



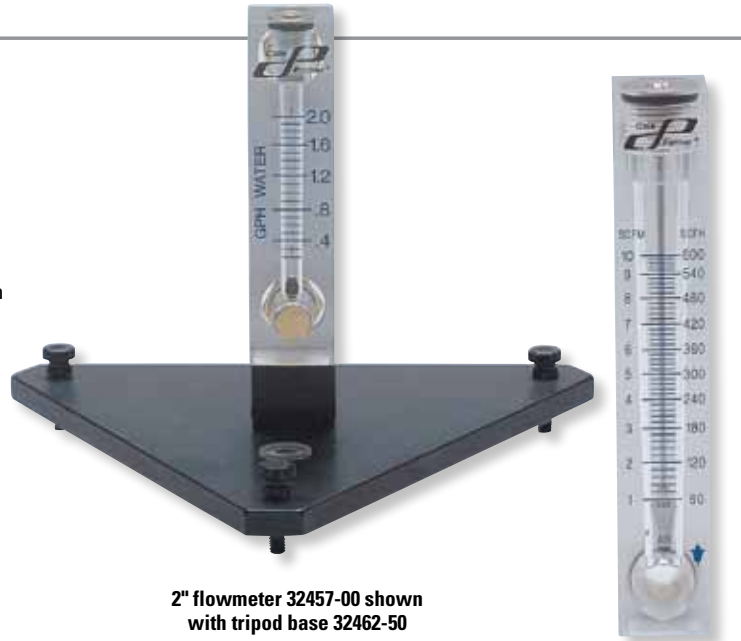
Cole-Parmer Acrylic Flowmeters
for Bench or Panel Mount

Durable single-piece body withstands severe shock and vibration

- Ideal for process plant applications on air sampling equipment, gas analyzers and chemical feed systems for water treatment
- Flexible design allows for panel or bench mounting

Machined from solid acrylic blocks, these meters have integral metering tubes that provide precise readings even in aggressive plant environments. The meters' inlet/outlet ports and mounting studs are extended for easy panel installation. An alternate option is a tripod base (sold separately below) which allows for mobility from bench to bench.

Note: There are many additional types of acrylic flowmeters not listed here. Contact your local dealer for quotes on acrylic meters with special requirements.



2" flowmeter 32457-00 shown with tripod base 32462-50

4" flowmeter 32458-26

Specifications

Accuracy

- 2" and 50-mm flowmeters: ±5% full-scale
- 4" and 100-mm flowmeters: ±3% full-scale
- 5" and 127-mm flowmeters: ±2% full-scale

Repeatability: ±0.5% full-scale

Max pressure: 100 psi (6.9 bar)

Max operating temp: 150°F (65°C)

Connections

- 2", 4", 50-mm, and 100-mm flowmeters: 1/8" NPT(F)[†]
- 5" and 127-mm flowmeters: 1" NPT(F)

Dimensions (W x H x D)

- 2" and 50-mm flowmeters: 1" x 4" x 2 1/8" (2.5 x 10.2 x 5.4 cm)
- 4" and 100-mm flowmeters: 1 3/8" x 6 1/2" x 2 1/8" (3.5 x 16.5 x 5.4 cm)
- 5" and 127-mm flowmeters: 1 3/4" x 10 7/8" x 4 3/4" (4.4 x 27.6 x 12.1 cm)



Materials of Construction

Part	2" and 50 mm	4" and 100 mm	5" and 127 mm
Body	Acrylic		
Fittings	Brass		PVC
Valve	Brass		
O-rings	Buna N		
Float (for air)	Black glass (BG)	316 SS (SS)	

English-Unit Scales

For liquid applications				For air applications		
Cat. no.	Float [‡]	Flow range	Price	Cat. no.	Flow range	Price
Flowmeters with 2" scale						
TW-32457-00	BG	0.2 to 2 GPH		TW-32457-10	0.1 to 1 scfh	
TW-32457-02	SS	0.4 to 5 GPH		TW-32457-12	0.2 to 2 scfh	
TW-32457-04	BG	1 to 10 GPH		TW-32457-14	0.4 to 5 scfh	
TW-32457-06	SS	2 to 20 GPH		TW-32457-16	0.5 to 10 scfh	
TW-32457-08	SS	4 to 40 GPH		TW-32457-18	2 to 20 scfh	
—	—	—	—	TW-32457-20	3 to 30 scfh	
—	—	—	—	TW-32457-22	4 to 50 scfh	
—	—	—	—	TW-32457-24	10 to 100 scfh	
—	—	—	—	TW-32457-26	20 to 200 scfh	
Flowmeters with 4" scale						
TW-32458-00	SS	1 to 10 GPH		TW-32458-10	0.4 to 5 scfh	
TW-32458-02	SS	2 to 25 GPH		TW-32458-12	1 to 10 scfh	
TW-32458-04	SS	4 to 50 GPH		TW-32458-14	2 to 20 scfh	
TW-32458-06	SS	6 to 60 GPH		TW-32458-16	4 to 40 scfh	
TW-32458-07 [†]	SS	0.2 to 2.5 GPM		TW-32458-18	10 to 100 scfh	
TW-32458-08 [†]	SS	0.4 to 5 GPM		TW-32458-20	14 to 150 scfh	
—	—	—	—	TW-32458-22	20 to 200 scfh	
—	—	—	—	TW-32458-24 [†]	0.5 to 5 scfm	
—	—	—	—	TW-32458-26 [†]	1 to 10 scfm	
Flowmeters with 5" scale						
TW-32462-00	SS	0.4 to 5 GPM		TW-32462-10	3 to 25 scfm	
TW-32462-02	SS	1 to 10 GPM		TW-32462-12	4 to 50 scfm	
TW-32462-04	SS	2 to 20 GPM		TW-32462-14	10 to 100 scfm	

[†]These models have dual scale: GPM/GPH, scfm/scfh, LPM/LPH; they also have 1/4" NPT(F) connections and use tripod base 32462-60 sold at right.

[‡]Float material key: BG = black glass, SS = stainless steel

Metric-Unit Scales

For liquid applications				For air applications		
Cat. no.	Float [‡]	Flow range	Price	Cat. no.	Flow range	Price
Flowmeters with 50-mm scale						
TW-32457-30	BG	5 to 50 mL/min		TW-32457-40	0.04 to 0.5 LPM	
TW-32457-32	BG	10 to 100 mL/min		TW-32457-42	0.1 to 1 LPM	
TW-32457-34	SS	20 to 240 mL/min		TW-32457-44	0.4 to 5 LPM	
—	—	—	—	TW-32457-46	1 to 10 LPM	
—	—	—	—	TW-32457-48	2 to 25 LPM	
—	—	—	—	TW-32457-50	4 to 50 LPM	
—	—	—	—	TW-32457-52	10 to 100 LPM	
Flowmeters with 100-mm scale						
TW-32458-30	BG	4 to 50 mL/min		TW-32458-50	0.4 to 5 LPM	
TW-32458-32	SS	10 to 120 mL/min		TW-32458-52	1 to 10 LPM	
TW-32458-34	BG	25 to 225 mL/min		TW-32458-54	2 to 20 LPM	
TW-32458-36	SS	40 to 400 mL/min		TW-32458-56	3 to 30 LPM	
TW-32458-38	SS	40 to 660 mL/min		TW-32458-58	4 to 50 LPM	
TW-32458-40	SS	100 to 1500 mL/min		TW-32458-60	10 to 100 LPM	
TW-32458-42	SS	200 to 3000 mL/min		TW-32458-62 [†]	14 to 140 LPM	
TW-32458-44 [†]	SS	0.8 to 9 LPM		TW-32458-64 [†]	30 to 280 LPM	
TW-32458-46 [†]	SS	1.5 to 20 LPM		TW-32458-65 [†]	80 to 560 LPM	
Flowmeters with 127-mm scale						
TW-32462-20	SS	1 to 15 LPM		TW-32462-30	100 to 700 LPM	
TW-32462-22	SS	4 to 36 LPM		TW-32462-32	100 to 1400 LPM	
TW-32462-24	SS	5 to 75 LPM		TW-32462-34	400 to 3000 LPM	

Tripod Bases

Durable acrylic base with three leveling screws and spirit level.

Catalog number	Description	Price
TW-32462-50	For one flowmeter with 2" or 50-mm scale	
TW-32462-55	For one flowmeter with 4" or 100-mm scale	
TW-32462-60	For one flowmeter with 1/4" connections	

MORE online!

For pressure drop information for these flowmeters, go to . . .

ColeParmer.com



Flowmeters

Variable Area, Direct Reading

Cole-Parmer® Valved Acrylic Flowmeters for Bench or Panel Mount

Meter with valve provides flow control through a highly durable meter body

- Ideal for process plant applications on air sampling equipment, gas analyzers and chemical feed systems for water treatment
- Integrated precision valve allows precise manual flow across the full scale
- The flexible design allows for panel or bench mounting

Machined from solid acrylic blocks, these meters have integral metering tubes that provide precise readings even in aggressive plant environments. The meters' inlet/outlet ports and mounting studs are extended for easy panel installation. An alternate option is a tripod base (sold separately below) which allows for mobility from bench to bench.

Note: There are many additional types of acrylic flowmeters not listed here. Contact your local dealer for quotes on acrylic meters with special requirements.

