



 King nutronics corporation

***Model 3731***

***Portable Pressure Calibrator***

## MODEL 3731 PRESSURE CALIBRATOR

This portable, self-contained pressure calibrator is capable of calibrating pneumatic gauges from 28.5 in-Hg vacuum to 600 psig (40 Bar) and hydraulic gauges up to 6,000 psig (400 Bar). Calibration is achieved by comparing the device under test (DUT) with the reference Master Digital Pressure Indicators (MDPIs) supplied with the Model 3731 system. The reference pressure or vacuum is manually generated using a scissor-action hand pump. Using the supplied hydraulic reservoir and appropriate calibration fluid, liquid gauges can be calibrated hydraulically.

The calibrator consists of a hand pump and hydraulic reservoir for generating vacuum and pressure, four MDPIs, a fluid trap, high-pressure test hoses (3 ft. and 6 ft.), test gauge adapter fittings, replacement packing kits, and accessories for maintaining and overhauling the user-serviceable components of the calibrator. All of the Model 3731 components are contained in a single watertight storage case.

## MASTER DIGITAL PRESSURE INDICATORS (MDPIs)

The Master Digital Pressure Indicators (MDPIs) use silicon sensor technology to detect applied pressure changes. Unlike standard pressure gauges, these gauges have accuracy rated as a percent of indication (reading). These gauges are also fully temperature compensated over an operating range of 14°F – 122°F (10°C to 50°C). The high-contrast, backlit, dual-line LCD display shows live and peak pressures with selectable units of measure. Typical battery life exceeds 500 hours of continuous operation. The pressure inlet of each MDPI is fitted with a male quick-disconnect fitting and a protective dust cap.

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## SCISSOR ACTION HAND PUMP ASSEMBLY

The hand pump assembly consists of a scissor-action hand pump, a hydraulic reservoir, a quick-disconnect fitting for connecting the Master Digital Pressure Indicators (MDPIs), and a test hose connection fitting. A mode selector valve determines control of vacuum or pressure. A volume adjustment knob controls fine pneumatic pressure adjustments, and is used to increase and decrease hydraulic pressure.

For pneumatic pressure generation the hydraulic reservoir is removed. By actuating the scissor-action pump handles, pneumatic pressures up to 500 psig can be generated.

The hand pump is fitted with the fluid reservoir when testing hydraulic systems. By actuating the scissor-action pump handles, hydraulic pressures up to 200 psig can be generated. For higher hydraulic pressures, up to 6,000 psig, the volume adjuster knob is used.

## ACCESSORIES, FITTINGS, AND PACKING KITS

An accessory kit and adapter fittings kit are included with the Model 3731 Handheld Portable Pressure Calibrator. The accessory kit includes Teflon thread tape, marking tape, a 2-in-1 screwdriver, an external power supply kit, an RS232 serial cable, and packing kits for maintenance of the hand pump components. The adapter fittings kit contains a variety of fittings to facilitate connection to various pneumatic and hydraulic instruments and devices. The adapter kit also contains a special spanner tool, which is used during disassembly of the hydraulic reservoir for cleaning.



## MODEL 3731 SPECIFICATIONS

### GENERAL:

#### Ambient Temperature Range:

Operating ..... 10°C to +40°C (+50°F to +104°F)  
Storage ..... -40°C to +71°C (-4°F to +158°F)  
Humidity (Operating).....95% RH Max, 5°C to 50°

### MODEL 3731 HAND PUMP:

Discharge Pressure (pneumatic) .....0 to 600 psig  
Discharge Pressure (hydraulic) .....0 to 6,000 psig  
Vacuum.....28.5 in-Hg

### MASTER DIGITAL PRESSURE INDICATORS (MDPIs):

Number of gauges per kit ..... Four  
Type..... Digital, LCD Display

#### Units of Measure:

0 – 30 Psig Range .....PSI, in-H<sub>2</sub>O, in-Hg, mm-Hg, mm-H<sub>2</sub>O, Bar, mBar, Kpa  
0 – 300 psig Range..... PSI, in-H<sub>2</sub>O, in-Hg, mm-Hg, Bar, mBar, Kpa  
0 – 3000 psig Range..... PSI, in-Hg, Bar, Kpa  
0 – 6000 psig Range..... PSI, in-Hg, Bar, Kpa

#### Accuracy:

20 to 100% of Full Scale..... ±0.1% of indication  
0 to 20% of Full Scale.....±0.02% of full scale, where full scale is gauge range

#### Vacuum Specifications:

**30 PSI Pressure Gauge:**  
0 to -14.5 psig .....±0.15% of full scale, where full scale is -14.5 PSI  
**300 PSI Pressure Gauge:**  
0 to -14.5 psig .....±0.25% of full scale, where full scale is -14.5 PSI

#### Temperature:

Operating and Compensated Range ..... -10°C to 50°C (14°F to 122°F)  
Storage Range..... -40°C to +75°C (-40°F to +167°F)

#### Temperature Range Humidity:

-10 to 10°C ..... Uncontrolled  
10 to 30°C..... 0 to 95% RH  
30 to 40°C..... 0 to 75% RH  
40 to 50°C..... 0 to 45% RH

#### Operational Specifications:

Media Compatibility ..... Liquids and gases compatible with 316 stainless steel  
Power Requirements ..... 3-AA size alkaline batteries or external AC power adapter kit  
Pressure Connection ..... KNC male probe fitting x 1/4" female NPT  
Weight..... 1.35 lbs (21.60 oz., including batteries and fittings)

**Test Fluid**..... Distilled Water

### KIT WEIGHT AND DIMENSIONS:

Weight.....31 lbs  
Dimensions (L x W x H)..... 24.6" x 19.7" x 8.6"