



TRANE®

Installation

Variable Frequency Drive Conversion to TR200

IntelliPak™ and Voyager™ III only



Models: Only Clarksville built units with factory installed VFDs. This includes the following Voyager III commercial units with the VAV option and IntelliPak units with the VAV and/or Statitrac™ option built prior to Trane TR200 drive units.

S*HF 20 through 75 ton

S*HG 90 through 130 ton

TC*, YC* and TE* 27.5 through 50 ton

June 2009

PART-SVN116A-EN





Warnings, Cautions and Notices

Warnings, Cautions and Notices. Note that warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provide to alert installing contractors to potential hazards that could result in personal injury or death. Cautions are designed to alert personnel to hazardous situations that could result in personal injury, while notices indicate a situation that could result in equipment or property-damage-only accidents.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

ATTENTION: Warnings, Cautions and Notices appear at appropriate sections throughout this literature. Read these carefully.

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

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

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

Important Environmental Concerns!

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

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. 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 **Contains Refrigerant!**

System contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.

⚠ WARNING

Hazard of Explosion!

Use only dry nitrogen with a pressure regulator for pressurizing unit. Do not use acetylene, oxygen or compressed air or mixtures containing them for pressure testing. Do not use mixtures of a hydrogen containing refrigerant and air above atmospheric pressure for pressure testing as they may become flammable and could result in an explosion. Refrigerant, when used as a trace gas should only be mixed with dry nitrogen for pressurizing units. Failure to follow these recommendations could result in death or serious injury or equipment or property-only damage.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards.

- Before installing/servicing this unit, technicians **MUST** put on all Personal Protective Equipment (PPE) recommended for the work being undertaken. **ALWAYS** refer to appropriate MSDS sheets and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations.
- If there is a risk of arc or flash, technicians **MUST** put on all necessary Personal Protective Equipment (PPE) in accordance with NFPA70E for arc/flash protection **PRIOR** to servicing the unit.

Failure to follow recommendations could result in death or serious injury.

Introduction

This manual describes the installation procedures required to retrofit ATV66 and ATV58 Variable Frequency Drives (VFD).

Trademarks

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General Information

About This Manual

The step-by-step instructions outlined in this manual describe the procedures required to successfully retrofit an ATV66 or ATV58 VFD 20 ton through 130 ton Intellipak™ rooftop air conditioning and 27.5 ton through 50 ton Voyager™ III rooftop air conditioning units to a Trane TR200 VFD drive. For help selecting the proper parts for this work, refer to general service bulletin PART-SVB21A-EN or the most current version of that same literature.

Note: It is recommended that technicians obtain 11" x 17" print outs of wiring diagrams for each specific project; see "Wiring Diagram Matrix," p. 22.

The installation instructions in this manual are divided into three general topic areas:

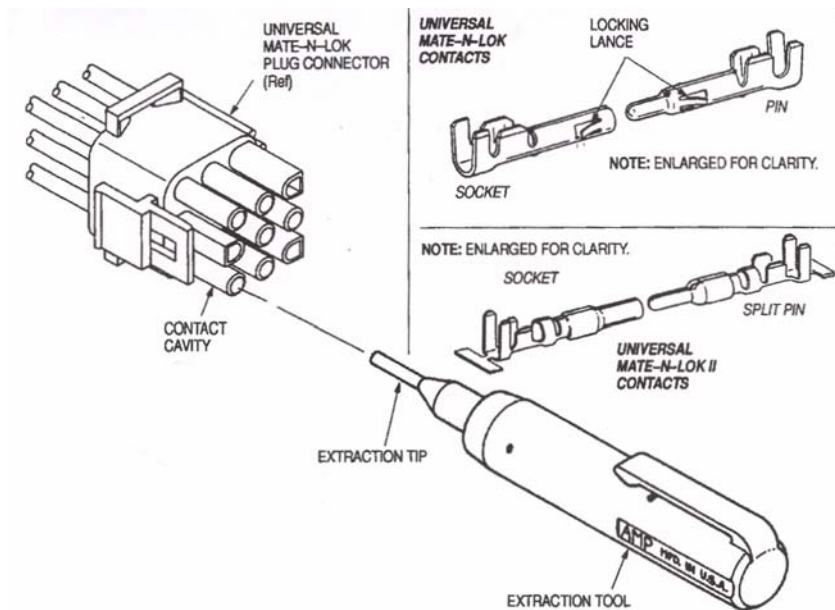
- Removal of existing VFD (ATV66 or ATV58) and components.
- Installation of replacement VFD (TR200) and components.
- TR200 programming of parameters.

Follow start-up and trouble shooting procedures outlined in the service manuals of the unit and/or the literature that is included with this TR200 control.

Tools Required

Very few tools are required to perform this installation. A service technician with a well-stocked tool chest should have the right tools to perform the job. The only special tool that is required is for the installation in a Voyager III type of unit (TC*, YC*, TE*). You will need an AMP Extraction Tool 458994-2 or an equivalent pin extraction tool (see Figure 1). It is also important to know the weight of the VFD Control Panel being replaced in case additional manpower or rigging apparatus is necessary to safely handle the VFD control panels.

Figure 1. AMP Pin extraction tool





Removing the Existing VFD and Components

The section that follows will give the procedure to replace an existing ATV66 or ATV58 VFD back panel assembly and remote keypad, cable and mounting bracket in the IntelliPak™ and Voyager™ III main control panels.

There are three communication cables to unhook from the unit VFD back panel assembly adjacent the power supply wiring. A new keypad is supplied with each VFD and must be used along with the given cable. Programming parameters are supplied and a minimum five must be set based on specific unit specifications.

VFD and Back Panel Assembly Removal

Locate existing VFD (ATV66 or ATV58) unit enclosure near the return and exhaust section as shown in [Figure 2](#) and [Figure 3, p. 7](#) for IntelliPak units and opposite supply fans on the Voyager III units as shown in [Figure 4, p. 7](#).

Identify the correct VFD for replacement. The IntelliPak rooftop can have both supply (1 or 2) and exhaust (1) VFDs.

The supply VFD is located on the back panel of the unit enclosure and the exhaust VFD is located on the inner door of the unit enclosure and must be turned to the open position for the VFD to be removed. Voyager III units only have supply VFDs and are located by the supply fan on the opposite side of the unit from the control panel.

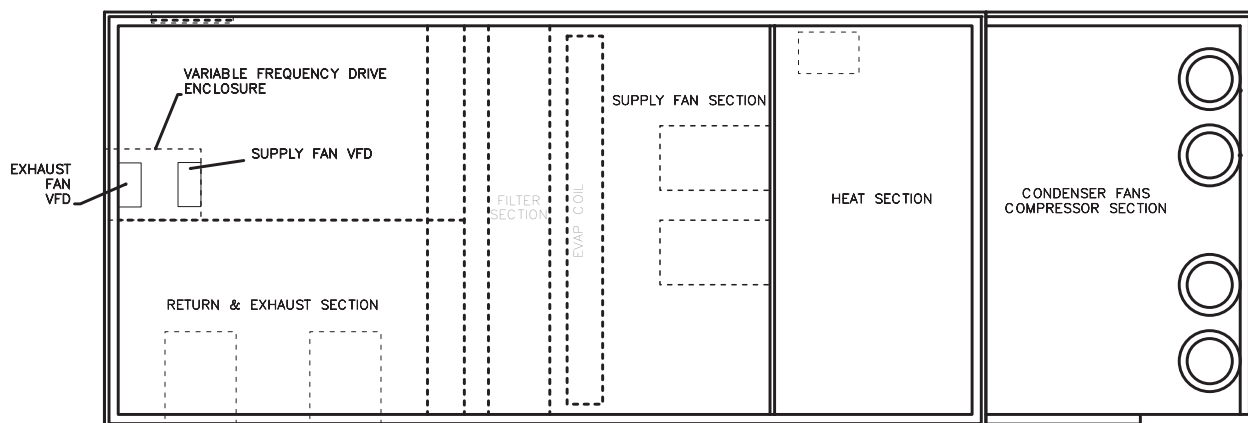
Disconnect the following power supply and control wires from each VFD. Based on the unit options and features use the appropriate paragraph and wiring diagrams.

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR

Figure 2. Typical IntelliPak 20 through 75 ton configuration



Removing the Existing VFD and Components

Figure 3. Typical IntelliPak 90 through 130 Ton configuration

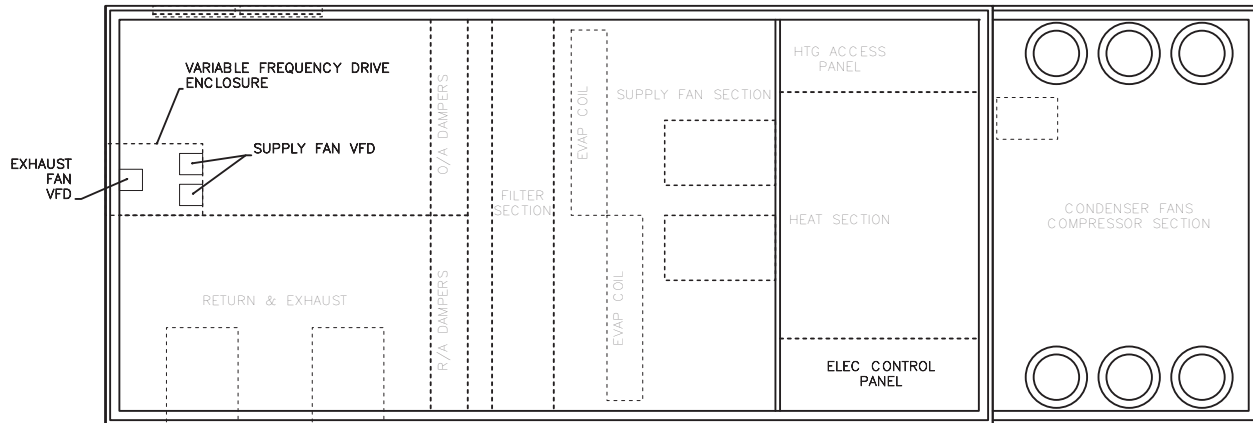
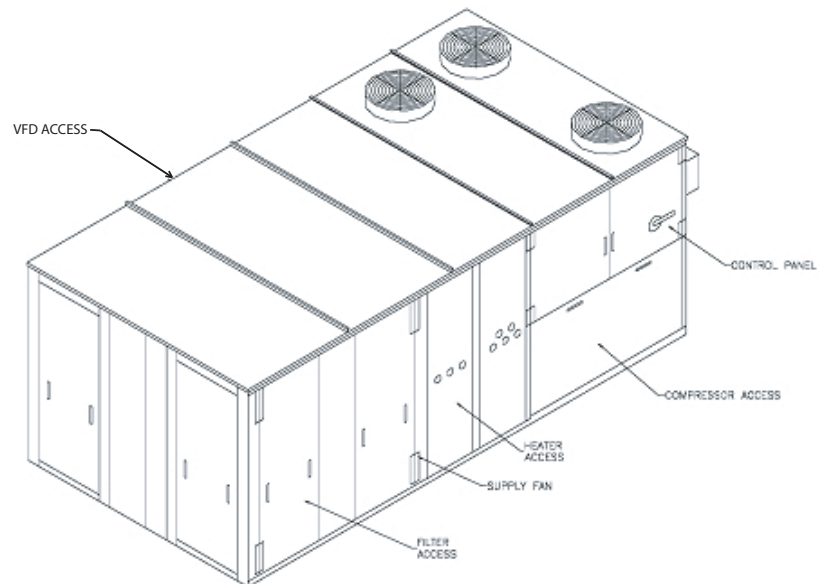


Figure 4. Typical Voyager III 27.5T through 50T Configuration



Removing the Existing VFD and Components

Power Supply Wiring Removal

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR

References to specific wiring schematics can be found in "[Wiring Diagram Matrix](#)," p. 22. Browse through the wiring diagram specifics to identify the one that best represents the options installed on the unit you are working on. The following instructions relate to either the IntelliPak or Voyager III; follow the appropriate instructions.

