

Standards Used:

Asset	Description	Cal-Date	Due-Date
2/8	DH INSTRUMENTS WORKING REFERENCE MASS SET	18-Jun-2013	18-Jun-2014
3/1	DH INSTRUMENTS WORKING REFERENCE MASS SET	18-Jun-2013	18-Jun-2014

Test Description

The masses in this calibration certificate were received and inspected per the Fluke Calibration, Phoenix Primary Pressure and Flow Laboratory (FCP) Quality Assurance Program. If there was gross contamination upon receipt the masses were cleaned to prevent contamination of the references. Apparent damage to masses is documented in an Equipment Discrepancy Form (EDF).

The masses are kept in the laboratory environment for a minimum of four hours for temperature stabilization. All masses were compared to FCP mass working standards by substitution method or direct weighing. If by substitution it is indicated by a 'B' and if by direct weighing by a 'C' in method.

If this is a recalibration and the previous mass values are available, the mass values determined as received are compared to those previous values.

For recalibrations if the change in mass from as received compared to the last known value is greater than the specification listed below it is indicated with a 'T' in the as received data table.

Both as received and as left values are given. It is likely that as left is the same as as received. As left will only be different if the masses were cleaned or adjusted and the mass value was re-determined.

UUT Description

Piston Gauge weight set with a stated uncertainty specification of:
 \pm (Greater of 5 ppm or 0.5 mg)

The uncertainty given in the tables is the measurement uncertainty at the time the mass was determined.

Hangar Depth [inches]: 7.933

Designation	Density (lbs/in ³)	Apparent Mass (8.4) (pound)	Apparent Mass (8.0) (pound)	True Mass (pound)	Expanded Uncertainty (pound)	Method
1	0.282	26.037994	26.038180	26.038280	4.1E-05	B
2	0.282	26.035128	26.035314	26.035414	3.8E-05	B
3	0.282	26.035172	26.035358	26.035459	4.9E-05	B
4	0.282	26.035547	26.035733	26.035833	3.8E-05	B
5	0.282	26.035812	26.035998	26.036098	4.3E-05	B
6	0.282	26.035900	26.036086	26.036186	3.8E-05	B
7	0.282	26.035768	26.035954	26.036054	4.3E-05	B
8	0.282	26.035150	26.035336	26.035436	3.8E-05	B
9	0.282	26.036098	26.036284	26.036384	4.9E-05	B
10	0.282	26.036407	26.036593	26.036693	3.8E-05	B
11	0.282	26.036473	26.036659	26.036759	3.8E-05	B
12	0.282	13.018576	13.018669	13.018719	2.1E-05	B
13	0.282	5.207191	5.207228	5.207248	1.2E-05	B
14	0.282	5.207140	5.207178	5.207198	1.3E-05	B
15	0.282	2.603594	2.603613	2.603623	4.8E-06	B
16	0.282	1.3017901	1.3017994	1.3018045	3.0E-06	B
17	0.282	0.5207707	0.5207744	0.5207764	1.1E-06	B
18	0.282	0.5207046	0.5207083	0.5207103	1.1E-06	B
19	0.282	0.2603934	0.2603953	0.2603963	1.1E-06	B
20	0.282	0.1302084	0.1302093	0.1302098	1.1E-06	C
21	0.282	0.0521025	0.0521029	0.0521031	1.1E-06	C
22	0.282	0.0521037	0.0521041	0.0521043	1.1E-06	C
23	0.282	0.0260520	0.0260522	0.0260523	1.1E-06	C
24	0.282	0.0130265	0.0130266	0.0130267	1.1E-06	C

