PORTABLE PNEUMATIC CALIBRATOR SERIES 65-120

TECHNICAL INFORMATION

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 pressures and vacuum. The dial, all pressure connections, and the controls are panel-mounted for easy access.

ADVANTAGES

- Accuracy 0.066 % FS
- Scale length 45 inches (1140 mm)
- Clear readout
- Versatile capabilities
- Calibration traceable to NBS
- Easy to use
- DKD calibration on request
- Dual scale calibration for standard range

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 (20 °C) 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.

AN EXTRA MEASURE OF ACCURACY

All **Wallace & Tiernan** Portable Pneumatic Calibrators are subjected to rigorous and extensive testing. Each has to perform at better than the rated accuracy to be accepted. It's accurate enough to double as a shop standard.

Calibration traceable to NBS

Calibration is with primary standards which are directly traceable to the German National Bureau of Standards (PTB).

WALLACE & TIERNAN
LEADER IN QUALITY
DIN EN ISO 9001 certified
DKD-K-02301 DIN EN ISO/IEC 17025

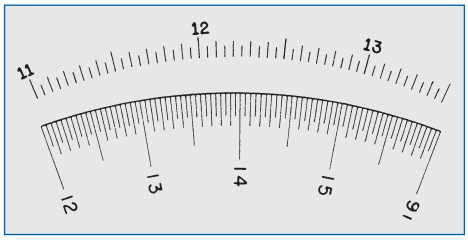
WALLACE & TIERNAN

www.wallace-tiernan.com

FEATURES

CLEAR, ACCURATE READOUT

Sharply defined graduations, a 45-inch (1140 mm) scale length over two pointer revolutions, and a knife-edge pointer facilitate precise readouts. All scale calibrations are individually plotted and hand marked to produce a dial custom fitted to the pressure element and mechanism of that gauge.



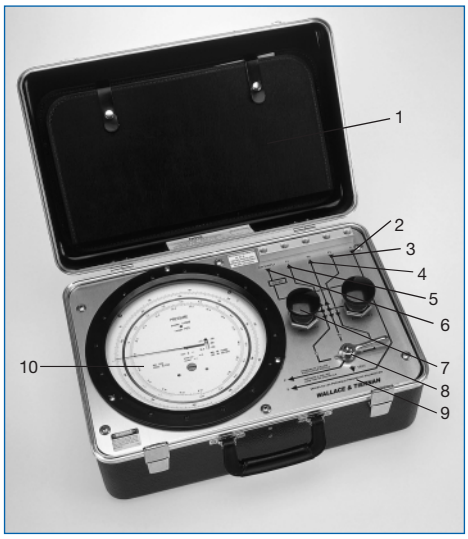
Wallace & Tiernan (top) and competitive scales of the same range.

ENGINEERED FOR PERFOMANCE

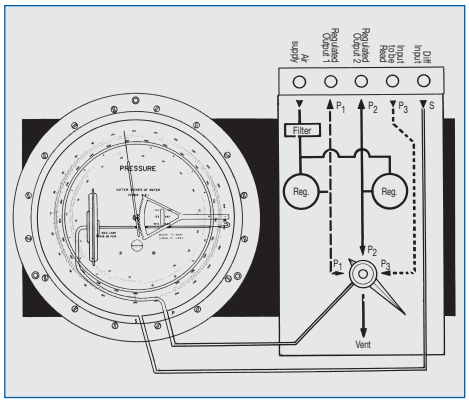
The gauge housing is heavy cast aluminum with a tempered glass dial cover. A built-in pressure-relief valve has a dumping capacity which protects the case against overpressures to 10 times the maximum pressure rating. A separate pressure-relief valve protects the capsule mechanism. The gauge is mounted 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 **Wallace & Tiernan** Portable Pneumatic Calibrator weights only 20 lb (9 kg) and is only slightly larger than a attache case. The easy portability, simple set-up, and the versatile capabilities of this unit extends its usefulness for service in the field. Its portability saves the time and expense of shop calibration.



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.

