



# PDPG

## DEAD-WEIGHT TESTER



**Dead-Weight Tester** is used as a generator of an accurately known pressure. It measures pressure as force per unit area. Therefore, Dead-Weight Tester is the most accurate pressure calibrator.

- Pressure ranges  
Oil - 10 / 25 / 50 / 100 / 200 MPa  
Gas - 0.5 / 0.7 / 5 / 7 MPa
- 0.008% of uncertainty
- Specially designed cylinder
- Quick & Easy installation of Piston/Cylinder module
- 9 LED for piston float-position display
- Automatic-Intelligent piston rotation
- Stainless Steel Mass set (True mass)
- Separated from the main unit and the pressure regulator can be used for various purposes.
- P/C Temperature accuracy - better than  $\pm 0.2^{\circ}\text{C}$

The advantages of Dead-weight tester are excellent long-term stability, small measurement uncertainty, good repeatability and excellent reproducibility. Therefore, national standard laboratories, calibration institutions, research institutes and industrial calibration laboratories have used it as the primary pressure calibrator for a long time.

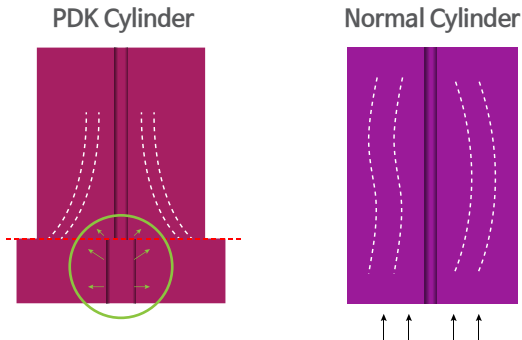
PDK's Dead-Weight Tester PDPG is the result of precision machining technology and high electronic engineering technology. PDPG is proud to show an advanced concept of pressure calibrator. PDPG boasts the highest performance among equivalent models.

PDK's Dead-weight Tester PDPG is suitable to test and calibrate various kinds of pressure gauges including pressure transducers, digital manometers, pressure transmitters, pressure switches.

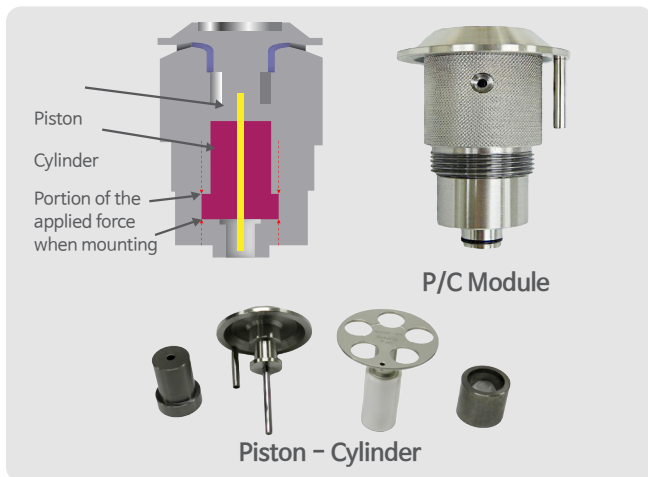
PDPG was made in accordance with the regulations of Pressure Balance International Recommendation (OIML R110, 1994(E)).



**Wing type P/C** is the most optimized and modernized design for piston-cylinder unit. A protrusion on the cylinder face enables easy and firm installation to the mount. Unique end shape of cylinder hole assures excellent metrological characteristics.



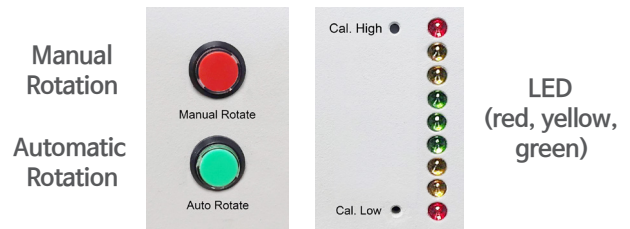
PDK's patented cylinder (Korea, 10-0449151) is made of tungsten carbide. PDK's piston-cylinder shows high precision and stability. The modular piston-cylinder unit can be replaced by hands very easily and quickly without special tool. It also as excellent structure which prevents environmental contamination from outside.



In order to measure the accurate temperature of the piston-cylinder, precision platinum resistance temperature sensor is equipped with uncertainty of 0.2°C. Incorrect measurement of the piston cylinder temperature about 1°C gives pressure error around 9 ppm. PDPG temperature sensor is located at the easy place to remove for calibration.



In order to monitor the float position of piston, non-contact height sensor was developed. In total, 9 LEDs are attached on the front panel of PDK's PDPG. Each LED will be lighting at 1 mm interval according to piston movement. When green LED is shining, it indicates "measurement available."



In order to rotate piston, two methods are available. The first one is to press the red button on the front panel of PDPG. The piston can be rotated only when you want to rotate. Second method is to press the green button. When the piston is located in a suitable operation position, the piston rotates automatically. The operation interval covers  $\pm 3$  mm from reference float line. If out of range, piston stops automatically.

Optional mass set (and trim mass) is available.



