FLUKE®

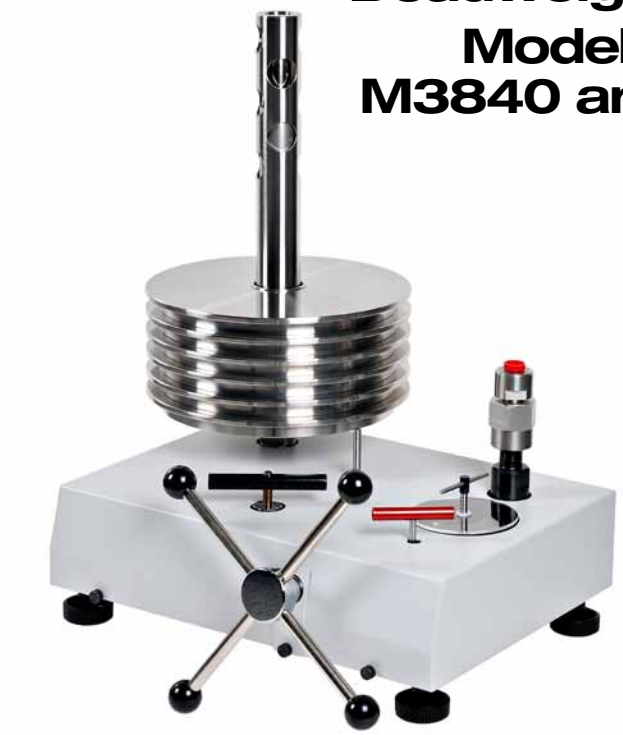
Calibration

M3800 Series

High Pressure Hydraulic Deadweight Testers

Models M3830, M3840 and M3860

Technical Data



Features

- Three models available in ranges from 30 000 psi to 60 000 psi (2 000 bar to 4 000 bar)
- Two accuracy classes available; 0.02 % or 0.015 % of Reading
- Select nominal increments in PSI, Bar, kgf/cm2 and MPa pressure units
- NIST traceable calibration certificate standard, Accredited ISO/IEC 17025 available
- Presscal software
- P3000 Series available for pressure/ vacuum ranges and hydraulic pressures to 20 000 psi (1 400 bar) and below

The Pressurements M3800 Series is the culmination of over 50 years experience in the design and manufacture of primary pressure standards. With features and options designed to improve accuracy, increase reliability, and simplify operation, the M3800 Series can be used to calibrate virtually any high pressure sensing device including transducers, transmitters, gauges or pressure switches.

Instrument base

The Instrument base includes all items required for operation. A high quality hand pump is coupled to a 7 to 1 intensifier, allowing the operator to easily generate high pressure in the system. An oil reservoir is included so the pump to be re-charged when calibrating large volume devices. A Test Station is provided for connecting the Device under Test to the M3800 Series. Adjustable feet and the level vial allow the operator to insure the instrument is level to achieve the ultimate performance. A Piston Float Reference allows the operator to determine when the piston is in the ideal, "mid float" position.

Piston/cylinder

The piston/cylinder is the "heart" of the deadweight tester. M3800 Series pistons are manufactured from tungsten carbide which provides excellent long term stability, durability, and extremely low coefficients for temperature and pressure.

Weight sets

Standard weight masses are series 3 non-magnetic stainless steel. Each mass is marked with the serial number of the instrument and the nominal pressure value. Select either PSI, bar kgf/cm^2 or MPa pressure units. Presscal software can be used to support additional pressure units.

Gravity correction

Gravity varies significantly with geographical locations. Each instrument can be calibrated to local gravity a no additional cost. If unspecified, instruments are calibrated to standard gravity at 980.665 cm/s^2.

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Specifications

Pressure ranges	
M3830	500 psi to 30 000 psi, or 40 bar to 2 000 bar, or 4 MPa to 200 MPa, or 40 kgf/cm^2 to 2 000 kgf/cm^2
M3840	500 psi to 40 000 psi, or 40 bar to 2 600 bar, or 4 MPa to 260 MPa, or 40 kgf/cm^2 to 2 600 kgf/cm^2
M3860	500 psi to 60 000 psi or 40 bar to 4 000 bar or 4 MPa to 400 MPa or 40 kgf/cm^2 to 4 000 kgf/cm^2
Accuracy	Standard accuracy is 0.02 % of Reading*. Optional accuracy of 0.015 % of Reading is available. Calibration certificate with traceability to NIST is provided with each instrument. An optional ISO/IEC 17025 accredited calibration certificate is available. *Accuracy is based on % of Reading from 10 % to 100 % of the piston range when used in accordance with the corrections found on the calibration certificate. Below 10 %, ± (accuracy class) x 10 % of the piston range.
Materials of construction	
Standard weight material	Series 3 non-magnetic, austenitic, stainless steel Density: 7.8 g/cm^3
Piston material	Tungsten carbide with nickel binder
Cylinder material	Tungsten carbide with cobalt binder
Thermal coefficient of expansion	11 ppm/°C
General	
Test port adaptors	9/16 in – 18 UNF (Autoclave); 3/8 in BSP; 1/2 in BSP and 3/4 in BSP
Weight	30 Kg (66 lb) Instrument base only
Dimensions (W x D x H)	455 mm X 340 mm X 478 mm (18 in X 13.5 in X 19 in)
Reservoir volume	235 cm^3 (14.3 in^3)
Intensifier ratio	7 to 1
Seal materials	Nitrile
Operating Fluid	Dioctyl Sebacate (DOS), our reference 55-600

Ordering information

Models

M3830 High Pressure Hydraulic Deadweight Tester, 500 to 30 000 psi
M3840 High Pressure Hydraulic Deadweight Tester. 500 to 40 000 psi
M3860 High Pressure Hydraulic Deadweight Tester, 500 to 60 000 psi

Options

A. PressCal Software Windows-based software program that allows users to easily apply all necessary corrections to enhance the deadweight tester performance. Supports additional 12 pressure units (bar, mbar, MPa, kPa, psi, kg/cm^2, atm, inH_2O, mH_2O, mmH_2O, inHg, mmHg).

Conversion Weight Sets For applications that require nominal pressure increments in measurement units different than the main unit, conversion weight sets are available. Available measurement units are: PSI, bar kgf/cm^2 or MPa.

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