Specifications

Accuracy

- 2" and 50-mm flowmeters: ±5% full-scale
- 4" and 100-mm flowmeters: ±3% full-scale
- 5" and 127-mm flowmeters: ±2% full-scale

Repeatability: ±0.5% full-scale

Media type: liquids or gases

Max pressure: 100 psi (6.9 bar)

Max operating temp: 150°F (65°C)

Connections

- 2", 4", 50-mm, and 100-mm flowmeters: ½" NPT(F)†
- 5" and 127-mm flowmeters: 1" NPT(F)

Dimensions (W x H x D)

- (not including valve stem):
- 2" and 50-mm flowmeters: 1" x 4" x 2½" (2.5 x 10.2 x 5.4 cm)
- 4" and 100-mm flowmeters: 1¾" x 6½" x 2½" (3.5 x 16.5 x 5.4 cm)
- 5" and 127-mm flowmeters: 1¾" x 10¾" x 4¾" (4.4 x 27.6 x 12.1 cm)

Materials of Construction

Part	2" and 50 mm	4" and 100 mm	5" and 127 mm
Body	Acrylic		
Fittings	Brass		PVC
Valve	Brass		
O-rings	Buna N		
Float (for air)	Black glass (BG)	316 SS (SS)	

English-Unit Scales

For liquid applications				For air applications		
Cat. no.	Float‡	Flow range	Price	Cat. no.	Flow range	Price
Flowmeters with 2" scale						
TW-32460-00	BG	0.2 to 2 GPH		TW-32460-10	0.1 to 1 scfh	
TW-32460-02	SS	0.4 to 5 GPH		TW-32460-12	0.2 to 2 scfh	
TW-32460-04	BG	1 to 10 GPH		TW-32460-14	0.4 to 5 scfh	
TW-32460-06	SS	2 to 20 GPH		TW-32460-16	0.5 to 10 scfh	
TW-32460-08	SS	4 to 40 GPH		TW-32460-18	2 to 20 scfh	
—	—	—	—	TW-32460-20	3 to 30 scfh	
—	—	—	—	TW-32460-22	4 to 50 scfh	
—	—	—	—	TW-32460-24	10 to 100 scfh	
—	—	—	—	TW-32460-26	20 to 200 scfh	
Flowmeters with 4" scale						
TW-32461-00	SS	1 to 10 GPH		TW-32461-10	0.4 to 5 scfh	
TW-32461-02	SS	2 to 25 GPH		TW-32461-12	1 to 10 scfh	
TW-32461-04	SS	4 to 50 GPH		TW-32461-14	2 to 20 scfh	
TW-32461-06	SS	6 to 60 GPH		TW-32461-16	4 to 40 scfh	
TW-32461-07†	SS	0.2 to 2.5 GPM		TW-32461-18	10 to 100 scfh	
TW-32461-08†	SS	0.4 to 5 GPM		TW-32461-20	14 to 150 scfh	
—	—	—	—	TW-32461-22	20 to 200 scfh	
—	—	—	—	TW-32461-24†	0.5 to 5 scfm	
—	—	—	—	TW-32461-26†	1 to 10 scfm	
Flowmeters with 5" scale						
TW-32466-50	SS	1 to 10 GPM		TW-32466-60	3 to 25 scfm	
TW-32466-52	SS	2 to 20 GPM		TW-32466-62	4 to 50 scfm	
—	—	—	—	TW-32466-64	10 to 100 scfm	

†These models have dual scale: GPM/GPH, scfm/scfh, LPM/LPH; they also have ¼" NPT(F) connections and use tripod base 32462-60 sold at right.

‡Float material key: BG = black glass, SS = stainless steel



2" Flowmeter 32460-18 shown with tripod base 32462-50



4" flowmeter 32461-08

INNOCAL®
INNOVATIVE CALIBRATION SOLUTIONS

Ensure the accuracy of your flowmeter!

TW-17080-00 NIST-traceable calibration with data for air/gas flowmeter

TW-17080-12 NIST-traceable calibration with data for liquid flowmeter

Metric-Unit Scales

For liquid applications				For air applications		
Cat. no.	Float‡	Flow range	Price	Cat. no.	Flow range	Price
Flowmeters with 50-mm scale						
TW-32460-30	BG	5 to 50 mL/min		TW-32460-40	0.04 to 0.5 LPM	
TW-32460-32	SS	10 to 100 mL/min		TW-32460-42	0.1 to 1 LPM	
TW-32460-34	SS	20 to 240 mL/min		TW-32460-44	0.4 to 5 LPM	
—	—	—	—	TW-32460-46	1 to 10 LPM	
—	—	—	—	TW-32460-48	2 to 25 LPM	
—	—	—	—	TW-32460-50	4 to 50 LPM	
—	—	—	—	TW-32460-52	10 to 100 LPM	
Flowmeters with 100-mm scale						
TW-32461-30	SS	4 to 50 mL/min		TW-32461-50	0.4 to 5 LPM	
TW-32461-32	SS	10 to 120 mL/min		TW-32461-52	1 to 10 LPM	
TW-32461-34	BG	25 to 225 mL/min		TW-32461-54	2 to 20 LPM	
TW-32461-36	SS	40 to 400 mL/min		TW-32461-56	3 to 30 LPM	
TW-32461-38	SS	40 to 660 mL/min		TW-32461-58	4 to 50 LPM	
TW-32461-40	SS	100 to 1500 mL/min		TW-32461-60	10 to 100 LPM	
TW-32461-42	SS	200 to 3000 mL/min		TW-32461-62†	14 to 140 LPM	
TW-32461-44†	SS	0.8 to 9 LPM		TW-32461-64†	30 to 280 LPM	
TW-32461-46†	SS	1.5 to 20 LPM		—	—	—
Flowmeters with 127-mm scale						
TW-32466-54	SS	4 to 36 LPM		TW-32466-66	100 to 700 LPM	
TW-32466-56	SS	5 to 75 LPM		TW-32466-68	100 to 1400 LPM	
—	—	—	—	TW-32466-70	400 to 3400 LPM	

Tripod Bases

Durable acrylic base with three leveling screws and spirit level.

Catalog number	Description	Price
TW-32462-50	For one flowmeter with 2" or 50-mm scale	
TW-32462-55	For one flowmeter with 4" or 100-mm scale	
TW-32462-60	For one flowmeter with ¼" connections	

Flowmeters

Variable Area, Direct Reading



Cole-Parmer Acrylic Flowmeters for Gases and Water

Designed for labs and plant processes where multiple gases are used

- Direct-reading English and metric scales

Versatile acrylic flowmeters are designed specifically for air, oxygen, nitrogen, carbon dioxide, argon, helium, or water. Meters are offered with or without built-in low hysteresis needle valves. Meters without valves can be panel mounted or used in partial or full in-line mounted configurations. Easily disassemble meters for cleaning. Flowmeters feature a stable, easy-to-read float.

NEW



Specifications

Accuracy: ±5% full-scale
Max pressure: 100 psi (6.9 bar)
Max operating temp: 150°F (65°C)
Connections: 1/8" NPT(F)

Materials of Construction

Body	Acrylic	
Fittings	Brass	316 SS
O-rings	Buna N	Viton®



68560-24

Max flow rate	Float	Flowmeters without valve				Flowmeters with valve			
		Brass fittings		316 SS fittings		Brass fittings		316 SS fittings	
		Catalog number	Price	Catalog number	Price	Catalog number	Price	Catalog number	Price
Air flowmeters									
2.8 scfh	1.4 L/min	Glass	TW-68560-00		TW-68560-07		TW-68560-14		TW-68560-21
5.5 scfh	2.75 L/min	SS	TW-68560-01		TW-68560-08		TW-68560-15		TW-68560-22
7 scfh	3.5 L/min	Carboly	TW-68560-02		TW-68560-09		TW-68560-16		TW-68560-23
18 scfh	8.5 L/min	Glass	TW-68560-03		TW-68560-10		TW-68560-17		TW-68560-24
32.5 scfh	16 L/min	SS	TW-68560-04		TW-68560-11		TW-68560-18		TW-68560-25
45 scfh	22 L/min	Carboly	TW-68560-05		TW-68560-12		TW-68560-19		TW-68560-26
100 scfh	50 L/min	SS	TW-68560-06		TW-68560-13		TW-68560-20		TW-68560-27
Oxygen flowmeters									
2.5 scfh	1.2 L/min	Glass	TW-68560-28		TW-68560-35		TW-68560-42		TW-68560-49
5 scfh	2.5 L/min	SS	TW-68560-29		TW-68560-36		TW-68560-43		TW-68560-50
7 scfh	3.5 L/min	Carboly	TW-68560-30		TW-68560-37		TW-68560-44		TW-68560-51
16 scfh	8 L/min	Glass	TW-68560-31		TW-68560-38		TW-68560-45		TW-68560-52
30 scfh	15 L/min	SS	TW-68560-32		TW-68560-39		TW-68560-46		TW-68560-53
42.5 scfh	20 L/min	Carboly	TW-68560-33		TW-68560-40		TW-68560-47		TW-68560-54
90 scfh	45 L/min	SS	TW-68560-34		TW-68560-41		TW-68560-48		TW-68560-55
Nitrogen flowmeters									
2.75 scfh	1.3 L/min	Glass	TW-68560-56		TW-68560-63		TW-68560-70		TW-68560-77
5.5 scfh	2.75 L/min	SS	TW-68560-57		TW-68560-64		TW-68560-71		TW-68560-78
7.5 scfh	3.5 L/min	Carboly	TW-68560-58		TW-68560-65		TW-68560-72		TW-68560-79
16 scfh	8 L/min	Glass	TW-68560-59		TW-68560-66		TW-68560-73		TW-68560-80
32.5 scfh	16 L/min	SS	TW-68560-60		TW-68560-67		TW-68560-74		TW-68560-81
45 scfh	22 L/min	Carboly	TW-68560-61		TW-68560-68		TW-68560-75		TW-68560-82
100 scfh	45 L/min	SS	TW-68560-62		TW-68560-69		TW-68560-76		TW-68560-83
Carbon dioxide flowmeters									
2.2 scfh	1.1 L/min	Glass	TW-68560-84		TW-68560-91		TW-68561-00		TW-68561-07
5 scfh	2 L/min	SS	TW-68560-85		TW-68560-92		TW-68561-01		TW-68561-08
6.5 scfh	3 L/min	Carboly	TW-68560-86		TW-68560-93		TW-68561-02		TW-68561-09
15 scfh	7 L/min	Glass	TW-68560-87		TW-68560-94		TW-68561-03		TW-68561-10
25 scfh	12 L/min	SS	TW-68560-88		TW-68560-95		TW-68561-04		TW-68561-11
37.5 scfh	18 L/min	Carboly	TW-68560-89		TW-68560-96		TW-68561-05		TW-68561-12
80 scfh	35 L/min	SS	TW-68560-90		TW-68560-97		TW-68561-06		TW-68561-13
Argon flowmeters									
2.25 scfh	1.1 L/min	Glass	TW-68561-14		TW-68561-21		TW-68561-28		TW-68561-35
5 scfh	2.2 L/min	SS	TW-68561-15		TW-68561-22		TW-68561-29		TW-68561-36
6.5 scfh	3 L/min	Carboly	TW-68561-16		TW-68561-23		TW-68561-30		TW-68561-37
15 scfh	7 L/min	Glass	TW-68561-17		TW-68561-24		TW-68561-31		TW-68561-38
26 scfh	13 L/min	SS	TW-68561-18		TW-68561-25		TW-68561-32		TW-68561-39
37.5 scfh	18 L/min	Carboly	TW-68561-19		TW-68561-26		TW-68561-33		TW-68561-40
80 scfh	40 L/min	SS	TW-68561-20		TW-68561-27		TW-68561-34		TW-68561-41
Helium flowmeters									
4 scfh	2 L/min	Glass	TW-68561-42		TW-68561-49		TW-68561-56		TW-68561-63
11 scfh	5.5 L/min	SS	TW-68561-43		TW-68561-50		TW-68561-57		TW-68561-64
17 scfh	8 L/min	Carboly	TW-68561-44		TW-68561-51		TW-68561-58		TW-68561-65
40 scfh	18 L/min	Glass	TW-68561-45		TW-68561-52		TW-68561-59		TW-68561-66
70 scfh	35 L/min	SS	TW-68561-46		TW-68561-53		TW-68561-60		TW-68561-67
110 scfh	55 L/min	Carboly	TW-68561-47		TW-68561-54		TW-68561-61		TW-68561-68
250 scfh	110 L/min	SS	TW-68561-48		TW-68561-55		TW-68561-62		TW-68561-69
Water flowmeters									
0.3 GPH	20 mL/min	Glass	TW-68561-70		TW-68561-77		TW-68561-84		TW-68561-91
1.1 GPH	70 mL/min	SS	TW-68561-71		TW-68561-78		TW-68561-85		TW-68561-92
1.5 GPH	100 mL/min	Carboly	TW-68561-72		TW-68561-79		TW-68561-86		TW-68561-93
2.75 GPH	175 mL/min	Glass	TW-68561-73		TW-68561-80		TW-68561-87		TW-68561-94
6.5 GPH	450 mL/min	SS	TW-68561-74		TW-68561-81		TW-68561-88		TW-68561-95
11 GPH	700 mL/min	Carboly	TW-68561-75		TW-68561-82		TW-68561-89		TW-68561-96
22 GPH	1400 mL/min	SS	TW-68561-76		TW-68561-83		TW-68561-90		TW-68561-97



