



**YANTRIKA**<sup>®</sup>  
INSTRUMENTS PVT. LTD.

*"Process Instruments and Calibrators"*

# Dead Weight Testers

Industrial Pressure Calibrator

- Vast Range for all Applications
- Traceability to International Standards
- Vacuum, Pneumatic & Hydraulic Ranges
- Industrial, Laboratory & Academic Models
- Economical Pricing & Quick Deliveries
- Highly Accurate, Proven for 40 years
- Customers in Five Continents



## Dead Weight Testers

### Yantrika<sup>®</sup> Dead Weight Testers

Dead Weight Testers are used as primary standards in industry, laboratories and academia world wide for precise measurement of pressure.

All pressure measuring instruments whether pressure gauges, transmitters, transfer standards, switches, recorders, pressure data loggers, digital calibrators etc are ultimately calibrated using dead weight testers. Till date no other equipment has been able to beat dead weight testers long time stability, accuracy & repeatability.

In rare cases like hydrotesting, dead weight testers are used to directly measure system pressures because the measurement precision required is very high.

Dead Weight Tester use the piston gauge pressure balance system consisting of finely lapped piston cylinder assembly of known area mounted along the vertical axis. Pressure forces the piston upwards and that force is balanced using accurately calibrated masses. Convenient value of piston area and masses allow user friendly measurement of pressure.



( Single Piston Machine )

### Operating Principle

Fluid Pressure generated by a screw pump acts on the bottom of a vertically free floating piston. The force produced pushes the loaded free piston vertically upwards. The piston floats freely in its cylinder and the pressure in the circuit will be determined by the weights loaded on the piston divided by the effective area of the piston with corrections for value of acceleration due to gravity, air buoyancy, surface tension and datum level difference.



( Dual Piston Machine )

**Yantrika** manufactures a vast range of dead weight testers from vacuum to the high hydraulic pressures. Our calibrations are traceable to the world best laboratories like

National Physical Laboratory, India (NPL, INDIA)  
National Physical Laboratory, UK (NPL, UK)  
National Institute of Standards and Technology USA (NIST, USA)



( Motorized Machine with Priming Pump )

Motor drive is suitable for application that require continuous pressure. Please specify line voltage & frequency

## Hydraulic Dead Weight Testers

- Accuracy better than **0.015%** of reading. **0.008%** available on request.
- **Over All Range** : 0.2-2000 bar, 10-30000 psi, 0.2-2000 kg/cm<sup>2</sup>
- Various Pressure Unit available: bar, kg/cm<sup>2</sup>, psi, MPa, kPa.
- In dual piston models PCU changeover from LP to HP automatically.  
[ Except model above 1000 bar]
- Pressure generated by a ram screw.
- Pressure calibration over a wide range allowed in Dual Piston Models
- **Operating Fluid** : Hydraulic Oil & Distilled Water (Depends on model Chosen)



(Hydraulic Dead Weight Tester)

### Applications

- Oil & Gas Plants
- Thermal / Nuclear / Hydro Power Stations
- Hydraulics and Pneumatics
- High pressure test benches
- Research & Developments
- Steel Plants
- General Mechanical Engineering Industries
- Rubber / Plastic Industries
- Chemical Process Industries
- Machine/Automobile Industries

### Standard Accessories with Dead Weight Tester

- 3 Years guarantee against normal operating failure
- (1/8", 1/4", 3/8", 1/2") BSP or NPT female adaptors
- Calibrated Weights in Carry Box
- Spare Seals & Dust Cover
- 1/2 Liter Operating Fluid
- Instruction Manual
- Tool Bag & Seal Kit
- Traceable Calibration Certificate

### Optional Accessories For Dead Weight Tester

- Extra (1/8", 1/4", 3/8", 1/2") BSP or NPT Adaptors
- Pointer Puller, Pointer Punch
- Carrying box for tester
- Angle Connection for back mounting gauges
- Extra Operating Fluid

### Standard Parameters

- Gravity : 9.80665m/s<sup>2</sup>
- Temperature : 23° C
- Air Density : 1.2 kg/m<sup>3</sup>
- \*Trimming to Local Gravity on Request

