PT-3070

HYDRAULIC PRESSURE TESTER

A variety of high-pressure tests can be performed requiring pressure cycles with a specific sequence, magnitude, and number of repetitions. Test profiles are user-programmable with several generic templates stored in the memory of the unit. The system is designed to allow for easy modifications to existing templates offering ultimate flexibility in designing your own test protocols. The functions such as program recall and storage, parameter selection, and parameter numeric value input are accomplished through menu-driven soft keys on the touchscreen. The system records measurements of pressure, volume, flow rate, time, and balloon diameter.

FIGURE 1

KEY FEATURES

- Simple test setup and operation
- Small footprint
- Tilting color touchscreen for data input
- Up to 100 programmable test sequences
- 0-1000 psi pressure range (0-2000 psi optional)
- Precise control of pressure, volume & flow rate
- Uses distilled water as pressure media
- Automatic system purge and fill
- Printer port and RS-232 communication port
- Capable of high flow rates, up to 1000 cc of continuous volume delivery
- Optional multi-port manifolds for simultaneous testing of 5 to 20 devices
- Interfaces with Compliance Test Fixture to measure balloon diameter during testing

OPERATION

The PT-3070 is ideally suited for testing small plastic pressure-retaining components such as welded or bonded plastic components and tubing assemblies that are typically encountered in many disposable medical devices, i.e. balloon catheters. Tubing, small valves, fittings, balloons, etc. can be tested for burst, leak, fatigue, pressure or volume compliance, and flow resistance. The unit can measure and plot pressure and volume compliance of elastomeric balloons, measure inflation and deflation times of balloon catheters, such as PTCA and PTA, and determine stent deployment characteristics, etc.

The test setup and system operation are very simple. The operator is guided by instructions presented on the touchscreen display. By pressing the appropriate icons the unit performs system purge and fill. Several standard programs reside in the unit. Recalling a standard program, modifying it, and then storing it again as a new program can quickly create new test protocols. Password protection is provided to prevent unauthorized access. The functions such as program recall and storage, parameter selection, value input, and unit of measure are accessed through menu-driven soft keys on the touchscreen. A sample control screen is shown in Figure 4 and a sample data graph is shown in Figure 5. The unit offers ultimate flexibility in designing your own test protocols. The user can select from basic parameters such as time interval, pressure, and volume and build individual program “steps”. Each “step” has a so-called “exit condition” that must be met before the program moves to the next step. Individual steps can be added up to form a “group”. Additionally, there can be a “loop function” performed on each “step” or “group” up to 99 times for each step or group. In this fashion, a variety of test protocols can be devised such as ramp, staircase, staircase with zero pressure pause between steps, and cycle or fatigue test.

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TECHNICAL SPECIFICATION	PT-3070
Dimensions	10” W x 12.5” H x 18.5” D
Weight	19.5 Kg (43.0 lbs)
Power Requirements	100/110/220/240 VAC 50 or 60 Hz, 1000 W
Air Supply	100 psi (0.7 Mpa) dry filtered air
Output Pressure Range	1.0 to 1000 psi (0.0068 13.6 Mpa) (2000 psi optional)
Output Volume Range	0.002 cc to 1000 cc

TECHNICAL SPECIFICATION	PT-3070
Output Flow Rate Range	0.2 to 10 cc/s
Pressure Accuracy	1.0 psi (6.8 Pa)
Pressure Resolution	0.1 psi (0.68 Pa)
Volume Accuracy	0.02 cc
Volume Resolution	0.001 cc
Flow Rate Accuracy	0.06 cc/s

SUMMARY OF FEATURED PHOTOS

The PT-3070 uses dual, double-acting hydraulic cylinders powered by a robust linear actuator to develop desired test pressures or volumes. High-accuracy pressure transducers, together with position encoders, ensure precise delivery of pressure media, i.e. distilled water, into the tested device. A bank of high-pressure solenoid valves controls both the filling and discharge of the hydraulic cylinders. During the purge and fill cycle the machine automatically draws water from an external reservoir to fill the hydraulic cylinder. Due to their double-acting nature, the cylinders are capable of continuous delivery of up to 1,000 cc of water. This feature is especially useful when performing cycle life testing of multiple devices (up to 20 pieces) connected to multi-port manifolds. The unit is housed in a sturdy metal enclosure with a sloping front panel (Figure 1). A tilting color touchscreen serves both as data input during programming and as a numeric and graphic display during the test. Additional push-button switches on the front panel control the routine functions such as Start Test, Reset, and Main Power. All pressure, electrical, and communication connections are on the rear panel. The standard unit comes fully equipped with drivers and connectors to accommodate optional devices such as a printer, Balloon Compliance Test Fixture, Multi-port Manifold Module (Figure 3), temperature-controlled water bath, and the Laser Measurement System (Figure 2).

FIGURE 2

FIGURE 3

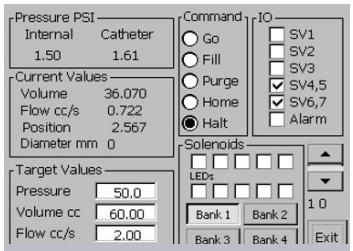

FIGURE 4

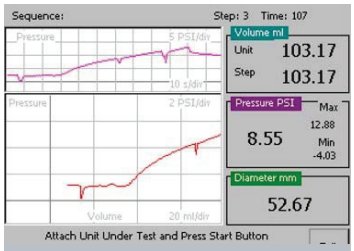

FIGURE 5

INTERFACE
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