IntelliPak Units Power Supply Wiring Removal

VFD supply fan with bypass, with and without line reactors.

- Disconnect power supply wires, 306A, 307A, 308A on Power Block (PB) terminals L1, L2, L3 and wires 315A, 316A, 317A on Overload (OL) terminals T1, T2, T3 located on back panel [Figure 5, p. 9](#).

VFD supply fan without bypass, with and without line reactors.

- Disconnect power supply wires, 306A, 307A, 308A without line reactors and power supply wires 377A, 378A, 379A with line reactors on VFD control module terminals L1, L2, L3 [Figure 6, p. 9](#).
- Disconnect wires 315A, 316A, 317A on VFD control module terminals T1, T2, T3.

VFD exhaust fan with bypass, with and without line reactors.

- Disconnect power supply wires, 312A, 313A, 314A on Power Block (PB) terminals L1, L2, L3 and wires 321A, 322A, 323A on Overload (OL) terminals T1, T2, T3 located on back panel [Figure 5, p. 9](#).

VFD exhaust fan without bypass, with and without line reactors.

- Disconnect power supply wires, 312A, 313A, 314A without line reactors and power supply wires 383A, 384A, 385A with line reactors on VFD control module terminals L1, L2, L3 [Figure 6, p. 9](#).
- Disconnect wires 321A, 322A, 323A on VFD control module terminals T1, T2, T3.

Removing the Existing VFD and Components

Figure 5. Typical IntelliPak VFD (ATV58 or 66) control panel with bypass option

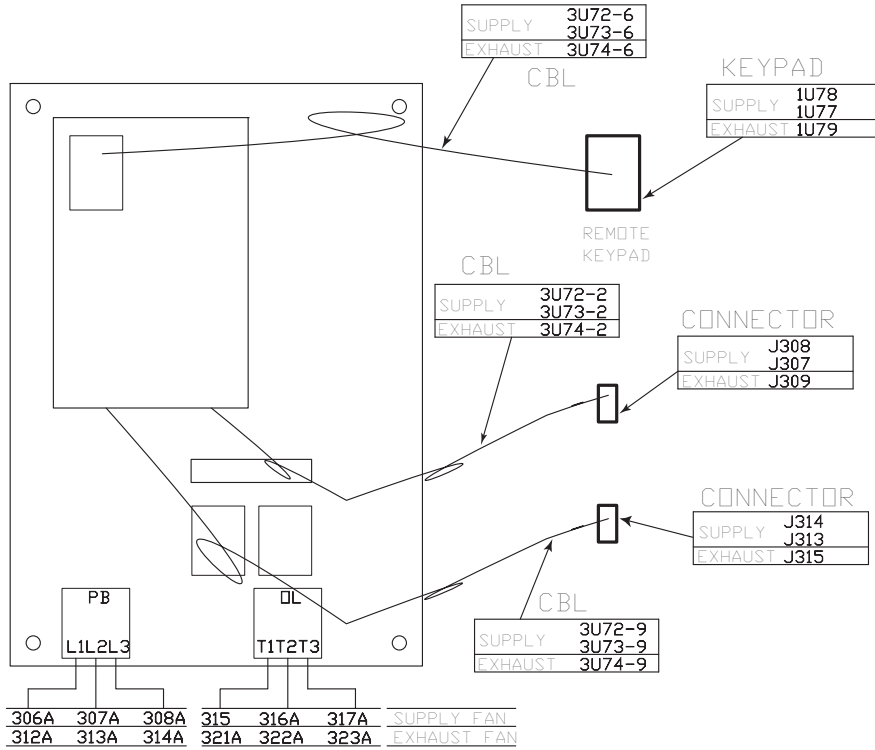
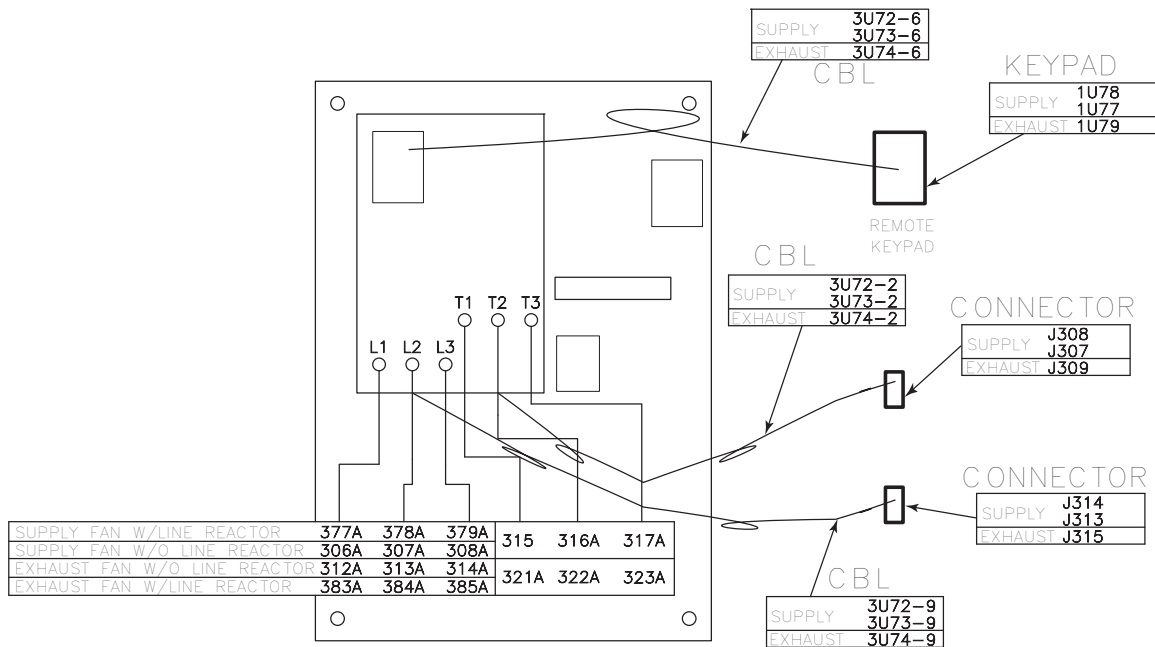


Figure 6. Typical IntelliPak VFD (ATV58 or 66) control panel without bypass option



Removing the Existing VFD and Components

Voyager III Units Power Supply Wiring Removal

⚠ WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see **PROD-SVB06A-EN** or **PROD-SVB06A-FR**

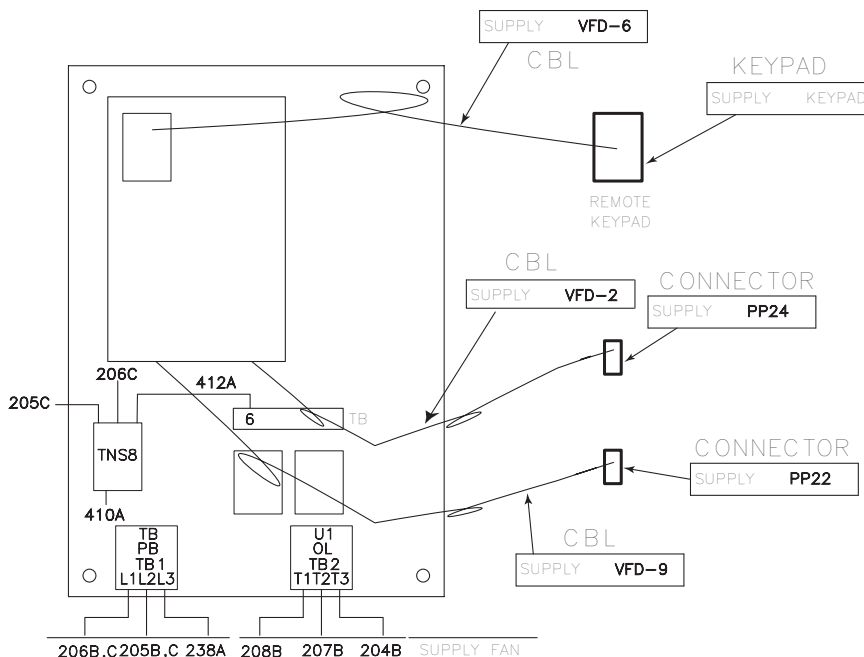
VFD supply fan with bypass.

- Disconnect power supply wires, 206B,C, 205B,C, 238A on Power Block (PB) terminals L1, L2, L3 and wires 208B, 207B, 3204B on Overload (OL) terminals T1, T2, T3 located on back panel [Figure 7, p. 10](#).

VFD supply fan without bypass.

- Disconnect power supply wires, 206B,C, 205B,C, 238A on VFD control module terminals L1, L2, L3 [Figure 8, p. 12](#).
- Disconnect wires 208B, 207B, 204B on VFD control module terminals T1, T2, T3.

Figure 7. Typical Voyager III VFD (ATV58 or 66) control panel with bypass



Control Wiring Removal

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see **PROD-SVB06A-EN** or **PROD-SVB06A-FR**

References to specific wiring schematics can be found in [“Wiring Diagram Matrix,” p. 22](#). Browse through the wiring diagram descriptions to identify the one that best represents the options installed on the unit you are working on.

