



Installation, Operation, and Maintenance

# VariTrane™ Variable Air Volume (VAV) Terminal Air Units

Shutoff, Fan Powered, and CoolSense™  
Sensible Cooling



**Single-Duct:** VCCF, VCEF, VCWF

**Dual-Duct:** VDDF

**Fan-Powered:** VPCF, VPEF, VPWF, VSCF, VSEF, VSWF

**Fan-Powered Low Height:** LPCF, LPEF, LPWF, LSCF, LSEF, LSWF

**Chilled Water Sensible Cooling Terminal Units:** LDCF, LDEF, LDWF

## ▲ 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.



# Introduction

Read this manual thoroughly before operating or servicing this unit.

## Warnings, Cautions, and Notices

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:



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



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.



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-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

## 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.

### ⚠ 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 Labelling 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.**

## **⚠ 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.

## **⚠ WARNING**

### **Fiberglass Wool!**

Exposure to glass wool fibers without all necessary PPE equipment could result in cancer, respiratory, skin or eye irritation, which could result in death or serious injury. Disturbing the insulation in this product during installation, maintenance or repair will expose you to airborne particles of glass wool fibers and ceramic fibers known to the state of California to cause cancer through inhalation.

You **MUST** wear all necessary Personal Protective Equipment (PPE) including gloves, eye protection, a NIOSH approved dust/mist respirator, long sleeves and pants when working with products containing fiberglass wool.

#### **Precautionary Measures:**

- Avoid breathing fiberglass dust.
- Use a NIOSH approved dust/mist respirator.
- Avoid contact with the skin or eyes. Wear long-sleeved, loose-fitting clothing, gloves, and eye protection.
- Wash clothes separately from other clothing; rinse washer thoroughly.
- Operations such as sawing, blowing, tear-out, and spraying may generate fiber concentrations requiring additional respiratory protection. Use the appropriate NIOSH approved respirator.

#### **First Aid Measures:**

- **Eye Contact** - Flush eyes with water to remove dust. If symptoms persist, seek medical attention.
- **Skin Contact** - Wash affected areas gently with soap and warm water after handling.

## **About This Manual**

This manual describes the installation of with recommended wiring, piping, and mounting of single-duct, dual-duct, fan-powered, and low-height VAV terminal units, and chilled water sensible coil terminal units.

See also the following reference documents:

- BAS-SVX40-EN — Wireless Comm IOM
- BAS-SVX55-EN — Wireless Comm Network Design Best Practices Guide
- BAS-SVX62\*-EN — Tracer® UC210 Programmable Variable-Air-Volume (VAV) Box Controller
- VAV-SVX07\*-EN — Tracer® UC400 Programmable BACnet® Controller for VAV Units
- VAV-SVP01\*-EN — VAV VV550 LonTalk® Controller
- VAV-SVX01\*-EN — VAV-UCM 4.2 IOM
- VAV-SVX02\*-EN — VariTrane™ Pneumatic Controls

## **Receiving and Handling**

These units are shipped completely assembled with the exceptions of outlet duct temperature sensors on non-VCEF products, water valves, and accessories. Upon receiving the equipment, complete the following:

- Locate the nameplate and refer to the model and sales order number and check that the correct units have been delivered.
- Inspect the control enclosures and air valve casing for dents or punctures.
- Verify that all options have been included, such as filters, controls, heating coils, water valves, etc. Also check that the unit voltages agree with the building parameters.
- Manually rotate fan (if applicable) to assure that there are no obstructions within the housing.
- Claims for in-transit damage must be filed immediately with the delivery carrier.
- For hot water re-heat units, check the coil fins and make sure that coils are not damaged.
- Locate and verify that the correct zone sensors are with the order. These will be marked with an orange "Accessories Enclosed" label. Store in a secure location until needed. Accessories lost at the job site are NOT covered by the Trane warranty.
- If a discrepancy occurs between what was ordered and what is received, contact your local Trane representative immediately.
- Read appropriate section in this manual for installation procedures prior to starting equipment.

Upon receiving the equipment, please inspect each unit and components for external or internal damage. Refer to the bill of lading to insure all equipment and accessories have been received. Contact your local



## Introduction

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Trane sales representative and notify the trucking company immediately of any short ship or damaged equipment.

Read this manual thoroughly before operating or servicing this unit.

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## Revision History

- Updated the Fan-Powered VAV units model number descriptions and the Chilled water sensible cooling terminal units sections in the Model Numbers chapter.
- Updated the Parallel hanger bracket location dimensions, the Low height parallel units, and the Low-height series units tables in the Unit Installation chapter.
- Running edits.



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# Model Numbers

## Single-Duct VAV Units

### Digit 1, 2— Unit Type

**VC** = VariTrane™ Single—Duct

### Digit 3— Reheat

**C** = Cooling Only  
**E** = Electric Heat  
**W** = Hot Water Heat

### Digit 4 — Development Sequence

**F** = Sixth

### Digit 5, 6 — Primary Air Valve

**04** = 4" inlet (225 cfm)  
**05** = 5" inlet (350 cfm)  
**06** = 6" inlet (500 cfm)  
**08** = 8" inlet (900 cfm)  
**10** = 10" inlet (1400 cfm)  
**12** = 12" inlet (2000 cfm)  
**14** = 14" inlet (3000 cfm)  
**16** = 16" inlet (4000 cfm)  
**24** = 24" x 16" inlet (8000 cfm)

### Digit 7, 8, 9— Not Used

**000** = N/A

### Digit 10, 11— Design Sequence

**M0** = New Hot Water Coil

### Digit 12, 13, 14, 15 — Controls

**DD00** = Trane Actuator Only and Enclosure  
**DD01** = UCM4 Cooling Only Control  
**DD02** = UCM4 N.C. On/Off Hot Water  
**DD03** = UCM4 Prop Hot Water  
**DD04** = UCM4 Staged On/Off Elec Heat  
**DD05** = UCM4 Pulse Width MOD Elec Heat  
**DD07** = UCM4 N.O. On/Off Hot Water  
**DD11** = VV550 DDC- Controller, Cool Only  
**DD12** = VV550 DDC- Ctrl to operate N.C. On/Off Water Valve  
**DD13** = VV550 DDC- Ctrl to operate Prop Water Valve  
**DD14** = VV550 DDC- Ctrl On/Off Elec Heat  
**DD15** = VV550 DDC- Ctrl w/Pulse Width Modulation  
**DD16** = VV550 DDC- Controller Ventilation Flow  
**DD17** = VV550 DDC- Ctrl to Operate N.O. On/Off Water Valve  
**DD19** = VV550 DDC- Controller with Flow Tracking  
**DD20** = VV550 DDC- Vent Flow Control I to Operate N.C. Water Valve  
**DD21** = VV550 DDC- Vent Flow w/ On/Off Elec Heat

### Digit 12, 13, 14, 15 — Controls (continued)

**DD22** = VV550 DDC- Vent Flow control to operate prop water valve  
**DD23** = VV550 DDC- Basic plus- Local (Electric heat- PWM) Remote  
**DD24** = VV550 DDC- Basic plus- Local (Water heat- Modulating)  
**DD25** = VV550 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.O. 2-position)  
**DD26** = VV550 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- Modulating)  
**DD27** = VV550 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- Modulating)  
**DD28** = VV550 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.O. 2-position)  
**DD29** = VV550 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- NC 2-position)  
**DD30** = VV550 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.C. 2-position)  
**DD31** = VV550 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.O. 2-position)  
**DD32** = VV550 DDC- Basic plus- Local (Electric heat- Staged) Remote (Staged EH)  
**DD33** = VV550 DDC- Vent Flow control to operate N.O. On/Off water valve  
**DD41** = UC400 DDC- Basic (No water or electric heat)  
**DD42** = UC400 DDC- Basic (Water heat- N.C. 2-position)  
**DD43** = UC400 DDC- Basic (Water heat- Modulating)  
**DD44** = UC400 DDC- Basic (Electric heat- Staged)  
**DD45** = UC400 DDC- Basic (Electric heat- PWM)  
**DD46** = UC400 DDC- Ventilation flow-cooling only  
**DD47** = UC400 DDC- Basic (Water heat- N.O. 2-position)  
**DD49** = UC400 DDC- Flow Tracking (Cooling only)  
**DD50** = UC400 DDC- Ventilation Flow (Water heat- N. C. 2-position)  
**DD51** = UC400 DDC- Ventilation Flow (Electric heat- Staged)  
**DD52** = UC400 DDC- Ventilation Flow (Water heat- Modulating)  
**DD53** = UC400 DDC- Basic plus- Local (Electric heat- PWM) Remote (Staged EH)  
**DD54** = UC400 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.C. 2-position)  
**DD55** = UC400 DDC- Basic plus Local (Water heat- Modulating) Remote (Water- N.O. 2-position)

### Digit 12, 13, 14, 15 — Controls (continued)

**DD56** = UC400 Basic plus - Local (Water heat - N.O. 2-position) Remote (Water - Modulating)  
**DD57** = UC400 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- Modulating)  
**DD58** = UC400 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.O. 2-position)  
**DD59** = UC400 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.C. 2-position)  
**DD60** = UC400 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.C. 2-position)  
**DD61** = UC400 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.O. 2-position)  
**DD62** = UC400 DDC- Basic plus- Local (Electric heat- Staged) Remote (Staged EH)  
**DD63** = UC400 DDC- Ventilation Flow (Water heat- N.O. 2-position)  
**DD65** = UC400 Basic (Electric Heat Modulating SCR)  
**DD66** = UC400 Basic plus- Local (Electric heat-Modulating SCR) Remote (Staged EH)  
**DD67** = UC400 Ventilation Flow (Electric heat- Modulating SCR)  
**DD71** = UC210 DDC- Basic (No water or electric heat)  
**DD72** = UC210 DDC- Basic (Water heat- N.C. 2-position)  
**DD73** = UC210 DDC- Basic (Water heat- Modulating)  
**DD74** = UC210 DDC- Basic (Electric heat- Staged)  
**DD75** = UC210 DDC- Basic (Electric heat- PWM)  
**DD76** = UC210 DDC Ventilation flow- cooling only  
**DD77** = UC210 DDC- Basic (Water heat- N.O. 2-position)  
**DD79** = UC210 DDC- Flow Tracking (Cooling only)  
**DD80** = UC210 DDC- Ventilation Flow (Water heat- N.C. 2-position)  
**DD81** = UC210 DDC- Ventilation Flow (Electric heat- Staged)  
**DD82** = UC210 DDC- Ventilation Flow (Water heat- Modulating)  
**DD83** = UC210 DDC- Basic plus- Local (Electric heat- PWM) Remote (Staged EH)  
**DD84** = UC210 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.C. 2-position)  
**DD85** = UC210 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.O. 2-position)  
**DD86** = UC210 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- Modulating)

## Digit 12, 13, 14, 15 — Controls (continued)

**DD87** = UC210 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- Modulating)  
**DD88** = UC210 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.O. 2-position)  
**DD89** = UC210 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.C. 2-position)  
**DD90** = UC210 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.C. 2-position)  
**DD91** = UC210 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.O. 2-position)  
**DD92** = UC210 DDC- Basic plus- Local (Electric heat- Staged) Remote (Staged EH)  
**DD93** = UC210 Ventilation Flow (Water heat- N.O. 2-position)  
**DD95** = UC210 Basic (Electric Heat Modulating SCR)  
**DD96** = UC210 Basic plus- Local (Electric heat-Modulating SCR) Remote (Staged EH)  
**DD97** = UC210 Ventilation Flow (Electric heat-Modulating SCR)  
**ENCL** = Shaft Only in Enclosure  
**ENON** = Shaft Out Side for Electric Units  
**FM00** = Other Actuator and Control  
**FM01** = Trane Supplied Actuator, Other Ctrl  
**PC00** = N.C. Actuator and Linkage Only  
**PC04** = N.C. with DA Stat, 3000 Series  
**PC05** = UC210 DDC- Ventilation flow- cooling only  
**PCSS** = UC210 DDC- Basic (Water heat- N.O. 2-position)  
**PN00** = UC210 DDC- Flow Tracking (Cooling only)  
**PN04** = UC210 DDC- Ventilation Flow (Water heat- N. C. 2-position)  
**PN05** = N.C. with RA Stat, 3000 Series  
**PN11** = Auto Dual Min.  
**PN32** = N.O. PNEU Constant Vol.  
**PN34** = N.O. 3000 Series Constant Vol.,RA STAT  
**PNON** = Shaft Out Side for Pneumatic Units  
**PNSS** = Normally-Open Special  
**N.C.** = Normally-Closed  
**N.O.** = Normally-Open  
**DA Stat** = Direct-acting Pneumatic T-stat (By Others)  
**RA Stat** = Reverse-acting Pneumatic T-stat (By Others)  
**PN** = Pneumatic  
**FM** = Factory Installation of Customer-supplied Controllers  
**PVR** = Pneumatic Volume Regulator

## Digit 16 — Insulation

**A** = 1/2" Matte-faced  
**B** = 1" Matte-faced  
**D** = 1" Foil-faced  
**F** = 1" Double Wall  
**G** = 3/8" Closed-cell

## Digit 17, 18— Not Used

**00** = Not Applicable

## Digit 19— Outlet Plenum (Slip-and-Drive Connection)

**0** = None  
**A** = 1 Outlet RH  
**B** = 1 Outlet END  
**C** = 1 Outlets, LH  
**D** = 2 Outlets, 1RH, 1END  
**E** = 2 Outlets, 1LH, 1END  
**F** = 2 Outlets, 1RH, 1LH  
**H** = 3 Outlets, 1LH, 1RH, 1END  
**J** = 4 Outlets, 1LH, 1RH, 2END

**Note:** See unit drawings for outlet sizes/damper information.

## Digit 20— Not Used

**0** = Not Applicable

## Digit 21— Water Coil

**0** = None  
**1** = 1 Row  
**2** = 2 Row  
**3** = 3 Row  
**4** = 4 Row  
**A** = 1 Row Premium  
**B** = 2 Row Premium  
**C** = 3 Row Premium  
**D** = 4 Row Premium

## Digit 22— Electrical Connections

**F** = Able to Flip for LH/RH Connections (VCEF Only)  
**L** = Left, Airflow hits in face  
**R** = Right, Airflow hits in face  
**0** = Opposite side connection, coil and control (VCWF Only)

**Note:** VCCF/VCWF can be flipped in field for opposite connections.

## Digit 23— Transformer

**0** = None  
**1** = 120/24V, 50 VA  
**2** = 208/24V, 50 VA  
**3** = 240/24V, 50 VA  
**4** = 277/24V, 50 VA  
**5** = 480/24V, 50 VA  
**6** = 347/24V, 50 VA  
**7** = 380/24V, 50 VA  
**8** = 575/24V, 50 VA

**Note:** For VCEF units with transformers the VA depends on the staging, control, and contactor type (ranges are 50 VA to 75 VA, for 1 and 3 phase)

## Digit 24 — Disconnect Switch

**0** = None  
**W** = With

**Note:** VCCF/VCWF— toggle disconnect. VCEF-door interlocking power disconnect.

## Digit 25 — Power Fuse

**0** = None  
**W** = With

## Digit 26 — Electric Heat Voltage

**0** = None  
**A** = 208/60/1  
**B** = 208/60/3  
**C** = 240/60/1  
**D** = 277/60/1  
**E** = 480/60/1  
**F** = 480/60/3  
**G** = 347/60/1  
**H** = 575/60/3  
**J** = 380/50/3  
**K** = 120/60/1

## Digit 27, 28, 29 — Electric Heat kW

**000** = None  
**010** = 1.0 kW  
**015** = 1.5 kW  
**460** = 46.0 kW

### Notes:

- 0.5 to 8.0 kW in 1/2 kW increments
- 8.0 to 18.0 kW in 1 kW increments
- 18.0 to 46.0 kW in 2 kW increments

## Digit 30 — Electric Heat Stages

**0** = None  
**1** = 1 Stage  
**2** = 2 Stages Equal  
**3** = 3 Stages Equal

## Digit 31 — Electric Heat Contactors

**0** = None  
**1** = 24V Magnetic  
**2** = 24V Mercury  
**3** = PE w/Magnetic  
**4** = PE w/Mercury  
**5** = 0-10Vdc SCR Heat; UC400/UC210  
**6** = 0-10Vdc SCR Heat; FMTD/ENCL/DD00  
**7** = 24V SSR (Solid State Relay)  
**A** = 24V Mercury Left Hand  
**B** = 24V Mercury Right Hand  
**C** = PE w/Mercury Left Hand  
**D** = PE 2/Mercury Right Hand

## Digit 32, 33— Not Used

**00** = Not Applicable



## Model Numbers

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### Digit 34 — Actuator

- 0** = Standard
- A** = Spring Return, Normally Open
- B** = Spring Return, Normally Closed
- C** = Belimo™ Actuator
- G** = Trane Analog Actuator (UC210 or UC400 only)

### Digit 35 — Sensor Options

- 0** = Standard, Wired
- 3** = Trane Air-Fi® Wireless Communications Interface

### Digit 36 — Pre-wired Factory Solutions

- 0** = None
- 1** = Factory-mounted DTS
- 2** = HW Valve Harness
- 3** = Both DTS/HW Valve Harness
- 4** = Averaging DTS Factory-installed in Unit (Required UC210/UC400 w/SCR Heat)
- 5** = Analog HW Valve, field provided

### Digit 37 — Bottom Access With Cam Locks

- 0** = None
- 1** = Access Left Side Terminal Unit
- 2** = Access Right Side Terminal Unit
- 3** = Access Left Side Terminal Unit w/Water Connection Right Side
- 4** = Access Right Side Terminal Unit w/Water Connection Left Side

### Digit 38 —Piping Package

- 0** = None
- A** = 2-Way Automatic Balancing
- B** = 3-Way Automatic Balancing

### Digit 39 — Water Valve

- 0** = None
- 1** = Proportional HW Valve 0.7 Cv
- 2** = Proportional HW Valve 2.7 Cv
- 3** = Proportional HW Valve 6.6 Cv
- 4** = Proportional HW Valve 8.0 Cv
- 5** = Analog HW Valve, field provided (UC210 or UC400 only)
- 6** = Proportional, HW Valve, 1.7 Cv
- 7** = Proportional, HW Valve, 5.0 Cv

### Digit 40 — Flow Rate

- 00** = No Heat
- A** = 0.5 gpm, 0.03 l/s
- B** = 1.0 gpm, 0.06 l/s
- C** = 1.5 gpm, 0.09 l/s
- D** = 2.0 gpm, 0.13 l/s
- E** = 2.5 gpm, 0.16 l/s
- F** = 3.0 gpm, 0.19 l/s
- G** = 3.5 gpm, 0.22 l/s
- H** = 4.0 gpm, 0.25 l/s
- J** = 4.5 gpm, 0.28 l/s
- K** = 5.0 gpm, 0.31 l/s
- L** = 5.5 gpm, 0.35 l/s

### Digit 40 — Flow Rate (continued)

- M** = 6.0 gpm, 0.38 l/s
- N** = 6.5 gpm, 0.41 l/s
- P** = 7.0 gpm, 0.44 l/s
- Q** = 7.5 gpm, 0.47 l/s
- R** = 8.0 gpm, 0.50 l/s
- S** = 9.0 gpm, 0.57 l/s
- T** = 10.0 gpm, 0.63 l/s
- U** = 11.0 gpm, 0.69 l/s
- V** = 12.0 gpm, 0.76 l/s
- W** = 13.0 gpm, 0.82 l/s
- X** = 14.0 gpm, 0.88 l/s
- Y** = 15.0 gpm, 0.95 l/s
- Z** = 16.0 gpm, 1.01 l/s
- 1** = 17.0 gpm, 1.07 l/s
- 2** = 18.0 gpm, 1.14 l/s
- 3** = 19.0 gpm, 1.20 l/s
- 4** = 20.0 gpm, 1.26 l/s
- 5** = 21.0 gpm, 1.32 l/s
- 6** = 22.0 gpm, 1.39 l/s
- 7** = 23.0 gpm, 1.45 l/s

### Digit 41 — Air Leakage Class

- 0** = Standard Air Leakage
- 1** = Certified Ultra-Low Air Leakage



# Dual-Duct VAV Units

## Digit 1, 2, 3— Unit Type

**VDD** = VariTrane™ Dual—Duct

## Digit 4 — Development Sequence

**F** = Sixth

## Digit 5, 6 — Primary Air Valve

**05** = 5" inlet (350 cfm)  
**06** = 6" inlet (500 cfm)  
**08** = 8" inlet (900 cfm)  
**10** = 10" inlet (1400 cfm)  
**12** = 12" inlet (2000 cfm)  
**14** = 14" inlet (3000 cfm)  
**16** = 16" inlet (4000 cfm)

## Digit 7, 8 — Secondary Air Valve

**05** = 5" inlet (350 cfm)  
**06** = 6" inlet (500 cfm)  
**08** = 8" inlet (900 cfm)  
**10** = 10" inlet (1400 cfm)  
**12** = 12" inlet (2000 cfm)  
**14** = 14" inlet (3000 cfm)  
**16** = 16" inlet (4000 cfm)

## Digit 9— Not Used

**0** = Not applicable

## Digit 10, 11— Design Sequence

**\*\*** = Factory Assigned

## Digit 12, 13, 14, 15 — Controls

**DD00** = Trane Actuator Only  
**DD01** = Dual UCM4.2 Cooling Only Control  
**DD08** = Dual UCM4.2 Constant Volume  
**DD11** = Dual VV550 DDC, Cooling Only  
**DD18** = Dual VV550 DDC, Constant Volume  
**DD41** = UC400 DDC Basic, No Water or Electric Heat  
**DD48** = UC400 DDC Basic, Constant Volume  
**ENON** = Shaft Out Side for Electric Units  
**FM00** = Other Actuator and Control  
**FM01** = Trane Supplied Actuator, Other Ctrl  
**PC03** = NC Heating Valve, N.O. Cooling Valve  
**PCSS** = Normally Closed Special  
**PN08** = N.O. Heat/Cool. Actuators and Linkage Only  
**PN09** = N.O. Heating, N.O. Cooling, w/PVR  
**PN10** = N.O. Heating, N.O. Cooling, w/PVR (CV Discharge)  
**PNON** = Shaft Outside for Pneumatic Units  
**PNSS** = Normally Open Special

## Digit 16 — Insulation

**A** = 1/2" Matte-faced  
**B** = 1" Matte-faced  
**D** = 1" Foil-faced  
**F** = 1" Double Wall  
**G** = 3/8" Closed-cell

## Digit 17— Not Used

**0** = Not Applicable

## Digit 18— Not Used

**0** = Not Applicable

## Digit 19 — Outlet Plenum (Slip-and-Drive Connection)

**0** = None  
**A** = 1 Outlet RH  
**B** = 1 Outlet END  
**C** = 1 Outlets, LH  
**D** = 2 Outlets, 1RH, 1END  
**E** = 2 Outlets, 1LH, 1END  
**F** = 2 Outlets, 1RH, 1LH  
**G** = 2 Outlets, 2END  
**H** = 3 Outlets, 1LH, 1RH, 1END  
**J** = 4 Outlets, 1LH, 1RH, 2END

**Note:** See unit drawings for outlet sizes/damper information.

## Digit 20— Not Used

**0** = Not Applicable

## Digit 21— Not Used

**0** = Not Applicable

## Digit 22— Not Used

**0** = Not Applicable

## Digit 23 — Transformer

**0** = None  
**1** = 120/24V, 50 VA  
**2** = 208/24V, 50 VA  
**3** = 240/24V, 50 VA  
**4** = 277/24V, 50 VA  
**5** = 480/24V, 50 VA  
**6** = 347/24V, 50 VA  
**7** = 575/24V, 50 VA

## Digit 24— Disconnect Switch

**0** = None  
**W** = With Toggle

## Digit 25 — Power Fuse

**0** = None  
**W** = With

## Digit 26 — Not Used

**0** = Not Applicable

## Digit 27 — Not Used

**0** = Not Applicable

## Digit 28 — Not Used

**0** = Not Applicable

## Digit 29 — Not Used

**0** = Not Applicable

## Digit 30— Not Used

**0** = Not Applicable

## Digit 31 — Not Used

**0** = Not Applicable

## Digit 32 — Not Used

**0** = Not Applicable

## Digit 33 — Special Options

**0** = None  
**X** = Varies, Factory Assigned

## Digit 34 — Actuator

**0** = Standard  
**A** = Belimo™ Actuator  
**B** = Trane Analog Actuator (UC400 only)

## Digit 35 — Wireless Sensor

**0** = Sensor/Receiver Standard  
**3** = Trane Air-Fi® Wireless Communication Interface

**Note:** All sensors selected in accessories.

## Digit 36 — Duct Temperature Sensor

**0** = None  
**1** = With Duct Temperature Sensor



## Model Numbers

# Fan-Powered VAV Units Model Number Descriptions

### Digit 1, 2— Unit Type

**VP** = VariTrane™ Fan-Powered Parallel  
**VS** = VariTrane™ Fan-Powered Series  
**LP** = VariTrane™ Fan-Powered Low Height Parallel  
**LS** = VariTrane™ Fan-Powered Low Height Series

### Digit 3— Reheat

**C** = Cooling Only  
**E** = Electric Heat  
**W** = Hot Water Heat

### Digit 4 — Development Sequence

**F** = Sixth

### Digit 5, 6 — Primary Air Valve

**04** = 4" inlet (225 cfm)  
**05** = 5" inlet (350 cfm)  
**06** = 6" inlet (500 cfm)  
**08** = 8" inlet (900 cfm)  
**10** = 10" inlet (1400 cfm)  
**12** = 12" inlet (2000 cfm)  
**14** = 14" inlet (3000 cfm)  
**16** = 16" inlet (4000 cfm)  
**RT** = 8" x 14" inlet (1800 cfm)

**Note:** 10, 12, 14, and 16 not available on low height units.

### Digit 7, 8— Secondary Air Valve Used

**00** = N/A

### Digit 9 — Fan

**A** = DS02 Fan (1300 nom cfm)  
**B** = PS02 Fan (1160 nom cfm)  
**C** = DS03 Fan (1950 nom cfm)  
**P** = 02SQ Fan (500 nom cfm)  
**Q** = 03SQ Fan (1100 nom cfm)  
**R** = 04SQ Fan (1350 nom cfm)  
**S** = 05SQ Fan (1550 nom cfm)  
**T** = 06SQ Fan (1850 nom cfm)  
**U** = 07SQ Fan (2000 nom cfm)

### Digit 10, 11— Design Sequence

**\*\*** = Factory Assigned

### Digit 12, 13, 14, 15 — Controls

**DD01** = Cooling Only Control  
**DD02** = N.C. On/Off Hot Water  
**DD03** = Prop Hot Water  
**DD04** = Staged On/Off Elec Heat  
**DD05** = Pulse Width Mod of Elect Heat  
**DD07** = N.O. On/Off Hot Water  
**DD11** = VV550 DDC- Controller, Cooling Only  
**DD12** = VV550 DDC- Control w/N.C. On/Off HW Valve  
**DD13** = VV550 DDC- Control w/Prop. HW Valve  
**DD14** = VV550 DDC- Control On/Off Electric Heat  
**DD15** = VVV550 DDC- Control w/Pulse Width Modulation  
**DD17** = VVV550 DDC- Control w/N.O On/Off HW Valve  
**DD41** = UC400 DDC- Basic (No water or electric heat)  
**DD42** = UC400 DDC- Basic (Water heat- N.C. 2-position)  
**DD43** = UC400 DDC- Basic (Water heat- Modulating)  
**DD44** = UC400 DDC- Basic (Electric heat- Staged)  
**DD45** = UC400 DDC- Basic (Electric heat- PWM)  
**DD47** = UC400 DDC- Basic (Water heat- N.O. 2-position)  
**DD53** = UC400 DDC- Basic plus- Local (Electric heat- PWM) Remote (Staged EH)  
**DD58** = UC400 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.O. 2-position)  
**DD59** = UC400 DDC- Basic plus Local (Water heat- Modulating) Remote (Water- N.C. 2-position)  
**DD60** = UC400 DDC- Basic Plus Local (Water Heat- N.O. 2-position) Remote Water- N.C. 2-position)  
**DD61** = UC400 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.O. 2-position)  
**DD62** = UC400 DDC- Basic plus- Local (Electric heat- Staged) Remote (Staged EH)  
**DD65** = UC400 Basic (Electric Heat Modulating SCR)  
**DD66** = UC400 Basic plus- Local (Electric heat-Modulating SCR) Remote (Staged EH)

