



## Installation Instructions

# Adaptive Frequency Drive 3 (AFD3)

Fan Kit (KIT18925)

Stealth RTAE

Model Number: Stealth RTAE

This document applies to service offering applications only.

### 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:

- ⚠ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- ⚠ CAUTION** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
- NOTICE** Indicates a situation that could result in equipment or property-damage only accidents.

## Important Environmental Concerns

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

## Important Responsible Refrigerant Practices

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

**⚠ WARNING**

**Proper Field Wiring and Grounding Required!**

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

**⚠ WARNING**

**Personal Protective Equipment (PPE) Required!**

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

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

**⚠ WARNING****Follow EHS Policies!**

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

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

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## Revision History

Document updated to reflect Service Offering number.



# General Information

The following sections outline the installation of the fan kit (KIT18925) for Adaptive Frequency Drive 3 (AFD3).

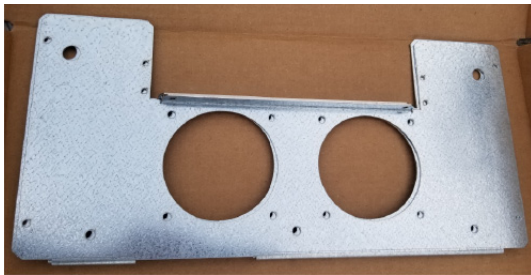
**Important:** *Trane auxiliary frame A (716251) should be shipped with this installation document.*

The kit includes the following items:

Item	Kit Description
2	Replacement Drive Chassis Sheet Metal
4	Fans
4	Fan Grilles
16	Fan Screws and Nuts
2	Fan Wire Harness
1	24Vdc, 5A Power Supply
3	Terminal Blocks
1	Terminal Block Jumpers
4	Wire Splices

Item	Kit Description
20 feet	18AWG UL 1230 (105C TEMP RATING) Wire
4	UL Listed Fork Terminals
10	Wire Ties

**Figure 1. Replacement drive chassis sheet metal with fan holes**



**Figure 2. Fans, grilles mounting fasteners and fan wire harnesses**



**Figure 3. Power supply, terminal blocks, jumpers splices and wire**



# 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.

## Fan Installation

1. Install the fans onto replacement sheet metal. The fans should mount on the outside of the drive (lip in middle of replacement sheet metal points out). Ensure that the arrows on fan point into the drive (air flow in the up direction). Be careful not to overtighten the screws to avoid breaking the plastic fan housing, and do not forget to include the grilles.

Figure 4. Fan installation



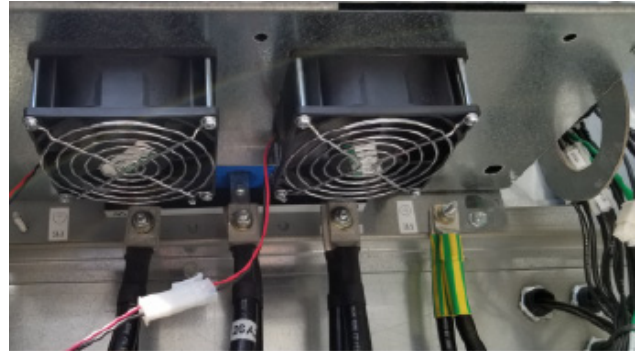
2. Remove the lexan covers from each drive.
3. Remove the drive chassis sheet metal on the bottom side (output terminal side). There are three screws on the front lower edge and four screws on the bottom side.

Figure 5. Removing drive chassis sheet



4. Install the replacement drive chassis sheet metal with fans.
5. Reinstall the lexan covers for each drive.

Figure 6. Replacing drive chassis sheet



## Electrical Wiring

1. Terminal block 1X3 require the components to be shifted to right end of terminal block DIN rail to make room for new 24 Vdc power supply. This will be mounted directly to left of 1Q1 relay.
2. Install two additional terminal blocks on 1X3 DIN rail to left of newly added 24 Vdc power supply.