Flowmeters

Variable Area, Direct Reading

Cole-Parmer Acrylic Flowmeter Kits

Seven interchangeable scales for routine gases and water offer flexibility

- Stable, easy-to-read float
- English and metric scales
- Easy disassembly for cleaning

These versatile acrylic flowmeter kits come with seven interchangeable back plates for routine gases (air, water, argon, carbon dioxide, helium, nitrogen, and oxygen). Meters are offered with or without built-in low hysteresis needle valves. Meters without valve can be panel mounted, or used in partial or full in-line mounted configurations.

Specifications

Accuracy: ±5% full-scale
Max operating temp: 150°F (65°C)
Max pressure: 100 psi (6.9 bar)
Connections: 1/8" NPT(F)



Materials of Construction

Body	Acrylic	
Fittings	Brass	316 SS
O-rings	Buna N	Viton®

34500-52



Max flow rate, L/min (scfh)							Float	Flowmeters without valve		Flowmeters with valve	
Air	Water (GPH)	Argon	CO ₂	Helium	Nitrogen	Oxygen		Brass fittings	Stainless steel fittings	Brass fittings	Stainless steel fittings
								Catalog number	Catalog number	Catalog number	Catalog number
1.2 (2.6)	20 (0.3)	1 (2)	1.1 (2.5)	2 (4)	1.3 (2.75)	1.1 (2.5)	Glass	TW-34500-10	TW-34500-14	TW-34500-12	TW-34500-16
2.5 (5.5)	70 (1.1)	2 (5)	2 (5)	5 (10)	2.5 (5.5)	2.25 (5)	Stainless steel	TW-34500-18	TW-34500-24	TW-34500-22	TW-34500-26
3.5 (7)	100 (1.5)	3 (6.5)	3 (6.5)	8 (17)	3.5 (7.5)	3.5 (7)	Carboly	TW-34500-28	TW-34500-32	TW-34500-30	TW-34500-34
8.5 (18)	175 (2.75)	7 (15)	7 (15)	18 (40)	8 (16)	8 (16)	Glass	TW-34500-36	TW-34500-40	TW-34500-38	TW-34500-42
16 (32.5)	450 (6.5)	13 (26)	12 (25)	35 (70)	16 (32.5)	15 (30)	Stainless steel	TW-34500-44	TW-34500-48	TW-34500-46	TW-34500-52
22 (45)	700 (11)	18 (37.5)	18 (37.5)	55 (110)	22 (45)	20 (42.5)	Carboly	TW-34500-54	TW-34500-58	TW-34500-56	TW-34500-60
							Price				

Cole-Parmer Direct-Reading Multigas Flowmeters

Rotating flowtube allows one meter to be used for five gases

- Rigid, high-quality, compact construction
- Flow graduations in English or metric units

Designed for medium flow range applications, these flowmeters incorporate precision-machined glass and brass or stainless steel frames to provide accurate and economical flow metering solutions. Simply rotate glass flowtube to read the gas you will be using—oxygen, nitrogen, helium, carbon dioxide, and argon.

Specifications

Accuracy: ±5% full-scale
Max pressure: 150 psi (10.3 bar)
Max operating temp: 250°F (121°C)
Connections: 3/8" NPT(F)

Dimensions (W x H)
 In-line (including fitting): 2" (5.1 cm) x 11" (28 cm)
 Panel-mount: 2" (5.1 cm) x 10 1/4" (26 cm)

Materials of Construction

Part	Brass	316 SS
Flowtube	Borosilicate glass	
Fittings, valves	Brass	316 SS
O-rings	Viton®	
Float	316 stainless steel	
Frame	Polycarbonate	



32605-36

Maximum flow rate					Flowmeters without valve				Flowmeters with valve			
O ₂	N ₂	He	CO ₂	Ar	Brass fittings		316 SS fittings		Brass fittings		316 SS fittings	
					Catalog number	Price	Catalog number	Price	Catalog number	Price	Catalog number	Price
In-line flowmeters with English units (scfm)												
4.5	4.5	12	3.8	4.2	TW-32605-00		TW-32605-05		TW-32605-10		TW-32605-15	
9	9.5	23	8	8	TW-32605-01		TW-32605-06		TW-32605-11		TW-32605-16	
14	14	35	12.5	12.5	TW-32605-02		TW-32605-07		TW-32605-12		TW-32605-17	
18	19	42.5	15.5	15.5	TW-32605-03		TW-32605-08		TW-32605-13		TW-32605-18	
28	30	60	24	26	TW-32605-04		TW-32605-09		TW-32605-14		TW-32605-19	
In-line flowmeters with metric units (sL/min)												
130	130	350	105	120	TW-32605-20		TW-32605-26		TW-32605-31		TW-32605-36	
260	270	650	220	230	TW-32605-21		TW-32605-27		TW-32605-32		TW-32605-37	
400	400	1000	360	360	TW-32605-22		TW-32605-28		TW-32605-33		TW-32605-38	
525	550	1250	440	440	TW-32605-24		TW-32605-29		TW-32605-34		TW-32605-39	
800	850	1800	700	750	TW-32605-25		TW-32605-30		TW-32605-35		TW-32605-40	
Panel-mount flowmeters with English units (scfm)												
4.5	4.5	12	3.8	4.2	TW-32605-41		TW-32605-46		TW-32605-51		TW-32605-56	
9	9.5	23	8	8	TW-32605-42		TW-32605-47		TW-32605-52		TW-32605-57	
14	14	35	12.5	12.5	TW-32605-43		TW-32605-48		TW-32605-53		TW-32605-58	
18	19	42.5	15.5	15.5	TW-32605-44		TW-32605-49		TW-32605-54		TW-32605-59	
28	30	60	24	26	TW-32605-45		TW-32605-50		TW-32605-55		TW-32605-60	
Panel-mount flowmeters with metric units (sL/min)												
130	130	350	105	120	TW-32605-61		TW-32605-66		TW-32605-71		TW-32605-76	
260	270	650	220	230	TW-32605-62		TW-32605-67		TW-32605-72		TW-32605-77	
400	400	1000	360	360	TW-32605-63		TW-32605-68		TW-32605-73		TW-32605-78	
525	550	1250	440	440	TW-32605-64		TW-32605-69		TW-32605-74		TW-32605-79	
800	850	1800	700	750	TW-32605-65		TW-32605-70		TW-32605-75		TW-32605-80	



Cole-Parmer
Acrylic In-Line Flowmeters

Highly durable compact design

- Block body with brass-reinforced connections—virtually unbreakable
- Large scale on a flat surface is easy to read
- Many versions have dual time-unit scales

Designed for rough-duty installations, a built-in guide rod stabilizes the float for easier reading. These are suitable for most general process fluids (brass reinforcing the connection does not come in contact with the fluid). Common applications are for RO systems, air-sampling skids and chemical feed systems in water treatment.



Flowmeter for air 32445-00

Flowmeter for air 32445-08

Specifications

Connection	Accuracy	Dimensions (W x H x D)
1/4" NPT(M)	±5%	1" x 5 1/2" x 1 1/8" (2.5 x 13.6 x 2.8 cm)
1/2" NPT(F)	±3%	1 1/2" x 9 1/4" x 1 5/8" (3.8 x 23.5 x 4.1 cm)
3/4" NPT(F)		1 1/2" x 11 1/4" x 1 5/8" (3.8 x 28.6 x 4.1 cm)



Media type: water or air

Max pressure: 100 psig (6.9 bar)

Max operating temp: 150°F (65°C)

Materials of Construction

Body	Acrylic
Fittings	PVC
Float	316 SS
O-rings	Buna N
Guide rod	SS

Catalog number	Flow range	Connections	Price
For water			
TW-32445-50	1 to 12 GPH	1/4" NPT(M)	
TW-32445-52	4 to 25 GPH		
TW-32445-54	6 to 60 GPH		
TW-32445-56	30 to 150 GPH/0.5 to 2.5 GPM	1/2" NPT(F)	
TW-32445-58	24 to 300 GPH/0.4 to 5 GPM		
TW-32445-60	60 to 600 GPH/1 to 10 GPM		
TW-32445-62	90 to 900 GPH/1.5 to 15 GPM	3/4" NPT(F)	
TW-32445-64	120 to 1200 GPH/2 to 20 GPM		
TW-32445-66	4 to 50 LPH		
TW-32445-68	15 to 100 LPH	1/4" NPT(M)	
TW-32445-70	30 to 230 LPH		
TW-32445-72	120 to 600 LPH/2 to 10 LPM		
TW-32445-74	120 to 1200 LPH/2 to 20 LPM	1/2" NPT(F)	
TW-32445-76	240 to 2400 LPH/4 to 40 LPM		
TW-32445-78	360 to 3600 LPH/6 to 60 LPM		
TW-32445-80	480 to 4200 LPH/8 to 70 LPM	3/4" NPT(F)	
For air			
TW-32445-00	6 to 60 scfh	1/4" NPT(M)	
TW-32445-02	15 to 100 scfh		
TW-32445-04	25 to 300 scfh		
TW-32445-06	180 to 720 scfh/3 to 12 scfm	1/2" NPT(F)	
TW-32445-08	180 to 1500 scfh/3 to 25 scfm		
TW-32445-10	300 to 3000 scfh/5 to 50 scfm		
TW-32445-11	600 to 4800 scfh/10 to 80 scfm	3/4" NPT(F)	
TW-32445-12	200 to 1700 LPH	1/4" NPT(M)	
TW-32445-14	500 to 3000 LPH		
TW-32445-16	1000 to 8500 LPH		
TW-32445-18	4800 to 20,400 LPH/80 to 340 LPM	1/2" NPT(F)	
TW-32445-20	6000 to 42,000 LPH/100 to 700 LPM		
TW-32445-22	9000 to 90,000 LPH/150 to 1500 LPM		
TW-32445-23	12,000 to 13,200 LPH/200 to 2200 LPM		

Cole-Parmer
High-Flow Acrylic In-Line Flowmeters

Durable design includes union ends for easy installation and maintenance

The one-piece clear acrylic construction is ideal for damp or corrosive process environments. The stainless steel float moves on a guide rod to help provide a steady read. Scales printed right on the flow tube make accurate readings easier in tough conditions or for dirty fluids.