### Digit 12, 13, 14, 15 — Controls (continued)

**DD71** = UC210 DDC- Basic (No water or electric heat)  
**DD72** = UC210 DDC- Basic (Water heat- N.C. 2-position)  
**DD73** = UC400 DDC- Basic (Water heat- Modulating)  
**DD74** = UC210 DDC- Basic (Electric heat- Staged)  
**DD75** = UC210 DDC- Basic (Electric heat- PWM)  
**DD77** = UC210 DDC- Basic (Water heat- N.O. 2-position)  
**DD83** = UC210 DDC- Basic plus- Local (Electric heat- PWM) Remote (Staged EH)  
**DD84** = UC210 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.C. 2-position)  
**DD85** = UC210 DDC- Basic plus- Local (Water heat- Modulating) Remote (Water- N.O. 2-position)  
**DD86** = UC210 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- Modulating)  
**DD87** = UC210 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- Modulating)  
**DD88** = UC210 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.O. 2-position)  
**DD89** = UC210 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.C. 2-position)  
**DD90** = UC210 DDC- Basic plus- Local (Water heat- N.O. 2-position) Remote (Water- N.C. 2-position)  
**DD91** = UC210 DDC- Basic plus- Local (Water heat- N.C. 2-position) Remote (Water- N.O. 2-position)  
**DD92** = UC210 DDC- Basic plus- Local (Electric heat- Staged) Remote (Staged)  
**DD95** = UC210 Basic (Electric Heat Modulating SCR)  
**DD96** = UC210 Basic plus- Local (Electric heat-Modulating SCR) Remote (Staged EH)  
**DD00** = Trane Actuator Only  
**ENCL** = Shaft Only in Enclosure  
**ENON** = Shaft Out Side for Electric Units  
**FM00** = Other Actuator and Control  
**FM01** = Trane Supplied Actuator, Other Ctrl  
**PN00** = N.O. Actuator and Linkage Only  
**PN05** = N.O. with RA STAT, 3000 Series  
**PN51** = Pneumatic N.O. w/3011, DPS Fan  
**PN52** = Pneumatic N.O. w/3011, DPM Fan  
**PNON** = Shaft Out Side for Pneumatic Units

**Digit 16 — Insulation**

**A** = 1/2" Matte-faced  
**B** = 1" Matte-faced  
**D** = 1" Foil-faced  
**F** = 1" Double Wall  
**G** = 3/8" Closed-cell

**Digit 17— Motor Type**

**D** = PSC Motor  
**E** = High-efficiency Electronically Commutated Motor (ECM)  
**F** = Variable Speed High-efficiency Electronically Commutated Motor (ECV)

**Digit 18— Motor Voltage**

**1** = 115/60/1  
**2** = 277/60/1  
**3** = 347/60/1  
**4** = 208/60/1  
**5** = 230/50/1

**Digit 19— Outlet Connection**

**1** = Flanged  
**2** = Slip-and-Drive Connection

**Digit 20— Attenuator**

**0** = None  
**B** = Suppressor  
**T** = Thinline Suppressor

**Digit 21— Water Coil**

**0** = None  
**1** = 1 Row, Plenum Inlet Installed RH  
**2** = 2 Row, Plenum Inlet Installed RH  
**3** = 1 Row, Discharge Installed LH  
**4** = 1 Row, Discharge Installed RH  
**5** = 2 Row, Discharge Installed LH  
**6** = 2 Row, Discharge Installed RH  
**A** = 1 Row Premium, Water Coil Inlet  
**B** = 2 Row Premium, Water Coil Inlet  
**C** = 1 Row Premium, Hot Coil on Discharge LH  
**D** = 1 Row Premium, Hot Coil on Discharge RH  
**E** = 2 Row Premium, Hot Coil on Discharge LH  
**F** = 2 Row Premium, Hot Coil on Discharge RH

**Digit 22— Electrical Connections**

**F** = Flippable Left and Right Hand  
**L** = Left, Airflow hits in face  
**R** = Right, Airflow hits in face  
**W** = Narrow Corridor LH, High Voltage, Inlet Facing  
**X** = Narrow Corridor RH, High Voltage, Inlet Facing

**Note:** Digits W and X, fan-powered series only.

**Digit 23— Transformer**

**0** = Not Applicable

**Digit 24 — Disconnect Switch**

**0** = None  
**W** = With

**Note:** Electric reheat w/door interlocking power disconnect, cooling only and water reheat w/toggle disconnect.

**Digit 25 — Power Fuse**

**0** = None  
**W** = With

**Digit 26 — Electric Heat Voltage**

**0** = None  
**A** = 208/60/1  
**B** = 208/60/3  
**C** = 240/60/1  
**D** = 277/60/1  
**E** = 480/60/1  
**F** = 480/60/3  
**G** = 347/60/1  
**H** = 575/60/3  
**J** = 380/50/3  
**K** = 120/60/1

**Note:** Digit K not available with low height.

**Digit 27, 28, 29— Electric Heat kW**

**000** = None  
**010** = 1.0 kW  
**015** = 1.5 kW  
**460** = 46.0 kW

**Notes:**

- 0.5 to 8.0 kW in 1/2 kW increments
- 8.0 to 18.0 kW in 1 kW increments
- 18.0 to 46.0 kW in 2 kW increments

**Digit 30 — Electric Heat Stages**

**0** = None  
**1** = 1 Stage  
**2** = 2 Stages Equal  
**3** = 3 Stages Equal

**Note:** Digit 3 not available with low height.

**Digit 31 — Electric Heat Contactors**

**0** = None  
**1** = 24V Magnetic  
**2** = 24V Mercury  
**3** = PE w/Magnetic  
**4** = PE w/Mercury  
**5** = 0-10Vdc SCR Heat; UC400  
**6** = 0-10Vdc SCR Heat; FMTD/ENCL/DD00  
**7** = 24V SSR (Solid State Relay)

**Notes:** SCR cannot be selected with the following:

- kW>10,208V, 3Ph, Low Height
- kW>22,480V, 3Ph, Low Height
- Voltage = 575V

**Digit 32— Air Switch**

**0** = Not Applicable  
**W** = With

**Digit 33— Not Used**

**0** = Not Applicable

**Digit 34 — Actuator**

**0** = Standard  
**A** = Belimo™ Actuator  
**G** = Trane Analog Actuator (UC210 or UC400 only)

**Digit 35 — Wireless Sensors**

**0** = None  
**2** = Wireless Comm Interface Modular FM  
**3** = Trane Air-Fi® Wireless Communications Interface

**Note:** All sensors selected in accessories.

**Digit 36 — Pre-wired Factory Solutions**

**0** = None  
**1** = Factory-mounted DTS  
**2** = HW Valve Harness  
**3** = Both DTS/HW Valve Harness

**Digit 37 — Bottom Access**

**0** = None  
**W** = Access Left Side Terminal Unit

**Digit 38 —Piping Package**

**0** = None  
**A** = 2-Way Automatic Balancing  
**B** = 3-Way Automatic Balancing



## Model Numbers

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### Digit 39 – Water Valve

- 0** = None
- 1** = Proportional HW Valve 0.7 Cv
- 2** = Proportional HW Valve 2.7 Cv
- 3** = Proportional HW Valve 6.6 Cv
- 4** = Proportional HW Valve 8.0 Cv
- 5** = Analog HW Valve, Field Provided (UC210 or UC400 only)
- 6** = Proportional HW Valve 1.7 Cv
- 7** = Proportional HW Valve 5.0 Cv

### Digit 40 – Flow Rate

- 00** = No Heat
- A** = 0.5 gpm, 0.03 l/s
- B** = 1.0 gpm, 0.06 l/s
- C** = 1.5 gpm, 0.09 l/s
- D** = 2.0 gpm, 0.13 l/s
- E** = 2.5 gpm, 0.16 l/s
- F** = 3.0 gpm, 0.19 l/s
- G** = 3.5 gpm, 0.22 l/s
- H** = 4.0 gpm, 0.25 l/s
- J** = 4.5 gpm, 0.28 l/s
- K** = 5.0 gpm, 0.31 l/s
- L** = 5.5 gpm, 0.35 l/s
- M** = 6.0 gpm, 0.38 l/s
- N** = 6.5 gpm, 0.41 l/s
- P** = 7.0 gpm, 0.44 l/s
- Q** = 7.5 gpm, 0.47 l/s

# Chilled Water Sensible Cooling Terminal Units

## Digit 1, 2— Unit Type

**LD** = Chilled Water Sensible Cooling Terminal Units

## Digit 3— Heating

**C** = Cooling Only  
**E** = Electric Heat  
**W** = Hot Water Heat

## Digit 4 — Development Sequence

**F** = Sixth

## Digit 5, 6 — Primary Air Valve

**04** = 4" inlet (225 max cfm)  
**05** = 5" inlet (350 max cfm)  
**06** = 6" inlet (500 max cfm)  
**08** = 8" inlet (900 max cfm)  
**RT** = 8x14" inlet (1800 max cfm)

## Digit 7, 8— Secondary Air Valve

**00** = N/A

## Digit 9 — Fan

**A** = DS01 Fan (700 max cfm)  
**B** = DS02 Fan (1300 max cfm)

## Digit 10, 11— Design Sequence

**\*\*** = Factory Assigned

## Digit 12, 13, 14, 15 — Controls

**DD00** = Trane Actuator Only  
**ENCL** = Shaft Only in Enclosure  
**FM00** = Other Actuator and Control  
**FM01** = Trane Supplied Actuator, Other Control  
**SC41** = UC400 DDC- Sensible Cooling- Basic (No water or electric heat)  
**SC43** = UC400 DDC- Sensible Cooling- Basic (Water heat, Modulating)  
**SC44** = UC400 DDC- Sensible Cooling- Basic (Electric heat- Staged)  
**SC62** = UC400 DDC- Sensible Cooling- Basic plus Local (Electric heat- Staged), Remote (Staged)  
**SC65** = UC400 DDC- Sensible Cooling- Basic (Electric Heat Modulating SCR)  
**SC66** = UC400 DDC- Sensible Cooling- Basic plus Local (Electric heat- Modulating SCR) Remote (Staged)

## Digit 16 — Insulation

**A** = 1/2" Matte-faced  
**B** = 1" Matte-faced  
**D** = 1" Foil-faced  
**F** = 1" Double Wall  
**G** = 3/8" Closed-cell

## Digit 17 — Motor Type

**E** = High-efficiency Motor (ECM)  
**F** = Variable Speed High-efficiency Electronically Commutated Motor (ECV)

## Digit 18 — Motor Voltage

**1** = 115/60/1  
**2** = 277/60/1

## Digit 19 — Outlet Connection

**1** = Flanged  
**2** = Slip-and-Drive Connection

## Digit 20 — Attenuator

**0** = No Attenuator

## Digit 21 — Water Coil

**0** = None  
**3** = 1 Row, Discharge Installed, LH  
**4** = 1 Row, Discharge Installed, RH  
**5** = 2 Row, Discharge Installed, LH  
**6** = 2 Row, Discharge Installed, RH  
**C** = 1 Row Premium, Hot Coil on Discharge, LH  
**D** = 1 Row Premium, Hot Coil on Discharge, RH  
**E** = 2 Row Premium, Hot Coil on Discharge, LH  
**F** = 2 Row Premium, Hot Coil on Discharge, RH

## Digit 22 — Control, Heat Connections

**F** = Flippable Left and Right Hand

## Digit 23 — Unit Filter

**0** = Construction Throw-away Filter  
**8** = MERV 8 Filter

## Digit 24 — Disconnect Switch

**0** = None  
**W** = With

## Digit 25 — Power Fuse

**0** = None  
**W** = With

## Digit 26 — Electric Heat Voltage

**0** = None  
**A** = 208/60/1  
**B** = 208/60/3  
**C** = 240/60/1  
**D** = 277/60/1  
**E** = 480/60/1  
**F** = 480/60/3

## Digit 27, 28, 29 — Electric Heat kW

**000** = None  
**005** = 0.5 kW  
**010** = 1.0 kW  
**015** = 1.5 kW  
**200** = 20.0 kW

### Notes:

- 0.5 to 8.0 kW in 1/2 kW increments
- 8.0 to 18.0 kW in 1 kW increments
- 18.0 to 20.0 kW in 2 kW increments

## Digit 30 — Electric Heat Stages

**0** = None  
**1** = 1 Stage  
**2** = 2 Stages Equal

## Digit 31 — Electric Heat Contactors

**0** = None  
**1** = 24V Magnetic  
**5** = SCR Heat, UC400  
**6** = SCR Heat, FM00/ENCL/DD00

## Digit 32 — Airflow Switch

**0** = None  
**W** = With

## Digit 33 — Not Used

**0** = Not Applicable

## Digit 34 — Actuator

**0** = Standard  
**A** = Belimo™ Actuator  
**D** = Trane Analog Actuator (UC210 or UC400 only)

## Digit 35 — Wireless Sensors

**0** = None  
**3** = Air-Fi® Wireless Communications

**Note:** All sensors selected in accessories.



## Model Numbers

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### Digit 36 — Pre-wired Factory Solutions

- 0** = None
- 1** = Discharge Temperature Sensor (DTS)
- 2** = Hot Water (HW) Valve Harness
- 3** = DTS and HW Valve Harness
- 7** = Chilled Water (CW) Valve Harness
- 8** = CW and HW Valve Harness
- B** = DTS with CW Valve Harness
- C** = DTS with CW and HW Valve Harness

### Digit 37 — Not Used

- 0** = Not Applicable

### Digit 38 — Hot Water Piping Package

- 0** = None
- A** = 2-way Automatic Balancing
- B** = 3-way Automatic Balancing

### Digit 39 — Hot Water Valve

- 0** = None
- 1** = Proportional, HW Valve, 0.7 Cv
- 2** = Proportional, HW Valve, 2.7 Cv
- 3** = Proportional, HW Valve, 6.6 Cv
- 4** = Proportional, HW Valve, 8.0 Cv
- 5** = Analog, HW Valve, field provided (UC210 or UC400 only)
- 6** = Proportional, HW Valve, 1.7 Cv
- 7** = Proportional, HW Valve, 5.0 Cv

### Digit 40 — Hot Water Flow Rate

- 0** = None (No Flow Rate)
- A** = 0.5 gpm (0.03 L/s)
- B** = 1 gpm (0.06 L/s)
- C** = 1.5 gpm (0.09 L/s)
- D** = 2 gpm (0.13 L/s)
- E** = 2.5 gpm (0.16 L/s)
- F** = 3 gpm (0.19 L/s)
- G** = 3.5 gpm (0.22 L/s)
- H** = 4 gpm (0.25 L/s)
- J** = 4.5 gpm (0.28 L/s)
- K** = 5 gpm (0.32 L/s)
- L** = 5.5 gpm (0.35 L/s)
- M** = 6 gpm (0.38 L/s)
- N** = 6.5 gpm (0.41 L/s)
- P** = 7 gpm (0.44 L/s)
- Q** = 7.5 gpm (0.47 L/s)

### Digit 41 — Sensible Cooling Coil

- 2** = 2-Row Standard Cooling Coil
- 4** = 4-Row Standard Cooling Coil
- 6** = 6-Row Standard Cooling Coil

### Digit 42 — Chilled Water Coil Connections

- D** = Cooling Coil Connections at Unit Discharge End
- V** = Cooling Coil Connections at Air Valve End

### Digit 43 — Chilled Water Piping Package

- 0** = None
- A** = 2-way Automatic Balancing
- B** = 3-way Automatic Balancing

### Digit 44 — Chilled Water Valve

- 0** = None
- 1** = Proportional Valve, 0.7 Cv
- 2** = Proportional Valve, 2.7 Cv
- 3** = Proportional Valve, 6.6 Cv
- 4** = Proportional Valve, 8.0 Cv
- 5** = Analog CW Valve, Field-Provided (UC400 Only)
- 6** = Proportional Valve, 1.7 Cv
- 7** = Proportional Valve, 5.0 Cv

### Digit 45 — Chilled Water Flow Rate

- 0** = None (No Flow Rate)
- A** = 0.5 gpm (0.03 L/s)
- B** = 1 gpm (0.06 L/s)
- C** = 1.5 gpm (0.09 L/s)
- D** = 2 gpm (0.13 L/s)
- E** = 2.5 gpm (0.16 L/s)
- F** = 3 gpm (0.19 L/s)
- G** = 3.5 gpm (0.22 L/s)
- H** = 4 gpm (0.25 L/s)
- J** = 4.5 gpm (0.28 L/s)
- K** = 5 gpm (0.32 L/s)
- L** = 5.5 gpm (0.35 L/s)
- M** = 6 gpm (0.38 L/s)
- N** = 6.5 gpm (0.41 L/s)
- P** = 7 gpm (0.44 L/s)
- Q** = 7.5 gpm (0.47 L/s)



# Unit Information

## Single Duct VAV Units

The basic unit consists of a sheet metal casing with an air valve, which is used to modulate the air being delivered into the occupied zone. The unit is designed to modulate either cooling or heating air between 40°F and 140°F (4.44°C and 60°C). Air enters the air valve through the round or rectangular inlet and exits into the sheet metal casing to be distributed to the zone either through integral round outlets in the casing or through rectangular duct attached to the discharge of the unit.

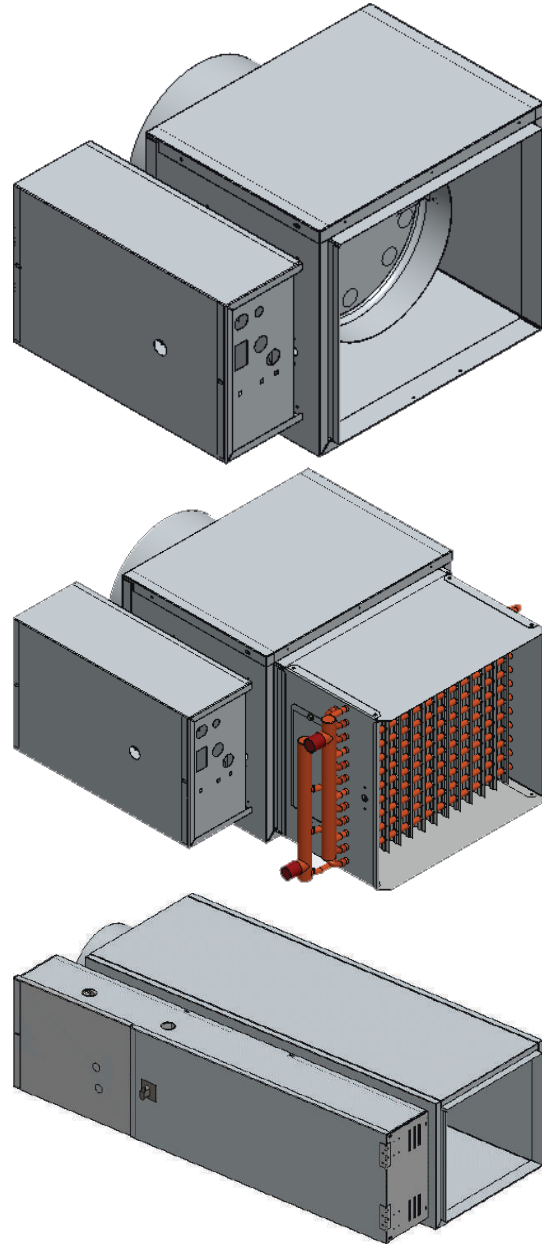
The basic unit can also be ordered with factory-mounted electric or hot water heating coils attached to the discharge.

These re-heat units are used primarily to reheat air-to-zone temperature when the load in the occupied space is low.

Primary air is modulated through the VariTrane™ air valve by rotating the damper blade. All air valves have a round/rectangular inlet for easy fit-up with incoming duct work.

## Typical Single Duct VAV Units

Figure 1. Typical single duct unit; VCCF VCWF, VCEF



## Dual-Duct VAV Units

Dual-duct units provide two air valves: one as heating primary air and the other as cooling primary air. Both discharge into the common outlet, which leads to the zone being controlled. See [Figure 2, p. 16](#).

Units are provided with a slip and drive rectangular duct connection or can be ordered with integral outlet plenum.

Sequencing of hot and cold air valve is dependent on job requirements. One typical control is valves working in conjunction to respond to zone temperature.

When the cooling valve becomes fully closed or reaches a specified valve minimum, the heating valve will begin to modulate or vice versa. The typical result is that air flowing to the zone varies from maximum down to a minimum and back up to maximum as load varies and controls would cause one air valve to close and the other to open.

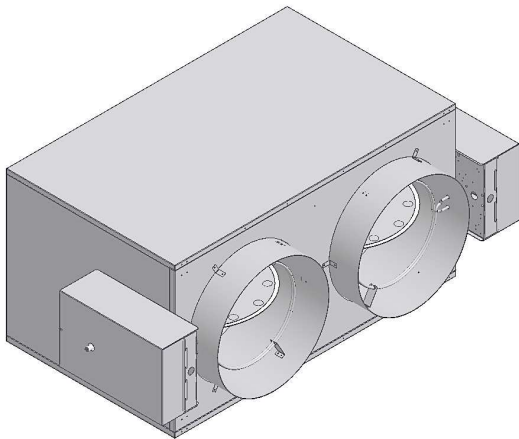
Another typical application is when the unit provides a constant volume to the zone. When the zone sensor is tied directly to the heating valve, it will modulate the heating valve according to the zone temperature.

When the heating valve is fully closed or there is a call for cooling in the zone, the cooling valve will be at constant supply. As the space becomes too cool, the heating valve will modulate open, decreasing the cooling valve flow. The typical result is that the air flowing into the zone stays at a constant flow whether the unit is heating or cooling.

Factory-installed Trane unit controls available include;

- UC400 — one required per unit
- VV550 — two required per unit
- UCM — two required per unit

**Figure 2. Typical dual-duct unit; VDDF**

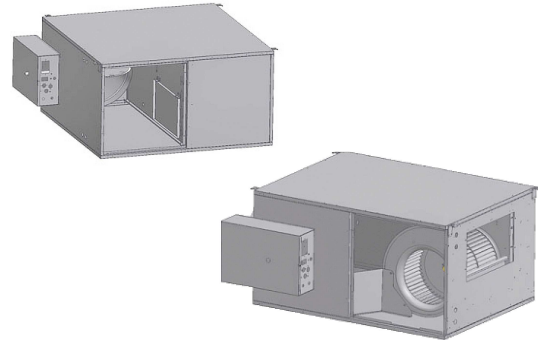


## Fan-Powered/Fan-Powered Low-Height VAV Units

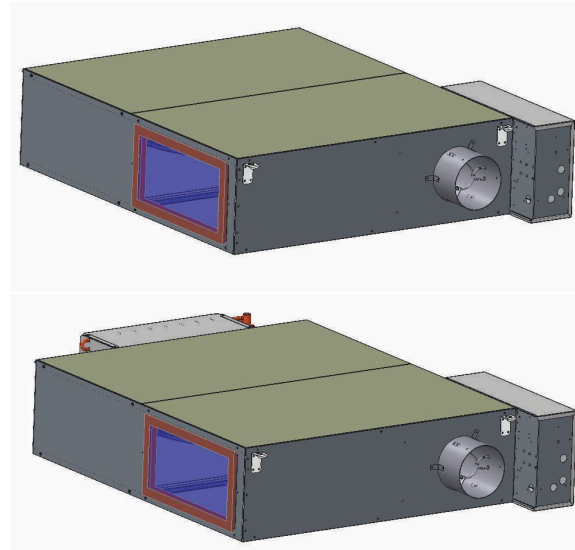
VariTrane™ fan-powered and low-height fan-powered units can be either parallel or series, with or without re-heat. Refer to the following figures.

### Typical Fan-powered Units

**Figure 3. Parallel fan-powered terminal unit (top) & series fan-powered terminal units (bottom)**

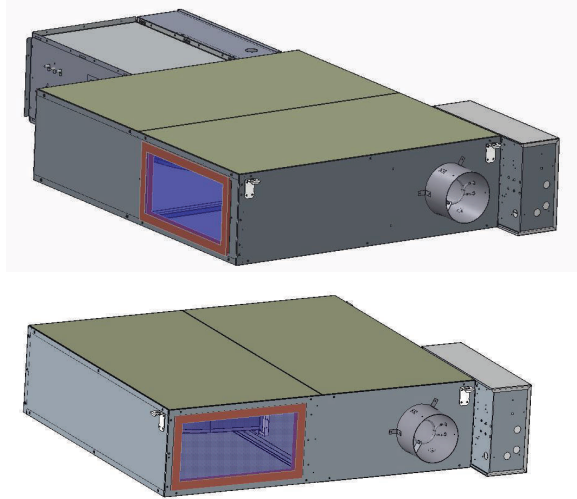


**Figure 4. Low height series: LSCF (top) & low height series: LSWF (bottom)**

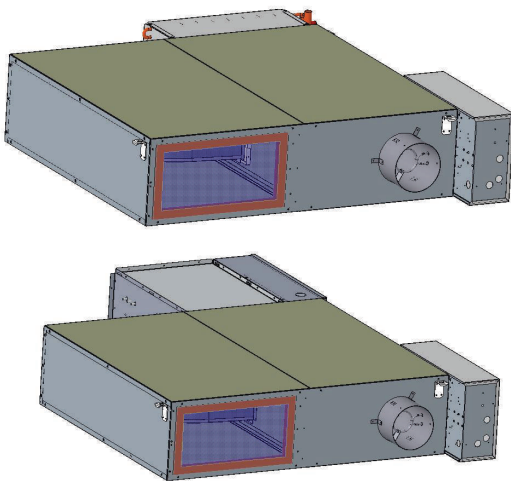




**Figure 5. Low height series: LSEF (top) & low height parallel: LPCF (bottom)**



**Figure 6. Low height parallel: LPWF (top) & low height parallel: LPEF (bottom)**



The fan on a series unit runs continuously whenever the main air handler unit is in operation. There are three (3) methods to start the fan: 1) remotely, 2) by a duct pressure switch, or 3) by a combination of both. The particular fan control method may vary from unit to unit, depending upon job needs.

Typically, heater is off while air valve modulates primary air and responds to zone temperature. If zone temperature decreases to the point where a decrease in primary air will not maintain the desired temperature, the re-heat will be activated to increase the temperature of the discharge air.

On a parallel unit, the VariTrane™ air valve delivers primary cooling air to the unit outlet. When the space temperature decreases beyond air valve control, the

fan is turned on as the first stage of heat. The fan delivers plenum air from above the occupied space to the unit outlet, which is mixed with primary air and delivered to the occupied space.

**Note:** *Either the fan, the air valve, or both can deliver airflow into the occupied space. In order to prevent primary airflow from exiting through the fan when the fan is not running on a parallel unit, a back draft damper is provided. When the fan is not running, the efficiency of this system is the same as a standard single-duct VAV unit.*

Typically, the control systems applied to parallel units cause the air valve to close to zero or a minimum flow before the fan is activated. After the fan is activated, the optional heat will be activated upon further reduction in zone temperature. Therefore, minimal primary air is mixed with the heated air.

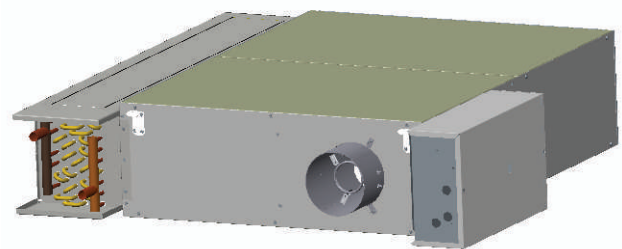
VariTrane™ fan-powered unit fan sizes 02SQ–05SQ, DS02, PS02 and DS03 were performance tested at .12 in. w.g. and sizes 06SQ and 07SQ were tested at .15 in. w.g. Units are not designed to operate without ducts and below these tested static pressures.

**Note:** *Fan-powered units are available with rectangular discharge connection only. The optional heater is mounted on the discharge of the unit. Hot water coils are connected to either the plenum inlet or on the discharge on parallel units, and to the discharge of series units.*

## Chilled Water Sensible Cooling Terminal Units

Chilled water sensible cooling terminal units are available with or without re-heat. Refer to the following figures.

