SERVICE BULLETIN

Title: **Cutler Hammer Chiller Starters**
Models Affected: **19/17DR, DM, DK Low Voltage Machines**

Number: **C9105**
Date: **2/25/91**
Supersedes: **None**
Date:

Purpose:

To provide information to the field service organization about the latest product changes to Cutler Hammer Wye-Delta low voltage starters.

File: Controls

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To inform the field about additional items that must be checked beyond those outlined in the standard INITIAL STARTUP CHECK LIST when commissioning a new centrifugal chiller starter.

Starter Improvements:

Cutler Hammer (C-H) has made a number of changes to their Wye-Delta low voltage motor starter during 1990. These changes are in response to product quality and cost reduction programs.

1. Effective August 1990, C-H has implemented the use of a computerized test stand which will completely test the functions of the starter. The test will include checking the following:
   - **A.** Wiring
   - **B.** Sequence of operation
   - **C.** Individual components
2. The 2M, 1M and S contactor coils are now operated using 120 volt control power instead of line voltage. This change was effective on all starters built after March 1990.
3. The overload protection for each phase was changed from a Bedford dashpot type to a Furnas solid state type. This change began with any starter built after June 1990. Sometime during 1991 C-H will be replacing the Furnas overload with their own design. The C-H design will be a "smart" overload. Additional details about this device will be discussed in a separate bulletin.
4. The ICR and transition timing relay assembly has been changed. The old style is black in color (fig. 1) and the new style is light grey and larger in size (fig. 2). The mounting holes for the two

styles are the same. If an old style unit has to be replaced in the future, the new style will fit without modification. The transition timing relay is mounted on the front of the ICR. On top of both style timing relays is a selector switch which can be put in the on-delay or off-delay position. For our purpose the switch must always be in the on-delay position. If it is not, the compressor motor will stop in about 90 seconds and a code 74 will be displayed on the 3200MP (failure of starter to complete transition). A plastic sleeve has been placed on the switch to prevent it from inadvertently moving from the on-delay to the off-delay position. The new style unit has been installed on all starters produced after August 1990.

5. The Syrelec phase failure relay (a starter option) was replaced with a Diversified phase failure relay. This change was made due to the extremely high failure rate of the Syrelec relay. For the purpose of identification, the Diversified relay is orange in color. This change was initiated on all starters built after October 1990.

6. The Westinghouse circuit breaker (a starter option) has been analyzed in depth to determine circuit breakers failures and the effects poor connections have in causing overheating. The following action items have been implemented to reduce circuit breaker failures:

A. Cable is increased on 5DP starters where RLA exceed 500.

B. Derating the breaker application to a 60 deg C ambient temperature.

C. Setting of the instantaneous magnetic trip to the maximum value.

D. Change to lug pad terminations on all 600 amp frame breakers.

Action Required:

Due to field feedback on C-H starters, the following items are to be checked, tightened and replaced prior to commissioning a new starter:

1. Transition Timing Relay - Confirm that the relay's selector switch is in the on-delay position and that the plastic sleeve has been installed.
2. Syrelec Phase Failure Relay - These are to be replaced with a Diversified relay prior to startup. All relays with a catalog number DWRA2 or DWRU should be reported to C-H, Ms. Jean Wein- and or Karen Knoblock at 1-800-752-5495 to obtain warranty authorization and a replacement relay.

   *** If motor terminal leads are reversed to obtain correct rotation of the motor, the phase failure relay must be rewired accordingly (fig. 3). ***
3. Main Circuit Breaker - Confirm that line and load connections are tight. Loose connections will cause hot spots.
4. Power Conductors - Verify that all connections are tight. Loose connections will cause hot spots.
5. C-H Bedford dashpot type overloads - Confirm that all control contacts on top of relay are solidly closed.

