

UNIT SWITCH

(Refer to Fig. 12, page 129)

This rocker switch is used to locally operate the unit. It is used to start, run and stop the compressor. Also, it resets the Control Center after a safety shutdown.

To **START** unit in **LOCAL** mode:

Move **UNIT** switch from **STOP/RESET** to **START** position. Switch will spring-return to **RUN** position.

To **STOP** the unit:

Move switch from **RUN** to **STOP/RESET** position.

To **RESET** Control Center:

Following a safety shutdown, the operator is required to reset the Control Center prior to restarting the system. Move switch from **RUN** to the **STOP/RESET** position.

*NOTE: The operator cannot start the unit (using this switch) when the Control Center is in the **REMOTE** mode.*

DISPLAY MESSAGES

SYSTEM READY TO START:

SYSTEM READY TO START

System has no status message to report and will start when a start signal is applied.

SYSTEM READY TO START – DILUTION

Same as above, but a dilution cycle is in progress.

SYSTEM READY TO START – PRESS STATUS

System will start when a start signal is applied. The operator is instructed to press the **STATUS** key to view a status message.

SYSTEM READY TO START – DIL'N – PRESS STATUS

Same as above, but a dilution cycle is in progress.

SYSTEM READY TO START – PURGE OL FAULT

System will start when a start signal is applied. However, the purge pump (M3) Motor Protector (MP3) or Motor Thermal Switch (MTH3) has opened. Therefore, no automatic purge cycles will occur (if unit is equipped with optional auto-purge system). Also, manual purge cycles cannot be performed. If the motor protector has opened, it requires a manual reset. The thermal switch automatically recloses.

SYSTEM READY TO START – UNIT HOLDING

or

SYSTEM READY TO START – UNIT LOADING

or

SYSTEM READY TO START – UNIT LOADED

or

SYSTEM READY TO START – UNIT UNLOADING

or

SYSTEM READY TO START – UNIT UNLOADED

Control Center is in **SERVICE** mode. The system will start when a start signal is applied. It is in the process of holding, loading, or unloading or is in the fully loaded or unloaded position.

SYSTEM START SEQUENCE:

COOLING START SEQUENCE INITIATED

The system has received a start signal but has not yet achieved the run state. The Control Center is operating in **COOLING ONLY** or **COOLING AND HEATING** mode and is being controlled by the **Leaving Chilled Water** setpoint.

HEATING START SEQUENCE INITIATED

The system has received a start signal but has not yet achieved the run state. The Control Center is operating in **HEATING ONLY** mode and is being controlled by the **Leaving Hot Water** setpoint.

SYSTEM RUN:

SYSTEM RUN – PRESS STATUS

The system is running in **LOCAL**, **REMOTE** or **SERVICE** mode. The operator is instructed to press the **STATUS** key to display a status message.

SYSTEM RUN – MAXIMUM COOLING

The system is running in **LOCAL**, **REMOTE** or **SERVICE**

operating mode. It is operating at maximum capacity in **COOLING ONLY** or **COOLING AND HEATING** mode. The load command is equal to the **Maximum Allowed Loading** value that has been programmed by the YORK factory or field serviceman using the "Special Programming Features" in the service manual, Form 155.17-M2.

IMPORTANT!!!

*Gas/oil-fired units are allowed to load beyond any programmed or remote load limits until **Burner Calibration Full Travel Calibration** is performed.*

SYSTEM RUN – MAXIMUM HEATING

(Applies to gas/oil-fired units only.) The system is running in **LOCAL**, **REMOTE** or **SERVICE** operating mode. It is operating at maximum capacity in **HEATING ONLY** mode. The load command is equal to the **Maximum Allowed Loading** value that has been programmed by the YORK factory or field serviceman using the "Special Programming Features" in the service manual, Form 155.17-M2.

IMPORTANT!!!

*Gas/oil-fired units are allowed to load beyond any programmed or remote load limits until **Burner Calibration Full Travel Calibration** is performed.*

SYSTEM RUN – MINIMUM ALLOWED LOADING

(Applies only to steam units equipped with EPROM version A.01F.08 or later and Leslie steam valves.) Displayed when the unit has unloaded to the programmed **Minimum Allowed Loading** setpoint. This setpoint is set by the field service technician to the valve position that corresponds to 20% of unit capacity. The unit will not be allowed to unload below this valve position. Below this position, instability in operation results.

SYSTEM RUN – PULL DOWN LIMIT

System is running in **LOCAL**, **REMOTE** or **SERVICE** mode. The loading is being inhibited by the programmed **Pull Down Demand** setpoint.

SYSTEM RUN – REMOTE LOAD LIMIT

System is running in **REMOTE** mode and the unit loading is being inhibited by the **Remote Load Limit** command from a remote device. The load limit value that is in effect can be viewed by pressing the **DISPLAY DATA** keypad key in **REMOTE** mode.

On steam units, this value (20–100% steam valve position) is input from a FAX-4500 EMS to the RS-485

serial port TB7 or from a remote device in PWM form (1–11 seconds) to the relay board terminal 82. The steam valve will be limited to this position during "System Run." While the unit is in "System Run," the steam valve is not allowed to unload below 20% of unit capacity. The actual steam valve position that corresponds to 20% of unit capacity could be different for each unit. Twenty percent (20%) capacity of a given unit could be, for example, 40% steam valve position. Units equipped with Honeywell steam valves have a limit switch that opens to prevent the valve from unloading to less than 20% of unit capacity. Therefore, even though the **Remote Load Limit** attempts to limit the steam valve position to a certain percentage of full travel, it will not be permitted to unload further than the limit switch will allow.