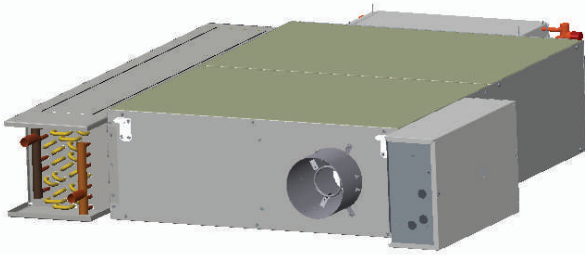
**Figure 7. Chilled water sensible cooling unit**



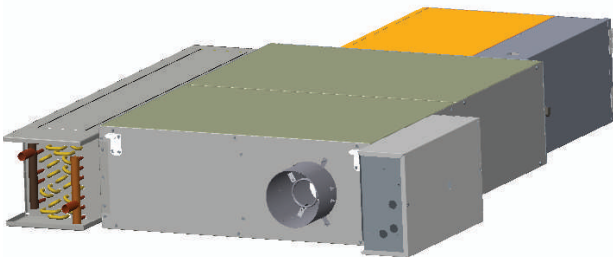


## Unit Information

**Figure 8. Chilled water sensible cooling unit with hot water coil**



**Figure 9. Chilled water sensible cooling unit with electric heat**



The function of the Trane chilled water sensible cooling terminal units is a little different than traditional VAV

Terminal Units. These terminal units are part of a **system** that uses a dedicated outdoor-air unit to distribute outdoor air to an air valve on each terminal unit to meet the ventilation requirements of the zone. Each terminal unit is also equipped with a cooling coil mounted on the plenum inlet. Recirculated air from the plenum (or directly from the occupied space) is drawn in through this cooling coil by the local fan. This cooled air is then mixed with the conditioned (cooled, dehumidified, heated, or humidified) outdoor air from the dedicated OA unit, and distributed through the downstream ductwork to the zone.

In most applications, the water supplied to this local cooling coil is controlled to a temperature above the dew point in the zone. This avoids moisture in the air from condensing on the coil, so it operates dry and provides only sensible cooling. All the dehumidification must then be provided by the dedicated outdoor-air unit. Trane chilled water sensible cooling terminal units are built with a drip pan located beneath the cooling coil, with a moisture sensor installed in it, to detect and prevent any moisture from getting on the ceiling beneath the units or into the occupied space below. These terminal units can be configured with either a hot water coil or electric heater mounted at the unit discharge.

# Unit Installation

## ⚠ 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. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

*For additional information regarding the safe discharge of capacitors, see PROD-SVB06\*-EN.*

## ⚠ WARNING

### Proper Structural Support Required!

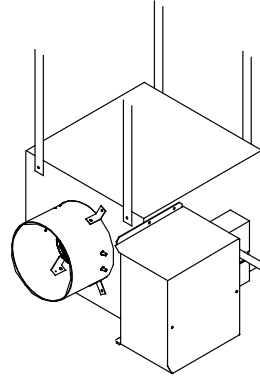
Failure to ensure proper structural ceiling support could result in unit falling from its location which could result in death or serious injury.

Ceiling structure must be strong enough to support the weight of the unit and any accessories. If unsure, check with a structural engineer.

Due to their weight, the VAV terminal units should be suspended from the uppermost ceiling, independent of the false ceiling grid. In fact, VAV terminal units are primarily designed for installation in the plenum space between the upper most ceiling and the false ceiling grid below it. See "Weights," p. 28 for unit weights. Suspension devices are to be supplied by the installer. Units must be installed level and upright. Failure to level the unit properly may prevent proper operation of the controls and/or terminal unit. Units are not designed to be installed vertically. Consequently, this will also void the U.L. ratings and any warranty on the unit.

## Single-Duct VAV Units

Figure 10. Single-duct hanging recommendations



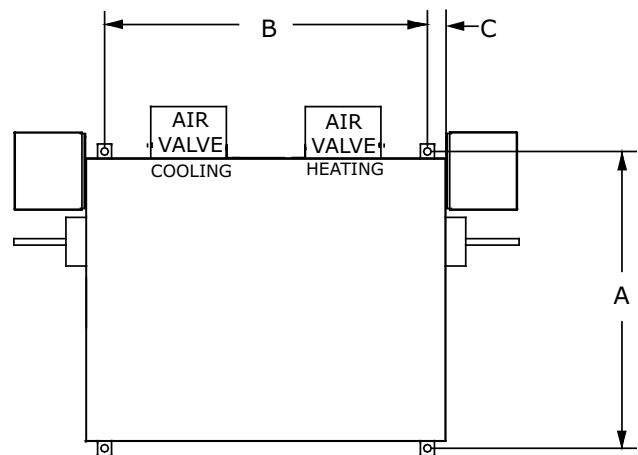
Depending upon the size and weight of the single-duct unit, it may be capable of being supported by the ductwork that is connected to it. No hanger brackets are provided on these units since the unit should be supported by means of a hanger strap. The hanger strap should be secured directly to the unit casing as shown above.

- For cooling only single-duct units or single-duct units with hot water coil, the unit may be rotated 180° for opposite side connections.
- For units with electric heat, the unit can be flipped to either RH or LH connection orientation if model number digit 22 Electrical Connections = F.

## Dual-Duct VAV Units

Dual-duct units should be supported by either hanger straps or by using a threaded rod in conjunction with the hanger brackets that are provided on the unit.

Figure 11. Dual-duct hanger bracket locations



TOP VIEW

**Table 1. Dual duct VAV unit hanger location dimensions**

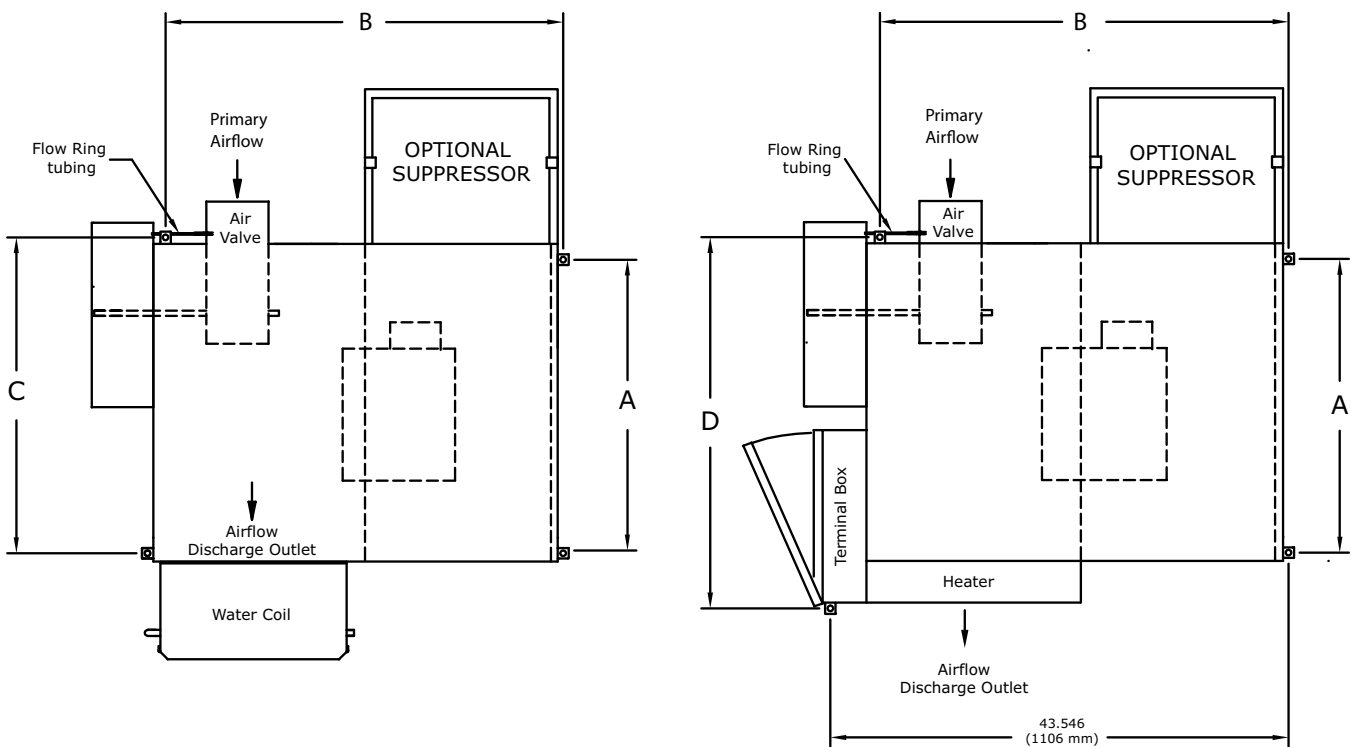
Inlet Size (in)	A		B		C	
	in	mm	in	mm	in	mm
5 thru 10	23.15	588	25.25	641	1.38	35
12 thru 16	23.15	588	37.25	946	1.38	35

## Fan-Powered VAV Units and Chilled Water Sensible Cooling Terminal Units

Fan-powered (standard and low-height) and chilled water sensible cooling terminal units should be supported by either hanger straps or by using a threaded rod in conjunction with the hanger brackets that are provided on the unit. Care should be exercised to insure that the hanging straps do not block the side access panel. Refer to the following figures.

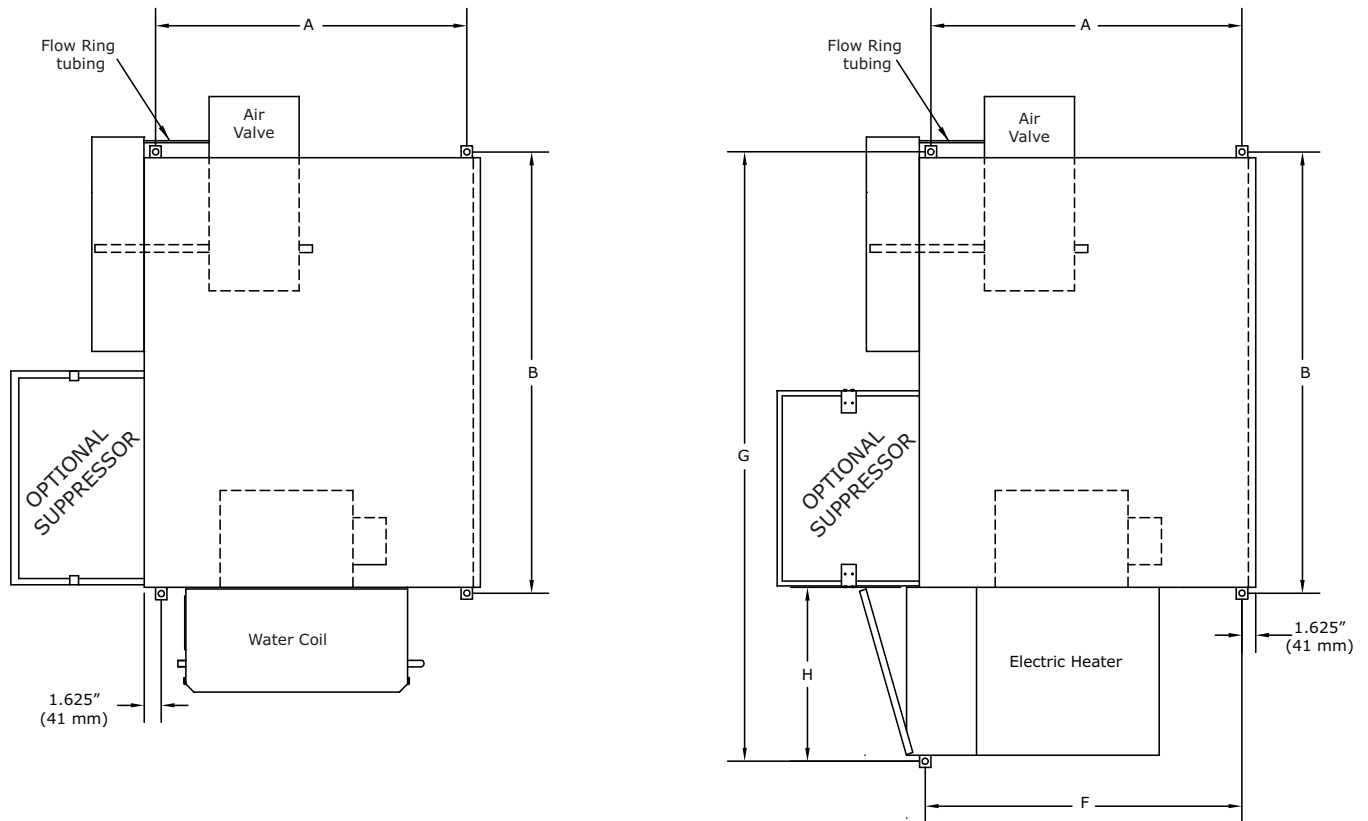
### Bracket Locations – Fan Powered

**Figure 12. Parallel hanger bracket location sizes**



**Table 2. Parallel hanger bracket location dimensions**

Fan Size	A		B		C		D	
	in.	mm	in.	mm	in.	mm	in.	mm
02SQ	26.75	679	38.95	989	28.95	735	37.10	942
03SQ, 04SQ, 05SQ	29.75	756	38.95	989	31.45	799	39.70	1008
06SQ	36.75	933	38.95	989	38.95	989	47.10	1196

**Figure 13. Series hanger bracket locations**

**Table 3. Series hanger bracket location dimensions**

Fan Size	A		B	
	in.	mm	in.	mm
02SQ	18.75	476	41.2	1041
03SQ, 04SQ	20.75	527	41.2	1041
05SQ	26.75	679	41.2	1041
06SQ, 07SQ	27.25	692	41.2	1041

**Table 4. Series hanger bracket location dimensions — electric heat only**

Fan Size	F		G		H	
	in.	mm	in.	mm	in.	mm
02SQ	20.13	511	53.75	1365	19.0	483
03SQ, 04SQ	23.88	606	59.75	1517	19.0	483
05SQ	28.97	736	59.75	1517	19.0	483
06SQ, 07SQ	29.88	759	58.25	1479	17.5	445

Figure 14. Low-height parallel DS02/PS02

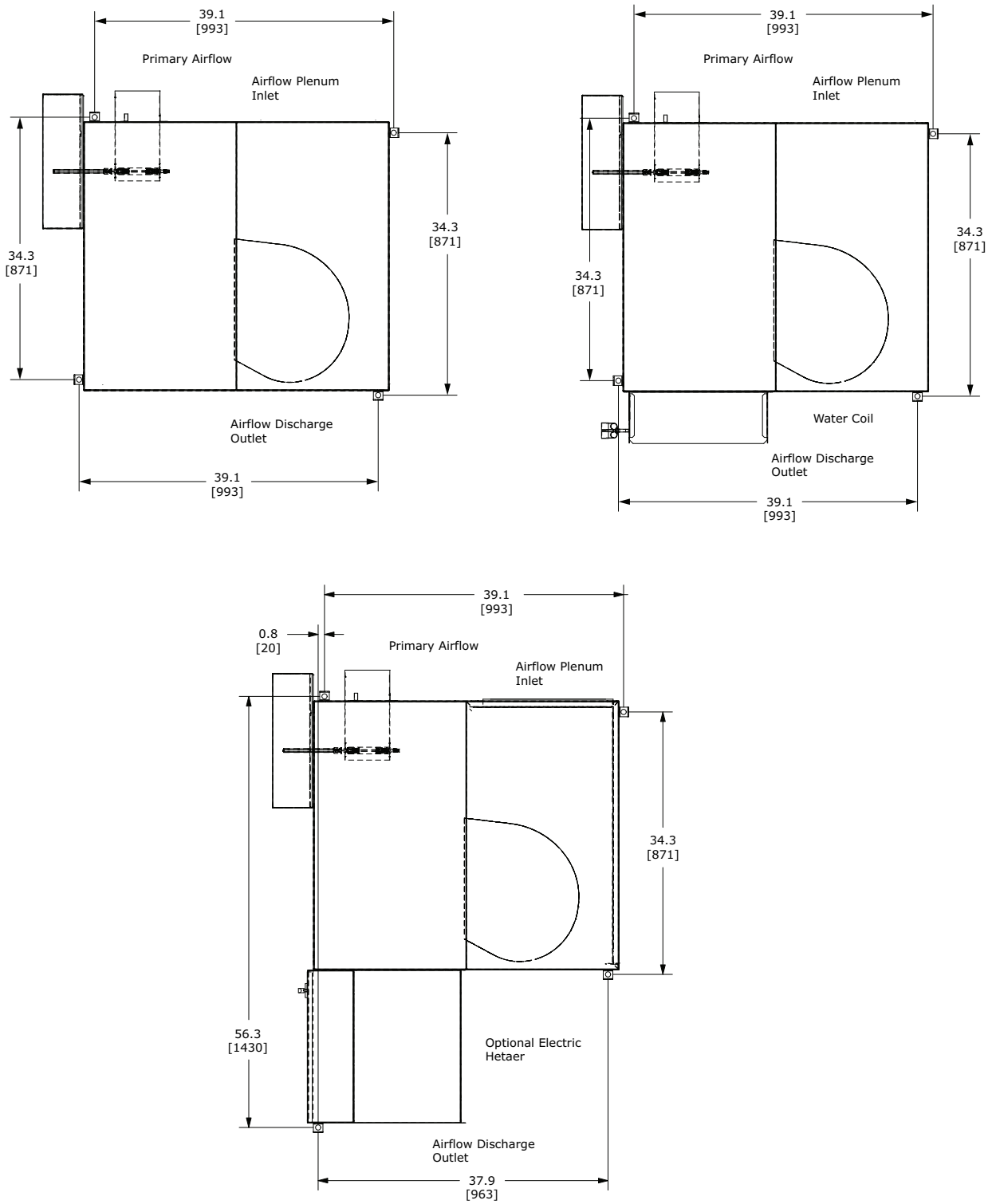
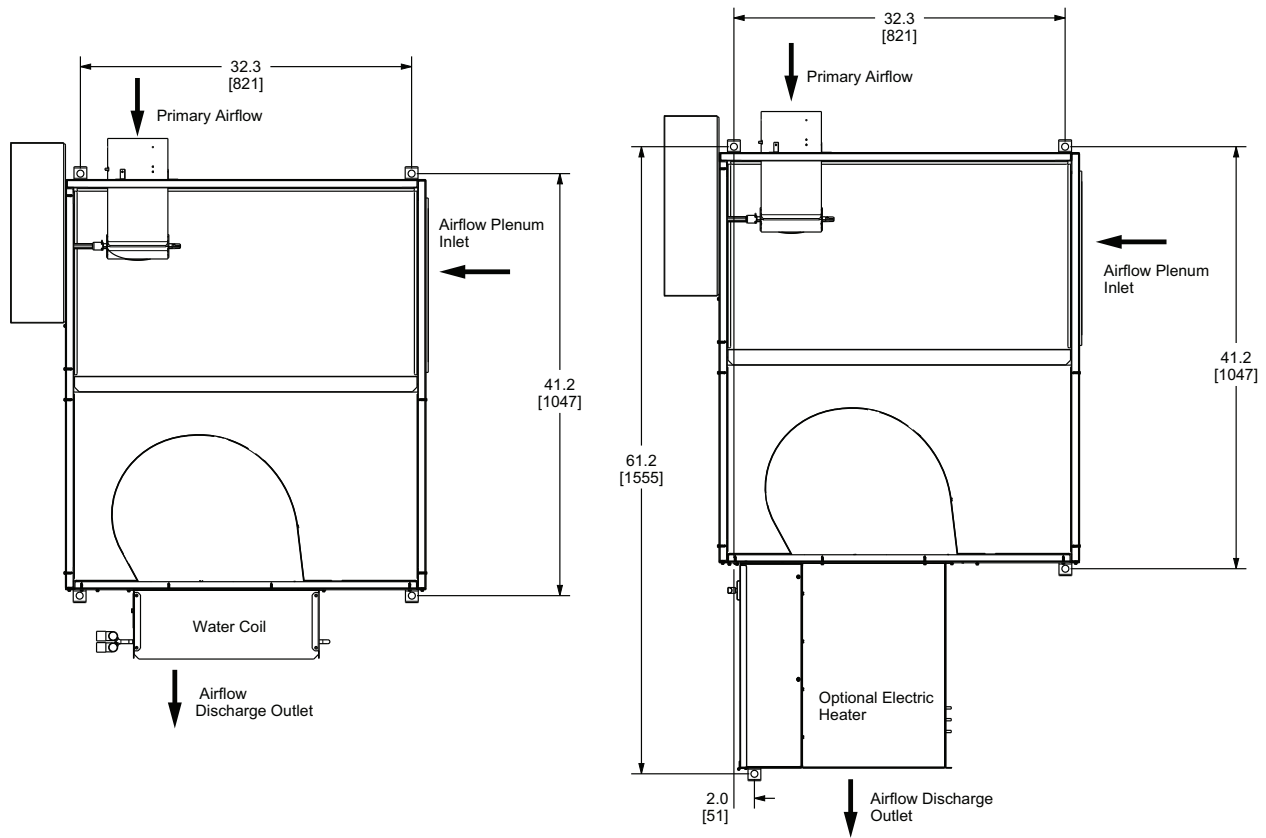


Figure 15. Low-height series DS02/PS02/DS03 w/hot water or electric heat



## Bracket Locations Chilled Water Sensible Cooling Terminal Units

Figure 16. Bracket locations — cooling only unit, and unit with hot water coil

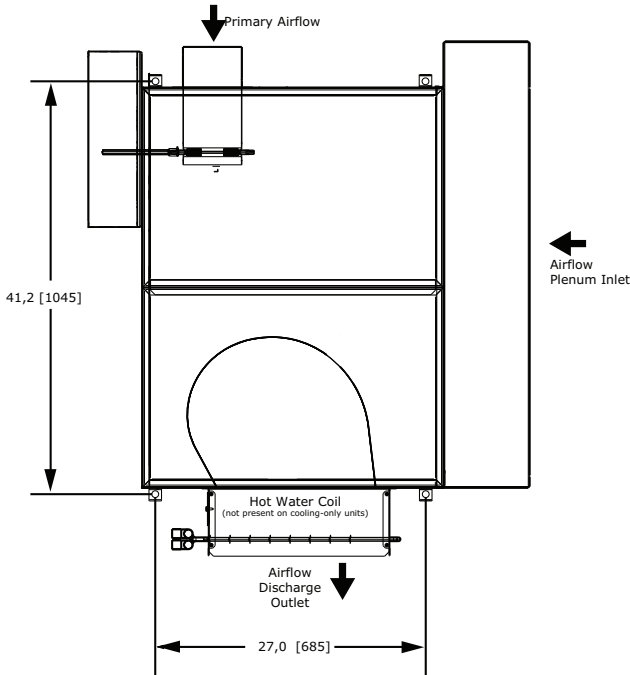
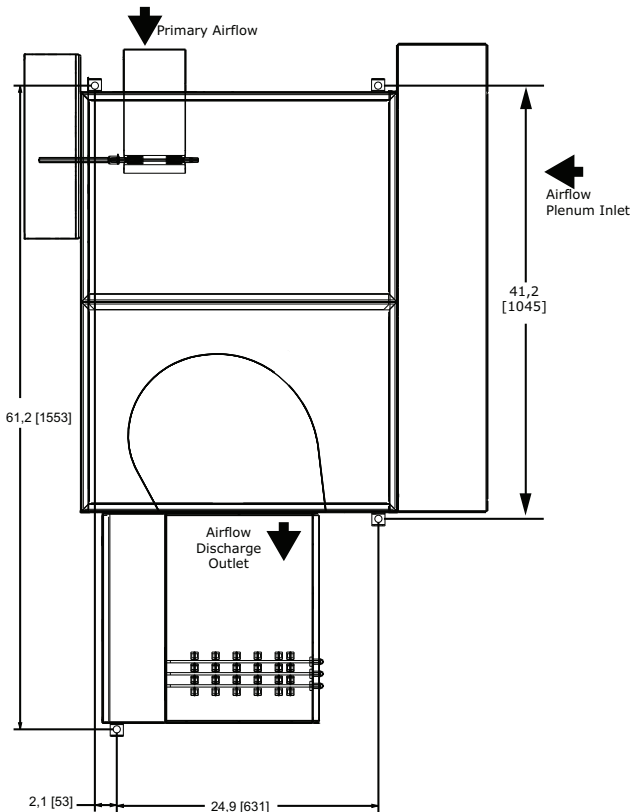


Figure 17. Bracket locations — electric heat unit



## Duct Connections

All VariTrane™ units should be provided with a minimum of 1.5-duct diameters of straight duct prior to the inlet of the unit. It is recommended that at least 48 inches of straight duct be provided from the discharge of the units prior to any take-offs or transitions.

**Important:** This is a requirement for electric heat fan-powered units used in applications with 100% downward discharge.

*In order to maintain good air distribution over the elements and not create turbulence which could cause a limit cutout there should be four feet of ductwork, consistent of the discharge dimensions of the heater, downstream of the reheat coil prior to any diffuser takeoffs for VariTrane™ electric coils.*

1. After all connections are made, check that the entire ductwork system is airtight. In some high-pressure systems, duct sealer may be necessary.

**Note:** All inlet duct on the VAV boxes are sized approximately 0.125 inches smaller in diameter than the nominal size in order to allow the incoming duct to slide over the inlet of the VAV box.

2. Provide insulation around the entire inlet collar (all the way to the unit casing).

**Note:** Use caution not to damage the flow tubes when making ductwork connections or insulating.

3. Cut slits in the insulation for the flow tubes and secure with duct tape.
4. If the unit is to be installed in a location with high humidity, external insulation around the heating coil should be installed as required.

## Water Coil Connections

**Notes:** The following coils have 0.375 inches OD water coil piping connections.

- Single Duct 1-row coils (inlet sizes 05, 05, 06, 08 or 10 only)
- Low Height Parallel Inlet 1-row
- Low Height Parallel Discharge 1-row

All others require a 0.875 inches OD water coil piping connections.

1. If necessary, you can change the coil connection from left-handed to right-handed (and vice-versa) by disconnecting the coil from the unit and rotating the coil like a steering wheel 180°.

**Note:** The exception is that the coil connection cannot be changed on parallel fan powered unit with hot water coil on plenum inlet.

2. Use port at the bottom for inlet and top for outlet on



single row coils. For multi-row coils, always plumb in counter flow orientation.

- Water inlet is always on the airflow downstream side of the hot water coil.
  - Water outlet is always on the upstream side of the hot water coil.
3. Care should be taken to properly support the water coil piping connections while connecting the adjoining pipe.
  4. It is recommended that piping to the water coil should be done after field-mounted controls, external insulation, and ductwork connections have been completed.

**Important:** Do not connect water valve or pipe extensions to the water coil connections unless supported.

## Discharge Duct Temperature Sensor Installation

**Note:** This process is to be used for control sequences that involve Discharge Air Temperature (DAT) control.

Several Tracer® UC210/UC400 control sequences perform direct DAT control of the VAV unit when both modulating unit heat and modulating ECM fan are present or when modulating unit heat is present on a non-fan-powered VAV unit. Supported modulating unit heat options include proportional hot-water and SCR-controlled electric heat. In these Tracer® UC210/UC400 control sequences, the DAT is a control input to the unit controller.

**Important:** To ensure good control of the DAT and overall level of heat being supplied to the zone, it's critical to locate the DAT sensor in a location in the downstream ductwork that is not too close to the heating water or electric coils.

1. Locate mounting location for DAT sensor a minimum of 1.5 equivalent duct diameters downstream of the heating coils and midway between top and bottom on the side of the ductwork.
2. Mount the DAT sensor using the instructions provided at the end of this manual.
3. If not already factory wired to unit controller, wire DAT sensor to unit controller using unit schematic.

## Electronic Duct Temperature Sensor Installation

Visually inspect the sensor unit and harness for damage. Return damage or defective products.

Tools required for installation:

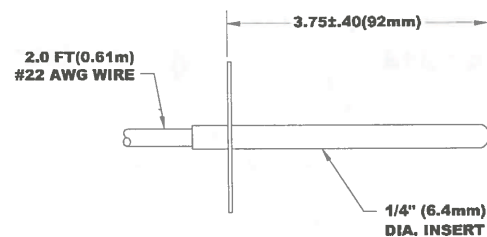
- Cutter to release zip tie

- DVM (Digital Volt ohm Meter)
- Appropriate screw driver for mounting screws
- Appropriate drill and drill bit for mounting screws

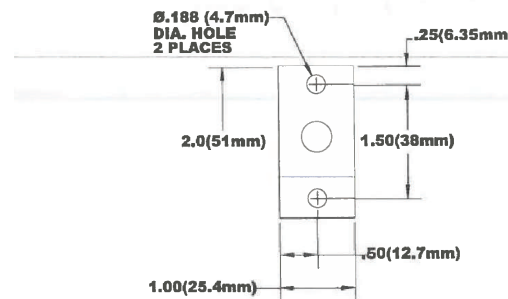
**Notes:**

- Installer must be a qualified, experienced technician.
  - Cut loose harness, verify location.
  - Avoid location where excessive vibration, moisture, corrosive fumes or vapors are present.
1. Determine the sensor mounting location on the duct. The sensing element is located within 1 inch (25mm) of the end of the sensing probe, and it should be located in the air stream typical of the temperature requiring sensing.
  2. Use the mounting plate supplied as a template (or refer to Figure 18, p. 25 for duct mounting dimensions) for mounting hole location.

