

ACCESSORY FLOWTUBES

For Use with FL-3000 Series variable area flow meter, Multi-Tube Assemblies and Gas Proportioners

The flow tubes shown on this page can be installed into any of the 150 mm variable area flow meter. Flow capacities shown are based on calibrations with air and water at 21°C (70°F) and 14.7 psia. For other fluids or conditions, the following equations provide rough approximations.



$$Q_a = Q_g \times \sqrt{G \times \frac{T_a}{T_o} \times \frac{P_o}{P_a}}$$

where:

- Q_a = equivalent air flow scale reading at Standard Conditions
- Q_g = true flow of metered gas
- G = specific gravity of metered gas
- T_a = absolute temperature at flow conditions, deg R or deg K
- T_o = absolute temperature at Standard Conditions deg R (530) or deg K (294)
- P_a = pressure at flow conditions, psia
- P_o = pressure at Standard Conditions, (14.7 psia)

$$Q_w = Q_L \times \sqrt{\frac{d_f \cdot d_w}{d_f \cdot d_L} \times \frac{d_L}{d_w}}$$

where:

- Q_w = equivalent water flow capacity at Standard Conditions
- Q_L = maximum flow of metered liquid
- d_f = density of float selected, (See Table, right), (g/ml)
- d_L = density of metered liquid, (g/ml)
- d_w = density of water at Standard Conditions, (1.0 g/ml) (Does not include viscosity effect)

150 mm Flowtube, gas flow capacities of routine gases. cc/min, 10:1 range

Model No.	Air	Water	Argon	CO ₂	He	H	N	O
FLT-45G	19	0.196	15	23	16	37	20	17
FLT-45SA	30	0.392	24	37	26	59	31	27
FLT-45ST	60.6	0.94	49	72	53	123	62	54
FLT-45C	110	1.91	90	127	101	232	114	99
FLT-45T	121	2.13	99	139	112	256	125	109
FLT-41G	49	0.49	44	56	46	94	48	42
FLT-41SA	73	0.98	60	84	69	149	76	70.4
FLT-41ST	143	2.34	113	150	133	301	143	131
FLT-41C	247	4.7	202	251	260	567	255	228
FLT-41T	264	5.1	222	263	288	602	274	244
FLT-61G	93	0.9	75.6	103	90	208	92	81
FLT-61C	444	8.5	373	445	519	1120	462	407
FLT-61T	484	9.2	393	470	555	1225	495	433
FLT-02G	374	5.5	305	355	450	1021	382	340
FLT-02SA	513	10.0	429	472	681	1497	520	472
FLT-02ST	814	20.4	676	728	1290	2496	824	753
FLT-02C	1222	33.7	1020	1072	2221	3876	1220	1131
FLT-02T	1331	36.1	1085	1134	2356	4257	1310	1206
FLT-03G	844	16.5	687	725	1490	2620	827	772
FLT-03SA	1093	26.1	910	944	2059	3546	1110	1024
FLT-03ST	1682	44.6	1380	1420	3397	5547	1662	1545
FLT-03C	2423	70.5	1996	2039	5120	8170	2405	2246
FLT-03T	2576	75.6	2131	2163	5437	8717	2575	2364
FLT-04G	2313	54	1949	2048	4880	7817	2395	2169
FLT-04SA	3079	78	2605	2620	6458	10455	3142	2860
FLT-04ST	4562	133	3903	3990	9770	15855	4685	4341
FLT-04C	6621	201	5665	5743	14500	22790	6845	6307
FLT-04T	6932	212	6040	6018	15420	24252	7080	6690
FLT-05G	3922	84	3151	3374	7803	13105	3868	3485
FLT-05SA	5188	126	4175	4388	10336	16108	5090	4652
FLT-05ST	7825	217	6384	6308	15960	27804	7722	6992
FLT-05C	11154	329	9460	9222	23509	37553	10973	10082
FLT-05T	11965	353	9627	9475	25131	39998	11628	10741
FLT-39G	8678	210	7366	7485	19426	29840	8916	8269
FLT-39SA	11357	306	9539	9557	25400	40006	11524	10706
FLT-39ST	16737	506	14131	14051	38576	59995	17021	15710
FLT-39C	23752	747	20166	19854	56220	83052	24071	22432
FLT-39T	25252	790	21414	21115	60596	90410	25709	23790
FLT-40G	23742	541	19761	18989	53100	85812	23512	21350
FLT-40SA	30711	806	24563	23855	70100	110100	29930	27181
FLT-40ST	45227	1288	35300	34287	103647	159699	43000	39567
FLT-40C	66346	1881	47890	46311	146500	221872	59580	54902
FLT-40T	69940	2001	51997	49009	189826	234423	63826	57960

Comes complete with correlation sheets for air and water.

* Suffix refers to float: G = black glass, SA = red sapphire, ST = 316 stainless steel, C = carboly, T = tantalum. Minimum flow is equal to 10% of the maximum listed.

For highest precision, field calibration is required.

Material	Density g/ml
Glass	2.53
Sapphire	3.98
Stainless steel	8.04
Carboly	14.98
Tantalum	16.58