



# AMETEK®

## Model PK II Pneumatic Deadweight Tester

- ❑ Accuracy Up to  $\pm 0.015\%$  of Indicated Reading
- ❑ Pressure Range 4" H<sub>2</sub>O to 30 PSIG
- ❑ Economical Self-Regulating Pressure Standard
- ❑ Exceptional Performance and Safety Built-In
  - Floating Ball Operation
  - Self Regulating
  - Rugged Ceramic Measuring Ball
  - Non-Contaminating Test Fluid
  - Closed Cover Operation
  - Ball Valves for Inlet and Outlet
  - Interchangeable Weights
- ❑ NIST Traceable

### PRODUCT DESCRIPTION

The AMETEK PK II Pneumatic Deadweight Tester 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 980.665cm/sec<sup>2</sup>.

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 cast-metal base with a quick-leveling system for field or lab setup. The unit may also be mounted to 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.

#### Special Calibrations/Local Gravity

The PK II tester are optionally available with an accuracy of  $\pm 0.015\%$ . Calibration to your local gravity is available for all stainless steel models. Please provide your gravity when ordering

#### Gas Industry Models

Standard testers in inches or cm of H<sub>2</sub>O 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. Contact AMETEK for details.

### FUNCTIONAL SPECIFICATIONS

#### Accuracy

$\pm 0.05\%$ ,  $\pm 0.025\%$ ,  $\pm 0.015\%$  of indicated reading.

#### Repeatability

0.005% of output reading

#### Temperature Coefficient

0.00167% of output per °C based on 23°C

#### Maximum Supply Pressure

100 PSIG Instrument quality air per ISA Quality Standard S 7.3.

#### Minimum Supply Pressure

30 PSIG or 150% of output pressure

#### Flow Rate

1 SCFH at 4" H<sub>2</sub>O output  
11 SCFH at 30 PSIG output

### PHYSICAL SPECIFICATIONS

#### Connections

0.125-inch NPT female

#### Weight

Tester Only ..... 18 to 31.5 lbs (8.2 - 14.3kg)  
Weights ..... 17.5 to 61.5 lbs (8.0 - 30.0kg)

#### Shipping Dimensions (L x W x H)

Tester ..... 15.0 x 9.5 x 8.0-inches  
(38.1 x 24.1 x 20.3 cm)  
Weights ..... 8.5 x 12.0 x 11.5-inches  
(21.6 x 30.5 x 29.2 cm)

#### Notes:

Deadweight tester and deadweight gage accuracy is expressed as "Percent of Indicated Pressure". A 1000 psi tester with an accuracy of  $\pm 0.01\%$  of indicated pressure will have an allowable error of 0.1 psi at 10 psi,  $\pm 0.1$  psi at 100 psi and  $\pm 1.0$  psi at 1000 psi. Generally, deadweight testers are used only in the upper 90% of the range.

