LR-Cal

Deadweight Tester / Pressure Balance
Hydraulic, Accuracy up to ±0.006% MV

LDW-H

Rel. 20201019

Applications:

- Primary standard for defining the pressure scale in a range up to 1,400 bar, hydraulic
- Reference instrument for factory and calibration laboratories for the testing, adjustment and calibration of pressure measuring devices.
- Complete, stand-alone system, also suitable for on-site use

Special features:

- Total measurement uncertainty to 0.006% MV (of measured value)
- Dual-range piston-cylinder system with fully automated changing between ranges
- Factory calibration includes traceability to national standards as standard. Optional with DKD-/DAkkS-calibration
- High long-term stability with recommended recalibration cycle every five years
- Fast and safe replacement of the piston-cylinder system with quick-release system as an option

Description:

Proven primary standard
Deadweight tester / Pressure balances are the most accurate instruments available on the market for the calibration of electronic or mechanical pressure measuring instruments. The direct measurement of the pressure (p = F/A), as well as the use of high-quality materials enable a very small measurement uncertainty, in conjunction with an excellent long-term stability of five years (recommended in accordance with the German Calibration Service DKD/DAkkS).
The pressure balance has therefore been used for years in factory and calibration laboratories in industry, national institutes and research laboratories.

Stand-alone operation
Due to its integrated pressure generation and the pure mechanical measuring principle, the Deadweight Tester **LR-*Cal* LDW-H** is ideal for on-site use for maintenance and service.

Basic principle
Pressure is defined as the quotient of force and area. The core component of the **LR-*Cal* LDW-H** is therefore a very precisely manufactured piston-cylinder system, which is loaded with masses in order to generate the individual test points.

The masses applied are proportional to the target pressure and this is achieved through optimally graduated masses. As standard, these masses are manufactured to the standard gravity (9.80665 m/s²), though the can be adjusted to a specific location and also DKD/DAkkS calibrated.

Instrument base LR-*Cal* LDW-H-S /-H

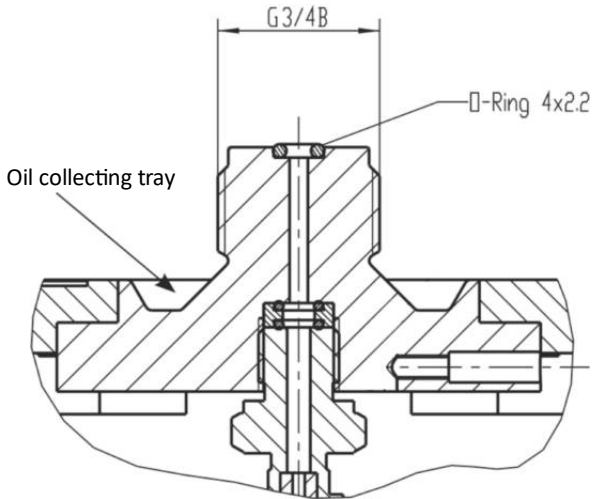
Easy operation
In the stable instrument base, the integrated priming pump and the 250 ml tank enable large test volumes to be easily filled and pressurised. For further pressure increases and fine adjustment, a very precisely-controllable spindle pump is fitted, which only runs within the pump body.
As soon as the measuring system reaches equilibrium, there is a balance of forces between the pressure and the mass load applied. The excellent quality of the system ensures that this pressure remains stable over several minutes, so that the pressure value for comparative measurements can be read out without any problems, or also so that more complex adjustments can be carried out on the item under test.

Two instrument base versions
The **LR-*Cal* LDW-H** Deadweight Tester is available in two versions, both with integrated pressure generation through priming pump and spindle pump:

- Standard hydraulic base
  Type **LR-*Cal* LDW-H-S**
  up to max. 1,200 bar (16,000 psi)
  Availabel for pressure transmission medium:
  Mineral oil. Optional: Sebacate oil, Brake fluid, Skydrol or Fomblin oil

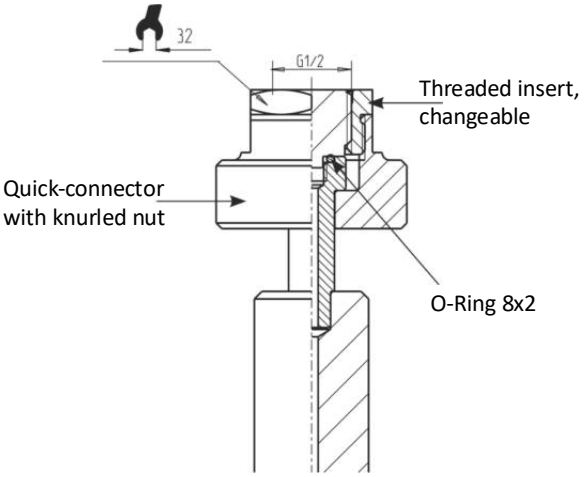
- High-pressure hydraulic base
  Type **LR-*Cal* LDW-H-H**
  up to max. 1,400 bar (20,000 psi)
  Available for pressure transmission medium:
  Mineral oil. Optional: Sebacate oil