IntelliPak

Disconnect remote keypad cable found connected on VFD front panel labeled CBL3U72-6, CBL3U73-6 for supply VFD and/or CBL3U74-6 for exhaust VFD with 6 pin Sub D connector. The other end of the cable is plugged into the VFD supply keypad (1U77, IU78) or exhaust keypad (IU79) located in the main unit control panel [Figure 5, p. 9](#) and [Figure 6, p. 9](#).

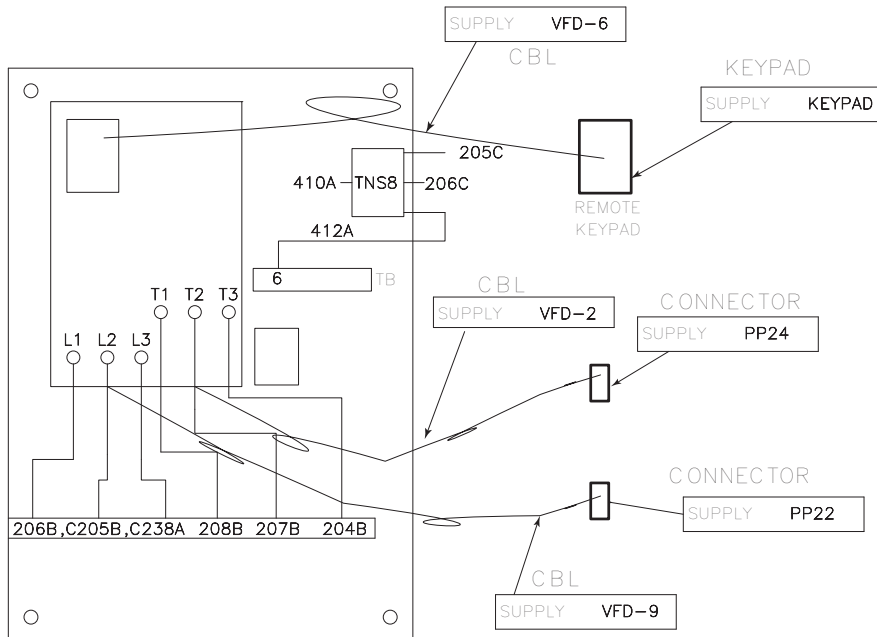
Disconnect the high voltage control wiring cable on supply fan VFD labeled CBL3U72-9, CBL3U73-9 and/or exhaust fan VFD labeled CBL3U74-9 that uses a 9-pin connector labeled J313, J314 and/or J315.

Disconnect the low voltage control wiring cable on supply fan VFD labeled CBL3U72-2, CBL3U73-2 and/or exhaust fan VFD labeled CBL3U74-2 that uses a 2-pin connector labeled J308, J307 and/or J309.

For units (90T-130T) that contain two supply VFDs, disconnect the fault interlock cable that uses the male and female 4-pin connector.

Removing the Existing VFD and Components

Figure 8. Typical Voyager III VFD (ATV58 or 66) control panel without bypass



Voyager III

⚠ WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see **PROD-SVB06A-EN** or **PROD-SVB06A-FR**

Disconnect remote keypad cable found connected on VFD front panel labeled VFD-6 for supply VFD with 6 pin Sub D connector. The other end of the cable is plugged into the VFD supply keypad located in the main unit control panel [Figure 7, p. 10](#) and [Figure 8, p. 12](#).

Disconnect the high voltage control wiring cable on supply fan VFD labeled VFD-9 that uses a 9-pin connector labeled PP22.

Disconnect the low voltage control wiring cable on supply fan VFD labeled VFD-2 that uses a 2-pin connector labeled PP2.

Disconnect the transformer/fuse (TNS8) wiring 205C, 206C from power block (PB) and 412A from terminal 6 on terminal block (TB).

Remove pin #9 with wire 410A from connector PP22 and cable VFD-9 with special extraction tool (see ["Tools Required," p. 5](#)) field supplied.

Remove transformer/fuse (TNS8) from back panel and set aside for installation to new VFD back panel.

⚠ WARNING
Heavy Objects!

Each of the cables (chains or slings) used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift. Other lifting arrangements may cause equipment or property-only damage. Failure to properly lift unit could result in death or serious injury. See details below.

After all cables and power supply wiring have been disconnected, locate back panel screws and remove the nuts and washers from each corner. The two welded studs on the top two corners can support the panel. Keyhole slots in each back panel are provided as lifting holes to attach overhead lifting devices if necessary. The weight of these panels can vary from 50 lb to 190 lb (see [Table 1, p. 13](#) for estimates). Verify actual weights before lifting. Follow safe procedures for lifting and removing the supply fan VFD drive and back panel assembly from the compartment and/or inner enclosure door if exhaust fan VFD is being removed.

TR200 Replacement Panels for Clarksville Square D Panels

Table 1. Estimated drive and back panel assembly weights

Motor Voltage	Motor Horsepower	Estimated Weight		Motor Voltage	Motor Horsepower	Estimated Weight	
		lb	kg			lb	kg
VAC	Hp			VAC	Hp		
200 or 230	1.5	50	23	460 or 575	1.5	50	23
200 or 230	3.0	50	23	460 or 575	3.0	50	23
200 or 230	5.0	50	23	460 or 575	5.0	50	23
200 or 230	7.5	65	30	460 or 575	7.5	50	23
200 or 230	10	65	30	460 or 575	10	50	23
200 or 230	15	65	30	460 or 575	15	65	30
200 or 230	20	85	40	460 or 575	20	65	30
200 or 230	25	120	56	460 or 575	25	85	40
200 or 230	30	165	76	460 or 575	30	120	56
200 or 230	40	190	88	460 or 575	40	165	76

Keypad and Cable Assembly Removal

⚠ WARNING
Hazardous Voltage!

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see [PROD-SVB06A-EN](#) or [PROD-SVB06A-FR](#)

References to specific wiring schematics can be found in "[Wiring Diagram Matrix](#)," p. 22.

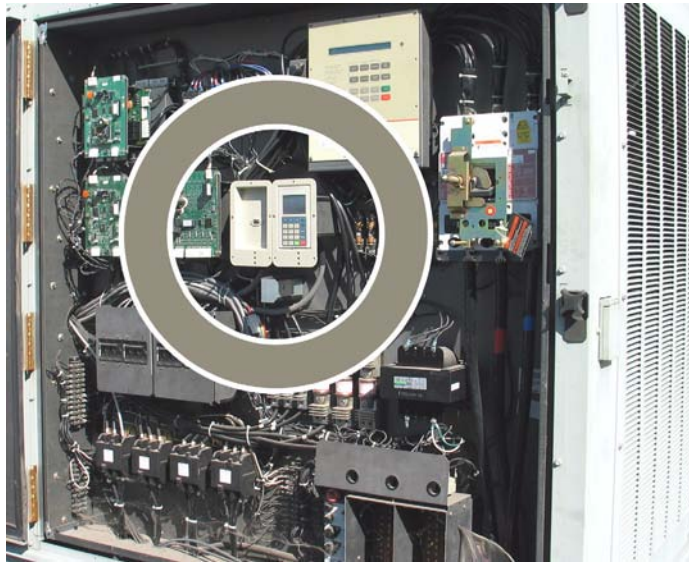
Locate the existing VFD keypad display (supply fan - IU77 and/or IU78, exhaust fan - IU79) in the main control box as shown in [Figure 2, p. 6](#) and [Figure 3, p. 7](#) for IntelliPak units and Voyager III units as shown in [Figure 4, p. 7](#).

Removing the Existing VFD and Components

Remove the keypad (IU77, IU78 and/or IU79), keypad mounting screws, bracket, and cable (CBL3U72-6, CBL3U73-6, VFD-6 and/or CBL3U74-6) completely from the unit.

On Voyager III units, the bypass switch must also be removed from the keypad mounting bracket to be mounted in the new keypad mounting bracket for the TR200 VFD.

Figure 9. Typical existing remote keypad location



Installation of TR200 VFD and Components

VFD and Back Panel Assembly for TR200

WARNING **Heavy Objects!**

Each of the cables (chains or slings) used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift. Other lifting arrangements may cause equipment or property-only damage. Failure to properly lift unit could result in death or serious injury. See details below.

Remove VFD and back panel assembly from the box and find the location (supply fan VFD mounted on back panel of VFD compartment and exhaust fan VFD mounted on inner door of VFD compartment) of the assembly in the VFD drive compartment in the IntelliPak™ and Voyager™ III units. Keyhole slots in each back panel are provided as lifting holes to attach overhead lifting devices if necessary. The weight of these panels can vary from 50 lb to 190 lb (see [Table 1, p. 13](#)). Follow safe procedures for lifting and removing the supply fan VFD drive and back panel assembly from the box.

Once the location has been determined position the VFD back panel top two corner holes on the two weld studs provided on compartment back wall for supply fan VFD or inner door panel for exhaust fan VFD (see [Figure 10, p. 16](#)).

Secure the VFD back panel assembly with nuts, washers, and lock washers in each corner of the back panel and tighten to secure to back wall of compartment for supply fan VFD or inner door for exhaust fan VFD.

Connect the three following cables: power supply, control wiring, and remote keypad.

Power Supply Wiring to TR200

References to specific wiring schematics can be found in “[Wiring Diagram Matrix](#),” p. 22.

IntelliPak ([Figure 10, p. 16](#))

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see [PROD-SVB06A-EN](#) or [PROD-SVB06A-FR](#)

VFD supply fan with bypass, with and without line reactors.

- Connect power supply wires, 306A, 307A, 308A on Terminal Block (TB) terminals L1, L2, L3 and wires 315A, 316A, 317A on Overload (U1) terminals T1, T2, T3 located on back panel.

VFD supply fan without bypass, with and without line reactors.

