YORK®	File in **ABS, 2SAM** Manual(s)	
SERVICE BULLETIN	Supersedes: Nothing	Form 155.17-O2 (SB3) 197
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SUBJECT: MILLENNIUM CONTROL CENTER (YPC ABSORPTION UNITS) - EPROM VERSION A.01F.09

On/About December 1996, YPC absorption units will be shipped with EPROM version A.01F.09 (P/N 031-01669-002). It supersedes version A.01F.08 and contains the following enhancements:

SOLUTION CONCENTRATION SAFETY SHUTDOWN

While the unit is running and the 1st stage generator temperature is at least 250.0°F, the program continuously calculates the solution concentration using the 2nd stage leaving refrigerant temperature (as sensed by RT12) and the 1st stage generator temperature (as sensed by RT6). If the concentration exceeds 66.0%, "WARNING-CONCENTRATION OVERRIDE" is displayed and the unit loading is reduced to minimum. If the concentration decreases to 65.0%, the load limit is removed but the warning message will remain until the **WARNING RESET** key is pressed in **SERVICE** mode. If the concentration continues to rise above 66.5%, the unit shuts down on a safety shutdown and "DAY-TIME-HIGH SOLUTION CONCENTRATION" is displayed.

The % concentration can be displayed using the **1ST STAGE GEN PRESS/TEMP** key. One of the scrolled messages is "HI TEMP GENERATOR CONCENTRATION = XX.X%". This message will only be displayed if the unit is running, the 1st stage generator temperature is at least 250.0°F and the concentration display has been enabled by a qualified service technician using the "SPECIAL SETPOINTS & PROGRAMMING PROCEDURES" section of SERVICE MANUAL FORM 155.17-M2 and I/O expansion board program jumper J14 is placed on pins 2 and 3 as described below.

Thermistor RT12 (2nd stage leaving refrigerant temperature) was not installed on previous production units. It is now supplied on production units to accomodate this feature.

To accomodate the application of this EPROM to new units that are equipped with thermistor RT12 and earlier units not equipped with thermistor RT12, the solution concentration display and safety shutdown feature can be enabled or disabled by the position of I/O expansion board program jumper J14 as follows:

J14 - Installed on pins 1 & 2 – Solution concentration display and safety shut down disabled. Units not equipped with thermistor RT12.

- Installed on pins 2 & 3 – Solution concentration display and safety shutdown enabled. New production units equipped with RT12.

AUTOMATIC PURGE

This EPROM provides for 2 modes of automatic purge operation, as selected at the keypad. The modes are as follows:

1. Auto tank purge
2. Manual purge

The automatic purge operation requires additional hardware. With the release of this EPROM version, production units are now equipped with automatic purge hardware consisting of:

1. PT3 – purge pump pressure transducer
2. PT4 – purge tank pressure transducer
3. 1SOL – purge tank solenoid valve
4. 2SOL – purge pump solenoid valve

The automatic purge hardware must be enabled by removing I/O expansion board program jumper "JP1". When this jumper is removed, the desired purge mode can be selected as follows:

1. Enter program mode using access code 9-6-7-5. "PROGRAM MODE SELECT SETPOINT" is displayed.
2. Press **MANUAL PUMP** key. "PURGE TYPE = 1 (0=MAN;1=AUTO TANK)" is displayed.
3. Using the **Entry** keys, enter the desired purge mode type: 0 or 1. If the **CANCEL** key is

pressed, default value “1” is displayed.

4. Press **ENTER** key.

   If “1” was entered in step 3:

   a.) “OPEN VP2, CLOSE VP4, THEN PRESS ENTER KEY” is displayed.

   IMPORTANT!!! The manual valves must be adjusted before proceeding to the next step, since an immediate **auto tank** purge will occur if the tank pressure is above 60mmHGA.

   b.) Press **ENTER** key. “PROGRAM MODE, SELECT SETPOINT” is displayed.

   If “0” was entered in step 3:

   “PROGRAM MODE, SELECT SETPOINT” is displayed.

5. Press **PROGRAM** key to exit.

AUTO TANK PURGE

If **auto tank** purge mode is selected, the purge operation is completely automatic. No operator intervention is required. It operates whether the unit is running or not as follows: when the purge tank pressure (PT4) increases to 60mHgA, the purge pump is turned on and, 10 to 38 seconds later the purge pump solenoid valve (2SOL) opens. When the purge pump pressure (PT3) decreases to 15mHgA, the purge tank solenoid valve (1SOL) opens. After allowing the pressures to settle for 60 seconds, the purge tank pressure (PT4) is stored in memory and a 1 minute timer is started. When the timer has elapsed, if the purge tank pressure (PT4) is greater than or equal to the stored value, the purge tank solenoid valve (1SOL) and purge pump solenoid valve (2SOL) closes, the purge pump is turned off, “warning-auto purge failure” is displayed and **auto tank** purge defaults to **manual** purge operation. This 1 minute period is re-initialized at each time-out and the pressure check is performed for the duration of the purge operation. However, if the purge tank pressure (PT4) decreased in the 1 minute period after the purge pump pressure(PT3) decreased to 15mHgA, the purge operation continues. When the purge tank pressure(PT4) decreases to 30mHgA, the purge tank solenoid valve(1SOL) and purge pump solenoid valve(2SOL) are closed and the 7-day auto purge counter and lifetime total auto purge counter each increment by one count. Then, 15 minutes later, the purge pump is turned off and the purge operation is complete.