Standard connection piston-cylinder system:



As standard, both instrument base versions are fitted with a connection for the piston-cylinder system with 3/4" BSP male thread.
With the 1,200 bar instrument base, a quick-release mechanism is available as an option. This enables the piston-cylinder system to be changed quickly and safely without any tools.
The connection of the test item is made without tools using a quick-connection. Via the freely-rotating knurled nut, the test item can be oriented as required. As standard, a threaded insert with a 1/2" BSP female thread is provided. Other threaded inserts are available (see „Accessories“) to connect the most common pressure measuring instruments.

Test item connection:



The piston-cylinder system
LR-*Cal* LDW-H-EKZ / -DKZ

There are two different piston-cylinder systems available for the deadweight testerLR-*Cal* **LDW-H**, depending on measuring range:

- Single piston-cylinder system
  Type LR-*Cal* **LDW-H-EKZ**
  for ranges 120 bar and 300 bar

- Double piston-cylinder system
  Type LR-*Cal* **LDW-H-DKZ**
  for ranges 700 bar, 1,200 bar and 1,400 bar

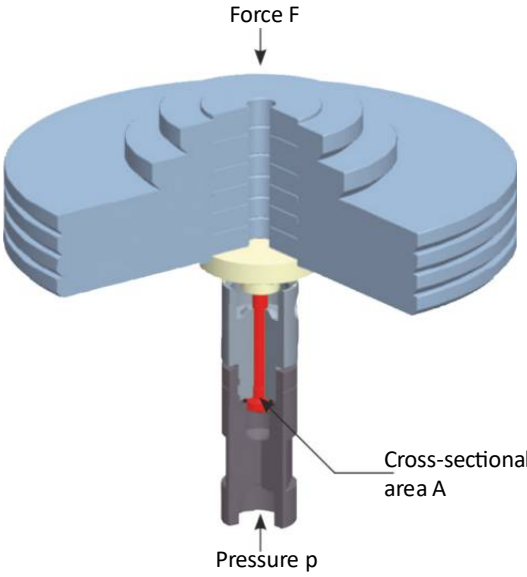
High accuracy over a wide measuring range
The dual-range piston-cylinder system offers two measuring ranges in one housing with automatic range switching from low-pressure to high-pressure pistons. This provides the user with an extremly flexible measuring instrument that can cover a wide measuring range with high accuracy, with only one piston-cylinder unit and one set of weights. Additionally two test points can automatically be achieved by the operater loading masses once.

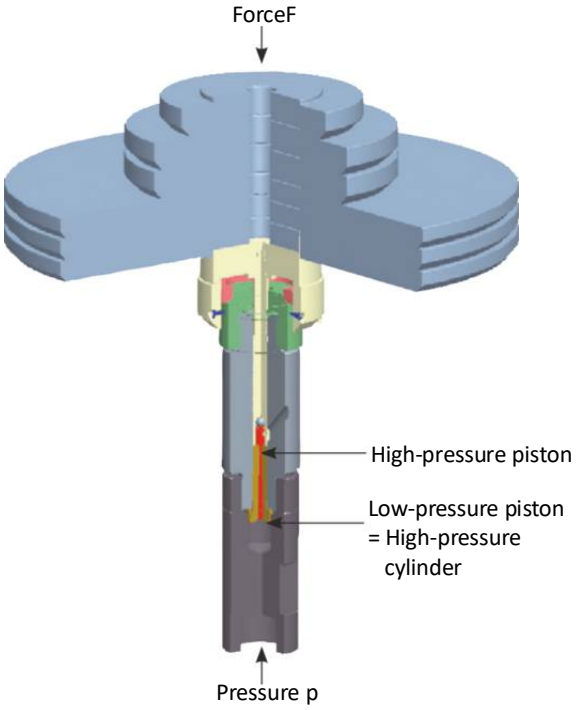
The piston and cylinder are manufactured from hardened steel and tungsten carbide, respectively. This pairing of materials has very low pressure and temperature coefficients of expansion, which results in a very good linearity for the cross-sectional area and a very high accuracy.

Piston and cylinder are very well protected, against contact, impacts or contamination from outside, in a solid stainless steel/hardened tool steel housing. At the same time, overpressure protection is integrated, which prevents the piston from being forced out vertically and avoids damage to the piston-cylinder system in the event of mass removal under pressure.

