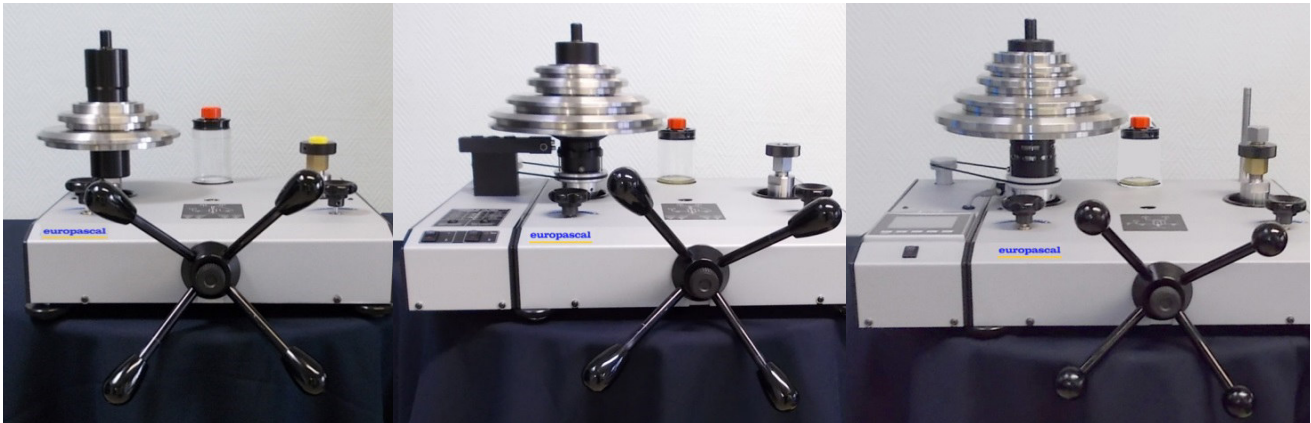


Hydraulic Deadweight Tester (Pressure Balance) EHDT, EHDT- M, EHDT- MLC



EHDT

Without motorization and without terminal for pressure calculation

EHDT- M

With motorization, but without terminal for pressure calculation

EHDT- MLC

With motorization, including terminal for pressure calculation

- **Primary standards with measuring ranges from 0.1 bar to 10,000 bar**
- **Ring weights and weight bell for a low center of gravity**
- **Two-stage spindle for little effort**
- **Overhead, transparent oil container for better monitoring**
- **Quick connections, no tools required**
- **Accuracy: 0.02% to 0.005% of reading**
- **Medium: Oil / Sebacate, Skydrol and other oils (depends on model)**

Hydraulic pressure balances are primary standards (piston pressure gauges) and are used to calibrate pressure gauges, pressure transmitters, pressure switches and secondary standards. The weighted piston-cylinder unit with cross-section "A" is subjected to pressure "p" by a spindle pump until an exact equilibrium with the applied ring weights "m" is achieved. The high-precision generated reference pressure $p = (m \times g) / A$ is transferred to the test item for calibration. The value "g" corresponds to the acceleration due to gravity. The hydraulic pressure compensator can be upgraded with an integrated double piston-cylinder unit in order to achieve an optimal pressure step in the low and high pressure range.

They consist of a pressure generator, a piston-cylinder unit and a set of weights. The capstan is used to generate pressure by pressing liquid through the piston. The pressure is compensated by the piston-cylinder unit, which compares the pressure values of the test instrument with the pressure generated by the standard. The pressure display is intended for pressure calibration.

The deadweight tester is robust, easy to operate and has a long-term stability.

Technical Specification

Pressure Medium

Mineral oil, colorless – tank volume 125 cm³

Mineral oil type EP-1201, EP-1202, EP-1203, Skydrol or Sebacate, depending on model

Positioning:

4 adjustable feet and controlled by a leveling bubble

Connection for the instrument to be tested

Quick connector G1/2" female up to 2000 bar / M16 x 1,5 up to 10.000 bar, others on demand

Housing

Aluminum with resistant paint

Piston-Cylinder-Unit

Double piston, made of special steel

Repeatability: $2 \cdot 10^{-5} \times p$ bis $4 \cdot 10^{-5} \times p$ depending on the measuring range

Sensitivity: $1 \cdot 10^{-5} \times p$ depending on the measuring range

Double Piston System for EHDT, EHDT-M and EHDT-MLC-300, 600, 700 and 1200

Weights

Non-corrosive stainless steel

Weight of the set of weights from 25 to 100 kg (depending on model)

The masses are marked with the corresponding measuring units (bar, mbar, kPa or psi, etc.)

