



TRANE®

General Service Bulletin

Rockwell water cooled AFDD liquiflow 1.5 PIC board field repair on 350, 450, 600, 750 & 1000 HP drives (CVHE, CVHF, CVHG Units)

ORDER No.: **CVHE-SVB10A-EN**

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Introduction

The purpose of this service bulletin is to advise you of modification that needs to be made to the power interface control board (Pic). This repair should be made at unit startup. If already started and running the unit is fine and the retrofit is not mandatory.

Discussion

CAUTION

Equipment Damage!

Components on a Power Interface Control Board could be damaged by isolated voltage spikes. Damaged components may cause failure of the Pic Board.

This is potential equipment damage and corrective action must be taken as soon as possible.

The liquid water-cooled adaptive frequency drive, Liquiflow 1.5 AFDD, has an electronic board in the drive called the Pic board that needs field modification. This is the Power Interface Control Board (Pic).

It has been determined that in a few isolated instances, that when high input line voltage conditions exist along with variations with board components on the Pic board component failures on the board may occur due to voltage spikes. The spike has in some cases damaged components causing failure of the Pic board.



If the board fails you typically get a diagnostics of Low DC buss.

When you look at the board, (Figure 1 and Figure 2), there is a component called a opto-coupler. It is a small square white part approximately ¼" square.

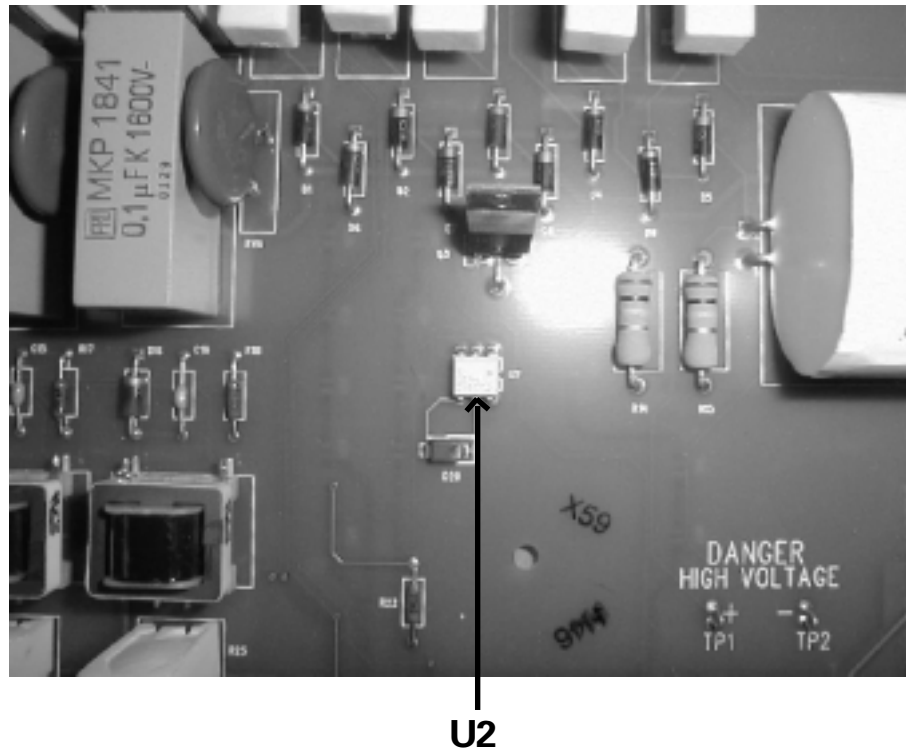
LiquiFlo1.5 Power Interface Controller (PIC) PCB Assembly Optocoupler Removal

Removal of the optocoupler referenced as U2 on the following PIC PCB assemblies is required for proper operation:

Rockwell Part #	Description
179561	600Hp LiquiFlo 1.5 Drive
179843	450Hp LiquiFlo 1.5 Drive
179844	350Hp LiquiFlo 1.5 Drive
179845	1000Hp LiquiFlo 1.5 Drive

The optocoupler is located in the center of the board, as shown in the following pictures:

Figure 1: Close-up View of U2 Location



Procedure WARNING

▲ Hazardous Voltage!