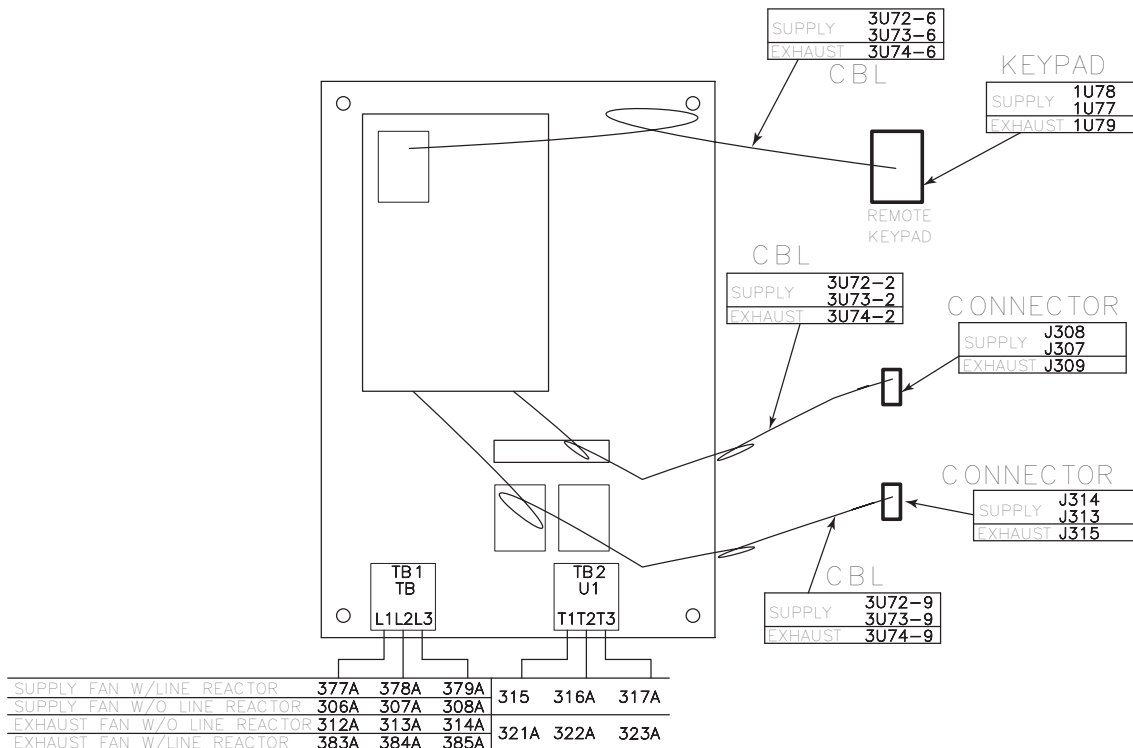
- Connect power supply wires, 306A, 307A, 308A without line reactors and power supply wires 377A, 378A, 379A with line reactors on Terminal Block (TB1) terminals L1, L2, L3.
- Connect wires 315A, 316A, 317A on Terminal Block (TB2) terminals T1, T2, T3

VFD exhaust fan with bypass, with and without line reactors.

Installation of TR200 VFD and Components

- Connect power supply wires, 312A, 313A, 314A on Terminal Block (TB) terminals L1, L2, L3 and wires 321A, 322A, 323A on Overload (U1) terminals T1, T2, T3 located on back panel.
- VFD exhaust fan without bypass, with and without line reactors.
- Connect power supply wires, 312A, 313A, 314A without line reactors and power supply wires 383A, 384A, 385A with line reactors on Terminal Block (TB1) terminals L1, L2, L3.
 - Connect wires 321A, 322A, 323A on Terminal Block (TB2) terminals T1, T2, T3.
- Ensure ground wires are properly secured per appropriate wiring schematics referenced in [“Wiring Diagram Matrix,” p. 22.](#)

Figure 10. Typical IntelliPak VFD (TR200) control panel with or without bypass option



Voyager III (Figure 11, p. 17)

⚠ WARNING Hazardous Voltage!

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see [PROD-SVB06A-EN](#) or [PROD-SVB06A-FR](#)

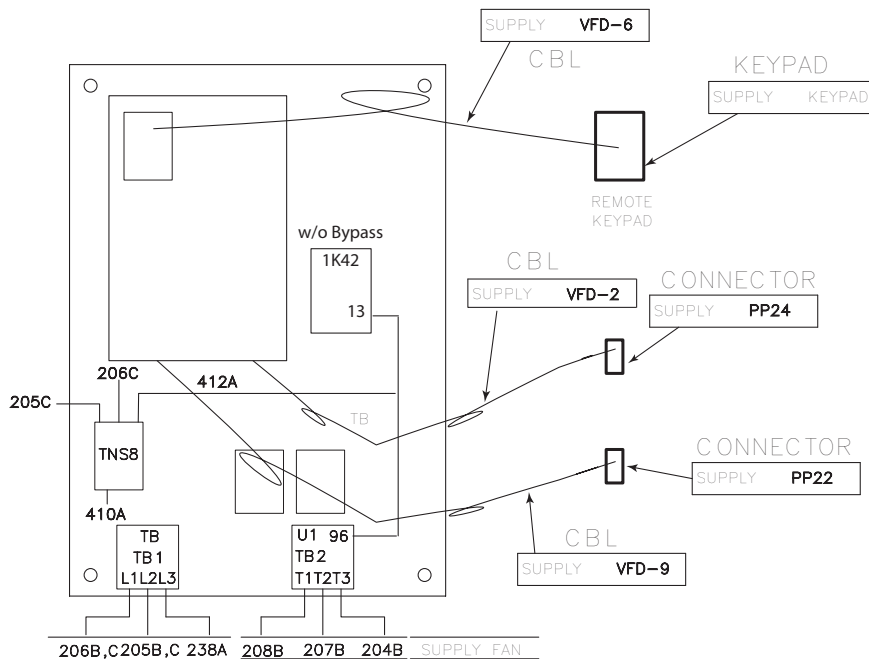
VFD supply fan with and without bypass.

Installation of TR200 VFD and Components

- Connect power supply wires, 206B,C, 205B,C, 238A on Terminal Block (TB or TB1) terminals L1, L2, L3 and wires 208B, 207B, 204B on Overload (U1 or TB2) terminals T1, T2, T3 located on back panel.

Ensure ground wires are properly secured per appropriate wiring schematics referenced in [“Wiring Diagram Matrix,” p. 22.](#)

Figure 11. Typical Voyager III VFD (TR200) control panel with or without bypass option



Control Wiring to TR200

References to specific wiring schematics can be found in [“Wiring Diagram Matrix,” p. 22.](#)

IntelliPak

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR

Remove keypad insert from front of VFD control. Connect remote keypad cable (supply fan CBL3U72-6, CBL3U73-6 and/or exhaust fan CBL3U74-6) provided with KIT to 6-pin Sub D connector on front of VFD control panel where keypad was mounted (see [Figure 12, p. 18.](#))

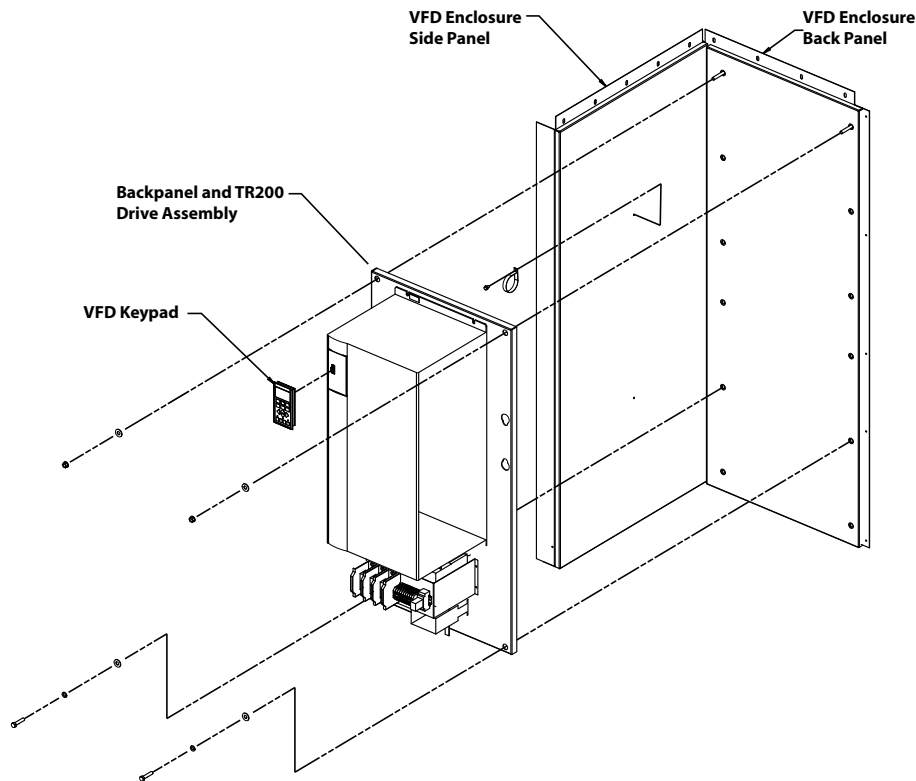
On units (90T-130T) that have two supply fan VFDs, connect the fault interlock cable that uses the 4-pin male and female connectors, P-F1.

Installation of TR200 VFD and Components

Connect the high voltage control wiring cable on supply fan VFD labeled CBL3U72-9, CBL3U73-9 and/or exhaust fan VFD labeled CBL3U74-9 that uses a 9-pin connector labeled J314 and/or J315.

Connect the low voltage control wiring cable on supply fan VFD labeled CBL3U72-2, CBL3U73-2 and/or exhaust fan VFD labeled 3U74-2 that uses a 2-pin connector labeled J308 and/or J309.

Figure 12. Typical TR200 VFD installation



Voyager III (Figure 12)

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

Note: For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR

Remove keypad insert from front of VFD control. Connect remote keypad cable (CBLVFD-6) provided with KIT to 6-pin Sub D connector on front of VFD control panel where keypad was mounted (see Figure 12).

Connect the high voltage control wiring cable on supply fan VFD labeled VFD-9 that uses a 9-pin connector labeled PP22 to the unit PP22 connector.

Connect the low voltage control wiring cable on supply fan VFD labeled VFD-2 that uses a 2-pin connector labeled PP24 to the unit PP24 connector.

Position transformer/fuse (TNS8) onto back panel of VFD where holes are provided and fasten with field provided fasteners.

Connect the transformer/fuse (TNS8) wiring 205C, 206C on terminal block (TB or TB1) and 412A on terminal 96 on overload (U1) for units with bypass option and on terminal 13 of K42 for units without bypass option.

Attach pin #9 with wire 410A to connector PP22 and cable VFD-9 with special extraction tool (see ["Tools Required," p. 5](#)) field supplied.