Figure 7. Installing additional terminal block

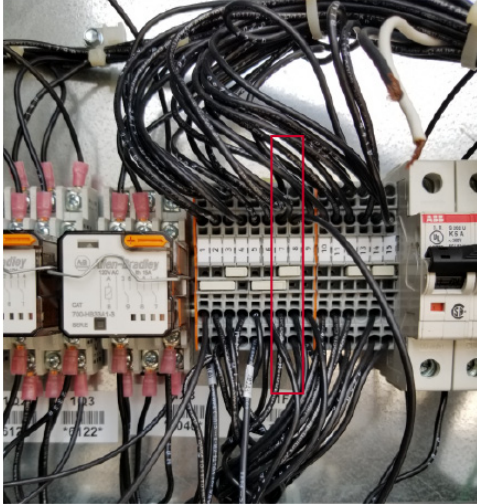




## Installation

- If terminal block 1X3-8 is not present on unit, mount the third terminal block between 1X3-7 and 1X3-9. Install a terminal jumper between 1X3-7 and 1X3-8.

**Figure 8. Installing terminal jumper**



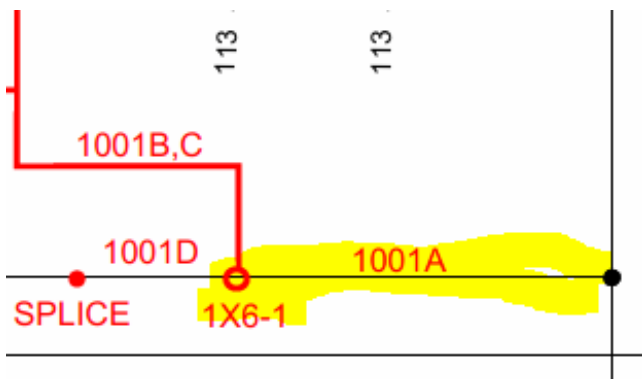
- Remove wire 201D from 1X3-1 and place open lead in 5 position WAGO 221 cage clamp.

**Figure 9. Removing wire 201D from 1X3-1**



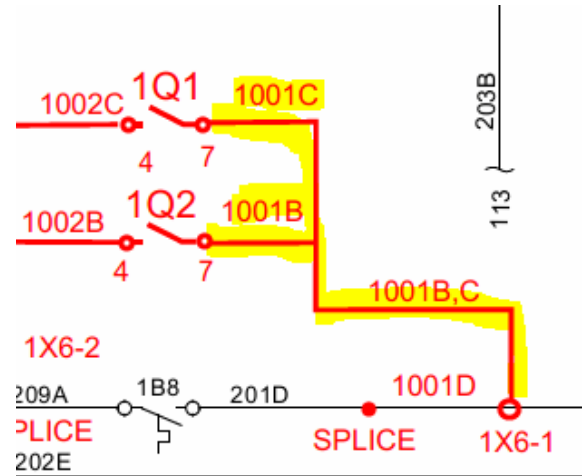
- Run new wire (labeled 1001A) for terminal 1X3-1 that 201D was previously populated to open terminal on 1X6-1.

**Figure 10. Running new wire for a terminal**



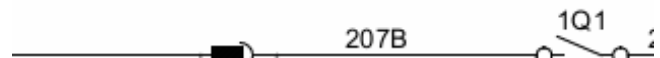
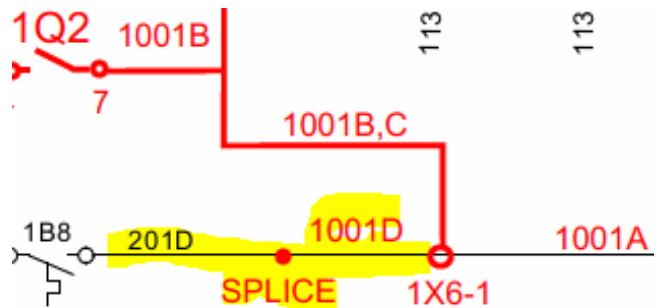
- Run two new wires from vacant terminals on 1X6-1 to each 1Q2-7 (labeled 1001B) and 1Q1-7 (labeled 1001C). Install the fork terminals on wire ends being terminated on 1Q2-7 and 1Q1-7.

