YORK®	Form Number: 160.46-OM3.1 (LS15)	1104
	Supersedes: 160.46-OM3.1 (SB9 & SB11)	
LITERATURE SUPPLEMENT	File with: 160.46-OM3.1 (1191)	
Subject: Liquid Cooled Starter Nuisance 1/2 Phase trips		

BACKGROUND

The style 'A' solid-state starter logic board has been revised many times over the years to add new features. In 1991 the board was revised to a 'D' level and the 1/2 phase detection circuitry was added. The circuit works well at detection 1/2 phase, but a few site specific conditions can cause the circuit to falsely detect a 1/2 phase.

DETAILS

Locate your copy of 160.46-OM3.1 (SB9 & SB11), and then replace it with this literature supplement!

When troubleshooting a half-phase trip, it is first necessary to determine if the situation is a real event caused by a starter malfunction, or a false trip caused by electrical abnormalities. We have been seeing an increasing number of false trips lately, so we suggest you rule-out the typical false trip conditions first. The three known causes of false trips are:

1) High Line Voltage, greater than 500VAC on a 460VAC nominal system, for example. More than 10% above nominal.

2) Large Variable Speed Drives on same power distribution, or many smaller drives in combination. Most VSD's create voltage distortion, which distorts our chillers motor's waveform.

3) Significant Current Imbalance, greater than 15% from highest leg to the lowest leg. Look at the Control Panel's display just prior to tripping. Note: the highest and lowest values, subtract to get the difference, and divide this number by the value of the lowest leg. If the answer is .15 or more, current imbalance is likely the cause. A 1.5% voltage imbalance will create a 15% or greater current imbalance. The exact amount of current imbalance varies with motor load (%FLA), and increases as the motor unloads.

If tripping is caused by one of these conditions, it would be best to correct the problem at the source, i.e. change transformer taps to lower voltage, put filters on VSD's, or balance out single phase loads to bring voltage balance to within 1%. If this is not possible, you may have no choice but to eliminate the 1/2 phase circuit. **On older rev. 'D' through rev. 'F' boards, you will need to solder a wire jumper as shown on Fig. 1. On (Rev G) and newer starter logic boards, there is a jumper wire, JP1, located approximately 1.5 inch below the large black heatsink in the upper right corner. Cut this jumper to disable the 1/2 phase circuit.**

If none of the three above conditions exist, you likely have a real problem in the LCSSS, and should troubleshoot the starter. The 1/2 phase indicator is intended to signify that one of the six SCR's is not firing. Most common problem areas are the trigger board, connections from the 3-wye to the trigger, and connections from the trigger to the SCR's.

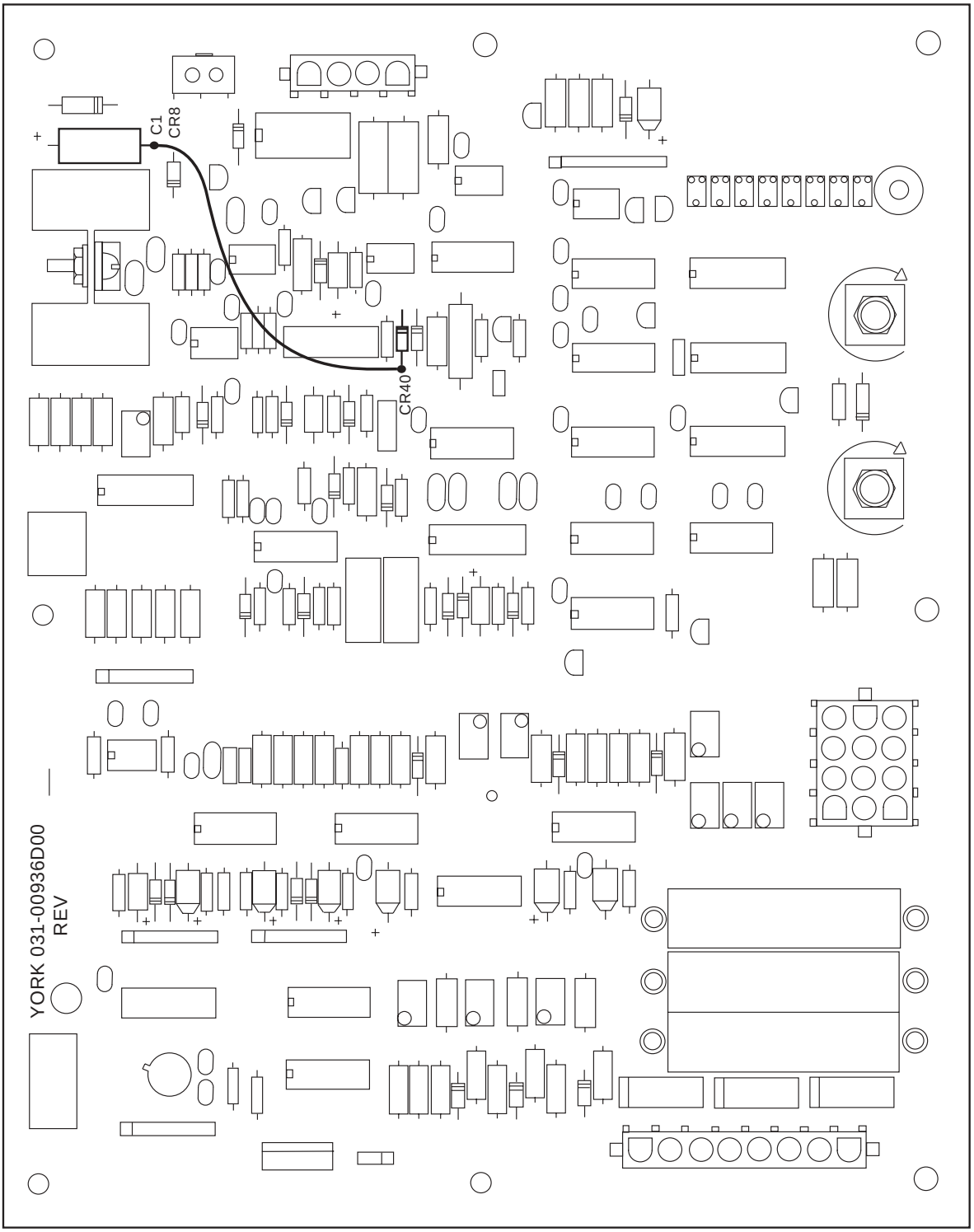

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FIG. 1 - SOLID STATE STARTER (STYLE A) LOGICBOARD

P.O. Box 1592, York, Pennsylvania USA 17405-1592
Tele. 800-861-1001
www.york.com

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