Microtrak and Omnitrak™

Primary Standard Liquid Calibration Systems

Description

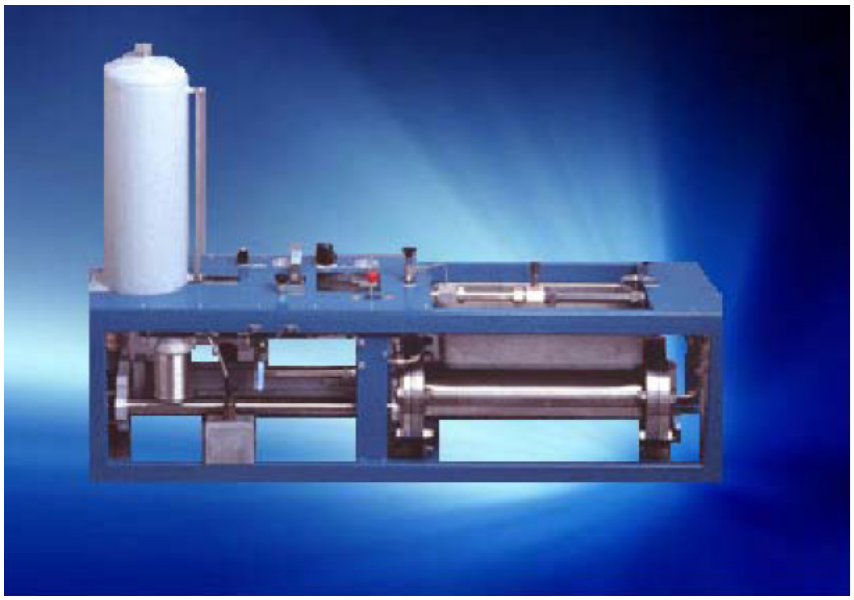
Flow Technology's Microtrak and Omnitrak™ positive displacement calibration systems provide performance, reliability, and economical benefits of ownership. The liquid calibration systems are pneumatically driven and computer-assisted with exceptional accuracy and stability. The Micro/Omnitrak's calibrations are directly traceable to NIST via water draw validation with a total volumetric flow rate measurement uncertainty of approximately ±0.05% at 95% confidence level typical.

The calibrators are manufactured to precise dimensions for liquid flow ranges up to 400 GPM (1,514 LPM). All flow meter technologies with frequency or analog outputs may be calibrated dependent upon responses time.

Calibrations may be performed in a matter of minutes, a vast improvement over competing calibration system methods.

Benefits

- Premium flow meter accuracy
- NIST traceable calibrations
- Water draw validation
- On site flow meter calibrations
- Minimizes process down time
- Maximizes productivity
- Minimal fluid inventory



Microtrak™

Primary Standard Liquid Calibration System

Features

- ±0.05% uncertainty of volumetric flow rate measurement (95% C.L.) typical
- Real time temperature compensation
- Performs complete flow meter calibration in minutes
- Dual Chronometry data acquisition
- Calibrates ALL flow meter technologies including: Coriolis, Turbine, Orifice, PD, Variable Area, Venturi, and Vortex
- PC-based user interface automatically merges data, performs calculations, saves data, displays data and prints data sheets
- Intuitive, reliable low maintenance system
- Calibration fluid is changed quickly and easily
- Small calibration fluid volume
- Compact size, easy to install
- Flow ranges from 0.001 GPM (0.0038 LPM) to 400 GPM (1,514 LPM)

