UNITED TECHNOLOGIES CARRIER

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-19-D-90-122
DATE: 5/1/90
PAGE: 1 OF: 5

SERVICE BULLETIN

SUPERSEDE BULLETIN:
DATE:
PAGE: OF:

SUBJECT: 32MP CONTROL IMPROVEMENTS (ESP II)

PURPOSE

The purpose of this bulletin is to advise of improvements in the 32MP control logic on chillers shipped after March 1, 1990 and to provide the instructions for upgrading older controls, if desired.

MACHINES AFFECTED

All 17/19 series machines with 3200MP controls

BACKGROUND

32MP software has been revised to correct some options, improve chiller performance and provide new features. Some items in these three areas are:

1. Auto start after a short power interruption, proper 5 minute pre- and post-lube and 5 minute pre-lube after power interruptions or POR for 19C/CB's in control retrofit applications.

2. Specific sensor out of range definitions (64-x), (64 flashes with a different number for each sensor) and a lag shutoff correction factor.

3. Standby operation (lag chiller or lag compressor (17/19DR) will continue to run or will start if there is a lead failure) and two more spare sensors to read customer selected parameters by ESP.

Material required:

Single Compressor with LEAD/LAG & ESP II style ESP Assembly (1988 and later**)

MX PC Board *	32MP400-874 (HK35EZ011)
EPROM Kit	32MP660-012
Display Code Label	19EB516-1153

Single Compressor with LEAD/LAG & ESP I style ESP Assembly (1987 and earlier**)

MX PC Board *	32MP400-874 (HK35EZ011)
ESP Back PC Board	HK35EZ012-1
EPROM Kit	32MP660-012
Display Code Label	19EB516-1153

Single Compressor without LEAD/LAG (type 1 corrections)

EPROM Kit	32MP660-014
Display Code Label	19EB516-1153

17/19DR Dual Compressor chiller with no ESP

MX Board	32MP400-874 (HK35EZ011)
EPROM Kit	32MP660-013
Display Code Label	19DR516-1083

17/19DR Dual Compressor chiller with ESP II style ESP Panel (1988 and later**)

EPROM Kit	32MP660-013
Display Code Label	19DR516-1083

17/19DR Dual Compressor chiller with ESP I style ESP Panel (1987 and earlier**)

ESP Back PC Board	HK35EZ012-1
EPROM Kit	32MP660-013
Display Code Label	19DR516-1083

* The dual compressor memory expansion board (MX) is used for ESP II on both single and dual compressor chillers. It has a soldered in jumper (W1).

** ESP II Panel identification - Only the back printed circuit board on the assembly is different. ESP II boards have all the components in a vertical orientation and they do not have an option header.

NEW OR REVISED SOFTWARE KITS WITH 1990 LOGIC UPGRADES

		ESP I		ESP II	
		Single Comp.	Dual Comp.	Single Comp.	Dual Comp.
EPROM Kit		32MP660-014	32MP660-011	32MP660-012	32MP660-013
Includes:	Basic	HK98EZ100	NOT	HK98EZ100	HK98EZ130
	M/X	HK98EZ016	AVAILABLE	HK98EZ110	HK98EZ140
	ESP	HK98EZ023	(INVALID)	HK98EZ120	HK98EZ150
	Opt-Pak	32MP400-023		N/A	N/A

Installation Procedure:

1. Turn off control power.

2. Replace the ESP back PC board if it is not already the ESP II style.

3. Modify or add an MX PC board if required. All dual compressor controls will need an MX board even if they do not have an ESP. The MX board permits the use of an EPROM with more memory which is needed even with no options.

4. Carefully replace the EPROM's with valid sets. No Opt-Pak is required for options with ESP II hardware. All options are available if the customer purchases an ESP.