Fine Weights:

Materials: stainless steel and partly light metal

Mass division: 4 g to 160 g

Operation

Hydraulic Deadweight Tester of the EHDT-Series

Move the spindle with the turnstile clockwise to the front stop with the valves open. Close valve "B" (on the right). Fill the supplied oil EP-1201, (-1202, -1203, Sebacate) into the transparent container. Now turn the spindle pump with the turnstile counter-clockwise to fill the system. Close valve "A" (on the left) and open valve "B". Adjust the required pressure with the turnstile / pressure spindle until the piston is in equilibrium with the ring weights placed on it. Compare the generated reference pressure with the display of the test item and note it down.

Measurement uncertainty single piston (related to the measured value p)

Model	Measuring Range	Accuracy (% of reading)	Increased accuracy (% of reading)	Piston cylinder unit		DUT connection
				Repeatability	Sensitivity	
EHDT-30B	0.1 to 30 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-60B	0.2 to 60 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-70B	0.2 to 70 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-150B	0.5 to 150 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-300B	1 to 300 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-600B	2 to 600 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-700B	2 to 700 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-1200B	2 to 1200 bar	0.015	0.006	$3 \cdot 10^{-5}$	$1 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-2000B	40 to 2000 bar	0.02	0.015	$5 \cdot 10^{-5}$	$2 \cdot 10^{-5} \times p$	BSP 1/2" f
EHDT-2500B	40 to 2500 bar	0.02	0.015	$5 \cdot 10^{-5}$	$2 \cdot 10^{-5} \times p$	M16 x 1,5
EHDT-3000B	40 to 3000 bar	0.02	0.015	$5 \cdot 10^{-5}$	$2 \cdot 10^{-5} \times p$	M16 x 1,5
EHDT-4000B	40 to 4000 bar	0.02	0.015	$5 \cdot 10^{-5}$	$2 \cdot 10^{-5} \times p$	M16 x 1,5
EHDT-5000B	40 to 5000 bar	0.04	0.015	$5 \cdot 10^{-5}$	$2 \cdot 10^{-5} \times p$	M16 x 1,5
EHDT-6000B	200 to 6000 bar	0.04	x	$1 \cdot 10^{-4}$	$5 \cdot 10^{-5} \times p$	M16 x 1,5
EHDT-7000B	200 to 7000 bar	0.04	x	$1 \cdot 10^{-4}$	$5 \cdot 10^{-5} \times p$	M16 x 1,5
EHDT-10000B	200 to 10000 bar	0.05	x	$1 \cdot 10^{-4}$	$5 \cdot 10^{-4} \times p$	M20 x 1,5

Note: The accuracy is determined for a temperature of = 20° C, relative humidity Rh = 50 %, Acceleration due to gravity/g = 9.80665 m/s² and an atmospheric pressure = 1013.25 hPa (mbar).

We offer 3 models of Deadweight Testers:

Deadweight Tester	Motorization	Terminal for Pressure Calculation
EHDT	X	X
EHDT-M	•	X
EHDT-MLC	•	•

Motorization

Motorized rotary drive of the piston-cylinder unit, low-vibration belt drive, side-mounted module, additional width approx. 112 mm, auxiliary power 110 or 220 VAC, please specify

Terminal for Pressure Calculation

Dynamic display of the piston position, automatic display of the generated pressure according the temperature, atmospheric pressure and hygrometric values. Connection for data transfer of the PC to ensure full traceability

Smallest test steps and number of weights (single piston)