CONTINUE TO ENCOURAGE THE TECHNICIANS TO CALL THE OPERATIONS DEPARTMENT IN SYRACUSE BY USING 1-800-333-CHIL TO REPORT THE OUTCOME OF ALL NEW CHILLER STARTUPS.

CONTROL DISC
OPTIONS H1-H3

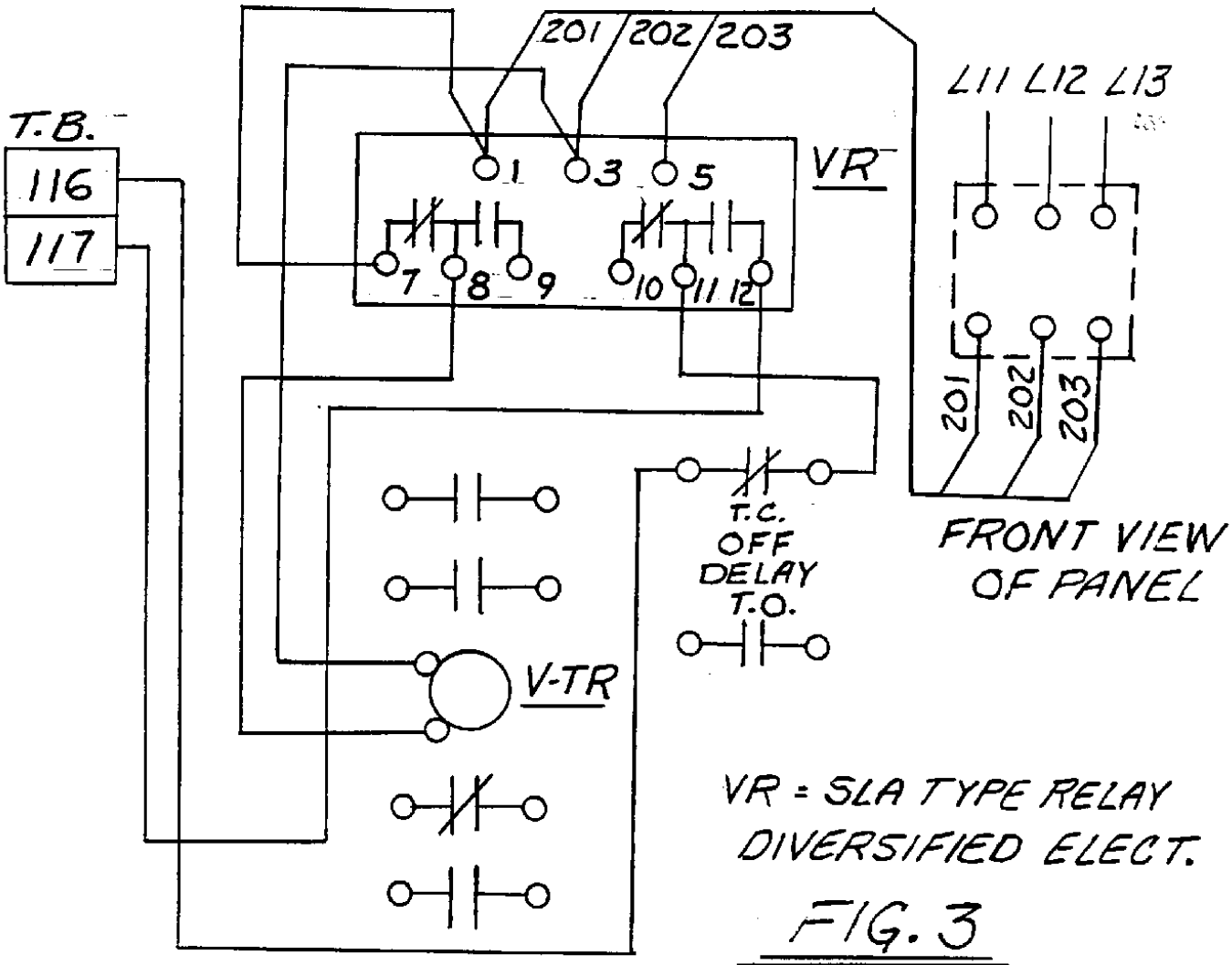

FIG. 3

When 3-phase power of the proper voltage (± 15% of the motor nameplate voltage) is applied to the starter in phase sequence A,B,C, the light on the phase relay will be "on" which indicates that it is energized and operating properly. If the 3-phase power is in incorrect sequence, the light will be off. Reversing wires 1 and 3 on the relay to energize (note that reversed phase sequence will cause the motor to run backwards).

