

Model PKII ®

Pneumatic Deadweight Tester



- Pressure range 1 to 200 kPa (0.145 to 30 psi)
- Accuracy to $\pm 0.015\%$ of indicated reading; accuracy ± 0.025 and 0.050% is also available
- Repeatability $\pm 0.005\%$ of indicated reading
- Available units psi, g/cm², mbar, bar, kPa, inH₂O, cmH₂O, cmH₂O
- Supplied standard with masses calibrated to International Standard gravity of 9.80665 m/s². Local gravity calibration is available on all models
- Gas Industry Models; Standard testers in inH₂O or cmH₂O are calibrated reference water columns at 20°C (68°F) per ISA recommended practices. Calibration to reference water columns at 60°F per AGA standards is available.
- Exceptional Performance and Safety Built-in: Floating Ball Operation, Self-Regulating, Rugged Ceramic Measuring Ball, Overhung Weight Carrier, Non-Contaminating Test Fluid, Closed Cover Operation, Ball Valves for Inlet and Outlet, Interchangeable Weights, NIST Traceable

Product description

The PK II tester is a floating ball type, pneumatic deadweight tester. This model is engineered to offer user-friendly features, safe operation, and an optimal performance in the field or in the lab.

Self-regulating pressure standard

The AMETEK PK II is a primary standard that produces a pressure by applying force (weight set) over area (the ceramic ball and nozzle). The PK II tester is NIST traceable and accurate to $\pm 0.015\%$ using stainless steel weights calibrated to International standard gravity at 9.80665 m/s^2 or local gravity as specified.

The PK II tester is self-regulating with accuracy independent of the operator. The tester utilizes a virtually frictionless ceramic ball floating on a layer of air within a stainless steel cylinder.

The PK II tester features a quick-leveling system for field or lab setup. The unit may also be mounted on an optional tripod for more convenient setup. The tester may be operated with the cover opened or closed.

Weights are located in foam-protective slots in the case.

Functional specifications

| | |
|--------------------------|---|
| Model: | PKII |
| Type: | Pneumatic, ball type |
| Pressure range: | 200 kPa/ 30 psi (model dependent) |
| Accuracy: | (12 months): to $\pm 0.015\%$ rdg* |
| Repeatability: | $\pm 0.005\%$ rdg |
| Temperature coefficient: | $\pm 0.00167\%$ of rdg/ $^{\circ}\text{C}$ (@ 23°C) |
| Minimum measurements: | 1 psi, 10 g/cm ² , 10 mbar, 1 kPa, 4 inH ₂ O, 10 cmH ₂ O, 10 mmHg |
| Increments (small): | Small incremental weight sets available |
| Gravity: | 9.80665 m/s ² (international standard) or Local gravity (specify when ordering) |
| Water column temp ref: | 20 $^{\circ}\text{C}$ (ISA) (standard) or 60 $^{\circ}\text{F}$ (AGA) (optional) |
| Weight sets: | Single (model dependent) |
| Note: | Extra weight sets may be ordered |
| Pressure source: | Nitrogen or instrument/ shop air (ISA quality standard 7.3) |
| Supply pressure (max): | 6.9 bar / 100 psi |
| Supply pressure (min): | 2.1 bar / 30 psi or 150% of desired output pressure |
| Flow rate: | 28 slh at 1 kPa/1 scfh at 0,15 psi output 310 slh at 200 kPa/1 scfh at 20 psi output |
| Test connections: | 1/4" NPT |
| Weight material: | Stainless steel and aluminum (small incremental weights) |
| Ball material: | Ceramic |
| Engineering units: | psi, g/cm ² , mbar, bar, kPa, inH ₂ O, mmHg |
| Cases: | 1 |

Notes: Deadweight tester and deadweight gauge accuracy is expressed as "Percent of Indicated Pressure". A 1,000 psi tester with an accuracy of $\pm 0.01\%$ of indicated pressure will have an allowable error of 0.1 psi at 10 psi, ± 0.1 psi at 100 psi and ± 1.0 psi at 1,000 psi. Generally, deadweight testers are used only in the upper 90% of the range.

Physical specifications

Tester size (L x W x H):

Small:.....17.8 x 26.7 x 38.1 cm / 7 x 10.5 x 15 in

Large:.....22.9 x 36.8 x 38.1 cm / 9 x 14.5 x 15 in

Weight:.....to 12.7 kg / 28 lb

Configuration:.....Pneumatic deadweight

Delivery:.....Tester base, weight set, manual and NIST traceable certification

General process information for calibrated parts

- Local gravity values must be specified by customer in gals, cm/s² or m/s².
- Include serial number, accuracy, gravity, and model number of deadweight tester when ordering weight sets or calibrated parts.
- Masses for weights ordered separately, including tolerance, must be supplied by customer; unless combined with tester on same order.
- Calibrated parts may be made to archival data if requested on the purchase order.
- Calibrated parts are certified for physical dimension only (mass or area) and not for accuracy unless ordered with a new tester or the tester is returned for proper calibration of parts.
- PK II weight set changes and additions require a matching weight carrier and/or conversion ring for the proper incremental output values.