Keypad and Cable Assembly for TR200

WARNING **Hazardous Voltage!**

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 an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

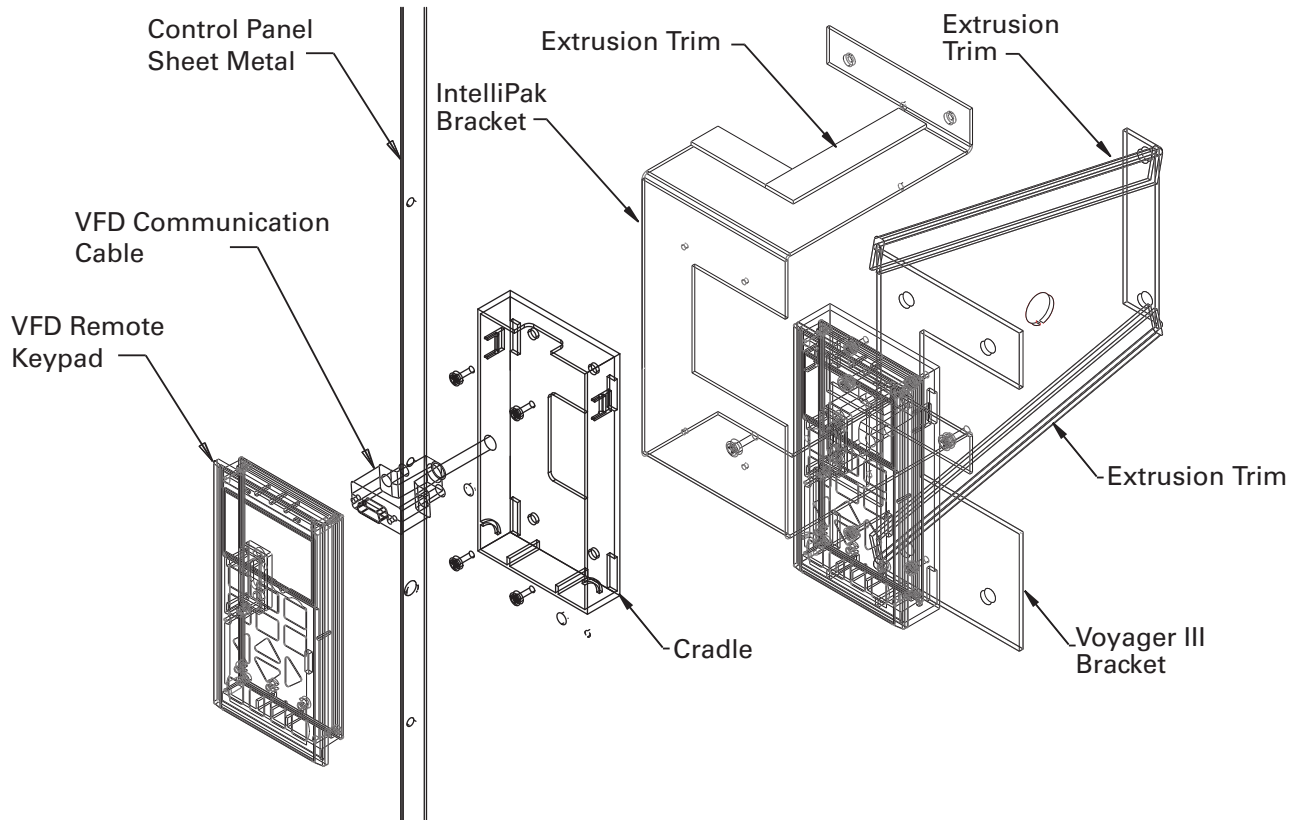
Note: For additional information regarding the safe discharge of capacitors, see PROD-SVB06A-EN or PROD-SVB06A-FR

Remove the keypad mounting bracket from supplied parts kit.

Mount the keypad from VFD control panel to mounting bracket with field-supplied screws.

Installation of TR200 VFD and Components

Figure 13. Typical TR200 VFD remote keypad installation



Thread keypad cable from VFD compartment through unit in the low electrical noise area (near roof of unit), supporting cable appropriately, to the main control panel where keypad is to be located.

Locate position for keypad mounting bracket in the main control panel on side of unit (see [Figure 2, p. 6](#), [Figure 3, p. 7](#), or [Figure 4, p. 7](#)).

Attach mounting bracket with field-supplied fasteners.

Apply flexible extrusion trim to all edges of bracket that come into contact with electrical wires and cables.

Route cable through back of mounting bracket and insert through hole where keypad is to mount.

Attach cable connector to back of keypad connection point.

Mount keypad in mounting bracket.

Secure cable appropriately in the main control panel where necessary.

On Voyager III units, mount bypass switch removed from the previous mounting bracket and install in hole provided in the new keypad mounting bracket.

Miscellaneous

Find the appropriate wiring schematic and connection drawing referenced in "[Wiring Diagram Matrix](#)," [p. 22](#), and print a copy from e-Library. Tape or glue the the printout over the wiring schematic and connection drawing found on the VFD unit enclosure door.

TR200 VFD Programming Information

Please refer to BAS-SVX19A-EN (*Operating Instructions: TR200*), or the most recent version, for complete programming information.



Wiring Diagram Matrix

Select wiring diagrams for Variable Frequency Drives based on model number:

- IntelliPak (Digit 17)

- 5 = Space Pressure Control with Exhaust/Return Variable Frequency Drive and Bypass
- 6 = VAV Supply Air Temperature Control with Variable Frequency Drive without Bypass
- 7 = VAV Supply Air Temperature Control with Variable Frequency Drive and Bypass
- 8 = Supply and Exhaust/Return Fan with Variable Frequency Drive without Bypass
- 9 = Supply and Exhaust/Return Fan with Variable Frequency Drive and Bypass

Note: Refer to RT-PRC010-EN, *Product Catalog: Packaged Rooftop Air Conditioners, IntelliPak Rooftops*, for complete model number descriptions.

- Voyager 3 (Digit 16)

- 4 = VAV Supply Air Temperature Control with Variable Frequency Drive without Bypass
- 5 = VAV Supply Air Temperature Control with Variable Frequency Drive and Bypass

Note: Refer to RT-PRC007-EN, *Product Catalog: Packaged Rooftop Air Conditioners, Voyager Commercial with ReliaTel Controls*, for complete model number descriptions.

[Table 2, p. 23](#) through [Table 7, p. 24](#) provide descriptions and Wiring Diagram Numbers for wiring schematics and connection diagrams; some complete wiring diagrams are also included (see [Figure 15, p. 26](#) through [Figure 21, p. 32](#)).

All wiring diagrams described in [Table 2](#) through [Table 7](#) are also included in e-Library. To locate wiring diagrams in e-Library, enter the eight-digit "Wiring Diagram Number," including the dash, in the **Literature Order Number** field on the left side of the e-Library window and click **Search Now**. Please check the **Current** box in the middle section of the e-Library window to make sure that the most recent version of the wiring diagram is located.

Table 2. TR200 VFD IntelliPak™ wiring schematics and connection diagrams

Wiring Diagram Number	Description
2309-3576 (see Figure 14, p. 25)	020 through 075 ton, Supply fan VFD with bypass control, rooftop single motor application
2309-3577 (see Figure 15, p. 26)	090 through 130 ton, Supply fan VFD 1 with bypass control, dual motor application
2309-3578 (see Figure 16, p. 27)	020 through 130 ton, Exhaust/return fan VFD with bypass control, rooftop
2309-3579	090 through 130 ton, Supply fan VFD 2 with bypass control, dual motor application
2309-3580 (see Figure 17, p. 28)	020 through 075 ton, Supply fan VFD without bypass control, single motor application
2309-3581 (see Figure 18, p. 29)	090 through 130 ton, Supply fan VFD 1 without bypass control, dual motor application
2309-3582 (see Figure 19, p. 30)	020 through 130 ton, Exhaust/return fan VFD without bypass control
2309-3583	090 through 130 ton, Supply fan VFD 2 without bypass control, dual motor application
2309-3587	020 through 130 ton, Constant volume, costumer connection diagram
2309-3588	020 through 130 ton, Variable air volume, costumer connection diagram

Note: Wiring diagrams are available via e-Library.

Table 3. ATV58 VFD IntelliPak wiring schematics and connection diagrams

Wiring Diagram Number	Description
2307-4569	020 through 075 ton, Supply fan with bypass, without line reactor
2307-4570	090 through 130 ton, Supply fan 1 with bypass, without line reactor
2307-4572	090 through 130 ton, Supply fan 2 with bypass, without line reactor
2307-4573	020 through 075 ton, Supply fan without bypass
2307-4574	090 through 130 ton, Supply fan 1 without bypass
2307-4576	090 through 130 ton, Supply fan 2 without bypass
2307-4579	090 through 075 ton, Supply fan with bypass, with line reactor
2307-4580	090 through 130 ton, Supply fan 1 with bypass, with line reactor
2307-4582	090 through 130 ton, Supply fan 2 with bypass, with line reactor
2307-4571	020 through 130 ton, Supply fan with bypass, without line reactor
2307-4575	020 through 130 ton, Exhaust fan without bypass and with or without line reactor
2307-4581	020 through 130 ton, Exhaust fan with, bypass with line reactor

Note: Wiring diagrams are available via e-Library.

Wiring Diagram Matrix

Table 4. ATV66 VFD IntelliPak wiring schematics and connection diagrams

Wiring Diagram Number	Description
2307-4311	020 through 075 ton, Supply fan with bypass, without line reactor
2307-4312	090 through 130 ton, Supply fan 1 with bypass, without line reactor
2307-4314	090 through 130 ton, Supply fan 2 with bypass, without line reactor
2307-4315	020 through 075 ton, Supply fan without bypass, 380/415/460 Vac
2307-4321	020 through 075 ton, Supply fan without bypass, 208/230 Vac
2307-4316	090 through 130 ton, Supply fan 1 without bypass
2307-4322	090 through 130 ton, Supply fan 1 without bypass, 208/230 Vac
2307-4318	090 through 130 ton, Supply fan 2 without bypass
2307-4324	090 through 130 ton, Supply fan 2 without bypass, 208/230 Vac
2307-4329	020 through 075 ton, Supply fan with bypass, with line reactor
2307-4330	090 through 130 ton, Supply fan 1 with bypass, with line reactor
2307-4332	090 through 130 ton, Supply fan 2 with bypass, with line reactor
2307-4313	020 through 130 ton, Exhaust fan with bypass, without line reactor, 380/415/460 Vac
2307-4317	020 through 130 ton, Exhaust fan without bypass and with or without line reactor, 208/230 Vac
2307-4323	020 through 130 ton, Exhaust fan without bypass, 208/230 Vac
2307-4331	020 through 130 ton, Exhaust fan without bypass, with line reactor

Note: Wiring diagrams are available via e-Library.

Table 5. TR200 VFD Voyager™ III wiring schematics and connection diagram

Wiring Diagram Number	Description
2309-3584 (see Figure 20, p. 31)	Voyager III fan VFD with bypass control
2309-3585 (see Figure 21, p. 32)	Voyager III fan VFD without bypass control

Note: Wiring diagrams are available via e-Library.