**Figure 18. Mounting dimensions**



**SIDE VIEW**



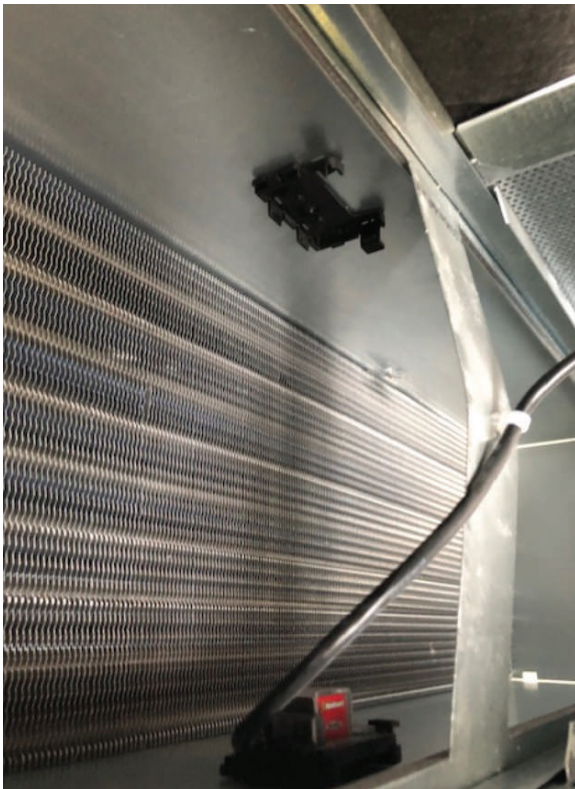
**FRONT VIEW**

3. Mount the sensor to the duct using (2) #8-1/6 x 1/2- in sheet metal screws.

## Chilled Water Sensible Cooling Terminal Units Moisture Sensor Installation

In most applications, the water supplied to this local cooling coil is controlled to a temperature above the dew point in the zone. This avoids moisture in the air from condensing on the coil, so it operates dry and provides only sensible cooling. All dehumidification must then be provided by the dedicated outdoor-air unit. Trane chilled water sensible cooling terminal units are built with a drip pan located beneath and above the cooling coil, with a moisture sensor installed, to detect and prevent any moisture from getting on the ceiling beneath the units or into the occupied space below. Sensible cooling units are designed so that the unit can be flipped 180 degrees for right and left hand orientation. They are configured as left hand from the factory with a moisture sensor installed to a bracket on the bottom of the drip pan. If installed as a right hand unit the moisture sensor will need to be moved to the bracket provided (shown in the following figure) so that the moisture sensor is on the bottom of the unit for proper moisture detection.

**Figure 19. Moisture sensor installation and additional bracket shown in cooling coil drip pan**



### Unit Accessibility

- Single-duct and dual-duct units provided with hot water reheat have an access panel located on the

side of the water coil. All other single-duct and dual-duct units are provided without access, as all functioning components are external to the unit.

- Fan-powered terminals are provided with a sliding side access.
- Low-height terminal units have a removable bottom panel.

### Clearances

For proper service, it is recommended that at least 3 inches" of side clearance be provided to service and access single-duct and dual-duct terminals units.

- Fan-powered VAV units have a plenum inlet that must be clear of obstructions. Allow at least 36 inches of clearance in front of the side access and plenum opening.
- Low-height fan-powered terminals require the same plenum clearance requirement that applies to the standard fan-powered units. However the access to the internal components is located on the bottom of the unit.
- Fan-powered VAV units with Suppressor attenuator requires at least 4.5 inches (6 inches preferred) clearance above the plenum opening.
- Fan-powered VAV units with Thinline Suppressor attenuator requires at least 4.5 inches (6 inches preferred) clearance at plenum openings.

It is also recommended that 6 inches of clearance be provided to the top and bottom of all the units.

**Note:** *The minimum clearance for controls and heater controls should be 36 inches for all models except units with 575-volt electric heaters, which require 48 inches of clearance. NEC™ and/or local codes override all clearance requirements.*

### Mounting Actuator

**Important:** *When installing or replacing the actuator tighten the actuator set screw per the manufacturer's instructions. Failure to follow the manufacturer's specifications may result in unit malfunction.*

Trane offers a factory-mounted actuator with a 90-second drive time. The actuator drives 1° per second. A field-installed actuator may be used if desired. The actuator shaft has a 0.5 inch diameter and is designed to travel clockwise to close the damper and counter-clockwise to open the damper. There is an indicator on the end of the actuator shaft that can be used to determine the position of the damper.

### Stand-alone Units

#### Stand-alone UCM 4.2

When there is no communication to the UCM control and the unit is in the stand-alone mode the control

action is determined by the auxiliary temperature sensor located on TB3-5 and TB3-6 terminals on the UCM board. In order for the auxiliary sensor to determine the control action (heat, cool) it must be located in the supply duct, upstream of the VAV unit. The auxiliary temperature is then compared to the zone temperature. If the supply air temperature is 10 degrees above the zone temperature, then the control action will be heat. If the supply air temperature is less than or equal to the zone temperature, then the control action will be cool. If the supply air temperature is between the zone temperature and the zone temperature + 10°F (5.5°C) [zone temperature < supply air temperature < zone temperature + 10°F] (5.5°C), the control action remains the same and the UCM controls to the minimum flow set point. If an auxiliary sensor is not installed the UCM will retain the last control action in effect.

### Stand-alone VV550 LonTalk Control

When there is no communication to the VV550 control and the unit is in the stand-alone mode the control action is determined by the auxiliary temperature sensor located on TB3-5 and TB3-6 terminals on the VV550 board. The control must also be configured through the Inputs Tab of Analog Input 4 as Primary Supply Air Sensor. In order for the auxiliary sensor to determine the control action (heat, cool) it must be located in the supply duct, upstream of the VAV unit. The auxiliary temperature is then compared to the zone temperature. If the supply air temperature is 10 degrees above the zone temperature, then the control action will be heat. If the supply air temperature is less than or equal to the zone temperature, then the control action will be cool. If the supply air temperature is between the zone temperature and the zone temperature + 10°F (5.5°C) [zone temperature < supply air temperature < zone temperature + 10°F] (5.5°C), the control action remains the same and the UCM controls to the minimum flow set point. If an auxiliary sensor is not installed the UCM will retain the last control action in effect.

### Stand-alone UC400

When there is no communication to the UC400 control and the unit is in the stand-alone mode the control action is determined by the auxiliary temperature sensor located on AI5 terminals on the UC400 control. This input may have to be changed from AI4 (Discharge Air Input) as wired from the factory. In order for the auxiliary temperature sensor to determine the control action (heat, cool) it must be located in the supply duct, upstream of the VAV unit. The auxiliary temperature is then compared to the zone temperature. If the supply air temperature is 10°F above the zone temperature, then the control action will be heat. If the supply air temperature is less than or equal to the zone temperature, then the control action will be cool. If the supply air temperature is between the zone

temperature and the zone temperature +10°F (5.5°C) [zone temperature < supply air temperature < zone temperature +10°F] (5.5°C), the control action remains the same and the UC400 controls to the minimum flow set point. If an auxiliary sensor is not installed the UC400 will retain the last control action in effect.

### Stand-alone UC210

When there is no communication to the UC210 control and the unit is in the stand-alone mode the control action is determined by the auxiliary temperature sensor located on AI3 terminals on the UC210 control. From the factory, this input is configured for discharge air temperature and needs to be field reconfigured as supply air temperature using Tracer® TU. In order for the auxiliary temperature sensor that is configured for supply air temperature to determine the control action (heat, cool) it must be located in the supply duct, upstream of the VAV unit. The supply air temperature is then compared to the zone temperature. If the supply air temperature is 10°F above the zone temperature, then the control action will be heat. If the supply air temperature is less than or equal to the zone temperature, then the control action will be cool. If the supply air temperature is between the zone temperature and the zone temperature +10°F (5.5°C) [zone temperature < supply air temperature < zone temperature +10°F] (5.5°C), the control action remains the same and the UC210 controls to the minimum flow set point. If an auxiliary temperature sensor is not installed and configured for supply air temperature, the UC210 will retain the last control action in effect.

### Bottom Access

An optional bottom access can be provided in the casing of fan powered series or parallel terminal unit.

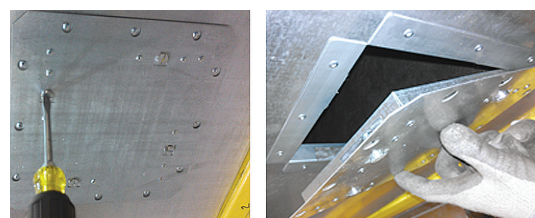
The 22-gauge door is lined with 1 inch, 26-gauge, dual wall insulation and thermal lined with 1 inch – 1 lb. density fiberglass insulation with a 3.85 R-value.

Each door includes 1 to 6 cam locks that are used to secure the door to the casing.

The cam lock engages a metal encapsulated frame on the unit that encloses the unit insulation to prevent air erosion.

The cam lock engagements are interlocked using a flat head screwdriver. Once unlocked, the entire door assembly can be removed for access.

**Figure 20. Bottom access**





## Unit Installation

# Weights

**Table 5. Single-duct units – lb/kg**

Unit Size	Single Wall						Dual Wall					
	VCCF	VCEF	VCWF				VCCF	VCEF	VCWF			
			1-Row	2-Row	3-Row	4-Row			1-Row	2-Row	3-Row	4-Row
4	16/7	38/17	21/10	22/10	23/11	24/11	19/9	48/22	24/11	25/11	26/12	27/12
5	16/7	38/17	21/10	22/10	23/11	24/11	19/9	48/22	24/11	25/11	26/12	27/12
6	16/7	38/17	21/10	22/10	22/10	24/11	19/9	48/22	24/11	25/11	25/11	27/12
8	16/7	38/17	21/10	24/11	24/11	26/12	20/9	49/22	25/11	28/13	28/13	30/14
10	22/10	46/21	29/13	32/15	32/15	36/16	27/12	60/27	34/15	37/17	37/17	41/19
12	27/12	52/24	37/17	40/18	41/19	45/20	34/15	68/31	43/20	47/21	48/22	52/24
14	32/15	60/27	44/20	48/22	51/23	55/25	41/19	80/36	53/24	57/26	60/27	64/29
16	35/16	69/31	49/22	54/24	56/25	61/28	46/21	91/41	60/27	65/29	67/30	72/33
24	52/24	84/38	70/32	77/35	76/35	82/37	63/29	106/48	81/37	88/40	87/40	93/42

**Table 6. Dual-duct units – lb/kg**

Unit Size	VDDF	VDDF w/Dual Wall
0505	54/24	68/31
0506	54/24	68/31
0606	54/24	68/31
0508	55/25	68/31
0608	55/25	69/31
0510	56/25	69/31
0808	56/25	70/32
0610	56/25	70/32
0810	57/26	70/32
1010	61/28	74/34
0612	57/26	70/32
0812	58/26	71/32
1012	59/27	72/33
1212	60/27	84/38
0814	78/35	102/46
1014	79/36	103/47
1214	80/36	104/47
1414	81/37	105/48
0816	79/36	103/47
1016	80/36	104/47
1216	81/37	105/48
1416	82/37	105/48
1616	83/38	106/48

**Table 7. Parallel fan-powered units – lb/kg**

Unit Size	Single Wall				Dual Wall				VPxF Suppressor
	VPCF	VPEF	VPWF		VPCF	VPEF	VPWF		
			1-Row	2-Row			1-Row	2-Row	
0502SQ	81/37	110/550	92/42	95/43	115/52	144/65	126/57	129/59	15.5/7.0
0602SQ	80/36	109/49	91/41	94/43	114/52	143/65	125/57	128/58	15.5/7.0
0603SQ	83/38	112/51	105/48	108/49	117/53	146/66	139/63	142/64	16.5/7.5
0802SQ	81/37	110/50	92/42	95/43	115/52	144/65	126/57	129/59	15.5/7.0
0803SQ	83/38	112/51	105/48	108/49	117/53	146/66	139/63	142/64	16.5/7.5
0804SQ	84/38	113/51	106/48	109/49	118/54	147/67	140/64	143/65	16.5/7.5
1002SQ	82/37	111/50	93/42	96/44	116/53	145/66	127/58	130/59	15.5/7.0
1003SQ	84/38	113/51	106/48	109/49	118/54	147/67	140/64	143/65	16.5/7.5

**Table 7. Parallel fan-powered units – lb/kg (continued)**

Unit Size	Single Wall				Dual Wall				VPxF Suppressor
	VPCF	VPEF	VPWF		VPCF	VPEF	VPWF		
			1-Row	2-Row			1-Row	2-Row	
1004SQ	85/39	114/52	107/49	110/50	119/54	148/67	141/64	144/65	16.5/7.5
1005SQ	98/44	128/58	120/54	123/56	132/60	162/73	154/70	157/71	16.5/7.5
1006SQ	114/52	144/65	127/58	130/59	148/67	178/81	161/73	164/74	20.5/9.3
1007SQ	122/55	152/69	135/61	138/63	156/71	186/84	169/77	172/78	20.5/9.3
1203SQ	85/39	114/52	107/49	110/50	119/54	148/67	141/64	144/65	16.5/7.5
1204SQ	86/39	115/52	108/49	111/50	120/54	149/68	142/64	145/66	16.5/7.5
1205SQ	99/45	129/59	121/55	124/56	133/60	163/74	155/70	158/72	15.5/7.0
1206SQ	115/52	145/66	128/58	131/59	149/68	179/81	162/73	165/75	20.5/9.3
1207SQ	123/56	153/69	136/62	139/63	157/71	187/85	170/77	173/78	20.5/9.3
1404SQ	87/39	116/53	109/49	112/51	121/55	150/68	143/65	146/66	16.5/7.5
1405SQ	100/45	130/59	122/55	125/57	134/61	164/74	156/71	159/72	16.5/7.5
1406SQ	116/53	146/66	129/59	132/60	150/68	180/82	163/74	166/75	20.5/9.3
1407SQ	124/56	154/70	137/62	140/64	158/72	188/85	171/78	174/79	20.5/9.3
1606SQ	117/53	147/67	130/59	133/60	151/68	181/82	164/74	167/76	20.5/9.3
1607SQ	125/57	155/70	138/63	141/64	159/72	189/86	172/78	175/79	20.5/9.3

**Table 8. Series fan-powered units – lb/kg**

Unit Size	Single Wall				Dual Wall				VSxF Suppressor
	VSCF	VSEF	VSWF		VSCF	VSEF	VSWF		
			1-Row	2-Row			1-Row	2-Row	
0402SQ	78/35	104/47	85/39	87/39	93/42	119/54	100/45	102/46	11.0/5.0
0502SQ	78/35	104/47	85/39	87/39	93/42	119/54	100/45	102/46	11.0/5.0
0602SQ	77/35	103/47	84/38	86/39	92/42	118/54	99/45	101/46	11.0/5.0
0603SQ	76/34	105/48	88/40	92/42	100/45	129/59	112/51	116/53	16.5/7.5
0604SQ	87/39	116/53	99/45	103/47	111/50	140/64	123/56	127/58	16.5/7.5
0802SQ	79/36	105/48	86/39	88/40	94/43	120/54	101/46	103/47	11.0/5.0
0803SQ	77/35	106/48	89/40	93/42	101/46	130/59	113/51	117/53	16.5/7.5
0804SQ	88/40	117/53	100/45	104/47	112/51	141/64	124/56	128/58	16.5/7.5
1002SQ	81/37	107/49	88/40	90/41	96/44	122/55	103/47	105/48	11.0/5.0
1003SQ	80/36	109/49	92/42	96/44	104/47	133/60	116/53	120/54	16.5/7.5
1004SQ	91/41	120/54	103/47	107/49	115/52	144/65	127/58	131/59	16.5/7.5
1005SQ	92/42	121/55	104/47	108/49	116/53	145/66	128/58	132/60	16.5/7.5
1006SQ	104/47	135/61	119/54	124/56	133/60	164/74	148/67	153/69	22.5/10.2
1007SQ	117/53	148/67	132/60	137/62	146/66	177/80	161/73	166/75	22.5/10.2
1203SQ	82/37	111/50	94/43	98/44	106/48	135/61	118/54	122/55	16.5/7.5
1204SQ	92/42	121/55	104/47	108/49	116/53	145/66	128/58	132/60	16.5/7.5
1205SQ	94/43	123/56	106/48	110/50	118/54	147/67	130/59	134/61	16.5/7.5
1206SQ	105/48	136/62	120/54	125/57	134/61	165/75	149/68	154/70	22.5/10.2
1207SQ	118/54	149/68	133/60	138/63	147/67	178/81	162/73	167/76	22.5/10.2
1404SQ	93/42	122/55	105/48	109/49	117/53	146/66	129/59	133/60	16.5/7.5
1405SQ	96/44	125/57	108/49	112/51	120/54	149/68	132/60	136/62	16.5/7.5
1406SQ	106/48	137/62	121/55	126/57	135/61	166/75	150/68	155/70	22.5/10.2
1407SQ	119/54	150/68	134/61	139/63	148/67	179/81	163/74	168/76	22.5/10.2
1606SQ	107/49	138/63	122/55	127/58	136/62	167/76	151/68	156/71	22.5/10.2
1607SQ	120/54	151/68	135/61	140/64	149/68	180/82	164/74	169/77	22.5/10.2



## Unit Installation

**Table 9. Low height parallel units – lb/kg**

Unit Size	Single Wall				Dual Wall				LPxF Attenuator
	LPCF	LPEF	LPWF		LPCF	LPEF	LPWF		
			1-Row	2-Row			1-Row	2-Row	
05DS02	90/41	109/49	97/44	99/45	114/51	132/60	120/54	122/55	14/6
05PS02	93/42	110/50	99/45	101/46	116/52	133/60	122/55	124/56	14/6
06DS02	90/41	108/49	96/43	96/43	113/51	131/59	119/54	121/55	14/6
06PS02	92/42	110/50	98/44	100/45	115/52	133/60	121/55	123/56	14/6
08DS02	91/41	109/49	97/44	99/45	114/51	132/60	120/54	122/55	14/6
08PS02	93/42	110/50	99/45	101/46	116/52	133/60	122/55	124/56	14/6
14RTDS02	109/49	121/55	109/49	111/50	132/60	144/65	132/60	134/61	14/6
14RTPS02	111/50	123/56	111/50	113/51	134/61	146/66	134/61	136/61	14/6

**Table 10. Low-height series units – lb/kg**

Unit Size	Single Wall				Dual Wall				LSxF Attenuator
	LSCF	LSEF	LSWF		LSCF	LSEF	LSWF		
			1-Row	2-Row			1-Row	2-Row	
04DS02	89/41	107/49	95/43	97/44	112/51	130/59	118/54	120/55	14/6
04PS02	91/42	108/49	97/44	99/45	114/52	131/60	120/55	122/55	14/6
05DS02	89/41	107/49	95/43	97/44	112/51	130/59	118/54	120/55	14/6
05PS02	91/42	108/49	97/44	99/45	114/52	131/60	120/55	122/55	14/6
06DS02	88/40	106/48	94/43	96/44	111/50	129/59	117/53	119/54	14/6
06PS02	90/41	108/49	96/44	98/45	113/51	131/60	119/54	121/55	14/6
06DS03	94/43	112/51	100/45	104/47	117/53	135/61	123/56	127/58	14/6
08DS02	89/41	107/49	95/43	97/44	112/51	130/59	118/54	120/55	14/6
08PS02	91/42	108/49	97/44	99/45	114/52	131/60	120/55	122/55	14/6
08DS03	95/43	113/51	101/46	105/48	118/54	136/62	124/56	128/58	14/6
10DS03	97/44	115/52	103/47	107/49	120/55	138/63	126/57	130/59	14/6
14RTDS02	107/49	119/54	107/49	109/50	130/59	142/65	130/59	132/60	14/6
14RTPS02	109/50	121/55	109/50	111/50	132/60	144/65	132/60	134/61	14/6
14RTDS03	100/45	118/54	106/48	110/50	122/55	140/64	128/58	132/60	14/6

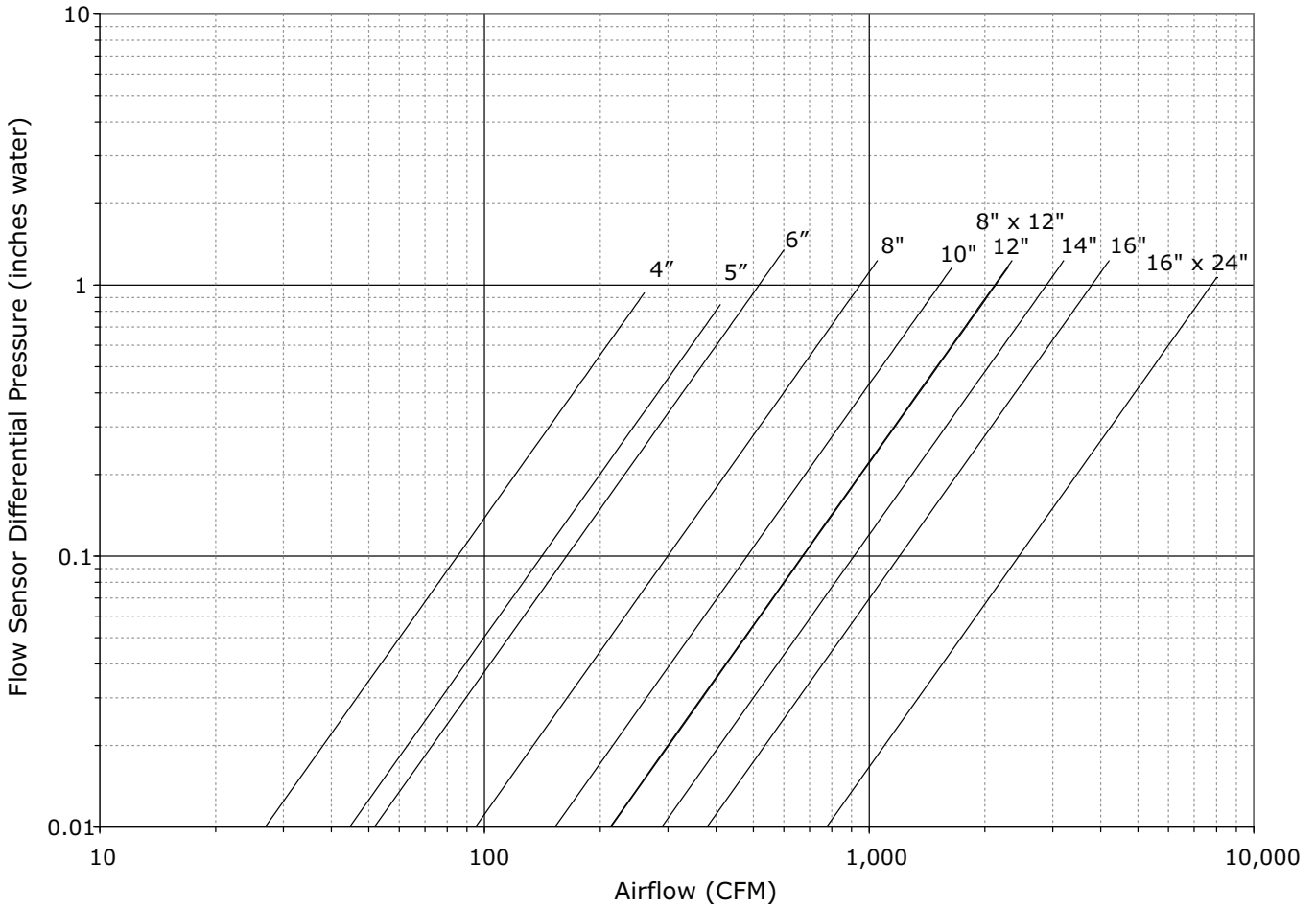
**Table 11. Chilled water sensible coil terminal units – lb/kg**

Unit Size	Single Wall				Dual Wall			
	LDCF	LDEF	LDWF		LDCF	LDEF	LDWF	
			1-Row	2-Row			1-Row	2-Row
DS01	117/53	135/61	123/56	126/57	136/62	154/70	142/64	146/66
DS02	125/57	143/65	131/59	135/61	148/67	166/75	154/70	158/72



# Unit Setup

Figure 21. Flow sensor  $\Delta P$  vs. airflow delivery



## Fan Motor Amperage

Reference unit submittal data and motor nameplate.

## Adjusting the SCR Motor Speed Control

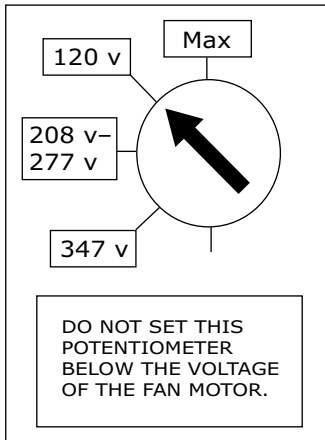
In order to make units more convenient and efficient to balance, an SCR (silicone control rectifier) is provided as standard on all fan-powered units.

The SCR is located on the side of the fan control box. To adjust the speed of the motor, the external knob must be rotated either clockwise or counterclockwise depending on the desired speed adjustment.

There is an internal potentiometer setting on the SCR controller that can be accessed by removing the control box cover. This internal potentiometer is set at the factory to the specific motor voltage.

It may be necessary to adjust this in the field depending on the building power factor.

**Figure 22. SCR (top) and internal potentiometer (bottom)**



**Note:** Do not set this potentiometer below the voltage of the fan motor.

## Electrically Commutated Motor (ECM)

**Figure 23. ECM control board**



Trane offers an energy efficient ECM motor as a motor option. The optional Tracer® UC210 and UC400 unit controllers directly interface with the ECM to control fan airflow and to do fan on/off control. With other unit control options, the ECM Control Board is used to set the fan airflow set point while the unit controller does fan on/off control via a binary output. The following

tables provide a mapping from fan percent-on setting to fan airflow in CFM for each fan type and size. Other fan settings can be determined either by interpolating from these tables or by using the following equation:

$$CFM_{\text{setting}} = CFM_{\text{min}} + \{[(\text{Potentiometer Setting}) \times [(CFM_{\text{max}} - CFM_{\text{min}})/100]]\}$$

There is an LED on the ECM control board, which will blink one time for every 100 CFM of motor setting. For example, the LED on a unit set for 790 CFM will blink seven (7) times. The LED on a unit set for 800 CFM will blink 8 times.

**Note:** This feature only verifies that the CFM is set properly. This feature does not indicate at what speed the motor is actually running.

The ECM must be load tested. In other words, the fan must be connected to properly test the ECM. An alternate fan-interface board is available with less-controls and factory-mount-of-third-party-unit-controls options that allows for fan modulation and fan on/off control via the unit controller.

