

Pressure balance

Pneumatic version to 120 bar [1,600 lb/in²]

Model CPB5000



WIKA data sheet CT 31.01



For further approvals
see page 7

Applications

- Primary standard for calibrating the pressure scale in a pneumatic range from -1 ... 120 bar [-14.5 ... 1,600 lb/in²]
- Reference instrument for factory and calibration laboratories for the testing, adjustment and calibration of pressure measuring instruments
- Complete, stand-alone system, also suitable for on-site use

Special features

- Total measurement uncertainty starting from 0.015 ... 0.006 % of reading
- Four different piston-cylinder systems available for ranges ± 1 bar, 0.1 ... 7 bar, 0.2 ... 25 bar, 1 ... 70 bar and 1 ... 120 bar, or also for ranges in lb/in² and kPa
- Quick and safe replacement of the piston-cylinder system for measuring range changes via patented ConTect quick-release system possible
- Masses manufactured from stainless steel and aluminium, can be adjusted to local gravity
- Factory calibration included as standard, traceable to national standards; with UKAS calibration possible



Pressure balance, pneumatic version, model CPB5000

Description

Proven primary standard

Pressure balances (dead-weight testers) 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.

The pressure balance (dead-weight tester) 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 purely mechanical measurement principle, the model CPB5000 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 CPB5000 is therefore a very precisely manufactured piston-cylinder system, onto which a mass load is applied in order to generate the individual test points.

The mass load is 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 they can be adjusted to a specific location and calibrated according to UKAS accreditation.

Easy operation

The pressure setting depends on the instrument version and is either done via an integrated pump or from external pressure supply via a metering valve. For further pressure increases and fine adjustment, a very precisely controllable spindle pump is fitted, which only runs within the pump body.

Functionality

The piston-cylinder system

Both the piston and cylinder are manufactured from tungsten carbide. This pairing of materials, in comparison to other materials, has very low pressure and temperature coefficients of expansion, which results in a very good linearity for the effective area of the piston and a very high accuracy.

Piston and cylinder are very well protected against contact, impacts or contamination from outside in a solid stainless-steel case. 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 masses removal under pressure.

The masses are stacked on a mass carrier, which sits on the piston shaft. The construction of the mass carrier provides a very low centre of gravity for the stacked masses, which minimises both the side thrust on the piston-cylinder system and the friction. For relatively low starting pressures, a lighter aluminium plate can be used instead of the mass carrier.

The entire construction design of the piston-cylinder system and the very precise manufacturing of both the piston and the cylinder ensures excellent operating characteristics with a long free-rotation time and low sink rates and a very high long-term stability. Therefore, the recommended calibration interval is two to five years dependent on the conditions of use.

The connection of the piston-cylinder system is a M30 x 2 male thread as standard.

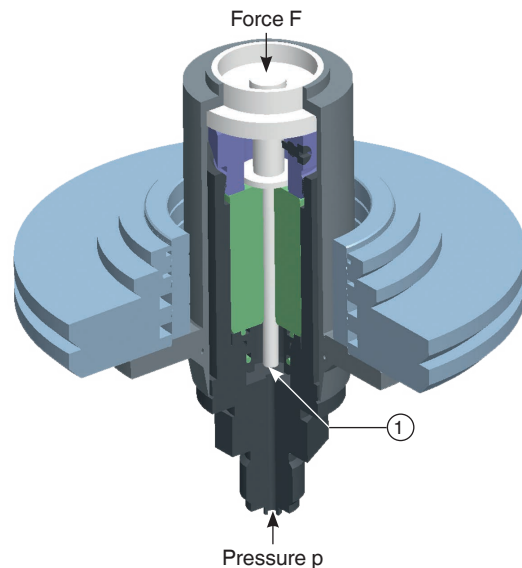
The patented ConTect quick-release connector, for easy measuring range changes without the need for tools is also available.

As soon as the measuring system reaches equilibrium, there is a balance of forces between the pressure and the masses 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 without any problems, or also so that more complex adjustments can be carried out on the test item.

High-performance instrument range

The CPB5000 basic instruments are available in the following three designs:

- Pneumatic base, low pressure
 - Up to max. 10 bar [150 lb/in²]
 - With integrated pressure generation through priming pump and spindle pump
- Pneumatic base, high pressure/vacuum
 - Up to max. 120 bar [1,600 lb/in²]
 - Connection for external pressure supply or vacuum



Piston-cylinder system model CPS5000

① Effective area A

Tables of masses

The following tables show the number of masses within a mass set with their nominal mass values and the resulting nominal pressures for the respective measuring ranges.

Should the instrument not be operated under reference conditions (ambient temperature 20 °C [68 °F], atmospheric pressure 1,013 mbar [14.69 lb/in²], relative humidity 40 %), the measured values must be corrected arithmetically.

For the measurement of the ambient conditions, the CPU6000 CalibratorUnit can be used, see page 11.