The masses are stacked directly onto the piston-cylinder shaft. This makes it easier for the operator to place the masses on and thus enables a lower start value.

The overall design of the piston-cylinder unit and the very precise manufacturing of both, the piston and the cylinder, ensure exceptionally low friction force, which results in excellent operating characteristics with long free-rotating time and low sink rates. Thus a high long-term stability is ensured. Therefore the recommended recalibration interval is 5 years depending on the conditions of usage.





The mass set LR-*Cal* LDW-H-MS

The standard mass set **LR-*Cal* LDW-H-MS** is supplied in a wooden case with a foam insert. This includes the masses listed in the tables of masses below, made from non-magnetic stainless steel, and optimised for everyday use. For finer increments and for a higher resolution, as an option, the standard mass sets can be extended by a set of fine increment weights **LR-*Cal* LDW-H-FMS**. If even smaller intermediate values need to be generated, using one of the class M1 or F1 trim-mass sets from the „Accessories“ is recommended.

Tables of masses
The following tables show, for the respective measuring range, the number of masses within a set of masses, with their resulting nominal pressures.

Should you not operate the instrument under reference conditions (ambient temperature 20°C, air pressure 1,013 mbar, relative humidity 40%), the relevant corections must be calculated.

The mass sets can be manufactured for the following different pressure units: bar, kg/cm², kPa, MPa or psi (lb/in²) and can be used with same piston-cylinder system.

Range [bar] or [kg/cm²]	Single piston ranges				Double piston ranges									
	1...120		2...300		1...700			1...1,200			1...1,400			
					1...60		10...700	1...60		20...1,200	1...60		20...1,400	
	Quantity	nom.pressure per piece [bar] [kg/cm²]	Quantity	nom.pressure per piece [bar] [kg/cm²]	Quantity	nom.pressure per piece [bar] [kg/cm²]	nom.pressure per piece [bar] [kg/cm²]	Quantity	nom.pressure per piece [bar] [kg/cm²]	nom.pressure per piece [bar] [kg/cm²]	Quantity	nom.pressure per piece [bar] [kg/cm²]	nom.pressure per piece [bar] [kg/cm²]	
Piston and make-up weight	1	1	1	2	1	1	10	1	1	20	1	1	20	
Standard mass set	4	20	4	50	5	10	100	4	10	200	5	10	200	
LR-*Cal* LDW-H-MS	1	18	1	45	1	9	90	1	9	180	1	9	180	
	1	10	1	25	1	5	50	1	5	100	1	5	100	
	2	4	2	10	2	2	20	2	2	40	2	2	40	
	1	2	1	5	1	1	10	1	1	20	1	1	20	
	2	1	1	3	1	0.5	5	1	0.5	10	1	0.5	10	
	1	0.5	1	2.5										
Optional fine	1	0.4	2	1	2	0.2	2	2	0.2	4	2	0.2	4	
increment weights	1	0.2	1	0.5	1	0.1	1	1	0.1	2	1	0.1	2	
LR-*Cal* LDW-H-FMS	1	0.1	1	0.25	1	0.05	0.5	1	0.05	1	1	0.05	1	
	2	0.04	2	0.1	2	0.02	0.2	2	0.02	0.4	2	0.02	0.4	
	1	0.02	1	0.05	1	0.01	0.1	1	0.01	0.2	1	0.01	0.2	

Tables of masses „psi = lb/in²" and „kPa“ see next page.

Range [psi] = [lb/in²]	Single piston ranges				Double piston ranges									
	10...1,600		30...4,000		10...10,000			10...16,000			10...20,000			
					10...800		100...10,000	10...800		200...16,000	10...800		200...20,000	
	Quantity	nom. pressure per piece [psi] [lb/in²]	Quantity	nom. pressure per piece [psi] [lb/in²]	Quantity	nom. pressure per piece [psi] [lb/in²]	nom. pressure per piece [psi] [lb/in²]	Quantity	nom. pressure per piece [psi] [lb/in²]	nom. pressure per piece [psi] [lb/in²]	Quantity	nom. pressure per piece [psi] [lb/in²]	nom. pressure per piece [psi] [lb/in²]	
Piston	1	10			1	10	100	1	10	200	1	10	200	
Piston and make-up weight			1	30										
Standard mass set	6	200	6	500	8	100	1000	6	100	2000	8	100	2000	
LR-Cal LDW-H-MS	1	180	1	450	1	90	900	1	90	1800	1	90	1800	
	1	100	1	250	1	50	500	1	50	1000	1	50	1000	
	2	40	2	100	2	20	200	2	20	400	2	20	400	
	1	20	1	50	1	10	100	1	10	200	1	10	200	
	2	10	1	25	1	5	50	1	5	100	1	5	100	
	1	5	1	20										
Optional fine	1	4	2	10	2	2	20	2	2	40	2	2	40	
increment weights	1	2	1	5	1	1	10	1	1	20	1	1	20	
LR-Cal LDW-H-FMS	1	1	1	2.5	1	0.5	5	1	0.5	10	1	0.5	10	
	2	0.4	2	1	2	0.2	2	2	0.2	4	2	0.2	4	
	1	0.2	1	0.5	1	0.1	1	1	0.1	2	1	0.1	2	

