

**SERVICE BULLETIN**Supersedes: *NOTHING*

1294

Form 160.47-M2 (SB11)

File with Form: 160.47-M2

SUBJECT: SCREW CHILLER (125-675TR)
MICROCOMPUTER CONTROL CENTER -
VERSION S.01F.13 AND S.01T.13 EPROM

ON/ABOUT DECEMBER 1994, THE SUBJECT SCREW CHILLERS WILL BE SHIPPED WITH EPROM VERSION S.01F.13 (P/N 031-01102-002). VERSION S.01T.13 (031-01102-003) WILL BE AVAILABLE FOR GUARDIAN SERVICE/REMOTE CHILLER COMMUNICATIONS APPLICATIONS. THESE EPROMS CONTAIN THE FOLLOWING ENHANCEMENTS:

BRINE OPERATING RANGE

WHEN OPERATING IN BRINE COOLING MODE (MICRO BOARD PROGRAM JUMPER JP3 REMOVED), THE ALLOWABLE "LEAVING CHILLED LIQUID TEMP SETPOINT" RANGE IS 20°F TO 45°F. IN PREVIOUS EPROM VERSIONS, THE RANGE WAS 10°F TO 45°F.

EXCESS CHARGE OVERRIDE

WHEN USING REFRIGERANT R-134a (MICRO BOARD PROGRAM JUMPER JP2 REMOVED), THE MESSAGE "SYSTEM RUN - EXCESS CHARGE OVERRIDE" IS NOW DISPLAYED WHEN THE DISCHARGE TEMP MINUS CONDENSER SATURATED TEMP IS LESS THAN-OR-EQUAL-TO 5°F. THIS WILL BE DISPLAYED UNTIL THE RELATIONSHIP IS EQUAL-TO OR GREATER-THAN 10°F. IN PREVIOUS EPROM VERSIONS THE THRESHOLDS WERE 10 F AND 15 F RESPECTIVELY. REFER TO OPERATION MANUAL 160.47-01.1 FOR DETAILS OF THIS MESSAGE.

WHEN USING REFRIGERANT R-22, THE THRESHOLDS ARE THE SAME AS PREVIOUS EPROM VERSIONS.

HOT GAS BYPASS

WHEN MICRO BOARD PROGRAM JUMPER JP4 IS REMOVED, HOT GAS BYPASS OPERATION IS ENABLED. IN PREVIOUS EPROM VERSIONS, THE HOT GAS OUTPUT (RELAY BOARD TB3-61) WAS ENERGIZED AND DE-ENERGIZED BASED ON SLIDE VALVE POSITION: AFTER A 3 MINUTE BYPASS AT START, ENERGIZED WHEN THE SLIDE VALVE POSITION DECREASED TO 5%; DE-ENERGIZED WHEN IT INCREASED TO 15%. IN THIS NEW VERSION, THE OUTPUT IS ENERGIZED AND DE-ENERGIZED BASED ON THE DIFFERENCE BETWEEN THE ENTERING CHILLED WATER TEMPERATURE AND THE LEAVING CHILLED WATER TEMP SETPOINT: THE SERVICE TECHNICIAN PROGRAMS THE DIFFERENTIAL THRESHOLD AT WHICH THE HOT GAS WILL TURN ON AND OFF AS FOLLOWS:

- 1.) ENTER PROGRAM MODE USING ACCESS CODE 1-3-8-0.
- 2.) PRESS CHILLED LIQUID TEMPS DISPLAY KEY.
"(ECWT-LCWTSP): HOT GAS ON=XX°F;OFF=XX°F" IS DISPLAYED.
- 3.) USING ENTRY KEYS, ENTER THE DIFFERENTIAL THRESHOLD AT WHICH IT IS DESIRED TO TURN ON (ENERGIZE) THE HOT GAS BYPASS. IT IS PROGRAMMABLE FROM 1 TO 10°F. THE DEFAULT VALUE IS 1 F. USE LEADING ZEROES WHERE NECESSARY.
- 4.) USING ENTRY KEYS, ENTER THE DIFFERENTIAL THRESHOLD AT WHICH IT IS DESIRED TO TURN OFF (DE-ENERGIZE) THE HOT GAS BYPASS. IT IS PROGRAMMABLE FROM 2 TO 15°F. THE DEFAULT VALUE IS

- 2° F. USE LEADING ZEROES WHERE NECESSARY (ie, "08"). **IMPORTANT:** THE VALUE PROGRAMMED FOR HOT GAS OFF MUST BE AT LEAST 1° F HIGHER THAN THE VALUE PROGRAMMED FOR HOT GAS ON. IF NOT "OUT OF RANGE - TRY AGAIN) IS DISPLAYED.
- 5.) PRESS ENTER KEY. "PROGRAM MODE - SELECT SETPOINT" IS DISPLAYED.
 - 6.) PRESS PROGRAM KEY TO EXIT.

