

WIKA

Calibration & Test Equipment

Portable Pneumatic Calibrator

Series 65-120



The Series 65-120 Pneumatic Calibrator provides high-degree accuracy for on-site testing and calibration service. This versatile portable test stand combines precision measurement and durable construction in a compact unit that is capable of simulating, applying, holding, regulating and measuring both pressure and vacuum. The dial, all pressure connections, and the controls are panel-mounted for easy access.

STANDARD FEATURES

- Accuracy:** 0.066% of full scale
- Scale length:** 45" (1140mm) through two pointer revolutions
- Range:** Dual scale calibrated -100 to 850" water and -3.6 to 30.6 psi
- Ordering number:** To order the standard W&T Portable Pneumatic Calibrator, ask for 665-120-000.
- Range and calibration:** On the dial, the outer scale reads -100 to 0 to 850" of water with graduations every 1.0"; the inner scale reads -3.6 to 0 30.6 psi with graduations every 0.05 psi.
- Repeatability:** 0.03% of full scale
- Sensitivity:** 0.01 of full scale
- Hysteresis:** 0.1% of full scale
- Temperature effect:** Maximum is 0.1% of full scale per 10°C/50°F change from 23°C/73.4°F
- Dial Diameter:** 8 ½" (215mm)
- Gauge case:** Anodized aluminum with tempered-glass dial cover

STANDARD RANGES AND ORDERING NUMBERS

Series 65-120 Portable Pneumatic Gauge

Range and Calibration	Ordering Number	Graduation
0 to 4.5 psi (0 to 300 mbar)	65-120 005	0.005 psi (0.5 mbar)
0 to 10 psi (0 to 700 mbar)	65-120 010	0.01 psi (1 mbar)
0 to 15.5 psi (0 to 1 bar)	65-120 015	0.02 psi (0.001 bar)
0 to 20 psi (0 to 1.4 bar)	65-120 020	0.02 psi (0.002 bar)
0 to 30 psi (0 to 2 bar)	65-120 030	0.05 psi (0.002 bar)
0 to 45 psi (0 to 3 bar)	65-120 045	0.05 psi (0.005 bar)
0 to 60 psi (0 to 4 bar)	65-120 060	0.1 psi (0.005 bar)
0 to 100 psi (0 to 7 bar)	65-120 100	0.1 psi (0.01 bar)

Other units of calibration are available at no extra charge. Two sets of calibrations (dual scales) are available at an extra charge.

STANDARD FEATURES (cont.)

Capsule system

volume: 6.9cc with pointer at zero; 8.6cc, at full scale

Case Volume: 3070 cc

Case

pressure: 35 psi (2.5 bar) maximum

Overpressure

protection: A pressure relief valve protects the mechanism (capsule); pressure up to 90 psi will not damage the mechanism nor affect accuracy. A built-in relief valve and a flow restrictor protect the case from pressures up to 10 times the case rating of 35 psig. This valve is an emergency-protective device only.

Maximum

case leak rate: Will not exceed 1.03×10^{-7} std cc/sec or 0.018 psi/hr

Materials exposed to measured gas:

Capsule system: Ni-Span C®, soft solder, brass, 303 stainless steel, silver solder

Case system: Ni-Span C®, brass, phosphor bronze, beryllium copper, magnesium, aluminum, nylon, 303 stainless steel, Elgiloy, soft solder, silver solder, Hypalon. Inlet manifold to pressure gauge: aluminum, brass, polyethylene, copper, steel, glass wool, carbon, Buna N.

Carrying

case: ABS plastic 17 ½" x 12" x 7 ½" (445x305x190 mm)

Accessories: 6 adapters for 1/8" pipe thread to ¼" plastic tubing, 20 ft of ¼" OD plastic tubing, instruction book, sheet with summary of important instructions.

Modifications: Other units of calibration, including metric (SI) units are available at an extra cost. Other units of calibration at no extra charge. Two sets of calibrations (dual scale) are available at an extra charge.

Shipping

weight: 26 lbs. 20 lb.

CONNECTIONS for DIFFERENT PRESSURE READOUTS

For gauge pressure:

Test pressure is applied to the capsule through the appropriate P connection; the case is open to atmosphere through S.

For differential pressure:

High-test pressure is applied to the capsule through the appropriate P connection. Low test pressure is applied to the case through S.