Table 6. ATV58 VFD Voyager III wiring schematics and connection diagrams

Wiring Diagram Number	Description
2307-4577	027 through 050 ton, Supply fan with bypass
2307-4578	027 through 050 ton, Supply fan without bypass

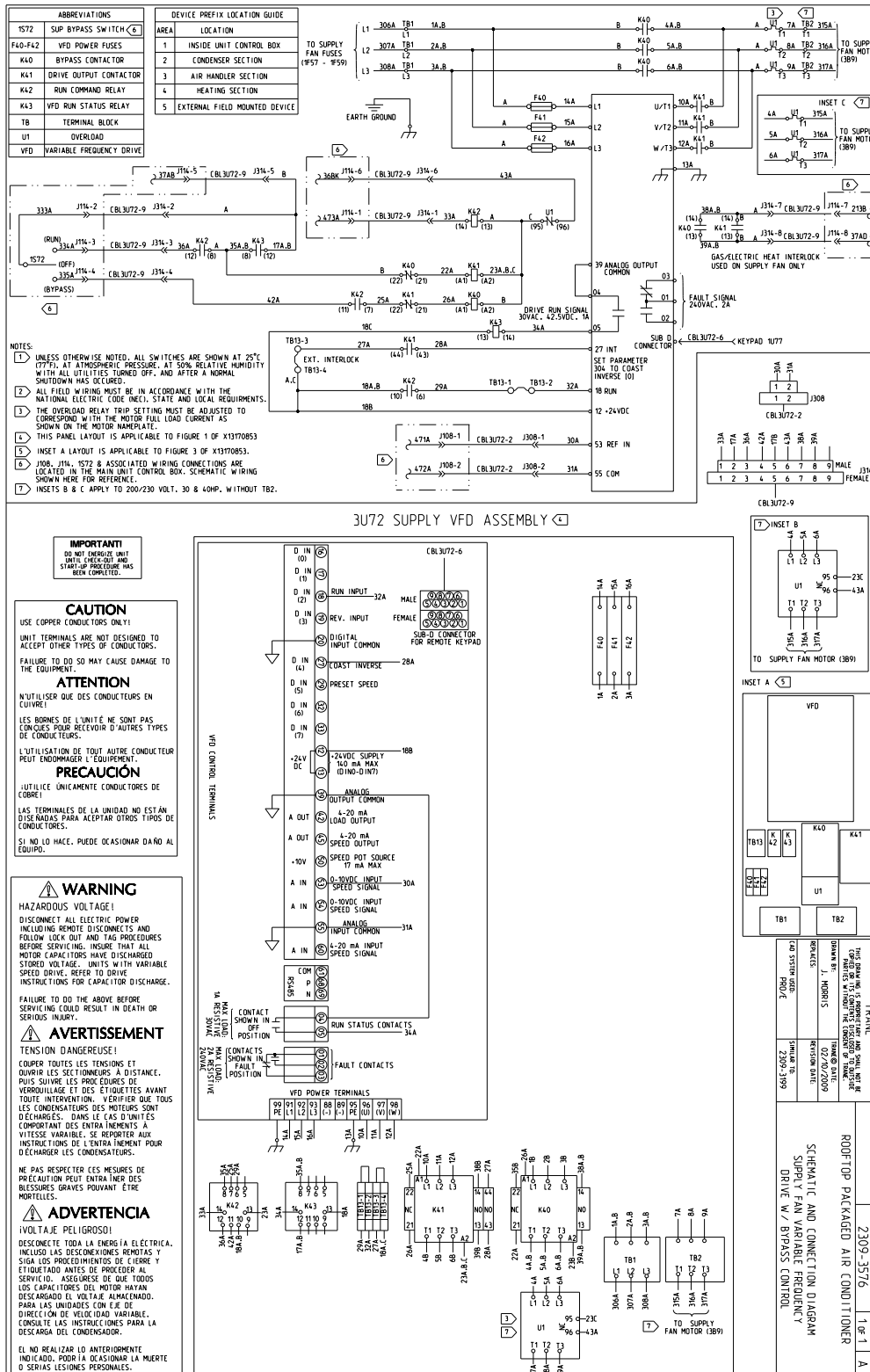
Note: Wiring diagrams are available via e-Library.

Table 7. ATV66 VFD Voyager III wiring schematics and connection diagrams

Wiring Diagram Number	Description
2307-4319	027 through 050 ton, Supply fan with bypass
2307-4320	027 through 050 ton, Supply fan without bypass
2307-4325	027 through 050 ton, Supply fan without bypass, 208/230 Vac

Note: Wiring diagrams are available via e-Library.

Figure 14. 020 through 075 ton, Supply fan VFD with bypass control, rooftop single motor application (2309-3576)



Wiring Diagram Matrix

Figure 15. 090 through 130 ton, Supply fan VFD 1 with bypass control, dual motor application (2309-3577)

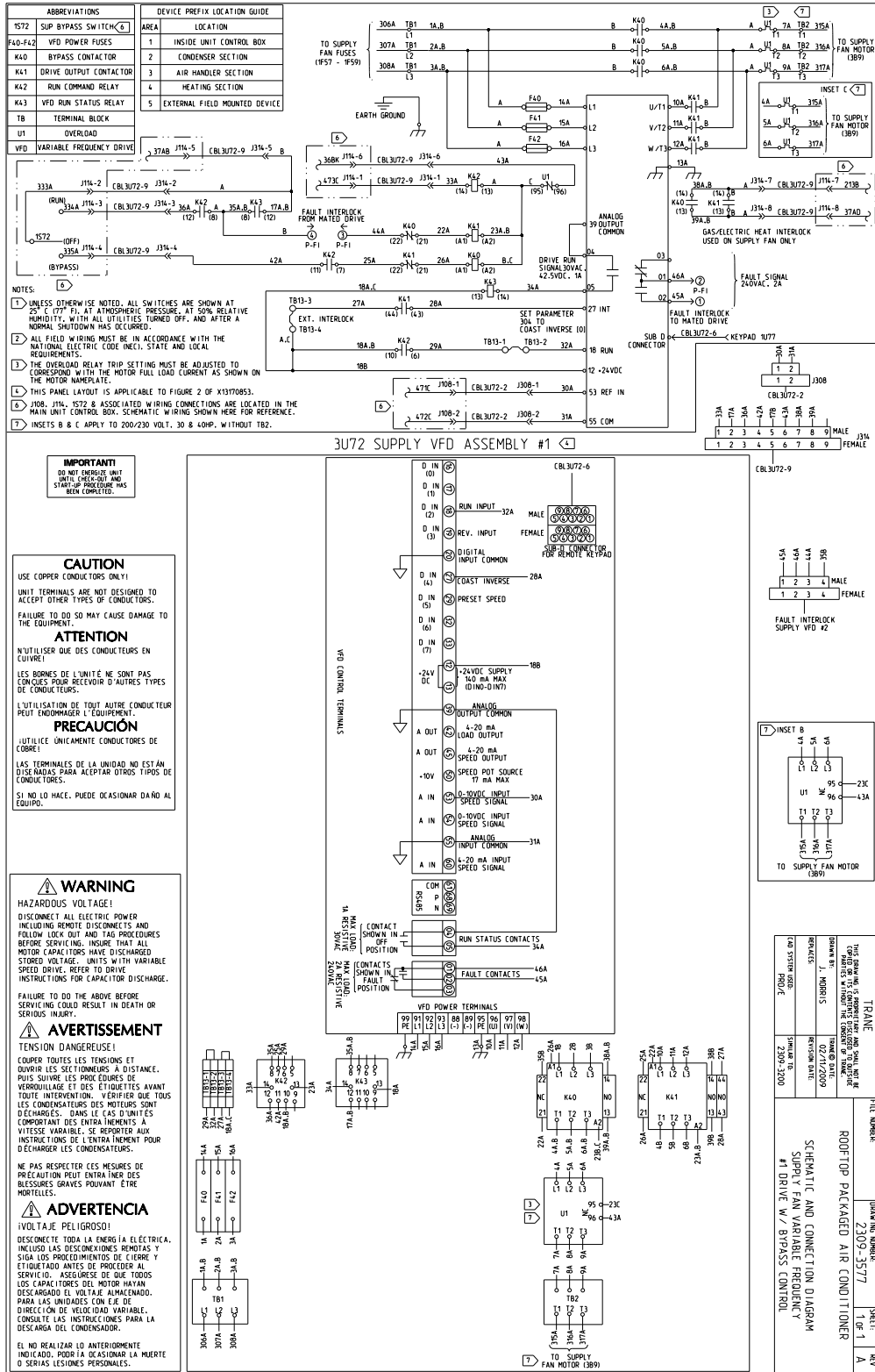
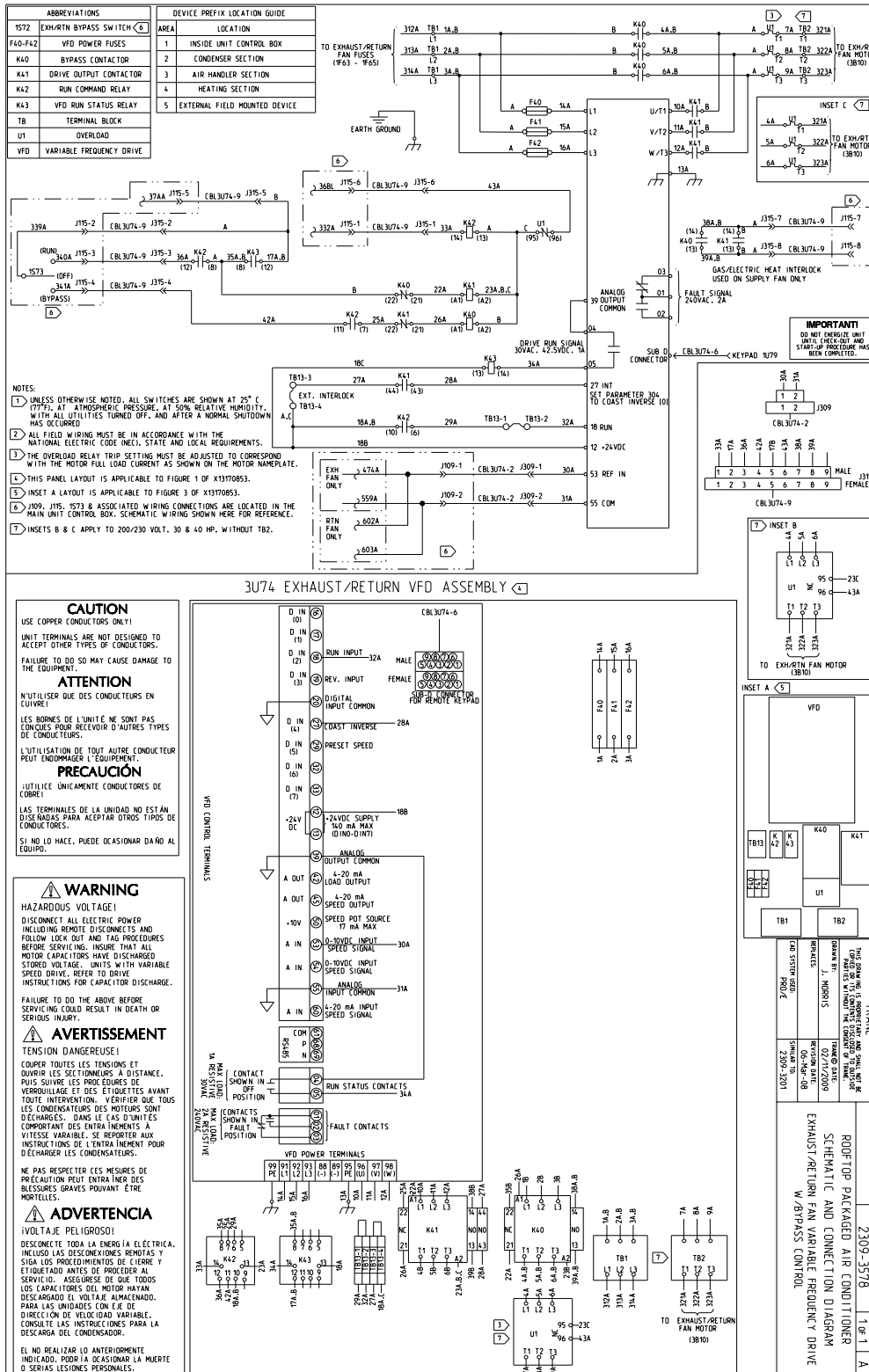