**Table 12. VPxF 03SQ ECM CFM**

Motor Min CFM: 160 Motor Max CFM: 1085		
CFM	L/sec	% Setting
160	76	1
170	80	2
179	84	3
188	89	4
198	93	5
207	98	6
216	102	7
226	107	8
235	111	9
244	115	10
254	120	11
263	124	12
272	129	13
282	133	14
291	137	15
300	142	16
310	146	17
319	151	18
328	155	19
338	159	20
347	164	21
356	168	22
366	173	23
375	177	24
385	181	25
394	186	26
403	190	27
413	195	28
422	199	29
431	204	30
441	208	31
450	212	32
459	217	33
469	221	34
478	226	35



**Table 12. VPxF 03SQ ECM CFM (continued)**

<b>Motor Min CFM: 160 Motor Max CFM: 1085</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
487	230	36
497	234	37
506	239	38
515	243	39
525	248	40
534	252	41
543	256	42
553	261	43
562	265	44
571	270	45
581	274	46
590	278	47
599	283	48
609	287	49
618	292	50
627	296	51
637	300	52
646	305	53
655	309	54
665	314	55
674	318	56
683	323	57
693	327	58
702	331	59
711	336	60
721	340	61
730	345	62
739	349	63
749	353	64
758	358	65
767	362	66
777	367	67
786	371	68
795	375	69
805	380	70
814	384	71
823	389	72
833	393	73
842	397	74
852	402	75
861	406	76
870	411	77
880	415	78
889	419	79
898	424	80
908	428	81
917	433	82
926	437	83
936	442	84
945	446	85
954	450	86
964	455	87
973	459	88
982	464	89
992	468	90
1001	472	91
1010	477	92
1020	481	93
1029	486	94
1038	490	95

**Table 12. VPxF 03SQ ECM CFM (continued)**

<b>Motor Min CFM: 160 Motor Max CFM: 1085</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
1048	494	96
1057	499	97
1066	503	98
1076	508	99
1085	512	100

**Table 13. VPxF 04SQ ECM CFM**

<b>Motor Min CFM: 220 Motor Max CFM: 1510</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
220	104	1
233	110	2
246	116	3
259	122	4
272	128	5
285	135	6
298	141	7
311	147	8
324	153	9
337	159	10
350	165	11
363	171	12
376	178	13
389	184	14
402	190	15
415	196	16
429	202	17
442	208	18
455	215	19
468	221	20
481	227	21
494	233	22
507	239	23
520	245	24
533	251	25
546	258	26
559	264	27
572	270	28
585	276	29
598	282	30
611	288	31
624	294	32
637	301	33
650	307	34
663	313	35
676	319	36
689	325	37
702	331	38
715	338	39
728	344	40
741	350	41
754	356	42
767	362	43
780	368	44
793	374	45



## Unit Setup

**Table 13. VPxF 04SQ ECM CFM (continued)**

Motor Min CFM: 220 Motor Max CFM: 1510		
CFM	L/sec	% Setting
806	381	46
819	387	47
832	393	48
845	399	49
859	405	50
872	411	51
885	417	52
898	424	53
911	430	54
924	436	55
937	442	56
950	448	57
963	454	58
976	461	59
989	467	60
1002	473	61
1015	479	62
1028	485	63
1041	491	64
1054	497	65
1067	504	66
1080	510	67
1093	516	68
1106	522	69
1119	528	70
1132	534	71
1145	540	72
1158	547	73
1171	553	74
1184	559	75
1197	565	76
1210	571	77
1223	577	78
1236	584	79
1249	590	80
1262	596	81
1275	602	82
1288	608	83
1302	614	84
1315	620	85
1328	627	86
1341	633	87
1354	639	88
1367	645	89
1380	651	90
1393	657	91
1406	663	92
1419	670	93
1432	676	94
1445	682	95
1458	688	96
1471	694	97
1484	700	98
1497	706	99
1510	713	100

**Table 14. VPxF 05SQ ECM CFM**

Motor Min CFM: 280 Motor Max CFM: 1850		
CFM	L/sec	% Setting
280	132	1
296	140	2
312	147	3
327	155	4
343	162	5
359	170	6
375	177	7
391	184	8
407	192	9
423	199	10
438	207	11
454	214	12
470	222	13
486	229	14
502	237	15
518	244	16
534	252	17
549	259	18
565	267	19
581	274	20
597	282	21
613	289	22
629	297	23
645	304	24
661	312	25
676	319	26
692	327	27
708	334	28
724	342	29
740	349	30
756	357	31
772	364	32
787	372	33
803	379	34
819	387	35
835	394	36
851	402	37
867	409	38
883	417	39
898	424	40
914	431	41
930	439	42
946	446	43
962	454	44
978	461	45
994	469	46
1009	476	47
1025	484	48
1041	491	49
1057	499	50
1073	506	51
1089	514	52
1105	521	53
1120	529	54
1136	536	55
1152	544	56
1168	551	57
1184	559	58
1200	566	59
1216	574	60

**Table 14. VPxF 05SQ ECM CFM (continued)**

<b>Motor Min CFM: 280 Motor Max CFM: 1850</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
1231	581	61
1247	589	62
1263	596	63
1279	604	64
1295	611	65
1311	619	66
1327	626	67
1342	634	68
1358	641	69
1374	649	70
1390	656	71
1406	664	72
1422	671	73
1438	678	74
1454	686	75
1469	693	76
1485	701	77
1501	708	78
1517	716	79
1533	723	80
1549	731	81
1565	738	82
1580	746	83
1596	753	84
1612	761	85
1628	768	86
1644	776	87
1660	783	88
1676	791	89
1691	798	90
1707	806	91
1723	813	92
1739	821	93
1755	828	94
1771	836	95
1787	843	96
1802	851	97
1818	858	98
1834	866	99
1850	873	100

**Table 15. VPxF 06SQ ECM CFM (continued)**

<b>Motor Min CFM: 530 Motor Max CFM: 2100</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
688	325	11
704	332	12
720	340	13
736	347	14
752	355	15
768	362	16
784	370	17
799	377	18
815	385	19
831	392	20
847	400	21
863	407	22
879	415	23
895	422	24
911	430	25
926	437	26
942	445	27
958	452	28
974	460	29
990	467	30
1006	475	31
1022	482	32
1037	490	33
1053	497	34
1069	505	35
1085	512	36
1101	520	37
1117	527	38
1133	535	39
1148	542	40
1164	549	41
1180	557	42
1196	564	43
1212	572	44
1228	579	45
1244	587	46
1259	594	47
1275	602	48
1291	609	49
1307	617	50
1323	624	51
1339	632	52
1355	639	53
1370	647	54
1386	654	55
1402	662	56
1418	669	57
1434	677	58
1450	684	59
1466	692	60
1481	699	61
1497	707	62
1513	714	63
1529	722	64
1545	729	65
1561	737	66
1577	744	67
1592	752	68
1608	759	69
1624	767	70

**Table 15. VPxF 06SQ ECM CFM**

<b>Motor Min CFM: 530 Motor Max CFM: 2100</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
530	250	1
546	258	2
562	265	3
577	273	4
593	280	5
609	287	6
625	295	7
641	302	8
657	310	9
673	317	10



## Unit Setup

**Table 15. VPxF 06SQ ECM CFM (continued)**

<b>Motor Min CFM: 530 Motor Max CFM: 2100</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
1640	774	71
1656	782	72
1672	789	73
1688	796	74
1704	804	75
1719	811	76
1735	819	77
1751	826	78
1767	834	79
1783	841	80
1799	849	81
1815	856	82
1830	864	83
1846	871	84
1862	879	85
1878	886	86
1894	894	87
1910	901	88
1926	909	89
1941	916	90
1957	924	91
1973	931	92
1989	939	93
2005	946	94
2021	954	95
2037	961	96
2052	969	97
2068	976	98
2084	984	99
2100	991	100

**Table 16. VSxF 03SQ ECM CFM (continued)**

<b>Motor Min CFM: 200 Motor Max CFM: 1100</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
382	180	21
391	185	22
400	189	23
409	193	24
418	197	25
427	202	26
436	206	27
446	210	28
455	215	29
464	219	30
473	223	31
482	227	32
491	232	33
500	236	34
509	240	35
518	245	36
527	249	37
536	253	38
546	257	39
555	262	40
564	266	41
573	270	42
582	275	43
591	279	44
600	283	45
609	287	46
618	292	47
627	296	48
636	300	49
646	305	50
655	309	51
664	313	52
673	318	53
682	322	54
691	326	55
700	330	56
709	335	57
718	339	58
727	343	59
736	348	60
745	352	61
755	356	62
764	360	63
773	365	64
782	369	65
791	373	66
800	378	67
809	382	68
818	386	69
827	390	70
836	395	71
845	399	72
855	403	73
864	408	74
873	412	75
882	416	76
891	420	77
900	425	78
909	429	79
918	433	80

**Table 16. VSxF 03SQ ECM CFM**

<b>Motor Min CFM: 200 Motor Max CFM: 1100</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
200	94	1
209	99	2
218	103	3
227	107	4
236	112	5
246	116	6
255	120	7
264	124	8
273	129	9
282	133	10
291	137	11
300	142	12
309	146	13
318	150	14
327	154	15
336	159	16
346	163	17
355	167	18
364	172	19
373	176	20

**Table 16. VSxF 03SQ ECM CFM (continued)**

<b>Motor Min CFM: 200 Motor Max CFM: 1100</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
927	438	81
936	442	82
945	446	83
955	451	84
964	455	85
973	459	86
982	463	87
991	468	88
1000	472	89
1009	476	90
1018	481	91
1027	485	92
1036	489	93
1045	493	94
1055	498	95
1064	502	96
1073	506	97
1082	511	98
1091	515	99
1100	519	100

**Table 17. VSxF 04SQ ECM CFM**

<b>Motor Min CFM: 275 Motor Max CFM: 1500</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
275	130	1
288	136	2
300	142	3
312	147	4
325	153	5
337	159	6
350	165	7
362	171	8
374	177	9
387	183	10
399	188	11
411	194	12
424	200	13
436	206	14
449	212	15
461	218	16
473	223	17
486	229	18
498	235	19
510	241	20
523	247	21
535	253	22
548	258	23
560	264	24
572	270	25
585	276	26
597	282	27
609	288	28
622	293	29
634	299	30

**Table 17. VSxF 04SQ ECM CFM (continued)**

<b>Motor Min CFM: 275 Motor Max CFM: 1500</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
646	305	31
659	311	32
671	317	33
684	323	34
696	328	35
708	334	36
721	340	37
733	346	38
745	352	39
758	358	40
770	363	41
783	369	42
795	375	43
807	381	44
820	387	45
832	393	46
844	399	47
857	404	48
869	410	49
882	416	50
894	422	51
906	428	52
919	434	53
931	439	54
943	445	55
956	451	56
968	457	57
980	463	58
993	469	59
1005	474	60
1018	480	61
1030	486	62
1042	492	63
1055	498	64
1067	504	65
1079	509	66
1092	515	67
1104	521	68
1117	527	69
1129	533	70
1141	539	71
1154	544	72
1166	550	73
1178	556	74
1191	562	75
1203	568	76
1215	574	77
1228	579	78
1240	585	79
1253	591	80
1265	597	81
1277	603	82
1290	609	83
1302	615	84
1314	620	85
1327	626	86
1339	632	87
1352	638	88
1364	644	89
1376	650	90



## Unit Setup

**Table 17. VSxF 04SQ ECM CFM (continued)**

<b>Motor Min CFM: 275 Motor Max CFM: 1500</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
1389	655	91
1401	661	92
1413	667	93
1426	673	94
1438	679	95
1451	685	96
1463	690	97
1475	696	98
1488	702	99
1500	708	100

**Table 18. VSxF 05SQ ECM CFM**

<b>Motor Min CFM: 350 Motor Max CFM: 2050</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
350	165	1
367	173	2
385	181	3
402	190	4
419	198	5
436	206	6
453	214	7
470	222	8
488	230	9
505	238	10
522	246	11
539	254	12
556	263	13
573	271	14
591	279	15
608	287	16
625	295	17
642	303	18
659	311	19
676	319	20
694	327	21
711	335	22
728	344	23
745	352	24
762	360	25
779	368	26
797	376	27
814	384	28
831	392	29
848	400	30
865	408	31
882	416	32
900	425	33
917	433	34
934	441	35
951	449	36
968	457	37
985	465	38
1003	473	39
1020	481	40

**Table 18. VSxF 05SQ ECM CFM (continued)**

<b>Motor Min CFM: 350 Motor Max CFM: 2050</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
1037	489	41
1054	498	42
1071	506	43
1088	514	44
1106	522	45
1123	530	46
1140	538	47
1157	546	48
1174	554	49
1192	562	50
1209	570	51
1226	579	52
1243	587	53
1260	595	54
1277	603	55
1295	611	56
1312	619	57
1329	627	58
1346	635	59
1363	643	60
1380	651	61
1398	660	62
1415	668	63
1432	676	64
1449	684	65
1466	692	66
1483	700	67
1501	708	68
1518	716	69
1535	724	70
1552	732	71
1569	741	72
1586	749	73
1604	757	74
1621	765	75
1638	773	76
1655	781	77
1672	789	78
1689	797	79
1707	805	80
1724	814	81
1741	822	82
1758	830	83
1775	838	84
1792	846	85
1810	854	86
1827	862	87
1844	870	88
1861	878	89
1878	886	90
1895	895	91
1913	903	92
1930	911	93
1947	919	94
1964	927	95
1981	935	96
1998	943	97
2016	951	98
2033	959	99
2050	967	100

**Table 19. VSxF 06SQ ECM CFM**

Motor Min CFM: 700 Motor Max CFM: 2500		
CFM	L/sec	% Setting
700	330	1
718	339	2
737	348	3
755	356	4
773	365	5
791	373	6
809	382	7
827	391	8
846	399	9
864	408	10
882	416	11
900	425	12
918	433	13
937	442	14
955	451	15
973	459	16
991	468	17
1009	476	18
1027	485	19
1046	493	20
1064	502	21
1082	511	22
1100	519	23
1118	528	24
1137	536	25
1155	545	26
1173	554	27
1191	562	28
1209	571	29
1227	579	30
1246	588	31
1264	596	32
1282	605	33
1300	614	34
1318	622	35
1336	631	36
1355	639	37
1373	648	38
1391	656	39
1409	665	40
1427	674	41
1446	682	42
1464	691	43
1482	699	44
1500	708	45
1518	717	46
1536	725	47
1555	734	48
1573	742	49
1591	751	50
1609	759	51
1627	768	52
1646	777	53
1664	785	54
1682	794	55
1700	802	56
1718	811	57
1736	820	58
1755	828	59
1773	837	60

**Table 19. VSxF 06SQ ECM CFM (continued)**

Motor Min CFM: 700 Motor Max CFM: 2500		
CFM	L/sec	% Setting
1791	845	61
1809	854	62
1827	862	63
1846	871	64
1864	880	65
1882	888	66
1900	897	67
1918	905	68
1936	914	69
1955	922	70
1973	931	71
1991	940	72
2009	948	73
2027	957	74
2046	965	75
2064	974	76
2082	983	77
2100	991	78
2118	1000	79
2136	1008	80
2155	1017	81
2173	1025	82
2191	1034	83
2209	1043	84
2227	1051	85
2245	1060	86
2264	1068	87
2282	1077	88
2300	1085	89
2318	1094	90
2336	1103	91
2355	1111	92
2373	1120	93
2391	1128	94
2409	1137	95
2427	1146	96
2445	1154	97
2464	1163	98
2482	1171	99
2500	1180	100

**Table 20. LPxF DS02 ECM CFM**

Motor Min CFM: 100 Motor Max CFM: 1300		
CFM	L/sec	% Setting
100	47	0
112	53	1
124	59	2
136	64	3
148	70	4
160	76	5
172	81	6
184	87	7
196	93	8
208	98	9
220	104	10



## Unit Setup

**Table 20. LPxF DS02 ECM CFM (continued)**

Motor Min CFM: 100 Motor Max CFM: 1300		
CFM	L/sec	% Setting
232	109	11
244	115	12
256	121	13
268	126	14
280	132	15
292	138	16
304	143	17
316	149	18
328	155	19
340	160	20
352	166	21
364	172	22
376	177	23
388	183	24
400	189	25
412	194	26
424	200	27
436	206	28
448	211	29
460	217	30
472	223	31
484	228	32
496	234	33
508	240	34
520	245	35
532	251	36
544	257	37
556	262	38
568	268	39
580	274	40
592	279	41
604	285	42
616	291	43
628	296	44
640	302	45
652	308	46
664	313	47
676	319	48
688	325	49
700	330	50
712	336	51
724	342	52
736	347	53
748	353	54
760	359	55
772	364	56
784	370	57
796	376	58
808	381	59
820	387	60
832	393	61
844	398	62
856	404	63
868	410	64
880	415	65
892	421	66
904	427	67
916	432	68
928	438	69
940	444	70

**Table 20. LPxF DS02 ECM CFM (continued)**

Motor Min CFM: 100 Motor Max CFM: 1300		
CFM	L/sec	% Setting
952	449	71
964	455	72
976	461	73
988	466	74
1000	472	75
1012	478	76
1024	483	77
1036	489	78
1048	495	79
1060	500	80
1072	506	81
1084	512	82
1096	517	83
1108	523	84
1120	529	85
1132	534	86
1144	540	87
1156	546	88
1168	551	89
1180	557	90
1192	563	91
1204	568	92
1216	574	93
1228	580	94
1240	585	95
1252	591	96
1264	597	97
1276	602	98
1288	608	99
1300	614	100

**Table 21. LSxF DS02 ECM**

Motor Min CFM: 100 Motor Max CFM: 1300		
CFM	L/sec	% Setting
100	47	0
112	53	1
124	59	2
136	64	3
148	70	4
160	76	5
172	81	6
184	87	7
196	93	8
208	98	9
220	104	10
232	109	11
244	115	12
256	121	13
268	126	14
280	132	15
292	138	16
304	143	17
316	149	18
328	155	19
340	160	20



**Table 21. LSxF DS02 ECM (continued)**

<b>Motor Min CFM: 100 Motor Max CFM: 1300</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
352	166	21
364	172	22
376	177	23
388	183	24
400	189	25
412	194	26
424	200	27
436	206	28
448	211	29
460	217	30
472	223	31
484	228	32
496	234	33
508	240	34
520	245	35
532	251	36
544	257	37
556	262	38
568	268	39
580	274	40
592	279	41
604	285	42
616	291	43
628	296	44
640	302	45
652	308	46
664	313	47
676	319	48
688	325	49
700	330	50
712	336	51
724	342	52
736	347	53
748	353	54
760	359	55
772	364	56
784	370	57
796	376	58
808	381	59
820	387	60
832	393	61
844	398	62
856	404	63
868	410	64
880	415	65
892	421	66
904	427	67
916	432	68
928	438	69
940	444	70
952	449	71
964	455	72
976	461	73
988	466	74
1000	472	75
1012	478	76
1024	483	77
1036	489	78
1048	495	79
1060	500	80

**Table 21. LSxF DS02 ECM (continued)**

<b>Motor Min CFM: 100 Motor Max CFM: 1300</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
1072	506	81
1084	512	82
1096	517	83
1108	523	84
1120	529	85
1132	534	86
1144	540	87
1156	546	88
1168	551	89
1180	557	90
1192	563	91
1204	568	92
1216	574	93
1228	580	94
1240	585	95
1252	591	96
1264	597	97
1276	602	98
1288	608	99
1300	614	100

**Table 22. LSxF DS03 ECM CFM**

<b>Motor Min CFM: 400 Motor Max CFM: 1800</b>		
<b>CFM</b>	<b>L/sec</b>	<b>% Setting</b>
700.0	330	0
712.5	336	1
725.0	342	2
737.5	348	3
750.0	354	4
762.5	360	5
775.0	366	6
787.5	372	7
800.0	378	8
812.5	383	9
825.0	389	10
837.5	395	11
850.0	401	12
862.5	407	13
875.0	413	14
887.5	419	15
900.0	425	16
912.5	431	17
925.0	437	18
937.5	442	19
950.0	448	20
962.5	454	21
975.0	460	22
987.5	466	23
1000.0	472	24
1012.5	478	25
1025.0	484	26
1037.5	490	27
1050.0	496	28
1062.5	501	29
1075.0	507	30



## Unit Setup

Table 22. LSxF DS03 ECM CFM (continued)

Motor Min CFM: 400 Motor Max CFM: 1800		
CFM	L/sec	% Setting
1087.5	513	31
1100.0	519	32
1112.5	525	33
1125.0	531	34
1137.5	537	35
1150.0	543	36
1162.5	549	37
1175.0	555	38
1187.5	560	39
1200.0	566	40
1212.5	572	41
1225.0	578	42
1237.5	584	43
1250.0	590	44
1262.5	596	45
1275.0	602	46
1287.5	608	47
1300.0	614	48
1312.5	619	49
1325.0	625	50
1337.5	631	51
1350.0	637	52
1362.5	643	53
1375.0	649	54
1387.5	655	55
1400.0	661	56
1412.5	667	57
1425.0	673	58
1437.5	678	59
1450.0	684	60
1462.5	690	61
1475.0	696	62
1487.5	702	63
1500.0	708	64
1512.5	714	65

Table 22. LSxF DS03 ECM CFM (continued)

Motor Min CFM: 400 Motor Max CFM: 1800		
CFM	L/sec	% Setting
1525.0	720	66
1537.5	726	67
1550.0	732	68
1562.5	737	69
1575.0	743	70
1587.5	749	71
1600.0	755	72
1612.5	761	73
1625.0	767	74
1637.5	773	75
1650.0	779	76
1662.5	785	77
1675.0	791	78
1687.5	796	79
1700.0	802	80
1712.5	808	81
1725.0	814	82
1737.5	820	83
1750.0	826	84
1762.5	832	85
1775.0	838	86
1787.5	844	87
1800.0	850	88
1812.5	855	89
1825.0	861	90
1837.5	867	91
1850.0	873	92
1862.5	879	93
1875.0	885	94
1887.5	891	95
1900.0	897	96
1912.5	903	97
1925.0	908	98
1937.5	914	99
1950.0	920	100



## Wiring Diagrams

**Notes:** See programming guides listed below for detailed class II low voltage unit controls wiring information on the following:

- UCM 4.2: VAV-SVX01\*-EN
- UC400: VAV-SVX07\*-EN
- UC210: BAS-SVX62\*-EN
- VV550: VAV-SVP01\*-EN



# Wiring Diagrams

## Wiring — Electric Heater Control Box

Figure 24. Single duct, single phase, 1 leg, 3 stages

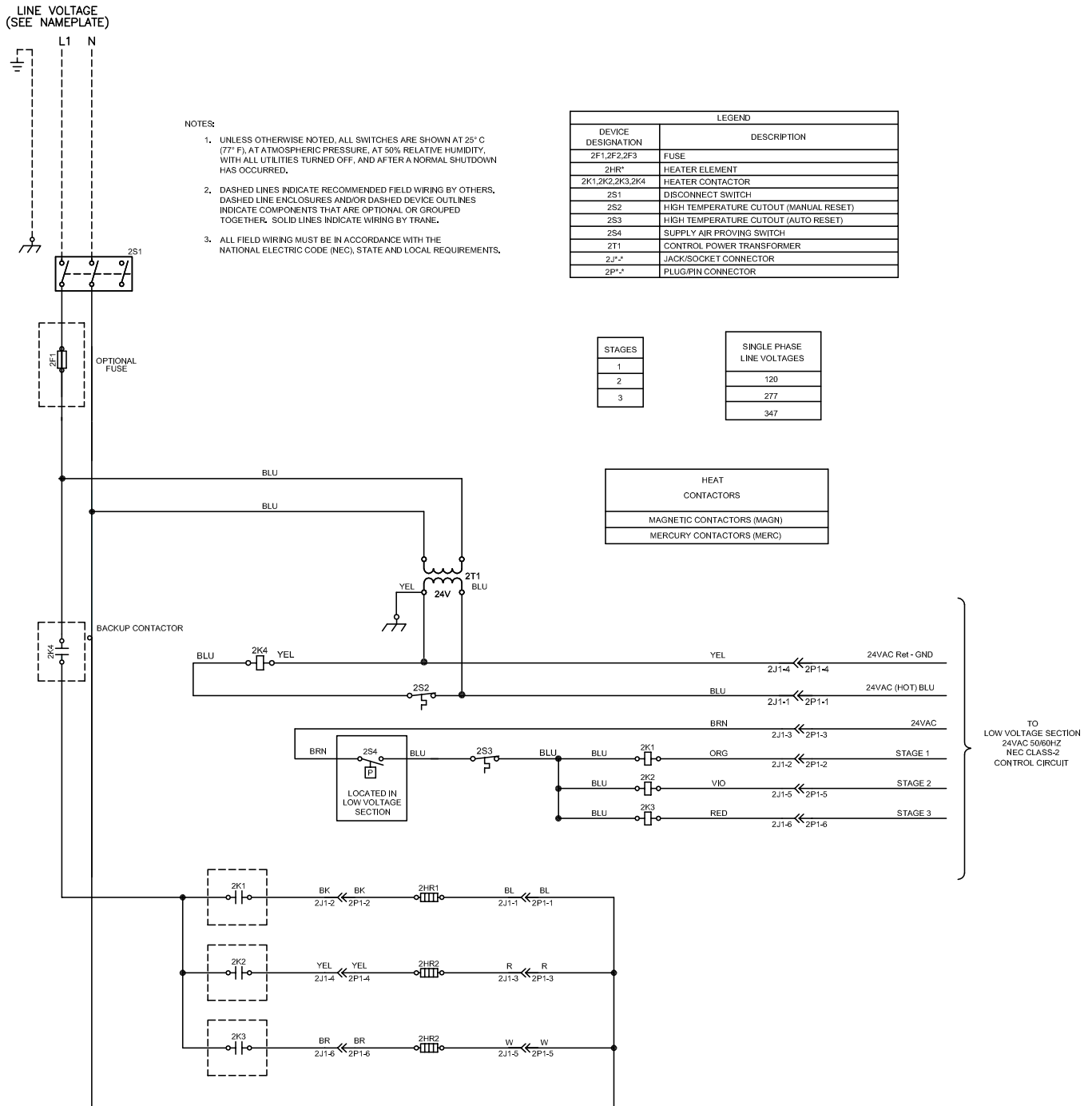
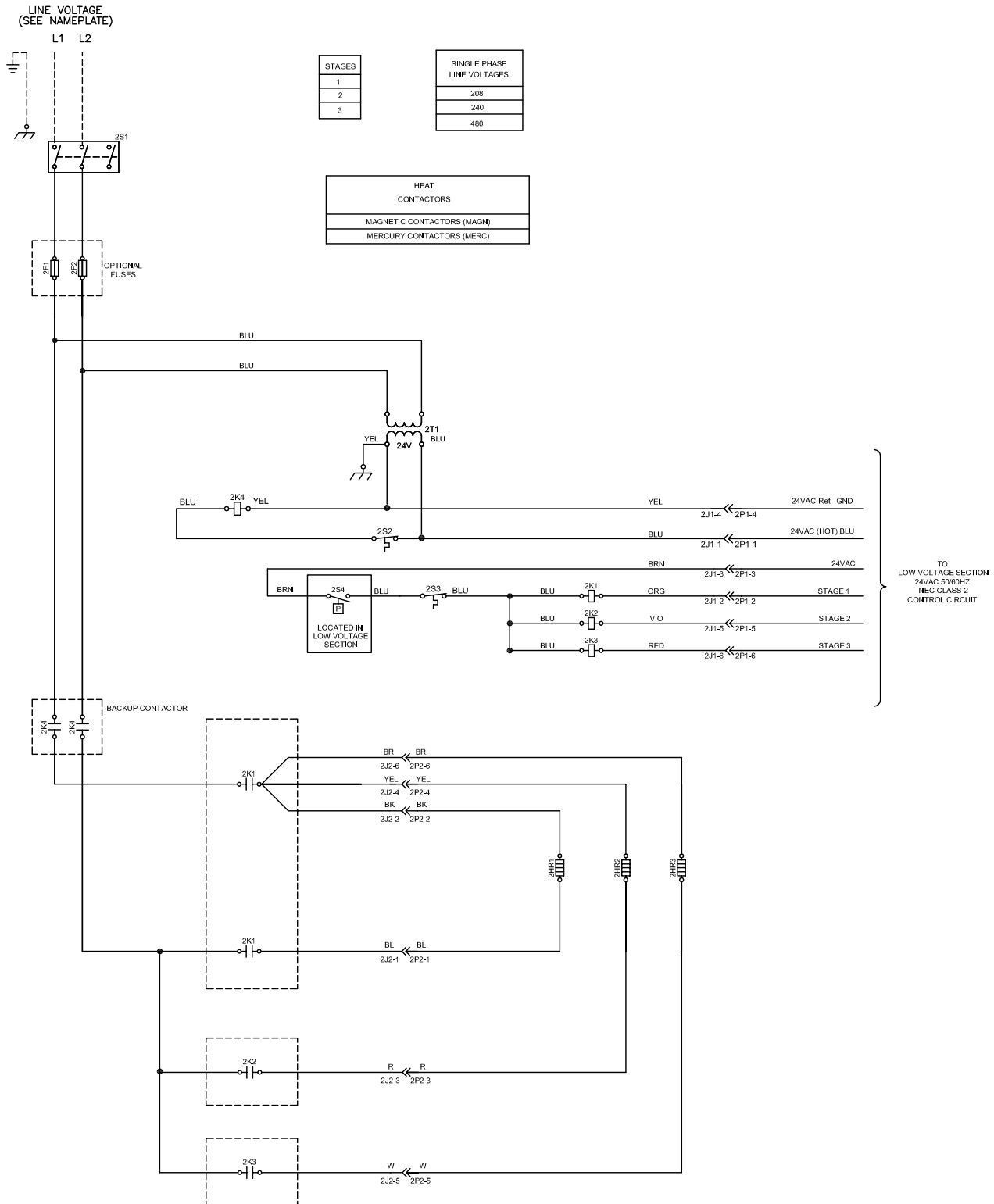