Flowmeter 32448-04 with stainless steel fittings

Flowmeter 32448-32 with PVC fittings

Specifications

Accuracy: ±5% full-scale

Media type: liquids or gases

Max pressure: 100 psig (6.9 bar)

Max operating temp: 150°F (65°C)

Dimensions (W x H x D)

Meters with 1 1/2" connection:
3 1/2" x 13 3/8" x 3 1/2" (8.9 x 34.0 x 8.9 cm)

Meters with 2" connection:
4 1/8" x 13 3/8" x 4 1/8" (10.5 x 34.6 x 10.5 cm)

Materials of Construction

Body	Acrylic
Fittings	PVC SS
O-rings	Buna N
Float	Aluminum or SS
Guide rod	SS

Flow range	Connections	PVC fittings		SS fittings	
		Cat. no.	Price	Cat. no.	Price
For water					
3 to 30 GPM	1 1/2" NPT(F)	TW-32448-00		TW-32448-04	
4 to 40 GPM		TW-32448-06		—	—
5 to 50 GPM		TW-32448-12		—	—
6 to 60 GPM	2" NPT(F)	TW-32448-20		—	—
8 to 80 GPM		TW-32448-26		TW-32448-30	
10 to 100 GPM		TW-32448-32		TW-32448-36	
For air					
20 to 240 scfm	2" NPT(F)	TW-32448-50		TW-32448-54	

INNOCAL®
INNOVATIVE CALIBRATION SOLUTIONS

Ensure the accuracy of your flowmeter!

TW-17080-00 NIST-traceable calibration
with data for air/gas flowmeter

TW-17080-12 NIST-traceable calibration
with data for liquid flowmeter



Flowmeters

Variable Area, Direct Reading



32900-62

High-Accuracy Oxygen and Air Flowmeters

Ideal for use in aquaculture, medical, and laboratory processes

- Available for use with both oxygen and breathing air
- Precision control valve provides accurate, leak-free flow control
- Machined brass base with integral DISS fitting and plated with a high-gloss chrome-like finish

These accurate, low-cost flowmeters are perfect for fish farms, welding apparatus, and medical devices that need to regulate oxygen and air into processes. Flowmeters are made with high-impact resistant Lexan® shield and flow tube. Combined with a sturdy machined brass base, these meters will stand up to the rigors of clinical or field use. The durable, stainless steel stem valve ensures precise control throughout the full flow range and provides for positive flow shut-off. O-ring seals eliminate the leaks that are commonly associated with plastic-base models. Meters are calibrated at 50 psig inlet pressure for accurate flow measurement under a variety of operating conditions. Models 32900-62 and -66 are cleared for oxygen use.

Specifications

Media type: oxygen and air

Accuracy

- 1/8 to 4 LPM: ±0.2 LPM
- 4 to 8 LPM: ±0.4 LPM
- 8 to 15 LPM: ±0.6 LPM

Repeatability: ±1% full-scale

Max pressure: 100 psig (6.9 bar)

Operating temp:

32 to 150°F (0 to 65°C)

Connections: 1/8" NPT (F) inlet,
1/16-18" male DISS outlet

Dimensions

Fitting-to-fitting: 1 1/16" (1.75 cm)
Height: 5 1/4" (13.3 cm)

Materials of Construction

Case	Brass
Flow tube, shield	Lexan®
Fittings	Nickel-plated brass
O-rings	Buna N



Flow range (LPM)	Float	For oxygen		For air	
		Catalog number	Price	Catalog number	Price
1/8 to 3 1/2	Black glass	TW-32900-62		—	—
1/4 to 8	Black glass	TW-32900-64		TW-32900-68	
1/2 to 15	Stainless steel	TW-32900-66		TW-32900-72	



Impact-Resistant Polycarbonate Flowmeters

Precision-adjusting valve for accurate, leak-free flow control

- High-quality construction
- Economy combined with high accuracy
- Ideal for OEM applications

Molded of high-impact-resistant polycarbonate, these direct-reading flowmeters are supplied with scales in both English and metric units for liquid and air—all with a 10:1 turndown ratio. These flowmeters have been designed to maintain maximum pressures to 100 psig and temperatures to 150°F (65°C).

Specifications

Media type: noncaustic liquids and air

Accuracy: ±4% full-scale

Repeatability: ±1% full-scale

Turndown ratio: 10:1

Max pressure: 100 psig (6.9 bar)

Operating temp:

32 to 150°F (0 to 65°C)

Connections: 1/8" NPT(F)

Dimensions

Fitting-to-fitting: 3" (7.6 cm)
Height: 4 13/16" (12.2 cm)

Materials of Construction

Flow tube	Polycarbonate
Fittings	Stainless steel
O-rings	Viton®
Frame	Polycarbonate



32900-36

Flow range	Float [†]	Flowmeters without valve		Flowmeters with valve	
		Catalog number	Price	Catalog number	Price
For liquids; English units					
0.2 to 2.5 GPH	WC	TW-32900-02		TW-32900-28	
1 to 10 GPH	BG	TW-32900-04		TW-32900-30	
4 to 40 GPH	SS	TW-32900-06		TW-32900-32	
For liquids; metric units					
5 to 110 ccm	BG	TW-32900-08		TW-32900-34	
20 to 300 ccm	SS	TW-32900-10		TW-32900-36	
For air; English units					
0.2 to 2.5 scfh	SS	TW-32900-12		TW-32900-38	
1 to 11 scfh	BG	TW-32900-14		TW-32900-40	
4 to 60 scfh	BG	TW-32900-16		TW-32900-42	
For air; metric units					
0.1 to 1.2 LPM	SS	TW-32900-18		TW-32900-44	
0.4 to 5 LPM	BG	TW-32900-20		TW-32900-46	
1 to 10 LPM	SS	TW-32900-22		TW-32900-48	
4 to 50 LPM	SS	TW-32900-24		TW-32900-52	
10 to 100 LPM	TC	TW-32900-26		TW-32900-54	

[†]Float material key: WC = white ceramic, BG = black glass, SS = stainless steel, TC = tungsten carbide



Pitot Tube-Style Flowmeter

Unique design allows wide viewing angles for easier reading

- Easily serviceable
- Dual-scale flow units—GPM and LPM

Pitot tube-style flowmeters are designed to measure water flow rates in closed horizontal PVC water pipe systems, such as swimming pool, spa, aquaculture, and horticulture applications, ensuring the recirculation pump is flowing adequate water for optimal water filtration. These flowmeters are compatible with existing flowmeter installations at an economical price, and can replace more expensive paddle wheel flowmeter systems when only local indication is required.

Flowmeter body is machined from a single acrylic piece, and clamps directly onto Schedule 40 PVC pipe with included gasket. Made from all corrosion-resistant materials, these meters are designed for indoor or outdoor use.

What's included: Viton® gasket and two stainless steel (SS) clamps.

Specifications

Accuracy: ±10% full-scale
Media type: water
Max pressure: 150 psi (10.3 bar)

Operating temp: 32 to 150°F (0 to 65°C)
Dimensions: 5¼"H (13.3 cm) (top of meter to pipe)

Materials of Construction

Flow tube	Acrylic
Seals	Viton®
Mounting base	PVC
Top plug	PVC

Catalog number	Flow range		Pipe size	Float	Price
	GPM	LPM			
TW-32900-82	5 to 35	20 to 130	1¼"	316 SS	
TW-32900-84	10 to 60	40 to 220	1¼"	316 SS	
TW-32900-86	5 to 30	20 to 110	1½"	Black acrylic	
TW-32900-88	20 to 100	75 to 375	1½"	316 SS	
TW-32900-90	40 to 130	150 to 500	2"	316 SS	



32900-82

Technical Support



*Our team of experts
is here to help you*

Cole-Parmer®
Delivering Solutions You Trust

Pocket Flowmeters

Perfect for quick flow readings of tubing

- Reads 3/16" to 7/16" ID tubing size
- Polycarbonate flow tube
- Stainless steel float

Portable handheld flowmeters are designed to measure flow rates quickly and easily. Measure oxygen or air in the lab, field, or in process areas. Simply attach the flowmeter to tubing vertically to ensure accurate readings. Read center of ball float for the most accurate reading.



32500-82

Specifications

Accuracy
 ½ to 4 LPM: ±0.2 LPM
 4 to 8 LPM: ±0.4 LPM
 8 to 15 LPM: ±0.6 LPM

Max pressure: 100 psi (6.9 bar)
Mounting angle: vertical
Flow conditions: atmosphere
Dimensions (L x dia): 5¼" x ½" (13.3 x 1.3 cm)
Fits tubing size: 3/16" to 7/16" ID

Materials of construction

Flow tube	Polycarbonate
Float	Stainless steel
Fittings	Acrylic



Flow range (LPM)	For oxygen		For air	
	Catalog number	Price	Catalog number	Price
½ to 2½	TW-32500-80		—	—
1 to 8	TW-32500-82		TW-32500-86	
2 to 15	TW-32500-84		TW-32500-88	



Flowmeters

Variable Area, Direct Reading

Easy-View Acrylic In-Line Flowmeters

Highly durable meters provide an unobstructed 360° view

- Flow ranges up to 50 GPM (200 LPM) with dual-unit scales for flexibility
- Machined from high-quality acrylic rod stock—extremely durable
- The one-piece, in-line body consumes less space for a clean installation

These meters are designed for use in more aggressive process environments. In addition to the machined acrylic bodies, the design utilizes SS float guides. The combination is a meter suitable for high-vibration, high-fluctuation process applications. Some versions include polypropylene end fittings reinforced with aluminum stress rings for added strength to the meters' design.

Models for liquids have direct-reading scales in English and metric units; models for air have direct-reading scales in English.

