



A I R S E R C O

AUTOMATIC PROCESSING EQUIPMENT APC-1 VACUUM PROCESS CONTROLLER



- Saves time by automating dehydration process
- No operator intervention required during pump down, saving labor
- Ensures consistency with each cooling appliance processed to identical parameters
- Utilizes existing pump and piping works with existing vacuum pump, manifold, and piping
- Manages multiple parameters including, low and high pressure, pump time, rise test and system failure inputs are unlimited
- Saves money by lowering costs, insuring consistency, and improving quality

SYSTEM OVERVIEW

The APC-1 Vacuum Process Controller is a microcontroller based vacuum instrument with adjustable inputs to control the dehydration process of cooling appliances. The operator uses the keypad and digital display to enter: a low pressure set point, a high pressure set point, amount of time for a pressure rise test, a maximum time to pump down before initiating a pressure rise test, and the maximum number of times the pressure rise test can be failed before notifying the operator. With the parameters entered, the operator simply presses the START button. The product coupled to the vacuum pump utilizing the APC-1 is dehydrated to the low pressure set point. The product is then isolated from the pump for the pressure rise test. If the pressure rise is below the desired parameters, the operator is notified that the cooling appliance has passed. Should the pressure rise above the input parameter, the process is repeated until the system passes, or until the failure count is exceeded. The pressure reading in microns is continually displayed throughout the process.

> 5000	MICRONS
50	500
1:30:00	5:00
3	PASS

A four line LCD display provides seven fields of information. Line 1 continually displays pressure reading in microns. The display is updated five times per second with accuracy of +/- 3% of reading or 3 microns. When pressure exceeds 5000 microns, display indicates greater than (>) 5000. The second line displays the low

pressure set point on the left and the high pressure set point on the right. These values are input and are used to initiate the pressure rise test (low) and serve as a pass/fail value (high). Line 3 displays the maximum pump down input value on the left. This input value instructs the system to begin the pressure rise test after a specific elapsed time regardless of the low pressure setting. Input values can range up to 9 hr: 59 min: 59 sec. The desired time to run the pressure rise test is displayed on the right side of the line 3. Input values can range up to 59 min: 59 sec. Line 4 is used to display the pressure rise test fail counter. This is the number of times the vacuum decay test has been run and failed. Input

values can range from 1 to 9. The right side of line four is used to inform the operator of pressure rise test results and display instructions.

1	2	3	F1	- PRESSURE SET
4	5	6	F2	- PUMP TIME SET
7	8	9	F3	- DECAY TEST SET
ENT	0	CLR	F4	- FAIL COUNT SET

The sixteen character keypad is used to input the desired process parameters. The four function keys are used to activate the six adjustable settings. By