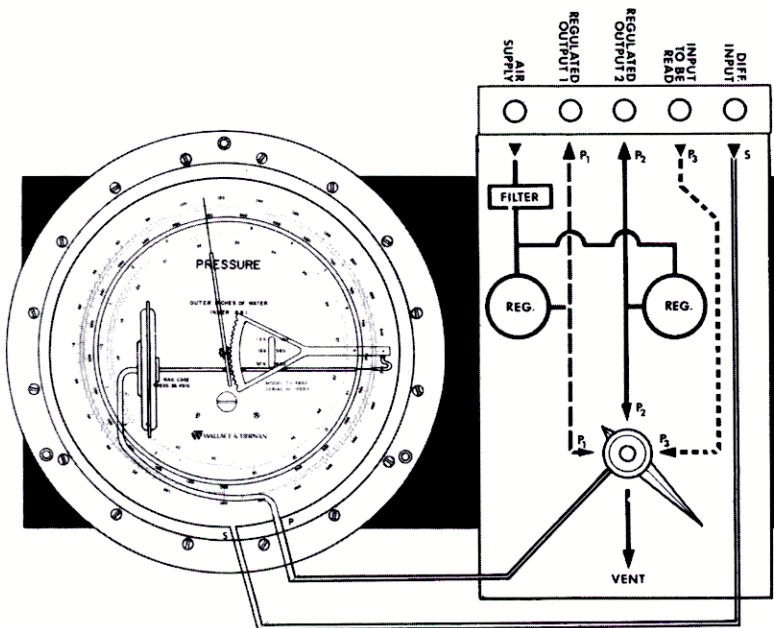
For absolute pressure:

Test pressure is applied to the capsule through the appropriate P connection, and the case is continuously subjected to full vacuum through S.

For vacuum: The capsule is open to atmosphere through connection P; the case is connected to test vacuum at S.

For positive and negative pressures:

Test pressure is applied to the capsule through the appropriate P connection, and the case is open to atmosphere through S.



Series 65-120 Portable Pneumatic Calibrator

Clear, Accurate Readout

Sharply defined graduations, a 45" scale length over two pointer revolutions, and a knife-edge pointer facilitate precise readouts. A computer-assisted plotter marks calibration points and the graduations between them on each dial.

Engineered for Performance

The gauge housing is heavy cast aluminum with a tempered glass dial cover. A built-in pressure-relief valve has a dumping capacity, which protects the case against overpressures to 10 times the maximum pressure rating. A separate pressure-relief valve protects the capsule mechanism. The gauge is mounted inside the carrying case on rubber-padded shock mounts. The carrying case is constructed of strong but lightweight molded ABS that flexes to absorb shock from impact.

Compact, Built for On-site Service

The W&T Portable Pneumatic Calibrator weighs only 20 lb and is only slightly larger than an attache case. The easy portability, simple set-up, and the versatile capabilities of this unit extend its usefulness for service in the field. Its portability saves the time and expense of shop calibration.

An Extra Measure of Accuracy

All W&T Portable Pneumatic Calibrator are subject to rigorous and extensive testing. Each has to perform at better than the rated accuracy 0.066% of full scale to be accepted. It's accurate enough to double as a shop standard.

Calibration Traceable to Nist

Calibration is with primary standards, which are directly traceable to the National Institute of Standards and Technology.

DESIGN and CONSTRUCTION

The Series 65-120 Portable Pneumatic calibrator is a Pressure-Vacuum test stand wholly contained in a carrying case. The front panel accommodates the precision pressure gauge, all pressure connections, two air-regulator controls, and a selector valve. With the selector valve, three different test pressures can be applied individually to the gauge. A fourth selector setting vents the gauge to atmosphere.

The precision pressure gauge has a Ni-Span C[®], capsule-type pressure element, which gives excellent temperature stability and speed of response. An almost frictionless mechanical linkage amplifies capsule movement and transmits it to the pointer. Although highly sensitive and accurate, the mechanism is built to withstand the handling normally associated with on-site calibration of pneumatic instrumentation.

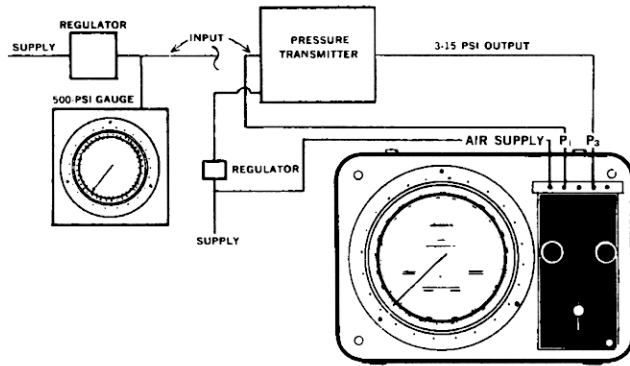
A filter on the air supply keeps oil and moisture out. Two regulators apply known pressures to the devices under test. The connection block has 1/8- inch female-pipe-threaded connections. Small gauges can be threaded directly into the block; or as with larger instruments, connected by flexible tubing.