1 Compartment for accessories
2 Differential Input
3 Input to be read
4 Regulated output no. 2
5 Regulated output no. 1
6 Air supply connection
7 Regulators
8 Selector Valve
9 Schematic flow diagram
10 Shock-mounted gauge

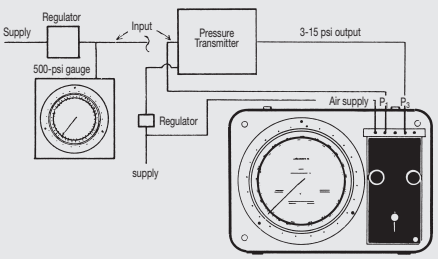
CALIBRATOR USES

The **Wallace & Tiernan** 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.

USES OF THE WALLACE & TIERNAN PORTABLE CALIBRATOR

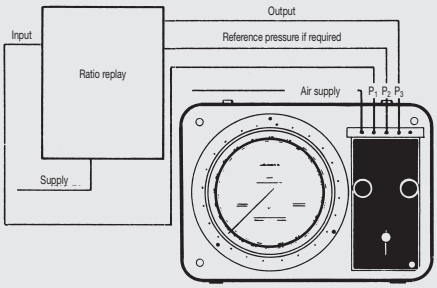
Simplest use of the calibrator is to carry it to an on-stream gauge, indicator, or recorder. Calibration of such instruments can be quickly checked by making simple connections without taking the instrument out of service. Also, the calibrator can simulate the set and process-variable signals to a pneumatic 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



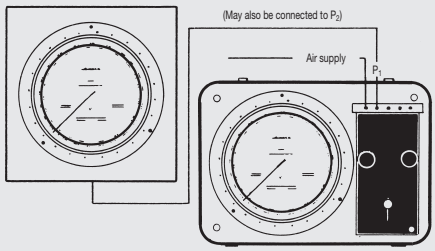
Using a common supply pressure for both the calibrator and the transmitter, transmitter input is regulated to the desired value and held. Transmitter output is accurately indicated by the calibrator.

Calibration of a ratio relay



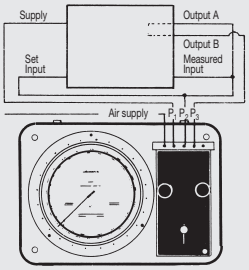
The ratio relay's input and reference pressures are regulated to the desired values and held. Relay output is indicated accurately by the calibrator.

Calibration of a gauge, indicator or recorder



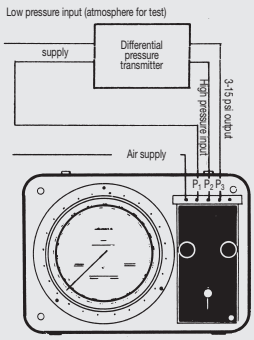
Test pressure is applied to the instrument and to the calibrator simultaneously. Instrument and calibrator readings are compared for an accuracy check.

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.

TECHNICAL DATA

ORDERING NUMBERS

The standard scale contains two sets of calibrations (dual scale) in the pressure units inches of water and PSI. Dial markings in the negative range are in red colour and in the positive range in black colour.

Range and Calibration	Ordering No.	Graduation
Outer scale: –100 to 0 to 850 inches of water (20 C)	65-120 000	1.0 inch water
Inner scale: –3.6 to 0 to 30.6 PSI		0.05 PSI
Other available ranges		
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 cost. Two sets of calibrations (dual scales) are available at extra cost.

Accuracy:
0.066 % of full scale

Repeatability:
0.03 % of full scale

Sensitivity:
0.01 % of full scale

Hysteresis:
0.1 % of full scale

Readability:
0.02 % of full scale

Temperature effect:
Maximum is 0.1 % of full scale per 10 °C change from 23 °C

Scale length:
45 inches (1140 mm) through 2 pointer revolutions

Dial diameter:
8 1/2 inches (215 mm)

Capsule system volume:
6.9 cc with pointer at zero; 8.6 cc, 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 PSI. This valve is an emergency-protective device only.

Maximum case leak rate:
Will not exceed 1.03 x 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

Gauge case:
Anodized aluminum with tempered-glass dial cover

Carrying case:
ABS plastic 17 1/2 in. x 12 in. x 7 1/2 in.
(445 x 305 x 190 mm)

Accessories:
6 adapters for 1/8" pipe thread to 1/4" plastic tubing, 20 ft of 1/4" OD plastic tubing, instruction book, sheet with summary of important instructions

Shipping weight:
approx. 26 lb (12 kg); approx. 20 lb (9 kg) net

Note:
Calibrator for use with non-corrosive gases.
It should not be used with liquids

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