The masses are manufactured, as standard, to the standard gravity of 9.80665 m/s², although they can also be adjusted for any local gravity.

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

Measuring range [bar] ¹⁾	0.015 ... 1		0.015 ... 2		0.1 ... 7		0.2 ... 25		1 ... 70		1 ... 120	
	Quantity	Nominal pressure per piece [mbar]	Quantity	Nominal pressure per piece [mbar]	Quantity	Nominal pressure per piece [bar]	Quantity	Nominal pressure per piece [bar]	Quantity	Nominal pressure per piece [bar]	Quantity	Nominal pressure per piece [bar]
Piston and make-up weight	1	0.015	1	0.015	1	0.1	1	0.2	1	1	1	1
Standard mass set	1	0.005	1	0.005	1	0.4	1	0.3	2	1	2	1
	3	0.02	3	0.02	2	0.5	1	4.5	5	10	1	18
	2	0.01	2	0.01	5	1	3	5	1	9	4	20
	6	0.05	6	0.05	2	0.2	2	2	2	4	1	10
	6	0.1	6	0.1	1	0.1	1	1	1	2	2	4
	-	-	1	1	1	0.05	1	0.5	1	0.5	1	2
	-	-	-	-	-	-	-	-	-	-	1	0.5
Set of fine increment masses	-	-	-	-	2	0.02	2	0.2	1	0.4	1	0.4
	-	-	-	-	1	0.01	1	0.1	1	0.2	1	0.2
	-	-	-	-	1	0.005	1	0.05	1	0.1	1	0.1
	-	-	-	-	-	-	2	0.02	2	0.04	2	0.04
	-	-	-	-	-	-	1	0.01	1	0.02	1	0.02

1) Other ranges like "inch of wather (inH₂O)" and "millimetre of wather (mmH₂O)" also available on request.

Measuring range [lb/in ²] ¹⁾	0.2 ... 15		0.2 ... 30		1 ... 100		3 ... 400		15 ... 1,000		10 ... 1,600	
	Quantity	Nominal pressure per piece [lb/in ²]	Quantity	Nominal pressure per piece [lb/in ²]	Quantity	Nominal pressure per piece [lb/in ²]	Quantity	Nominal pressure per piece [lb/in ²]	Quantity	Nominal pressure per piece [lb/in ²]	Quantity	Nominal pressure per piece [lb/in ²]
Piston	1	0.2	1	0.2	1	1	1	3	1	10	1	10
Standard mass set	1	0.05	1	0.05	1	4	1	7	2	10	2	10
	1	0.1	1	0.1	2	5	1	90	1	180	1	180
	2	0.2	2	0.2	8	10	2	100	3	200	6	200
	1	0.5	1	0.5	2	2	1	50	1	100	1	100
	1	0.8	1	0.8	1	1	2	20	2	40	2	40
	1	1	1	1	1	0.5	1	10	1	20	1	20
	2	2	2	2	-	-	1	5	1	5	1	5
	2	4	2	4	-	-	-	-	-	-	-	-
Set of fine increment masses	-	-	1	15	-	-	-	-	-	-	-	-
	-	-	-	-	2	0.2	2	2	1	4	1	4
	-	-	-	-	1	0.1	1	1	1	2	1	2
	-	-	-	-	1	0.05	1	0.5	1	1	1	1
	-	-	-	-	-	-	2	0.2	2	0.4	2	0.4
-	-	-	-	-	-	1	0.1	1	0.2	1	0.2	

1) Other ranges like "inch of wather (inH₂O)" and "millimetre of wather (mmH₂O)" also available on request.

Measuring range [kPa] ¹⁾	1.5 ... 100		1.5 ... 200		10 ... 700		20 ... 2,500		100 ... 7,000		100 ... 12,000	
	Quantity	Nominal pressure per piece [kPa]	Quantity	Nominal pressure per piece [kPa]	Quantity	Nominal pressure per piece [kPa]	Quantity	Nominal pressure per piece [kPa]	Quantity	Nominal pressure per piece [kPa]	Quantity	Nominal pressure per piece [kPa]
Piston and make-up weight	1	1.5	1	1.5	1	10	1	20	1	100	1	100
Standard mass set	1	0.5	1	0.5	1	40	1	30	2	100	2	100
	3	2	3	2	2	50	1	450	5	1,000	1	1,800
	2	1	2	1	5	100	3	500	1	900	4	2,000
	6	5	6	5	2	20	2	200	2	400	1	1,000
	6	10	6	10	1	10	1	100	1	200	2	400
	-	-	1	100	1	5	1	50	1	50	1	200
Set of fine increment masses	-	-	-	-	-	-	-	-	-	-	1	50
	-	-	-	-	2	2	2	20	1	40	1	40
	-	-	-	-	1	1	1	10	1	20	1	20
	-	-	-	-	1	0.5	1	5	1	10	1	10
	-	-	-	-	-	-	2	2	2	4	2	4
-	-	-	-	-	-	1	1	1	2	1	2	

1) Other ranges like "inch of wather (inH₂O)" and "millimetre of wather (mmH₂O)" also available on request.

