Carrier
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SERVICE BULLETIN

Title: Nuisance Shunt Trips w/IQ1000II

Number: C9639
Date: 12/23/96
Supersedes: new
Date:

Models Affected: 17 & 19 Series with Cutler Hammer Starters

Purpose: To inform the field of a compatibility problem between the IQ1000II motor protection system and the SMM module software, and to describe a resolution. This affects jobs where the restart after power failure option is required.

Background: Upon power failure or upon power restoration, the interface of the IQ1000II with the SMM software and the wiring logic of the starter can cause the circuit breaker to shunt trip unnecessarily. There are two ways in which a nuisance shunt trip can occur and both happen in the event of a power failure.

When the power drops, the relays in the IQ1000II will dropout at 85% voltage. This connects the shunt trip relay to LL1 while there is still enough voltage in the line to trigger the shunt trip. The other relays do not drop out until the voltage is much lower. The IQ internal relays are also very fast acting.

The second way that a nuisance shunt trip can occur happens when the power is restored. The IQ1000II has a 4-20mA output which is used to provide the motor current signal to the SMM. The current signal is passed through a 25 ohm resistor. The voltage across the resistor at 20mA is 0.5 volts which corresponds to the full load amp input to the $MM.

When power is applied to the IQ1000II, the 4-20mA output momentarily climbs to full out put then drops to the correct value (which is 4mA since the motor is off). This momentary pulse triggers the SMM to activate its shunt trip output. Because this happens while the PSIO is in the boot-up mode, no alarm code is registered.

Materials Required:

Potter Brumfield KHAU17A16 relay, 120VAC coil, dry circuit duty, gold overlay silver contacts (or equivalent relay). This can be obtained from Newark Electronics under Newark stock # 90F1129

Mounting socket use either:
Potter-Brumfield 27E166 Surface mount (Newark stock # 57F3447)
or
Potter-Brumfield 27E894 DIN (rail mount) (Newark stock # 46F3589)

File:

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Mail Keys: 2.33A, 2.33B, 2.33D, 2.40, 2.40A, 2.40B, 2.40D, 2.40M, 2.46A, 5.25G

The unit mounted starters have a relay mounting rail with sufficient room to add another relay.

Procedure:

1. Disconnect wire 113 from the GFTR relay to the NC contact of the AUX TRIP output of the IQ- and remove the wire or tape both ends. Another wire will be connected to the same terminal of the GFTR later in this procedure.

2. Disconnect the other wire from the AUX TRIP output. Tape off the wire end or disconnect the other end from the shunt trip relay and remove it.

3. Connect the IQ- AUX trip (terminals 15 & 16) in series with the IQ- trip contacts (terminals 12 & 13), in the 1CR circuit.

Note: The ground fault protection will now open the contactor instead of initiating a shunt trip. The SMM can still initiate a shunt trip and the circuit breaker will trip of its own accord it there is a massive short, so all protection is maintained.