Certificate Number:1500165000

As Left Data SI

Date of Calibration: 19 May 2014

Hangar Depth [meters]: 0.2015

Designation	Density (g/cc)	Apparent Mass (8.4) (kilograms)	Apparent Mass (8.0) (kilograms)	True Mass (kilograms)	Expanded Uncertainty (kilograms)	Method
1	7.8	11.810636	11.810721	11.810766	1.9E-05	B
2	7.8	11.809336	11.809421	11.809466	1.7E-05	B
3	7.8	11.809356	11.809441	11.809486	2.2E-05	B
4	7.8	11.809526	11.809611	11.809656	1.7E-05	B
5	7.8	11.809646	11.809731	11.809776	2.0E-05	B
6	7.8	11.809686	11.809771	11.809816	1.7E-05	B
7	7.8	11.809626	11.809711	11.809756	1.9E-05	B
8	7.8	11.809346	11.809431	11.809476	1.7E-05	B
9	7.8	11.809776	11.809861	11.809906	2.2E-05	B
10	7.8	11.809916	11.810001	11.810046	1.7E-05	B
11	7.8	11.809946	11.810031	11.810076	1.7E-05	B
12	7.8	5.905127	5.905169	5.905192	9.4E-06	B
13	7.8	2.361942	2.361959	2.361968	5.3E-06	B
14	7.8	2.361919	2.361936	2.361945	5.7E-06	B
15	7.8	1.180971	1.180979	1.180984	2.2E-06	B
16	7.8	0.5904821	0.5904863	0.5904886	1.4E-06	B
17	7.8	0.2362176	0.2362193	0.2362202	5.1E-07	B
18	7.8	0.2361876	0.2361893	0.2361902	5.1E-07	B
19	7.8	0.1181125	0.1181133	0.1181138	5.0E-07	B
20	7.8	0.0590615	0.0590620	0.0590622	5.0E-07	C
21	7.8	0.0236333	0.0236335	0.0236336	5.0E-07	C
22	7.8	0.0236339	0.0236340	0.0236341	5.0E-07	C
23	7.8	0.0118170	0.0118171	0.0118171	5.0E-07	C
24	7.8	0.0059087	0.0059088	0.0059088	5.0E-07	C

Certificate Number:1500165000

As Received Data

Date of Calibration: 19 May 2014

Designation	As Rec	Expanded Uncertainty	Density	Previous Value	Difference	Method
	(kilograms)	(kilograms)	(g/cc)	(kilograms)	(milligrams)	
1	11.810766	1.9E-05	7.8	11.810770	-4.0	B
2	11.809466	1.7E-05	7.8	11.809460	6.0	B
3	11.809486	2.2E-05	7.8	11.809540	-54.0	B
4	11.809656	1.7E-05	7.8	11.809660	-4.0	B
5	11.809776	2.0E-05	7.8	11.809780	-4.0	B
6	11.809816	1.7E-05	7.8	11.809800	16.0	B
7	11.809756	1.9E-05	7.8	11.809760	-4.0	B
8	11.809476	1.7E-05	7.8	11.809480	-4.0	B
9	11.809906	2.2E-05	7.8	11.809910	-4.0	B
10	11.810046	1.7E-05	7.8	11.810040	6.0	B
11	11.810076	1.7E-05	7.8	11.810070	6.0	B
12	5.905192	9.4E-06	7.8	5.905200	-8.0	B
13	2.361968	5.3E-06	7.8	2.361957	11.0	B
14	2.361945	5.7E-06	7.8	2.361958	-13.0T	B
15	1.180984	2.2E-06	7.8	1.180980	4.0	B
16	0.5904886	1.4E-06	7.8	0.5904880	0.6	B
17	0.2362202	5.1E-07	7.8	0.2362191	1.1	B
18	0.2361902	5.1E-07	7.8	0.2361888	1.4T	B
19	0.1181138	5.0E-07	7.8	0.1181133	0.5	B
20	0.0590622	5.0E-07	7.8	0.0590616	0.6T	C
21	0.0236336	5.0E-07	7.8	0.0236333	0.3	C
22	0.0236341	5.0E-07	7.8	0.0236339	0.2	C
23	0.0118171	5.0E-07	7.8	0.0118171	0.0	C
24	0.0059088	5.0E-07	7.8	0.0059089	-0.1	C