Figure 25. Single duct, single phase, 2 legs, 3 stages

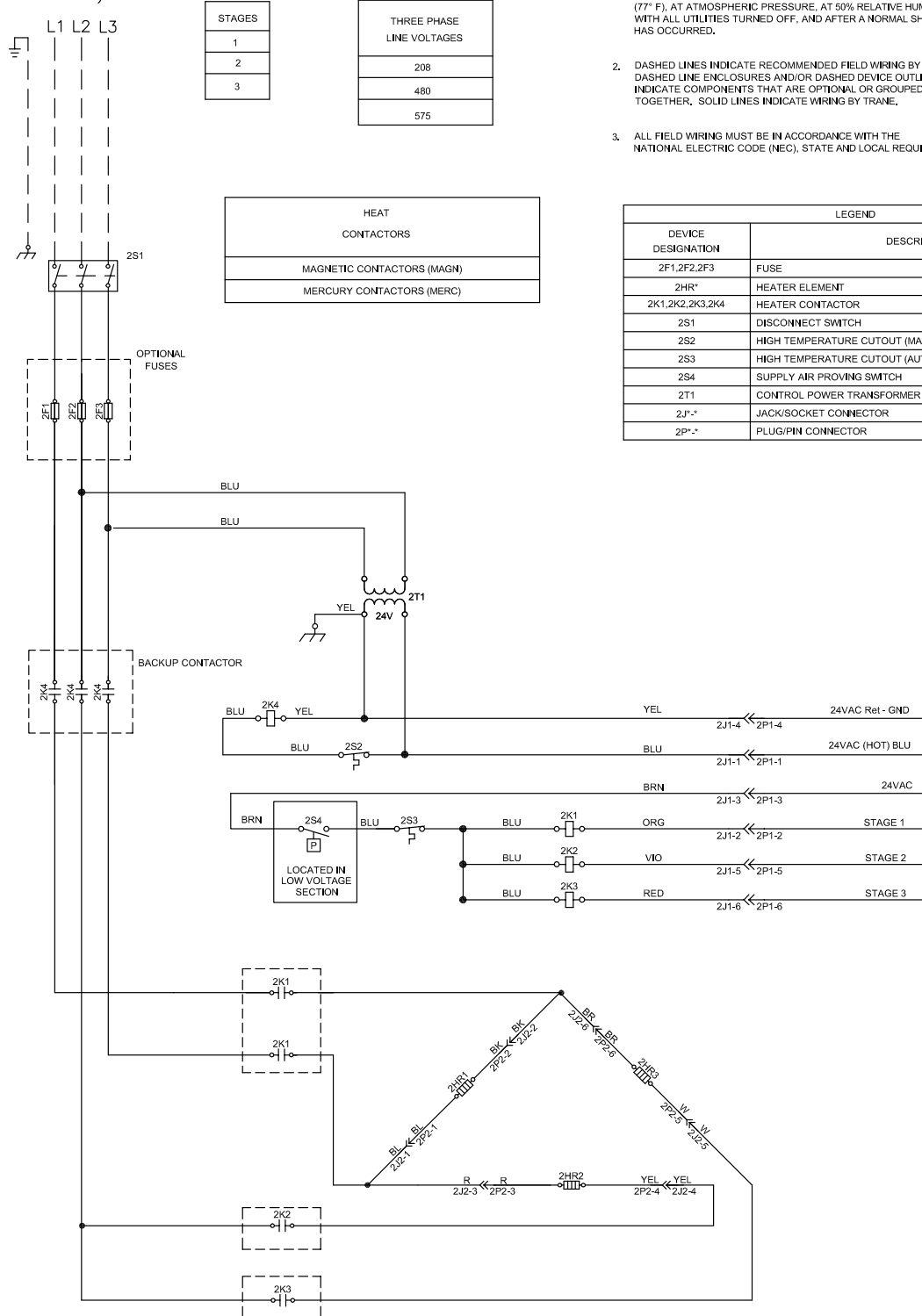




# Wiring Diagrams

**Figure 26. Single duct, three phase, delta, 3 stages**

LINE VOLTAGE  
(SEE NAMEPLATE)



STAGES
1
2
3

THREE PHASE LINE VOLTAGES
208
480
575

HEAT CONTACTORS
MAGNETIC CONTACTORS (MAGN)
MERCURY CONTACTORS (MERC)

NOTES:

- UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25° C (77° F), AT ATMOSPHERIC PRESSURE, AT 50% RELATIVE HUMIDITY, WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
- DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSURES AND/OR DASHED DEVICE OUTLINES INDICATE COMPONENTS THAT ARE OPTIONAL OR GROUPED TOGETHER. SOLID LINES INDICATE WIRING BY TRANE.
- ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS.

LEGEND	
DEVICE DESIGNATION	DESCRIPTION
2F1,2F2,2F3	FUSE
2HR*	HEATER ELEMENT
2K1,2K2,2K3,2K4	HEATER CONTACTOR
2S1	DISCONNECT SWITCH
2S2	HIGH TEMPERATURE CUTOUT (MANUAL RESET)
2S3	HIGH TEMPERATURE CUTOUT (AUTO RESET)
2S4	SUPPLY AIR PROVING SWITCH
2T1	CONTROL POWER TRANSFORMER
2J*-*	JACK/SOCKET CONNECTOR
2P*-*	PLUG/PIN CONNECTOR

TO  
LOW VOLTAGE SECTION  
24VAC 50/60HZ  
NEC CLASS-2  
CONTROL CIRCUIT

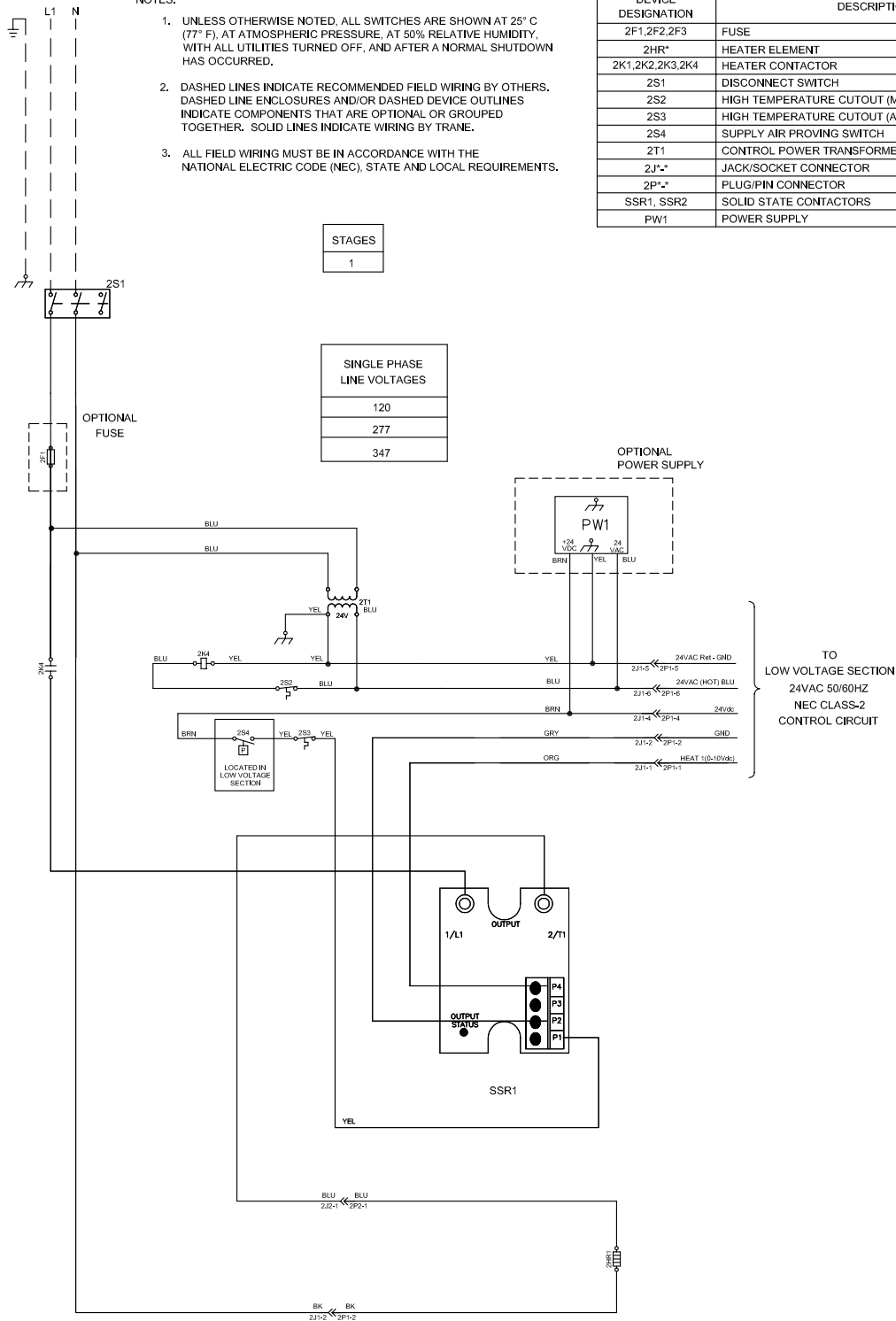
**Figure 27. Single duct, single phase, SCR, 1 leg, 1 stage**

LINE VOLTAGE  
(SEE NAMEPLATE)

**NOTES:**

1. UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25° C (77° F), AT ATMOSPHERIC PRESSURE, AT 50% RELATIVE HUMIDITY, WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
2. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSURES AND/OR DASHED DEVICE OUTLINES INDICATE COMPONENTS THAT ARE OPTIONAL OR GROUPED TOGETHER. SOLID LINES INDICATE WIRING BY TRANE.
3. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS.

LEGEND	
DEVICE DESIGNATION	DESCRIPTION
2F1,2F2,2F3	FUSE
2HR*	HEATER ELEMENT
2K1,2K2,2K3,2K4	HEATER CONTACTOR
2S1	DISCONNECT SWITCH
2S2	HIGH TEMPERATURE CUTOUT (MANUAL RESET)
2S3	HIGH TEMPERATURE CUTOUT (AUTO RESET)
2S4	SUPPLY AIR PROVING SWITCH
2T1	CONTROL POWER TRANSFORMER
2J*~	JACK/SOCKET CONNECTOR
2P*~	PLUG/PIN CONNECTOR
SSR1, SSR2	SOLID STATE CONTACTORS
PW1	POWER SUPPLY





# Wiring Diagrams

**Figure 28. Single duct, single phase, SCR, 2 legs, 1 stage**

STAGES
1

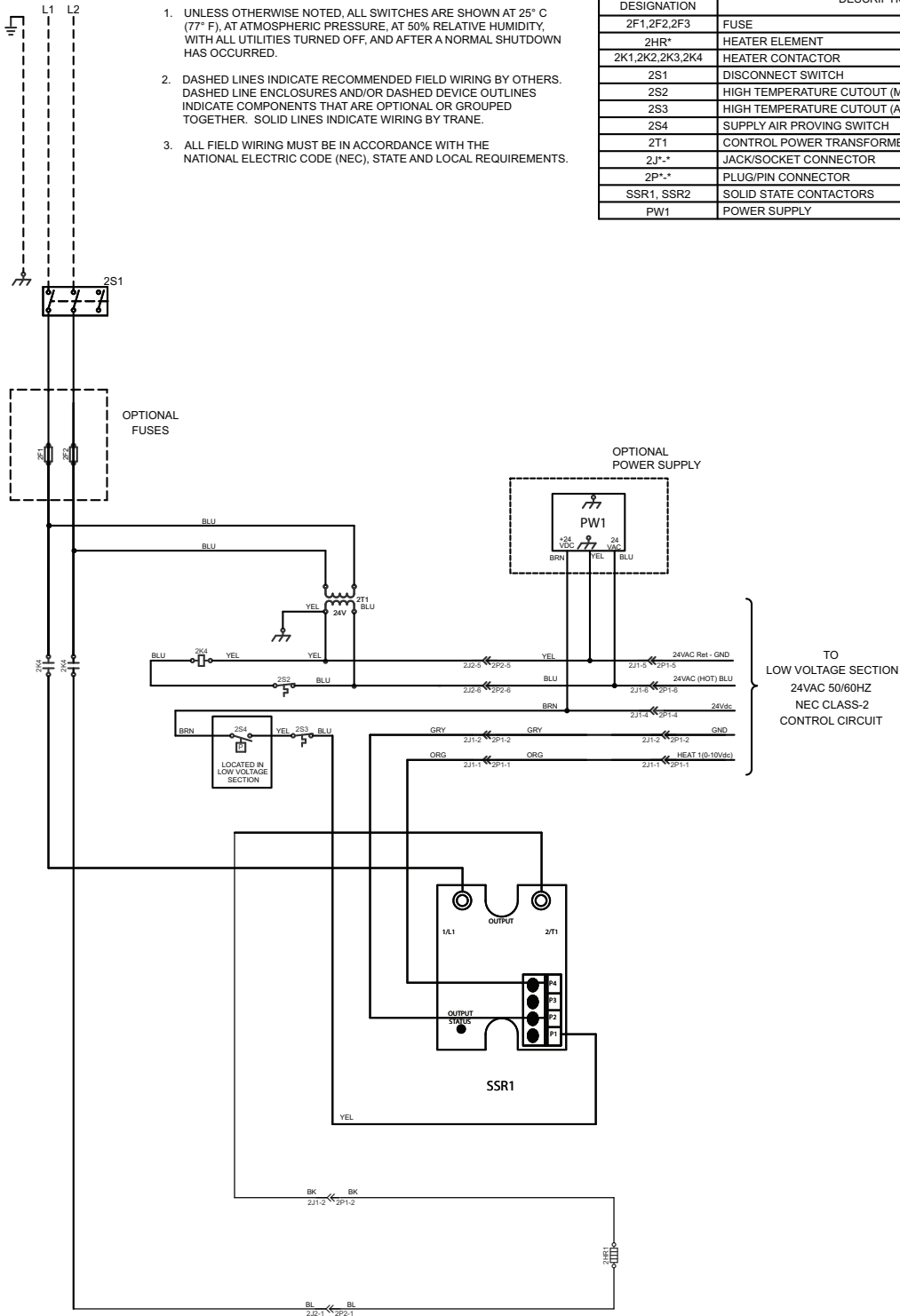
SINGLE PHASE LINE VOLTAGES
208
240
480

LINE VOLTAGE  
(SEE NAMEPLATE)

**NOTES:**

1. UNLESS OTHERWISE NOTED, ALL SWITCHES ARE SHOWN AT 25° C (77° F), AT ATMOSPHERIC PRESSURE, AT 50% RELATIVE HUMIDITY, WITH ALL UTILITIES TURNED OFF, AND AFTER A NORMAL SHUTDOWN HAS OCCURRED.
2. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSURES AND/OR DASHED DEVICE OUTLINES INDICATE COMPONENTS THAT ARE OPTIONAL OR GROUPED TOGETHER. SOLID LINES INDICATE WIRING BY TRANE.
3. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS.

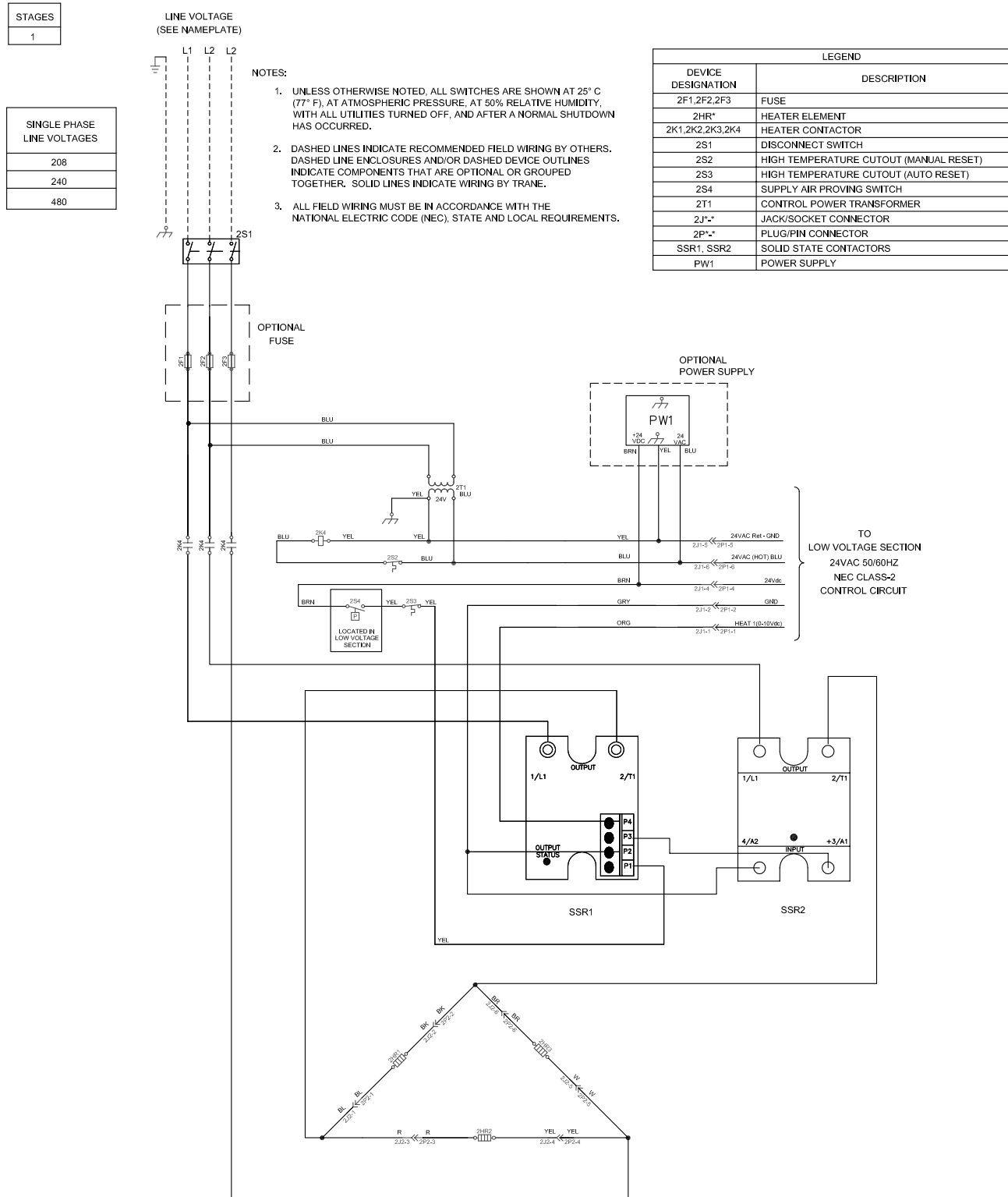
LEGEND	
DEVICE DESIGNATION	DESCRIPTION
2F1,2F2,2F3	FUSE
2HR*	HEATER ELEMENT
2K1,2K2,2K3,2K4	HEATER CONTACTOR
2S1	DISCONNECT SWITCH
2S2	HIGH TEMPERATURE CUTOUT (MANUAL RESET)
2S3	HIGH TEMPERATURE CUTOUT (AUTO RESET)
2S4	SUPPLY AIR PROVING SWITCH
2T1	CONTROL POWER TRANSFORMER
2J*.*	JACK/ SOCKET CONNECTOR
2P*.*	PLUG/PIN CONNECTOR
SSR1, SSR2	SOLID STATE CONTACTORS
PW1	POWER SUPPLY



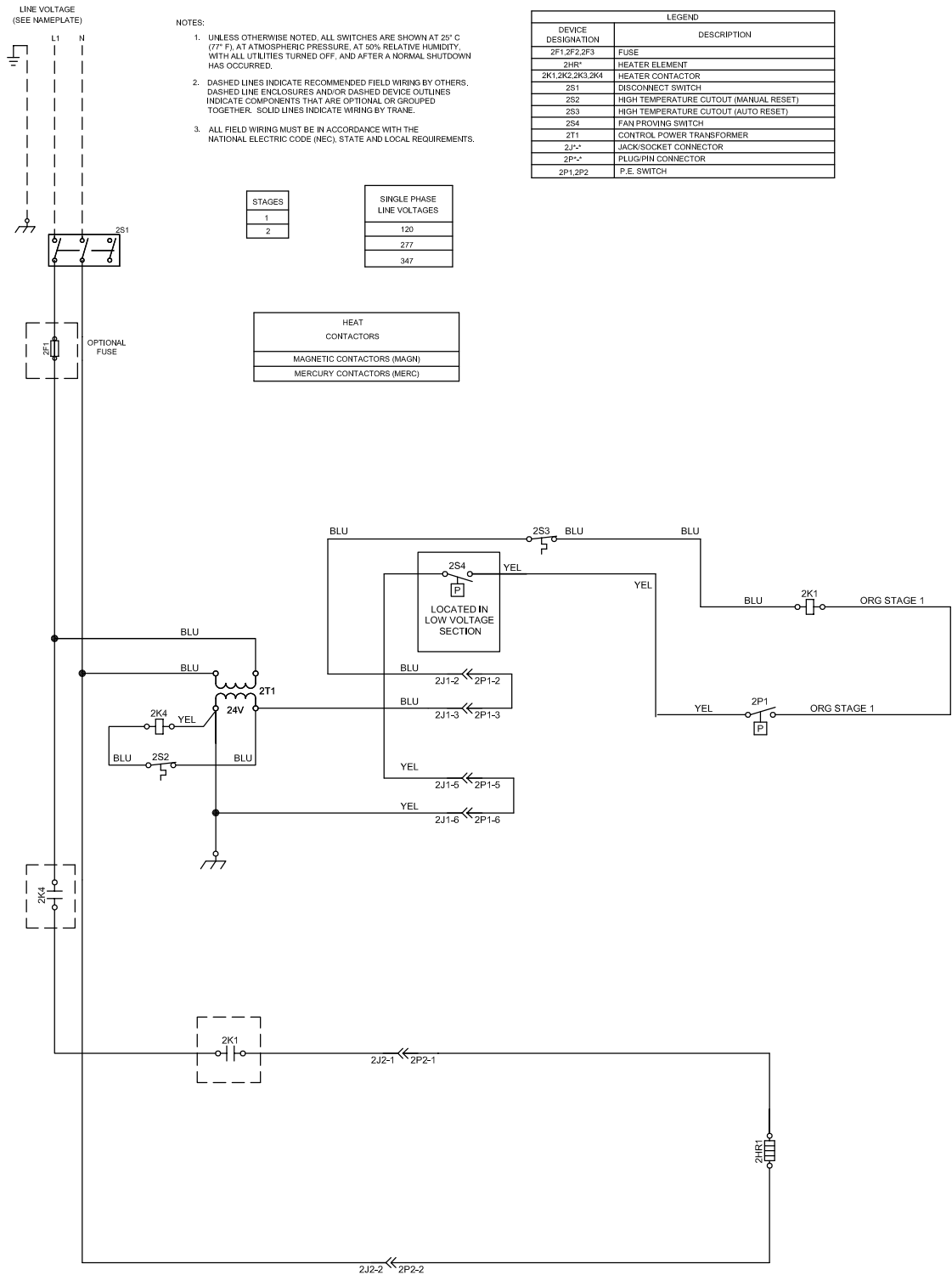
TO  
LOW VOLTAGE SECTION  
24VAC 50/60HZ  
NEC CLASS-2  
CONTROL CIRCUIT



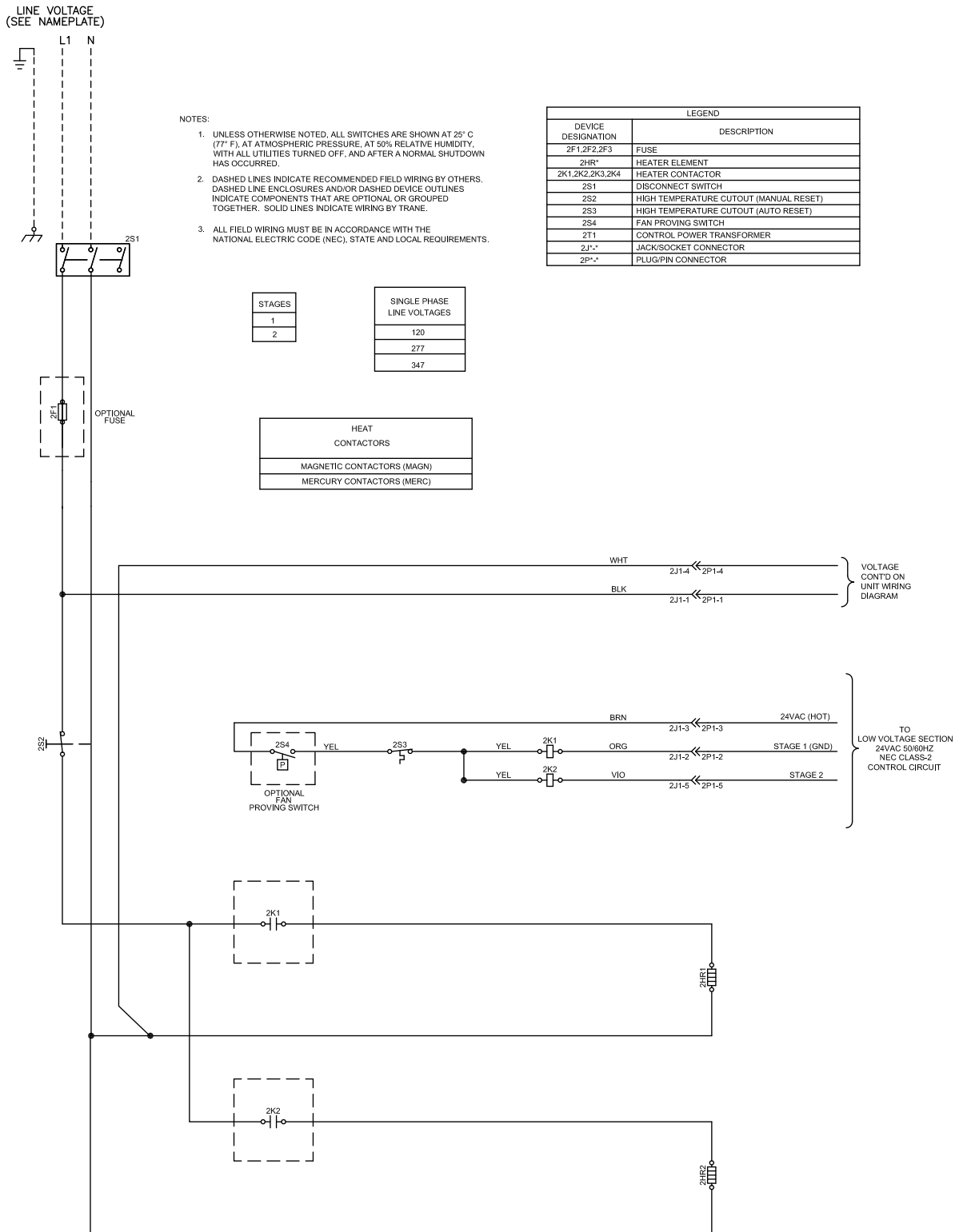
**Figure 29. Single duct, three phase, delta, SCR, 1 stage**



