



**TRANE®**

# General Service Bulletin

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## CVHE-F with Rockwell LF 2.0 Drive

ORDER No.: CTV-SVB04A-EN

DATE: February 2003

### **Inductor mounting inspection and adjustment (Refrigerant Cooled Only)**

### **Inductor Interference with enclosure; Potential short!**

**NOTICE:** Warnings and Cautions appear at appropriate locations throughout this manual. 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, may result in minor or moderate injury.

**CAUTION:** May also be used to alert reader to a situation that could result in equipment or property only damage.



## INTRODUCTION

### Action:

Recommend turning off drive and securing electrical power OFF until Drive inspection is performed, and adjustment made if necessary.

### **⚠ WARNING**

#### **Hazardous Voltage!**

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

### **⚠ WARNING**

#### **Electrical Hazard!**

DC BUS CAPACITORS RETAIN HAZARDOUS VOLTAGES AFTER INPUT POWER HAS BEEN DISCONNECTED. FOLLOW PROPER LOOKOUT/TAGOUT PROCEDURES TO ENSURE THE POWER CANNOT BE INADVERTENTLY ENERGIZED. AFTER DISCONNECTING INPUT POWER, WAIT TEN (10) MINUTES FOR THE DC CAPACITORS TO DISCHARGE AND THEN CHECK THE VOLTAGE WITH A VOLTMETER TO ENSURE THE DC BUS CAPACITORS ARE DISCHARGED BEFORE TOUCHING ANY INTERNAL COMPONENTS. Failure to observe this precaution could result in death or serious injury.

### **Problem:**

The LF 2.0 Drive has inductors in the center enclosure portion towards the rear of the enclosure. The inductors may be mounted such that is in contact with the enclosure "mullion" (U channel support) which can wear through the insulation materials which then can short to the unit chassis.

## DISCUSSION

### **Background:**

The inductors are used to filter out harmonics (similar to LF1.5 line reactors) and are located at the back side of the drive cabinet. There is one 3 phase inductor in each LF2 drive with three large windings at the top and three smaller windings at the bottom. These windings have winding paper and varnish for insulation. However, in some cases the rightmost upper winding is in contact with the cabinet frame. Running vibration of the chiller is enough to wear through the insulation and supply voltage of 480 VAC shorts to the cabinet.

## Inspection

The problem area can be inspected by opening the left hand front door and reaching in at the top to feel for the clearance between the rightmost upper winding and the cabinet frame. See figure 1. Rockwell has changed the assembly and are now providing approximately 1/2 inch of clearance.

**Figure 1. Top view of LF**

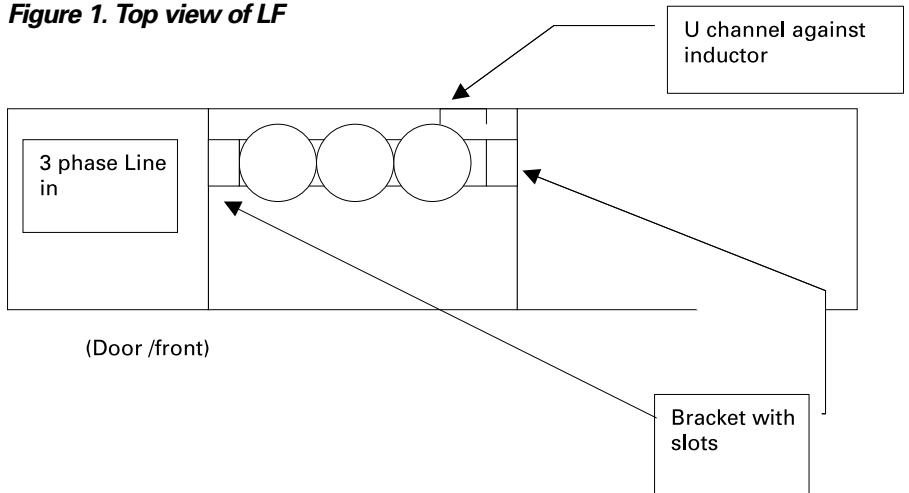


Figure 2 is a picture of the inductor in a new LF2.0 608amp Rockwell drive. This picture illustrates an inductor too close to the u channel.

- In the field we would like an 1/2 inch if possible, however the existing slots and adjustments will likely not provide an 1/2 inch in all cases.

If the final measurement is less than this make sure:

- There is insulation paper between all inductor conductors and the U channel. The absolute minimum is 3/16 inch.

**Figure 2. Illustration with no clearance. View is from rear of drive. Back cover removed.**

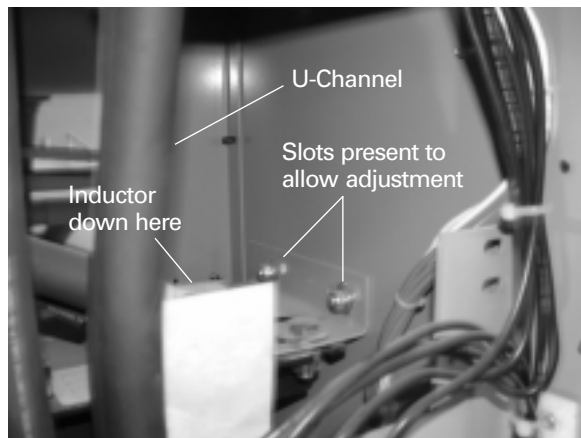


It is desired to have 3/16" (4.75mm) to 1/2" (12.7mm) between the inductor and the u-channel. Refer to Figure 2.

## Repair/Adjustments

There are slots on the top angle brackets accessible from the front side. If the clearance cannot be attained by top only adjustment the bottom can also be loosened. There are four bolts at the bottom also. To access the rear two bolts the drive enclosure rear cover will need to be removed. There are approximately 20 torque head bolts holding the rear cover on. The four lower bolts can be loosened. Do not allow the nuts to drop off the bolts as they are not accessible.

- A pry bar may be needed to scoot the barrier forward due the shear weight of the inverters.
- We expect adjustment can all be accomplished through the front of the starter.



Front view looking in at starters center section. Bolts can be loosened and the assembly slide forwards in slots to provide clearance required at rear.

Slide the inductor brackets forward then secure the mounting bolts. If the lower inductor frame mounting bolts were loosened, determine if there is a gap at the rear. A gap at the lower rear can be created from sliding and securing the top of the indicator assembly forward. If necessary fabricate shims from washers or sheet metal to take up the space. Tighten the four lower mounting bolts.

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Literature Order Number	CTV-SVB04A-EN
File Number	SL-RF-CTV-CTV-SVB04-EN-203
Supersedes	New
Stocking Location	Electronic Only

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