FTI FLOW TECHNOLOGY™

Data Acquisition

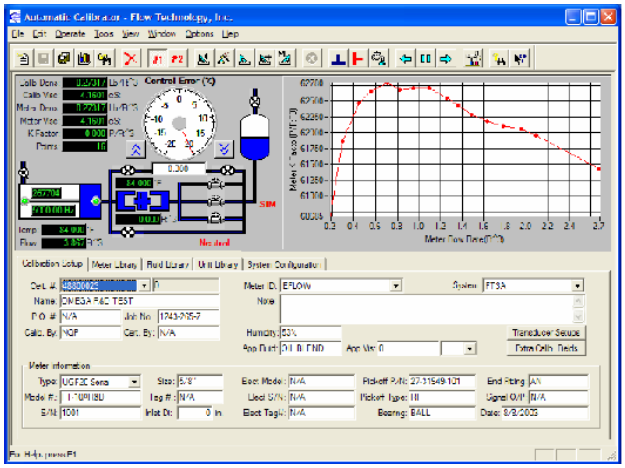
The operator adjusts the control valves behind the flow meter test section for the desired flow rate on both the Microtrak and Omnitrak. An analog dial in the software gives real time flow rates for critical adjustments and data point collection. Depending upon the flow rates, a complete calibration can be completed in a single stroke of the piston. The software allows the operator to display, analyze, save, and print the data.

Operating costs are minimized since calibrations are performed in minutes, using a small quantity of calibration liquid. Calibrations at different viscosities require only a quick and easily-performed change of calibration liquid. The small physical size of these calibration systems allow installation where space is at a premium. Operating facilities simply require a volume of compressed air and a standard electrical outlet.

Comprehensive operator training is provided by Flow Technology's staff at the factory when a Microtrak or Omnitrak is delivered. Installations worldwide are providing many years of maintenance-free service.

Calware™

Calware™, Flow Technology's flow calibration software for Windows® 11, provides an intuitive user interface. The operator can select calibration units, fluid parameters, convert data, and display results prior to printing. Calware™ logically displays all calibrator controls and parameter settings on a single active screen. Dual Chronometry, a technique pioneered by Flow Technology, insures data integrity. Graph representations of flow meter non-linearity allow quick analysis of flow meter performance.



Menu-driven software provides the operator with a variety of curves and plots, which accurately represent the flow meter's performance during calibration.

Omnitrak™

Primary Standard Liquid Calibration System

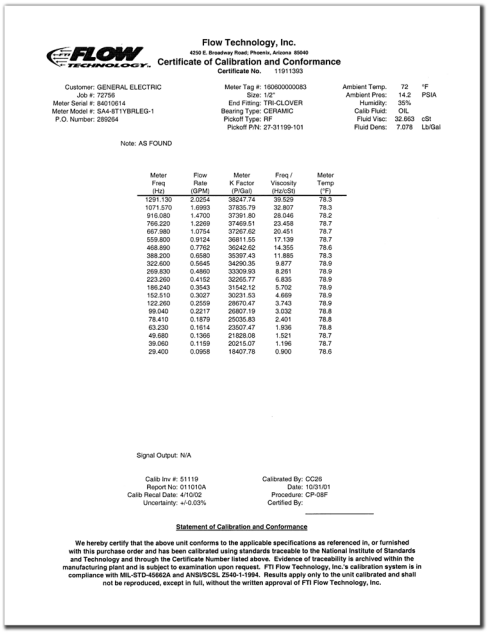
How the System Works

Compressed air drives the piston in the precision-honed flow tube at a constant rate, displacing the liquid in the tube and causing it to flow through the test section, which contains the meter being calibrated. The displaced liquid is then stored in the liquid reservoir.

The desired flow rate of the calibration liquid is set by viewing a flow rate readout on the computer screen and adjusting throttle valves. A linear encoder mounted on the piston shaft generates pulses for distance traveled. Each pulse represents an extremely small and precise amount of liquid displaced by the piston, and this pulse train is used to calculate the exact rate of flow. Simultaneously the flow meter output and measured flow rate are provided by the calibrator. The Dual Chronometry technique ensures that only complete pulses are used for the calculation of flow rate.

The temperature of the calibration liquid is monitored and used to compensate for density and viscosity changes as data points continue to be acquired throughout the stroke of the piston. At the end of the stroke, the top of the liquid reservoir is pressurized; the pressurized air side of the piston is vented; and the piston returns to the start position. A system of check valves prevents the liquid from flowing back through the test meter during the return stroke, allowing the piston to travel to its start position at a high rate.

At the end of a calibration run, a complete file or a variety of curves can be displayed on the computer screen. These include comparisons with previous calibrations, linearity curves and a host of other methods of displaying the results. The test data may be printed or stored. These options allow calibration trends of a particular meter to be monitored during its lifetime.



