



Installation

Ceramic Bearing Replacement for CenTraVac™ Chillers

For CVHE and CVHF Units







Warnings, Cautions, and Notices

Warnings, Cautions and Notices. Note that warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provided 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.

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.

WARNING

Hazardous Voltage w/Capacitors!

Disconnect all electric power, including remote disconnects 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

WARNING

Ground Wire!

All field-installed wiring must be completed by qualified personnel. All field-installed wiring must comply with NEC and applicable local codes. Failure to follow this instruction could result in death or serious injuries.

WARNING

Grounding Required!

Follow proper local and state electrical code on requirements for grounding. Failure to follow code could result in death or serious injury.

⚠️ WARNING

Conform to All Applicable National, State, and Local Electrical Codes!

Users **MUST** conform to all applicable national, state, and local electrical codes during the electrical installation and servicing of this product. Failure to follow all applicable codes could result in an arc flash event, electrocution, explosion, or fire, which could result in death or serious injury.

NOTICE

Use Copper Conductors Only!

Unit terminals are not designed to accept other types of conductors. Failure to use copper conductors could result in equipment damage.

Models Affected

CVHE and CVHF units built after June 2005 with AFDE or AFDG frequency drives installed.

Reason for Replacement

CenTraVac production is discontinuing the use of ceramic bearings in favor of using magnetic cores for spark discharge protection. The cores allow the use of steel bearings. Trane Parts is following this direction with a conversion kit. This is a one-time conversion to add the cores to the AFD.

For the conversion:

- Chillers with AFDE unit-mounted drives require the purchase of steel bearings, a choke kit, and Flexibar.
- Chillers with AFDG remote-mounted drives require the purchase of steel bearings and a core kit.

Note: *Flexibar is not required for AFDG drives because field wiring is used for the remote drives.*

Refer to [Table 1, p. 3](#) through [Table 4, p. 4](#) for parts that need to be purchased based on the chiller RLA.

Table 1. Replacement bearings

Original Ceramic Bearing	Replacement Steel Bearing
BRG01641	BRG01639
BRG01642	BRG01640
BRG01655	BRG01542

Table 2. Core kit for AFDE unit-mounted drives

SRRL	Core Kit Part Number
405-608 (Frame 3)	KIT15645
900-1210 (Frame 4)	KIT15646

Table 3. Core kit for AFDG remote-mounted drives

	SRRL	Core Kit Part Number
460/480 V	575/600 V	
443 or less (D-Frame)	400 or less (D-Frame)	KIT15647
444-730 (E-Frame)	401-630 (E-Frame)	KIT15648
731-1530 (F-Frame)	631-1415 (F-Frame)	KIT15649



Table 4. Flexibar for AFDE unit-mounted drives

PRLA	SRRL	Starter Size	Flexibar Part Number	Number of Flexibar Required
0-491.2	405-608	Frame 3	BAR00242	2
491.3-643.2	405-608	Frame 3	BAR00242	2
491.3-643.2	900-1210	Frame 4	BAR00242	3
643.3-844.9	900-1210	Frame 4	BAR00197	6
845.0-1210.0	900-1210	Frame 4	BAR00197	6

Notes:

1. PRLA and SRRL can be found on the CenTraVac nameplate.
2. The last column shows the number of Flexibar that will need to be purchased to complete the conversion.

Core Kit Contents

KIT15645

X05010209010	Horizontal Mount Shelf Bracket, Rockwell Automation Frame 3	Qty=1
X13640734010	Magnetic M-116 Cores	Qty=5
X19210282010	Cable Ties 27"	Qty=3
X20600036020	Trim-Lok Flexible Edging	Qty=2 @ 7" each
Mounting Hardware	3 Bolts, 3 Nuts	

KIT15646

X05010210010	Horizontal Mount Shelf Bracket, Rockwell Automation Frame 4	Qty=1
X13640735010	Magnetic M-117 Cores	Qty=8
X19210282010	Cable Ties 27"	Qty=2
X19210282020	Cable Ties 51"	Qty=1
X20600036020	Trim-Lok Flexible Edging	Qty=2 @ 11.9" each
Mounting Hardware	4 Bolts, 4 Nuts	

KIT15647

	Horizontal Mount Shelf Bracket, Danfoss D-Frame	Qty=1
X13640734010	Magnetic M-116 Cores	Qty=5
X19210282010	Cable Ties 27"	Qty=3
X20600036020	Trim-Lok Flexible Edging	Qty=2 @ 7" each
Mounting Hardware	4 Screws	

KIT15648

	Horizontal Mount Shelf Bracket, Danfoss E-Frame	Qty=1
X13640734010	Magnetic M-116 Cores	Qty=5
X19210282010	Cable Ties 27"	Qty=3
X20600036020	Trim-Lok Flexible Edging	Qty=2 @ 7" each
Mounting Hardware	4 Screws	