On steam units equipped with Leslie steam valves (EPROM version A.01F.08 or later), the steam valve position corresponding to 20% of unit capacity is set by the **Minimum Allowed Loading** setpoint. The steam valve is inhibited from unloading to less than this position. If a remote device attempts to limit the loading to a valve position that is less than or equal to the **Minimum Allowed Loading** setpoint, the MicroComputer Control Center will override the remote device as follows: If a **Remote Load Limit** setpoint is received that is not greater than the **Minimum Allowed Loading** setpoint, the program will automatically set the **Remote Load Limit** setpoint to 1% above the **Minimum Allowed Loading** setpoint.

On gas/oil-fired units, this value (30–100%) is input from a FAX-4500 EMS to the RS-485 serial port TB7.

IMPORTANT!!!

*Gas/oil-fired units are allowed to load beyond any programmed or remote load limits until **Burner Calibration Full Travel Calibration** is performed.*

SYSTEM RUN – LEAVING CHILLED WATER CONTROL

The system is running in **LOCAL** or **REMOTE** mode. The loading and unloading is being automatically controlled by the **Leaving Chilled Water** setpoint. There are no status messages.

SYSTEM RUN – LEAVING HOT WATER CONTROL

The system is running in **LOCAL** or **REMOTE** mode. The loading and unloading is being automatically controlled by the **Leaving Hot Water Temp** setpoint. There are no status messages.

SYSTEM RUN – UNIT LOADING

or

SYSTEM RUN – UNIT LOADED

or

SYSTEM RUN – UNIT UNLOADING

or

SYSTEM RUN – UNIT UNLOADED

The system is running in **SERVICE** mode. It is in the process of loading or unloading due to the operator pressing the **LOAD** or **UNLOAD** keys or because of automatic control by the **Leaving Chilled Water** setpoint or **Leaving Hot Water** setpoint. Or it is in the fully loaded or unloaded position.

SYSTEM RUN – UNIT HOLDING

The system is running in **SERVICE** mode. The load command is in the process of holding because the operator has pressed the **HOLD** key. The load command is unchanging.

SYSTEM RUN – AUTO TEMP CONTROL

The system is running in **SERVICE** mode. The loading and unloading is being automatically controlled by the **Leaving Chilled Water Temp** setpoint (**COOLING ONLY** or **COOLING AND HEATING** mode) or **Leaving Hot Water Temp** setpoint (**HEATING ONLY** mode). However, it is presently not loading or unloading. The load command is **HOLD**.

SYSTEM RUN – COLD STACK FIRING LIMIT

(Applies to gas/oil-fired units only.) Displayed while the **Auto-Temp Control Delay** is maintaining the burner at minimum fire preventing unstable burner operation due to a cold stack. The **Auto-Temp Control Delay** is programmable from 0–10 minutes and can only be changed by a qualified service technician. (Refer to service manual, YORK Form 155.17-M2.)

SYSTEM SHUTDOWN:**SYSTEM SHUTDOWN – PRESS STATUS**

The system is shut down due to a cycling or safety shutdown. Pressing the **STATUS** key displays the day, time and cause of shutdown.

SYSTEM SHUTDOWN – DILUTION – PRESS STATUS

Same as above but a dilution cycle is presently in progress.

STATUS MESSAGES:**Cycling Shutdowns****SUN 12:00 AM HW FLOW SWITCH – AUTO START**

Hot water flow switch has opened for 2 continuous seconds while unit was running. This check is bypassed for the first 30 seconds of a start sequence. It is only performed on gas-fired units (micro board program jumper JP1 must be IN) operating in **HEATING ONLY** mode. The unit will automatically restart when the flow switch closes.

SUN 12:00 AM COND FLOW SWITCH – AUTO START

Condenser flow switch has opened for 2 continuous seconds while unit was running. This check is bypassed for the first 30 seconds of a start sequence. The unit will automatically restart when the flow switch closes. If the unit is equipped with EPROM version A.01F.07 (or earlier), if the flow switch does not close within 30 minutes, the cycling shutdown becomes a safety shutdown. Refer to message “Day-Time-Cond Flow Switch”.

If the unit is equipped with EPROM version A.01F.08 (or later), if the flow switch closes before the dilution terminates, the unit will automatically restart. However, if it does not close before the dilution terminates, the cycling shutdown becomes a safety shutdown. Refer to message “Day-Time-Cond Flow Switch”.

SUN 12:00 AM POWER FAILURE – AUTO START

A power failure has occurred with the Control Center operating in “Auto-Restart After Power Failure” mode (micro board program jumper JP50 is IN). If the unit is running when the power failure occurs, it will automatically restart when power is restored.

SUN 12:00 AM LOW WATER TEMP – AUTO START

The leaving chilled water temperature has decreased to $>3^{\circ}\text{F}$ below the **Leaving Chilled Water Temp** setpoint or has decreased to $<40^{\circ}\text{F}$. If the setpoint is $>43.0^{\circ}\text{F}$, the unit will automatically restart when the water temperature increases to $\geq 1^{\circ}\text{F}$ above the setpoint. If the setpoint is $<43.0^{\circ}\text{F}$, the unit will automatically restart when the water temperature increases to $\geq 44.0^{\circ}\text{F}$. If the setpoint is increased while the unit is running, the shutdown threshold remains the same as the previous threshold for 30 minutes to eliminate nuisance trips. (This check is only made when the unit is in **COOLING ONLY** or **COOLING AND HEATING** mode.)

SUN 12:00 AM LVG WATER TEMP < SETPOINT

The unit is shut down for any reason other than “SUN 12:00AM LOW WATER TEMP – AUTOSTART” and the leaving chilled water temperature is less than the **Leaving Chilled Water Temp** setpoint. It will be allowed to start when the water temperature is equal to or greater than the setpoint. If a start signal is applied while shut down with this condition, the unit will automatically start when the condition clears. (This check is only performed in **COOLING ONLY** or **COOLING AND HEATING** mode.)