Specifications

Piston-cylinder system						
Measuring range in bar ¹⁾	0.015 ... 1	0.015 ... 2	0.1 ... 7	0.2 ... 25	1 ... 70	1 ... 120
Required masses	3.3 kg	6.54 kg	22.5 kg	21 kg	29 kg	49.5 kg
Smallest step ²⁾ (Standard mass set)	0.005 bar	0.005 bar	0.05 bar	0.3 bar	0.5 bar	0.5 bar
Smallest step ³⁾ (Set of fine increment masses)	--	--	0.005 bar	0.01 bar	0.02 bar	0.02 bar
Measuring range in lb/in² ¹⁾	0.2 ... 15	0.2 ... 30	1 ... 100	3 ... 400	15 ... 1,000	10 ... 1,600
Required masses	3.3 kg	6.54 kg	22.6 kg	22.4 kg	26.9 kg	45.5 kg
Smallest step ²⁾ (Standard mass set)	0.05 lb/in ²	0.05 lb/in ²	0.5 lb/in ²	5 lb/in ²	5 lb/in ²	5 lb/in ²
Smallest step ³⁾ (Set of fine increment masses)	--	--	0.05 lb/in ²	0.1 lb/in ²	0.2 lb/in ²	0.2 lb/in ²
Measuring range in kPa ¹⁾	1.5 ... 100	1.5 ... 200	10 ... 700	20 ... 2,500	100 ... 7,000	100 ... 12,000
Required masses	3.3 kg	6.54 kg	22.5 kg	21 kg	29 kg	49.5 kg
Smallest step ²⁾ (Standard mass set)	0.5 kPa	0.5 kPa	5 kPa	30 kPa	50 kPa	50 kPa
Smallest step ³⁾ (Set of fine increment masses)	--	--	0.5 kPa	1 kPa	2 kPa	2 kPa
Nominal effective area of the piston	1/2 in ²	1/2 in ²	1/2 in ²	1/8 in ²	1/16 in ²	1/16 in ²
Accuracies						
Standard ⁴⁾	0.015 % of reading					
Premium ⁵⁾	0.008 % of reading		0.006 % of reading		0.008 % of reading	
Material						
Piston	High-chromium steel			Tungsten carbide	High-chromium steel	
Cylinder	High-alloy heat-treatable stainless steel			Tungsten carbide	Bronze	
Mass set	Stainless steel, non-magnetic					
Weight						
Piston-cylinder system	0.5 kg [1.1 lb]	0.5 kg [1.1 lb]	1 kg [2.2 lb]	1 kg [2.2 lb]	2 kg [4.4 lb]	2 kg [4.4 lb]
bar mass set incl. mass carrier	4 kg [8.8 lb]	7.6 kg [16.8 lb]	23 kg [50.8 lb]	24 kg [53.0 lb]	32 kg [70.7 lb]	53 kg [117 lb]
kPa mass set incl. mass carrier	4 kg [8.8 lb]	7.6 kg [16.8 lb]	23 kg [50.8 lb]	24 kg [53.0 lb]	32 kg [70.7 lb]	53 kg [117 lb]
lb/in ² mass set incl. mass carrier	4 kg [8.8 lb]	7.6 kg [16.8 lb]	23 kg [50.8 lb]	24 kg [53.0 lb]	30 kg [66.3 lb]	49 kg [108 lb]
lb/in ² extension mass set, (incl. carrying case)	11.0 kg [24.3 lb]					18.5 kg [40.9 lb]
Storage case for mass set	5.8 kg [12.8 lb]					
Dimensions of the storage case (W x H x D)						
For extension mass set	215 x 310 x 310 mm [8.5 x 12.2 x 12.2 in]					
For basic mass set	400 x 310 x 310 mm [15.8 x 12.2 x 12.2 in]					
For mass set	300 x 265 x 205 mm [11.8 x 10.4 x 8.1 in] ⁶⁾		400 x 310 x 310 mm and 215 x 310 x 310 mm [15.8 x 12.2 x 12.2 in and 8.5 x 12.2 x 12.2 in]			

1) Theoretical starting value; corresponds to the pressure value generated by the piston or the piston and its make-up weight (by their own weight). To optimise the operating characteristics more masses should be loaded.

2) The smallest pressure change value that can be achieved based on the standard mass set.

3) The smallest pressure change value that can be achieved based on the set of fine increment masses. For further reductions, an accessory of class M1 or F1 set of fine increment masses is available.

4) The accuracy is in reference to the measured value, from 10 % of the measuring range to compensate for actual area of piston unit. Standard accuracy without any corrections for the actual area down to 0.02 % (0.03 % of reading below 10 % of range). For the range 0.015 ... 1 bar the accuracy below 10 % of the range is 0.04 % of reading.