KIT16549

	Vertical Mount Shelf Brackets, Danfoss F-Frame	Qty=2
X13640735010	Magnetic M-117 Cores	Qty=8
X19210282020	Cable Ties 51"	Qty=1
Mounting Hardware	6 Screws, 6 Washers	

Installation of Core Kits

AFDE Unit-Mounted Drive

WARNING

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

1. Turn off the main power disconnect to the chiller and then follow the correct lockout/tagout safety procedures to ensure that main power to the machine cannot be inadvertently restored.
 - a. For additional safety, also open all starter and control panel disconnect switches and secure them in the open position.
 - b. Follow proper safety procedures to assure that the capacitors in the drive have been discharged and then verify that no power exists in the drive cabinet.
2. Identify and clearly label the compressor motor terminals and the drive output terminals. The existing Flexibar can now be disconnected and discarded. Do not remove the motor terminal clamps because they will be reused.
3. Caution must be taken during this step to ensure that no metal shavings get into the electronic parts of the drive.
 - a. It is recommended to use coverings and possibly magnets or vacuum to catch any shavings during the drilling process.
 - b. Using the bracket as a template mark the mounting hole locations. Refer to [Figure 1, p. 6](#) and [Figure 2, p. 6](#) for the recommended mounting locations for your particular application.
 - c. Drill the mounting holes with a 7/16 drill bit using caution to not get shavings into the electronics.
 - d. Bolt the bracket to the drive cabinet using the provided hardware.
 - e. Set the magnetic cores onto the shelf and secure them into place using the supplied cable ties.

Note: You may want to wait to secure the cores to the bracket to make it easier to install the Flexibar.
4. Route the Flexibar through the center of the cores and secure to the proper terminals at the motor and drive output. In some cases the original Flexibar can be reused but in most cases new Flexibar will need to be bent and cut to fit.

NOTICE

Equipment Damage!

When tightening Flexibar connections at the drive terminals, take care not stress the IGBTs. The IGBTs are connected to the other end of the terminal bar, and stressing them could cause equipment damage.

5. After checking that everything is secure, the power can be restored.

Figure 1. AFDE Unit-Mounted Drive (Frame 3)

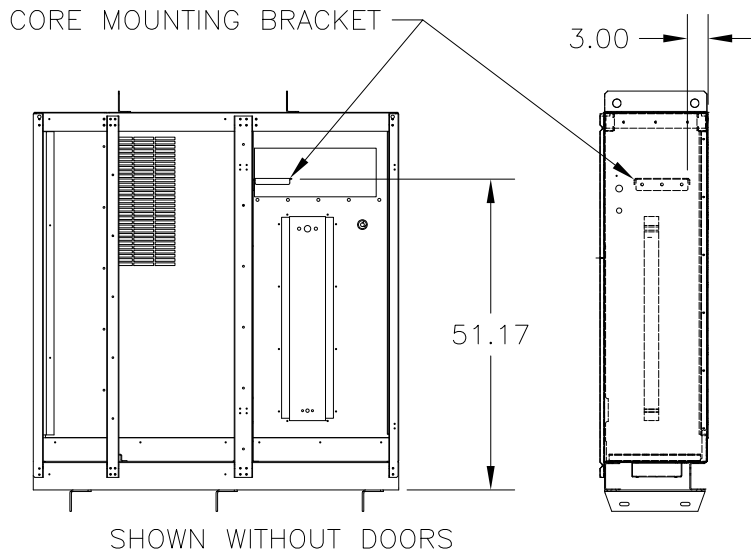
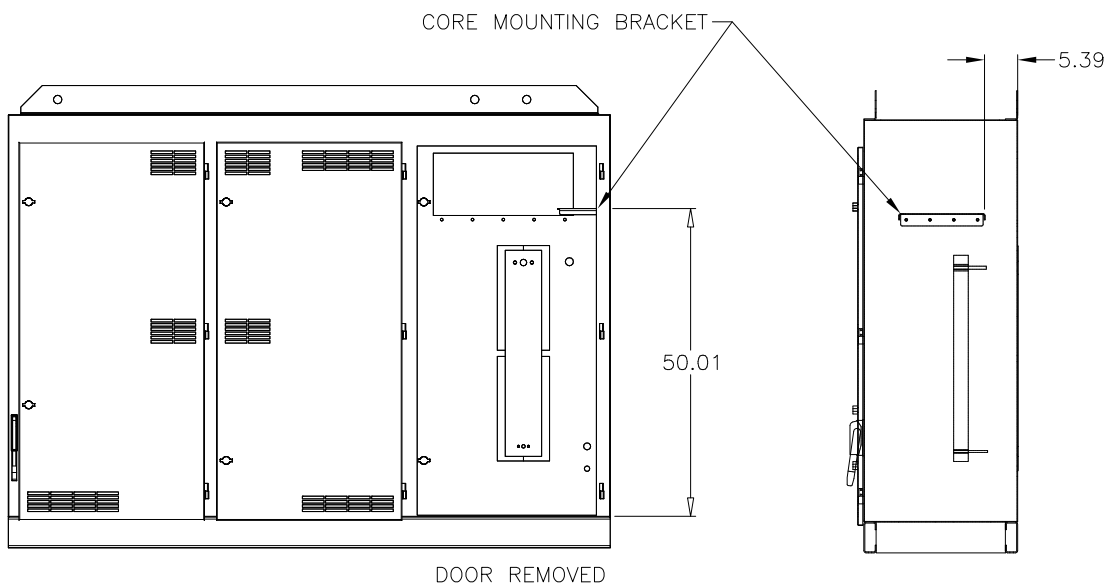