Specifications for all flowmeters



Accuracy: ±5% of reading
Max pressure: 150 psi (10.3 bar); 130 psig (8.8 bar) for large-body models
Max operating temp: 150°F (65°C); 130°F (54°C) for large-body models

Dimensions (H x dia)
 Models with flow rates up to 5 GPM and 45 scfm air: 8 3/16" x 1 1/4" (20.8 x 3.2 cm)
 Models with flow rates from 10 to 20 GPM: 11" x 1 3/4" (27.9 x 4.4 cm)
 Large-body models: 12" x 2" (30.5 x 5.1 cm)

Materials of Construction

Part	General-purpose	Large-body	Corrosive environment with alarm
Body	Acrylic		
Fittings	PP†	PVC	PVC
O-rings	Viton®		
Guide	316 SS	Hastelloy	

†Reinforced with aluminum stress rings.

General-Purpose Flowmeters

Cat. no.	Flow range	Float	Connections	Price
For liquids				
TW-32477-00 TW-32477-02	0.025 to 0.25 GPM/0.1 to 1 LPM	PVC	1/4" NPT(F) 3/8" NPT(F)	
TW-32477-04 TW-32477-06	0.1 to 1 GPM/0.4 to 4 LPM	PVC	3/8" NPT(F) 1/2" NPT(F)	
TW-32477-08 TW-32477-10	0.2 to 2 GPM/1 to 7.5 LPM	316 SS	3/8" NPT(F) 1/2" NPT(F)	
TW-32477-12 TW-32477-14	0.3 to 3 GPM/1.5 to 11.1 LPM	316 SS	3/8" NPT(F) 1/2" NPT(F)	
TW-32477-16 TW-32477-18	0.5 to 5 GPM/2.0 to 20 LPM	316 SS	3/8" NPT(F) 1/2" NPT(F)	
TW-32477-20 TW-32477-22	1 to 10 GPM/4 to 38 LPM	316 SS	3/4" NPT(F) 1" NPT(F)	
TW-32477-24 TW-32477-26	1 to 17 GPM/4 to 64 LPM	316 SS	3/4" NPT(F) 1" NPT(F)	
TW-32477-28 TW-32477-30	2 to 20 GPM/8 to 80 LPM	316 SS	3/4" NPT(F) 1" NPT(F)	
For air				
TW-32477-70 TW-32477-72	0.75 to 7.5 scfm	316 SS	3/8" NPT (F) 1/2" NPT (F)	
TW-32477-74 TW-32477-76	4.0 to 45 scfm	316 SS	3/4" NPT (F) 1" NPT (F)	

Large-Body Flowmeters

Cat. no.	Flow range	Float	Connections	Price
For liquids				
TW-32477-78 TW-32477-80 TW-32477-82	5 to 25 GPM (20 to 100 LPM) 8 to 40 GPM (30 to 150 LPM) 10 to 50 GPM (40 to 200 LPM)	316 SS	1 1/2" NPT (M)	



General-purpose flowmeter for liquids 32477-26

General-purpose flowmeter with alarm 32477-50

Large-body flowmeter for liquids 32477-82

Flowmeters with High/Low Alarms

Catalog number	Flow range		Float	Connection	Price
	GPM	LPM			
General purpose flowmeters for liquids					
TW-32477-34 TW-32477-36	0.2 to 2.0	1 to 7.5	PVC	3/4" NPT(F) 1" NPT(F)	
TW-32477-50 TW-32477-52	0.5 to 5.0	2 to 20			
TW-32477-38 TW-32477-40	1 to 10	4 to 38	316 SS	3/4" NPT(F) 1" NPT(F)	
TW-32477-54 TW-32477-56	2 to 20	8 to 80			
Corrosive-environment flowmeters for liquids					
TW-32477-42 TW-32477-44	1 to 10	4 to 38	Hastelloy	3/4" NPT(F) 1" NPT(F)	
TW-32477-46 TW-32477-48	1 to 17	4 to 64			
TW-32477-58 TW-32477-60	2 to 20	8 to 80			



Ensure the accuracy of your flowmeter!

- [TW-17080-00](#) NIST-traceable calibration with data for air/gas flowmeter
- [TW-17080-12](#) NIST-traceable calibration with data for liquid flowmeter



Polysulfone In-Line Flowmeters

Better than acrylics for aggressive fluids or high temperature and pressure applications

- Flow ranges from less than 0.1 GPM to over 130 GPM and less than 1 scfm to over 230 scfm
- Models with all plastic wetted parts are ideal for ultrapure and deionized water applications

All meters include union connections—installing the meter and cleaning the internals is much easier. The unions also allow simple rotation of the sight-tube for easier reading all while keeping a tight thread seal on the fittings to contain aggressive fluids. With an O-ring seal, a tight seal is assured with O-ring replacement.

Most meters feature dual scales (English and metric) to reduce the need for stocking separate units for shipping to the US or elsewhere. The back-side of the meter body is molded with an opaque surface to make reading easier.

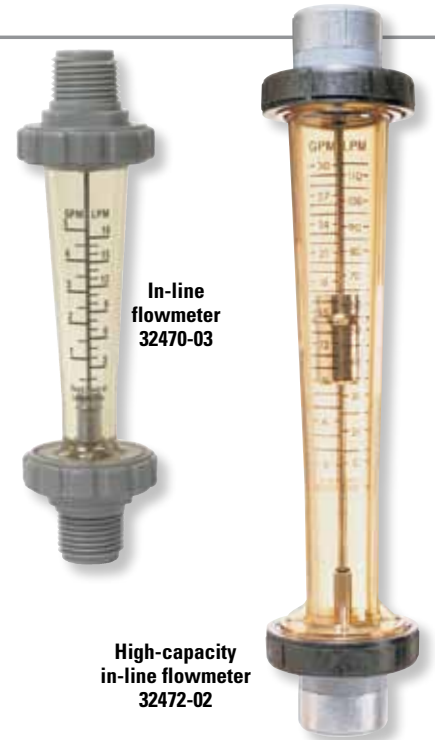
Note: Polysulfone is not suited for direct exposure to sunlight.

Specifications for all flowmeters

Accuracy

- Standard in-line and panel mount: ±5% full-scale
- High-capacity: ±3% full-scale
- Ultrapure: ±2½% full-scale

Max pressure drop: 2 psi (0.1 bar)



In-line flowmeter
32470-03

High-capacity in-line flowmeter
32472-02

In-Line Flowmeters

This design is the standard and fits well into the piping line for confined or high-traffic areas.

Catalog number	Flow range	Float material	Connections	Dimensions (L x dia)	Maximum temp/pressure	Price
Standard in-line flowmeters for water						
TW-32470-00	0.025 to 0.25 GPM/0.1 to 1.0 LPM	PVC	½" NPT(M)	6¾" x 1½"	212°F/ 150 psig	
TW-32470-01	0.1 to 1.0 GPM/0.4 to 4.0 LPM	316 SS				
TW-32470-02	0.2 to 2.0 GPM/0.75 to 7.5 LPM	316 SS				
TW-32470-03	0.5 to 5.0 GPM/1.8 to 18 LPM	316 SS				
TW-32470-04	1.0 to 10.0 GPM/5.0 to 37.5 LPM	316 SS	¾" NPT(M)	7½" x 2"		
Standard in-line flowmeters for air						
TW-32470-05	1 to 12 scfm	316 SS	½" NPT(M)	8¾" x 2"	212°F/ 150 psig	
TW-32470-06	4 to 48 scfm		¾" NPT(M)	10" x 2"		
High-capacity in-line flowmeters for water						
TW-32472-00	1.0 to 10 GPM/3.0 to 38 LPM	316 SS	1" NPT(F)	14½" x 3½"	212°F/ 150 psig	
TW-32472-01	2.0 to 20 GPM/7.5 to 75 LPM					
TW-32472-02	3.0 to 30 GPM/12 to 115 LPM					
TW-32472-03	4.0 to 40 GPM/15 to 155 LPM		2" NPT(F)	18¾" x 4¾"	150°F/ 130 psig	
TW-32473-01	6.0 to 60 GPM/30 to 230 LPM					
TW-32473-02	10 to 80 GPM/40 to 300 LPM					
TW-32473-04	15 to 130 GPM/60 to 500 LPM					
High-capacity in-line flowmeters for air						
TW-32473-10	8 to 80 scfm	316 SS	1" NPT(F)	14½" x 3½"	212°F/150 psig	
TW-32473-11	30 to 230 scfm		2" NPT(F)	18¾" x 4¾"		

Ultrapure In-Line Flowmeters for Liquids

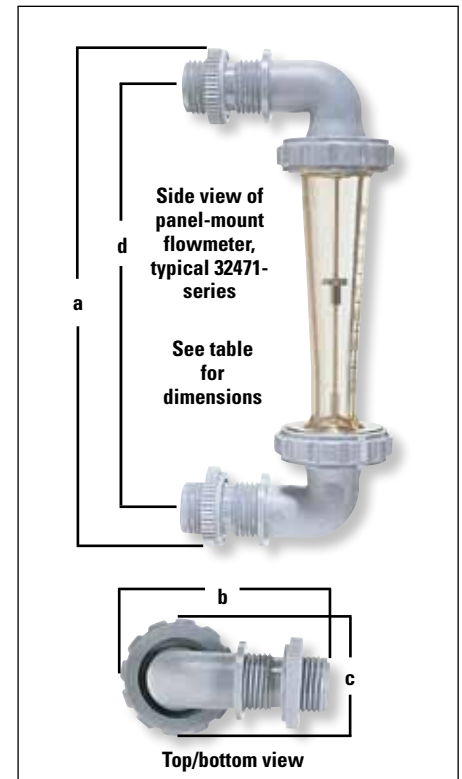
These designs use a fluted meter body instead of a metallic float guide as in the other units. There is no metal in the fluid path with these meters.

Catalog number	Flow range	Float material	Connections	Dimensions (L x dia)	Maximum temp/pressure	Price
TW-32475-10	0.1 to 1.2 GPM/0.4 to 4.4 LPM	PTFE	½" NPT(F)	10" x 1¾"	130°F/ 150 psig	
TW-32475-14	0.2 to 2.0 GPM/0.3 to 8.0 LPM					
TW-32475-22	0.5 to 5.0 GPM/2.0 to 20 LPM					

Panel-Mount Flowmeters

Meters include 90° PVC elbow fittings for panel mounting. Models for air include a valve for control of inlet flow into meter; call your dealer for lower cost air models without a valve.