5. Configure the DIP switches as called for in the latest Operation & Maintenance Instructions dated 1987 or later.

6. Add the new display code label.

7. Operate the chiller to verify proper operation.

8. Instruct the customer on the new features and display codes.

DISPLAY CODES

TYPE	CODE NO.	FUNCTION
TIMER	1-15	TIME REMAINING UNTIL RESTART (DECREASES AT ONE MINUTE INTERVALS)
START STATUS	20	READY FOR START-UP, LOCAL
	21	READY FOR START-UP, REMOTE CONTACT
	22	READY FOR START-UP, ESP
	23	LAG MACHINE READY FOR RESTART
	25	RECYCLE RESTART PENDING
	26	STARTUP IN PROGRESS
RUN STATUS	27	RESET OPTION ACTIVE
	28	NORMAL TEMPERATURE CONTROL
	29	RAMP LOADING CONTROL
	30	DEMAND LIMIT CONTROL
	31	LEAD / LAG MANUALLY DECOUPLED, LEAD IN LOCAL
	32	LEAD / LAG MANUALLY DECOUPLED, LAG IN LOCAL
	33	LEAD / LAG TEMPORARILY DECOUPLED, LEAD COMMUNICATION ERROR
	34	LEAD / LAG TEMPORARILY DECOUPLED, LAG COMMUNICATION ERROR
	35	MOTOR TEMPERATURE OVERRIDE
	36	REFRIGERANT TEMPERATURE OVERRIDE
	37	EXCESSIVE PURGING
	38	LEAD CHILLER REDESIGNATION IN PROCESS
	39	LEAD / LAG RESTORATION IN PROGRESS
PRESTART FAILURE STATUS	40	HIGH MOTOR TEMPERATURE
	41	STARTS LIMIT EXCEEDED
	42	CONDENSER WATER FLOW INADEQUATE
	43	EVAPORATOR WATER FLOW INADEQUATE
	44	DEFECTIVE OIL PRESSURE SWITCH
	46	FAILURE TO ESTABLISH OIL PRESSURE
	47	EXCESSIVE IMPELLER DISPLACEMENT
	48	LOW/HIGH LINE VOLTAGE
	54	LEAD CHILLER MALFUNCTION
	55	LAG CHILLER MALFUNCTION
SHUTDOWN STATUS	60	HIGH DISCHARGE TEMPERATURE
	61	LOW REFRIGERANT TEMPERATURE
	62	HIGH MOTOR TEMPERATURE
	63	HIGH THRUST BEARING TEMPERATURE
	64/1	LEAVING CHILLER WATER SENSOR OUT OF RANGE
	64/2	EVAPORATOR REFRIGERANT SENSOR OUT OF RANGE
	64/3	CONDENSER REFRIGERANT SENSOR OUT OF RANGE
	64/4	THRUST BEARING SENSOR OUT OF RANGE
	64/5	MOTOR WINDING SENSOR OUT OF RANGE
	64/6	DISCHARGE TEMPERATURE SENSOR OUT OF RANGE
	64/7	OPTIONAL TEMPERATURE #1 SENSOR OUT OF RANGE
	64/8	OPTIONAL TEMPERATURE #2 SENSOR OUT OF RANGE
	65	LOW OIL PRESSURE
	66	MOTOR OVERLOAD TRIP
	67	TEMPORARY LOSS OF LINE VOLTAGE
	68	LOW LINE VOLTAGE
	69	HIGH LINE VOLTAGE
	70	LOSS OF CHILLED WATER FLOW
	71	LOSS OF CONDENSER WATER FLOW
	72	EXCESSIVE IMPELLER DISPLACEMENT
	73	HIGH CONDENSER PRESSURE
	74	FAILURE OF STARTER TO COMPLETE TRANSITION
	75	EXCESSIVE MOTOR ACCELERATION TIME
	76	IMPROPER DIP SWITCH CONFIGURATION
	77	STARTER CONTACTS FAIL TO OPEN
	78	MANUAL OVERRIDE SHUTDOWN
	79	SPARE PROTECTIVE LIMIT TRIP
	80	RECYCLE WITH HIGH MOTOR CURRENT
	81	COMMUNICATIONS MALFUNCTION
	82	LOSS OF MOTOR CURRENT SIGNAL
	87	STARTER RUN CONTACT OPENED WHILE MACHINE RUNNING
	89/4	DIFFUSER FEEDBACK POTENTIOMETER OUT OF RANGE