Model EHDT-, EHDT-M-, EHDT-MLC-	Mineral oil	Total Weight	Weights (bar)		additional Fine Weights (bar)		
			smallest Test step	Numbers of weights	Fine Weights total	smallest Test step	Numbers of weights
EHDT-30B	EP-1201; EP-1202, EP-1203	42 kg	0.05	11	45 g	0.002	5
EHDT-60B	EP-1201; EP-1202, EP-1203	44 kg	0.2	11	46 g	0.005	5
EHDT-70B	EP-1201; EP-1202, EP-1203	48 kg	0.1	11	46 g	0.005	5
EHDT-150B	EP-1201; EP-1202, EP-1203	48 kg	0.25	11	48 g	0.01	6
EHDT-300B	EP-1201; EP-1202, EP-1203	48 kg	0.5	11	48 g	0.02	6
EHDT-600B	EP-1201; EP-1202, EP-1203	48 kg	1	11	46 g	0.05	5
EHDT-700B	EP-1201; EP-1202, EP-1203	48 kg	1	12	46 g	0.05	5
EHDT-1200B	EP-1201; EP-1202, EP-1203	67 kg	2	13	84 g	0.1	5
EHDT-2000B	Sebacate	59 kg	10	10	324 g	0.2	7
EHDT-2500B	Sebacate	71 kg	10	12	324 g	0.2	7
EHDT-3000B	Sebacate	79 kg	10	13	324 g	0.2	7
EHDT-4000B	Sebacate	103 kg	10	15	324 g	0.2	7
EHDT-5000B	Sebacate	122 kg	10	18	324 g	0.2	7
EHDT-6000B	Sebacate	53 kg	50	11	420 g	1	7
EHDT-7000B	Sebacate	58 kg	50	12	420 g	1	7
EHDT-10000B	Sebacate	86 kg	50	15	420 g	1	7

Measurement uncertainty double piston (related to the measured value P)

Model	Measuring Range	Accuracy (% of reading)	Increased accuracy (% of reading)	Piston cylinder unit		DUT connection
				Repeatability	Sensitivity	
EHDT-300B-D	1 to 60 bar	0.015	0.006	3.10 ⁻⁵	1.10 ⁻⁵	BSP 1/2" f
	5 to 300 bar					
EHDT-600B-D	1 to 60 bar	0.015	0.006	3.10 ⁻⁵	1.10 ⁻⁵	BSP 1/2" f
	6 to 600 bar					
EHDT-700B-D	1 to 60 bar	0.015	0.006	3.10 ⁻⁵	1.10 ⁻⁵	BSP 1/2" f
	10 to 700 bar					
EHDT-1200B-D	1 to 60 bar	0.015	0.006	3.10 ⁻⁵	1.10 ⁻⁵	BSP 1/2" f
	60 to 1200 bar					

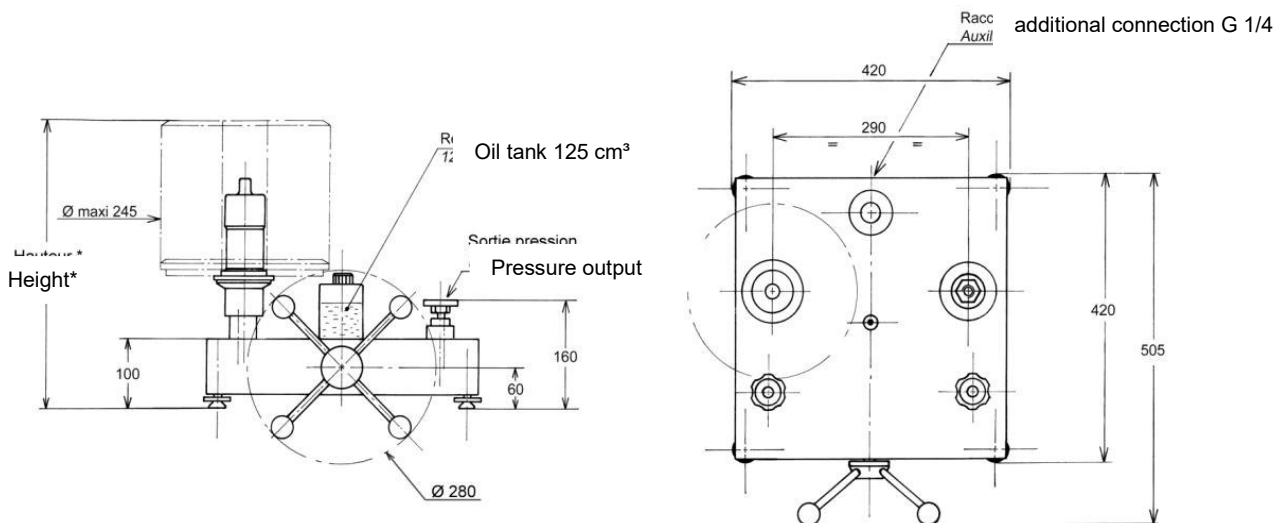
Smallest test steps and number of weights (double piston)

