BULLETIN

Carrier Corporation

Carrier
A United Technologies Company

North American Operations

Number: C9917 Date: 11/1/99 Supersedes: N/A Date:
Title: CENTRIFUGAL CHILLER PIC I Y2K REMEDIATION
Category: *GENERAL* Termination Date:
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Models Affected: CAC: 17/19 Series Centrifugal chillers with PIC I Controls – Factory installed or retrofit
BDP: None

Situation:
It was recently discovered that some 17 and 19 series chillers with PIC I controls could experience abnormal start-up conditions in the year 2000. A convenient work around has been determined for all chillers except those operating in a Carrier Comfort Network (CCN). Software has been revised for new production chillers and for those on CCN systems. Each international and domestic regional office has program guidelines with the answers to frequently asked questions and sample customer letters.

This bulletin includes:

Background Statement
Y2K Problem Description with models affected
Corrective Action - Factory and Field
Field Remediation Process
Software Version Table
Software Version Identification Procedure
Date Change Procedure
Date Change Label Script
Installation of New or Downloaded PSIO Module

Background:
Most centrifugal chillers have an oil-heating algorithm to maintain the oil at a minimum temperature when the machine is in shutdown mode (not running). This is to minimize the amount of refrigerant that can be absorbed by the oil while the compressor is not operating.

After an extended power outage (more than 3 hours, or on the first start-up following first setting of the control's time and date with a new PSIO module) special actions are enforced in addition to getting the oil temperature back up to normal to provide good lubrication at start-up.

Ramp Loading: After an extended power outage, all of the PIC I centrifugal chillers are forced to follow temperature-based ramp loading at the lowest configurable rate (2 degrees F per minute), regardless of the ramp loading mode configured in the LID. The machine loads up as slowly as possible in order to reduce oil foaming.

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

Enhanced Oil Heating: After a 3 hour power outage some models require the oil to be heated to a higher threshold than normal (190◦ F or Evap Refrig Temp + 100◦ F, whichever is lower). After achieving this elevated oil temperature, startup can proceed. The higher oil heating threshold ensures that excessive refrigerant has been removed from the oil in the sump, thereby providing proper lubrication to the bearings.

Y2K Problem Description:
The code incorrectly enforces the special action(s) on all start-ups in 2000, rather than just after a 3 hour or greater power outage or on the first start-up following first setting of the control's time and date with a new PSIO module. The control was originally programmed to interpret "00" in a YY-date code (also the last two digits in 2000) as an indicator of a new PSIO being powered up for the first time.

Models Affected:
- 19XL, XT, XR, XRT, and 17/19EX, EF, FA, FX - Once the compressor starts, it is limited to a pull-down rate of 2F per minute. This is not likely to be noticed on most jobs.

- All 19XL, XT and those 19EX, EF, FA, FX with Ver. 01 and 02 - The enhanced oil heat algorithm is invoked which requires the higher oil temperature for start-up. This could add a 2 to 5 hour delay before the chiller is allowed to start.

- All Units - The actions described above will apply to every start (including recycle restarts) throughout the year 2000. The symptoms will disappear in the following year (2001).

Models Not Affected:
- Other chillers, which use the PSIO such as the 23XL and 30 series chillers, are not affected. The problem is in the product software, not the basic module.

Corrective Action:
- Factory - Chillers built after September 1, 1999 have revised software that is Y2K-ready.

- Field - Non CCN Jobs (including units with DataPort, DataLink or TeLink) - A manual reset by the customer of the chiller's year (YY) field to 19 before December 31, 1999 is suggested. In 2000 the display in the YY field will roll over to 20 corresponding to 2020. Both 2000 and 2020 are leap years. Labels for the control panel which alert operators to the date change will be provided in many languages.

- Field - CCN Jobs - New software for the existing PSIO modules is necessary because a network time broadcaster configured anywhere on the network will broadcast the time and date twice each day which will reset the PIC to the correct date, thereby defeating a manual year change in the chiller control.

NOTE: Systems with DataPort, DataLink or Telnet aren't considered full CCN systems because these programs read data from the PIC and pass it to a third party system and have limited ability to write to the PIC. The PIC's date can't be changed by the third party system.

Field Remediation Process:

- A common program for international and domestic regions to administer has been developed. Please address your question to the regional administrator.

- The Y2K website has been revised to reflect the problem and remediation. See www.carrier.com/y2k.

- Identify the owners or managers of all 17/19 series chillers with PIC I controls affected by this Y2K issue.

- Advise those with chillers not in CCN systems of the preferred work-around (date change), providing them with explanatory letters and date change labels.

- Recommend that those with 3rd party network systems advise their supplier that the yy date field will read 19 in 1999 and 20 in 2000.

- Advise those with CCN systems of the impact:

  - Slow ramp loading for all
  - Unacceptable pre-start oil temperature shift with 19XL, XT and those 19EX, EF, FA, FX chillers with Ver. 01 and 02

- Establish a program to upgrade software as required. This is primarily for CCN jobs.

  - Software has been provided to field service and controls engineers involved with the remediation.
  - A quantity of blank PSIO II modules will be provided to each region to be used to start an exchange program. The element # will have to be adjusted for downloading to 90 (S1=5, S2=A).