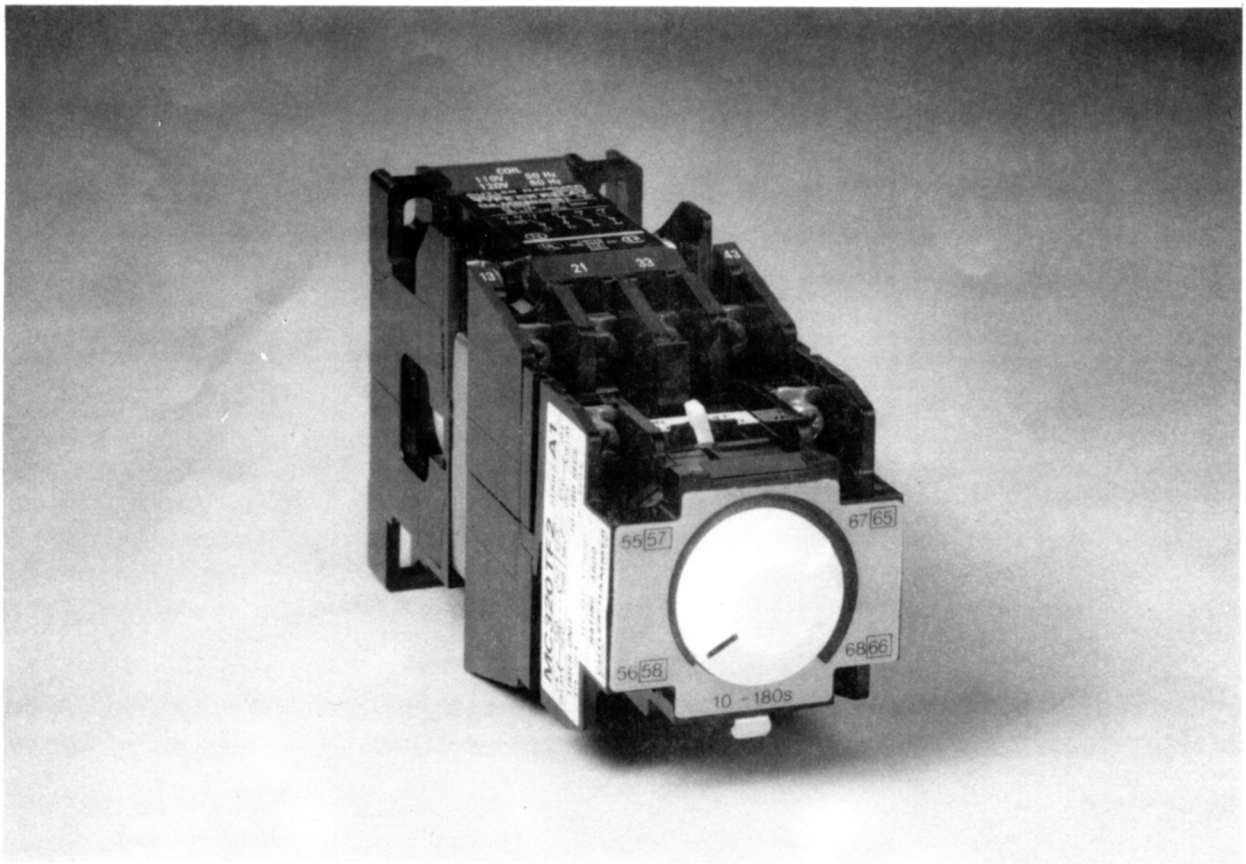

Figure 1