Figure 2. AFDE Unit-Mounted Drive (Frame 4)



AFDG Remote-Mounted Drive

⚠️ WARNING

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

1. Turn off the main power disconnect to the chiller and then follow the correct lockout/tagout safety procedures to ensure that main power to the machine cannot be inadvertently restored.
 - a. For additional safety, also open all starter and control panel disconnect switches and secure them in the open position.
 - b. Follow proper safety procedures to assure that the capacitors in the drive have been discharged and then verify that no power exists in the drive cabinet.
2. Identify and clearly label the drive output terminals and motor power cables. The existing motor power cables can now be disconnected at the drive output terminals.
3. Secure the bracket to the drive cabinet using the provided hardware. Refer to [Figure 3, p. 7](#) and [Figure 4, p. 8](#) for the recommended mounting locations for your particular application.
 - a. Set the magnetic cores onto the shelf and secure them into place using the supplied cable ties.

Note: You may want to wait to secure the cores to the bracket to make it easier to install the motor leads.
4. Route the existing motor power cables through the center of the cores and secure to the proper terminals at the drive output.
5. After checking that everything is secure, the power can be restored.

Figure 3. AFDG Remote-Mounted Drive (Frame D3 and D4)

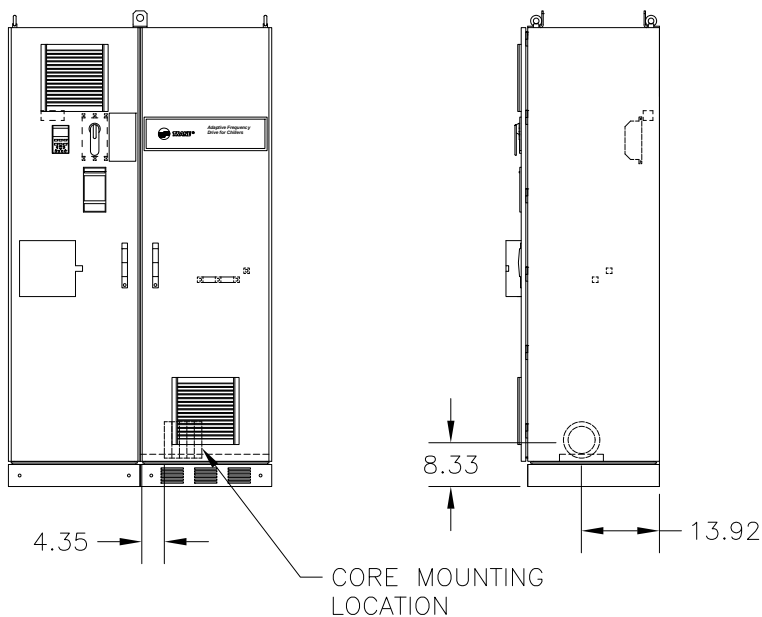


Figure 4. AFDG Remote-Mounted Drive (Frame E2)

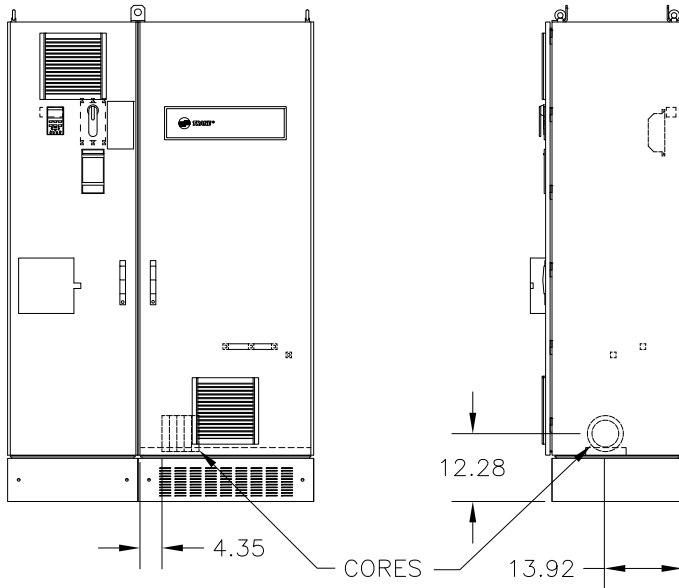


Figure 5. AFDG Remote-Mounted Drive (Frame F3 and F4)