Catalog number	Flow rate	Float material	Connections	Dimensions (a x b x c, d)	Maximum temp/press	Price
Panel-mount flowmeters for water						
TW-32471-00	0.025 to 0.250 GPM/0.1 to 1.0 LPM	PVC	½" NPT(M)	7" x 4½" x 1½", 6"	212°F/ 150 psig	
TW-32471-01	0.1 to 1.0 GPM/0.4 to 4.0 LPM	316 SS				
TW-32471-02	0.2 to 2.0 GPM/0.75 to 7.5 LPM					
TW-32471-03	0.5 to 5.0 GPM/1.8 to 18 LPM					
TW-32471-04	1.0 to 10.0 GPM/5.0 to 37.5 LPM	316 SS	¾" NPT(M)	8" x 4½" x 2", 6½"		
Panel-mount flowmeters for air						
TW-32471-05	1 to 12 scfm	316 SS	½" NPT(M)	9¾" x 3¾" x 2", 8¾"	212°F/ 150 psig	
TW-32471-06	4 to 48 scfm		¾" NPT(M)	10½" x 3¾" x 2", 9¾"		



Side view of panel-mount flowmeter, typical 32471-series

See table for dimensions

Top/bottom view

MORE online!

For pressure drop information for these flowmeters, go to ...

ColeParmer.com



Flowmeters

Variable Area, Direct Reading

Cole-Parmer Flowmeters with Pressure-Compensating Scales

Install in any position

Use for high-pressure industrial applications—install in any configuration, even next to a bend in your pipeline. A calibrated retention spring eliminates the need to mount flowmeters vertically or run straight lengths of pipe prior to or after the meter. These rugged flowmeters are relatively insensitive to shock and vibrations—the spring, piston assembly, and internal magnet compensate for rough process environments.

Specifications

Accuracy: ±2% full-scale
Repeatability: ±1%
Max operating temp: 240°F (115°C)

Max pressure
 Aluminum models (gas): 1000 psi (68.9 bar)
 Brass models (liquid): 3500 psi (241.3 bar)
 Stainless steel models (liquid): 6000 psi (413.6 bar)
 up to ½" NPT(F); 5000 psi (344.7 bar) up to 1" NPT(F)



Materials of Construction

Part	Aluminum	Brass	Stainless steel (SS)
Body	Aluminum	Brass	303 SS
Piston/cone	Aluminum	Brass	303 SS
Fittings	Anodized aluminum	Brass	303 SS
Spring		302 SS	
Magnet		PPS ceramic	
Seals		Viton®	



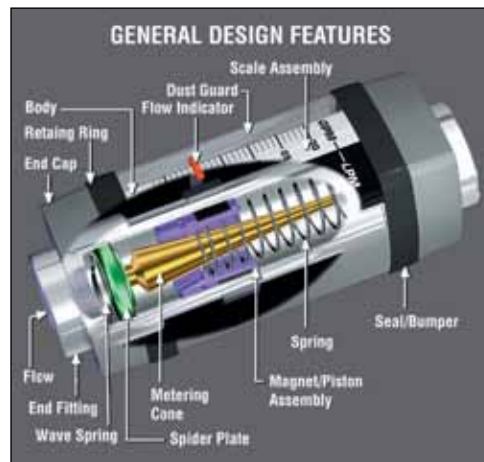
Graph-style aluminum flowmeter 32206-26

Dual-scale SS flowmeter 32205-12

Graph-Style Aluminum Flowmeters for Air

Graph-style flowmeters for air are ideal for applications with changing pressures—eliminating the need for calculating correction factors. Flowmeters with built-in pressure gauge allow measurement of inlet pressure, which is necessary to properly read the scale graph. Aluminum construction.

Flow range [†] Air (scfm)	Connections	Dimensions (W x H x D)	Graph-style flowmeters		Graph-style flowmeters with built-in pressure gauge	
			Catalog number	Price	Catalog number	Price
0.5 to 5 1 to 10 2 to 20 3 to 30	¼" NPT(F)	1¾" x 4 ¹³ / ₁₆ " x 1 ¹⁵ / ₁₆ " (4.4 x 12.2 x 5.0 cm)	TW-32206-02		TW-32206-52	
			TW-32206-04		TW-32206-54	
			TW-32206-06		TW-32206-56	
			TW-32206-08			—
3 to 25 5 to 50 10 to 100 15 to 150	½" NPT(F)	2½" x 6 ⁵ / ₁₆ " x 2 ⁷ / ₁₆ " (5.4 x 16.8 x 6.2 cm)	TW-32206-12		TW-32206-62	
			TW-32206-14		TW-32206-64	
			TW-32206-16		TW-32206-66	
				—	TW-32206-68	
10 to 100 15 to 150 25 to 250	¾" NPT(F)	2½" x 7 ³ / ₁₆ " x 2 ¹⁵ / ₁₆ " (6.4 x 18.2 x 7.5 cm)	TW-32206-20		TW-32206-70	
				—	TW-32206-72	
			TW-32206-24		TW-32206-74	
				—		
25 to 250	1" NPT(F)	2½" x 7 ³ / ₁₆ " x 2 ¹⁵ / ₁₆ " (6.4 x 18.2 x 7.5 cm)	TW-32206-26		TW-32206-76	



Dual-Scale Brass and Stainless Steel Flowmeters for Water

Dual-scale flowmeters indicate gallons and liters simultaneously with an easy-to-read linear scale and highly visible red indicator. Available in brass or stainless steel construction.

Flow range [†] Water		Connections	Dimensions (W x H x D)	Brass flowmeters		303 stainless steel flowmeters	
GPM	LPM			Cat. no.	Price	Cat. no.	Price
0.1 to 1.0 0.2 to 2.0	0.4 to 4 1 to 7.5	¼" NPT(F)	1¾" x 4 ¹³ / ₁₆ " x 1 ¹⁵ / ₁₆ " (4.4 x 12.2 x 5.0 cm)	TW-32204-04		TW-32205-04	
				TW-32204-06		TW-32205-06	
0.2 to 2.0 0.5 to 5.0 1 to 15 1 to 10	1 to 7.5 1.8 to 18 4 to 56 4 to 37	½" NPT(F)	2½" x 6 ⁵ / ₁₆ " x 2 ⁷ / ₁₆ " (5.4 x 16.8 x 6.2 cm)	TW-32204-08		TW-32205-08	
				TW-32204-10		TW-32205-10	
				TW-32204-12		TW-32205-12	
				TW-32204-14		TW-32205-14	
2 to 20 3 to 30 1 to 10	7.5 to 75 11 to 113 4 to 37	¾" NPT(F)	2½" x 7 ³ / ₁₆ " x 2 ¹⁵ / ₁₆ " (6.4 x 18.2 x 7.5 cm)	TW-32204-16			—
				TW-32204-18			—
				TW-32204-20		TW-32205-20	
				TW-32204-22		TW-32205-22	
4 to 40	11 to 151	1" NPT(F)	2½" x 7 ³ / ₁₆ " x 2 ¹⁵ / ₁₆ " (6.4 x 18.2 x 7.5 cm)	TW-32204-24			—

[†]Flow given at 70°F and 100 psi.

INNOCAL®
INNOVATIVE CALIBRATION SOLUTIONS

Ensure the accuracy of your flowmeter!

[TW-17080-00](#) NIST-traceable calibration with data for air/gas flowmeter

[TW-17080-12](#) NIST-traceable calibration with data for liquid flowmeter



Cole-Parmer® Economical Spring-Loaded Flowmeters

Perfect low-cost durable process meter

- Spring-loaded indicator allows inline mounting in any position
- Nonreactive wetted parts are ideal for applications requiring a high level of purity
- Direct reading in dual English and metric scales
- Versions available with electric switches—field adjustable to trigger high/low alarms or other control devices

Spring-loaded, no-float design means these versatile, economical flowmeters do not depend on gravity for accurate readings. Mount in any position in your flow line. Straight pipe runs are not required before or after the flowmeter. Pressure drop is only 4 psi full scale. Flowmeters feature a knife-edged piston that remains visible and easy to read even through cloudy liquids. Working parts are easily removed for maintenance.

Flowmeters for Water, Air, or Nitrogen are ideal for general water and air applications, including process water and cooling water lines. Flowmeters feature direct reading scales for water in GPM and LPM, as well as for air (at 90 psi) in scfm and SLPM.

Flowmeters for Ultrapure Water are perfect for pharmaceutical and laboratory applications using ultra-pure, distilled, deionized, or demineralized water. Use these flowmeters to indicate flow rate to deionized water returns and UPW returns.

Flowmeters with Electric Switches allow for critical set point monitoring. They are field adjustable to activate high/low alarms or other control devices via a proximity switch in the housing which is actuated by the moving piston.

Note: Polysulfone is not suited for direct contact with sunlight.



Flowmeter for water, air, or nitrogen 32211-54

Adjustable switch versions allow you to monitor critical flow points.



Flowmeter for ultrapure water 32213-10

Specifications

Accuracy: ±5% full-scale flow

Repeatability: ±5% of reading

Pressure drop: 4 psi (0.2 bar) at full scale flow

Max pressure: 250 psig (17.2 bar) liquids;
125 psig (8.6 bar) gases

Max operating temp: 230°F (110°C)

Dimensions

Models with max flow rates up to 15 GPM
Without switch (H x dia): 7" x 2" (17.8 x 5.1 cm)
With switch (W x H x D): 2" x 7" x 3 3/8" (5.1 x 17.8 x 9.8 cm)
Models with max flow rates from 20 to 50 GPM
Without switch (H x dia): 7" x 3" (17.8 x 7.6 cm)
With switch (W x H x D): 3" x 7" x 4 1/2" (7.6 x 17.8 x 11.4 cm)

Switch (for appropriate models): three-wire Reed switch, contacts rated at 120 VAC/100 VDC, 300 mA

Materials of Construction

Part	Materials of Construction	
	For water, air, or nitrogen	Ultrapure water design
Body	Polysulfone	
Fittings	Brass	316 SS
O-rings	Viton®	
Spring	316 SS	
Shaft	Viton®	



Maximum flow rate				Connections	For water, air, or nitrogen				For ultrapure water only		
Water		Air†			Flowmeters without switch		Flowmeters with switch		Flowmeters without switch		
GPM	LPM	scfm	SLPM		Catalog number	Price	Catalog number	Price	Catalog number	Price	
5	20	50	1400	1/2" NPT(F) 1" NPT(F)	TW-32211-00 TW-32211-02			TW-32211-50 TW-32211-52		TW-32213-00 TW-32213-02	
10	38	90	2500	1/2" NPT(F) 1" NPT(F)	TW-32211-04 TW-32211-06			TW-32211-54 TW-32211-56		— —	— —
15	55	135	3900	1/2" NPT(F) 1" NPT(F)	TW-32211-08 TW-32211-10			TW-32211-58 TW-32211-60		TW-32213-10	
20	75	200	5500	1" NPT(F) 1 1/2" NPT(F)	TW-32211-12 TW-32211-14			TW-32211-62 —	—	— —	— —
30	110	300	6000	1" NPT(F) 1 1/2" NPT(F)	TW-32211-16 TW-32211-18			TW-32211-66 TW-32211-68		TW-32213-18	
40	150	400	11,000	1" NPT(F) 1 1/2" NPT(F)	TW-32211-20 TW-32211-22			— TW-32211-72	—	— TW-32213-22	—
50	200	500	14,000	1" NPT(F) 1 1/2" NPT(F)	TW-32211-24 TW-32211-26			— TW-32211-76	—	TW-32213-24 TW-32213-26	

†Only models 32211-series measure air at 90 psi and 70°F.