Certification of Accuracy and Traceability

A Certification of Accuracy and Traceability to NIST is included with every AMETEK floating ball-type deadweight tester. An optional Certification of Accuracy with area, mass and intrinsic correction factors is available.



Features

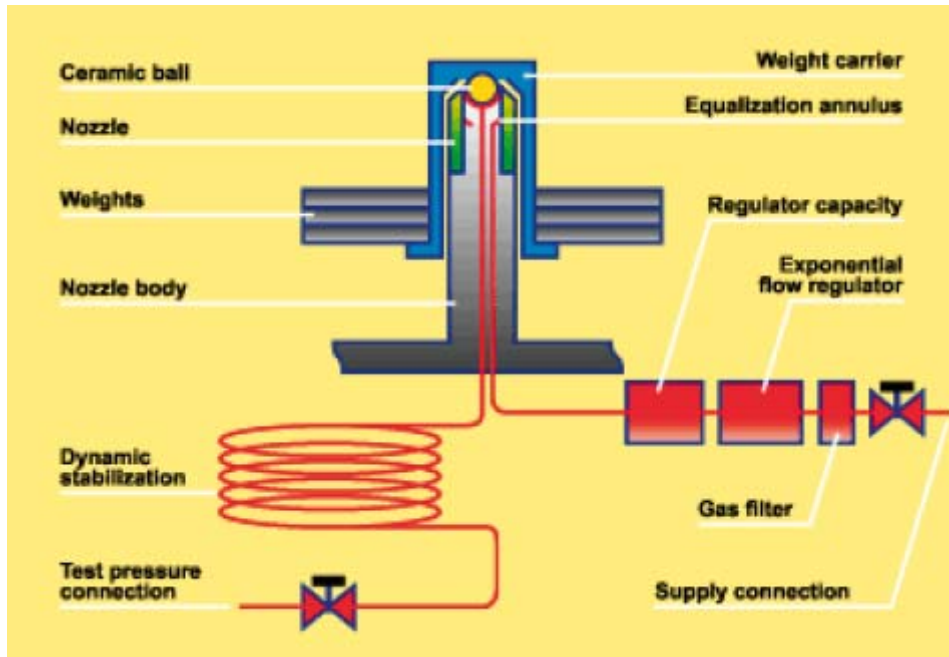
The following are some of the features and characteristics inherent to the AMETEK PK II deadweight tester.

Floating Ball

While in operation, the PK II tester's ball and weights float freely, supported only by a thin film of air which is virtually frictionless. This eliminates the necessity to rotate the weights during testing and allows the user to concentrate on the instrument calibration.

Self-Regulating

The instrument's built-in flow regulator automatically adjusts the input air flow to maintain the ball and weights in a float position. The regulator also compensates for variations in pressure from the air supply. These features eliminate the necessity of having to continually adjust the supply during the test and provides for an easy up and down scale calibration.



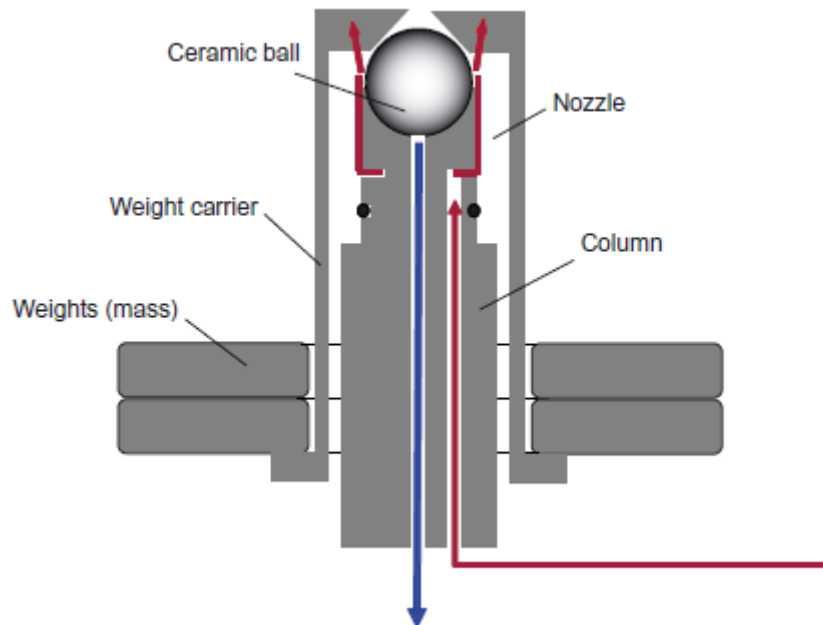
Overhung weight carriers

Another feature of the PK II deadweight tester is the way that the weights are positioned on the carrier. Ametek utilizes an overhung weight carrier design. This design employs a tube carrier that is positioned over the column and onto the ceramic ball. The center of gravity for the stack of weights is lowered, reducing side thrust and friction; which lengthens the life of the ball/nozzle and carrier. This also improves measurement accuracy.



Rugged Ceramic Measuring Ball

The floating ball is manufactured from aluminum oxide ceramic - a material with near-diamond hardness. The ball, unlike steel and carbide pistons, may be dropped on hard surfaces without damage.