19EBS16-1153

DISPLAY CODES

TYPE	CODE NO.	FUNCTION
TIMER	1-15	TIME REMAINING UNTIL RESTART (DECREASES AT ONE MINUTE INTERVALS)
START STATUS	20	READY FOR START-UP, LOCAL
	21	READY FOR START-UP, REMOTE CONTACT
	22	READY FOR START-UP, ESP
	23	LAG COMPRESSOR READY FOR RESTART
	24	LAG COMPRESSOR MANUALLY DISABLED
	25	RECYCLE RESTART PENDING
	26	STARTUP IN PROGRESS
RUN STATUS	27	RESET OPTION ACTIVE
	28	NORMAL TEMPERATURE CONTROL
	29	RAMP LOADING CONTROL
	30	DEMAND LIMIT CONTROL
	35	MOTOR TEMPERATURE OVERRIDE
	36	REFRIGERANT TEMPERATURE OVERRIDE
	37	EXCESSIVE PURGING
	39	LEAD/LAG RESTORATION IN PROGRESS
PRESTART FAILURE STATUS	40	HIGH MOTOR TEMPERATURE
	41	STARTS LIMIT EXCEEDED
	42	CONDENSER WATER FLOW INADEQUATE
	43	EVAPORATOR WATER FLOW INADEQUATE
	44	DEFECTIVE OIL PRESSURE SWITCH
	46	FAILURE TO ESTABLISH OIL PRESSURE
	48	LOW/HIGH LINE VOLTAGE
	54	LEAD COMPRESSOR MALFUNCTION
	56	LAG COMPRESSOR MALFUNCTION
SHUTDOWN STATUS	60	HIGH DISCHARGE TEMPERATURE
	61	LOW REFRIGERANT TEMPERATURE
	62	HIGH MOTOR TEMPERATURE
	63	HIGH THRUST BEARING TEMPERATURE
	64/1	LEAVING CHILLER WATER SENSOR OUT OF RANGE
	64/2	EVAPORATOR REFRIGERANT SENSOR OUT OF RANGE
	64/3	CONDENSER REFRIGERANT SENSOR OUT OF RANGE
	64/4	THRUST BEARING SENSOR OUT OF RANGE COMPRESSOR A
	64/5	MOTOR WINDING SENSOR OUT OF RANGE COMPRESSOR A
	64/6	DISCHARGE TEMPERATURE SENSOR OUT OF RANGE COMPRESSOR A
	64/7	OPTIONAL TEMPERATURE #1 SENSOR OUT OF RANGE
	64/9	THRUST BEARING SENSOR OUT OF RANGE COMPRESSOR B
	64/10	MOTOR WINDING SENSOR OUT OF RANGE COMPRESSOR B
	64/11	DISCHARGE TEMPERATURE SENSOR OUT OF RANGE COMPRESSOR B
	65	LOW OIL PRESSURE
	66	MOTOR OVERLOAD TRIP
	67	TEMPORARY LOSS OF LINE VOLTAGE
	68	LOW LINE VOLTAGE
	69	HIGH LINE VOLTAGE
	70	LOSS OF CHILLED WATER FLOW
	71	LOSS OF CONDENSER WATER FLOW
	73	HIGH CONDENSER PRESSURE
	74	FAILURE OF STARTER TO COMPLETE TRANSITION
	75	EXCESSIVE MOTOR ACCELERATION TIME
	76	IMPROPER DIP SWITCH CONFIGURATION
	77	STARTER CONTACTS FAIL TO OPEN
	78	MANUAL OVERRIDE SHUTDOWN
	79	SPARE PROTECTIVE LIMIT TRIP
	80	RECYCLE WITH HIGH MOTOR CURRENT
	81	COMMUNICATIONS MALFUNCTION
	82	LOSS OF MOTOR CURRENT SIGNAL
	85	DIFFUSER WALL MALFUNCTION
	87	STARTER RUN CONTACT OPENED WHILE MACHINE RUNNING
	88	LAG COMPRESSOR SURGE PROTECTION SHUTDOWN
	89/4	COMPRESSOR A DIFFUSER FEEDBACK POTENTIOMETER OUT OF RANGE
	89/5	COMPRESSOR B DIFFUSER FEEDBACK POTENTIOMETER OUT OF RANGE

WARNING

OVERCURRENT SHUTDOWN (CODE66) OF THE COMPRESSOR MAY. INDICATE A SERIOUS PROBLEM. REFER TO THE CARRIER OPERATION AND MAINTENANCE MANUAL BEFORE RESTARTING.

19DR516-1083