4. Install the gold contact relay in the starter. We will refer to this as the Current Signal Relay (CSR).

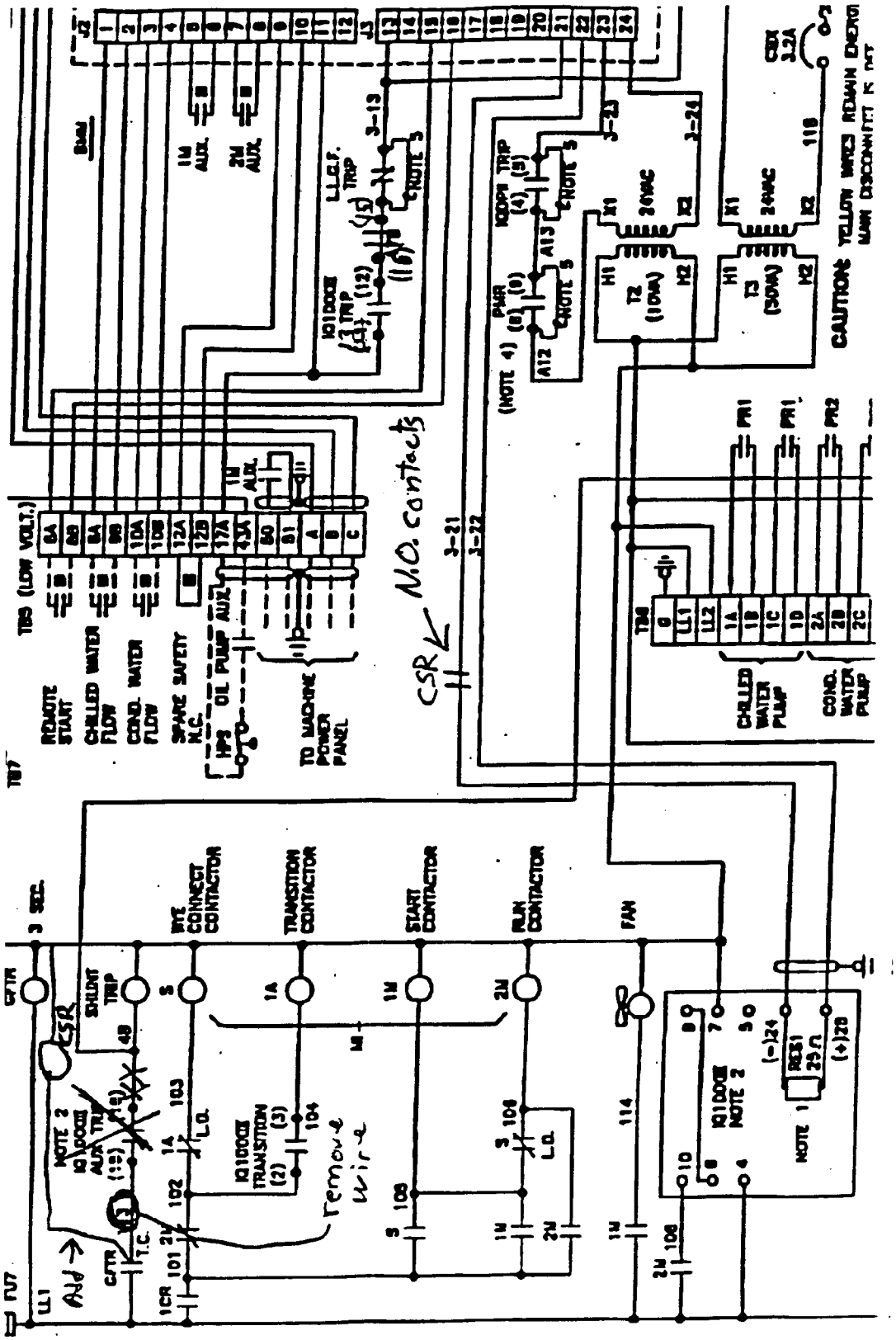
5. Connect one coil terminal of CSR to the normally open timed contact of GFTR from which you removed wire 113 in step 1.

5. Connect the other coil terminal of CSR to LL2.

6. Break wire 3-21, which connects terminal 24 of the IQ1000II to terminal J3-21 of the SMM, and connect the ends across a normally open contact of CSR. This can be accomplished at the terminals on the back of the IQ1000II.

7. Set the time delay of GFTR to approximately 15 seconds.

8. Using the controls test, initiate a shunt trip from the SMM to insure that wire 4B from pilot relay PR4 was not disconnected from the shunt trip relay.


N.O. contacts
CSR
Remove wire
Add
CAUTION
TO MACHINE POWER PANEL
REMOTE START
CHILLED WATER FLOW
COND. WATER FLOW
SPARE SAFETY N.C.
OIL PUMP AUX.
HPS
CHILLED WATER PUMP
COND. WATER PUMP
WYE CONNECT CONTACTOR
TRANSITION CONTACTOR
START CONTACTOR
RUN CONTACTOR
FAN
SHUNT TRIP
3 SEC.
IQ1000II TRANSITION (2)
IQ1000II AUX TRIP (11)
IQ1000II TRIP (4)
IQ1000II NOTE 2
IQ1000II NOTE 3
1M AUX.
2M AUX.
1M
2M
T.C.
L.O.
NOTE 1
NOTE 2
NOTE 3
NOTE 4
NOTE 5
T2 (10VA)
T3 (50VA)
240VAC
TB3 (LOW VOLT.)
TB6
TB7
TB8