## ORDERING INFORMATION

### MODEL PK II PNEUMATIC DEADWEIGHT TESTER

| Order Number | Description  |
|--------------|--|
|              | <b>Base Number</b>   |
| PK2-         | PK II Deadweight Tester  |
|              | <b>Range, Weight Set Type and Accuracy</b>   |
|              | <b><i>1 PSI Minimum Increment, 1 PSI Carrier &amp; Ball Weight</i></b>                                 |
| 20-          | 1 - 20 PSIG, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy                             |
| 20-SS        | 1 - 20 PSIG, stainless steel weight set, $\pm 0.05\%$ accuracy   |
| 20-SS-1A     | 1 - 20 PSIG, stainless steel weight set, $\pm 0.015\%$ accuracy  |
| 20-SS-1B     | 1 - 20 PSIG, stainless steel weight set, $\pm 0.025\%$ accuracy  |
|              | <b><i>1 PSI Minimum Increment, 1 PSI Carrier &amp; Ball Weight</i></b>                                 |
| 30-          | 1 - 30 PSIG, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy                             |
| 30-SS        | 1 - 30 PSIG, stainless steel weight set, $\pm 0.05\%$ accuracy   |
| 30-SS-1A     | 1 - 30 PSIG, stainless steel weight set, $\pm 0.015\%$ accuracy  |
| 30-SS-1B     | 1 - 30 PSIG, stainless steel weight set, $\pm 0.025\%$ accuracy  |
|              | <b><i>1" H<sub>2</sub>O Minimum Increment, 4" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b>         |
| 104WC-       | 4 - 100" H <sub>2</sub> O, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy               |
| 104WC-SS     | 4 - 100" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                           |
| 104WC-SS-1A  | 4 - 100" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                          |
| 104WC-SS-1B  | 4 - 100" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                          |
|              | <b><i>10" H<sub>2</sub>O Minimum Increment, 10" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b>       |
| 250WC-       | 10 - 250" H <sub>2</sub> O, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy              |
| 250WC-SS     | 10 - 250" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                          |
| 250WC-SS-1A  | 10 - 250" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                         |
| 250WC-SS-1B  | 10 - 250" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                         |
|              | <b><i>1" H<sub>2</sub>O Minimum Increment, 4" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b>         |
| 254WC-       | 4 - 250" H <sub>2</sub> O, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy               |
| 254WC-SS     | 4 - 250" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                           |
| 254WC-SS-1A  | 4 - 250" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                          |
| 254WC-SS-1B  | 4 - 250" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                          |
|              | <b><i>10" H<sub>2</sub>O Minimum Increment, 10" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b>       |
| 650WC-       | 10 - 650" H <sub>2</sub> O, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy              |
| 650WC-SS     | 10 - 650" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                          |
| 650WC-SS-1A  | 10 - 650" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                         |
| 650WC-SS-1B  | 10 - 650" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                         |
|              | <b><i>1" H<sub>2</sub>O Minimum Increment, 4" and 10" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b> |
| 654WC-       | 4 - 650" H <sub>2</sub> O, nonmagnetic, die-cast alloy weight set, $\pm 0.05\%$ accuracy               |
| 654WC-SS     | 4 - 650" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                           |
| 654WC-SS-1A  | 4 - 650" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                          |
| 654WC-SS-1B  | 4 - 650" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                          |
|              | <b><i>10" H<sub>2</sub>O Minimum Increment, 10" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b>       |
| 850WC-SS     | 10 - 850" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                          |
| 850WC-SS-1A  | 10 - 850" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                         |
| 850WC-SS-1B  | 10 - 850" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                         |
|              | <b><i>1" H<sub>2</sub>O Minimum Increment, 4" and 10" H<sub>2</sub>O Carrier &amp; Ball Weight</i></b> |
| 854WC-SS     | 4 - 850" H <sub>2</sub> O, stainless steel weight set, $\pm 0.05\%$ accuracy                           |
| 854WC-SS-1A  | 4 - 850" H <sub>2</sub> O, stainless steel weight set, $\pm 0.015\%$ accuracy                          |
| 854WC-SS-1B  | 4 - 850" H <sub>2</sub> O, stainless steel weight set, $\pm 0.025\%$ accuracy                          |
|              | <b><i>25g/cm<sup>2</sup> Minimum Increment, 25g/cm<sup>2</sup> Carrier &amp; Ball Weight</i></b>       |
| 2000GM-SS    | 25 - 2000g/cm <sup>2</sup> , stainless steel weight set, $\pm 0.05\%$ accuracy                         |
| 2000GM-SS-1A | 25 - 2000g/cm <sup>2</sup> , stainless steel weight set, $\pm 0.015\%$ accuracy                        |
| 2000GM-SS-1B | 25 - 2000g/cm <sup>2</sup> , stainless steel weight set, $\pm 0.025\%$ accuracy                        |

# ORDERING INFORMATION

## MODEL PK II PNEUMATIC DEADWEIGHT TESTER

### Order Number Description

PK2- Base Number  
PK II Deadweight Tester

#### Range, Weight Set Type and Accuracy

##### **5 kg/cm<sup>2</sup> Minimum Increment, 10 and 15g/cm<sup>2</sup> Carrier & Ball Weight**

2010GM-SS 10 - 2000g/cm<sup>2</sup>, stainless steel weight set, ±0.05% accuracy  
2010GM-SS-1A 10 - 2000g/cm<sup>2</sup>, stainless steel weight set, ±0.015% accuracy  
2010GM-SS-1B 10 - 2000g/cm<sup>2</sup>, stainless steel weight set, ±0.025% accuracy

##### **2 kPa Minimum Increment, 2 kPa Carrier & Ball Weight**

200N-SS 2 - 200 kPa, stainless steel weight set, ±0.05% accuracy  
200N-SS-1A 2 - 200 kPa, stainless steel weight set, ±0.015% accuracy  
200N-SS-1B 2 - 200 kPa, stainless steel weight set, ±0.025% accuracy

##### **0.5 kPa Minimum Increment, 1 and 2 kPa Carrier & Ball Weight**

201N-SS 1 - 200 kPa, stainless steel weight set, ±0.05% accuracy  
201N-SS-1A 1 - 200 kPa, stainless steel weight set, ±0.015% accuracy  
201N-SS-1B 1 - 200 kPa, stainless steel weight set, ±0.025% accuracy