If the purge pump solenoid valve (2SOL) has been energized for at least 1 minute during a purge operation, and the purge pump pressure (PT3) increases to greater than 100mHgA, the purge tank solenoid valve (1SOL) and purge pump solenoid valve (2SOL) close, the purge pump is turned off after a 65 second delay to allow the purge pump solenoid valve to fully close, “WARNING-PRG PMP FAIL;MAN CLOSE VP2,VP5” is displayed and **auto tank** purge defaults to **manual** purge operation. This is indicative of a purge pump failure. The operator should manually close valves VP2 and VP5. Manual turnoff of the purge pump is prevented during the 65 second pump turnoff delay. If someone attempts to manually turn off the purge pump before the 65 seconds have elapsed, “PURGE PUMP VALVE CLOSING” is displayed when the **PUMP STATUS** key is pressed.

If the purge pump is not running and the purge pump pressure (PT3) increases to greater than 100mmhga, “WARNING - 2SOL FAIL;MANUAL CLOSE VP2,VP5” is displayed, the purge pump is turned on, the purge tank solenoid (1SOL) and purge pump (2SOL) solenoid valves close and auto tank purge defaults to manual purge. This is indicative of a purge pump solenoid (2SOL) valve failure. The purge pump will continue to run until manually turned off using the **PUMP STATUS** and **MANUAL PUMP** keypad keys as follows:

1. Press **PUMP STATUS** key. “CLOSE VP2, VP5; PRESS ‘MANUAL PUMP’ KEY” is displayed.
2. Operator should close VP2 and VP5
3. Press **manual pump** key. The purge pump turns off and “PURGE PUMP - OFF - MANUAL PURGE” is displayed.
4. Press **display hold** key. The normal foreground message is displayed.

If the purge tank transducer (PT4) or purge pump transducer (PT3) indicate a pressure of $\leq$0.0mHgA continuously for 25 seconds, “WARNING-PURGE TRANSDUCER ERROR” is displayed.

While **auto tank** purge is selected, the purge pump cannot be manually operated. If the operator attempts to manually run the purge pump, “PURGE PUMP - OFF - AUTO TANK PURGE” or “PURGE PUMP - ON - AUTO TANK PURGE” is displayed.

If 6 or more automatic purges occur in 7 days, “WARNING - EXCESS PURGE” is displayed while the unit runs. The excess purge check is disabled during the first 150 hours of unit operation since more frequent purging of newly commissioned units is common, especially if the unit was shipped with a nitrogen charge.

MANUAL PURGE

In **manual purge** operation, although the purge tank solenoid valve and purge pump solenoid valve are automatically controlled, the operator must manually operate the purge pump. **Manual purge** operation is enabled whenever a.) An “AUTO PURGE FAILURE” warn-

ing, “PURGE PUMP FAILURE” warning or 2SOL failure warning occurs while in **auto tank** purge mode or b.) **Manual purge** mode is selected. If the purge tank transducer (PT4) or purge pump transducer (PT3) indicate a pressure of ≤0.0mHgA continuously for 25 seconds, “WARNING - PURGE TRANSDUCER ERROR” is displayed. To operate **manual purge**, proceed as follows:

To Start Manual Purge:

1. Press **PUMP STATUS** key until “PURGE PUMP - OFF - MANUAL PURGE” is displayed.
2. Press **MANUAL PUMP** key. “PURGE PUMP - ON - MANUAL PURGE” is displayed. The purge pump starts. After 2 minutes, the purge tank solenoid valve (1SOL) and purge pump solenoid valve (2SOL) open.

To Stop Manual Purge:

1. If necessary, press **PUMP STATUS** key until “PURGE PUMP-ON- MANUAL PURGE” is displayed.
2. Press **MANUAL PUMP** key. If the pump has been running less than 2 minutes (purge tank and purge pump solenoid valves not opened yet), the purge pump is turned off and “PURGE PUMP-OFF-MANUAL PURGE” is displayed. If the purge pump has been running for greater than 2 minutes, the purge tank solenoid valve (1SOL) and purge pump solenoid valve (2SOL) close. “PURGE PUMP VALVE CLOSING” is displayed for 65 seconds and when the 65 seconds elapse, the purge pump is turned off and “PURGE PUMP-OFF-MANUAL PURGE” is displayed. The manual purge operation is complete. If the **manual purge** operation continued for more than 10 minutes, the 7-day manual purge counter and lifetime total manual purge counter each increment by 1 count.
3. Press **DISPLAY HOLD** key. The normal foreground message is displayed.

SPRAY SOLUTION PUMP DELAY

In previous EPROM versions, the spray solution pump delay setpoint was programmable over the range of 30 to 120 seconds. In this version, it is programmable over the range of 10 to 120 seconds.

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