

DOS series

oil deadweight testers

DOS0015

The oil operated deadweight tester DOS0015 has an accuracy of 0.015% of reading. This is a typical deadweight tester for industrial use and the weight set is transferred into a pressure unit. A traceable certificate is standard and a RVA certificate is possible as an option. The certificate shows the effective area as well as a list of the weight of each mass. The deadweight tester can be leveled with adjustable feet. An extra set of adjustable feet are included for fixing the deadweight tester to a bench. Five different pistons are available to cover ranges from 0.25 – 25 bar up to 10 – 1400 bar. Also ranges in psi, kPa, MPa and kg/cm² are available.



Ranges

A list of masses corresponding with the ranges is listed below. For small pressure steps a fractional weight set is available as an option.

bar		Piston number and measuring range				Standard								Optional	
mass set		No. 1				mass set and equivalent of mass in bar								No. 1	
		No. 2				0.25	0.025	0.05	0.25	0.5	2.5	5	0.0025	0.005	
		No. 3				0.5	0.05	0.1	0.5	1	5	10	0.005	0.01	
		No. 4				1	0.1	0.2	1	2	10	20	0.01	0.02	
		No. 5				5	0.25	0.5	2.5	5	25	50	0.025	0.05	
						10	0.5	1	5	10	50	100	0.05	0.1	
kg	Range [bar]	Range [bar]	Range [bar]	Range [bar]	Range [bar]	carrier	number of masses								
20	0.25 - 25	0.5 - 50	1 - 100	5 - 250	10 - 500	1	1	4	1	4	1	4	1	4	
24	0.25 - 30	0.5 - 60	1 - 120	5 - 300	10 - 600	1	1	4	1	4	1	5	1	4	
28	0.25 - 35	0.5 - 70	1 - 140	5 - 350	10 - 700	1	1	4	1	4	1	6	1	4	
32	0.25 - 40	0.5 - 80	1 - 160	5 - 400	10 - 800	1	1	4	1	4	1	7	1	4	
36	0.25 - 45	0.5 - 90	1 - 180	5 - 450	10 - 900	1	1	4	1	4	1	8	1	4	
40	0.25 - 50	0.5 - 100	1 - 200	5 - 500	10 - 1000	1	1	4	1	4	1	9	1	4	
44	0.25 - 55	0.5 - 110	1 - 220	5 - 550	10 - 1100	1	1	4	1	4	1	10	1	4	
48	0.25 - 60	0.5 - 120	1 - 240	5 - 600	10 - 1200	1	1	4	1	4	1	11	1	4	
52	0.25 - 65	0.5 - 130	1 - 260	5 - 650	10 - 1300	1	1	4	1	4	1	12	1	4	
56	0.25 - 70	0.5 - 140	1 - 280	5 - 700	10 - 1400	1	1	4	1	4	1	13	1	4	

psi		Piston number and measuring range				Standard								Optional	
mass set		No. 1				Mass set and equivalent of mass in psi								No. 1	
		No. 2				5	0,5	1	5	10	50	100	0.05	0.1	
		No. 3				10	1	2	10	20	100	200	0.1	0.2	
		No. 4				20	2	4	20	40	200	400	0.2	0.4	
		No. 5				100	5	10	50	100	500	1000	0.5	1	
						200	10	20	100	200	1000	2000	1	2	
kg	Range [psi]	Range [psi]	Range [psi]	Range [psi]	Range [psi]	carrier	number of masses								
22	5 - 400	10 - 800	20 - 1600	100 - 4000	200 - 8000	1	1	4	1	4	1	3	1	4	
28	5 - 500	10 - 1000	20 - 2000	100 - 5000	200 - 10000	1	1	4	1	4	1	4	1	4	
33	5 - 600	10 - 1200	20 - 2400	100 - 6000	200 - 12000	1	1	4	1	4	1	5	1	4	
39	5 - 700	10 - 1400	20 - 2800	100 - 7000	200 - 14000	1	1	4	1	4	1	6	1	4	
44	5 - 800	10 - 1600	20 - 3200	100 - 8000	200 - 16000	1	1	4	1	4	1	7	1	4	
50	5 - 900	10 - 1800	20 - 3600	100 - 9000	200 - 18000	1	1	4	1	4	1	8	1	4	
55	5 - 1000	10 - 2000	20 - 4000	100 - 10000	200 - 20000	1	1	4	1	4	1	9	1	4	

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DOS0015 Dual Piston

The oil operated deadweight tester DOS0015 dual piston has the same features as the normal DOS0015. By using two pistons of different sizes, a larger measuring range is achieved. The pistons can easily be interchanged within minutes. A wooden box is used to safely store the pistons and cylinders.