**Figure 11. Running two new wires from vacant terminals**



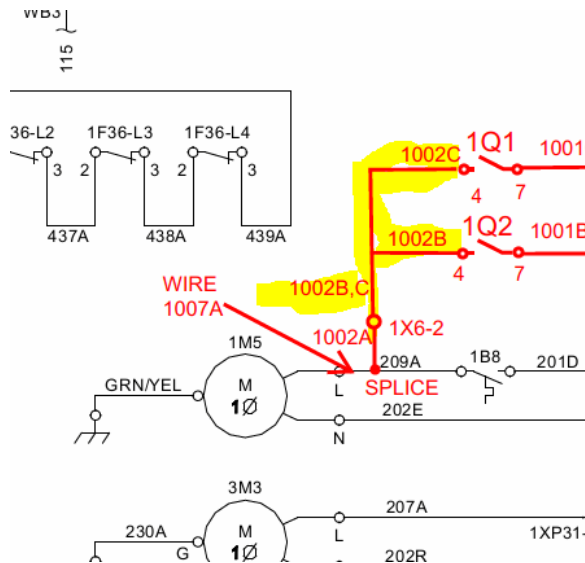
- Run (labeled 1001D) new wire from last vacant terminal on 1X6-1 to vacant position in WAGO cage clamp that 201D was terminated.

**Figure 12. Running new wire from last vacant terminal**



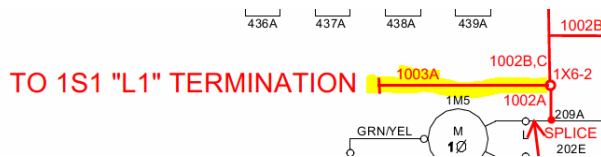
- Run two new wires from each 1Q2-4 (labeled 1002B) and 1Q1-4 (labeled 1002C) to two vacant terminals on 1X6-2. Fork terminals will need to be installed on wire ends being terminated on 1Q2-4 and 1Q1-4.

**Figure 13. Running two new wires from each 1Q2-4 and 1Q1-4 to two vacant terminals**



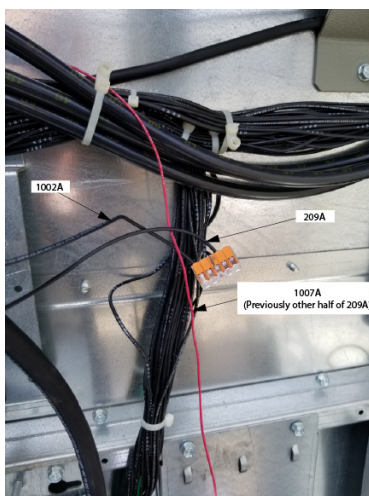
9. Run new wire (labeled 1003A) from vacant terminal on 1X6-2 to L1 terminal on new 24Vdc power supply (1S1).

**Figure 14. Running new wire from vacant terminal**



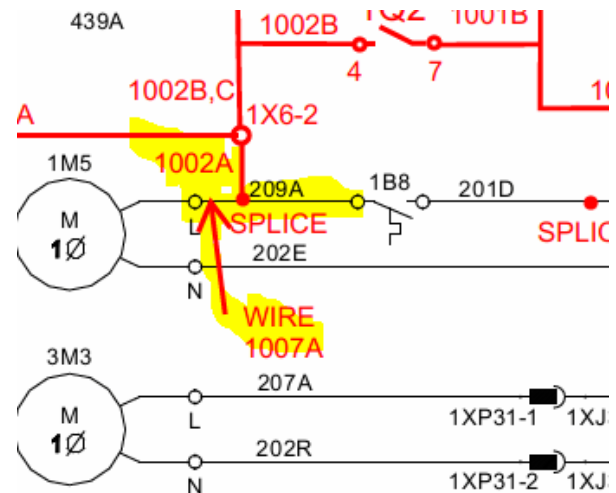
10. Locate wire 209A within wire bundle running vertical between both drives (trace out wire 209A starting from enclosure panel fan terminations). Cut wire 209A roughly 6 inch above the drive mounting bracket running across panel. Strip ends of cut wire and terminate in a new 5 position WAGO terminal cage clamp. Relabel lower cut wire end 1007A.

