

DGS series

gas deadweight testers

DGS001

The gas operated deadweight tester DGS001 has an accuracy of 0.01% of reading. The piston cylinder assembly is made of tungsten carbide which is extremely hard and wear-resistant. The weight column is 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. 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.



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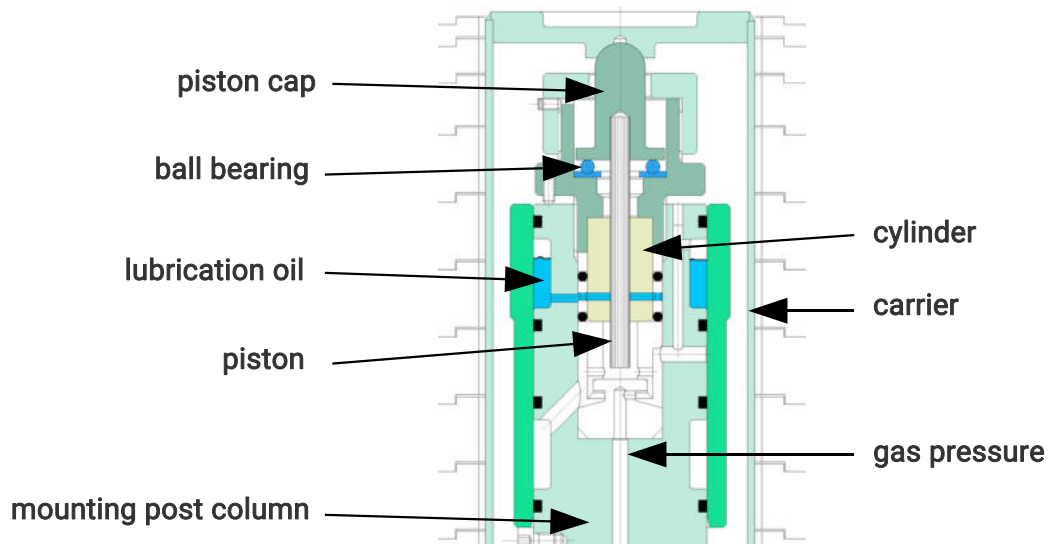
Oil lubricated / gas operated

The oil lubricated / gas operated piston of the DGS series is specially designed to have superior performance at higher gas pressures without the problems of gas lubricated / gas operated pistons cylinders. They have better sensitivity than oil lubricated pistons, however the natural drop rate is much higher at high line-pressure. Which makes them very difficult to operate. Oil lubricated pistons have no significant drop rate as the oil acts as a seal.

There are a lot of deadweight tester manufacturers who claim oil lubrication / gas operation, but they use a traditional oil / oil piston and an oil-gas interface. The biggest and obvious disadvantage of this solution is that the surface level of the oil-gas interface precisely has to be known. The added uncertainty especially in high line-pressure applications make this solution not ideal. The piston cylinder assembly of the DGS series is significantly different. The oil is lead to the gap between piston and cylinder by means of an oil reservoir around the cylinder. As the oil surface is slightly higher than the entry bore in the cylinder, the oil pressure is also slightly higher than the gas pressure, ensuring enough lubrication between piston and cylinder. The benefits of this design are:

- excellent turning time of the piston;
- very small fall rate (also at higher pressures);
- excellent leak rate, because the oil acts as a seal;
- the oil avoids dirt and dust entrance between piston and cylinder.

Design of DGS001



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Ranges

A list of masses corresponding with the ranges is listed below. Three different piston cylinders are available. For small pressure steps, a fractional weight set is optionally available.

				Standard									Optional	
bar	Piston number and measuring range			Mass set and equivalent of mass in bar										
mass set	No. 1		No. 2	1.25	0.025	0.05	0.125	0.25	0.5	1.25	2.5	5	0.0025	0.005
	No. 2			2.50	0.05	0.1	0.25	0.5	1	3	5	10	0.005	0.01
	No. 3		5	0.1	0.2	0.5	1	2	5	10	20	0.01	0.02	
kg	Range [bar]	Range [bar]	Range [bar]	carrier	number of masses									
16	1.25 - 20	2.5 - 40	5 - 80	1	1	2	1	1	2	1	1	3	1	4
24	1.25 - 30	2.5 - 60	5 - 120	1	1	2	1	1	2	1	1	5	1	4
32	1.25 - 40	2.5 - 80	5 - 160	1	1	2	1	1	2	1	1	7	1	4
40	1.25 - 50	2.5 - 100	5 - 200	1	1	2	1	1	2	1	1	9	1	4
48	1.25 - 60	2.5 - 120	-	1	1	2	1	1	2	1	1	11	1	4
56	1.25 - 70	2.5 - 140	-	1	1	2	1	1	2	1	1	13	1	4

				Standard									Optional	
psi	Piston number and measuring range			Mass set and equivalent of mass in psi										
mass set	No. 1		No. 2	20	0,5	1	2,5	5	10	25	50	100	0.05	0.1
	No. 2			40	1	2	5	10	20	50	100	200	0.1	0.2
	No. 3		80	2	4	10	20	40	100	200	400	0.2	0.4	
kg	Range [psi]	Range [psi]	Range [psi]	carrier	number of masses									
16	20 - 300	40 - 600	100 - 1200	1	1	2	1	1	2	1	1	2	1	4
22	20 - 400	40 - 800	100 - 1600	1	1	2	1	1	2	1	1	3	1	4
28	20 - 500	40 - 1000	100 - 2000	1	1	2	1	1	2	1	1	4	1	4
33	20 - 600	40 - 1200	100 - 2400	1	1	2	1	1	2	1	1	5	1	4
39	20 - 700	40 - 1400	100 - 2800	1	1	2	1	1	2	1	1	6	1	4
44	20 - 800	40 - 1600	-	1	1	2	1	1	2	1	1	7	1	4

DGS0008

The gas operated deadweight tester DGS0008 has an accuracy of 0.008% of reading. The design is similar to the DGS001, but the piston cylinder assembly is even more accurate. To correct the temperature error a PT100 with LCD display is installed.

Differential deadweight tester type DGDP001

The gas operated deadweight tester is also available in a differential pressure model. The DGDP001 combines the benefits of the oil lubricated piston cylinder assembly with the need to calibrate at a specific static pressure. This deadweight tester allows you to make differential pressure from 1.25 mbar up to the maximum pressure of 200 bar with static pressures from 5 bar up to 200 bar. It can be used to calibrate differential pressure transmitters with accuracies of 0.1 or 0.05%. The accuracy of the DGDP is 0.01% of reading.

A differential regulator is used to set the line (static) pressure and to adjust the differential pressures.