NOTE: This check is not performed if the unit has shut down on

SUN 12:00 AM LOW WATER TEMP – AUTO START

*If the unit has shut down on **Low Water Temp**, then the criterion for that restart applies.*

SUN 12:00 AM SYSTEM CYCLING – AUTO START

A remote device (Energy Management System, time clock, etc.) connected to the **REMOTE/LOCAL** cycling input (TB2-1 and 13) of the digital input board has shut down the unit. Relay contacts or switch connected from 1 to 13 will cycle unit in **LOCAL** or **REMOTE** mode. When the contacts are closed, the unit runs. When the contacts open, the unit shuts down.

SUN 12:00 AM MULTI-UNIT CYCLING – AUTO START

A remote device (Energy Management System, time clock, multi-unit sequencer, etc.) connected to the **Multi-Unit** sequence input (TB2-1 and 9) of the digital input board has shut down the unit. Relay contacts or switch connected from 1 to 9 will cycle unit in **LOCAL** or **REMOTE** mode. When the contacts are closed, the unit runs. When the contacts open, the unit shuts down.

SUN 12:00 AM INTERNAL CLOCK – AUTO START

The operator-programmed daily stop schedule (**Daily Schedule** setpoint) has shut down unit. The unit will automatically restart when the operator-programmed daily start schedule initiates a start. It can be overridden by pressing the **UNIT** switch to **START** position.

SUN 12:00 AM HIGH WATER TEMP – AUTO START

The unit has shut down because the leaving hot water temperature has increased to $>5^{\circ}\text{F}$ above the **Leaving Hot Water** setpoint. The unit will automatically restart when the leaving hot water temperature decreases to $>10^{\circ}\text{F}$ below the setpoint. If the leaving hot water temperature setpoint is decreased while the unit is running, the **High Water Temp** shutdown threshold becomes 155°F (“G” series units with standard heat exchanger), 175°F (“S” and “G” series with high temp heat exchanger), 145°F (standard “S” series without heat exchanger) for 30 minutes to eliminate nuisance trips. (This check is only made when the Control Center is operating in **HEATING ONLY** mode.)

SUN 12:00 AM LVG WATER TEMP > SETPOINT

The unit is shut down for any reason except “SUN 12:00AM HIGH WATER TEMP – AUTOSTART” and the leaving hot water temperature is greater than the **Leaving Hot Water Temp** setpoint. It will be allowed to start when the leaving hot water temperature is less than or

equal to the setpoint. If a start signal is applied while shut down under this condition, the unit will automatically start when this condition clears. (This check is only performed in **HEATING ONLY** mode.)

NOTE: This check is not performed if the unit has shut down on

SUN 12:00 AM HIGH WATER TEMP – AUTO START

*If the unit has shut down on **High Water Temp**, then the criterion for that restart applies.*

SUN 12:00 AM STEAM VALVE LOADED ABOVE 10%

The unit is shut down for any reason and the steam valve remains at a position that is greater than or equal to 10% load. Steam-fed units (micro board program jumper JP1 is OUT) are not allowed to start until the steam valve position decreases to $<9\%$.

SUN 12:00 AM LOAD COMMAND ABOVE 30%

(Applies to gas/oil units only.) This message indicates that the unit is shut down and a start has been initiated and the burner load command is above 30%. Gas/oil units are not allowed to start while the load command is greater than 30%. The unit will automatically start when the load command decreases to 30%.

SUN 12:00 AM – FLS – LIMITED DIL’N OVERRIDE

(where FLS = Condenser Flow Switch). Condenser water flow is not permitted during a “Limited Dilution” cycle. If condenser water flow is sensed, through the condenser flow switch closure, the limited dilution is terminated and this message is displayed. If flow subsequently ceases, the limited dilution will resume if the solution dilution temperature (as measured by thermistor RT11) is $>136^{\circ}\text{F}$. If the solution temperature is $\leq 136^{\circ}\text{F}$, the dilution will not resume and “Day-Time-LD-Chk Sol’n Level-Abs & Gen” is displayed.

SUN 12:00 AM SOL’N PUMP ONLY DIL’N CYCLE

Displayed when a “Limited Dilution” cycle is in progress. Time displayed is the time the limited dilution was initiated. Limited dilutions are performed when the Control Center is powered by a standby power supply during power failures.

SUN 12:00 AM STANDBY POWER – UNIT LOCKOUT

Displayed while the MicroComputer Control Center is being powered by a standby power supply and the “Limited Dilution” cycle is completed or was not required because the unit was not running when the power failure occurred. Whenever a standby power supply is providing power to the MicroComputer Control Center, it will close a set of

external relay contacts connected to the digital input board TB2-95 to TB2-1. While this is displayed, the unit cannot be started and all other unit operations are inhibited and cannot be performed even with manual override.

Safety Shutdowns:

SUN 12:00 AM SOLUTION PUMP OVERLOADS OPEN

Unit has shut down because the solution pump (M1) motor protector (1OL) or motor thermal switch (MTH1) has opened. To restart the unit, press **UNIT** switch to **STOP/RESET** position, reset the **MOTOR PROTECTOR** (if tripped), then press the **UNIT** switch to the **START** position. If the shutdown was caused by the **thermal switch**, the thermal switch does not have to be reset; it automatically recloses. The motor protector is located in the power panel. The thermal switch is located inside the motor (M1).

