



SERVICE BULLETIN

Title: 19/23XL and 19XR Low Level Ground Fault
Models Affected: 19/23XL, 19XR

Number: C9711
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Supersedes: New

PURPOSE:

To inform the field about the addition and operation of a low level ground fault protective device on all low voltage Cutler Hammer and Benshaw unit mounted starters for 19/23XL'S and 19XR's.

FILE: Controls-Wiring

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FUNCTION AND OPERATION:

In the event of a motor failure in which there is a phase to phase or phase to ground short occurring the low level ground fault device will sense the flow of current to ground or between phases. When a current is sensed the ground fault relay opens resulting in the chiller shutting down on a starter fault. The relay can be reset by depressing the reset button on the low level ground fault circuit board. See Fig. 1 (Hard Copy).

The circuit board is equipped with a green and a red LED for diagnostic purposes. The table below outlines the condition and interpretation of the two LED's.

Condition	Green	Red
Relay not energized or is defective	OFF	OFF
Relay energized and not tripped	BLINK	OFF
Relay energized and tripped	OFF	ON

The relay is equipped with two adjustments which should be checked upon start up. The first is the "trip delay" which should be set for 15 cycles (1/4 second). The second is "trip amps" which should be initially set for 10 amps. These settings can be increased, if necessary, due to nuisance tripping at startup.

GENERAL INFORMATION:

Generally a “ground fault” failure occurs because of a deterioration of the insulation system in a motor over time. With a ground fault interruptive device, the failure can be detected before a catastrophic failure occurs. This in turn minimizes the possibility of contamination which will keep the time and expense of a clean up to a minimum.

If a trip does occur it is imperative that a qualified technician diagnose the failure by meggering the motor between phases and from phase to ground before the motor is condemned. It is important to note that repeated resets of the device, and motor restarts will defeat the purpose of the device.

The ground fault device uses three CT's which are wired into the ground fault circuit board. Each of the CT's has the wires from one **winding** of the motor running through it. See Fig. 2 (Hard Copy). When the insulation system is intact the current flowing into a winding equals the current flowing out of the winding. With the CT located on both wires of the same winding and the wires running through the CT from the same direction the net current measured is zero. When a ground fault occurs the current in does not equal the current out of the winding. The CT measures this difference and recognizes it as an abnormality which trips the ground fault relay. (Note that if rewiring takes place both leads from each winding must pass through the CT in the same direction so that the net current sensed is zero. Anything else will result in relay failure.) See Fig. 2 (Hard Copy Only).

Replacement kits are available through RCD under 19XR660019 or HK35AC001. Each kit comes with the three CT's and the low level ground fault circuit board. These kits can also be used as retrofits on existing low voltage starters wiring the contacts in the starter fault circuit and installing the current transformers as described above. The board must be powered with 24 volts ac across the T1 and T2 terminals either from an existing transformer or a separate field supplied transformer.

With regard to in warranty failures on the low level ground fault boards, they must be returned to Service Engineering in Syracuse for analysis.

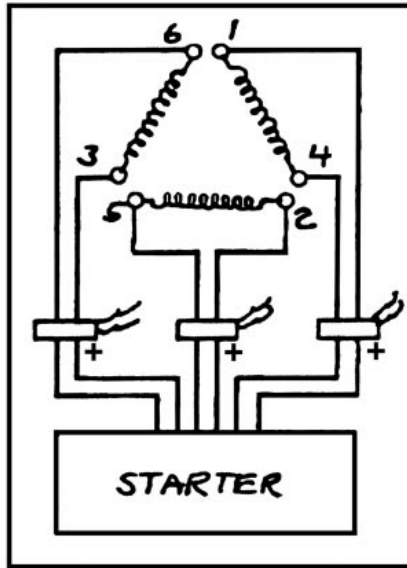


Figure 2
Schematic Showing CT Configuration and Orientation