### Specification

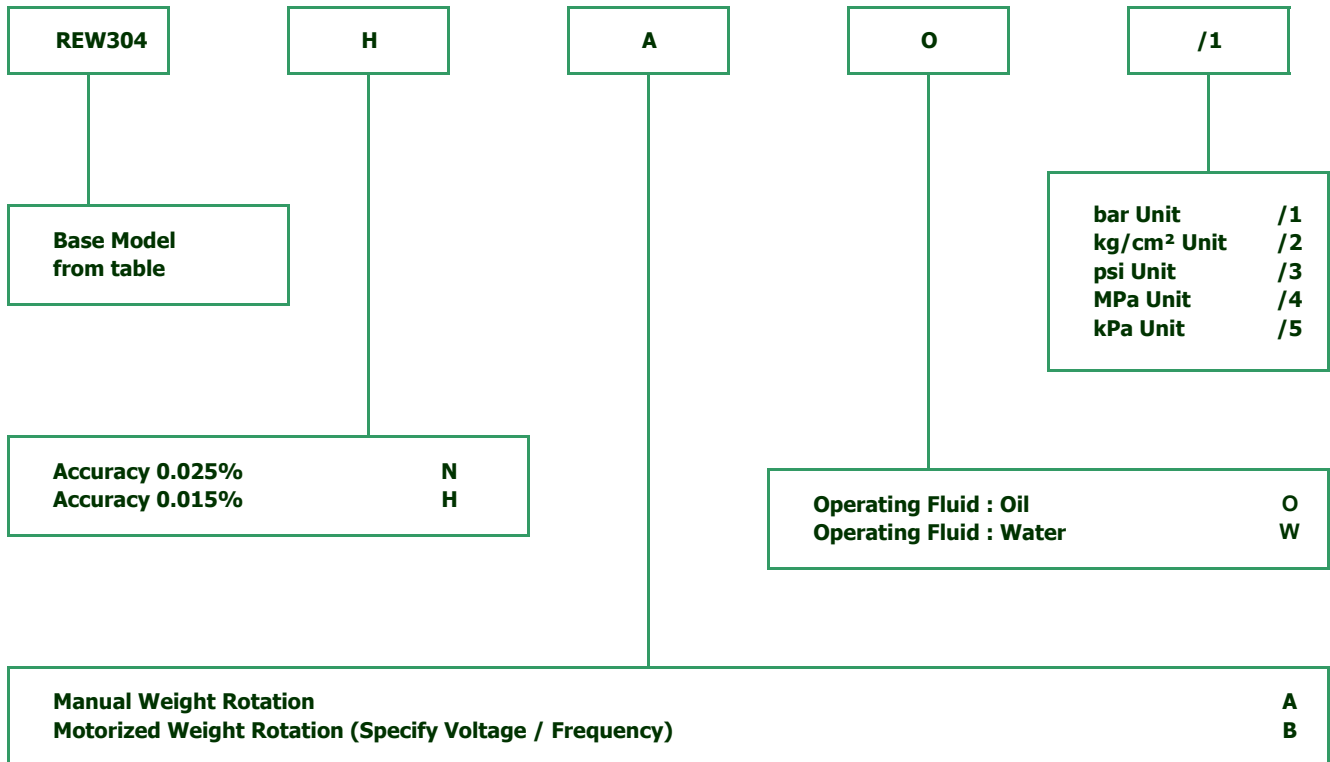
#### General

- **Accuracy**  
±0.015% of reading  
±0.008% on request
- **Base Unit Size & Weight**  
361 x 382 x 245 mm  
12 kg Approximately
- **Weight Box Size & Weight**  
12 x 12 x 12 inch  
Depends on Model  
[28 to 40 kg]

#### Materials of Construction

- **Piston material**  
Oil Operated : Tungsten Carbide/HCHC  
Water Operated:Tungsten Carbide
- **Cylinder material**  
Oil Operated : Tungsten Carbide/HCHC  
Water Operated:Tungsten Carbide
- **Mass Set materials**  
Non magnetic 300 series  
Austenitic Stainless Steel.
- **Wetted Parts**  
Non magnetic 300 series  
Austenitic Stainless Steel / Aluminum

### Ordering Code ( for Hydraulic Dead Weight Testers )



### How to Order

**STEP 1 :** Choose base model from the table on the next page, the choice of models depends on the pressure range required. **Eg.** Choose **REW 304** for 1 to 700 bar range.