5) Available as high-accuracy class dead-weight testers supplied with UKAS calibration certificates for area and mass.

6) Piston and mass set can be supplied in a flight box.

Base		
Base version		
Pneumatic, low pressure	Up to max. 10 bar [150 lb/in ²]; with internal pressure generation	
Pneumatic, high pressure/vacuum	Up to max. 120 bar [1,600 lb/in ²]; for external supply and vacuum	
Connections		
Connection for piston-cylinder system	<ul style="list-style-type: none"> ■ G 1 female thread with adaptation ■ ConTect quick-release connector 	
Test connection	<ul style="list-style-type: none"> ■ Quick connector G ½ B female thread, freely rotating, changeable → Further threaded inserts, see accessories 	
External pressure connection	<ul style="list-style-type: none"> ■ 6 mm SWAGELOK® threaded pipe connection; max. 110 % of the assigned measuring range ■ With pneumatic high-pressure/vacuum base version and with separator 	
Pressure transmission medium		
Base	Pneumatic based on clean, dry and non-corrosive gases (e.g. air or nitrogen)	
Material		
Piping in base	Pneumatic low pressure	Plastic tubing from polyurethane, 4 x 0.75 mm
	Pneumatic high pressure/vacuum	1.4571 stainless steel, 3 x 1 mm
Weight		
Pneumatic base	<ul style="list-style-type: none"> ■ Low-pressure version ■ High-pressure version 	18.0 kg [39.8 lb]
	<ul style="list-style-type: none"> ■ Low-pressure version, incl. ConTect quick-release connector ■ High-pressure version, incl. ConTect quick-release connector 	19.0 kg [42.0 lb]
Dimensions (W x D x H)		
Base	401 x 375 x 265 mm [15.8 x 14.8 x 10.4 in] → For details, see technical drawings	

Operating conditions	
Operating temperature	18 ... 28 °C [64 ... 82 °F]
Storage temperature range	-10 ... +50 °C [14 ... 122 °F]
Relative humidity, condensation (place of storage)	<ul style="list-style-type: none"> ■ 35 ... 85 % relative humidity for instrument base and mass set (non-condensing) ■ 35 ... 65 % relative humidity for piston-cylinder system (non-condensing)

Approvals

Logo	Description	Region
EAC	EAC	Eurasian Economic Community
	EMC directive	
	Pressure Equipment Directive	
	Machinery Directive	
-	MChS Permission for commissioning	Kazakhstan

Certificates

Certificate	
Calibration	
Set of fine increment mass CPM5000	<ul style="list-style-type: none"> ■ Without ■ 3.1 inspection certificate per DIN EN 10204 (factory calibration) ■ UKAS calibration certificate (pressure calibration with a piston-cylinder system) ■ UKAS calibration certificate (mass calibration)
Piston-cylinder system CPS5000	<ul style="list-style-type: none"> ■ 3.1 inspection certificate per DIN EN 10204 (factory calibration) ■ UKAS calibration certificate (pressure calibration with a mass set) ■ DAkkS calibration certificate (traceable and accredited in accordance with ISO/IEC 17025)
Recommended calibration interval	2 to 5 years (dependent on conditions of use)

Patents, property rights

Patent number	Description
EP 1475624	ConTect quick-release system

→ Approvals and certificates, see website

Transport dimensions for complete instrument

The complete instrument, in its standard version and standard scope of delivery, consists of up to 3 packages on a single pallet.

The dimensions are 1,200 x 800 x 500 mm [47.3 x 31.5 x 19.7 in].

The overall weight is dependent on the measuring range.