Models 19GL through 22GL have two spray solution pumps (M4 and M5) in addition to the solution pump (M1) listed above. Spray solution pump No. 1 (M4) is protected by motor protector (4OL) and thermal switch (MTH4). Spray solution pump No. 2 (M5) is protected by motor protector (5OL) and thermal switch (MTH5). Models 16SL through 19S have a solution pump and a spray solution pump. The solution pump is protected by motor protector (1OL) and motor thermal switch (MTH1). The spray solution pump is protected by motor protector (4OL) and motor thermal switch (MTH4).

If any one of the above motor protectors or thermal switches opens, the unit will shut down.

SUN 12:00 AM REFRIG PUMP OVERLOADS OPEN

Unit has shut down because the refrigerant pump (M2) motor protector (2OL) or motor thermal switch (MTH2) has opened. To restart the unit, press **UNIT** switch to **STOP/RESET** position, reset the **MOTOR PROTECTOR** (if tripped), then press the **UNIT** switch to the **START** position. If the shutdown was caused by the **thermal switch**, the thermal switch does not have to be reset; it automatically recloses. The motor protector is located in the power panel. The thermal switch is located inside the motor (M2).

Normal dilution cycles are not performed on refrigerant pump overload safety shutdowns.

SUN 12:00 AM - PO - CHK SOL'N LEVEL - ABS & GEN

(where PO = Pump Overload). This message indicates the solution dilution temperature (as measured by thermistor RT11) was <136°F when the solution pump or refrigerant pump overload reclosed during an overload shutdown.

Since a dilution cycle does not occur when the unit shuts down on a solution pump or refrigerant pump overload

and the solution dilution temperature has cooled to <136°F while it was shut down, it is possible that crystallization has occurred during the shutdown. Therefore, this message is advising the operator to check the solution level in the absorber and generator prior to restarting the unit. If any of these areas indicate a low liquid level, crystallization has possibly occurred. Refer to YORK Form 155.17-NM1 for details of decrystallization.

After it has been determined that crystallization has not occurred, the unit can be restarted by placing the **UNIT** switch in the **STOP/RESET** position, then pressing the **WARNING/RESET** key in **SERVICE** mode and then initiating a start.

SUN 12:00 AM 1ST STAGE GEN HIGH PRESS - DIG

(where DIG = Digital Initiated Shutdown). The unit has shut down because the first stage generator high pressure safety device (HP1) has opened. It is calibrated to open at 709.8mm HgA (13.73 PSIA). It will automatically reclose at 39.8mm HgA (0.77 PSIA). To restart unit, press **UNIT** switch to **STOP/RESET** position, then to **START** position.

Gas/oil-fired models 20G through 22G have two first stage generators. Each has its own safety device. Generator No. 1 is protected by HP1. Generator No. 2 is protected by HP2. If either safety device HP1 or HP2 opens, the unit will shut down.

SUN 12:00 AM 1ST STAGE GEN HIGH PRESS - ANA

(where ANA = Analog Initiated Shutdown). The unit has shut down because the first stage generator pressure, as sensed by pressure transducer PT1 (and PT2 if Models 20G through 22G) has increased to 775.5mm HgA (15.00 PSIA). It will be allowed to restart when pressure decreases to <775.5mm HgA (<15.00 PSIA). To restart unit, press the **UNIT** switch to **STOP/RESET** position, then to **START** position.

This analog check acts as a back-up check to the digital check performed by safety device HP1 (and HP2 if Model 20G through 22G). HP1 and HP2 are calibrated to trip at 709.8mm HgA (13.73 PSIA).

SUN 12:00 AM 1ST STG GEN HI TMP - MAN RESET

The unit has shut down because the first stage generator high temperature safety device (HT1) has opened. It is calibrated to open at 330°F. It will close when manually reset (if temp <329°F). To restart unit, press the **UNIT** switch to **STOP/RESET** position, manually reset **HT1**, then press **UNIT** switch to **START** position.

Gas/oil-fired models 20G through 22G have two first stage generators. Each has its own high temperature safety device. Generator No. 1 is protected by HT1. Generator No. 2 is protected by HT2. If either safety device HT1 or HT2 remains open for more than 1 sec-

ond, the unit will shut down. This delay prevents nuisance shutdowns on units equipped with dual fuel burners when the burner is switched to the alternate fuel while running.

SUN 12:00 AM 1ST STG GEN HIGH TEMP – ANA

(where ANA = Analog Initiated Shutdown). The unit has shut down because the first stage generator temperature as sensed by thermistor RT6 (and RT7 if Model 20G through 22G) has increased to 337°F. It will be allowed to restart when temperature decreases to <337°F. To restart unit, press **UNIT** switch to **STOP/RESET**, then to **START**.

This analog check acts as a back-up to the digital check performed by safety device HT1 (and HT2 if Model 20G through 22G). HT1 and HT2 are calibrated to trip at 330°F.

SUN 12:00 AM AUXILIARY SAFETY SHUTDOWN

The unit has shut down because an external device connected to digital input board TB1–31 has initiated a shutdown. This input is a general purpose input that can be used to enunciate a user-defined safety shutdown. Typical application is normally open contacts that close to apply 115 VAC to TB1–31 to initiate a shutdown. The unit will be allowed to restart when the contacts are open. To restart unit, press the **UNIT** switch to **STOP/RESET** position, then to **START** position.

SUN 12:00 AM POWER FAILURE – MANUAL RESTART

The chiller has shut down because there has been a power failure or interruption with the Control Center configured for “Manual Restart After Power Failure” (micro board program jumper J50 is OUT). After power is restored, the unit can be restarted by pressing the **UNIT** switch to **STOP/RESET** position, then to **START** position.