Range [kPa]	Single piston ranges				Double piston ranges									
	100...12,000		200...30,000		100...70,000			100...120,000			100...140,000			
					100-6,000		1,000-70,000	100-6,000		2,000-120,000	100-6,000		2.000-140,000	
	Quantity	nom.pressure per piece [kPa]	Quantity	nom.pressure per piece [kPa]	Quantity	nom.pressure per piece [kPa]	nom.pressure per piece [kPa]	Quantity	nom.pressure per piece [kPa]	nom.pressure per piece [kPa]	Quantity	nom.pressure per piece [kPa]	nom.pressure per piece [kPa]	
Piston and make-up weight	1	100	1	200	1	100	1000	1	100	2000	1	100	2000	
Standard mass set	4	2000	4	5000	5	1000	10000	4	1000	20000	5	1000	20000	
LR-Cal LDW-H-MS	1	1800	1	4500	1	900	9000	1	900	18000	1	900	18000	
	1	1000	1	2500	1	500	5000	1	500	10000	1	500	10000	
	2	400	2	1000	2	200	2000	2	200	4000	2	200	4000	
	1	200	1	500	1	100	1000	1	100	2000	1	100	2000	
	2	100	1	300	1	50	500	1	50	1000	1	50	1000	
	1	50	1	250										
Optional fine	1	40	2	100	2	20	200	2	20	400	2	20	400	
increment weights	1	20	1	50	1	10	100	1	10	200	1	10	200	
LR-Cal LDW-H-FMS	1	10	1	25	1	5	50	1	5	100	1	5	100	
	2	4	2	10	2	2	20	2	2	40	2	2	40	
	1	2	1	5	1	1	10	1	1	20	1	1	20	

Scope of delivery

- Base with adjustable feet
- Priming pump
- Spindle pump for pressure generation and fine adjustment
- Piston connection with 3/4" BSP female thread
- Quick-connector for test items with 1/2" BSP female threaded insert, changeable
- Piston-cylinder system
- Standard mass sets in carrying case
- Set of masses manufactured to standard gravity (9.80665 m/s²)
- Operating fluid mineral oil VG22
- Operating instructions
- Factory calibration certificate

Options

- Other pressure transmission media
- Piston connection with quick-release connector
- System with increased accuracy to 0.006% MV (MV = of measured value)
- Other pressure units
- Set of masses manufactured to local gravity
- Fine increment weights
- Storage case for the base and the piston-cylinder system
- DKD/DAkkS calibration certificate

LDW-H

Deadweight Tester / Pressure Balance
Hydraulic, Accuracy up to ±0.006% MV

LR-*Cal*

Specifications LR-*Cal* LDW-H piston-cylinder systems:

Version		Single piston ranges		Double piston ranges		
Measuring range 1)	**bar, kg/cm²**	**1...120**	**2...300**	**1...60 / 10...700**	**1...60 / 20...1,200**	**1...60 / 20...1,400**
Required masses	kg	49.7	49.6	57.4	49.2	57.4
Smallest step 2) (standard mass set)	bar, kg/cm²	0.5	2.5	0.5 / 5.0	0.5 / 10	0.5 / 10
Smallest step 3) (increment weights)	bar, kg/cm²	0.02	0.05	0.01 / 0.1	0.01 / 0.2	0.01 / 0.2
Nominal cross-sect. area of piston	cm²	0.4032	0.1613	0.8065 / 0.0807	0.8065 / 0.0403	0.8065 / 0.0403
Measuring range 1)	**psi, lb/in²**	**10...1.600**	**30...4.000**	**10...800 / 100...10,000**	**10...800 / 200...16,000**	**10...800 / 200...20,000**
Required masses	kg	45.5	45.3	56.4	45	56.4
Smallest step 2) (standard mass set)	psi, lb/in²	5	20	5 / 50	5 / 10	5 / 100
Smallest step 3) (increment weights)	psi, lb/in²	0.2	0.5	0.1 / 1	0.1 / 2	0.1 / 2
Nominal cross-sect. area of piston	cm²	0.4032	0.1613	0.8065 / 0.0807	0.8065 / 0.0403	0.8065 / 0.0403
Measuring range 1)	**kPa**	**100...12,000**	**200...30,000**	**100...6,000 / 1,000...70,000**	**100...6,000 / 2,000...120,000**	**100...6,000 / 2,000...140,000**
Required masses	kg	49.7	49,6	57.4	49.2	57.4
Smallest step 2) (standard mass set)	kPa	50	250	50 / 500	50 / 1,000	50 / 1,000
Smallest step 3) (increment weights)	kPa	2	5	1 / 10	1 / 20	1 / 20
Nominal cross-sect. area of piston	cm²	0.4032	0.1613	0.8065 / 0.0807	0.8065 / 0.0403	0.8065 / 0.0403
Accuracies						
Standard 4) 5)	% MV	0.015	0.015	0.015	0.015	0.025
Optional 4) 5)	% MV	0.007	0.006	0.006	0.007	0.007
Pressure transmission medium						
Standard		Hydraulic fluid based on mineral oil VG22				
Optional		Sebacate oil Brake fluid Skydrol Fomblin oil	Sebacate oil Brake fluid Skydrol Fomblin oil	Sebacate oil Brake fluid Skydrol Fomblin oil	Sebacate oil Brake fluid Skydrol Fomblin oil	Sebacate oil --- --- ---
Material						
Piston		Steel	Steel	Tungsten carbide / steel	Tungsten carbide / steel	Tungsten carbide / steel
Cylinder		Bronze	Steel	Steel / Tungsten carbide	Steel / Tungsten carbide	Steel / Tungsten carbide
Mass set		Stainless steel, non-magnetic				
Weight						
Piston-cylinder system	kg	1	0.8	2	2	2
Storage case for piston-cylinder system	kg	3.1	3.1	3.1	3.1	3.1
"bar" standard mass set (in 2 wooden cases)	kg	61.3	61.2	69	60.8	69
"psi" standard mass set (in 2 wooden cases)	kg	57.1	56.9	68	56.6	68
"bar" incremental weights	kg	0.33	0.5	0.5	0.5	0.5
"psi" incremental weights	kg	0.23	0.34	0.34	0.34	0.34
Dimensions						
Carrying case for standard mass set	mm	W 400 x D 310 x H 310				
Storage case for piston-cylinder systems (optional)	mm	W 300 x D 265 x H 205				

1) Theoretical starting value; correspondends to the pressure value generated by the piston or the piston and its make-up weights (by their own weight). To optimise the operating characteristics more weights should be loaded.
2) The smallest pressure change value that can be achieved based on the standard weight set. To reduce this, a set of fine incremental weights is also available.
3) The smallest pressure change value that can be achieved based on the optional fine increment weights. For further reductions, an accessory of class M1 or F1 trim masses is available.
4) The accuracy from 10% of the measuring range is based on the measured value. In the lower range, a fixed error based on 10% of the range applies.
5) Measurement uncertainty assuming reference conditions (ambient temperature 20°C, air pressure 1,013 mbar, relative humidity 40%). Corrections must be made if required.

GRATIS - FREE OF CHARGE:

Download Link für a MS Excel sheet for calculation of corrections (e.g. air density, piston temperature) and masses/pressure calculation:

https://www.druck-temperatur.de/images/software/dwt-corrections.zip

Specifications LR-*Cal* LDW-H instrument base:

Basement versions	
Hydraulic standard LR-*Cal* LDW-H-S	up to max. 1,200 bar / 16,000 psi; with internal pressure generation
Hydraulic high-pressure LR-*Cal* LDW-H-H	up to max. 1,400 bar / 20,000 psi; with internal pressure generation
Pressure transmission medium	
Standard	Hydraulic fluid based on mineral oil VG22
Optional	Sebacate oil, brake fluid, Skydrol, Fomblin oil (dependant upon measuring range)
Oil reservoir	250 cm^3
Connections	
Connection for piston-cylinder system	3/4" BSP male; Optional: quick-release connector (max. 1,200 bar) (Note: Quick-release connector NOT for 1,400 bar version)
Test item connector	1/2" BSP female quick connector as standard, freely rotating, changeable (for other threaded inserts, see "Accessories")
Material	
Piping in instrument base	Stainless steel 1.4404, 6 x 2 mm
Weight	
Basement standard LR-*Cal* LDW-H-S	18.0 kg (19.0 kg with optional quick-release connector)
Basement high-pressure LR-*Cal* LDW-H-H	18.0 kg
Storage case for the base	8.5 kg
Permissible ambient conditions	
Operating temperature	18...28°C
Dimensions	
Base (both versions)	W 400 x D 375 x H 265 mm

Approvals and certificates:

CE conformity	
Pressure equipment directive	97/23/EC (module A)
Certificate	
Calibration	Certificate of Calibration (3.1, factory certificate, traceable) Option: DKD/DAkkS certificate of calibration