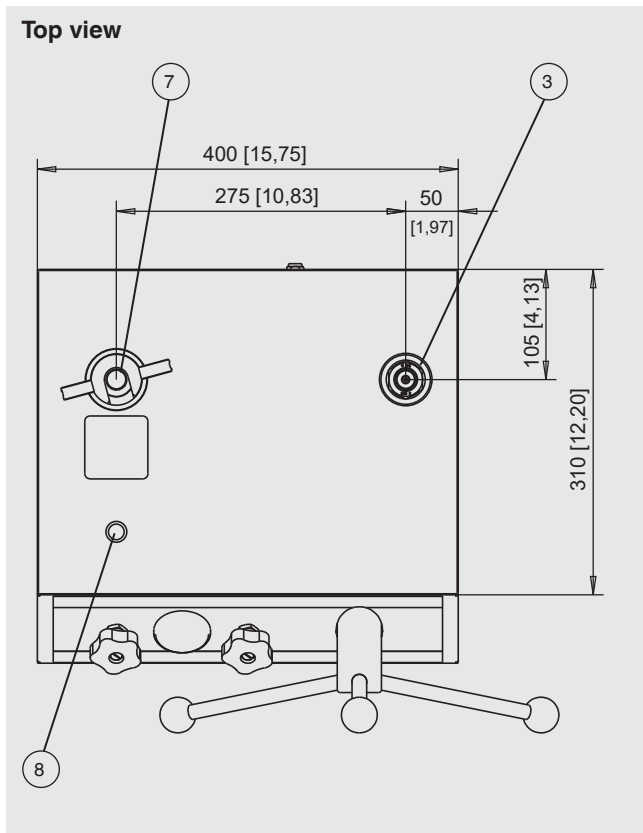
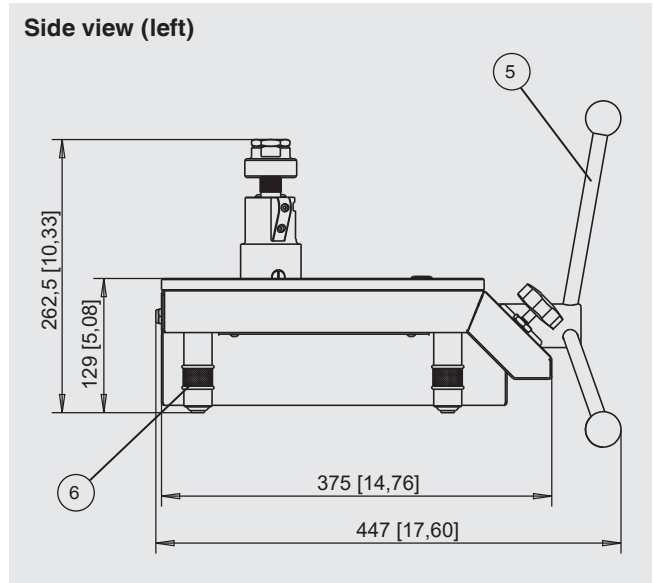
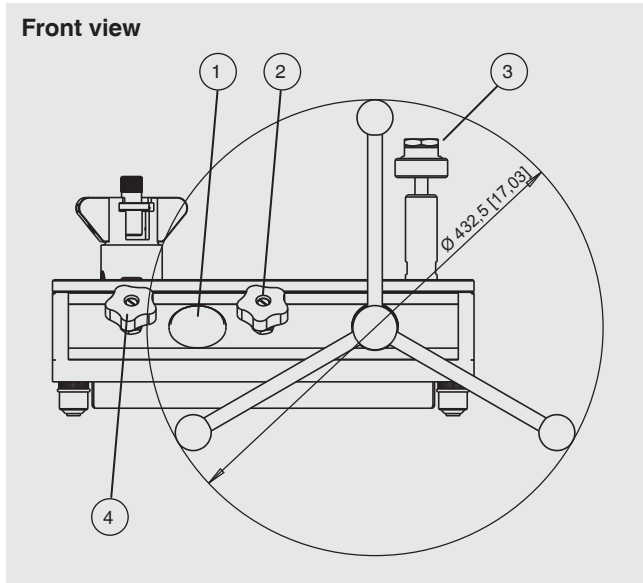
Version in bar	Weight			
	net		gross	
0.015 ... 1 bar	14 kg	[30.9 lb]	35 kg	[77.2 lb]
0.015 ... 2 bar	17.6 kg	[38.8 lb]	38.6 kg	[85.1 lb]
0.1 ... 7 bar	34 kg	[75.0 lb]	55 kg	[121.3 lb]
0.2 ... 25 bar	32 kg	[70.6 lb]	53 kg	[116.9 lb]
1 ... 70 bar	36 kg	[79.4 lb]	57 kg	[125.7 lb]
1 ... 120 bar	62 kg	[136.7 lb]	83 kg	[183.0 lb]

Version in lb/in ²	Weight			
	net		gross	
0.2 ... 15	14 kg	[30.9 lb]	35 kg	[77.2 lb]
0.2 ... 30	17.6 kg	[38.8 lb]	38.6 kg	[85.1 lb]
1 ... 100 lb/in ²	34 kg	[75.0 lb]	55 kg	[121.3 lb]
3 ... 400 lb/in ²	34 kg	[75.0 lb]	55 kg	[121.3 lb]
15 ... 1,000 lb/in ²	36 kg	[79.4 lb]	57 kg	[125.7 lb]
10 ... 1,600 lb/in ²	58 kg	[127.9 lb]	79 kg	[174.2 lb]

Version in kPa	Weight			
	net		gross	
1.5 ... 100 kPa	14 kg	[30.9 lb]	35 kg	[77.2 lb]
1.5 ... 200 kPa	17.6 kg	[38.8 lb]	38.6 kg	[85.1 lb]
10 ... 700 kPa	34 kg	[75.0 lb]	55 kg	[121.3 lb]
20 ... 2,500 kPa	32 kg	[70.6 lb]	53 kg	[116.9 lb]
100 ... 7,000 kPa	36 kg	[79.4 lb]	57 kg	[125.7 lb]
100 ... 12,000 kPa	62 kg	[136.7 lb]	83 kg	[183.0 lb]