**Figure 15. Locating wire in wire bundle**



11. Run new wire (labeled 1002A) from last vacant terminal on 1X6-2 to vacant terminal in WAGO in addition to both 209A and 1007A wires.

**Figure 16. Running new wire in vacant terminal in WAGO**



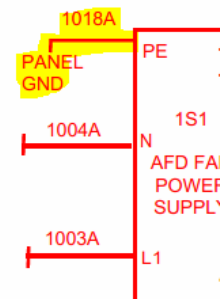
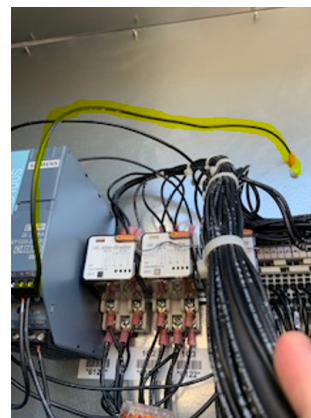
12. Run new wire (labeled 1004A) from vacant terminal on 1X3-8 to N termination on 24Vdc power supply (1S1).

**Figure 17. Running new wire from vacant terminal**



13. Run new wire (labeled 1018A) from ground termination (labeled PE on power supply) to panel ground screw above terminal strip 1X3. Fork terminal will need to be installed on panel ground end.

**Figure 18. Running new wire from ground termination**



## Single Drive Unit

**Important:** This section is **ONLY** required if unit has a single drive. If unit has two drives, see “Dual Drive Units,” p. 8.

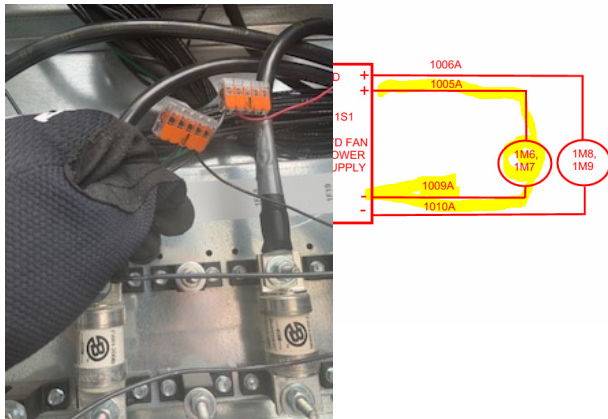
**⚠ WARNING**

**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.

1. Run two new wires, one from left (+)(labeled 1005A) on new 24 Vdc power supply 1S1 to red wire lead on VFD 1T1 fan harness and one from left (-)(labeled 1009A) termination on new 24 Vdc power supply 1S1 to black wire lead on the VFD 1T1 fan harness. WAGO 5 position cage clamps is used to secure both the wire connections. Make splice termination close to 209A/1007A splice location. This may require cutting back fan harness wires.

**Figure 19. Running new wires from power supply**



2. Use wire ties to route new connections with existing harness routing if possible.

## Dual Drive Units

**Important:** This section is **ONLY** required if unit has two drives. For units with only one drive, see “Single Drive Unit,” p. 8.

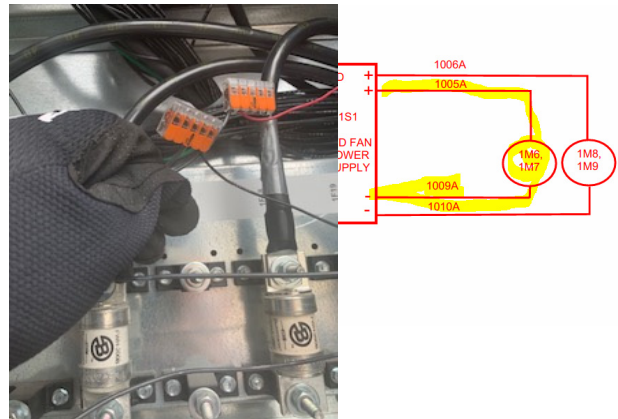
**⚠ WARNING**

**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.

1. Run two new wires, one from left (+)(labeled 1005A) on new 24 Vdc power supply 1S1 to red wire lead on VFD 1T1 fan harness and one from left (-)(labeled 1009A) termination on new 24 Vdc power to black wire lead on the VFD 1T1 fan harness. WAGO 5 position cage clamps are used to secure both the wire connections. Make splice termination close to 209A/1007A splice location. This may require cutting back fan harness wires.