- General comments regarding the software upgrade program:

  - PSIO I modules (HK50AA020) can be downloaded with Y2K-ready software and be reused on chillers that have operated with PSIO I modules.
  - Centrifugal chillers that had PSIO II modules must have PSIO II modules (HK50AA023) for replacements. PSIO II modules may be used on chillers with PSIO I modules if stock is available. PSIO II modules are more resistant to electrical noise.
  - Since there may be internal table changes from one version to another that will affect the integrity of CCN system graphics, use Y2K-ready software versions that match the existing software versions when possible on CCN jobs. Y2K-ready versions for 19XL ver. 09, 10, 11 and 19XR ver. 02 and 03 have been created.
  - The CCN service tool can be used to upload configuration data from the old software and download it into modules with Y2K ready software of the same version number.
  - Y2K-ready software matching the CCN-compatibility of older versions of 17/19EX, EF, FA, FX software will not be available. Y2K-ready replacement software is available but a CCN qualified technician/engineer must gather the existing configuration data and rebuild CCN graphics as necessary after installing a PSIO with Y2K-ready software.
  - A separate CCN guideline is available through the APO, ETO, LAO and NAO regions.

Software Version Table:

Product Code	CURRENT PIC Software		REPLACEMENT PIC Software		Can existing configuration be downloaded into new Y2K-Ready PIC?
	Software Release	Ext. Ver. No.	Software Release	Ext. Ver. No.	
19XL	CESR500046-09 CESR500046-10 CESR500046-11 Latest production version:	09 10 11	CESR131231-09 CESR131231-10 CESR131231-11 CESR500046-12	09 10 11 12	Yes Yes Yes No
19XR (PIC-I)	CESR131130-02 CESR131130-03 Latest production version:	02 03	CESR131232-02* CESR131232-03 CESR131130-04	02 03 04	Yes Yes No
19EX,EF,FA,FX	CESR500071-02	02	CESR500071-04	04	No
17EX,FA,FX	CESR131124-02	02	CESR131124-03	03	No

* Versions 02 dated 9/23/99 and dated 11/15/99 have an error. Use Ver. 02 dated 11/30/99.

Software Version Identification Procedure:

Use the following procedure the read the chiller software version from your chiller's LID Display (located in the control panel mounted on the chiller):

1. With the display showing the default screen, press the **MENU** key.
2. Press **SERVICE**.
3. Enter the four digits of your password, one at a time. An asterisk appears as each digit is entered. The initial factory password is: **1 1 1 1**.
4. When the SERVICE screen appears, press **NEXT** repeatedly to scroll the highlighted line down to **CONTROLLER IDENTIFICATION** or **CVC CONFIGURATION**, then press **SELECT**.
5. Read the line **SOFTWARE PART #: CESR - x x x x x x - z z**. This is the number, which will indicate whether or not the chiller's control falls into the category of "Y2K-Ready" or "Non-Y2K-Ready". (Note: If the name of the screen is **CVC CONFIGURATION**, this is a PIC-II control, and it *is* Y2K-Ready.)
6. Press **EXIT** twice to return to the default screen.

Date Change Procedure:
For chillers not connected to Carrier Comfort Network (CCN) integrated products

To avoid possible abnormal chiller start-up during the Year 2000, this date change should be made by December 31, 1999.

A simple corrective action for stand-alone chillers not connected to a Carrier Comfort Network (CCN) is a manual reset of the chiller's internal clock. Customers can perform this operation on their own. Customers with stand-alone chillers using DataLink® and DataPort® to interface with control systems manufactured by parties other than Carrier should contact those manufacturers to confirm that the manual reset will not impact the operation of their system.

The date can be changed while the chiller is operating or with it turned off. Refer to the Start-Up, Operation, and Maintenance Instructions for more control operation details if needed.

The instructions are as follows:

1. With the control panel default screen displayed, press the MENU soft key
2. Press SERVICE.
3. Enter the four digits of your password, one at a time. An asterisk appears as each digit is entered. The initial factory password is: 1-1-1-1.
4. Press NEXT to scroll the cursor bar down and highlight TIME AND DATE.
5. Press SELECT to display the TIME AND DATE screen.
6. Press ENTER until the two digit year field is highlighted.
7. Press INCREASE or DECREASE to change the year field from "99" to "19".
8. Press EXIT to save the changes.
9. Press EXIT again to return to the default screen.

Performing this corrective action will provide continued operation of your chiller through the year 2000. The display can be reset to 01 in 2001. After performing the manual reset, please contact Carrier to receive a label to be placed on your chiller throughout the year 2000, which will alert operators to the deliberate date change.

Date Change Label Script:

ATTENTION:

This chiller's date has been adjusted to allow proper chiller startup during the year 2000. Until the year 2001, *do not reset the date or remove this label*. If you have any questions, please contact your local Carrier service office.

Installation of New or Downloaded PSIO Module

Following is a summary of the installation procedure. Complete instructions can be found in the Start-Up, Operation and Maintenance Instructions. CCN systems require special considerations.

1. Record the PSIO configuration data such as chiller's address, run hours, starts, setpoints, voltage, FLA, Delta P1, 2 and Delta T1, 2 and, using the O&M, all configurations that are not set to default.
2. Replace the module.
3. Restore control power and verify that the red and green LEDs are functioning properly,
4. Access the Attach to Network Device Function on the LID Service menu. Press ATTACH to upload the PSIO into the LID. (to default address 90).
5. Change address as necessary in the controller identification screen.
6. Input all configurations as recorded above.
7. Set time and date.
8. Calibrate machine voltage.
9. Perform a controls test.
10. Calibrate Cooler/Condenser/Oil pressure transducers.
11. Start unit and calibrate motor amps.