Model	Mineral oil	Total Weight	Weights (bar)		additional Fine Weights (bar)		
			smallest Test step	Numbers of weights	Fine Weights total	smallest Test step	Numbers of weights
EHDT-300B-D	EP-1201; EP-1202, EP-1203	68 kg	BP: 0.05 HP: 2.5	10	480 g	0.05	7
EHDT-600B-D	EP-1201; EP-1202, EP-1203	68 kg	BP: 0.5 HP: 5	10	480 g	0.05	7
EHDT-700B-D	EP-1201; EP-1202, EP-1203	68 kg	BP: 0.5 HP: 5	10	480 g	0.05	7
EHDT-1200B-D	EP-1201; EP-1202, EP-1203	68 kg	BP: 0.5 HP: 10	10	480 g	0.05	7

Dimensions (mm) and weights (kg)

Model	Dimensions (W x D x H) in mm of the Deadweight Tester in operating state *	Weight Dead Weight Tester (withour masses)	
EHDT-30B	420 x 510 x 340	18 kg	
EHDT-60B			
EHDT-70B			
EHDT-150B			
EHDT-300B			
EHDT-600B			
EHDT-700B			
EHDT-1200B			420 x 505 x 415
EHDT-2000B			420 x 540 x 375
EHDT-2500B			420 x 540 x 420
EHDT-3000B	420 x 540 x 445		
EHDT-4000B	420 x 540 x 500		
EHDT-5000B	420 x 540 x 570		
EHDT-6000B	420 x 540 x 430		
EHDT-7000B	420 x 540 x 450		
EHDT-10000B	640 x 505 x 300	35 kg	
EHDT-300B-D	420 x 510 x 410	18 kg	
EHDT-600B-D			
EHDT-700B-D			
EHDT-1200B-D			

Dimensions of the Deadweight Tester



Height with standard mass set (bar):

Dimensions in mm

Scope of delivery

- Pressure pump
- Piston cylinder unit
- Ring weight set
- Manufacturer's certificate of measurement uncertainty
- Operating manual
- 0,5 l mineral oil for hydraulic Deadweight Tester

Accessories (optional)

- Mineral oil type EP-1201, EP-1202, EP-1203, Skydrol or Sebacate, depending on model
- DAkkS-accredited calibration including certificate
- Additional mass sets for other units
- Adjustment of the pressure balance to your local acceleration due to gravity
- Accessory set for pressure compensators
- Separator gas / liquid up to 800 bar
- Separator up to 700 bar or 1200 bar for different liquids or oxygen, this results in an additional measurement uncertainty of 20 mbar. Viton oder Butyl membrane. Weight 6,5 kg.
- Transport case for Deadweight Tester and mass set
- Quick Connector set (17 different threads sizes M-, G-, and NPT-) up to 1200 bar
- Cleaning system for pressure gauges and other test items
- Transport trolley
- Connection kit M, Connection kit G, Connection kit NPT, (please contact us)
- Height position display of the piston via LED, contactless sensors
- Other units of measurement / measuring ranges on request
- Suction pump with collections container for empty the test device
- Tool set, consisting of:
 - 1 bag with replacement seals
 - 1 Bend connection adapter for pressure gauges with rear connection
 - 1 Set thread adapters (G 3/8"; G 1/4"; 1/2" NPT; 1/4" NPT)
 - 1 open-end wrench SW 27/30
 - 1 Allen key
 - 1 small hammer
 - 1 hand setter
 - 1 pointer puller with 2 needles (0,8 mm and 1,5 mm)
- Container with 1 l, 2 l or 5l oil