SUN 12:00 AM 1ST STAGE GEN LO SOL'N LEVEL

(Applies to gas/oil-fired units only.) The unit has shut down because the first stage generator **solution level detector switch** (LS) has opened due to insufficient level. The switch will automatically reclose when there is sufficient level. To restart unit, press **UNIT** switch to **STOP/RESET** position, then to the **START** position.

Gas/oil-fired models 20G through 22G have two first stage generators. Each generator has its own level sensor, connected to a switch that is common to both sensors. If either sensor detects a low level condition, it causes the level detector switch (LS) to open.

SUN 12:00 AM LOW REFRIGERANT TEMP – DIGITAL

The unit has shut down because the low refrigerant tem-

perature safety device (LRT) has opened. It is calibrated to open at 35.0°F. It will automatically reclose at 40.0°F. To restart unit, press **UNIT** switch to **STOP/RESET** position, then to **START** position. (This check is not applicable when operating in **HEATING ONLY** mode.)

When the LRT safety closes, a dilution cycle is initiated if the solution dilution temperature is greater than 136°F. If less than 136°F, the message “DAY – TIME – LRT – CHK SOL'N LEVEL – ABS & GEN” is displayed and the unit is prevented from starting until the **WARNING RESET** key is pressed in **SERVICE** mode with the **UNIT** switch in **STOP/RESET** position.

SUN 12:00 AM LOW REFRIGERANT TEMP – ANALOG

The unit has shut down because the refrigerant temperature, as sensed by thermistor RT10, has decreased to the shutdown threshold. The shutdown threshold is variable and determined by the relationship between the entering (ECDWT) and leaving condenser water temperature (LCDWT) and a variable defined as low absorber water temperature (LAWT) as follows:

$$\text{LAWT} = \text{ECDWT} + 0.67 (\text{LCDWT} - \text{ECDWT})$$

If LAWT is equal to or greater than 92.0°F, the analog LRT threshold is 39.0°F. If LAWT is less than or equal to 70.0°F, the LRT threshold is 35.0°F. For values of LAWT between 70.0°F and 92.0°F, the LRT threshold becomes a linear interpolation between 35.0°F and 39.0°F as follows:

$$\text{Analog LRT Cutout} = [(2 (\text{LAWT} - 70.0) / 11) + 35.0]$$

In special circumstances, it may be necessary to provide a fixed 35.0°F LRT threshold. This can be accomplished by removing program jumper J13 on the I/O expansion board.

CAUTION!!!

This jumper must never be removed by anyone other than a qualified service technician who has been counseled by the YORK factory to perform this modification. Serious unit damage can result!

The analog LRT cutout threshold that is in effect at any given time can be displayed using the **DISPLAY DATA** key.

When the refrigerant temperature increases to the reset threshold of 5°F or greater above the temperature at which it cutout (the cutout threshold is frozen at the instant of shutdown), a dilution cycle is initiated if the solution dilution temperature is greater than 136°F. If less than 136°F, “DAY – TIME – LRT – CHK SOL'N LEVEL – ABS & GEN” is displayed and the unit is prevented from starting until the **WARNING RESET** key is pressed in **SERVICE** mode with the **UNIT** switch in **STOP/RESET**. After the reset threshold is reached, the unit can be started by placing the **UNIT** switch in **STOP/**

RESET and then to **START**. (This check is not performed in **HEATING ONLY** mode.)

SUN 12:00 AM – LRT – CHK SOL'N LEVEL - ABS & GEN

(where LRT = Low Refrigerant Temperature). This message indicates the solution dilution temperature (as measured by thermistor RT11) was <136°F when the low refrigerant temperature safety device (LRT) recloses (digital shutdown) or the refrigerant temperature thermistor (RT10) rises to 44°F (analog shutdown) during a **Low Refrigerant Temp** shutdown. When this occurs, the chilled water pump is turned off.

Dilution cycles do not occur on **Low Refrigerant Temp** shutdowns until the safety device recloses (digital shutdowns) or the refrigerant temperature rises to 44°F (analog shutdowns). If the solution dilution temperature is <136°F when this occurs, a dilution cycle should not be initiated because crystallization may have already taken place during the shutdown. This message is advising the operator to check the solution level in the absorber and generator prior to starting the unit. Refer to YORK Form 155.17-NM1 for details of decrystallization.

After it has been determined that crystallization has not occurred, the unit can be restarted by placing the **UNIT** switch in the **STOP/RESET** position, then pressing the **WARNING RESET** key in **SERVICE** mode and then initiating a start.

SUN 12:00 AM CHILLED WATER FLOW SWITCH

The unit has shut down because the chilled water flow switch has opened for 2 continuous seconds while the unit was running. This check is bypassed for the first 30 seconds of "Cooling Start Sequence Initiated." To restart unit, press **UNIT** switch to **STOP/RESET** position, then to **START**.

Normal dilution cycles are not performed on **Chilled Water Flow Switch** safety shutdowns.

SUN 12:00 AM – FLS – CHK SOL'N LEVEL - ABS & GEN

(where FLS = Flow Switch). This message indicates that the solution dilution temperature (as measured by thermistor RT11) was <136°F when the chilled water flow switch (CHFLS) reclosed during a **Chilled Water Flow Switch** shutdown.

Dilution cycles are not initiated on flow switch shutdowns until the flow switch recloses during the shutdown. If the solution dilution temperature is <136°F when this occurs, a dilution cycle should not be initiated because crystallization may have taken place during the shutdown. This message is advising the operator to check the solution level in the absorber and generator prior to starting the unit. Refer to YORK Form 155.17-NM1 for details of decrystallization.

After it has been determined that crystallization has not occurred, the unit can be restarted by placing the **UNIT** switch in the **STOP/RESET** position, then pressing the **WARNING RESET** key in **SERVICE** mode and then initiating a start.