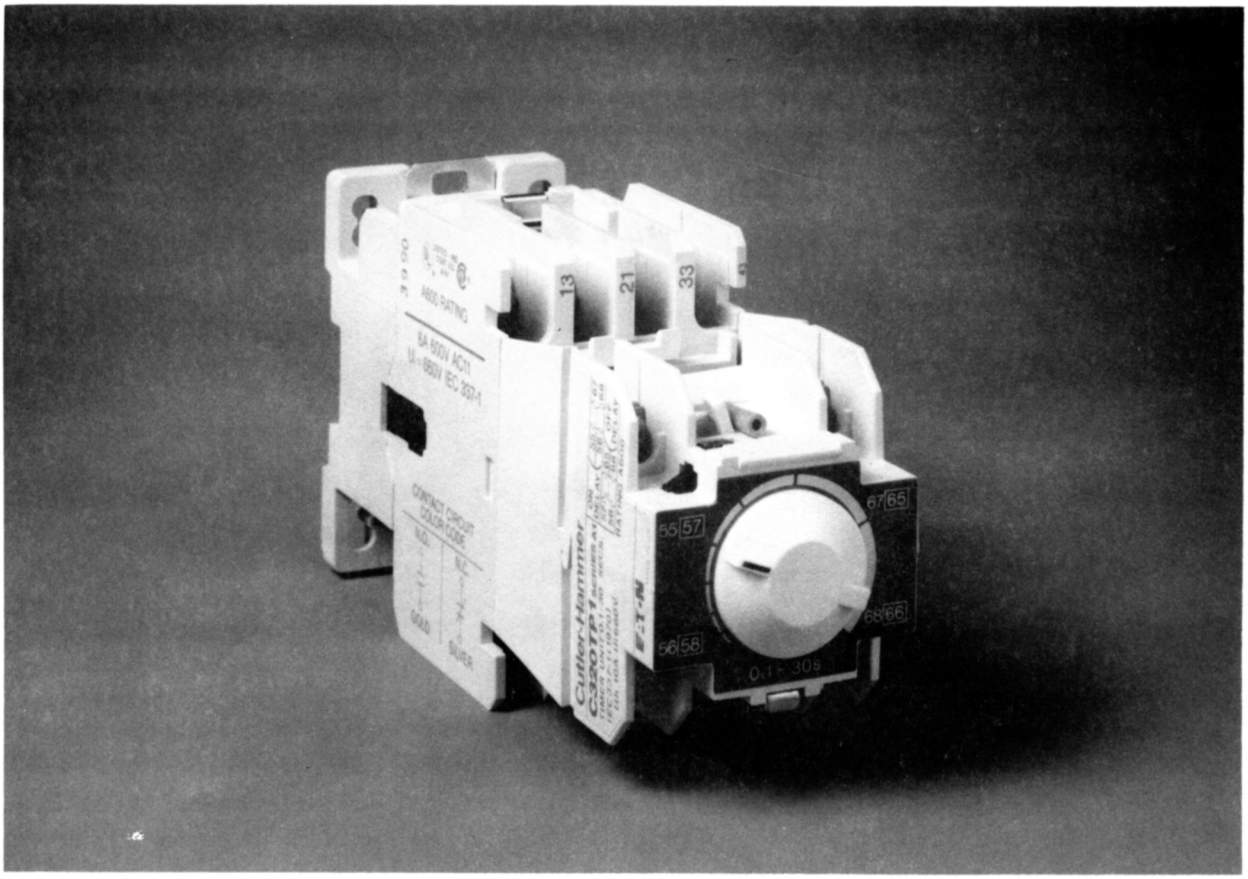

Figure 2