

# Automated Pressure Control System

## Description

The APP Automated Pressure Control System (APCS) provides precise pressure generation and control from atmospheric pressure to 5000 PSI (pneumatic system) and to 60,000 PSI (hydraulic system). The APCS is completely microprocessor controlled and fully automated - the system allows user-defined multiple target pressures, holding times, and pressurization rates. The APCS can be incorporated into an already existing larger system, or operate independently.



## Software

Easy-to-use APCS software is compatible with Windows '98 and higher. The software program is written in Visual Basic. Throughout the pressure control process, this software provides useful reports and data, including a real-time graphical display of pressure versus time. Upon termination of the pressurization process, data such as pressure, corresponding time, and motor speed can be downloaded to Excel for further analysis. Advanced Pressure Products also has the capability to customize the software to produce reports and data required for a specific application.

## Applications

The APCS has applications in many industries. The flexible design of the APCS, combined with the ability of Advanced Pressure Products to customize all aspects of the configuration, make the APCS suitable in almost any pressure or flow control situation.

Examples of applications include:

- Burst Tests
- Battery Burst Tests, including Crimp and Vent Tests
- Fatigue Tests
- Leak Tests
- Air Bag Inflator Test
- High Pressure Chamber Fatigue Tests
- Multi-Gauge Tests and Calibration
- Rupture Disc Tests
- Supercritical Fluid Extraction

## Features

- Highly accurate pressure transducer monitors system pressure and provides feedback
- User-defined multiple target pressures, holding times, dwell times, and pressurization rates
- Pressure cycling feature allows fatigue testing
- Tests can be performed under elevated temperature to simulate actual operating conditions (optional)
- Multi-level, fail-safe system provides over-pressurization protection
- Windows-based software handles all control, measurement, data collection, and report generation; complete manual control also possible
- Compatible with Windows '98 and higher
- Real-time graphical test display depicts testing status and results throughout operation
- Multiple pressure outlet ports available
- Automatic pressure generator refill for high volume situations
- Multiple pressure generator systems for continuous and multi-axis pressurization (optional)
- Customized report formats available
- Minimal maintenance required



## Hardware: Pneumatic System (Applications up to 5,000 PSI)

The Automated Pressure Control System - Pneumatic System comprises a booster, pressure transducer, motorized valves, and a pressure controller. The high pressure booster driven by shop air produces up to 5000 PSI output. A highly accurate pressure transducer monitors system pressure and provides feedback. The APCS - Pneumatic System has two control modes: multi-target pressure control and pressurization rate control. (Control algorithms are based on PID control.) Multi-target pressure control allows the operator to reach the targeted pressure quickly and smoothly, while minimizing overshoot. Additionally, multi-target control holds the designated pressure for a specified length of time. The pressurization rate control provides operator control of the pressurization rate at which the target is approached.

## Hardware: Hydraulic System (Application up to 60,000 psi)

The Automated Pressure Control System - Hydraulic System comprises a motorized pressure generator, pressure gauges, high-pressure motorized valves, and a pressure controller. The DC motor driven piston pressure generator produces up to 60,000 PSI output. A highly accurate pressure transducer monitors system pressure and provides feedback.

The APCS - Hydraulic System has two control modes: multi-target pressure control and pressurization rate control. (Control algorithms are based on PID control.) Multi-target pressure control allows the operator to reach the targeted pressure quickly and smoothly, while minimizing overshoot. Additionally, multi-target control holds the designated pressure for a specified length of time. The pressurization rate control provides operator control of the pressurization rate at which the target is approached.

### Specifications

#### Pneumatic

#### Hydraulic

Working Fluid	Air & N2	Water, Oil, or Alcohol
Air Requirement	80 psi Air	N/A
Pressure Range	0 - 5,000 psi	0 - 60,000 psi
Pressure Transducer	Range: 0 - 5,000 psi (Accuracy: Up to 0.01 % FS)	Range: 0 - 60,000 psi (Accuracy: Up to 0.01 % FS)
System Resolution	1/20,000 (65536 optional)	1/20,000 (65536 optional)
System Control Accuracy	+/- 0.02 % FS	+/- 0.02 % FS
Pressure Setting	Up to 20 different pressure steps	Up to 20 different pressure steps
Pressurization Rate	0.1 psi/sec - 500 psi/sec	0.1 psi/sec - 500 psi/sec
Power Requirements	110 VAC, 60 Hz (220 VAC, 50Hz optional)	110 VAC, 60 Hz (220 VAC, 50Hz optional)
Dimensions	51" H x 28.5" W x 26" D	51" H x 28.5" W x 26" D
Weight	125 lbs	300 lbs

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