- Accuracy of marked values: better than 10 ppm
- Integrated Mass set
- Stainless steel
- Mass set tray and hard case included

1-2-2-5 Series combination mass set

100 g - 1 ea, 200 g - 2 ea, 500 g - 1 ea

1 kg - 1 ea, 2 kg - 2 ea

4.5 kg - 1 ea (Make up mass)

5 kg - 8 ea or 18 ea (Oil) / 3 ea or 5 ea (Gas)

- Oil : 50 kg set / up to 100 kg available
- Gas : 25 kg set / up to 35 kg available
- Option : 10 mg to 50 g 1-2-2-5 series combination trim mass set
- Pressure marking available on mass surface
- Customized mass value available in case user provides the value of acceleration of gravity



Pressure generator / controller is separated with PDPG. Then if valve is mounted on connection, Pressure generator / controller can be Comparator or Comparison Tester therefore it can saving the additional cost.



OPS-J for Oil

Manual hydraulic pressure  
Generator / Controller

For Dead-weight tester, Comparator  
and Comparison Tester

- Pressure control range:  
up to 200 MPa
- Lever type priming pump:  
up to 40 MPa

For pressure generation and adjustment  
systems that required very precise  
pressure regulation quick & easy to use.



OPS-H for Oil

Manual hydraulic pressure  
Generator / Controller

For Dead-weight tester, Comparator  
and Comparison Tester

- Pressure control range:  
up to 200 MPa
- Pneumatic pump priming:  
up to 100 MPa

For pressure generation and adjustment  
systems that required very precise  
pressure regulation quick & easy to use.



OPS-2 for Oil

Generator / Controller

For Dead-weight tester, Comparator  
and Comparison Tester

- Pressure control range:  
up to 300 MPa
- Pneumatic pump priming:  
up to 200 MPa

For pressure generation and adjustment  
systems that required very precise  
pressure regulation joystick pressure  
control.



MPC-70 for Gas

Manual pneumatic  
pressure Controller

For Dead-weight tester, Comparator  
and Comparison Tester (Precision  
control)

- Pressure control range:  
vacuum to 7 MPa

For pressure generation and adjustment  
systems that required very precise  
pressure regulation quick & easy to use.

For Hydraulic, pressure generator / controller consists of pump priming pump and a precision spindle pump. O-ring designed for high-pressure structure of almost no internal leakage, a torque of the lowest among the same class and during long-term use, it will needs less power in high pressure up to more than 200 MPa. Available installed pressure generator / controller which is special designed by PDK.

Optional automatic standard pressure calculation unit is equipped with a device developed by PDK. The unit has built-in an external temperature, humidity, barometric pressure sensor to automatically calculate the density for the buoyancy correction to the mass.

Also when mass lift up and place from mass tray, it automatically calculate loading mass on the piston by load cell and micro switch. This device can be equipped with all of pressure dead weight tester to calculate standard errors for the pressure can be minimized.



[ Actual installed photo ]



## 01 Specification

Maximum Pressure	Oil - up to 200 MPa
	Gas - up to 7 MPa
Measurement uncertainty	0.008 % of reading
Piston cylinder material	Tungsten carbide
Mass material	Stainless Steel
Mass set	Oil - 50 kg set / up to 100 kg available
	Gas - 25 kg set / up to 35 kg available
Test port	Oil - 9/16" UNF Cone & Thread (AE F250C, HIP HF4)
	Gas - 1/4" PF
Weight	12 kg
Media	Hydraulic - Oil (Sebacate Oil recommended)
	Pneumatic - Dry Air, N <sub>2</sub>

### Oil pressure P/C and pressure range

Piston \ Mass	Piston 0.1 kg	Piston+Bell 0.5 kg	50 kg	100 kg
0.2 MPa / kg	0.02 MPa	0.1 MPa	10 MPa	20 MPa
0.5 MPa / kg	0.05 MPa	0.25 MPa	25 MPa	50 MPa
1 MPa / kg	0.1 MPa	0.5 MPa	50 MPa	100 MPa
2 MPa / kg	0.2 MPa	1 MPa	100 MPa	200 MPa

### Gas pressure P/C and pressure range

Piston \ Mass	Piston 0.1 kg	Piston+Bell 0.5 kg	25 kg	35 kg
20 kPa / kg	2 kPa	10 kPa	500 kPa	700 kPa
200 kPa / kg	20 kPa	100 kPa	5 000 kPa	7 000 kPa

## 02 Order Information

### Model / Description

PDPG-H - PISTON - MASS	Oil Dead-Weight Tester
PDPG-P - PISTON - MASS	Gas Dead-Weight Tester

## 03 Option

- Pressure generator / controller
 

OPS-J (Oil Standard)
OPS-1
OPS-H
MPC-70 (Gas)
- Trim Mass F1 grade (10 mg to 50 g, 1-2-2-5 Series)
- Automatic standard pressure calculation unit
- KOLAS Certificated calibration report
- Multi test port
- Piston temperature indicator

## 04 Accessories

- Main unit and mass set
- P/C case and mass set case
- Mass tray
- Pressure controller
- Fitting adaptor set
- Sebacate oil
- Power cable