##### **10cmH<sub>2</sub>O Minimum Increment, 10cmH<sub>2</sub>O Carrier & Ball Weight**

500CM-SS 10 - 500cm H<sub>2</sub>O, stainless steel weight set, ±0.05% accuracy  
500CM-SS-1A 10 - 500cm H<sub>2</sub>O, stainless steel weight set, ±0.015% accuracy  
500CM-SS-1B 10 - 500cm H<sub>2</sub>O, stainless steel weight set, ±0.025% accuracy

##### **10cmH<sub>2</sub>O Minimum Increment, 10cmH<sub>2</sub>O Carrier & Ball Weight**

1000CM-SS 10 - 1000cm H<sub>2</sub>O, stainless steel weight set, ±0.05% accuracy  
1000CM-SS-1A 10 - 1000cm H<sub>2</sub>O, stainless steel weight set, ±0.015% accuracy  
1000CM-SS-1B 10 - 1000cm H<sub>2</sub>O, stainless steel weight set, ±0.025% accuracy

##### **10cmH<sub>2</sub>O Minimum Increment, 10 and 25cmH<sub>2</sub>O Carrier & Ball Weight**

1500CM-SS 10 - 1500cm H<sub>2</sub>O, stainless steel weight set, ±0.05% accuracy  
1500CM-SS-1A 10 - 1500cm H<sub>2</sub>O, stainless steel weight set, ±0.015% accuracy  
1500CM-SS-1B 10 - 1500cm H<sub>2</sub>O, stainless steel weight set, ±0.025% accuracy

##### **10cmH<sub>2</sub>O Minimum Increment, 10 and 25cmH<sub>2</sub>O Carrier & Ball Weight**

2000CM-SS 10 - 2000cm H<sub>2</sub>O, stainless steel weight set, ±0.05% accuracy  
2000CM-SS-1A 10 - 2000cm H<sub>2</sub>O, stainless steel weight set, ±0.015% accuracy  
2000CM-SS-1B 10 - 2000cm H<sub>2</sub>O, stainless steel weight set, ±0.025% accuracy

##### **0.02 Bar Minimum Increment, 0.02 Bar Carrier & Ball Weight**

2B-SS 0.02 - 2.0 bar, stainless steel weight set, ±0.05% accuracy  
2B-SS-1A 0.02 - 2.0 bar, stainless steel weight set, ±0.015% accuracy  
2B-SS-1B 0.02 - 2.0 bar, stainless steel weight set, ±0.025% accuracy

##### **0.005 Bar Minimum Increment, 0.01 and 0.02 Bar Carrier & Ball Weight**

2B.01-SS 0.01 - 2.0 bar, stainless steel weight set, ±0.05% accuracy  
2B.01-SS-1A 0.01 - 2.0 bar, stainless steel weight set, ±0.015% accuracy  
2B.01-SS-1B 0.01 - 2.0 bar, stainless steel weight set, ±0.025% accuracy

##### **5mm Hg Minimum Increment, 10mm Hg Carrier & Ball Weight**

MED 10 - 325mm Hg, stainless steel weight set, ±0.05% accuracy  
MED-1A 10 - 325mm Hg, stainless steel weight set, ±0.015% accuracy  
MED-1B 10 - 325mm Hg, stainless steel weight set, ±0.025% accuracy

#### NIST Certification Data

/C For optional NIST Traceable Calibration Data

### PK2-1000CM-SS-1B/C

#### Sample Order Number

PK II Deadweight Tester with a 10 - 1000 cm H<sub>2</sub>O range (minimum increments- 10 cm H<sub>2</sub>O), 0.025% stainless steel weight set (10 and 25 cm H<sub>2</sub>O), supplied with NIST Data and protective carrying case

#### Notes:

0.05% Models with nonmagnetic die-cast weights are calibrated for U.S. Mean Gravity 980.000 gals. (cm/sec<sup>2</sup>). All other models are calibrated for International Gravity 980.655 gals. (cm/sec<sup>2</sup>), or to user's local gravity when specified.

Stainless Steel Models ("SS") are calibrated to water at 68°F (20°C), but can be calibrated to water at 60°F when specified.

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## FEATURES

The PK II tester is a floating ball-type, pneumatic deadweight tester with many features designed to improve performance and safe operation when used according to the instrument's operating instructions. Listed are some of the inherent features of 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.

### Rugged Ceramic Measuring Ball

The floating ball/piston 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 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.

### Tripod Mounting

The PK II tester is designed for laboratory and portable use in the field. The instrument includes built-in tripod mounts. 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.

### 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.

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## TEST AND CALIBRATION INSTRUMENTS

AMETEK is a leading global manufacturer of electrical and electromechanical products for niche markets. Listed on the New York Stock Exchange (AME) since 1930, AMETEK's annual sales are approaching \$1 billion. Operations are in North America, Europe and Asia, with about one-third of sales to markets outside the United States.

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