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[TW-17080-00](#) NIST-traceable calibration with data for air/gas flowmeter
[TW-17080-12](#) NIST-traceable calibration with data for liquid flowmeter



Flowmeters

Variable Area, Direct Reading

Cole-Parmer Stainless Steel Shielded Flowmeters

For the most aggressive process applications

- Flowmeters enclosed in brushed 304 SS case
- Ideal for applications with flow rates up to 116 GPM and 250 scfm

Detachable, clear 3/16"-thick polycarbonate front shield provides protection at maximum rated temperature and pressure. Easily read the graduated direct-reading scale. The interchangeable transparent scale plates mount directly on the front of the flowtube.

Unique float stops allow easy cleaning—remove and replace the float without disturbing either the flowtube or the shield. Tube sizes 3, 4, and 5 are fluted; tube sizes 6, 8, and 9 are tapered with a stainless steel guide rod.



Specifications

Accuracy: ±3% full-scale
Repeatability: ±0.5% full-scale
Minimum flow rate: approx 10% of max flow rate (see table below)

Max pressure: (at 200°F)
 Tube sizes 3, 4, 5, and 6: 200 psi (13.7 bar)
 Tube sizes 8, and 9: 125 psi (8.6 bar)

Max operating temp: 200°F (93°C)



Materials of Construction

Flowtube	Borosilicate glass
Fittings	316 SS
O-rings	Viton®
Float, rod	316 SS
Shield	Polycarbonate

Catalog number	Max flow rate		Float type [†]	Tube size	Pressure drop (" of H ₂ O)	Connections	Dimensions (W x H x D)	Price
	Water (GPM)	Air (scfm)						
TW-32447-00	0.25	1.0	LP		—			
TW-32447-02	0.36	1.5	SL	3	2	1/2" NPT(F)	2 1/2" x 1 1/8" x 2 9/16" (6.4 x 30.2 x 6.5 cm)	
TW-32447-10	0.74	3.0	SL	3	5			
TW-32447-20	1.0	4.2	LP	4	6		2 1/2" x 1 1/8" x 2 9/16" (6.4 x 30.2 x 6.5 cm)	
TW-32447-32	1.5	6.0	LP	5	—	1/2" NPT(F)	3 3/8" x 1 3/4" x 3 7/8" (8.6 x 34.9 x 9.8 cm)	
TW-32447-30	2.0	8.2	SL	4	10		2 1/2" x 1 1/8" x 2 9/16" (6.4 x 30.2 x 6.5 cm)	
TW-32447-34	3.8	16	GS	5	10			
TW-32447-40	5.0	21.5	SL	5	14	1" NPT(F)	3 3/8" x 1 3/4" x 3 7/8" (8.6 x 34.9 x 9.8 cm)	
TW-32447-42	6.0	25.5	GV	6	5			
TW-32447-50	9.6	40	GS	5	10			
TW-32447-52	11	45	GS	6	13	1" NPT(F)	3 3/8" x 1 3/4" x 3 7/8" (8.6 x 34.9 x 9.8 cm)	
TW-32447-54	14	62	GS	6	24	1" NPT(F)	3 3/8" x 1 3/4" x 3 7/8" (8.6 x 34.9 x 9.8 cm)	
TW-32447-60	20	90	SL	6	39	1" NPT(F)	3 3/8" x 1 3/4" x 3 7/8" (8.6 x 34.9 x 9.8 cm)	
TW-32447-62	26	— [‡]	SL	6	70	1" NPT(F)	3 3/8" x 1 3/4" x 3 7/8" (8.6 x 34.9 x 9.8 cm)	
TW-32447-74	41	160	GV	9	5	2" NPT(F)	5 1/8" x 1 6" x 5 5/8" (13.5 x 40.6 x 13.6 cm)	
TW-32447-80	60	245	GS	9	16	2" NPT(F)	5 1/8" x 1 6" x 5 5/8" (13.5 x 40.6 x 13.6 cm)	
TW-32447-82	86	— [‡]	SL	9	25	2" NPT(F)	5 1/8" x 1 6" x 5 5/8" (13.5 x 40.6 x 13.6 cm)	

[†]LP floats have the lowest pressure loss, GV floats are accurate at higher viscosities, GS floats are accurate at lower viscosities than GV and have a higher flow rate, SL floats have the highest flow rate. [‡]Flowmeters are for direct reading of water only.

Spring-Loaded In-Line Flowmeters

Provide accurate readings while mounted in any position

- Rugged design resists shock and vibration
- Control pumps or valves with an optional limit switch

These economical flowmeters are built with a spring-retained piston for direct, accurate readings regardless of the position you mount them. Use them to monitor hydraulic systems or chemical processes; the meters also work well to check pump and control valve performance.

Note: Polysulfone is not suited for direct contact with sunlight.

Specifications

Accuracy: ±5% full scale
Repeatability: ±1%
Max pressure: 325 psi (22.4 bar)
Max operating temp: 250°F (121°C)

Dimensions
 1/2" units: 7.75" (197 mm) L
 3/4" units: 8.25" (210 mm) L
 1" units: 5.25" (134 mm) L

Materials of Construction

Part	1/2" units	3/4" & 1" units
Body	Polysulfone	
Fittings	Brass	Polysulfone
Indicator ring/seals	Buna N	
Spring	316 stainless steel	



Flowmeter 03231-81 shown with limit switch 03231-80

Flowmeter 03231-41

Flow range		Pressure drop	Water, 1/2" NPT(F) [†]		Water, 3/4" NPT(M) [†]		Water, 1" NPT(M) [†]		Oil, 1" NPT(M) [‡]	
US units	Metric units		Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
0.5 to 4 GPM	2 to 15 LPM	1 psid at 3 GPM	TW-03231-01		TW-03231-21		TW-03231-41		TW-03231-61	
1 to 7 GPM	4 to 26 LPM	2 psid at 6 GPM	TW-03231-03		TW-03231-23		TW-03231-43		—	—
1 to 10 GPM	4 to 35 LPM	3 psid at 9 GPM	TW-03231-07		TW-03231-27		TW-03231-45		—	—
1 to 16 GPM	5 to 60 LPM	7.5 psid at 12 GPM	TW-03231-09		TW-03231-29		TW-03231-47		TW-03231-67	
4 to 28 GPM	20 to 100 LPM	7 psid at 21 GPM	—	—	TW-03231-33		TW-03231-51		TW-03231-71	

[†]Water flowmeters are calibrated for specific gravity = 1.00. [‡]Oil flowmeters are calibrated for specific gravity = 0.876.

Limit switches. Use to provide an output signal at a setpoint anywhere between 0 to 100% of full-scale. Use to control small pumps, valves, or alarms or to interface with a PLC.

TW-03231-80 AC switch; 115 VAC ±10%; 0.5 A max
TW-03231-85 DC switch; 10 to 30 VDC, 1 A max



Cole-Parmer Dual-Media Flowmeters with Dual Scale

Highly flexible design allows a single meter to be used in numerous applications

- Rotate the flow tube to select water or air scale in either English or metric units
- In-line and panel-mount options to suit most system designs
- Ideal for busy process areas—heavy-walled flowtube with metal housing

Specifications

Accuracy: ±5% full-scale
Max pressure: 150 psi (10.3 bar) at 200°F (93°C)
Max operating temp: 250°F (121°C)
Connections: 3/8" NPT(F)

Dimensions
 In-line (W x H): 2" x 13 1/4" (5.1 x 33.7 cm)
 Panel-mount (W x H x D): 2" x 10 3/8" x 1 7/8" (5.1 x 26.3 x 4.7 cm); valve protrudes 1 1/2" (3.8 cm) from face. Space between inlet and outlet is 9" (22.9 cm)

Materials of Construction

Part	Brass	316 SS
Flowtube	Borosilicate glass	
Fittings, valves	Brass	316 SS
O-rings	Viton®	
Float	316 SS	
Frame	Aluminum	



Panel-mount 32062-30

In-line 32060-02



Rotate scale around flowtube to select water or air scale.

Maximum flow rate				Flowmeters without valve				Flowmeters with valve			
Water		Air		Brass fittings		316 SS fittings		Brass fittings		316 SS fittings	
GPM	LPM	scfm	LPM	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
In-line flowmeters											
1.2	4.0	5	140	—	—	TW-32061-00	—	TW-32060-10	—	TW-32061-10	—
2.0	8.0	10	280	TW-32060-01	—	TW-32061-01	—	TW-32060-11	—	TW-32061-11	—
3.0	11.5	15	425	TW-32060-02	—	—	—	—	—	TW-32061-12	—
4.0	15.0	20	575	—	—	—	—	TW-32060-13	—	TW-32061-13	—
5.0	20.0	30	900	—	—	—	—	—	—	TW-32061-14	—
Panel-mount flowmeters											
1.2	4.0	5	140	—	—	—	—	TW-32062-10	—	TW-32062-30	—
2.0	8.0	10	280	TW-32062-02	—	TW-32062-22	—	TW-32062-12	—	TW-32062-32	—
3.0	11.5	15	425	—	—	—	—	TW-32062-14	—	—	—
4.0	15.0	20	575	—	—	—	—	TW-32062-16	—	TW-32062-36	—

Cole-Parmer Dual-Media PTFE Flowmeters with Dual Scale

Use one of these safe-design meters in multiple aggressive chemical applications

- Scale rotates to display rates for either air-like or water-like fluids
- Breakaway back plate protects user in case of pressure surge blowout
- Valved units offer both control and indication of flowrate

These meters have been designed to measure aggressive water-like liquid solutions and aggressive air-like gas mixtures. The dual-scale for liquids measures in GPM and LPM; the dual-scale for gases shows flow rate in scfm and LPM.