Figure 16. 020 through 130 ton, Exhaust/return fan VFD with bypass control, rooftop (2309-3578)



Wiring Diagram Matrix

Figure 17. 020 through 075 ton, Supply fan VFD without bypass control, single motor application (2309-3580)

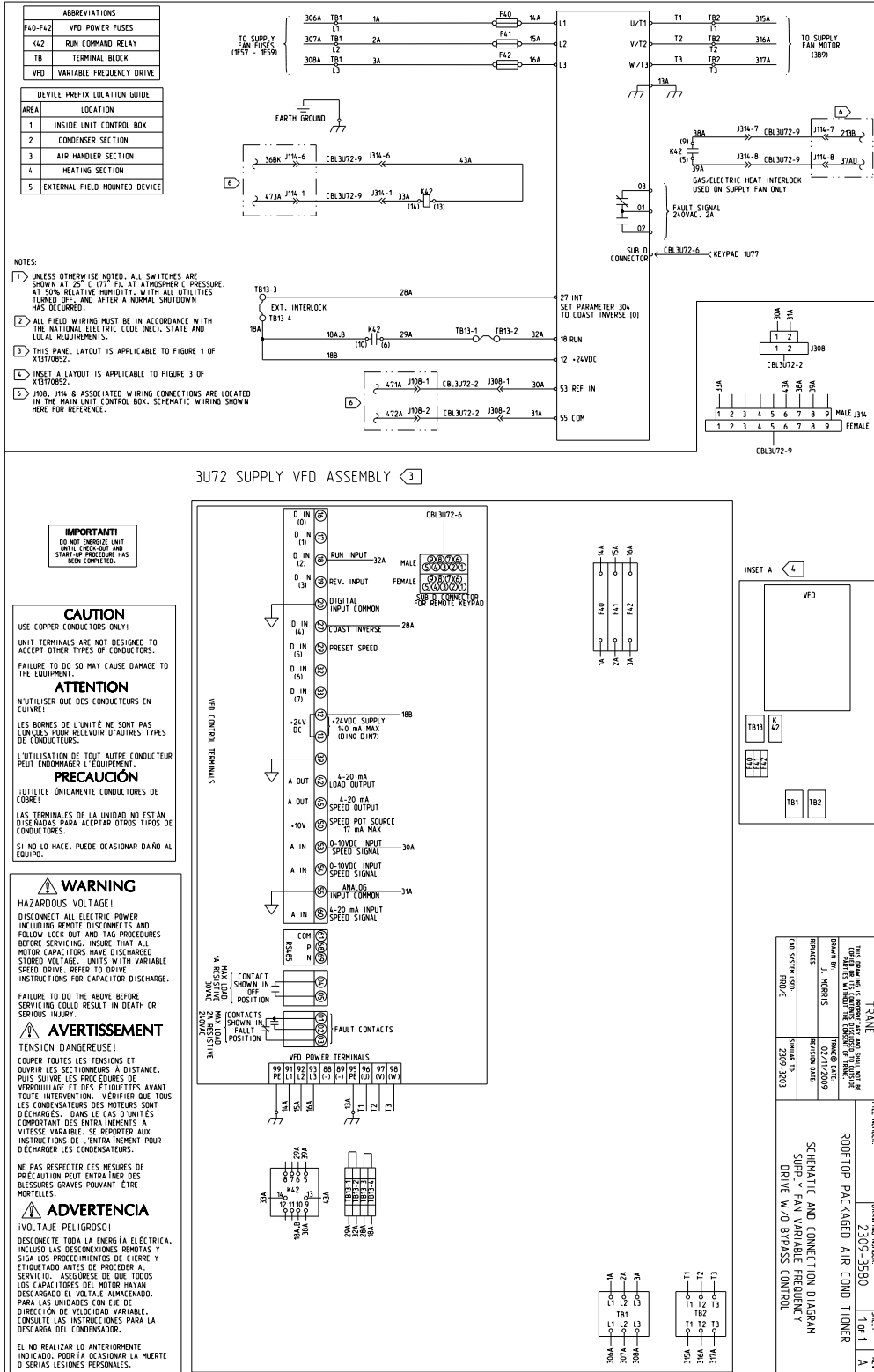
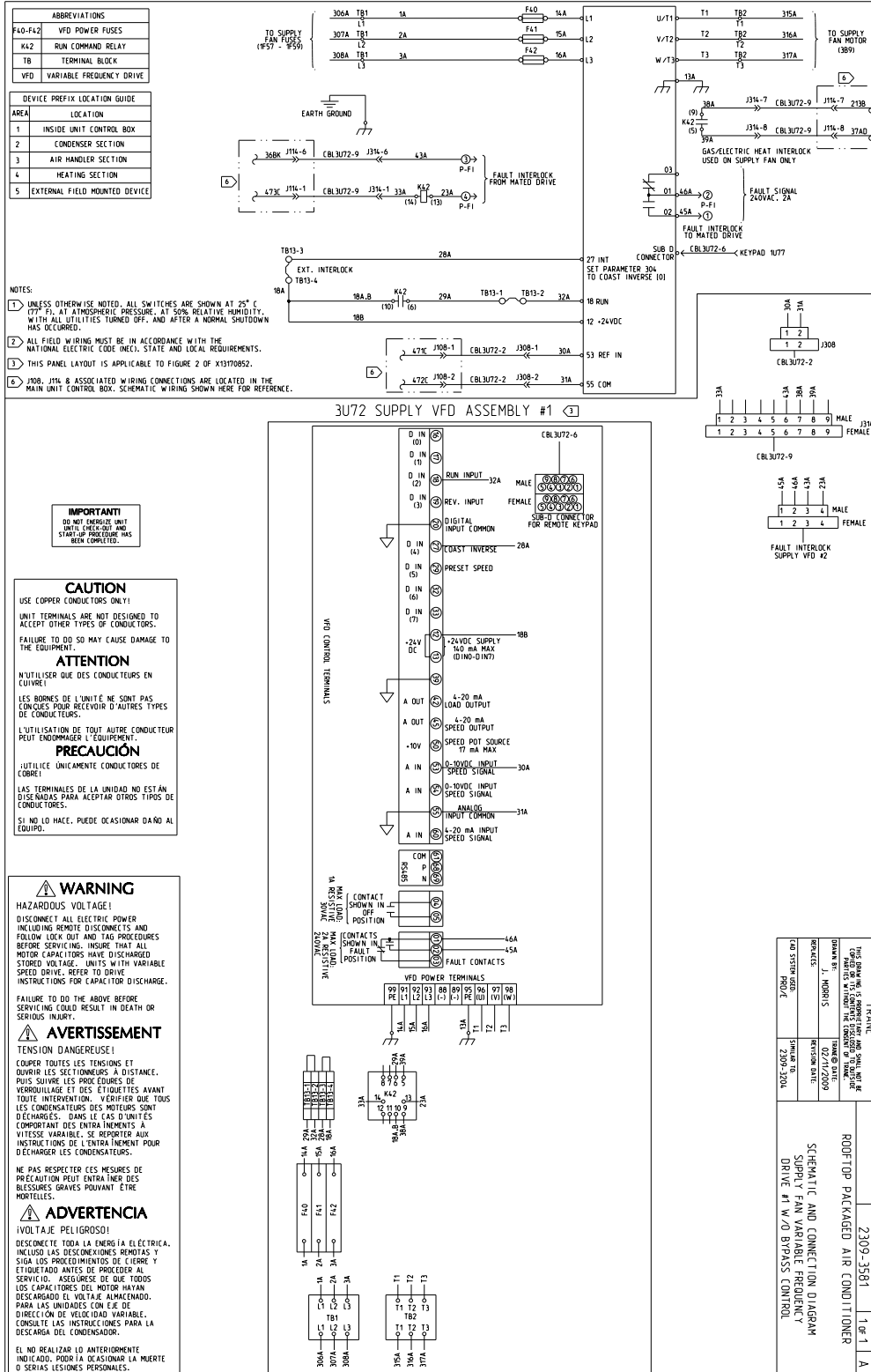


Figure 18. 090 through 130 ton, Supply fan VFD 1 without bypass control, dual motor application (2309-3581)



Wiring Diagram Matrix

Figure 19. 020 through 130 ton, Exhaust/return fan VFD without bypass control (2309-3582)