SUN 12:00 AM BURNER REM ALARM – MAN RESET

(Applies to gas/oil-fired units only). The unit is shut down because the burner control center has opened its remote alarm contacts indicating a burner control center alarm condition. Refer to Form 155.17-NM1 for details of burner control center. To restart unit, press **UNIT** switch to **STOP/RESET** position, manually reset burner control center, then press **UNIT** switch to **START** position.

Models 20G through 22G have two burner alarm contacts in series because there are two burners.

SUN 12:00 AM MANUAL BURNER PANEL MALFUNCTION

(Applies to gas/oil-fired units only.) Unit has shut down because the "Main Flame On" contacts in the burner control center (a) opened continuously for 10 seconds while the unit was running or (b) did not close within 180 seconds after the start signal is sent to the burner control center. Either of these situations could be caused by (but is not limited to) any of the following problems in the burner control center:

- a. Manual switch open
- b. Blown fuse
- c. High exhaust gas temp switch tripped

To restart unit, press **UNIT** switch to **STOP/RESET** position, then to **START** position.

Models 20G through 22G have two burner-on contacts in series because there are two burners.

SUN 12:00 AM – LD – CHK SOL'N LEVEL – ABS & GEN

(where LD = Limited Dilution). Indicates a limited dilution is called for but cannot be performed or has been interrupted because:

- the solution dilution temperature (as measured by thermistor RT11) was <136°F when a limited dilution was initiated
- or -
- the solution pump(s) overloads are tripped.

After it has been determined that crystallization has not occurred, the unit can be started. Press the **UNIT** switch to **STOP/RESET** position, then press **WARNING RESET** key in **SERVICE** mode and initiate a start. The unit cannot be started until the standby power supply contacts connected to Digital Input Board TB2–95 open.

SUN 12:00 AM – PF – CHK SOL'N LEVEL – ABS & GEN

(where PF = Power Failure). This message indicates there was a power failure while the unit was running and when power was restored, the dilute solution temperature (as measured by thermistor RT11) was <136°F.

Since a dilution cycle cannot occur during a power failure, and the dilute solution temperature has cooled to <136°F during the power failure, it is possible that crystallization has occurred during the power failure. Therefore, this message is advising the operator to check the solution level in the absorber and generator prior to restarting the unit. If any of these areas indicate a low liquid level, crystallization has possibly occurred. Refer to YORK Form 155.17-NM1 for details of crystallization and decrystallization.

After it has been determined that crystallization has not occurred, the unit can be restarted by placing the **UNIT** switch in the **STOP/RESET** position, then pressing the **WARNING RESET** key in **SERVICE** mode and then initiating a start.

SUN 12:00 AM - HIGH SOLUTION CONCENTRATION

(Applies only to units equipped with EPROM version A.01F.09 or later. Not displayed in **HEATING ONLY** mode.) The unit has shut down because the solution concentration has increased above 66.5% while the unit was running and the first stage generator temperature is at least 250.0°F. The unit will be allowed to restart when the concentration decreases to less than 66.5%. To restart unit, press **UNIT** switch to **STOP/RESET** position, then to **START** position.

The solution concentration is calculated as a function of the first stage generator temperature (RT6) and the second stage leaving refrigerant temperature (RT12). The calculated concentration can be displayed using the **1ST STAGE GEN PRESS/TEMP** key if the first stage generator temperature is at least 250.0°F, the unit is running and the concentration message display has been enabled by a qualified service technician using the "Special Setpoints and Programming Procedures" section of service manual 155.17-M2. (Concentration related messages are not displayed in **HEATING ONLY** mode.)

SUN 12:00 AM COND FLOW SWITCH

EPROM Version A.01F.07 (or earlier): If the condenser water flow switch opens while the unit is running or fails to close at unit start, a **Cycling** shutdown is initiated and the message "DAY – TIME – COND FLOW SWITCH – AUTOSTART" is displayed. A dilution is performed. If the flow switch does not reclose within 30 minutes, a **Safety** shutdown is initiated and the above message is displayed. The unit is prevented from restarting until the following reset procedure is performed. To restart the unit, press **UNIT** switch to **STOP/RESET** position. Then press **WARNING RESET** key while in **SERVICE** operating mode.

EPROM Version A.01F.08 (or later): If the condenser water flow switch opens while the unit is running, a **Cycling** shutdown is initiated, "DAY – TIME – COND FLOW SWITCH – AUTOSTART" appears, and a dilution is performed. If the flow switch closes before the dilution terminates, the unit will automatically restart. However, if the flow switch does not close before the dilution terminates, the **Cycling** shutdown becomes a **Safety** shutdown coincident with the dilution termination, all pumps are shut off, and the message "DAY – TIME – COND FLOW SWITCH" (the day and time displayed is when the cycling shutdown occurred) replaces the "DAY – TIME – COND FLOW SWITCH – AUTOSTART" message. To restart unit, move **UNIT** switch to **STOP/RESET** position, then to **START**.

WARNING MESSAGES:

Coincident with the occurrence of each of the following warning conditions, K7 relay contacts (relay output board TB4–89 & 90) close to sound an external audible alarm (supplied by others). The alarm is silenced by pressing the **WARNING RESET** key in any operating mode. After the alarm has been silenced, the warning message will be displayed until the condition that caused the alarm reaches the reset threshold and the **WARNING RESET** key is pressed in **SERVICE** mode. This clears the warning message.

If multiple warning conditions exist, the appropriate warning messages will scroll on the display while the **STATUS** key is being pressed. Each warning message will be displayed for 2 seconds and will scroll from the most recent to the oldest occurrence.

Warning messages (except purge warnings) are displayed and the alarm is activated only while the unit is running.