Quick Setup and Operation

The setup for the PK II tester is completed by simply connecting two tubes, - one for the supply and one for the unit-under-test, leveling the PK II, and adding the appropriate weights. Operation is fast and efficient with no valves to adjust and no regulation needed between set points. Pressure regulators are not required if the air supply is within the tester's operational requirements.

Non-Contaminating Test Fluid

The instrument's test fluid is Nitrogen or instrument quality air complying with the ISA Standard S7.3. This fluid is non contaminating to virtually all processes, thus eliminating the need to clean instruments after calibration and before use.

Designed for field or lab use

The PK II tester is designed for precision and is accurate enough for lab use. However, the construction is rugged enough to allow for reliable field operation as well. The instrument includes a built-in tripod mount. A tripod may be ordered separately.

Closed Cover Operation

The PK II tester is designed to operate with the cover closed, thus eliminating the effects of wind during field operation.

Ball Valves

AMETEK floating ball testers, such as the PK II tester, incorporate multi-position ball valves for both the inlet and outlet valve connections. These ensure trouble free operation that is both fast and efficient.

Easy Leveling

AMETEK floating ball testers incorporate a bulls-eye level for reference when preparing the unit for use. The tester also employs a 3-leg leveling system which is more convenient and is superior to a 4-leg system.

Small incremental weight sets

Small incremental weight sets are available to provide fractional output pressures. These are available for the PK II deadweight tester in psi and inH₂O.

Ordering information

| Model | Certified Range | Increment | W/C and Ball Output |
|---------------|--------------------------------|-----------------------|------------------------------|
| PK2-20-SS | 1 to 20 psi | 1 psi | 1 psi |
| PK2-30-SS | 1 to 30 psi | 1 psi | 1 psi |
| PK2-2000GM-SS | 25 to 2,000 g/cm ² | 25 g/cm ² | 25 g/cm ² |
| PK2-2010GMSS | 10 to 2,000 g/cm ² | 5 g/cm ² | 10 and 25 g/cm ² |
| PK2-700MB-SS | 10 to 700 mbar | 20 mbar | 20 mbar |
| PK2-2B-SS | 0.02 to 2 bar | 0.02 bar | 0.02 bar |
| PK2-2B.01-SS | 0.01 to 2 bar | 0.005 bar | 0.01 and 0.02 bar |
| PK2-200N-SS | 2 to 200 kPa | 2 kPa | 2 kPa |
| PK2-201N-SS | 1 to 200 kPa | 0.5 kPa | 1 and 2 kPa |
| PK2-250WC-SS | 10 to 250 inH ₂ O | 10 inH ₂ O | 10 inH ₂ O |
| PK2-304WC-SS | 4 to 304 inH ₂ O | 1 inH ₂ O | 4 inH ₂ O |
| PK2-404WC-SS | 4 to 404 inH ₂ O | 1 inH ₂ O | 4 inH ₂ O |
| PK2-404WC-SS | 10 to 650 inH ₂ O | 10 inH ₂ O | 10 inH ₂ O |
| PK2-654WC-SS | 4 to 654 inH ₂ O | 1 inH ₂ O | 4 and 10 inH ₂ O |
| PK2-850WC-SS | 10 to 850 inH ₂ O | 10 inH ₂ O | 10 inH ₂ O |
| PK2-854WC-SS | 4 to 854 inH ₂ O | 1 inH ₂ O | 4 and 10 inH ₂ O |
| PK2-500CM-SS | 10 to 500 cmH ₂ O | 10 cmH ₂ O | 10 cmH ₂ O |
| PK2-1000CM-SS | 10 to 1,000 cmH ₂ O | 10 cmH ₂ O | 10 cmH ₂ O |
| PK2-1500CM-SS | 10 to 1,500 cmH ₂ O | 10 cmH ₂ O | 10 and 25 cmH ₂ O |
| PK2-2000CM-SS | 10 to 2,000 cmH ₂ O | 10 cmH ₂ O | 10 and 25 cmH ₂ O |

Calibration Options

| Model Suffix | Accuracy | Gravity | Data |
|--------------|------------------------|-------------------------------------|------|
| NONE | ±0.050% rdg (standard) | Standard or local gravity (specify) | None |
| -1B | ±0.025% rdg (optional) | Standard or local gravity (specify) | None |
| -1A | ±0.015% rdg (optional) | Standard or local gravity (specify) | None |
| /C | ±0.050% rdg (standard) | Standard or local gravity (specify) | Yes |
| -1B/C | ±0.025% rdg (optional) | Standard or local gravity (specify) | Yes |
| -1A/C | ±0.015% rdg (optional) | Standard or local gravity (specify) | Yes |

Accessories

| Order no. | Description |
|-----------|---|
| K-1082 | Tubing kit (2) 76.2 cm (30 in) sections 1/4" NPT female x 1/4" NPT female) |
| K-1562 | Tripod |
| 1GT-99 | Gauge pointer puller set Small incremental weight sets available in psi and inH ₂ O Additional weight sets |