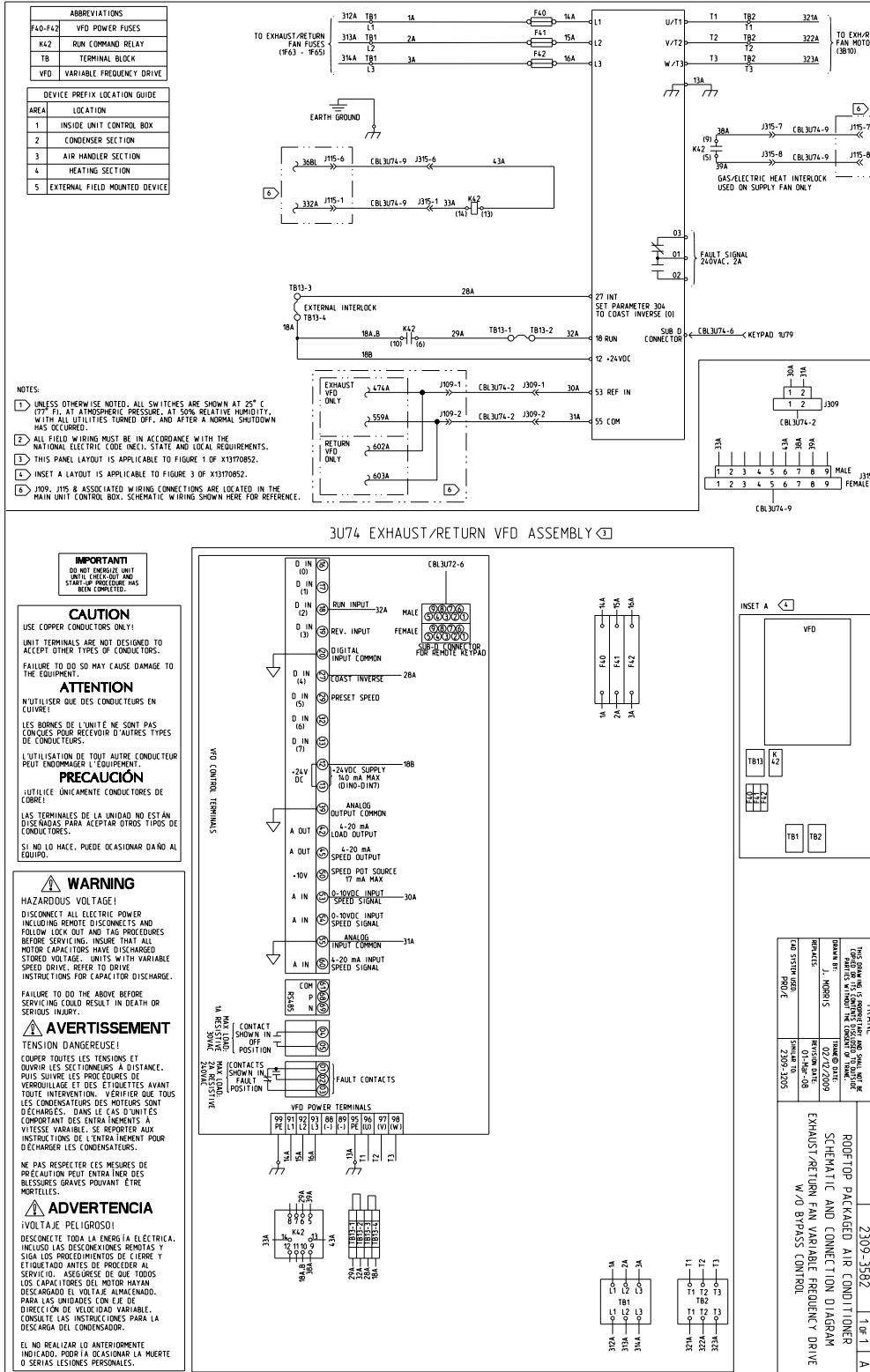
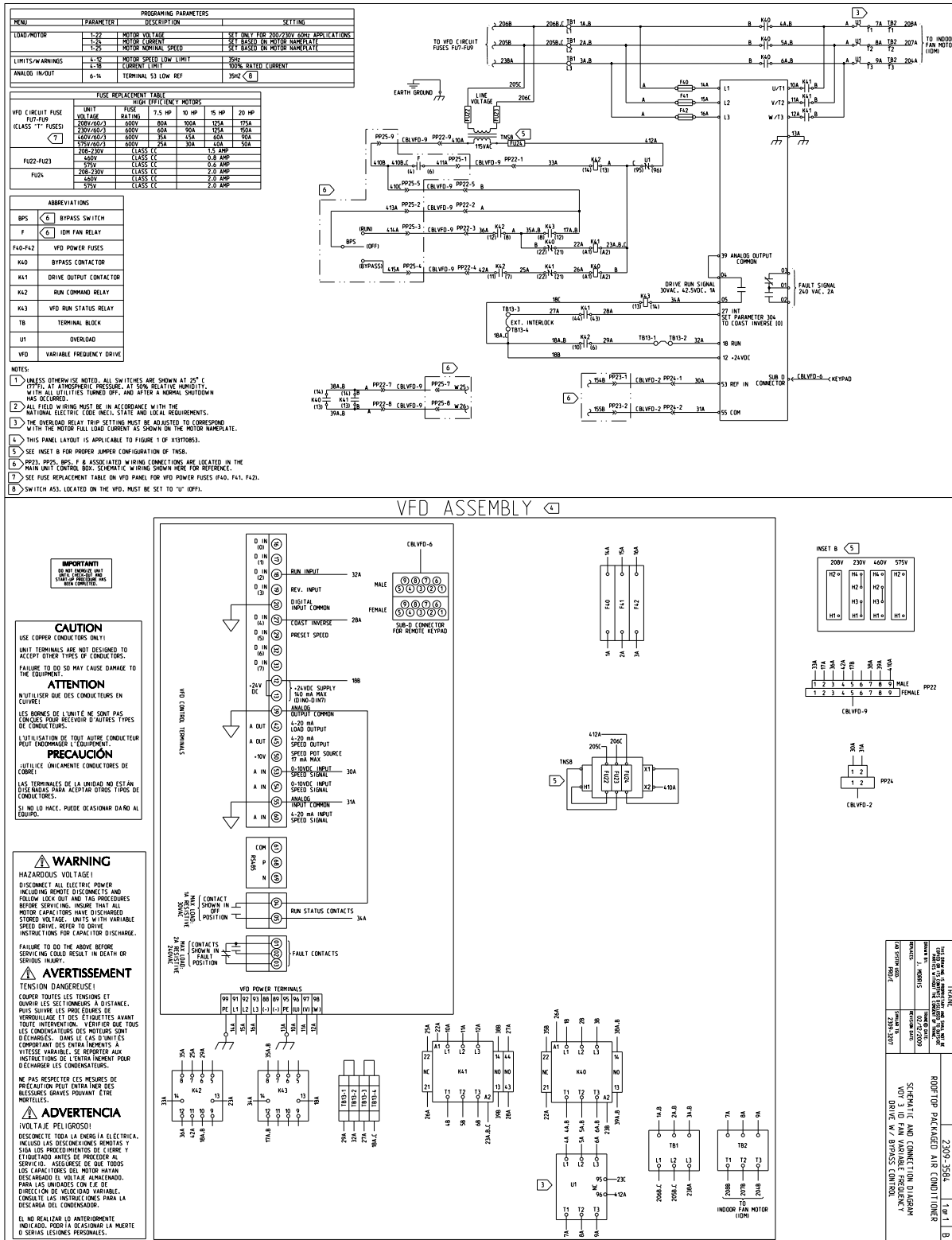
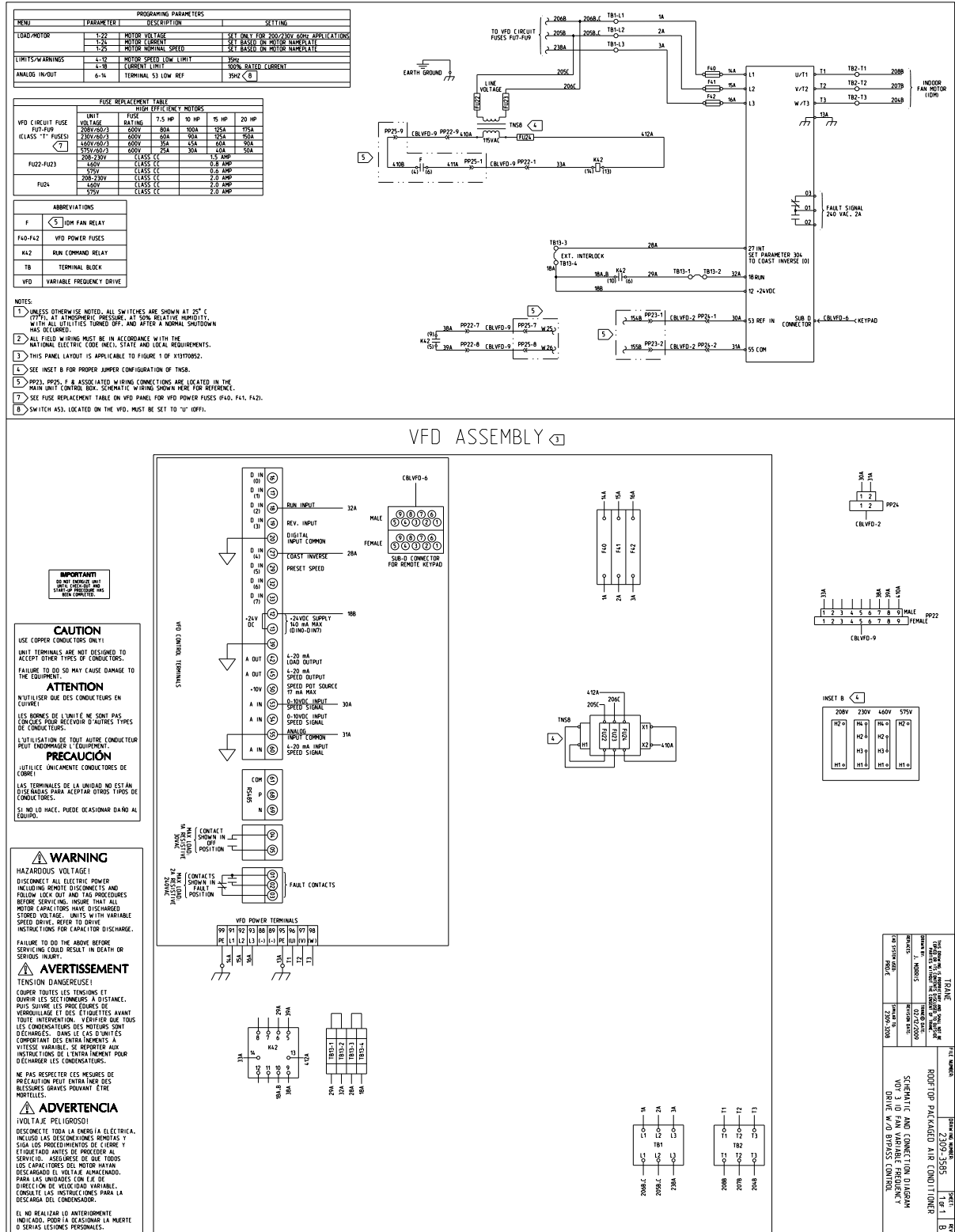


Figure 20. Voyager III fan VFD with bypass control (2309-3584)



Wiring Diagram Matrix

Figure 21. Voyager III fan VFD without bypass control (2309-3585)





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Literature Order Number	PART-SVN116A-EN
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Date	June 2009
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