Standard Flow Ranges

LIQUID

GPH	GPM	LPH	LPM
2		8	120 ml/min
4		15	
5		20	300 ml/min
8		30	500 ml/min
10		40	
15		60	1000 ml/min
20		75	
40		150	
	1		4
	2		8
	3		12
	4		15
	5		20
	6		25
	8		30
	10		40
	15		60
	20		75
	25		95
	30		110

AIR & GAS

SCFM	SLPM	Nm^3/hr
1.5-5	60-140	3-8
1.5-10	40-280	3-15
2-15		3-25
3-20	60-560	3-30
3-25	70-700	4-40
3-30	100-850	5-50
4-40		5-80
5-50		10-90
5-75		15-125
10-100		20-150

Calibration

One of the three standard calibration types or special calibration (with conditions) must be specified at order placement:

A. Standard calibration on water:
- Meters are calibrated using water
- S.G. = 1.0 & Viscosity = 1.0 CS @ 70°F

B. Standard calibration on oil:
- Meters are calibrated using oil
- S.G. = 0.86 & Viscosity = 78 CS @ 74°F

C. Standard calibration on air:
- Meters are calibrated using air
- 100 psig @ 70°F

Special calibration for liquids (other than water or oil, as described in A or B):
- Using water or oil and a conversion procedure, meters will be calibrated to conform to the SG and the viscosity of the customer's in-service fluid (viscosities up to 150 CS). Accuracy = ±10% F.S.
- Specify Specific Gravity and Viscosity

Special calibration for gas (other than air as described in C):
- Using air and a conversion procedure meters will be calibrated to conform to customer's gas, pressure and temperature.
- Specify temperature, pressure and gas

Flowmeter Notes

- Filtration is required if particle size exceeds 500 microns for 2020 Series and 50 microns for 2200, 2300 and 2400 Series.
- To avoid turbulent flow we recommend installing our flowmeters 10 pipe diameters upstream and 5 pipe diameters downstream of pipe turns.
- Mount our flowmeters 1 inch from ferromagnetic surfaces to avoid magnetic sensor interference. Special calibration on steel is available (see options).

Options

Dial/Scale:
- Plastic lens
- Shatterproof lens
- Liquid filling (glycerine)
- Red arc
- Multicolor arc
- Dual scale

O-ring seals:
- Viton
- EPDM
- Fluorosilicone
- Teflon

Miscellaneous:
- Teflon-coated spring (magnet always Teflon-coated)
- Teflon metering cone on 2220, 2320
- Calibrate on steel (steel affects magnet)
- Stainless steel or paper tag
- Reverse flow
- Vertical flow (horizontal std)

Density Correction Factors — Air & Gas Flow

Gas density can have an effect on the accuracy of the flow reading. Since gases are very compressible the density is an especially important factor. Temperature or pressure changes in a gas can expand or compress a gas resulting in a change in the density. Measuring the flow of a gas other than the one used in the calibration of the flowmeter without taking these factors into account can result in inaccurate readings.

Below we list correction factors for pressures, temperatures or specific gravities other than those used for calibration of our flowmeters. The formulas supplied allow for the calculation of the flow rate using these correction factors. An example is also supplied.

For values not listed on the reference tables below, use equations at right to determine correction factors.

Pressure correction factor, X_P

PSIG	25	50	75	100	125	150	175	200
BAR	1.7	3.4	5.2	6.9	8.6	10.3	12.1	13.8
kPA	172	345	517	689	862	1034	1207	1379
X_P	**.69**	**.75**	**.88**	**1.0**	**1.1**	**1.2**	**1.29**	**1.37**

$$X_P = \sqrt{\frac{14.7 + PSIG}{114.7}} \qquad X_P = \sqrt{\frac{1.01 + BAR}{7.91}} \qquad X_P = \sqrt{\frac{101.4 + kPa}{790.9}}$$

Temperature correction factor, X_T

°F	10	30	50	70	90	110	130	150	170	190
°C	-12.2	-1.10	10	21.1	32.2	43	54	66	77	88
X_T	**1.06**	**1.04**	**1.02**	**1.0**	**.98**	**.96**	**.95**	**.93**	**.92**	**.90**

$$X_T = \sqrt{\frac{530}{460 + °F}} \qquad X_T = \sqrt{\frac{294}{273 + °C}}$$

Specific Gravity correction factor, X_{SG}

Gas	Air	Nitrogen (N_2)	Carbon Dioxide (CO_2)	Natural Gas	Hydrogen (H_2)	Oxygen (O_2)
SG	1.0	.97	1.53	.60	.07	1.1
X_{SG}	**1.0**	**1.02**	**.81**	**1.29**	**3.78**	**.95**

$$X_{SG} = \sqrt{\frac{1}{SG}}$$

Calculation: $SCFM_{indicated}$ (X_P) (X_T) (X_{SG}) = $SCFM_{actual}$

Notes: 1. All three correction factors may not apply.
2. Pressure and temperature conditions are to be taken at the inlet of the gauge.

Example: **Standard air meter reads 50 SCFM,** but application gas is CO_2 at 80 PSIG, 90°F. ***What is the actual flow?***

$$X_P = \sqrt{\frac{14.7 + \mathbf{80}}{114.7}} = 0.91 \qquad X_T = \sqrt{\frac{530}{460 + \mathbf{90}}} = 0.98 \qquad X_{SG} = \sqrt{\frac{1}{\mathbf{1.53}}} = 0.81$$

50 $SCFM_{indicated}$ (0.91) (0.98) (0.81) = **36 $SCFM_{actual}$**