ICE STORAGE MODE

ICE STORAGE MODE IS A NEW OPERATING MODE THAT ALLOWS THE CHILLER TO MAKE ICE AT A FASTER RATE THAN NORMAL BY INHIBITING UNLOAD PULSES TO THE SLIDE VALVE. THIS WILL RESULT IN THE CHILLER RUNNING UNTIL IT EVENTUALLY SHUTSDOWN ON LOW WATER TEMPERATURE (LWT @ 4° F BELOW SETPOINT); UNLESS A LOCAL/REMOTE STOP OR SAFETY SHUTDOWN OCCURS FIRST.

IN NORMAL OPERATION, WHEN THE LEAVING CHILLED LIQUID TEMPERATURE DECREASES TO THE LEAVING CHILLED WATER (LIQUID) TEMP SETPOINT, UNLOAD PULSES ARE APPLIED TO THE SLIDE VALVE PREVENTING THE CHILLER FROM SHUTTING DOWN ON LWT. HOWEVER, IF ICE STORAGE MODE IS SELECTED AND ENABLED, NO UNLOAD PULSES ARE APPLIED UNLESS THE MOTOR CURRENT INCREASES TO THE CURRENT LIMIT THRESHOLD.

IN ORDER FOR ICE STORAGE MODE TO BE SELECTED, THE CHILLER MUST BE CONFIGURED FOR BRINE COOLING MODE (MICRO BOARD PROGRAM JUMPER JP3 REMOVED), THE LEAVING CHILLED LIQUID TEMP SETPOINT MUST BE PROGRAMMED BETWEEN 20° F AND 32° F, AND THE OPERATOR MUST SELECT ICE STORAGE MODE AT THE KEYPAD. AFTER ICE STORAGE MODE HAS BEEN SELECTED, ANYTIME THE LEAVING CHILLED LIQUID TEMP SETPOINT IS SET ABOVE 32° F, ICE STORAGE MODE IS AUTOMATICALLY "DISABLED" (ALLOWS UNLOAD PULSES). IT WILL THEN BE AUTOMATICALLY "ENABLED" (INHIBITS UNLOAD PULSES) WHEN THE SETPOINT IS LOWERED TO BELOW 32° F. THIS ALLOWS THE CHILLER TO BE SWITCHED IN AND OUT OF ICE STORAGE MODE (AFTER IT HAS BEEN SELECTED AT THE KEYPAD) BY LOCAL OR REMOTE CHANGE OF THE LEAVING CHILLED LIQUID TEMP SETPOINT. THIS FEATURE ALLOWS THE CHILLER TO MAKE ICE IN THE NIGHT-TIME HOURS AND PERFORM AIR CONDITIONING DUTY DURING THE DAYTIME HOURS SIMPLY BY CHANGING THE SETPOINT.

TO ADD GREATER OPERATING FLEXIBILITY, TWO DIFFERENT LOW WATER TEMP RESTART THRESHOLDS (SEE EXPLANATION OF LWT RESTART OFFSET BELOW) CAN BE PROGRAMMED; ONE FOR WHEN ICE STORAGE MODE IS ENABLED AND ONE FOR WHEN IT IS DISABLED. FOR EXAMPLE, IF ICE STORAGE IS SELECTED AND THE ICE STORAGE LEAVING CHILLED LIQUID TEMP SETPOINT IS 20° F AND THE ICE STORAGE LWT RESTART OFFSET IS PROGRAMMED FOR 10° F, AND THE CHILLER SHUTDOWN ON LOW WATER TEMP, THE CHILLER WOULD RESTART WHEN THE LEAVING CHILLED WATER INCREASED TO 30° F. HOWEVER, WHEN THE LEAVING CHILLED LIQUID TEMP SETPOINT IS THEN INCREASED TO 40° F, AND THE NON ICE STORAGE LWT RESTART OFFSET IS PROGRAMMED FOR 5° F, THE CHILLER WOULD RESTART WHEN THE LEAVING CHILLED LIQUID TEMP REACHED 45° F.

