

Flow Dynamics, Inc. is an ISO 9002 registered company for the calibration, certification and testing of gas and liquid flow measurement devices.

CALIBRATION REPORT

Customer Name:	Report No. : 11158-2B
Customer PO No: 2/02-7	Cal Date: 04-03-2002
Meter Type: Orifice <u> </u> IP Feedwater	Serial #: 002
Fluid Type: SOLVENT	Model #: 8902-13000-FE-4130

Left side taps in direction of flow.

#:	Delta P : Inch H2O	Flow Rate : GPM	Coef Disch: : Cd	:	:	:
1	1.15483	62.6121	0.973381	:	:	:
2	2.57913	93.4174	0.971801	:	:	:
3	5.19335	132.254	0.969553	:	:	:
4	7.79867	162.597	0.972572	:	:	:
5	20.2469	261.735	0.971790	:	:	:
6	22.6630	277.488	0.973814	:	:	:
7	25.6631	295.560	0.974721	:	:	:
8	36.5013	353.634	0.977737	:	:	:
9	42.5874	383.647	0.981999	:	:	:
10	55.5737	438.158	0.981803	:	:	:
11	58.4887	449.168	0.981062	:	:	:
12	81.8616	534.695	0.987150	:	:	:
13	101.080	598.231	0.993935	:	:	:
14	113.597	634.215	0.994063	:	:	:
15	129.133	681.414	1.001661	:	:	:
16	134.340	696.351	1.003596	:	:	:
17	157.838	755.163	1.004088	:	:	:
18	193.325	839.925	1.009203	:	:	:
19	216.667	907.213	1.029584	:	:	:
20	239.939	953.089	1.027840	:	:	:
21	259.725	1001.90	1.038522	:	:	:
22	280.129	1057.83	1.055929	:	:	:

The instrument referenced above was calibrated using standards traceable to the National Institute of Standards and Technology. Evidence of traceability is on file at our laboratory and is available upon request. The volumetric flowrates reported are within an uncertainty of +/- 0.05% of reading.

FDI Calibration Procedure used: FDP-002.

Flow Dynamics, Inc. calibration services comply with MIL-STD-45662A,

ANSI Z540-1-1994, ISO GUIDE 25 and ISO 9002:1994.

ANY REPRODUCTION OR REPRESENTATION OF THIS DATA, EXCEPT IN FULL, MUST NOT INCLUDE ANY CLAIM OF COMPLIANCE WITH THE ABOVE MENTIONED STANDARDS.

Calibrated by: *M. Keating*
 Certified by: *[Signature]*
 Date: *3 April 2002*

Equipment No: FDI-27
 Calibrated: 5/04/01
 Recal due: 5/04/03

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CALIBRATION REPORT

Customer Name:		Report No. : 11158-3A
Customer PO No: 2/02-7		Cal Date: 04-11-2002
Meter Type: Orifice -IP Feedwater		Serial #: 003
Fluid Type: SOLVENT		Model #: 8901-13000-FE-2130

Right side taps in direction of flow.

#:	Delta P : Inch H2O :	Flow Rate : GPM :	Coef Disch: : Cd :	:	:	:
1	4.17807	123.798	1.012115			
2	4.16058	123.820	1.014421			
3	6.11284	149.181	1.008463			
4	6.06614	149.308	1.013197			
5	11.8440	206.750	1.003911			
6	16.9849	247.129	1.002056			
7	17.0970	247.822	1.001565			
8	27.6291	315.553	1.003175			
9	31.1959	335.501	1.003761			
10	31.4872	336.974	1.003493			
11	47.6125	413.366	1.001058			
12	72.2369	507.322	0.997445			
13	99.1531	591.538	0.992690			
14	157.881	747.380	0.993994			
15	195.844	842.637	1.006201			
16	215.783	885.631	1.007620			
17	247.552	950.354	1.009367			
18	266.617	984.735	1.007859			
19	289.295	1024.08	1.006180			
20	293.031	1038.25	1.013549			
21	319.089	1081.23	1.011473			

The instrument referenced above was calibrated using standards traceable to the National Institute of Standards and Technology. Evidence of traceability is on file at our laboratory and is available upon request. The volumetric flowrates reported are within an uncertainty of +/- 0.05% of reading.

FDI Calibration Procedure used: FDP-002.

Flow Dynamics, Inc. calibration services comply with MIL-STD-45662A, ANSI Z540-1-1994, ISO GUIDE 25 and ISO 9002:1994.

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Calibrated by: *M. Kuntz*
 Certified by: *H. S. S. C.*
 Date: 11 April 2002

Equipment No: FDI-27
 Calibrated: 5/04/01
 Recal due: 5/04/03

Calibration of a Orifice Fitting Run
 Model: 460DC40 Serial Number: .621 Beta Plate
 For: Services Company Order: C1344
 Data File: 00BEC003 Job Number: 1008-001 Date: 12 January 2000
 Inlet Diameter: 4.026 inches Throat Diameter: 2.5002 inches
 Test gas: AIR Standard density= 0.074908 lbm/ft³
 at standard conditions of 529.67 °R, and 14.696 Psia
 Diff: Differential pressure in std. inches of water @ 68 °F
 Density: Flowing Density at meter INLET, pounds mass per cubic foot
 Cd: Coefficient of discharge
 Rey No: Pipe Reynolds number
 Temp: EXIT temperature, degrees Rankine
 Press: Meter INLET static pressure in psia
 LBMS: Mass flowrate in pounds per second

Pt.	Diff	Density	Cd	Rey No	Temp	Press	LBMS
1	179.36	1.8574	0.60082	2296800	529.4	361.61	7.36
2	243.38	1.8574	0.60341	2681400	529.4	361.61	8.55
3	243.17	1.8767	0.60121	2704600	524.3	361.61	8.60
4	193.36	1.8778	0.60123	2417500	524.0	361.61	7.65
5	168.54	1.8778	0.60099	2257900	524.0	361.61	7.18
6	142.42	1.8767	0.60154	2077700	524.3	361.61	6.61
7	118.24	1.8752	0.60075	1890300	524.7	361.61	6.01
8	91.947	1.8706	0.60170	1665900	525.9	361.61	5.31
9	124.86	1.8744	0.60076	1941100	524.9	361.61	6.18
10	77.708	1.8683	0.60225	1531300	526.5	361.61	4.88
11	45.462	1.8619	0.60276	1168500	528.2	361.61	3.74
12	35.311	1.8566	0.60189	1025100	529.6	361.61	3.28
13	24.635	1.8503	0.60192	853010	531.3	361.61	2.74
14	14.621	1.8425	0.60157	653610	533.4	361.61	2.10
15	10.447	1.8370	0.60382	552600	534.9	361.61	1.78
16	12.839	1.8352	0.60364	611630	535.4	361.61	1.97
17	22.149	1.8385	0.60223	802970	534.5	361.61	2.59

Average values for above results:

Press: 361.61 Psia Density: 1.8608 lbm/ft³
 Temp: 528.48 °R Viscosity: 1.0128E-06 lbm/(inch*sec)
 Compressibility factor: 0.99243