**STEP 2 :** Choose Accuracy, **Eg.** Choose **H** for 0.015% or **N** for 0.025% accuracy.

**STEP 3 :** Choose Weight rotation method **Eg.** Choose **A** for manual or **B** for motorized rotation.

**STEP 4 :** Choose pressure unit. **Eg.** **/1** for bar unit or **/3** for psi unit.

**STEP 5 :** Choose Operating Fluid. **Eg.** Choose **O** for Hydraulic Oil or **W** for Distilled Water.

**Example:** Ask for **REW 304HBO/1** to order a dual piston, 1-700 bar range with 0.015% Accuracy motorized, oil based machine

**Example:** Ask for **REW 202HAW/3** to order a single piston, 100-10000 psi range, with 0.015% Accuracy, water based, manual machine



## Dead Weight Testers

### Standard Manufacturing Program

<i>Dual Piston Oil Operated Model</i>	<i>Range</i>	<i>Dual Piston Water Operated Model</i>
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REW 300HAO/1	0.2-100 bar	REW 300HAW/1
REW 300HAO/2	0.2-100 kg/cm <sup>2</sup>	REW 300HAW/2
REW 300HAO/3	10-1500 psi	REW 300HAW/3

REW 301HAO/1	0.2-160 bar	REW 301HAW/1
REW 301HAO/2	0.2-160 kg/cm <sup>2</sup>	REW 301HAW/2
REW 301HAO/3	10-2000 psi	REW 301HAW/3

REW 302HAO/1	1-250 bar	REW 302HAW/1
REW 302HAO/2	1-250 kg/cm <sup>2</sup>	REW 302HAW/2
REW 302HAO/3	10-3500 psi	REW 302HAW/3

REW 312HAO/1	1-300 bar	REW 312HAW/1
REW 312HAO/2	1-300 kg/cm <sup>2</sup>	REW 312HAW/2
REW 312HAO/3	10-4000 psi	REW 312HAW/3

REW 322HAO/1	1-350 bar	REW 322HAW/1
REW 322HAO/2	1-350 kg/cm <sup>2</sup>	REW 322HAW/2
REW 322HAO/3	10-5000 psi	REW 322HAW/3

REW 303HAO/1	1-400 bar	REW 303HAW/1
REW 303HAO/2	1-400 kg/cm <sup>2</sup>	REW 303HAW/2
REW 303HAO/3	10-6000 psi	REW 303HAW/3

REW 313HAO/1	1-600 bar	REW 313HAW/1
REW 313HAO/2	1-600 kg/cm <sup>2</sup>	REW 313HAW/2
REW 313HAO/3	10-8000 psi	REW 313HAW/3

REW 304HAO/1	1-700 bar	REW 304HAW/1
REW 304HAO/2	1-700 kg/cm <sup>2</sup>	REW 304HAW/2
REW 304HAO/3	10-10000 psi	REW 304HAW/3

REW 307HAO/1	1-1000 bar	REW 307HAW/1
REW 307HAO/2	1-1000 kg/cm <sup>2</sup>	REW 307HAW/2
REW 307HAO/3	10-15000 psi	REW 307HAW/3

REW 308HAO/1	1-1100 bar	REW 308HAW/1
REW 308HAO/2	1-1100 kg/cm <sup>2</sup>	REW 308HAW/2
REW 308HAO/3	10-16000 psi	REW 308HAW/3

REW 309HAO/1	1-1400 bar	REW 309HAW/1
REW 309HAO/2	1-1400 kg/cm <sup>2</sup>	REW 309HAW/2
REW 309HAO/3	10-20000 psi	REW 309HAW/3

REW 310HAO/1	1-2000 bar	REW 310HAW/1
REW 310HAO/2	1-2000 kg/cm <sup>2</sup>	REW 310HAW/2
REW 310HAO/3	10-30000 psi	REW 310HAW/3

<i>Single Piston Oil Operated Model</i>	<i>Range</i>	<i>Single Piston Water Operated Model</i>
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REW 103HAO/1	0.2-20 bar	REW 103HAW/1
REW 103HAO/2	0.2-20 kg/cm <sup>2</sup>	REW 103HAW/2
REW 103HAO/3	10-300 psi	REW 103HAW/3

REW 104HAO/1	1-35 bar	REW 104HAW/1
REW 104HAO/2	1-35 kg/cm <sup>2</sup>	REW 104HAW/2
REW 104HAO/3	10-500 psi	REW 104HAW/3

REW 105HAO/1	1-50 bar	REW 105HAW/1
REW 105HAO/2	1-50 kg/cm <sup>2</sup>	REW 105HAW/2
REW 105HAO/3	10-700 psi	REW 105HAW/3

REW 107HAO/1	2-100 bar	REW 107HAW/1
REW 107HAO/2	2-100 kg/cm <sup>2</sup>	REW 107HAW/2
REW 107HAO/3	20-1500 psi	REW 107HAW/3

REW 108HAO/1	2-120 bar	REW 108HAW/1
REW 108HAO/2	2-120 kg/cm <sup>2</sup>	REW 108HAW/2
REW 108HAO/3	10-1800 psi	REW 108HAW/3