1. Remove all power from the drive and allow the DC bus to discharge.

CAUTION

Static Electricity

Use a grounding wrist strap which is fabricated with a current limiting resistance for static control. Do not contact grounded objects other than through the wrist straps.

Failure to use it properly can result in static electricity damage.

2. In this retrofit, the PCB can remain mounted while performing the necessary procedures. However, utilize proper grounding procedures when working with the Printed Circuit Board.
3. Locate PIC board on respective drive (please reference manual for board location).
4. Remove the component U2, by clipping each of the six (6) pins on the topside at the board level.
5. Verify that none of the remaining pins are able to short together.
6. Confirm all ribbon cables are connected properly and reapply power.

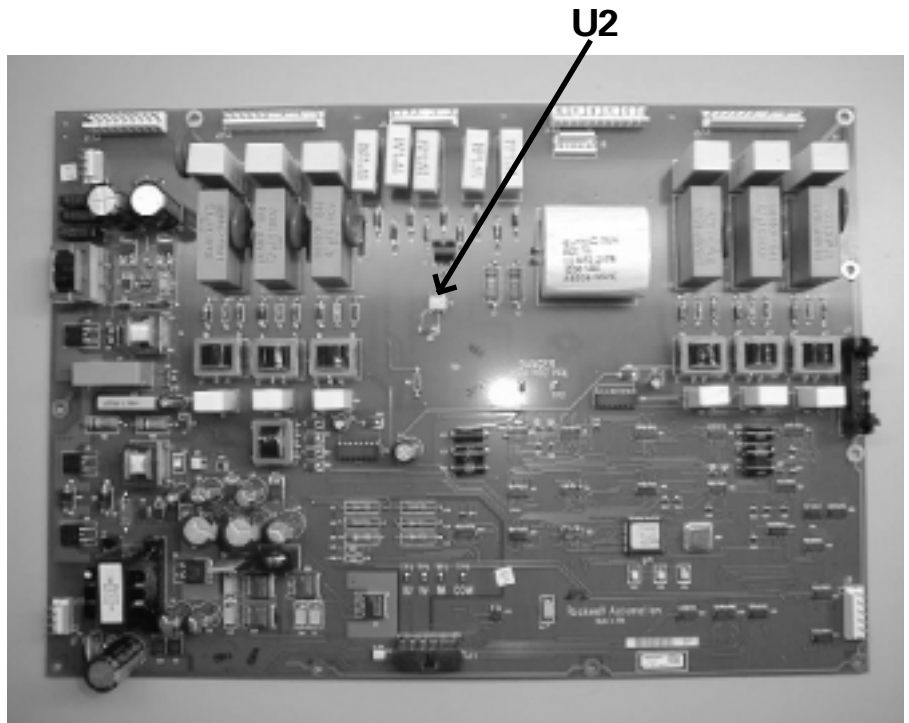


Figure 2: Full view of PIC Board Assembly Showing U2 Location

If the unit has not been started, this opto-coupler needs to be removed. If the unit has already been started it does not have to be removed. The opto-coupler switches a bleeder resistor in and out of the circuit. When we remove it we disable the function so the bleeder resistor is always in the circuit to dampen short voltage spikes at startup.

No functionality is sacrificed by removal of the U2 coupler. All future production Pic boards will have the U2 coupler removed. Pic boards that have been revised will have a revision of Rev 05 shown on the board. Boards that need to have the U2 opto-coupler removed will show a Rev 04 on the board.

Repair Procedure

WARNING

▲ Hazardous Voltage!

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

Procedure:

- Remove all power from the drive and allow the DC bus to discharge.
- Utilize proper grounding procedures when handling printed circuit boards
- Locate PIC board on the respective drive (please reference your manual for board location)
- Remove the component U2, by clipping each of the (6) pins on the topside at board level.
- Verify that none of the remaining pins are able to short together.
- Confirm all ribbon cables are connected properly and reapply power.

Parts Ordering Information

No parts to be ordered.

Units Affected

Rockwell water cooled AFDD liquiflow 1.5 PIC board field repair on 350, 450, 600, 750 & 1000 HP drives.



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