Flow Technology, Inc.
4250 E. Broadway Road, Phoenix, Arizona 85040

Certificate of Calibration and Conformance
Certificate No. 11911393

Customer: GENERAL ELECTRIC
Job #: 72756
Meter Serial #: 84010614
Meter Model #: SA4-8T1YBRLEG-1
P.O. Number: 289264

Meter Tag #: 160600000083
Size: 1/2"
End Fitting: TRI-CLOVER
Bearing Type: CERAMIC
Picket Type: RF
Pickoff P/N: 27-31199-101

Ambient Temp. 72 °F
Ambient Pres: 14.2 PSIA
Humidity: 35%
Calib Fluid: OIL
Fluid Visc: 32.663 cSt
Fluid Dens: 7.078 Lb/Gal

Note: AS FOUND

Meter Freq (Hz)	Flow Rate (GPM)	Meter K Factor (P/Gal)	Freq / Viscosity (Hz/cSt)	Meter Temp (°F)
1291.130	2.0254	38247.74	39.529	78.3
1071.570	1.6993	37835.79	32.807	78.3
916.080	1.4700	37391.80	28.046	78.2
766.220	1.2269	37469.51	23.458	78.7
667.980	1.0754	37267.62	20.451	78.7
559.800	0.9124	36811.55	17.139	78.7
468.890	0.7762	36242.62	14.355	78.6
388.200	0.6580	35397.43	11.885	78.3
322.600	0.5645	34290.35	9.877	78.9
269.830	0.4960	33309.93	8.261	78.9
223.260	0.4152	32265.77	6.835	78.9
186.240	0.3543	31542.12	5.702	78.9
152.510	0.3027	30231.53	4.669	78.9
122.260	0.2559	28670.47	3.743	78.9
99.040	0.2217	26807.19	3.032	78.8
78.410	0.1879	25035.83	2.401	78.8
63.230	0.1614	23507.47	1.936	78.8
49.680	0.1366	21828.08	1.521	78.7
39.060	0.1159	20215.07	1.196	78.7
29.400	0.0958	18407.78	0.900	78.6

Signal Output: N/A

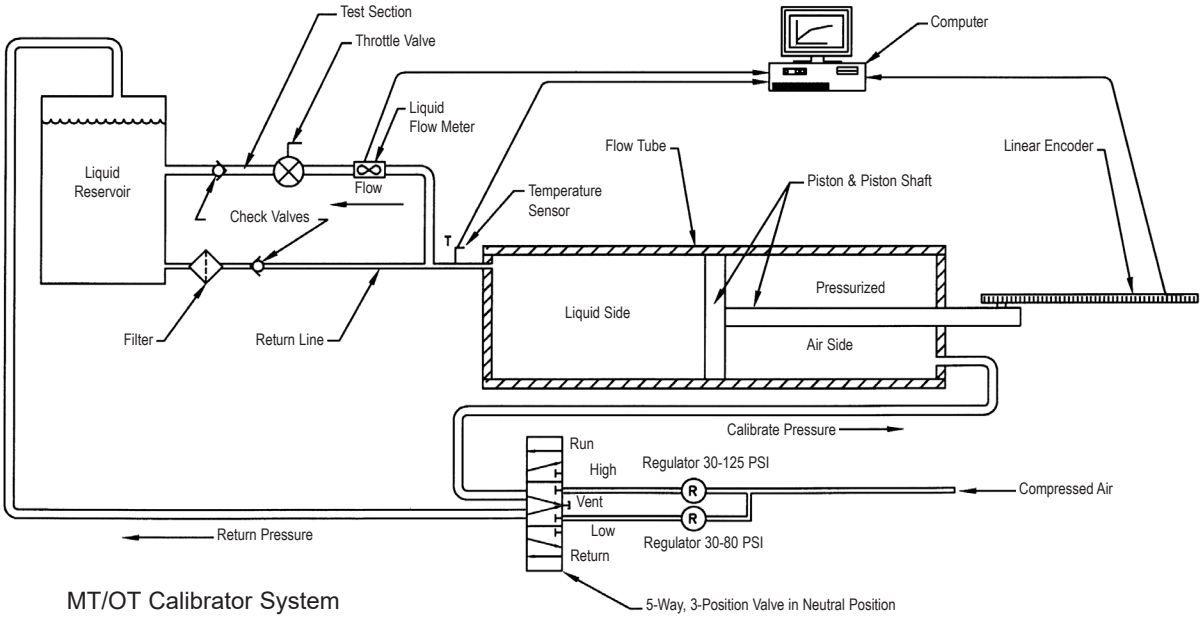
Calib Inv #: 51119
Report No: 011010A
Calib Recal Date: 4/10/02
Uncertainty: +/-0.03%