REW 109HAO/1	2-250 bar	REW 109HAW/1
REW 109HAO/2	2-250 kg/cm <sup>2</sup>	REW 109HAW/2
REW 109HAO/3	10-3500 psi	REW 109HAW/3

REW 200HAO/1	10-350 bar	REW 200HAW/1
REW 200HAO/2	10-350 kg/cm <sup>2</sup>	REW 200HAW/2
REW 200HAO/3	100-5000 psi	REW 200HAW/3

REW 201HAO/1	10-400 bar	REW 201HAW/1
REW 201HAO/2	10-400 kg/cm <sup>2</sup>	REW 201HAW/2
REW 201HAO/3	100-6000 psi	REW 201HAW/3

REW 202HAO/1	10-700 bar	REW 202HAW/1
REW 202HAO/2	10-700 kg/cm <sup>2</sup>	REW 202HAW/2
REW 202HAO/3	100-10000 psi	REW 202HAW/3

REW 203HAO/1	20-1000 bar	REW 203HAW/1
REW 203HAO/2	20-1000 kg/cm <sup>2</sup>	REW 203HAW/2
REW 203HAO/3	400-16000 psi	REW 203HAW/3

REW 204HAO/1	20-1400 bar	REW 204HAW/1
REW 204HAO/2	20-1400 kg/cm <sup>2</sup>	REW 204HAW/2
REW 204HAO/3	400-20000 psi	REW 204HAW/3

REW 205HAO/1	20-2000 bar	REW 205HAW/1
REW 205HAO/2	20-2000 kg/cm <sup>2</sup>	REW 205HAW/2
REW 205HAO/3	400-30000 psi	REW 205HAW/3



## Dead Weight Testers for Hydrotesting

- Accuracy better than **0.015%** of reading. **0.008%** available.
- **Over All Range** : 0.2-700 bar, 10-10000 psi, 0.2-700 kg/cm<sup>2</sup>
- Various Pressure Unit available: bar, kg/cm<sup>2</sup>, psi, MPa, kPa.
- Finer Least Count than normal machines

### Application

- Oil & Gas Plants
- Thermal / Nuclear / Hydro Power Stations
- Hydraulics and Pneumatics
- High pressure test benches
- Research & Developments
- Steel Plants
- General Mechanical Engineering Industries
- Rubber / Plastic Industries
- Chemical Process Industries
- Machine/Automobile Industries

### Standard Accessories with Dead Weight Tester

- 3 Years guarantee against normal operating failure
- (1/8", 1/4", 3/8", 1/2") BSP or NPT female adaptors
- Calibrated Weights in Carry Box
- Spare Seals & Dust Cover
- 1/2 Liter Operating Fluid
- Instruction Manual
- Tool Bag & Seal Kit
- Traceable Calibration Certificate

### Optional Accessories For Dead Weight Tester

- Extra (1/8", 1/4", 3/8", 1/2") BSP or NPT Adaptors
- Pointer Puller, Pointer Punch
- Carrying box for tester
- Angle Connection for back mounting gauges
- Extra Operating Fluid

### Standard Manufacturing Program

<i>Oil Operated Model</i>	<i>Range</i>	<i>Water Operated Model</i>
HEW 109HAO/1	2-250 bar	HEW 109HAW/1
HEW 109HAO/2	2-250 kg/cm <sup>2</sup>	HEW 109HAW/2
HEW 109HAO/3	10-3500 psi	HEW 109HAW/3
HEW 201HAO/1	10-400 bar	HEW 201HAW/1
HEW 201HAO/2	10-400 kg/cm <sup>2</sup>	HEW 201HAW/2
HEW 201HAO/3	100-6000 psi	HEW 201HAW/3
HEW 202HAO/1	10-700 bar	HEW 202HAW/1
HEW 202HAO/2	10-700 kg/cm <sup>2</sup>	HEW 202HAW/2
HEW 202HAO/3	100-10000 psi	HEW 202HAW/3



(Hydrotesting Models)

### Standard Parameters

- Gravity : 9.80665m/s<sup>2</sup>
- Temperature : 23° C
- Air Density : 1.2 kg/m<sup>3</sup>
- \*Trimming to Local Gravity on Request

### Specification

#### General

- **Accuracy**  
±0.015% of reading  
±0.008% on request
- **Base Unit Size & Weight**  
361 x 382 x 245 mm  
12 kg Approximately
- **Weight Box Size & Weight**  
12 x 12 x 12 inch  
Depends on Model  
[28 to 40 kg]