WARNING – LOW REFRIGERANT TEMPERATURE

Either a fixed or variable LRT warning threshold is used as determined by the position of I/O expansion board program jumper J13.

If I/O expansion board program jumper J13 is removed, the warning message is displayed and unit loading is inhibited when the refrigerant temperature decreases to 36.0°F. When the temperature increases to the reset threshold 36.5°F, the load inhibit is removed.

If I/O expansion board program jumper J13 is installed, the **Low Refrigerant Temperature** safety shutdown and warning threshold is variable, based upon the relationship of entering and leaving condenser water temperature. Refer to description of "Day-Time-Low Refrigerant Temp-Analog" message for explanation of how the LRT safety shutdown threshold is determined. The actual LRT safety threshold that is in effect at any time can be displayed using the **DISPLAY DATA** key. The warning message is displayed and the load inhibit is put in effect

when the actual refrigerant temperature is $\leq 1^{\circ}\text{F}$ above the safety shutdown threshold. The load inhibit is removed when the refrigerant temperature increases to the reset threshold of $\geq 1.5^{\circ}\text{F}$ above the safety shutdown threshold.

WARNING – HIGH GEN PRESSURE OVERRIDE

Displayed when the generator pressure increases to 659.7mm HgA (12.76 PSIA). While this condition exists, the load command is driven to minimum (30%, gas-fired units; 30% steam valve position, steam-fed units). The load command remains at minimum load until the pressure decreases to the reset value of 258.5mm HgA (5.0 PSIA). The load command will then be allowed to increase.

On steam units, a limit switch (Honeywell valves) or set-point (Leslie valves) prevents the steam valve from unloading to a position that is $<20\%$ of unit capacity. Therefore, although the steam valve is commanded to unload to 30% of full travel position, it may be prevented from actually reaching 30% steam valve position.

WARNING – HIGH GEN 1 PRESSURE OVERRIDE

or

WARNING – HIGH GEN 2 PRESSURE OVERRIDE

Gas/oil-fired models 20G through 22G have two first stage generators. A high pressure warning condition in either generator is enunciated separately. Refer to above message "Warning-High Gen Pressure Override."

WARNING – HIGH GEN TEMPERATURE OVERRIDE

Displayed when the generator temperature increases to 326°F . The load command is driven to and maintained at minimum load (30%, gas-fired units; 30% steam valve position, steam-fed units) while this condition exists. When the temperature decreases to the reset value of 250°F , the load command will be allowed to increase.

On steam units, a limit switch (Honeywell valves) or set-point (Leslie valves) prevents the steam valve from unloading to a position that is $<20\%$ of unit capacity. Therefore, although the steam valve is commanded to unload to 30% of full travel position, it may be prevented from actually reaching 30% steam valve position.

WARNING – HIGH GEN 1 TEMP OVERRIDE

or

WARNING – HIGH GEN 2 TEMP OVERRIDE

Gas/oil-fired models 20G through 22G have two first stage generators. A high temperature warning condition in either generator is enunciated separately. Refer to above message "Warning-High Gen Temperature Override."

WARNING – RET COND WATER TEMP $< 68.0^{\circ}\text{F}$

Displayed if the micro board program jumper JP6 is IN and the return condenser water temperature has been $<68.0^{\circ}\text{F}$ continuously for 30 minutes of unit operation. The reset value is 68.0°F . (This check is not performed in **HEATING ONLY** mode.)

WARNING – RET COND WATER TEMP $< 59.0^{\circ}\text{F}$

Displayed if the micro board program jumper JP6 is OUT and the return condenser water temperature has been $<59.0^{\circ}\text{F}$ continuously for 30 minutes of unit operation. The reset value is 59.0°F . (This check is not performed in **HEATING ONLY** mode.)

WARNING – PURGE PUMP OVERLOADS OPEN

Displayed when the purge pump (M3) motor protector (3OL) or motor thermal switch (MTH3) has opened. If the motor protector has opened, it requires a manual reset. The thermal switch automatically recloses.

WARNING – PURGE TRANSDUCER ERROR

Displayed when either the purge tank transducer (PT4) or purge pump transducer (PT3) is indicating an out-of-range pressure low ($\leq 0.0\text{mm HgA}$) continuously for 25 seconds. This message is displayed only if the unit is equipped with the optional auto purge system. The reset threshold is any in-range value.

WARNING – FAULTY SOL'N DIL'N TEMP SENSOR

Displayed when the solution dilution temperature thermistor RT11 indicates a temperature equal to or less than 91°F continuously for 1 minute. This check is bypassed for the first 30 minutes of unit run time. The reset threshold is any value greater than 91°F . (This check is not performed in **HEATING ONLY** mode.)

WARNING – ENT COND WATER TEMP HIGH LIMIT

Displayed when the entering condenser water temperature exceeds the programmed value for 10 continuous minutes following a 30-minute bypass at start. While this condition exists, the load command is limited to 60%. The reset value of 0.1°F below the programmed value. (This check is not performed in **HEATING ONLY** mode.)

Instructions for programming the threshold are in the service manual, Form 155.17-M2, under "Special Programming Features." This value is programmed at the YORK factory. It should not be arbitrarily changed. (This check is not performed in **HEATING ONLY** mode.)

REPLACE RTC, U 16 – REPROGRAM SETPOINTS

Indicates that the battery located inside the **REAL-TIME CLOCK IC** Chip (U16 on the micro board) is defective. This battery provides back-up power to the RTC memory (RAM) in the event of a utility AC power failure. This assures that system setpoints will be maintained. If this message appears, the RTC IC Chip (U16) on the micro board must be replaced. If there is a power failure while this message is displayed, the setpoints will be lost and must be reprogrammed.