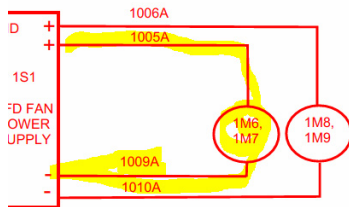
**Figure 20. Running new wires from one side**





- Run two new wires, one from right (+)(labeled 1005A) on new 24 Vdc power to red wire lead on VFD 1T2 fan harness and one from left (-)(labeled 1010A) termination on new 24 Vdc power to black wire lead on the VFD 1T2 fan harness. WAGO 5 position cage clamps are used to secure both the wire connections. Location of splice is not as critical for these drive fans.

Figure 21. Running two new wires from right

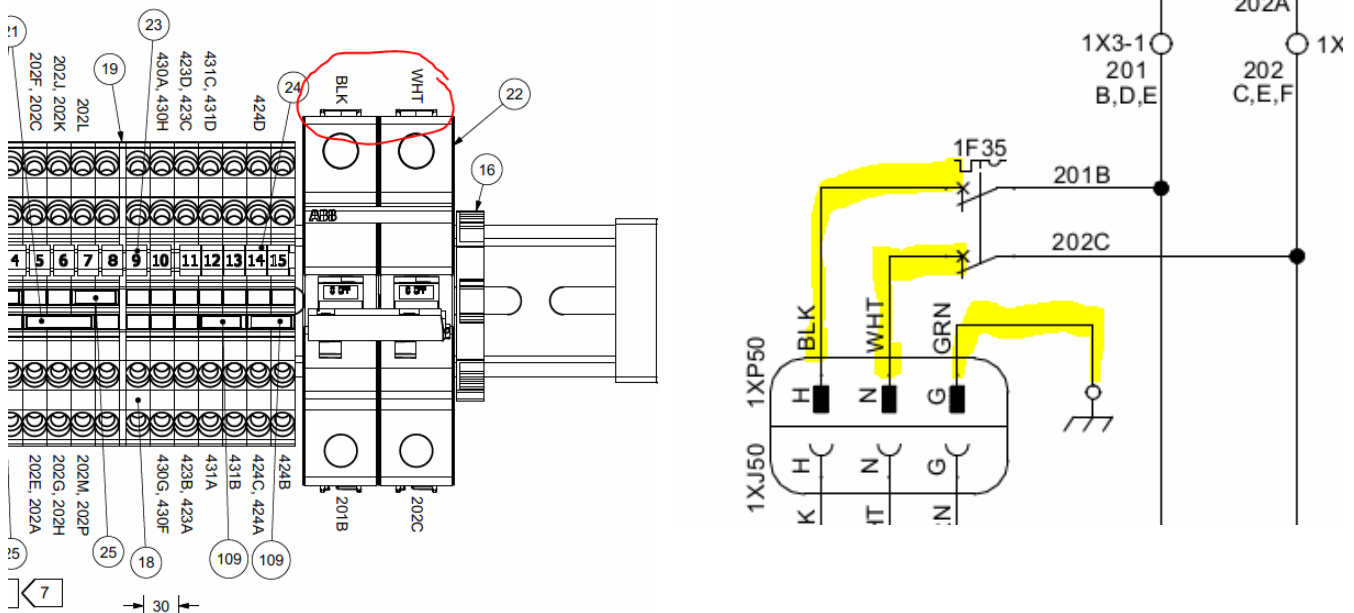


- Use wire ties to route new configuration with existing harness routing if possible.