The standard scale contains two sets of calibrations: -100 to 0 to 850 inches of water and -3.6 to 0 to 30.6 psi. Other ranges and units of calibration (from min. 0-4.5 psi to max. 0-100 psi) are available.

The W&T Portable Calibrator eliminates the need for special arrangements or external controls. The carrying case has a compartment for adapters, tubing, and other accessories; the case cover is easily removed. Complete information on the use of the calibrator is given in an instruction book. A schematic flow diagram on the panel shows the calibrator's connections at a glance.

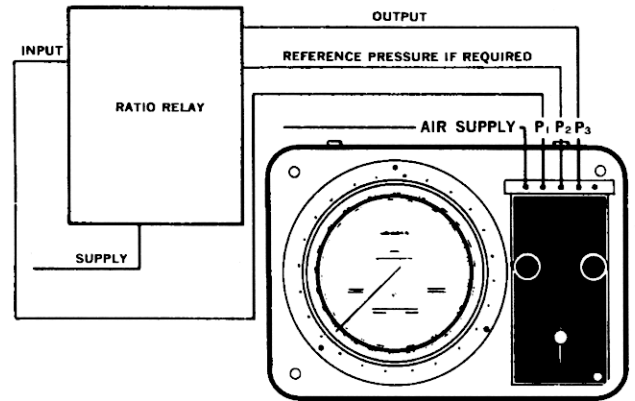
Simplest use of the calibrator is to carry it to an on-stream gauge, indicator, or recorder. Calibration of such instruments can be quickly checked by making simple connections without taking the instrument out of service. Also, the calibrator can simulate the set and process-variable signals to a pneumatic control device and check its output. These three pressures can be read out and checked in any order and in rapid sequence. By evacuating the calibrator, absolute pressure measurements can be made.

Calibration of a pressure transmitter



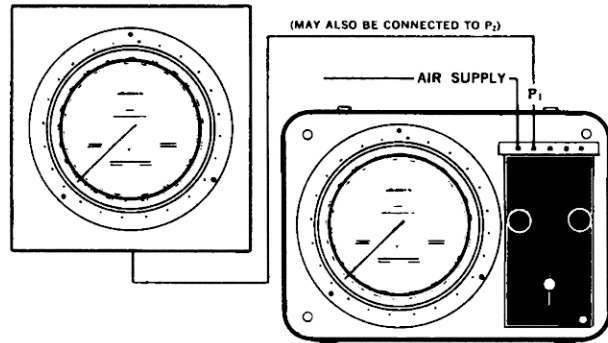
Using a common pressure supply for both the calibrator and the transmitter, transmitter input is regulated to the desired value and held. Transmitter output is accurately indicated by the calibrator.

Calibration of a ratio relay



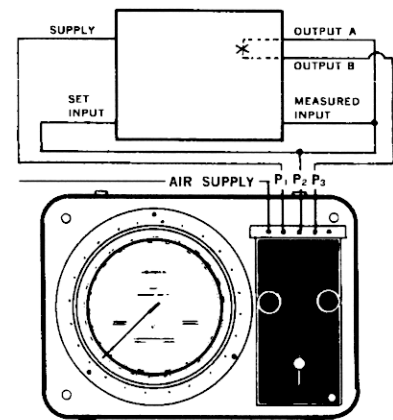
The ratio relay's input and reference pressures are regulated to the desired values and held. Relay output is indicated accurately by the calibrator.

Calibration of a gauge, indicator, or recorder



Test pressure is applied to the instrument and to the calibrator simultaneously. Instrument and calibrator readings are compared for an accuracy check.

Calibration of a typical stacked diaphragm pneumatic controller



Controller supply pressure is regulated to the desired value and held. Controller set and measured inputs and output A are regulated to the desired value and held. The calibrator then reads out controller output accurately. P_3 equals P_2 for any value of P_2 if the controller is in calibration.

Calibration of a differential pressure transmitter

The transmitter's supply and high-input pressures are regulated to the desired values and held. Transmitter output is indicated accurately by the calibrator.

LOW PRESSURE INPUT (ATMOSPHERE FOR TEST)