WHEN THE CHILLED LIQUID TEMP SETPOINT KEY IS PRESSED AND THE FOLLOWING MESSAGE IS DISPLAYED, ICE STORAGE MODE IS ENABLED AND THE DISPLAYED LEAVING CHILLED LIQUID TEMP SETPOINT AND LWT RESTART OFFSET ARE IN EFFECT:

"ICE LEAVING SETP = XX.X°F RESTART = +XX°F"

WHEN THE CHILLED LIQUID TEMP SETPOINT KEY IS PRESSED AND THE FOLLOWING IS DISPLAYED, ICE STORAGE MODE IS NOT ENABLED AND THE DISPLAYED LEAVING CHILLED LIQUID TEMP SETPOINT AND LWT RESTART THRESHOLD ARE IN EFFECT:

"LEAVING SETP = XX.X°F RESTART = +XX°F"

TO SELECT ICE STORAGE MODE AND PROGRAM DESIRED LEAVING CHILLED LIQUID TEMP SETPOINT AND LWT RESTART OFFSET (FOR ICE STORAGE MODE ENABLED AND DISABLED), PROCEED AS FOLLOWS:

- 1.) REMOVE MICRO BOARD PROGRAM JUMPER JP3.
- 2.) ENTER PROGRAM MODE USING ACCESS CODE 9-6-7-5.
- 3.) PRESS CHILLED LIQUID TEMP SETPOINT KEY.
"LEAVING SETPOINT = XX°F (BASE)" IS DISPLAYED
- 4.) USING ENTRY KEYS, ENTER DESIRED VALUE BETWEEN 20°F AND 32°F. IF CANCEL KEY IS PRESSED, DEFAULT VALUE 45.0 IS DISPLAYED.
- 5.) PRESS ENTER KEY.
- 6.) PRESS ADVANCE DAY/SCROLL KEY.
"LWT RESTART OFFSET = XX°F" IS DISPLAYED.
- 7.) USING ENTRY KEYS, ENTER THE DESIRED VALUE BETWEEN 0°F AND 15°F. THIS IS THE OFFSET VALUE THAT WILL BE IN EFFECT WHEN ICE STORAGE MODE IS DISABLED. USE LEADING ZEROES WHERE NECESSARY (ie; 05). IF CANCEL KEY IS PRESSED, DEFAULT VALUE "0" IS DISPLAYED. REFER TO BELOW FOR EXPLANATION OF LWT RESTART OFFSET.
- 8.) PRESS ENTER KEY.
- 9.) PRESS ADVANCE DAY/SCROLL KEY.
"SELECT ICE STORAGE MODE? 0 (YES=1;NO=0)" IS DISPLAYED.
- 10.) USING ENTRY KEYS, PRESS "1" TO SELECT ICE STORAGE MODE; OTHERWISE, PRESS "0". IF CANCEL KEY IS PRESSED, DEFAULT VALUE "0" IS DISPLAYED.
- 11.) PRESS ENTER KEY.
- 12.) PRESS ADVANCE DAY/SCROLL KEY.
"ICE STORAGE LWT RESTART OFFSET = XX°F"
- 13.) USING ENTRY KEYS, ENTER THE DESIRED VALUE BETWEEN 0°F AND 15°F. THIS IS THE OFFSET VALUE THAT WILL BE IN EFFECT WHEN ICE STORAGE MODE IS ENABLED. USE LEADING ZEROES WHERE NECESSARY (ie; 06). IF CANCEL KEY IS PRESSED, DEFAULT VALUE "15" IS DISPLAYED. REFER TO BELOW FOR EXPLANATION OF LWT RESTART OFFSET.
- 14.) PRESS ENTER KEY.
- 15.) PRESS PROGRAM KEY TO EXIT.

LOW WATER TEMP SHUTDOWN RESTART THRESHOLD

PREVIOUS EPROM VERSIONS HAD A FIXED LOW WATER TEMP (LWT) SHUTDOWN RESTART THRESHOLD. THE CHILLER WOULD RESTART WHEN THE LEAVING CHILLED LIQUID TEMPERATURE INCREASED TO THE PROGRAMMED LEAVING CHILLED LIQUID TEMP SETPOINT VALUE. IN CERTAIN LIGHT LOAD APPLICATIONS, THIS COULD CAUSE EXCESSIVE CHILLER CYCLING.