Calibrated By: CC26
Date: 10/31/01
Procedure: CP-08F
Certified By: _____

Statement of Calibration and Conformance

We hereby certify that the above unit conforms to the applicable specifications as referenced in, or furnished with this purchase order and has been calibrated using standards traceable to the National Institute of Standards and Technology and through the Certificate Number listed above. Evidence of traceability is archived within the manufacturing plant and is subject to examination upon request. FTI Flow Technology, Inc.'s calibration system is in compliance with MIL-STD-45662A and ANSI/ISCSL Z540-1-1994. Results apply only to the unit calibrated and shall not be reproduced, except in full, without the written approval of FTI Flow Technology, Inc.

Calibration data can be compiled in a comprehensive final test report, and a hard copy printed for a permanent record.



MT/OT Calibrator System

Model Numbering System

Model No.
MT-10 = 10 GPM
MT-50 = 50 GPM
OT150 = 150 GPM
OT400 = 400 GPM

Number of Channels
1 = Single Channel

Temperature Input
T = Temperature Input

Power
1 = 110/115 VAC
2 = 220/230 VAC

Standard Flow Meter Inputs
A = Pulse, Magnetic, Manual, FTI RF and Other RF

Optional Analog Flow Meter Inputs
(16-bit resolution)
0-5 VDC
0-10 VDC
4-20 mA
10-50 mA

Specifications

Viscosity Range	10,000 centistokes maximum
Operating Temp. Range	60° F to 120° F (15° C to 50° C)
Operating Pressure	125 psig (8.6 bar) maximum

Flow Meter Interface
Flow Meter Pulse Outputs

Pulse:	10V p-p maximum, frequency 0–10 kHz
Magnetic Pickoff:	Sensitivity 20 mV p-p, 10 V p-p maximum, frequency 0–10 kHz
RF Pickoff (FTI):	Inductance 1 mH, resistance 10ohm ±10%
RF Pickoff (other):	Inductance 0.35 mH, resistance 3.5ohm ±10%

Flow Meter Analog Outputs (See *Optional Analog Flow Meter Inputs*)

Stroke Time at Maximum Flow
MT-10 = 8.5 seconds
MT-50 = 2.8 seconds
OT-150 = 4.1 seconds
OT-400 = 3.9 secods

Model Part Numbering System

Model Number	Flow Ranges GPM (LPM)	Net Dimensions (L x W x H) Feet (m)	Weight Pounds (kg)	Fluid Capacity Gallons (liters)	Displacement Volume Gallons (liters)
MT-10	0.001 to 10 (0.0038 to 38)	5' x 1.2' x 4.7' (1.5 x 0.37 x 1.4)	220 (100)	3 (11)	1.5 (6)
MT-50	0.03 to 50 (0.11 to 189)	5' x 1.2' x 4.7' (1.5 x 0.37 x 1.4)	220 (100)	5 (19)	3 (12)
OT150	0.15 to 150 (0.57 to 568)	11' x 2' x 4.4' (3.4 x 0.6 x 1.3)	550 (250)	13 (49)	7.4 (30)
OT400	0.4 to 400 (1.5 to 1,514)	11' x 2' x 5.9' (3.4 x 0.6 x 1.8)	1,850 (839)	35 (132)	25 (94)

Specifications are for reference only and are subject to change without notice.

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DB 62071 Rev D