Ranges

Both piston cylinders could be used on one weight set. The piston cylinders are made in such a way that the same weight creates for instance for the low range 10 bar and for the high range 100 bar.

For each combination of pistons the table gives a list of masses corresponding with the ranges.

Piston number	No. 1	No. 2	No. 3	No. 4	No. 5	
Ratio	1:	1	2	4	10	20

Example

If a deadweight tester is needed for 0.5 up to 1000 bar a dual piston can be used.

See the table on page 5:

mass set of 40 kg (first column)

piston no. 2 gives 0.5 ... 100 bar

piston no. 5 gives 10 ... 1000 bar

Above table gives the piston ratio.

piston no. 2: ratio 2

piston no. 5: ratio 20

The ratio between both pistons is 2:20 or 1:10. This means that a weight (in this example the largest weight). See table on page 5 the column with the biggest mass/pressure: for piston no. 2 is 10 bar and the same weight makes 100 bar for the piston no.5

Transport cases



Aluminum case



Flight case

DOS series

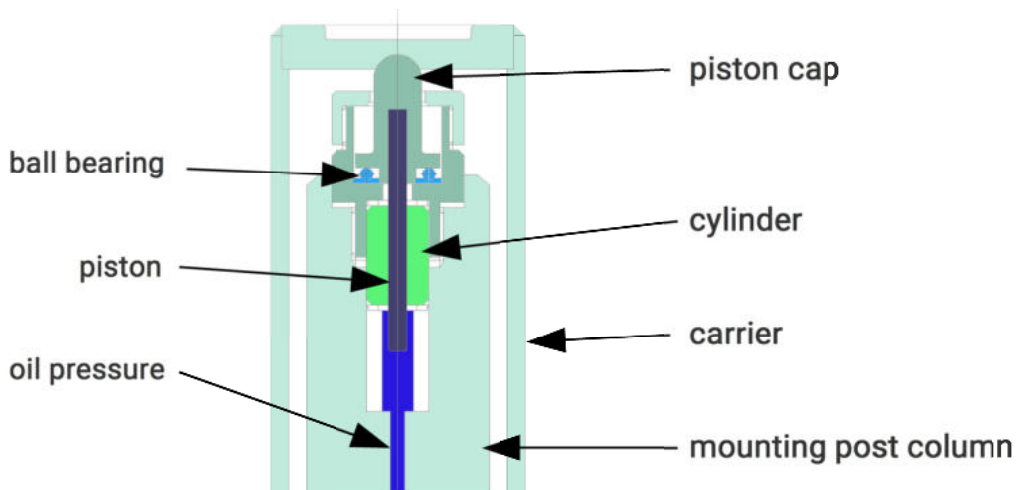
oil deadweight testers

DOS001

The oil operated deadweight tester DOS001 has an accuracy of 0.01% of reading. The weight column and pump are mounted on a stainless steel base plate. A triangle frame is used to make a steady and firm base for the weight column and can be leveled out by a spirit level. The weight carrier is of a hanging type and therefore insensible for any negative influences like friction of a support piston. The picture below shows the design of a DOS001. An EA RVA certificate by an accredited third party is standard. The certificate shows the effective area as well as the weight of each mass.



Design of DOS001/DOS0008



DOS0008

The oil operated deadweight tester DOS0008 has an accuracy of 0.008% of reading. The design is similar to the DOS001, but the piston cylinder assembly is even more accurate. To correct the temperature influence a PT100 with LCD display is applied.

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Mass set for DOS001 and DOS0008

The oil deadweight tester DOS001 and DOS0008 can be ordered with different mass sets. Mostly it is delivered in kg. With the mentioned formula and the data listed in the certificate the best accuracy is achieved. By ordering the mass set in a pressure unit (for instance bar, psi or kg/cm²) the deadweight tester can be used without using the formula. In this case the disagreement is larger than by using the formula. The weight set can be adjusted to the local gravity to increase the accuracy.