TO DELAY THE CHILLER STARTING UNTIL THE LOAD IS GREATER, THE LWT RESTART THRESHOLD IS NOW PROGRAMMABLE FROM 0°F TO 15°F ABOVE THE LEAVING CHILLED LIQUID TEMP SETPOINT. WHEN THE CHILLER SHUTSDOWN ON A LOW WATER TEMP CYCLING SHUTDOWN, IT WILL AUTOMATICALLY RESTART WHEN THE LEAVING CHILLED LIQUID TEMP REACHES THE PROGRAMMED RESTART THRESHOLD. THE RESTART THRESHOLD IS THE SUM OF THE SETPOINT AND THE OFFSET. FOR EXAMPLE, IF THE LWT RESTART OFFSET THRESHOLD IS PROGRAMMED FOR 5°F, AND THE LEAVING CHILLED LIQUID TEMP SETPOINT IS PROGRAMMED FOR 42°F, THE CHILLER WILL RESTART WHEN THE LEAVING CHILLED LIQUID TEMP INCREASES TO 47°F (42+5=47). IF THE OFFSET IS PROGRAMMED FOR 0°F, THE CHILLER WILL RESTART WHEN THE LEAVING CHILLED LIQUID TEMP REACHES THE SETPOINT.

WHEN OPERATING IN BRINE MODE AND ICE STORAGE MODE (SEE ABOVE) HAS BEEN SELECTED, TWO DIFFERENT OFFSET VALUES CAN BE PROGRAMMED; ONE IS IN EFFECT WHEN ICE STORAGE MODE IS ENABLED (LEAVING CHILLED LIQUID TEMP SETPOINTS 20 TO 32°F), THE OTHER IS IN EFFECT WHEN ICE STORAGE MODE IS DISABLED (LEAVING CHILLED LIQUID TEMP SETPOINTS GREATER THAN 32°F).

THE LWT RESTART OFFSET THAT IS IN EFFECT AT ANY TIME, CAN BE DISPLAYED BY PRESSING THE LEAVING CHILLED LIQUID TEMP SETPOINT KEY. IF ICE STORAGE MODE IS IN EFFECT, "ICE LEAVING SETP = XX.X °F RESTART = +XX °F" IS DISPLAYED. OTHERWISE, "LEAVING SETP = XX.X °F RESTART = +XX °F" IS DISPLAYED.

TO PROGRAM THE LWT RESTART OFFSET (IF NOT OPERATING IN BRINE MODE), PROCEED AS FOLLOWS. IF OPERATING IN BRINE COOLING MODE, FOLLOW INSTRUCTIONS ABOVE UNDER ICE STORAGE MODE.

- 1.) ENTER PROGRAM MODE USING ACCESS CODE 9-6-7-5.
- 2.) PRESS CHILLED LIQUID TEMP SETPOINT KEY.
- 3.) PRESS ADVANCE DAY/SCROLL KEY.
"LWT RESTART OFFSET = XX°F" IS DISPLAYED.
- 4.) USING ENTRY KEYS, ENTER DESIRED VALUE BETWEEN 0°F AND 15°F. USE LEADING ZEROES WHERE NECESSARY (ie; 05). IF CANCEL KEY IS PRESSED, DEFAULT VALUE "0" IS DISPLAYED.
- 5.) PRESS ENTER KEY.
- 6.) PRESS PROGRAM KEY TO EXIT.

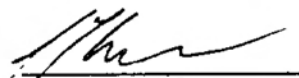
FAX-4500 DATA

THE ABOVE ENHANCEMENTS REQUIRE THE FOLLOWING DATA TO BE SENT TO THE FAX-4500 VIA THE MICRO BOARD RS-485 SERIAL DATA PORT:

- A.) ICE STORAGE MODE STATUS; SELECTED OR NOT SELECTED. SENT AS FEATURE 54, PAGE 55.
- B.) LWT RESTART OFFSET. SENT AS FEATURE 54, PAGE 66. IF CHILLER IS OPERATING IN ICE STORAGE MODE (ICE STORAGE MODE ENABLED), THE ICE STORAGE MODE LWT RESTART OFFSET IS SENT. IF CHILLER IS NOT OPERATING IN ICE STORAGE MODE, (ICE STORAGE MODE DISABLED), THE NORMAL LWT RESTART OFFSET IS SENT.

LOW WATER TEMP SHUTDOWN THRESHOLD - BRINE MODE

IN BRINE OPERATING MODE (MICRO BOARD PROGRAM JUMPER JP3 REMOVED), ANYTIME THE LEAVING CHILLED LIQUID TEMP SETPOINT IS INCREASED, THE LOW WATER TEMP CYCLING SHUTDOWN THRESHOLD REMAINS THE SAME FOR THE NEXT TEN MINUTES TO ELIMINATE NUISANCE TRIPS. FOR EXAMPLE, IF THE SETPOINT IS 30 °F THE LWT SHUTDOWN THRESHOLD IS 26 °F (4 °F BELOW SETPOINT). IF THE SETPOINT IS RAISED TO 40 °F, THE SHUTDOWN THRESHOLD REMAINS AT 26 °F FOR THE NEXT 10 MINUTES; THEN IT BECOMES 36 °F.



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CODE:SK