**Figure 30. Single duct, pneumatic controls, single phase, 1 leg**

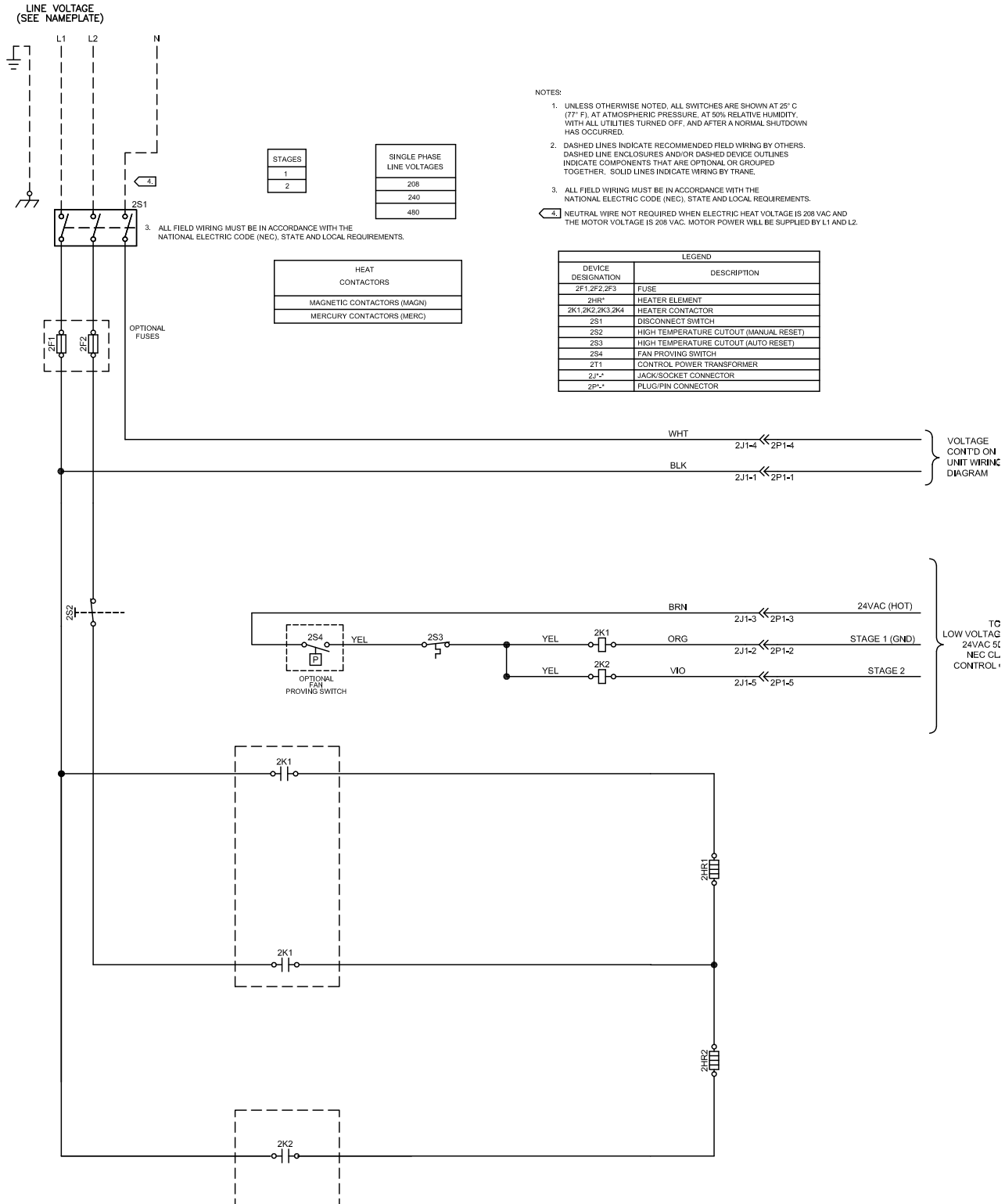


**Figure 31. Fan powered, single phase, 1 leg, 2 stages**

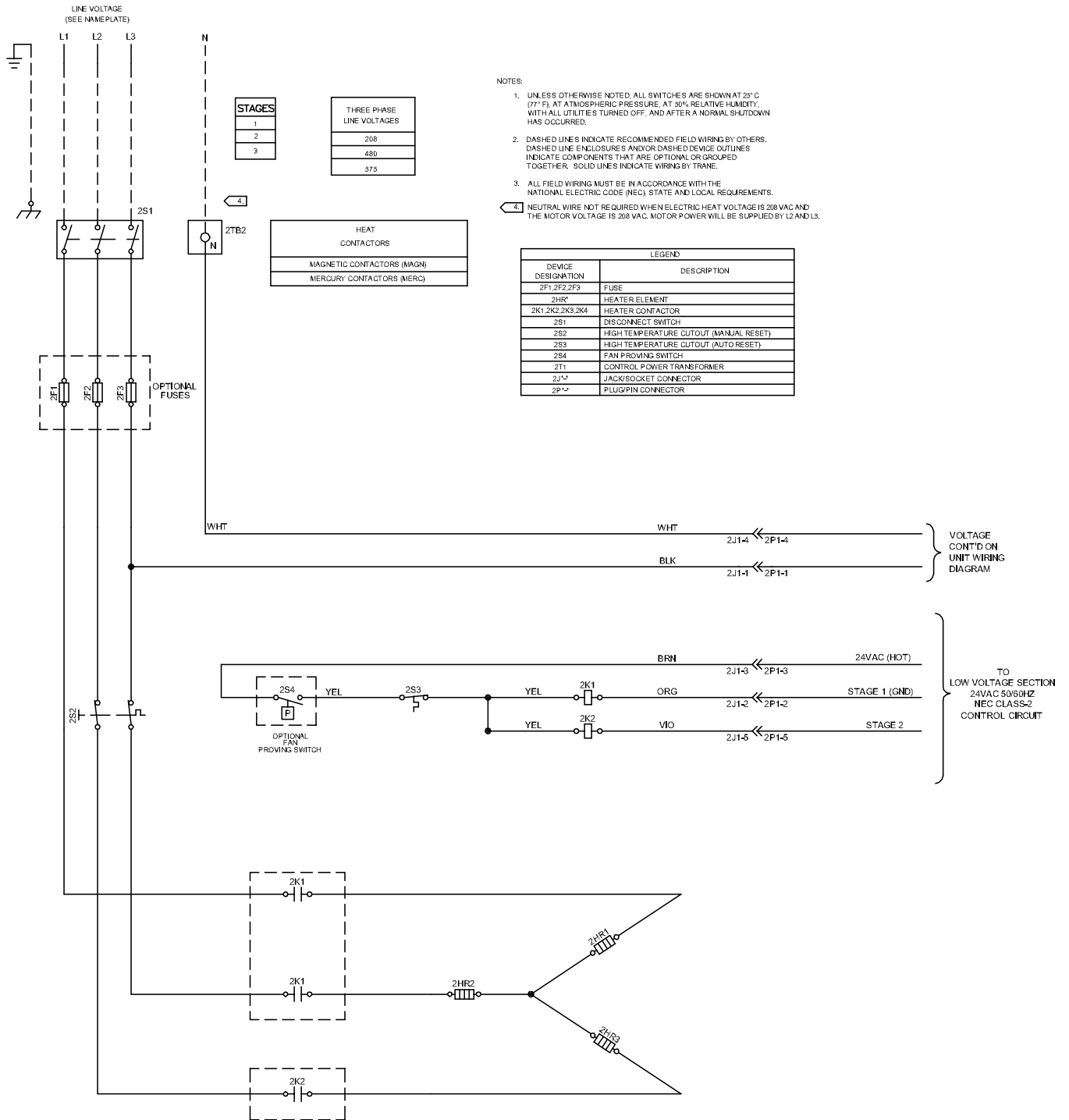


# Wiring Diagrams

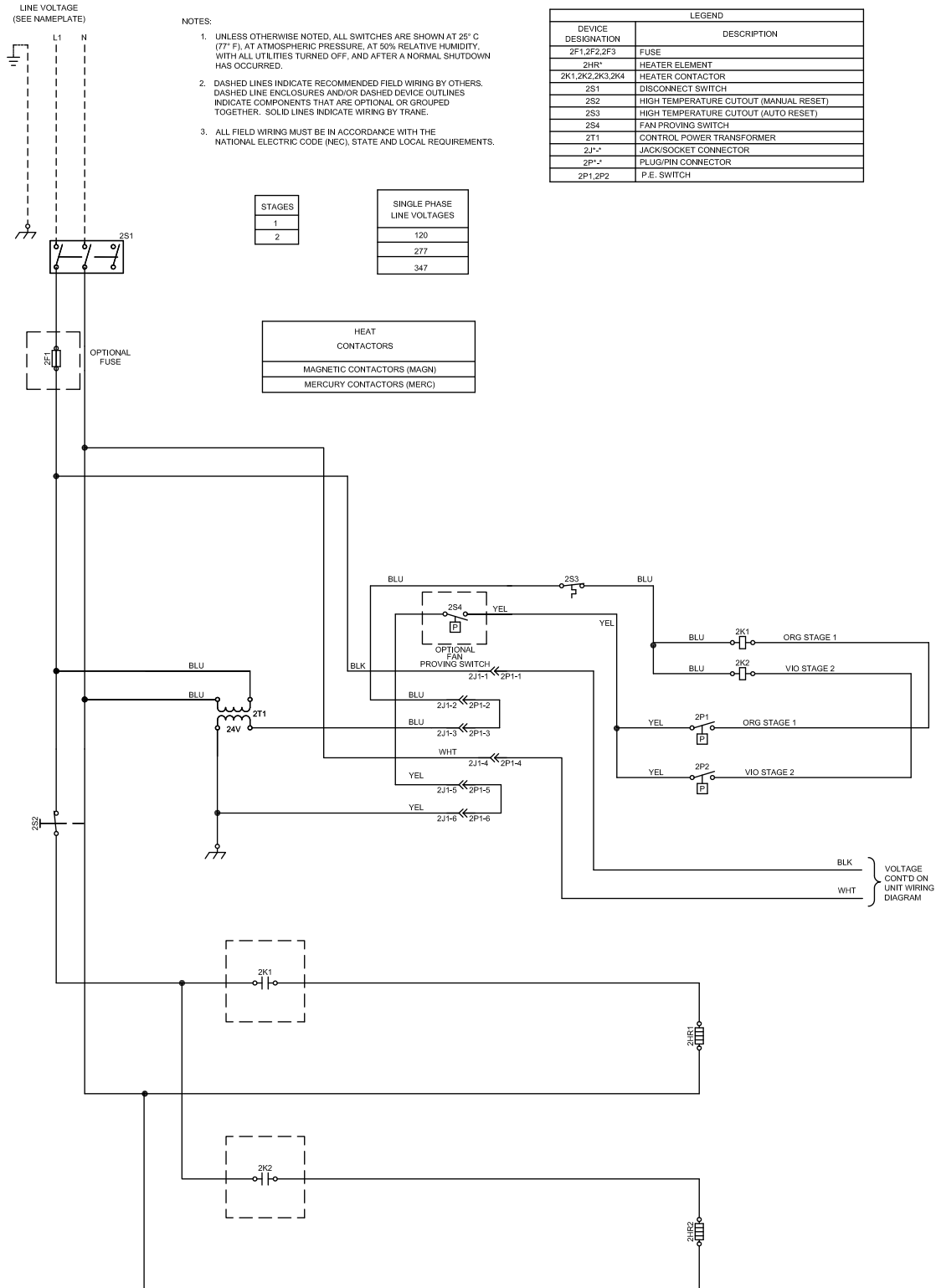
**Figure 32. Fan powered, single phase, 2 legs, 2 stages**



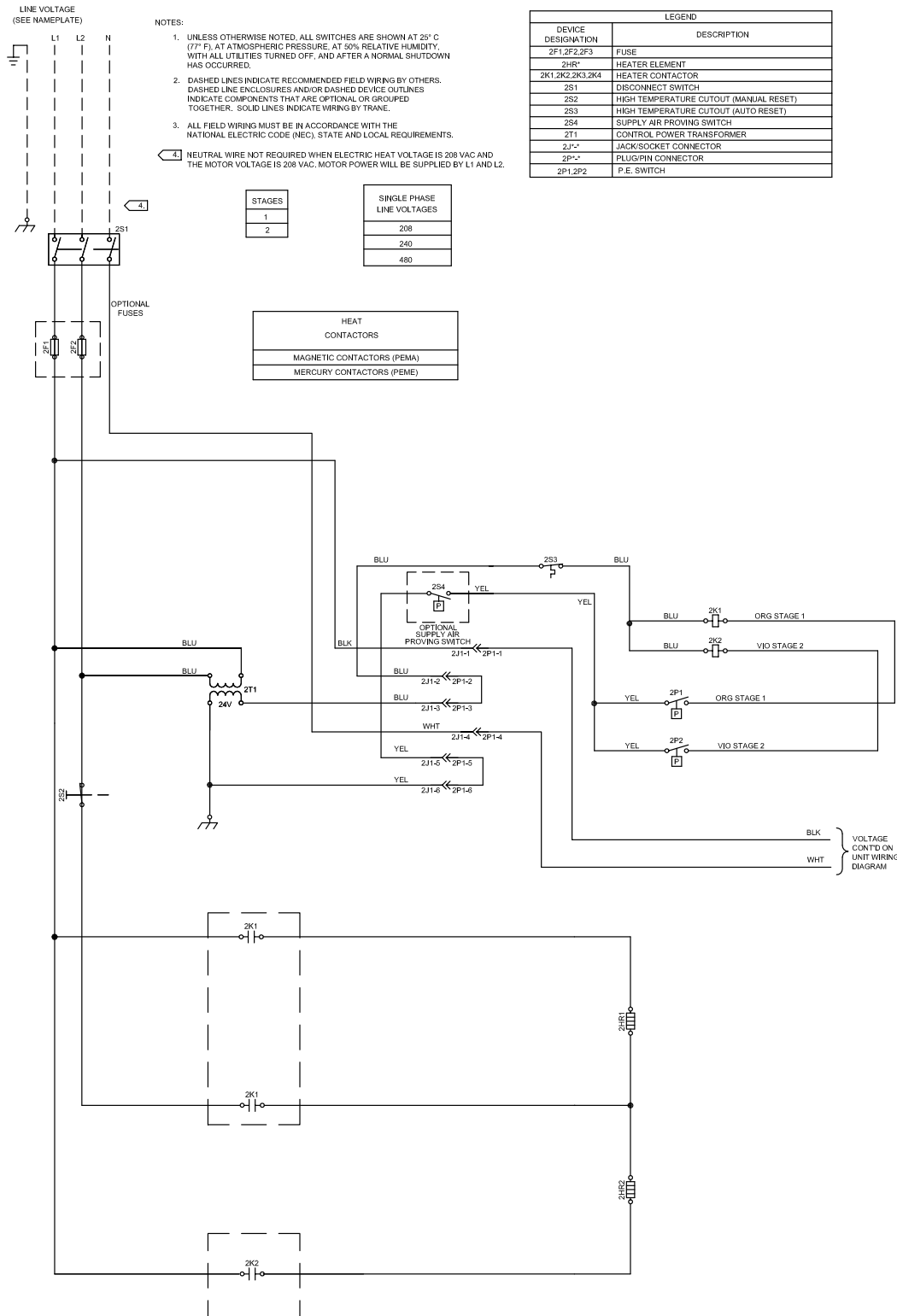
**Figure 33. Fan powered, three phase, wye, 2 stages**



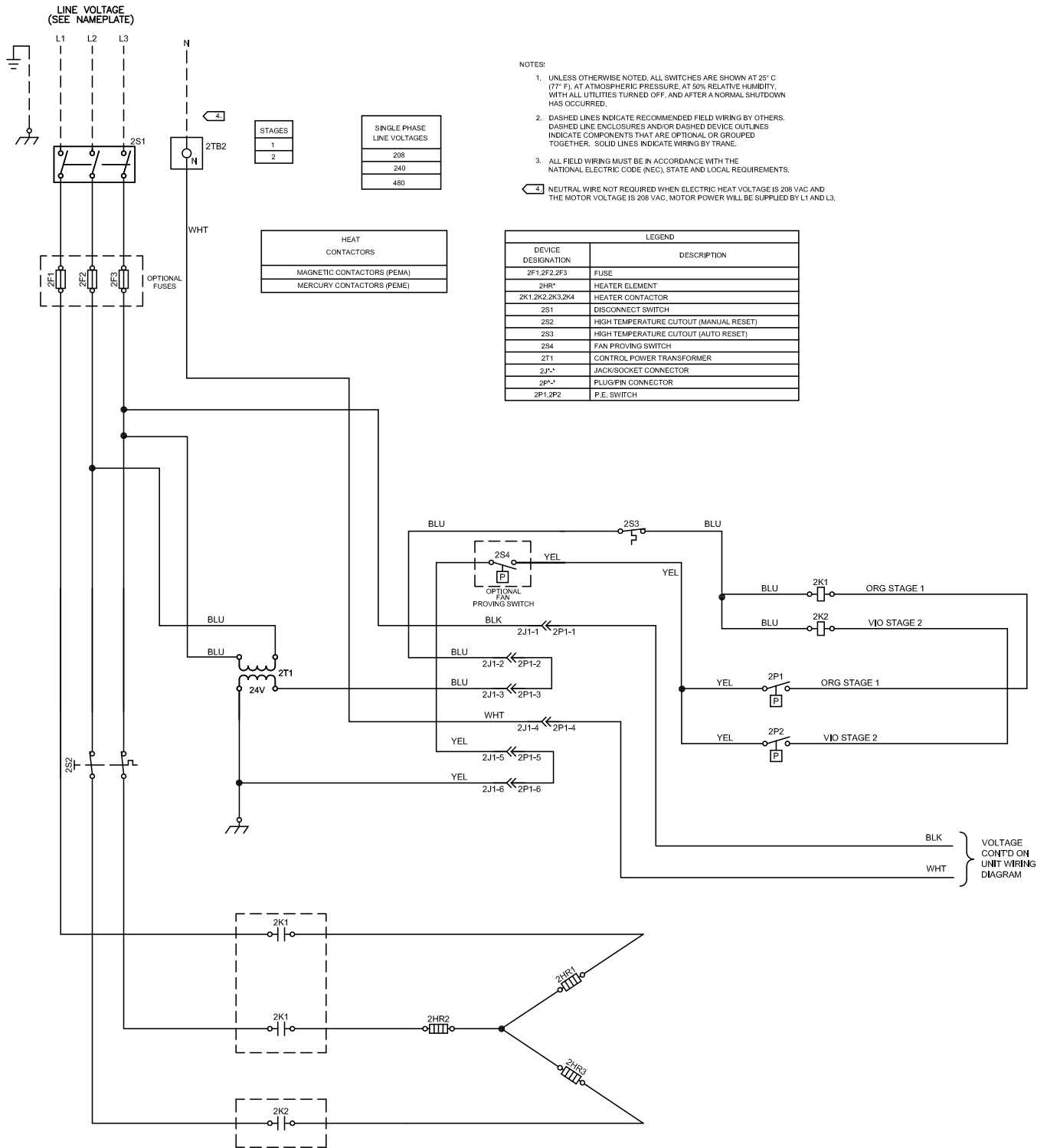
**Figure 34. Fan powered, pneumatic, single phase, 1 leg, 2 stages**



**Figure 35. Fan powered, pneumatic, single phase, 2 legs, 2 stages**



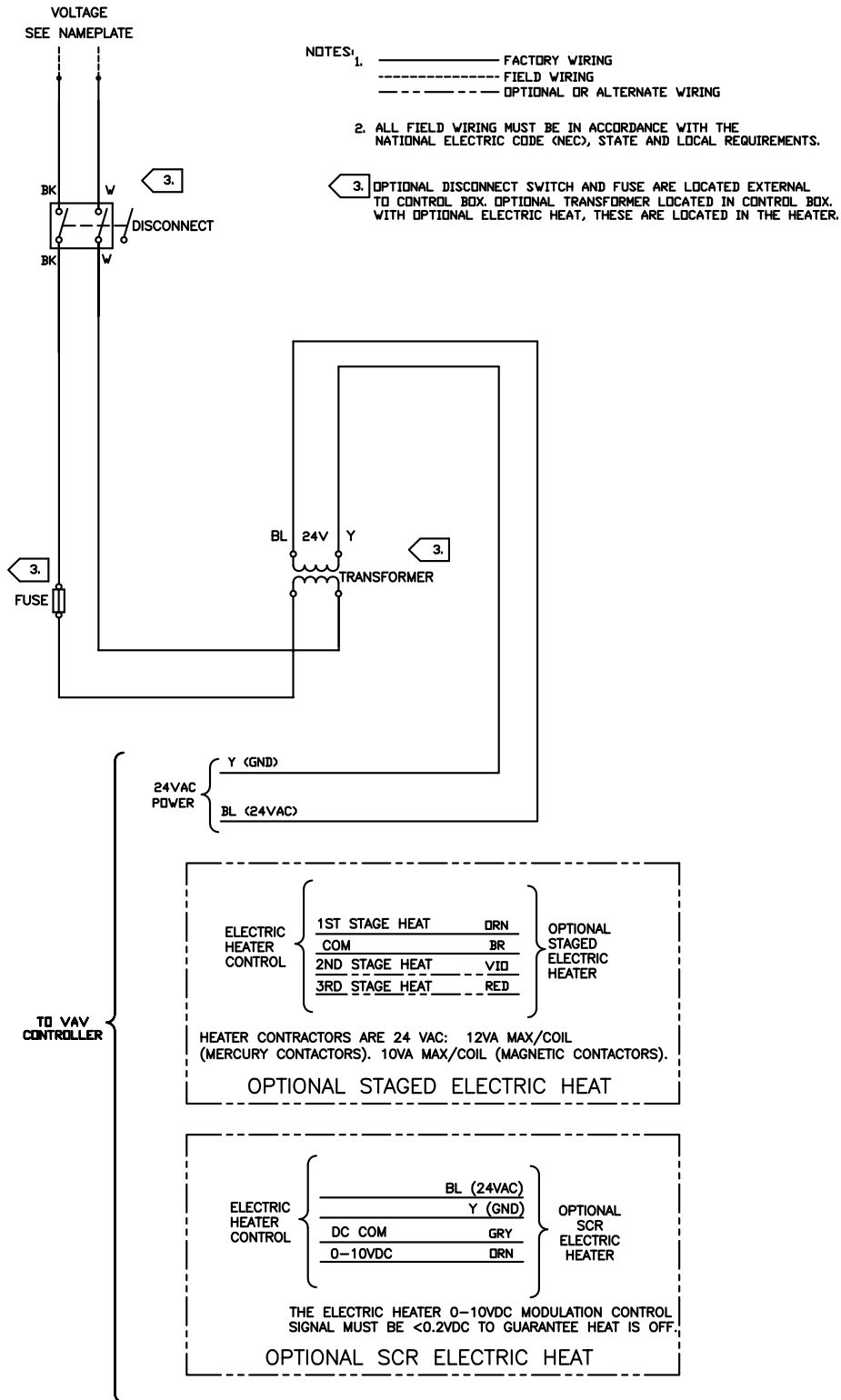
**Figure 36. Fan powered, pneumatic, three phase, wye, 2 stages**



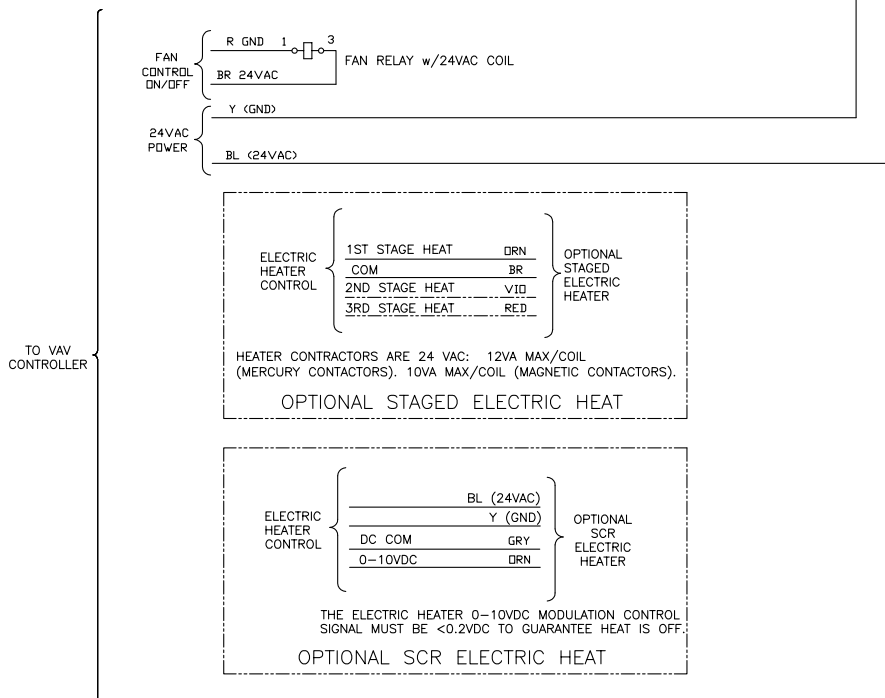
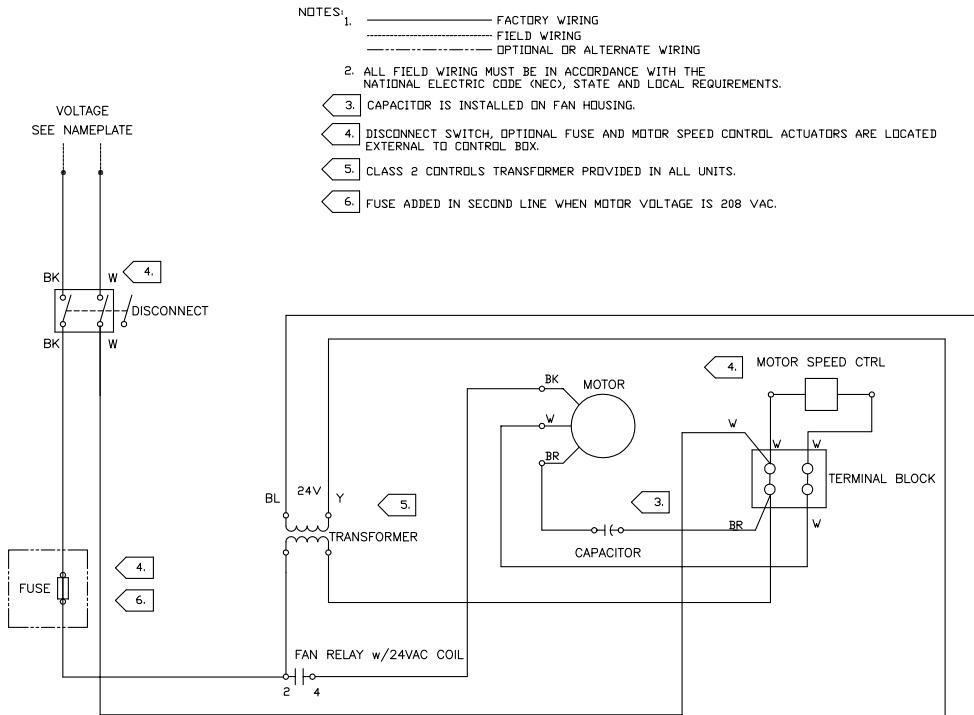


# Control Box Wiring

Figure 37. Single duct control box



**Figure 38. Fan-powered units with PSC motors, non-10SQ**



**Figure 39. Fan-powered units with ECM motor, non-10SQ**

NOTES:

1. \_\_\_\_\_ FACTORY WIRING
- FIELD WIRING
- OPTIONAL OR ALTERNATE WIRING
2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), STATE AND LOCAL REQUIREMENTS.
3. OPTIONAL POWER FACTOR CORRECTION CHOKE LOCATED IN CONTROL BOX. (NOT REQUIRED FOR LOW HEIGHT STYLE UNITS)
4. DISCONNECT SWITCH, FUSE AND MOTOR SPEED CONTROL ACTUATORS ARE LOCATED EXTERNAL TO CONTROL BOX.
5. CLASS 2 CONTROLS TRANSFORMER PROVIDED IN ALL UNITS.
6. FUSE ADDED IN SECOND LINE WHEN MOTOR VOLTAGE IS 208 VAC.

