UNITED TECHNOLOGIES CARRIER	Commercial Division Carrier Corporation	BULLETIN: CA-SB-19-E-70-50 DATE: 5/15/70 PAGE: 1 OF: 3
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SUBJECT: 32SM CONTROLS		

PURPOSE: To describe certain operating functions of the 32SM control.

MACHINES AFFECTED: All 19 series machines with 32SM solid state controls.

PROCEDURE: There have been some reports that when trying to calibrate a 32SM control, the vanes would not open when the capacity control selector switch was placed in "INC". This is probably quite normal.

There are several features built into the 32SM control which are not present in conventional controls. One of these is an override feature which insures that any signal which tells the vanes not to open will override manual operation of the vanes.

Figure 1 shows a simplified circuit which can be used to describe these features. This circuit is not the actual one; there are no relays in the capacity control module. This circuit is used for illustration purposes only. Actual switching is performed by solid state devices within the module.

If there were relays, however, they would function as described in Figure 1.

In "AUTO", CWO and CWC will cause the vanes to open or close depending on chilled water temperature and thermostat setting. If CWO is closed (vanes opening) and motor current exceeds 100% FLA, OL2 will close and both <21> and <22> will be grounded causing the vanes to stop. If motor current exceeds 105% FLA, OL2 will open, only <22> will be grounded, and the vanes will close.

In "INC", <21> will be grounded and the vanes will open unless motor current exceeds 100% or chilled water is too cold. In either case, <22> will be grounded and the vanes will stop. The vanes will not close, but they cannot open further unless motor current goes down or water temperature comes up.

In "DEC", <22> will be grounded and the vanes will close.

In "HOLD", the vanes will stay stationary unless chilled water is too cold or motor current is too high, in which case the vanes will close.

It is important that you understand what happens in each of the switch positions. When calibrating the motor overload control, if the vanes do not open when switching to "INC", chilled water temperature may be too low, or with a transducer, air pressure may be set at a minimum (simulating a cold water condition). If necessary, the thermostat should be set for colder water (monitor leaving chilled water carefully to prevent freezeup!) in order to allow the vanes to open further.

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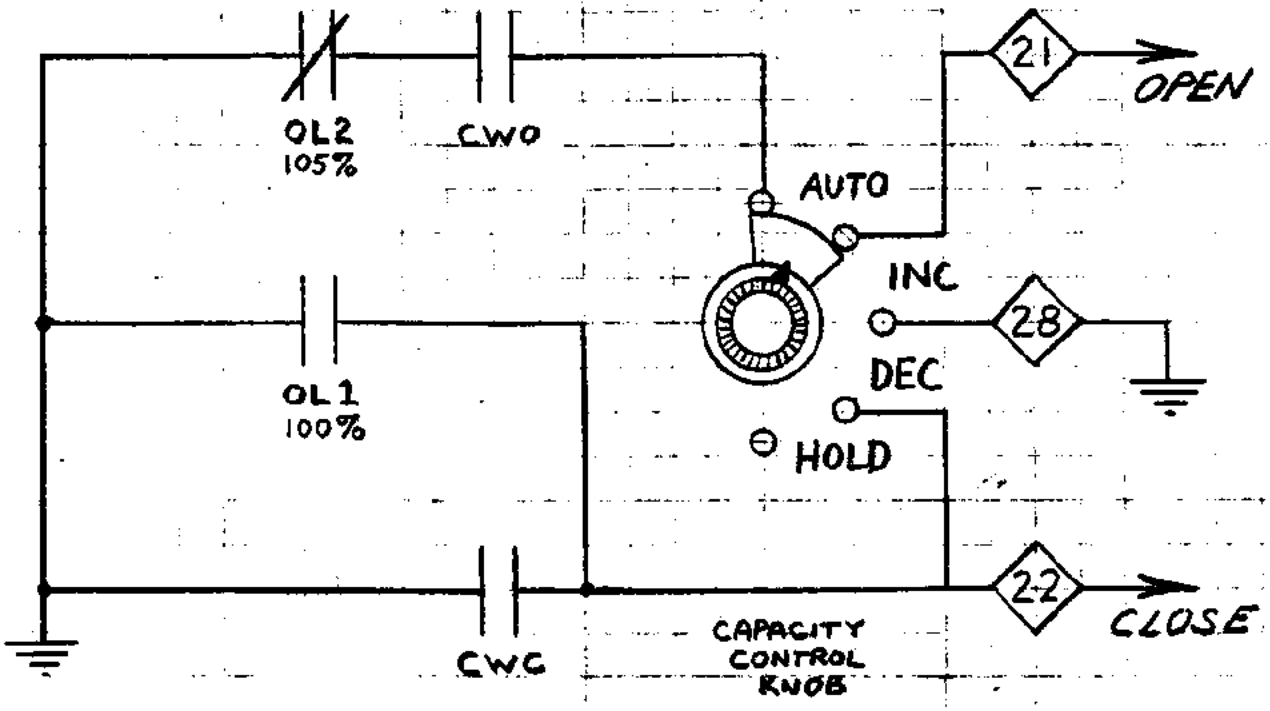
FIGURE 1



CWO - CLOSES WHEN CH WATER TOO WARM

CWC - CLOSES WHEN CH WATER TOO COLD

OL1 - CLOSES WHEN MOTOR CURRENT GREATER THAN 100% FLA

OL2 - OPENS WHEN MOTOR CURRENT GREATER THAN 105% FLA

(NOTE: THIS IS NOT THE ACTUAL CIRCUIT. THE RELAYS SHOWN ABOVE ARE FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL SWITCHING IS PERFORMED BY SOLID STATE DEVICES.)