Transport dimensions for complete instrument LR-*Cal* LDW-H:

The complete instrument, in its standard version and standard scope of delivery, consists of 3 packages on a single pallet. The dimensions are 1,200 x 800 x 500 mm. The overall weight is dependant on the measuring range:

Version in bar	Weight in kg net	gross
Single piston ranges		
1...120 bar	81.5	100
2...300 bar	81.5	100
Double piston ranges		
1...60 bar / 10...700 bar	90	108.5
1...60 bar / 20...1,200 bar	82	100.5
1...60 bar / 20...1,400 bar	90	108.5

Version in psi	Weight in kg net	gross
Single piston ranges		
10...1,600 psi	77,5	96
30...4,000 psi	77	95.5
Double piston ranges		
10...800 psi / 100...10,000 psi	89	107.5
10...800 psi / 200...16,000 psi	77.5	96
10...800 psi / 200...20,000 psi	89	107.5

LDW-H

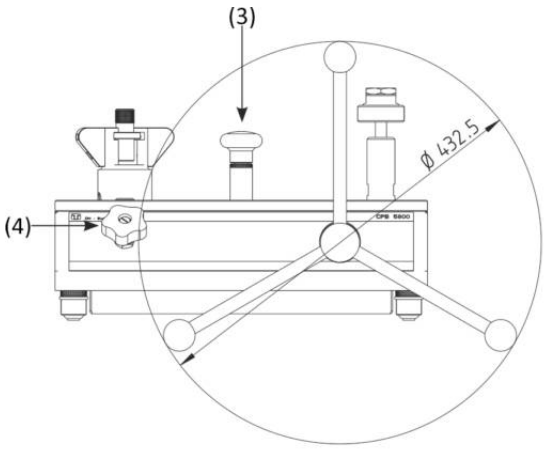
Deadweight Tester / Pressure Balance
Hydraulic, Accuracy up to ±0.006% MV

LR-*Cal*

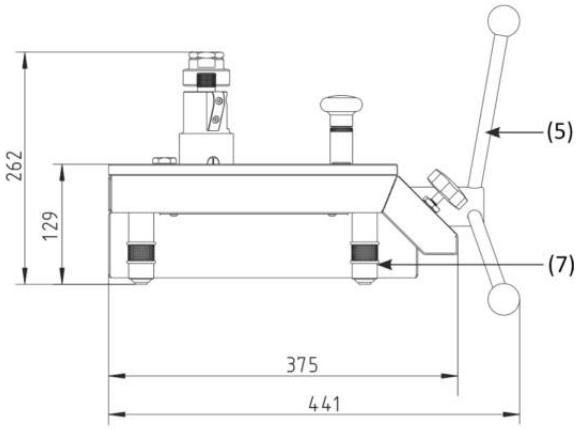
Dimensions in mm (without masses):

The picture shows a LR-*Cal* **LDW-H** base unit in the LR-*Cal* **LDW-H-S** 1,200 bar version with optional quick-release connection for piston-cylinder unit.
The 1,400 bar high-pressure version LR-*Cal* **LDW-H-H** does not differ from it dimensionally, only in the arrangement of the control elements.

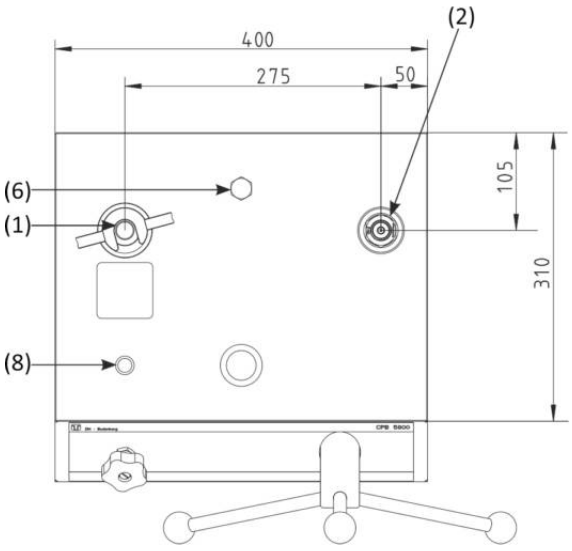
Front view:



Side view:

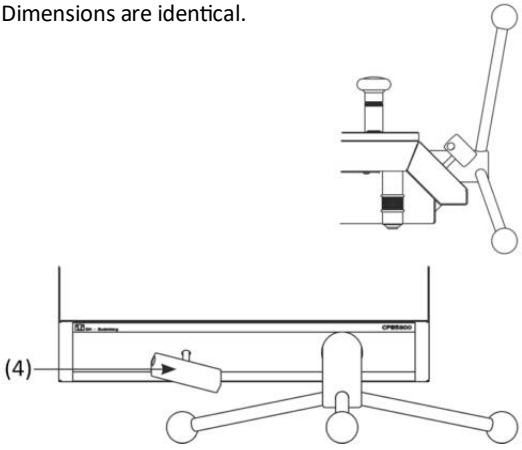


Top view:



Detailed section view
1,400-bar high-pressure version LR-*Cal* LDW-H-H:
- with high-pressure shut-off valve
- no quick-release option possible

Dimensions are identical.



