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KDS-T5000X Series Dead Weight tester

Application

A pressure instrument (hydraulic type) with a defined range up to 100 MPa (14,500 psi) for defining scales

A reference instrument for measuring, adjusting, and calibrating pressure measuring instruments in factories and calibration laboratories.

A complete standalone system suitable for field use

Features

Accuracy class: 0.05%, 0.02%, 0.01%, 0.005%.

High long-term stability, it is recommended to recalibrate every 2 years.

Mass standards are made of carbon steel, stainless steel, or aluminum and can be adjusted according to local gravity

Description

Dead Weight tester is the most precise instrument on the market for calibrating electronic or mechanical pressure measuring instruments, capable of directly measuring pressure (P = F/A). The piston pressure gauge is made of high-quality materials to minimize measurement uncertainty and can operate stably for a long period.

Due to the above features, Dead Weight tester is widely used in factories and industrial, national institutions, and research laboratories for calibration.

Independent Operation

The KDS-T5000X type uses an integrated pressure source and purely mechanical measurement principle, making it an ideal choice for field maintenance and troubleshooting

Basic Principle

Pressure is defined as the force per unit area. Based on this, the KDS-T5000X uses a precisely manufactured piston cylinder system as the core component, which can generate individual test points by loading the mass standard set.

The mass standard set is optimally divided into different mass grades, making the mass loaded on the balance proportional to the target pressure. Under standard conditions, these weights are manufactured according to the standard gravity (9.80665 m/s^2), but users can also adjust them according to local gravity. Additionally, the piston measuring system and mass standard set also provide calibration or calibration certificates from legal metrology institutions/authorized institutions(Separate charges).

Easy to Operate

Pressure setting is completed through an integrated pump.

Dead Weight tester is equipped with a precision-controlled piston pump (the piston runs inside the pump) for fine-tuning.

Model/Measurement Range [MPa]	KDS-T5006X		KDS-T5006X-A		KDS-T5006X-B	
	0.04…0.6		0.1…6		0.1…6	
	quantity	Rated pressure/pc	quantity	Rated pressure/pc	quantity	Rated pressure/pc
Pistons (including trays or hangers)	1	0.04MPa	1	0.1MPa	1	0.1MPa
A weight of 0.1kg	6	0.01MPa				
A weight of 0.2kg			4	0.1MPa		
A weight of 0.5kg	10	0.05MPa			4	0.1MPa
A weight of 1kg			11	0.5MPa		
A weight of 2.5kg					11	0.5MPa

KDS-T5000X Piston - Cylinder System						
measuring range(MPa)	0.04…0.6	0.1…6(A)	0.1…6(B)	0.5…25	1…60	2-100
Required weight of weights(kg)	6	12	30	25	30	25
Minimum increment(Standard weight setting)(MPa)	0.01	0.1	0.1	0.5	1	0.5
Rated cross-sectional area of piston	$1cm^2$	$0.2cm^2$	$0.5cm^2$	$0.1cm^2$	$0.05cm^2$	$0.025cm^2$
Accuracy level	0.05%, 0.02%, 0.01%, 0.005%					
Working position of piston	Floating height indicator column					
Pressure transmission medium	0.6MPa, 6MPa: mixed oil of kerosene and transformer oil 25MPa, 60MPa, 100MPa: sebacic acid ester oil					
piston rod material	Tungsten carbide					
Piston cylinder block material	Tungsten carbide					
Pipeline in instrument base material	1.4404 stainless steel, outer diameter 6mm x 2 mm					

1.Theoretical starting value, equivalent to the pressure value generated by the piston (self-weight). To optimize operating parameters, please load more weights.

2.The minimum pressure change value achievable with the standard mass kit. To obtain a lower change value, use the mass standard set.

3.Accuracy is related to the measurement value and generally does not exceed 10% of the range. If it is below 10% of the range, it can be considered a fixed error.

4.The measurement uncertainty setting conditions are standard reference conditions (ambient temperature 20 ° C (68 ° F), atmospheric pressure 101.3 mkPa (14.69 psi), relative humidity 40%). If no calibrator is available, correction is required when using the piston pressure gauge.