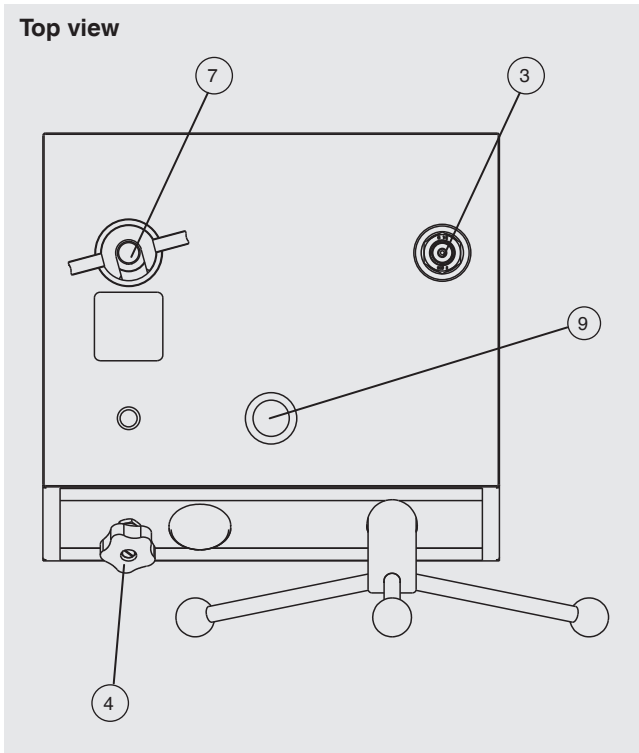
Dimensions in mm [in]

The figure shows a CPB5000 pneumatic high-pressure base unit with the ConTect quick-release connector version. The versions for pneumatic low pressure and pneumatic with integrated gas to oil separator do not differ from it dimensionally, only in the arrangement of the control elements.

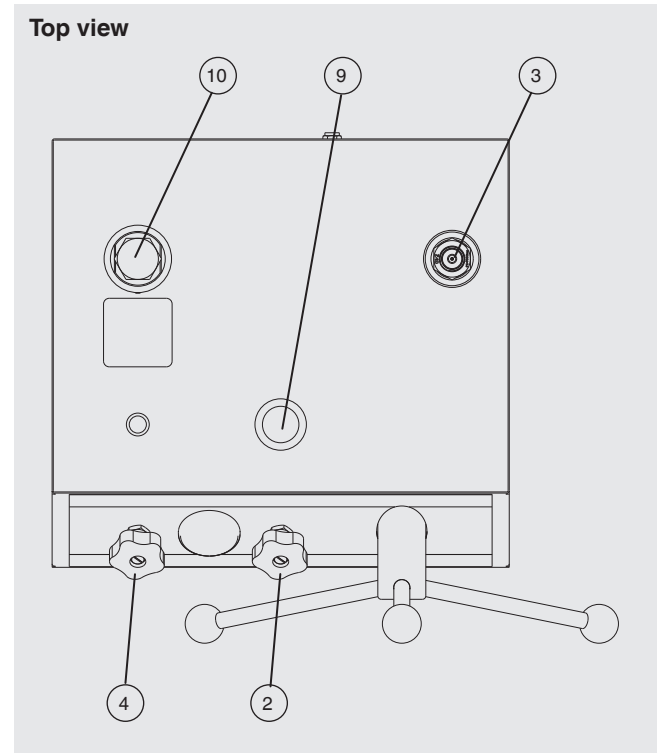


- ① Test pressure gauge
- ② Inlet valve (not for pneumatic low pressure)
- ③ Test connection
- ④ Vent valve
- ⑤ Spindle pump with star handle, removable
- ⑥ Levelling feet
- ⑦ Connector for piston-cylinder system
- ⑧ Water level

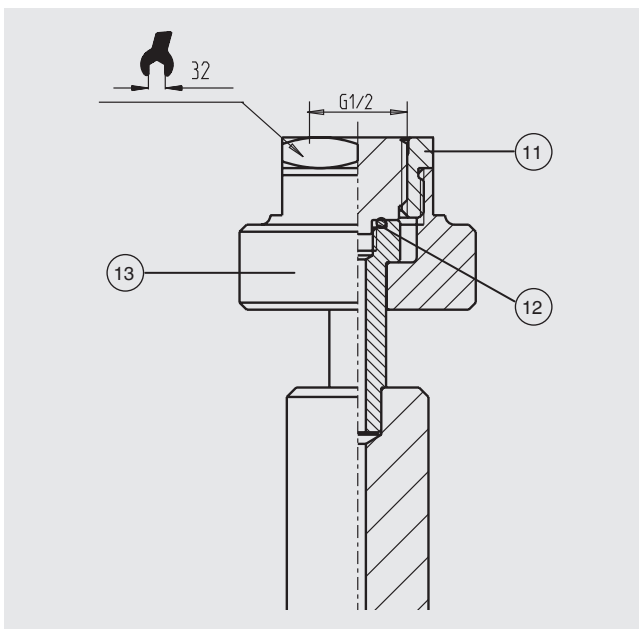
Pneumatic base, low pressure



Pneumatic base with integrated gas to oil separator



Test connection



- ② Inlet valve (not for pneumatic low pressure)
- ③ Test connection
- ④ Vent valve
- ⑦ Connector for piston-cylinder system
- ⑨ Priming pump
- ⑩ Connector for piston-cylinder system with integrated gas to oil separator
- ⑪ Threaded insert, changeable
- ⑫ O-ring 8 x 2
- ⑬ Quick-release connector with knurled nut