(1) Connector for piston-cylinder system (Single-piston LR-*Cal* **LDW-H-EKZ** or Double-piston LR-*Cal* **LDW-H-DKZ**)
(2) Test item connection
(3) Priming pump
(4) Outlet valve
(5) Spindle pump with star handle, removable
(6) Oil reservoir sealing screw
(7) Rotatable (adjustable) feet
(8) Level

Accessories

Trim-mass sets M1 and F1

The weights included in the **LR-*Cal* LDW-H** standard mass set or fine increment weights are ideally suited for everyday use. If smaller intermediate values need to be generated, we recommend using a set of class M1 or F1 trim masses, with the following weights.
1 x 50 g, 2 x 20 g, 1 x 10 g, 1 x 5 g, 2 x 2 g, 1 x 1 g,
1 x 500 mg, 2 x 200 mg, 1 x 100 mg, 1 x 50 mg,
2 x 20 mg, 1 x 10 mg, 1 x 5 mg, 2 x 2 mg, 1 x 1 mg

Set of trim masses M1 / F1

90° angle connection

Connector for test items with back connection

For test items with back connection mounting, a 90° angle connection is available

Separators

The separators have been specifically designed for measuring instruments, which should not come into contact with the medium of the deadweight tester or to protect against contamination of the pressure balance from the test items.

Separator (without diaphragm) 1.000 bar

Separator (with diaphragm) 700 bar

Separator (with diaphragm) 1200 bar

Set of adapters

Set of adapters for test item connection

As a standard, the pressure balance is equipped with a quick connector for connecting the test item. For this purpose, various threaded adapters, which can be easily changed, are available. Additionally the sets of adapters include spare-O-rings and a spanner with SW32 flats and SW14 flats, for changing the adapters.

Order-Code	Description
LDW-FMS-F1	Set of trim masses (1 mg up to 50 g), class F1
LDW-FMS-M1	Set of trim masses (1 mg up to 50 g), class M1
CPB5000-ADS	Set of adapters for quick connector with 1/4" BSP, 3/8" BSP, 1/2" NPT, 1/4" NPT and M20x1.5 threaded inserts for insertion in the knurled nut (test item connector)
CPB5000-ADS-NPT	Set of NPT adapter for quick connector with 1/8", 1/4", 3/8" and 1/2" NPT threaded inserts for insertion in the knurled nut (test item connector)
CPB5000-WA90	90° angle connection, for test items with back mounting connection
CPB5000-TV-1000	Separator (without diaphragm), max. 1,000 bar
LDW-TV-M-0700	Separator (to separate 2 liquids by diaphragm), max. 700 bar
LDW-TV-M-1000	Separator (to separate 2 liquids by diaphragm), max. 1,200 bar
CPB5000-R-SET	O-ring set consisting of 5 pcs. 8 x 2 and 5 pcs. 4 x 2.2
CPB5000-FLUID	Bottle with 1 l operating fluid for pressures up to max. 4,000 bar
LDW-H-KA	Adapter for mounting piston-cylinder systems into quick-release connector
LDW-PAS-G12	Test item connecting piece, 3/4" BSP female to 1/2" BSP female, free rotating, operation as a comparison test pump is possible
LDW-PAS-G12-CT	Special test-item adapter with quick connect, for the matching to the quick-release system mechanism, operation as a comparison test pump is possible
LDW-H-E-230	Electrical piston drive unit for 700 bar, 1,200 bar and 1,400 bar measuring ranges (230 VAC, 50 Hz)

Further LR-*Cal* Deadweight Tester / Pressure Balances:

Model LR-*Cal* LDW-P
Pneumatic

Ranges from -0.03...-1 to +0.4...+100 bar
from -0.435...-14 to +5.8...+1,500 psi

Accuracy ±0.015% or ±0.008% of measured value

Model LR-*Cal* LDW-HK
Hydraulic (compact design)