## Verification Test

This verification test confirms that fans run when they should and do not run when they should not. Test is performed by splicing in 120 Vac from external source.

Figure 22. Verification testing on removing wires and fuses



- Stand clear of control panel and plug in 120V extension cord. Fans should not run at this time. If fans do turn on, there is a wiring error.
- Unplug 120V extension cord.

### ⚠ WARNING

#### Hazardous Voltage w/Capacitors!

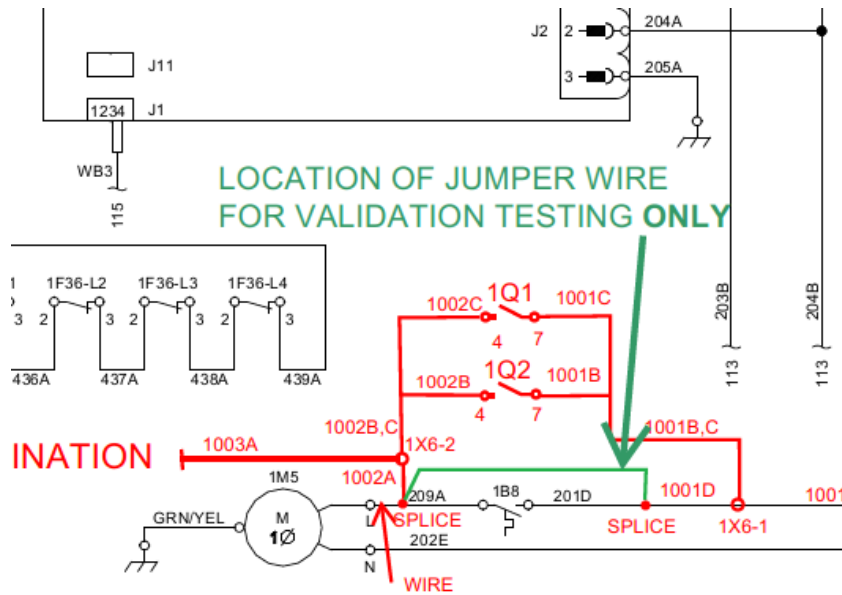
Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury. Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot 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.

- Remove fuses 1F33 and 1F34 to prevent back feeding of line voltage through CPT.
- Remove Black and White wires on top side of mini circuit breaker 1F35. Replace with 120V spliced extension cord. Hot wire of extension cord should replace black wire across from wire 201B, and neutral wire should replace white wire across from 202C. Ground wire should be terminated on panel ground termination.

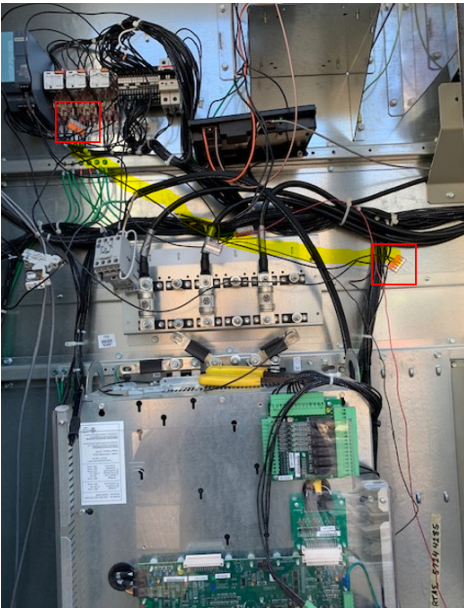
- To simulate a motor run signal, a jumper wire should be inserted between 1002A/209A/1007A splice and the 201D

splice. There should be vacant termination in the 5 position WAGO cage clamps for this wire.

**Figure 23. Locating jumper wire for verification**



**Figure 24. Jumper wire location**



- Stand clear of control panel and plug in 120V extension cord. Verify panel fan and both fans on each drive are running. If they are not running, there is a wiring error.
- Unplug 120V extension cord and disconnect hot, neutral, and ground from control panel.
- Reinstall black and white wire removed in [Step 2](#).
- Remove jumper installed in [Step 5](#).
- Install 1F33 and 1F34.



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