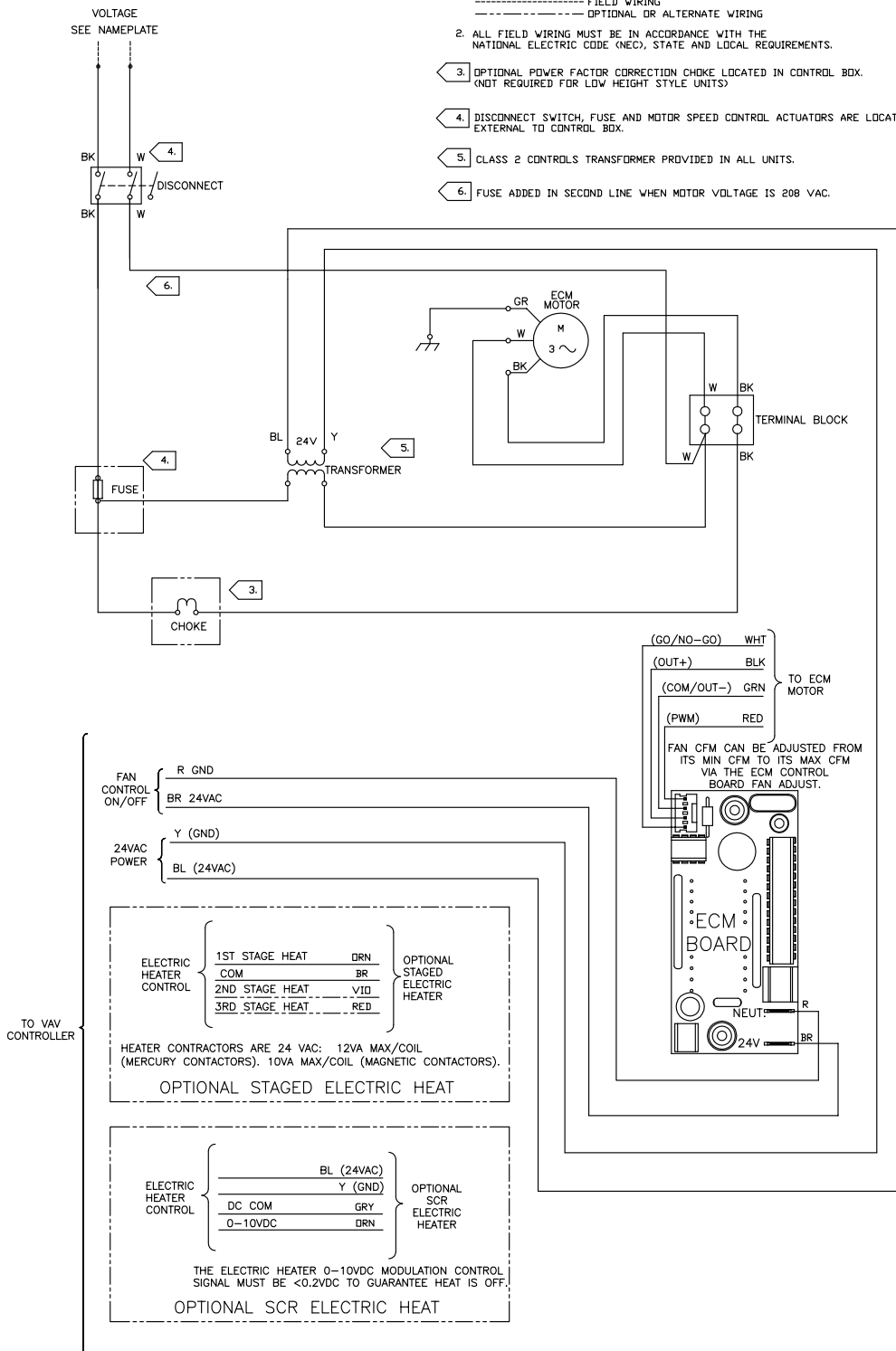
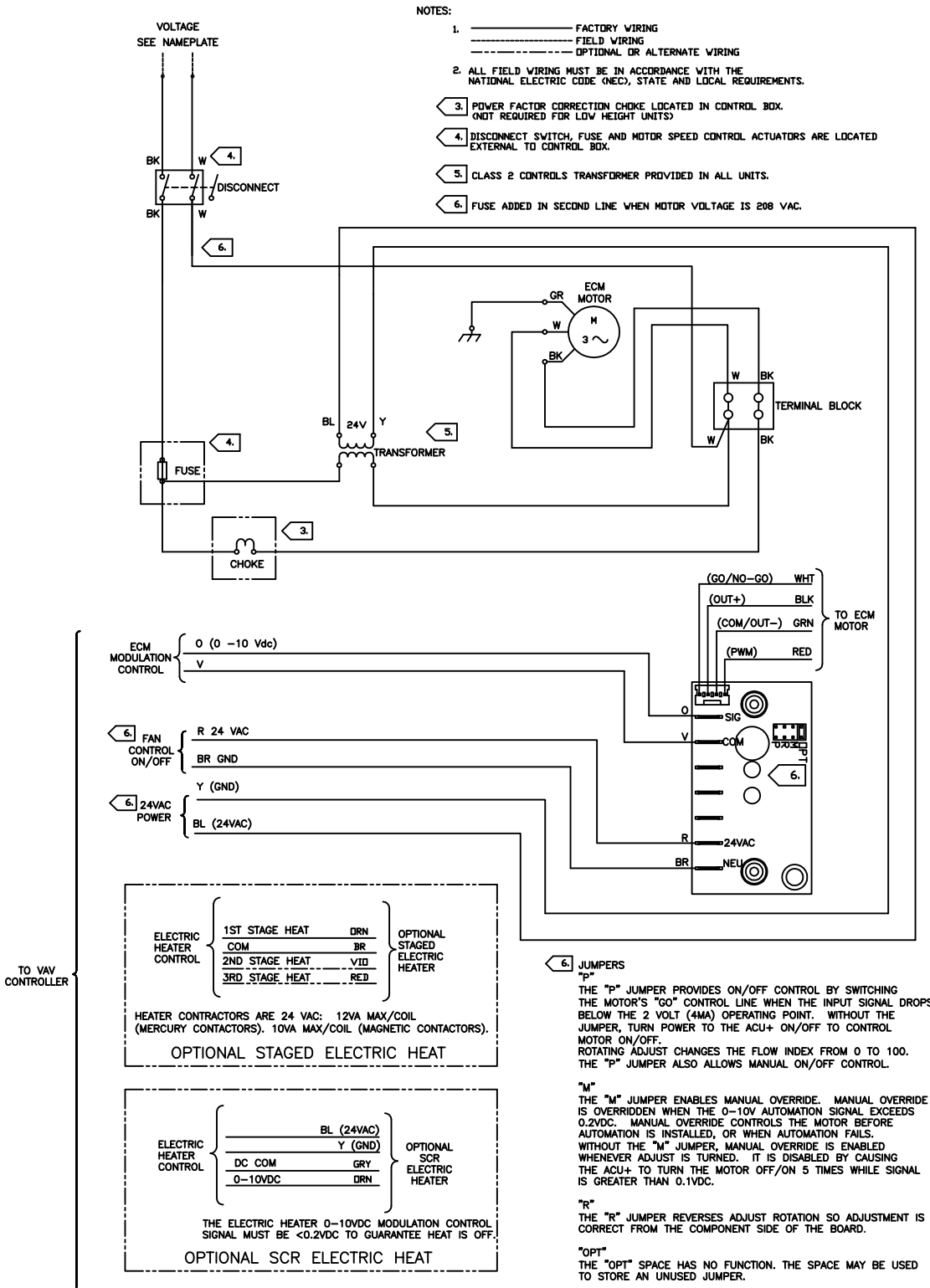
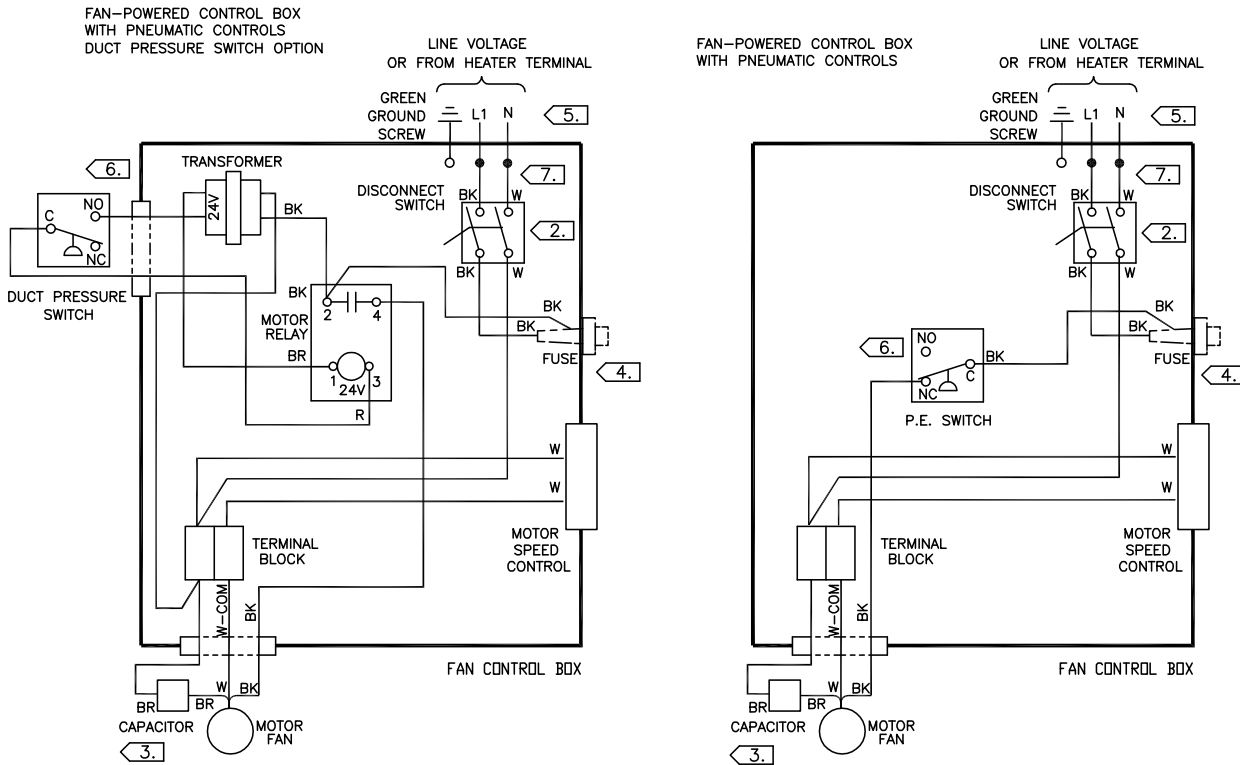


Figure 40. Fan-powered units with ECV motor, non-10SQ



**Figure 41. Fan-powered, pneumatic options, old style**



**NOTES:**

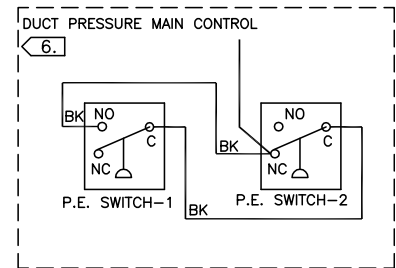
1. \_\_\_\_\_ FACTORY INSTALLED  
 - - - - - BY OTHERS  
 - - - - - OPTIONAL OR ALTERNATE CIRCUITRY
2. DISCONNECT SWITCH, FUSE, & SCR ARE LOCATED EXTERNAL TO CONTROL BOX.
3. CAPACITOR IS INSTALLED ON FAN HOUSING.
4. FUSE IS OPTIONAL.
5. DETERMINED BY MOTOR VOLTAGE ON ORDER. VOLTAGE FOUND ON UNIT NAMEPLATE.
6. FOR SERIES FAN POWERED TERMINAL UNITS ONLY.
7. NEUTRAL WIRE NOT REQUIRED WHEN ELECTRIC HEAT VOLTAGE IS 208 VAC AND MOTOR VOLTAGE IS 208VAC. MOTOR POWER WILL BE SUPPLIED BY L1 AND L2.

**WARNING**

**HAZARDOUS VOLTAGE!**  
 DISCONNECT, LOCK OUT AND TAG ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.  
 DISCHARGE MOTOR START/RUN CAPACITORS BEFORE SERVICING.  
 FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

**CAUTION**

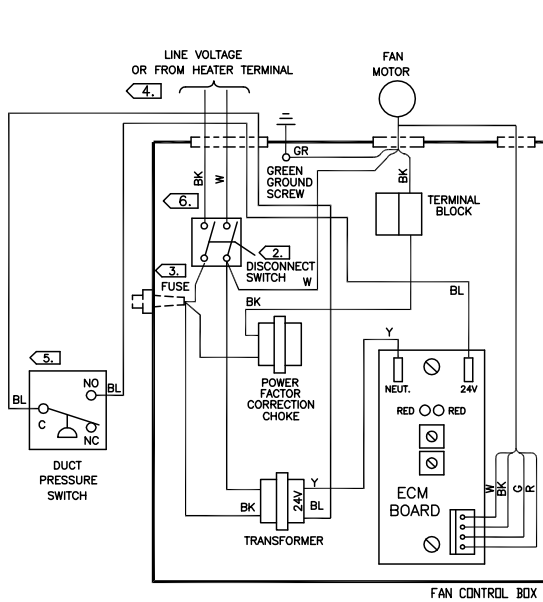
USE COPPER CONDUCTORS ONLY!  
 UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.  
 FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.



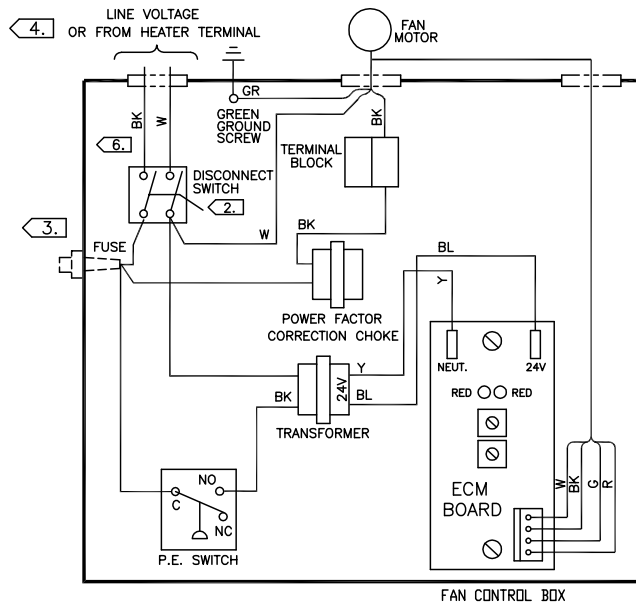
# Wiring Diagrams

**Figure 42. Fan-powered, ECM, pneumatic options, old style**

FAN-POWERED CONTROL BOX w/ECM  
WITH PNEUMATIC CONTROLS  
DUCT PRESSURE SWITCH OPTION



FAN-POWERED CONTROL BOX  
WITH PNEUMATIC CONTROLS



**NOTES:**

1. ————— FACTORY INSTALLED  
 - - - - - BY OTHERS  
 - · - · - · OPTIONAL OR ALTERNATE CIRCUITRY
2. DISCONNECT SWITCH, FUSE, & SCR ARE LOCATED EXTERNAL TO CONTROL BOX.
3. FUSE IS OPTIONAL.
4. DETERMINED BY MOTOR VOLTAGE ON ORDER. VOLTAGE FOUND ON UNIT NAMEPLATE.
5. FOR SERIES FAN POWERED TERMINAL UNITS ONLY.
6. FUSE ADDED IN SECOND LINE WHEN MOTOR VOLTAGE IS 208 VAC.

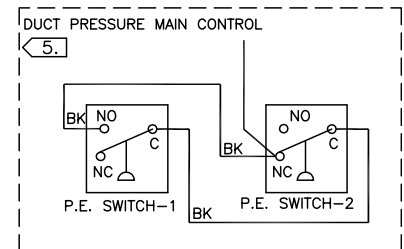
**⚠ WARNING**

HAZARDOUS VOLTAGE!  
DISCONNECT, LOCK OUT AND TAG ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.

DISCHARGE MOTOR START/RUN CAPACITORS BEFORE SERVICING.  
FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

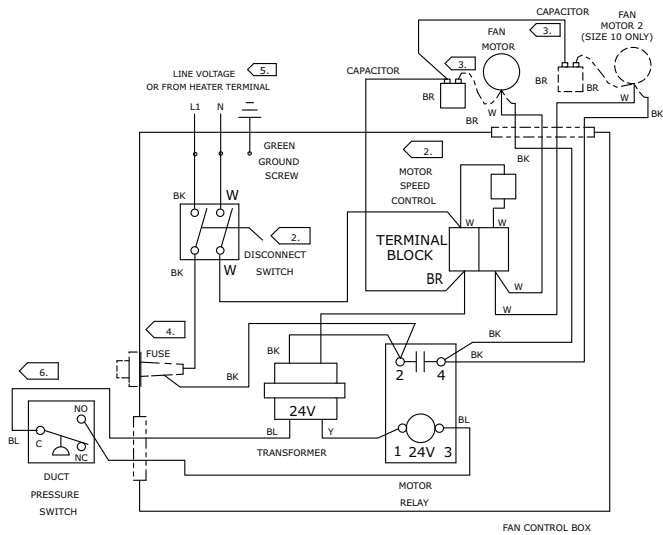
**⚠ CAUTION**

USE COPPER CONDUCTORS ONLY!  
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.  
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

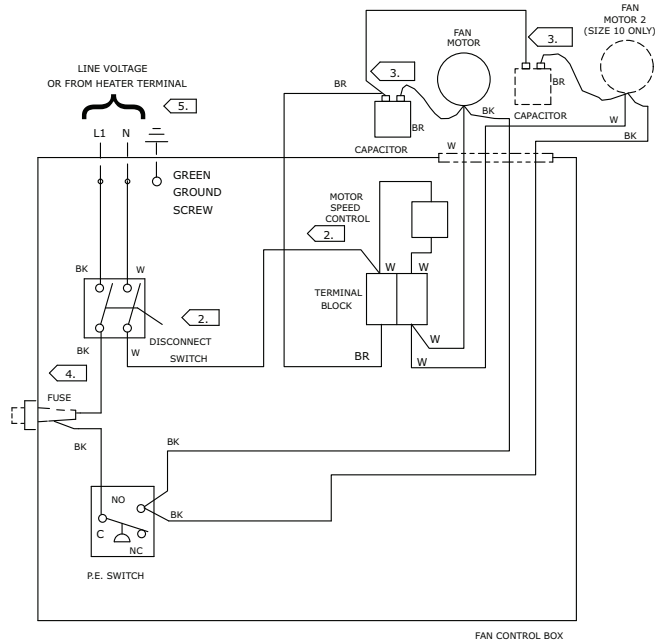


**Figure 43. Fan-Powered, low-height incl 10SQ, pneumatic options, old style**

Fan-Powered Low-Height Control Box with Pneumatic Controls  
Duct Pressure Switch Option



Fan-Powered Low-Height Control Box with Pneumatic Controls



**NOTES:**

1. \_\_\_\_\_ FACTORY INSTALLED  
 - - - - - BY OTHERS  
 - - - - - OPTIONAL OR ALTERNATE CIRCUITRY
2. DISCONNECT SWITCH, FUSE, & SCR ARE LOCATED EXTERNAL TO CONTROL BOX.
3. CAPACITOR IS INSTALLED ON FAN HOUSING.
4. FUSE IS OPTIONAL.
5. DETERMINED BY MOTOR VOLTAGE ON ORDER. VOLTAGE FOUND ON UNIT NAMEPLATE.
6. FOR SERIES FAN POWERED TERMINAL UNITS ONLY.

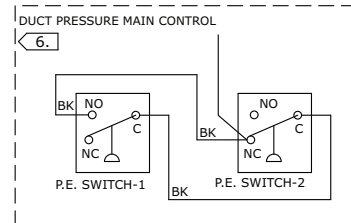
**⚠ WARNING**

HAZARDOUS VOLTAGE!  
DISCONNECT, LOCK OUT AND TAG ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.

DISCHARGE MOTOR START/RUN CAPACITORS BEFORE SERVICING.  
FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

**⚠ CAUTION**

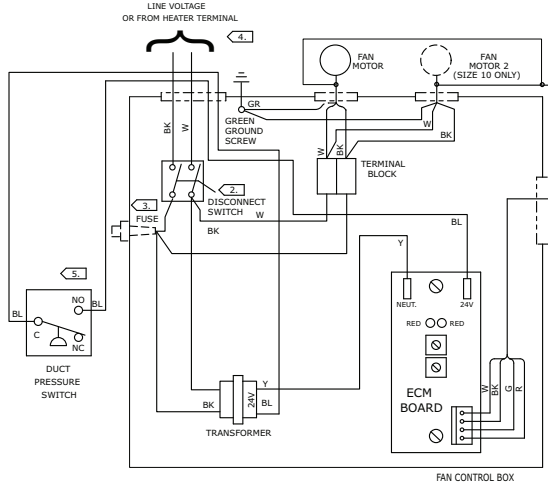
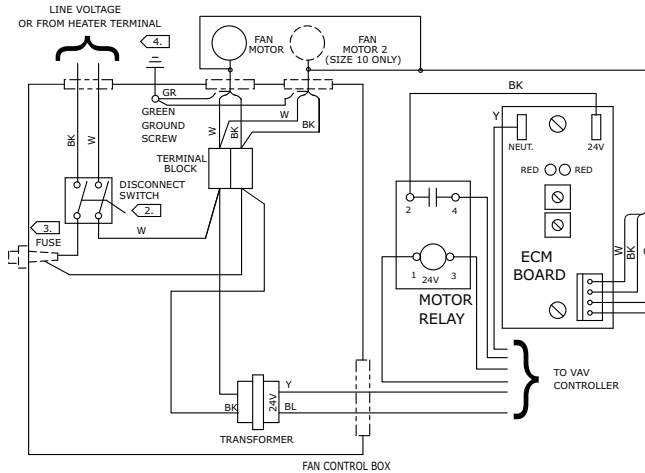
USE COPPER CONDUCTORS ONLY!  
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.  
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.



**Figure 44. Fan-powered, low-height incl 10SQ, ECM, pneumatic options, old style**

Fan-Powered Low-Height Control Box  
w/ ECM with Electronic or DDC Controls  
(Depending on the size of the unit, the ECM board  
may or may not be located in the fan control box.)

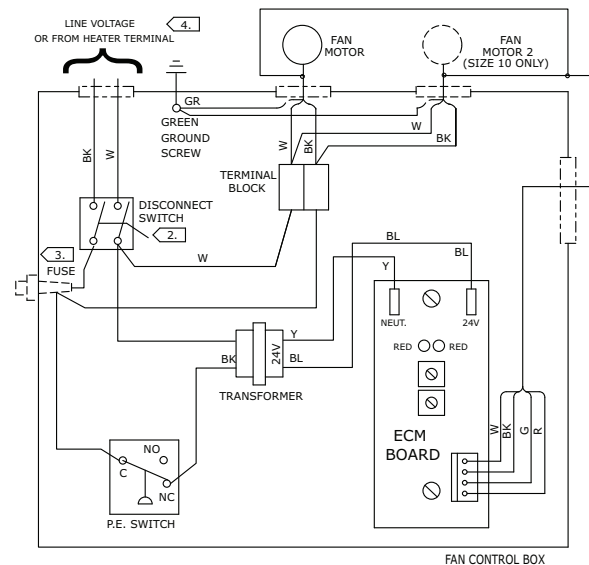
Fan-Powered Low-Height Control Box  
w/ ECM with Pneumatic Controls  
Duct Pressure Switch Option



**⚠ WARNING**  
HAZARDOUS VOLTAGE!  
DISCONNECT, LOCK OUT AND TAG ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING.  
DISCHARGE MOTOR START/RUN CAPACITORS BEFORE SERVICING.  
FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

**⚠ CAUTION**  
USE COPPER CONDUCTORS ONLY!  
UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.  
FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

Fan-Powered Low-Height Control Box w/ ECM with Pneumatic Controls



**NOTES:**

1. ———— FACTORY INSTALLED  
----- BY OTHERS  
----- OPTIONAL OR ALTERNATE CIRCUITRY
2. DISCONNECT SWITCH, FUSE, & SCR ARE LOCATED EXTERNAL TO CONTROL BOX.
3. FUSE IS OPTIONAL.
4. DETERMINED BY MOTOR VOLTAGE ON ORDER. VOLTAGE FOUND ON UNIT NAMEPLATE.
5. FOR SERIES FAN POWERED TERMINAL UNITS ONLY.





# Maintenance

Periodic maintenance of the VariTrane™ product is minimal, but necessary for efficient operation. Routine maintenance consists of inspecting/replacing the air filters of the fan-powered terminals.

## Motors

Both the Permanent Split Capacitor (PSC) and the Electrically Commutated Motor (ECM) require no lubrication during its normal life of operation.

## Fan Wheel

Routinely inspect the fan wheel for dirt or debris and cleaned as necessary.

## Filter

Routinely inspect and/or replace the filter on fan-powered terminals depending on the environmental conditions of the plenum.

## Filter Change Out

- To remove the filter, turn each of the filter retaining clips 90° (CW or CCW)
- Remove the filter and replace with new filter of the same frame size.
- Return the filter clips to their retaining position by turning them 90° (CW or CCW) back to their original position.

## Water Coil

- Periodically inspect water coils and clean fins.
- Water coils are provided with an access panel as standard to assist with inspection and cleaning.

## Fan Motor Replacement

### ⚠ WARNING

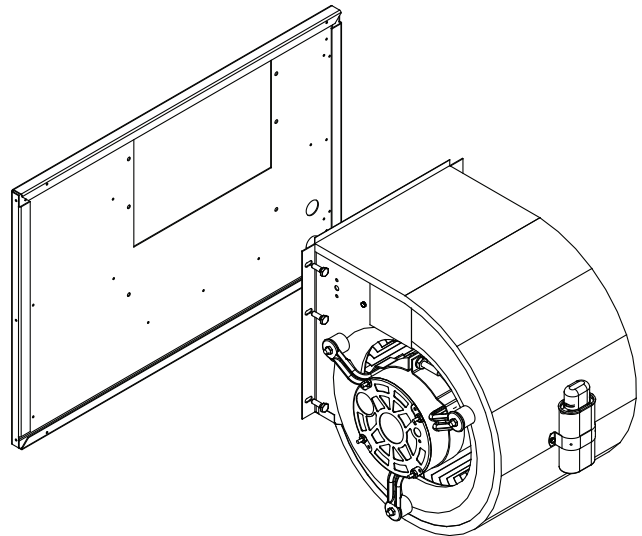
#### Hazardous Voltage w/Capacitors!

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. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

*For additional information regarding the safe discharge of capacitors, see PROD-SVB06\*-EN.*

Figure 45. Standard motor removal



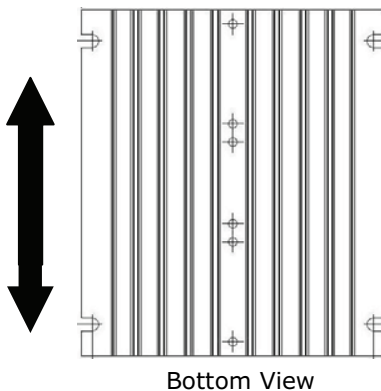
Standard height fan-powered series and parallel fan motors are replaceable through the filter opening and the standard sliding side access panel. To access the fan motor, the fan housing must be detached by removing the mounting bolts that hold the housing to the fan board. Removing the entire housing allows the fan motor, fan housing, and fan wheel to be re-aligned on a workbench or floor and prevent any possible fan wheel rubbing that may occur. Removing the housing will provide access to the motor shaft set screw that holds the fan wheel to the motor shaft.

The low height fan assembly has been designed to be removed and replaced as a complete unit.

## SCR Assembly

SCR solid state relays are used to switch a single heater stage on and off. An intelligent (Master) relay is used for all single phase applications. For three phase applications, a Master-Slave configuration is used to switch two legs of three phase power to the heater stage. The Master Relay controls one leg independently, and provides a control signal to the Slave Relay, which controls the second leg.

**Figure 46. Typical heat sink fin orientation**



Every Master or Master/Slave relay combination is mounted on a heat sink to prevent the relays from overheating during normal operation. The SCR assembly must always be mounted with the heat sink fins oriented vertically (see above) with a minimum clearance of 0.5 inches on all sides of the heat sink for cooling. Where additional cooling slots are provided in the heater, the VAV unit must be mounted with a minimum of 1 inch clearance in front of the slots.

When the 0-10 VDC control voltage is present at the Master relay in both single and three phase applications, an ON indicating LED light on the Master relay will blink continually (approximately 0.5 seconds on, 1.0 seconds off). If the load side voltage is also present at the relay(s), the Master relay LED and the Slave relay LED blink rate will increase as the control signal increases. When the control signal reaches a maximum of 10 VDC, all LEDs will be lit continuously, indicating that the relays are full-open and continuously conducting. If the control signal is present in three phase applications while the load side voltage is not, only the Master relay LED will light and the blink rate will be constant.

If the SCR assembly does not appear to be functioning properly, verify that all required voltages are present and all that all wiring is properly connected. If all these conditions are verified, and the SCR LED does not light and/or the SCR relay does not conduct, the entire SCR heat sink assembly should be changed out. Individual Master or Slave relays should not be replaced.



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VAV-SVX08P-EN 05 Dec 2020  
Supersedes VAV-SVX08N-EN (June 2020)

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