CalibratorUnit model CPU6000

The models of the CPU6000 series are compact tools for use with a pressure balance (dead-weight tester). In particular when highly accurate measuring values, with measurement uncertainties of less than 0.025 %, are required, complicated mathematical calculations and corrections are necessary. With the CPU6000 in combination with the WIKA-Cal (PC software) all critical ambient parameters can be registered and automatically corrected.

The CPU6000 series is made up of three instruments

Weather station, model CPU6000-W

The CPU6000-W provides measured values such as atmospheric pressure, relative humidity and the ambient temperature of the laboratory environment.

Pressure balance sensor box, model CPU6000-S

The CPU6000-S measures the piston temperature and displays the floating position of the masses.

Typical application

WIKA-Cal PC software and mass calculator

With the demo version of the WIKA-Cal software and a CPB series pressure balance (dead-weight tester), the masses to be applied and the corresponding reference pressure can be determined. The pressure balance data (dead-weight tester data) can be entered into the database manually or imported automatically via an XML file available online.

All ambient parameters and piston temperature can be entered manually into WIKA-Cal or can be measured automatically with the CPU6000 series, so that the highest accuracy can be achieved. WIKA-Cal demo version can be downloaded free of charge from the WIKA website.

Further specifications on the CPU6000 series can be found in data sheet CT 35.02.

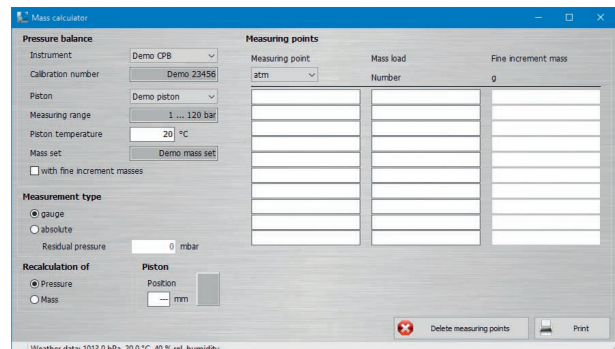
For details of the WIKA-Cal calibration software see data sheet CT 95.10.



CPU6000 series



Model CPU6000-W, CPU6000-S, CPB5800 and PC with WIKA-Cal software



WIKA-Cal PC software and mass calculator

Further pressure balances (dead-weight testers) within our calibration technology programme

Dead-weight tester, compact design, model CPB3800

Measuring ranges

Hydraulic	1 ... 120 to 10 ... 1,200 bar [10 ... 1,600 to 100 ... 16,000 lb/in ²]
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Accuracy	■ 0.05 % of reading
	■ 0.025 % of reading

→ For specifications, see data sheet CT 31.06



Dead-weight tester, compact design, model CPB3800

Pressure balance, high-pressure version, model CPB5000HP

Measuring ranges

Hydraulic	40 ... 6,000 bar [400 ... 90,000 lb/in ²]
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Accuracy	■ 0.025 % of reading
	■ 0.02 % of reading

→ For specifications, see data sheet CT 31.51



Pressure balance, high-pressure version, model CPB5000HP

Pressure balance, hydraulic version, model CPB5800

Measuring ranges

Hydraulic	Single-piston measuring ranges: 1 ... 120 to 2 ... 300 bar [10 ... 1,600 to 30 ... 4,000 lb/in ²]
	Dual-piston measuring ranges: 1 ... 60 bar / 10 ... 700 bar to 1 ... 60 bar / 20 ... 1,400 bar [10 ... 800 lb/in ² / 100 ... 10,000 lb/in ² to 10 ... 800 lb/in ² / 200 ... 20,000 lb/in ²]

Accuracy	■ 0.015 % of reading
	■ up to 0.006 % of reading

→ For specifications, see data sheet CT 31.11



Pressure balance, hydraulic version, model CPB5800

Pressure balance, differential pressure version, model CPB5600DP

Measuring ranges (= static pressure + differential pressure):

Pneumatic	0.03 ... 2 to 0.4 ... 100 bar [0.435 ... 30 to 5.8 ... 1,500 lb/in ²]
Hydraulic	0.2 ... 60 to 25 ... 1,600 bar [2.9 ... 1,000 to 350 ... 23,200 lb/in ²]