WARNING – AUTO PURGE FAILURE

(Applies only to units equipped with Automatic Purge Hardware (see Note 1 below) and EPROM version A.01F.09 or later.) The I/O expansion board program jumper JP1 must be removed (**AUTO PURGE HARDWARE** selected) and **AUTO TANK PURGE OPERATION** selected at the keypad. During normal automatic purge operation, the purge tank pressure (PT4) must increase to 60mm HgA to initiate the purge operation by turning on the purge pump. When the purge pump pressure (PT3) has decreased to 15mm HgA, a 1-minute timer is started. If, during this 1-minute period, the purge tank pressure (PT4) has not decreased, this message is displayed and the purge tank solenoid valve (1 SOL) and pump solenoid valve (2 SOL) are closed, the purge pump is turned off and the programmed “Auto Tank Purge” operation defaults to “Manual Purge” operation. This 1-minute period is re-initialized at each timeout and this pressure check is performed for the duration of the purge operation. Refer to “Special Setpoints and Programming Procedures” section of service manual Form 155.17-M2 for details of programming “Auto Tank Purge Operation.”

WARNING – PRG PMP FAIL; MAN CLOSE VP2, VP5

(Applies only to units equipped with Automatic Purge Hardware (see Note 1 below) and EPROM version A.01F.09 or later.) The I/O expansion board program jumper JP1 must be removed (**AUTO PURGE HARDWARE** selected) and **AUTO TANK PURGE OPERATION** selected at the keypad. Anytime the purge pump solenoid valve (2SOL) has been energized for at least 1 minute during an “Auto Tank Purge” and the purge pump pressure (PT3) increases to greater than 100mm HgA for at least 1 second, this message is displayed, the purge tank (1 SOL) and pump (2 SOL) solenoid valves are de-energized (closed), the purge pump is turned off after a 65-second delay to allow the purge pump solenoid valve to fully close, and the programmed “Auto Tank Purge” operation defaults to “Manual Purge” operation. This is indicative of a purge pump failure. The operator should manually close valves VP2 and VP5. The reset threshold is any pressure less than 100mm HgA. Refer to “Special Setpoints and Programming Procedures”

section of service manual Form 155.17-M2 for details of programming “Auto Tank Purge Operation.”

WARNING – 2 SOL FAIL; MANUAL CLOSE VP2, VP5

(Applies only to units equipped with Automatic Purge Hardware (see Note 1 below) and EPROM version A.01F.09 or later.) The I/O expansion board program jumper JP1 must be removed (**AUTO PURGE HARDWARE** selected) and **AUTO TANK PURGE OPERATION** selected at the keypad. Anytime the purge pump is **not** running, and the purge pump pressure (PT3) increases to greater than 100mm HgA for at least 1 second, this message is displayed, the purge tank (1 SOL) and pump (2 SOL) solenoid valves are de-energized (closed), the purge pump is turned on, and the programmed “Auto Tank Purge” operation defaults to “Manual Purge” operation. This is indicative of a purge pump solenoid (2 SOL) valve failure. The operator should manually close valves VP2 and VP5. The reset threshold for this message is any pressure less than 100mm HgA. Manual turnoff of the purge pump is prevented during the 65-second pump turnoff delay. If this is attempted before the 65 seconds have elapsed, the message “PURGE PUMP VALVE CLOSING” is displayed when the **PUMP STATUS** key is pressed. The purge pump continues to run until manually turned off using the following procedure:

1. Press **PUMP STATUS** key. This message is displayed:

CLOSE VP2, VP5; PRESS ‘MANUAL PUMP’ KEY

2. Operator should close VP2 and VP5.
3. Press **MANUAL PUMP** key. The purge pump turns off and this message is displayed:

PURGE PUMP – OFF – MANUAL PURGE

4. Press **DISPLAY HOLD** key. The normal foreground message is displayed.

Refer to “Special Setpoints and Programming Procedures” section of service manual Form 155.17-M2 for details of programming “Auto Tank Purge Operation.”

WARNING – EXCESS PURGE

(Applies only to units equipped with Automatic Purge Hardware (see Note 1 below) and EPROM version A.01F.09 or later.) The I/O expansion board program jumper JP1 must be removed (**AUTO PURGE HARDWARE** selected) and **AUTO TANK PURGE OPERATION** selected at the keypad. Anytime the unit is operating in the “Auto Tank Purge” mode, and 6 or more automatic purges occur in the last 7 days, this message is displayed. The excess purge warning check is disabled

during the first 150 operating hours because more frequent purging of newly commissioned unit is common, especially if the unit was shipped with a nitrogen charge.

WARNING – SOL'N CONCENTRATION OVERRIDE

(Applies only to units equipped with EPROM version A.01F.09 or later. Not displayed in **HEATING ONLY** mode.) Displayed when the unit is running and the first stage generator temp is at least 250.0°F and the solution concentration exceeds 66.0%. The load command is driven to and maintained at minimum load. When the concentration decreases to 65.0% or less, the load limit is released and the message can be reset. The solution concentration is calculated as a function of the first stage generator temperature (RT6) and the second stage leaving refrigerant temperature (RT12).

The calculated concentration can be displayed using the **1ST STAGE GEN PRESS/TEMP** key if the first stage generator temperature is at least 250.0°F, the unit is running, and concentration message display has been enabled by a qualified service technician using the "Special Setpoints and Programming Procedures" in service manual 155.17-M2. (Concentration related messages are not displayed in **HEATING ONLY** mode.)

¹ Automatic Purge Hardware consists of:

- PT3 - Purge Pump Pressure Transducer
- PT4 - Purge Tank Pressure Transducer
- 1 SOL - Purge Tank Solenoid Valve, and
- 2 SOL - Purge Pump Solenoid Valve