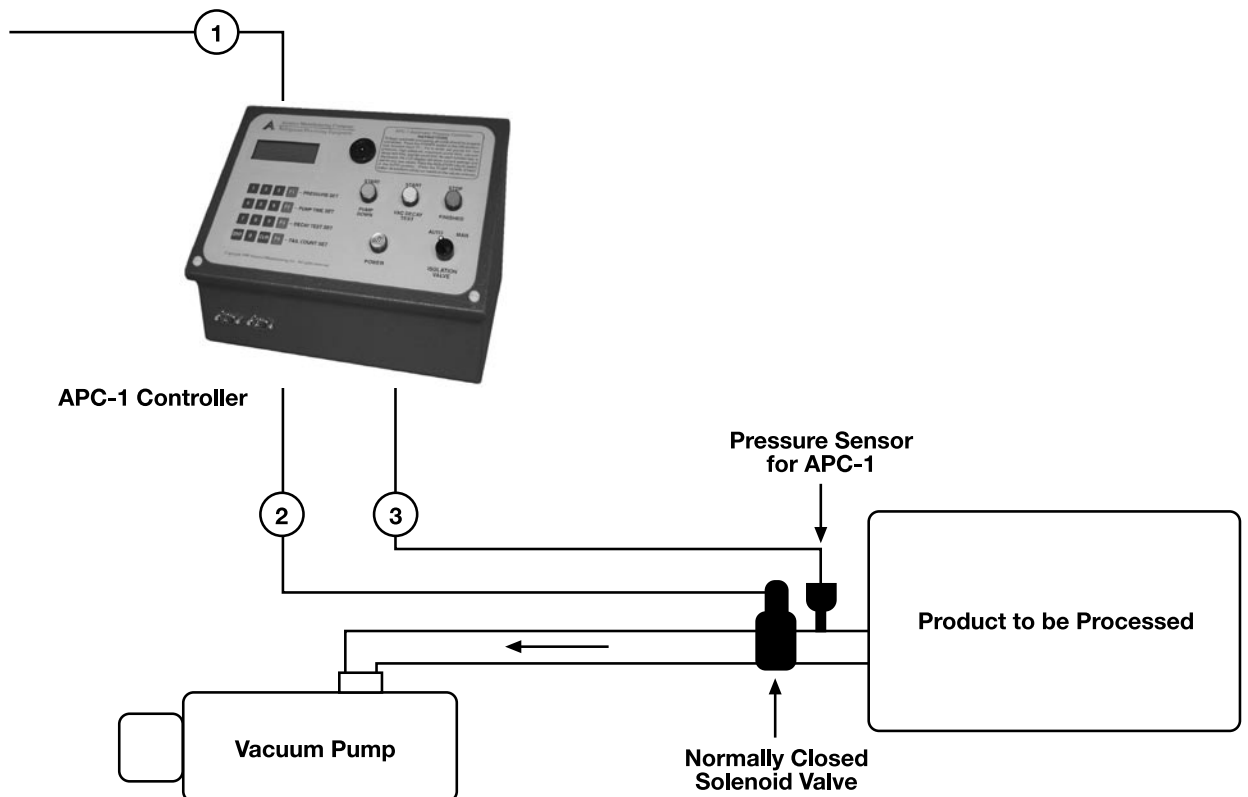
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pressing the F1 key, the low pressure setting will flash. To change the value, the numeric keys are pressed followed by the ENT key. The flashing display will then move to the high pressure field. Again, enter the desired value followed by the ENT key. Pressing the F2 key will cause the maximum pump down time value to flash. The time can be adjusted by using the numeric key pad to enter new values followed by pressing the ENT key. The same procedure applies for the F3 key which is used to enter the desired amount of time to run the pressure rise or vacuum decay test. The F4 key is used to enter the maximum number of times the system will reset the pump down process after the vacuum decay test has been initiated and failed. The APC-1 has a special built in feature that will limit pump time in case of pressure rise test failures. If the pressure rise test is initiated by the pump down time being exceeded (before the low pressure level is reached) and the pressure rise test is failed, the system will limit the maximum pump time to 10% of the input value. This feature can force quick and frequent pressure rise tests to eliminate continued pump time on units that may leak.

Typical Flow Diagram

- 1.) Power cord to APC-1 (120/VAC std., 220/VAC optional)
- 2.) Power cord to solenoid valve (120/VAC)
- 3.) Pressure sensor cord to gauge tube (9001-T)





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SPECIFICATIONS

Cabinet: Sloped front, NEMA 12
Type display: 4 Line X 20 Character LCD
Pressure sensor: Pirani type, included
Dimensions: 12" W X 8" D X 7" H
Keypad: 16 Key
Response time: Less than .3 sec.
Weight: Approx. 14 lb.
Pressure range: 3 to 5000 microns
Sensor cable: 6 ft., included
Power requirements: 115/VAC Standard, 230/VAC Optional
Accuracy: + or - 3% or 5 microns
Solenoid cable: 6 ft. with lighted connector included
Power cord: 8 ft. grounded 120/VAC standard
Operating temperature range: 0° C to 40° C
Printer port: DB9 Male
COM port: DB9 Male

APC-1 Ordering Information		
Product	Description	Order Code
APC-1	APC-1 Base Unit – 115/VAC, 8 ft. grounded 120/VAC power cord, Pirani Type Pressure Sensor, and 6 ft. sensor cable	APC-1
Solenoid Valve	1/2" Vacuum Rated 2-way Solenoid 3/4" Vacuum Rated 2-way Solenoid 1" Vacuum Rated 2-way Solenoid 1 1/2" Vacuum Rated 2-way Solenoid	290-A-1/2 290-A-3/4 290-A-1 290-A-1 1/2
Serial Printer Option	Unit is programmed to require the input of a product's serial number (up to nine numeric characters) prior to initiating the charge cycle. With a printer connected, preset values and all processing data for the unit being processed will be printed during the charge cycle.	SP
Communications Program	This program allows a PC to collect data from the AC-21 AccuCharge.	COM