#### Materials of Construction

- **Piston mterial**  
Oil Operated : Tungsten Carbide/HCHC  
Water Operated:Tungsten Carbide
- **Cylinder mterial**  
Oil Operated : Tungsten Carbide/HCHC  
Water Operated:Tungsten Carbide
- **Mass Set materials**  
Non magnetic 300 series  
Austenitic Stainless Steel.
- **Wetted Parts**  
Non magnetic 300 series  
Austenitic Stainless Steel / Aluminum



### Pneumatic Dead Weight Testers

- Accuracy better than **0.015%** available.
- **Over All Range** : 0.2-35 bar, 5-500psi, 0.2-35 kg/cm<sup>2</sup>
- Various Pressure Unit available: bar, mmHg, mmH<sub>2</sub>O, inHg
- Pressure generated by a ram screw. (inbuilt)
- Base Machine Weight : 20kg Aprx.
- **Operating Fluid** : Air

#### Application

- Oil & Gas Plants
- Thermal / Nuclear / Hydro Power Stations
- Hydraulics and Pneumatics
- High pressure test benches
- Research & Developments
- Steel Plants
- General Mechanical Engineering Industries
- Rubber / Plastic Industries
- Chemical Process Industries
- Machine/Automobile Industries



(Pneumatic Dead Weight Testers)

#### Standard Parameters

- Gravity : 9.80665m/s<sup>2</sup>
- Temperature : 23° C
- Air Density : 1.2 kg/m<sup>3</sup>
- \*Trimming to Local Gravity on Request

#### Standard Accessories with Dead Weight Tester

- 3 Years guarantee against normal operating failure
- (1/8", 1/4", 3/8", 1/2") BSP or NPT female adaptors
- Calibrated Weights in Carry Box
- Spare Seals & Dust Cover
- Instruction Manual
- Tool Bag & Seal Kit
- Traceable Calibration Certificate

#### Optional Accessories For Dead Weight Tester

- Extra (1/8", 1/4", 3/8", 1/2") BSP or NPT Adaptors
- Pointer Puller, Pointer Punch
- Carrying box for tester
- Angle Connection for back mounting gauges

#### Specification

##### General

- **Accuracy**  
±0.015% of reading  
±0.008% on request
- **Base Unit Size & Weight**  
361 x 382 x 245 mm  
20 kg Approximately
- **Weight Box Size & Weight**  
12 x 12 x 12 inch  
Depends on Model  
[28 to 40 kg]

##### Materials of Construction

- **Piston material** : Tungsten Carbide/HCHC/Ceramic
- **Cylinder material**: Tungsten Carbide/HCHC
- **Mass Set materials**  
Non magnetic 300 series  
Austenitic Stainless Steel.
- **Wetted Parts**  
Non magnetic 300 series  
Austenitic Stainless Steel

## Dead Weight Testers

### Standard Manufacturing Program

PNEUMATIC MODEL	RANGE
REW401HAA/1 REW401HAA/6	15 to 1000 mbar 5 to 400 inH <sub>2</sub> O
REW402HAA/1 REW402HAA/6	30 to 2000 mbar 12 to 800 inH <sub>2</sub> O
REW403HAA/1 REW403HAA/3	0.2 to 7 bar 3 to 100 psi
REW404HAA/1 REW404HAA/3	0.2 to 10 bar 3 to 150 psi

PNEUMATIC MODEL	RANGE
REW405HAA/1 REW405HAA/3	0.2 to 30 bar 3 to 400 psi
REW406HAA/1 REW406HAA/3	0.2 to 30 bar 3 to 500 psi
REW407HAA/1 REW407HAA/3	1 to 70 bar 10 to 1000 psi
REW408HAA/1 REW408HAA/3	1 to 140 bar 10 to 2000 psi

### Other Calibration Products

#### Pressure Comparators

Lightweight, Bench Top  
Pressure Source



#### Multifunction Calibrator

Measure and simulate pressure, temperature  
current, voltage & frequency



#### Digital Pressure Gauges

Various Ranges from Vacuum to 700 bar  
Accuracy : ±0.1% & 0.05% of F.S.



#### Precision Master Gauges

Various Ranges from Vacuum to 2500 bar  
Accuracy : ±0.1% & 0.2% of F.S.



#### Handheld Comparison Test Pump

Handy Pressure Source  
From -1 to 700 bar



#### Documenting Pressure Calibrator

Pressure Range : 0- 700bar  
Super accuracy : ±0.025% of F.S.



#### Dry Block & Liquid Bath Temperature Calibrator

Used for calibration of Temperature  
Gauges, Temperature Recorder



#### Hand-Held Pressure Calibrator

Measure and simulate  
pressure transmitter



Manufacturer:

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An ISO 9001 : 2008

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