Ranges from 1...120 to 10...1,200 bar
from 10...1,600 to 100...16,000 psi

Accuracy ±0.05% or ±0.025% of measured value

Model LR-*Cal* CPB5000-HP
High pressure, hydraulic

Ranges from 25...2,500 to 25...5,000 bar
from 350...40,000 to 350...70,000 psi

Accuracy ±0.025% or ±0.02% of measured value

Modell LR-*Cal* CPB5600-DP

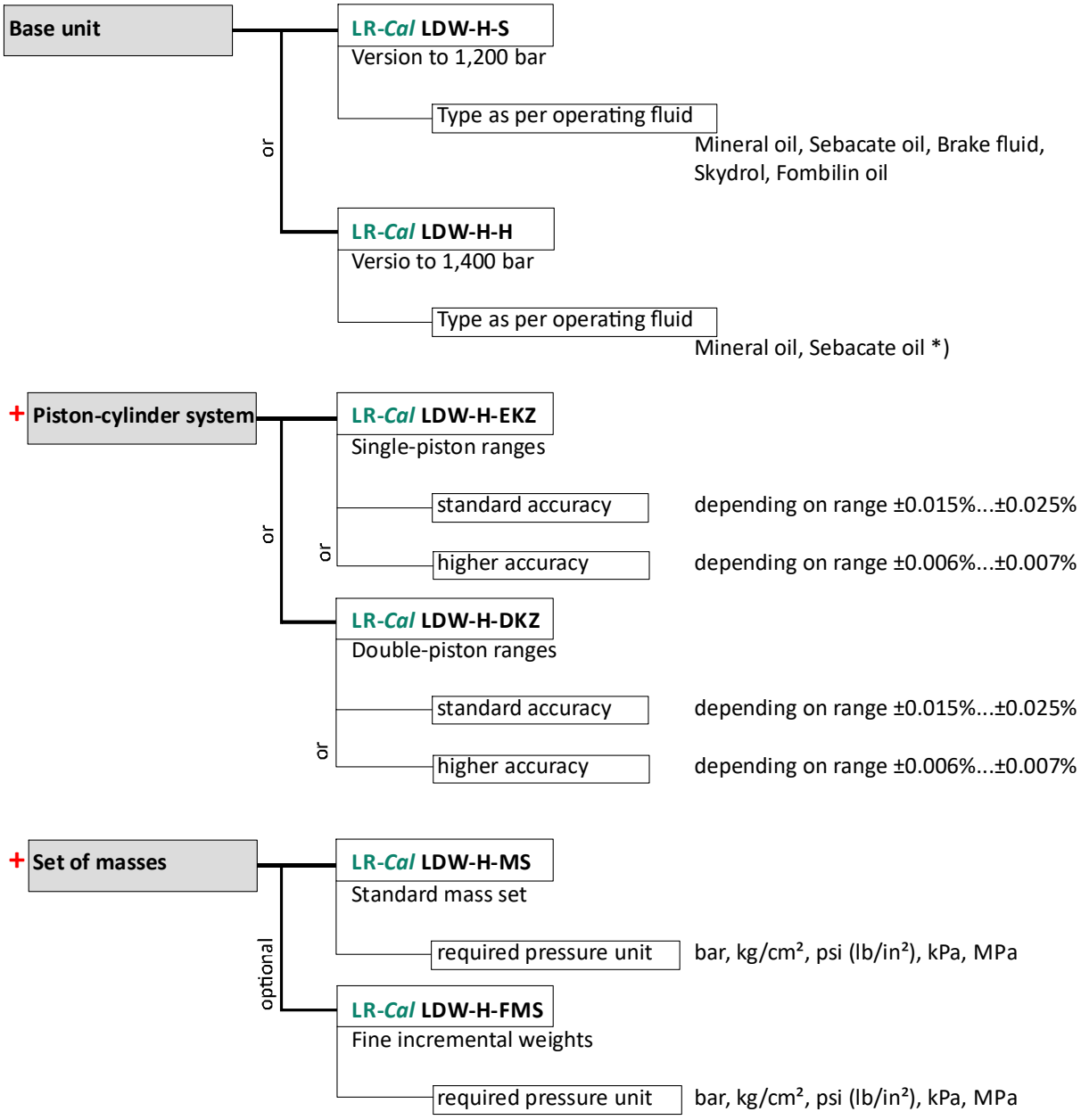
Differential pressure, pneumatic
Ranges from 0.03...2 to 0.4...100 bar
from 0.435...30 to 5.8...1500 psi

Differential pressure, hydraulic
Ranges from 0.2...60 to 2...1,000 bar
from 2.9...1,000 to 29...14,500 psi

Accuracy ±0.015% or ±0.008% of measured value

Information „How to order“

A complete deadweight tester Model **LR-*Cal* LDW-H** always consists of following components:



*) Operating fluids „Brake fluid“, „Skydrol“ and „Fomblin oil“: only up to max. 1,200 bar