Ranges

A list of masses corresponding with the ranges is listed below. Five different diameter of pistons are available to cover a wide pressure range. For small pressure steps a fractional weights set is available as an option.

bar	Piston number and measuring range					Standard										Optional											
						Mass set and equivalent of mass in bar																					
mass set	No. 1		No. 2			No. 3				No. 4				No. 5		1.25	0.025	0.05	0.125	0.25	0.5	1.25	2.5	5	10	0.0025	0.005
	No. 2		No. 3			No. 4				No. 5		2.5	0.05	0.1	0.25	0.5	1	2.5	5	10	20	50	100	0.005	0.01		
	No. 3		No. 4			No. 5		5	0.1	0.2	0.5	1	2	5	10	20	50	100	200	500	1000	2000	0.01	0.02			
	No. 4		No. 5			12.5	0.25	0.5	1.25	2.5	5	12.5	25	50	100	200	500	1000	2000	5000	10000	0.025	0.05				
	No. 5		25	0.5	1	2.5	5	10	25	50	100	250	500	1000	2000	5000	10000	20000	50000	100000	0.05	0.1					
kg	Range bar	Range bar	Range bar	Range bar	Range bar	carrier	number of masses																				
16	1.25-20	2.5-40	5-80	12.5-200	25-400	1	1	2	1	1	2	1	1	3	1	4											
24	1.25-30	2.5-60	5-120	12.5-300	25-600	1	1	2	1	1	2	1	1	5	1	4											
32	1.25-40	2.5-80	5-160	12.5-400	25-800	1	1	2	1	1	2	1	1	7	1	4											
40	1.25-50	2.5-100	5-200	12.5-500	25-1000	1	1	2	1	1	2	1	1	9	1	4											
48	1.25-60	2.5-120	5-240	12.5-600	25-1200	1	1	2	1	1	2	1	1	11	1	4											
56	1.25-70	2.5-140	5-280	12.5-700	25-1400	1	1	2	1	1	2	1	1	13	1	4											
64*					40-1600	1	1	2	1	1	2	1	1	15	1	4											
72*					40-1800	1	1	2	1	1	2	1	1	17	1	4											
80*					40-2000	1	1	2	1	1	2	1	1	19	1	4											

* DOS001 high: modified design

psi	Piston number and measuring range					Standard										Optional										
						Mass set and equivalent of mass in psi																				
mass set	No. 1		No. 2			No. 3				No. 4				No. 5		20	0.5	1	2.5	5	10	25	50	100	0.05	0.1
	No. 2		No. 3			No. 4				No. 5		40	1	2	5	10	20	50	100	200	400	800	1600	0.1	0.2	
	No. 3		No. 4			No. 5		80	2	4	10	20	40	100	200	400	800	1600	3200	6400	12800	0.2	0.4			
	No. 4		No. 5			200	5	10	25	50	100	250	500	1000	2000	5000	10000	20000	50000	100000	200000	0.5	1			
	No. 5		400	10	20	50	100	200	500	1000	2000	5000	10000	20000	50000	100000	200000	500000	1000000	2000000	5000000	1	2			
kg	Range psi	Range psi	Range psi	Range psi	Range psi	carrier	number of masses																			
16	20-300	40-600	100-1200	200-3000	400-6000	1	1	2	1	1	2	1	1	2	1	4										
22	20-400	40-800	100-1600	200-4000	400-8000	1	1	2	1	1	2	1	1	3	1	4										
28	20-500	40-1000	100-2000	200-5000	400-10000	1	1	2	1	1	2	1	1	4	1	4										
33	20-600	40-1200	100-2400	200-6000	400-12000	1	1	2	1	1	2	1	1	5	1	4										
39	20-700	40-1400	100-2800	200-7000	400-14000	1	1	2	1	1	2	1	1	6	1	4										
44	20-800	40-1600	100-3200	200-8000	400-16000	1	1	2	1	1	2	1	1	7	1	4										
50	20-900	40-1800	100-3600	200-9000	400-18000	1	1	2	1	1	2	1	1	8	1	4										
55	20-1000	40-2000	100-4000	200-10000	400-20000	1	1	2	1	1	2	1	1	9	1	4										
61*					500-22000	1	1	2	1	1	2	1	1	10	1	4										
66*					500-24000	1	1	2	1	1	2	1	1	11	1	4										
72*					500-26000	1	1	2	1	1	2	1	1	12	1	4										
77					500-28000	1	1	2	1	1	2	1	1	13	1	4										

* DOS001 high: modified design