Accuracy	■ 0.015 % of reading
	■ 0.008 % of reading

→ For specifications, see data sheet CT 31.56



Pressure balance, differential pressure version, model CPB5600DP

Accessories

Adapter sets for quick-release connector

As standard, the pressure balance (dead-weight tester) is equipped with a quick-release connector for connecting the test item. For this purpose, the following threaded inserts, which can be easily changed, are available:

Adapter set		
Adapter set with	■ G ¼	■ ¼ NPT
	■ G ⅜	■ ½ NPT
	■ M20 x 1.5	
Adapterset NPT mit	■ ⅛ NPT	■ ⅜ NPT
	■ ¼ NPT	■ ½ NPT

Additionally, the adapter sets include spare O-rings as well as a spanner with SW 32 flats and SW 14 flats, for changing the adapters.

Other threaded inserts are available on request.



Adapter set

Dirt trap

For strongly soiled test items, a dirt trap should be used. This helps prevent the ingress of contaminants into the pressure balance (dead-weight tester).



Dirt trap

Set of fine increment masses M1 and F1


The masses included in the standard scope of delivery are ideally suited for everyday use. If even smaller intermediate values need to be generated, using one of the class M1 or F1 set of fine increment masses with the following masses is recommended.


Set of fine increment masses M1 and F1		
Fine increment masses	■ 1 x 50 g	■ 1 x 100 mg
	■ 2 x 20 g	■ 1 x 50 mg
	■ 1 x 10 g	■ 2 x 20 mg
	■ 1 x 5 g	■ 1 x 10 mg
	■ 2 x 2 g	■ 1 x 5 mg
	■ 1 x 1 g	■ 2 x 2 mg
	■ 1 x 500 mg	■ 1 x 1 mg
	■ 2 x 200 mg	



Set of fine increment masses

Accessories and spare parts

Description ¹⁾	Order code	
CPB-A-AA-		
	Set of fine increment masses model CPM3500 In bar, accuracy class M1	-2-
	In lb/in ² , accuracy class M1	-3-
	In kPa, accuracy class M1	-4-
	Adapter set "BSP" for test connection G ½ B, male thread on G ⅛, G ¼, G ⅜ and G ½, female thread	-5-
	Adapter set "NPT" for test connection G ½ B, male thread on ⅛ NPT, ¼ NPT, ⅜ NPT and ½ NPT, female thread	-6-
	Adapter set "metric" for test connection G ½ B, male thread on M12 x 1.5 and M20 x 1.5, female thread	-7-
	Vacuum adapter For measuring ranges 1 bar and 100 kPa only (Model 24)	-8-
-	Storage case For model CPB3500 instrument base and piston-cylinder system	-A-
	Two storage cases For mass set	-B-
-	Test connection G 1 B, male thread to G ½, female thread, rotating	-C-
	Dual test connection G 1 B, male thread to G ½, female thread, rotating (model 27)	-D-
	Separator 0 ... 35 bar (Model 35)	-E-
	Hydraulic fluid based on VG22 mineral oil In plastic bottle, content 0.5 litre	-F-
	Sealing and maintenance set For instrument base model CPB3500	-G-

Description ¹⁾		Order code
 <p>Tool set Consisting of:</p> <ul style="list-style-type: none"> ■ Open-ended spanners ■ BSP adapter ■ Replacement seals ■ Pointer remover ■ Pointer punch 		CPB-A-AA- -H-
Ordering information for your enquiry		
<p>1. Order code: CPP-A-AA 2. Option:</p>		↓ []

1) The figures are an example and may change depending on the state of the art in design, material composition and representation

Scope of delivery

For all base versions

- Base with dust protection cover
Priming pump
- Spindle pump for filling, pressure generation and fine pressure adjustment
- Piston connection with M30 x 2 female thread
- Quick connector for test items
- Piston-cylinder system with mass carrier
- Basic mass set in carrying case
- Extension mass set in carrying case (depending on the measuring range)
- Masses manufactured to standard gravity (standard value: 9.80665 m/s²) or manufactured to local gravity
- Sealing set for base CPB5000
- Tool set
- Operating instructions
- Calibration certificate(s)

Ordering information

Instrument base

CPB5000 / Instrument version / Threaded inserts for test connections / Connection of the piston-cylinder system / Piston-cylinder system / Mass set / Installation of CPU6000-S Calibrator Unit sensor technology / Calibration for mass set / Further approvals / Additional ordering information

Piston-cylinder system

CPS5000 / Version / Connection of the piston-cylinder system / Accuracy / Measuring range / Storage case for piston-cylinder systems / Calibration for ConTect system / Additional ordering information

Set of fine increment mass

CPM3500 / Gravity / Mass set / Storage case / Calibration for mass set / Additional ordering information

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We reserve the right to make modifications to the specifications and materials.
In case of a different interpretation of the translated and the English data sheet, the English wording shall prevail.