32053-26

Specifications

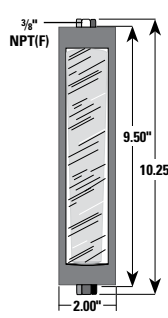
Accuracy: ±5% full-scale
Max pressure: 100 psi (6.9 bar)
Max operating temp: 150°F (65°C)
Connections: 3/8" NPT(F)
Leak integrity: Each flowmeter is individually leak-tested to 1 x 10⁻⁷ sccs of helium or better



Materials of Construction

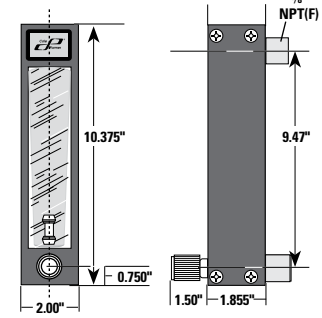
Part	Material
Flowtube	Borosilicate glass
Fittings, valves	PTFE/PCTFE
O-rings	PTFE
Float	PTFE
Frame	Aluminum

In-line flowmeters



Front view, without valve

Panel-mount flowmeters



Front view, with valve

Side view, with valve

Maximum flow rate				Flowmeters without valve		Flowmeters with valve	
Water		Air		Cat. no.	Price	Cat. no.	Price
GPM	LPM	scfm	LPM				
In-line flowmeters							
0.8	3.0	3.5	100	TW-32053-00	—	TW-32053-20	—
1.5	5.75	7.0	200	TW-32053-02	—	TW-32053-22	—
2.2	8.25	10.5	300	—	—	TW-32053-24	—
2.9	11.0	14.0	400	—	—	TW-32053-26	—
4.1	15.75	22.0	625	—	—	TW-32053-30	—
Panel-mount flowmeters							
0.8	3.0	3.5	100	—	—	TW-32053-60	—
1.5	5.75	7.0	200	—	—	TW-32053-62	—
2.2	8.25	10.5	300	TW-32053-44	—	TW-32053-64	—
4.1	15.75	22.5	625	—	—	TW-32053-70	—

TW-31320-11 Fitting; NPT(M) to compression adapter, PFA, 3/8"



Flowmeters

Variable Area, Direct Reading

Cole-Parmer Panel-Mount Flowmeters

Many unique features make these the ideal economical flowmeters

- Front shield magnifies scale 16% for more accurate readings
- Fused ceramic scale for a precise, permanent measuring guide
- A vertical-tangential locator line for readings with hairline accuracy

Aluminum is economical and good for general use with noncorrosive gases and liquids. A 150-mesh inlet screen is included.

Brass is economical and good for use with water. A 150-mesh inlet screen is included.

316 Stainless Steel (SS) withstands higher temperatures and pressures and features excellent chemical compatibility. A 150-mesh inlet screen is included.

Valved meters have valves mounted at the inlet (bottom) of the flowmeters. This arrangement is typically used for positive pressure applications with liquids and gases. The valve can be reconfigured to mount at the outlet (top), often for vacuum applications.

Specifications

- Accuracy:** ±5% full-scale
- Repeatability:** ±0.25% full-scale
- Minimum flow rate:** approximately 10% of maximum flow rate (see tables on facing page)
- Max pressure:** 200 psi (13.7 bar)
- Operating temp:** -15 to 250°F (-26 to 121°C)
- Connections:** 1/8" NPT(F)



Materials of Construction

Part	Aluminum	Brass	316 SS
Flowtube	Borosilicate glass		
Fittings, valves	Aluminum	Chrome-plated brass	316 SS
O-rings	Buna N		Viton®
Float	Glass, 316 SS, carboloy, sapphire, or tantalum		
Frame	Aluminum, acrylic, polycarbonate		

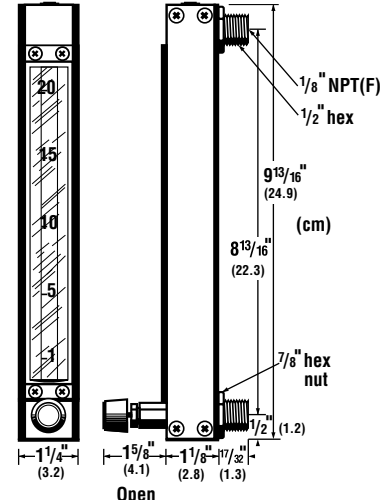
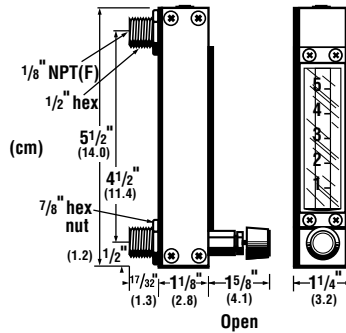


150-mm flowmeter
32003-28
with valve

65-mm flowmeter
32012-29
without valve

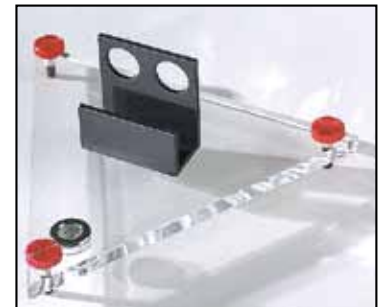
To Panel Mount

Drill two holes to fit the inlet and outlet according to the diagrams below. Secure flowmeter with two retaining nuts (included).



Tripod Bases

Bench mount up to three flowmeters in any combination. Three leveling screws and spirit level are built into a clear acrylic base.



Catalog number	Number of meters held	Price
TW-03226-10	One	
TW-03226-30	One, two, or three	



65-mm Direct Reading Flowmeters

Max flow	Float [†]	Flowmeters without valve						Flowmeters with valve					
		Aluminum fittings [†]		Brass fittings [†]		316 SS fittings [†]		Aluminum fittings [†]		Brass fittings [†]		316 SS fittings [†]	
		Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
For air													
7 mL/min	G	TW-32010-15	—	—	—	—	TW-32012-15	—	TW-32013-15	—	TW-32014-15	—	TW-32015-15
50 mL/min	SS	TW-32010-01	—	TW-32011-01	—	TW-32012-01	—	TW-32013-01	—	TW-32014-01	—	TW-32015-01	—
100 mL/min	G	TW-32010-03	—	TW-32011-03	—	TW-32012-03	—	TW-32013-03	—	TW-32014-03	—	TW-32015-03	—
250 mL/min	C	TW-32010-05	—	—	—	TW-32012-05	—	TW-32013-05	—	TW-32014-05	—	TW-32015-05	—
500 mL/min	C	TW-32010-07	—	TW-32011-07	—	TW-32012-07	—	TW-32013-07	—	TW-32014-07	—	TW-32015-07	—
1.0 LPM	G	TW-32010-09	—	TW-32011-09	—	TW-32012-09	—	TW-32013-09	—	TW-32014-09	—	TW-32015-09	—
2.0 LPM	SS	TW-32010-11	—	TW-32011-11	—	TW-32012-11	—	TW-32013-11	—	TW-32014-11	—	TW-32015-11	—
5.0 LPM	G	TW-32010-13	—	TW-32011-13	—	TW-32012-13	—	TW-32013-13	—	TW-32014-13	—	TW-32015-13	—
10.0 LPM	SS	TW-32010-17	—	TW-32011-17	—	TW-32012-17	—	TW-32013-17	—	TW-32014-17	—	TW-32015-17	—
16.0 LPM	SS	TW-32010-16	—	TW-32011-16	—	TW-32012-16	—	TW-32013-16	—	TW-32014-16	—	TW-32015-16	—
2.2 scfh	G	—	—	TW-32011-18	—	TW-32012-18	—	TW-32013-18	—	TW-32014-18	—	TW-32015-18	—
6.0 scfh	G	—	—	—	—	TW-32012-19	—	TW-32013-19	—	TW-32014-19	—	TW-32015-19	—
10.0 scfh	SS	—	—	—	—	—	—	TW-32013-21	—	TW-32014-21	—	TW-32015-21	—
25.0 scfh	SS	—	—	—	—	—	—	TW-32013-23	—	TW-32014-23	—	TW-32015-23	—
50.0 scfh	SS	—	—	—	—	—	—	TW-32013-24	—	TW-32014-24	—	TW-32015-24	—
90.0 scfh	SS	—	—	—	—	—	—	TW-32013-27	—	TW-32014-27	—	—	—
1.9 scfm	SS	—	—	—	—	—	—	TW-32013-28	—	TW-32014-28	—	TW-32015-28	—
For water													
0.5 mL/min	G	—	—	—	—	TW-32012-29	—	TW-32013-29	—	TW-32014-29	—	TW-32015-29	—
6.0 mL/min	SS	TW-32010-31	—	TW-32011-31	—	TW-32012-31	—	TW-32013-31	—	TW-32014-31	—	TW-32015-31	—
115 mL/min	SS	TW-32010-33	—	TW-32011-33	—	TW-32012-33	—	TW-32013-33	—	TW-32014-33	—	TW-32015-33	—
500 mL/min	G	TW-32010-35	—	—	—	TW-32012-35	—	TW-32013-35	—	TW-32014-35	—	TW-32015-35	—
750 mL/min	SS	—	—	—	—	—	—	TW-32003-09	—	TW-32004-09	—	TW-32005-09	—

150-mm Direct Reading Flowmeters

Max flow	Float [†]	Flowmeters without valve						Flowmeters with valve					
		Aluminum fittings [†]		Brass fittings [†]		316 SS fittings [†]		Aluminum fittings [†]		Brass fittings [†]		316 SS fittings [†]	
		Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price	Cat. no.	Price
For air													
25 mL/min	Sa	TW-32030-00	—	TW-32031-00	—	TW-32032-00	—	TW-32033-00	—	TW-32034-00	—	TW-32035-00	—
50 mL/min	Sa	TW-32000-00	—	TW-32001-00	—	TW-32002-00	—	TW-32003-00	—	TW-32004-00	—	TW-32005-00	—
75 mL/min	C	TW-32000-02	—	—	—	TW-32002-02	—	TW-32003-02	—	TW-32004-02	—	TW-32005-02	—
100 mL/min	C	TW-32000-04	—	TW-32001-04	—	TW-32002-04	—	TW-32003-04	—	TW-32004-04	—	TW-32005-04	—
200 mL/min	SS	TW-32000-06	—	TW-32001-06	—	TW-32002-06	—	TW-32003-06	—	TW-32004-06	—	TW-32005-06	—
300 mL/min	C	TW-32000-08	—	TW-32001-08	—	TW-32002-08	—	TW-32003-08	—	TW-32004-08	—	TW-32005-08	—
500 mL/min	Sa	TW-32030-08	—	TW-32031-08	—	TW-32032-08	—	TW-32033-08	—	TW-32034-08	—	TW-32035-08	—
800 mL/min	G	TW-32030-09	—	TW-32031-09	—	TW-32032-09	—	TW-32033-09	—	TW-32034-09	—	TW-32035-09	—
1.25 LPM	C	TW-32030-10	—	TW-32031-10	—	TW-32032-10	—	TW-32033-10	—	TW-32034-10	—	TW-32035-10	—
2.5 LPM	G	TW-32000-10	—	TW-32001-10	—	TW-32002-10	—	TW-32003-10	—	TW-32004-10	—	TW-32005-10	—
5.0 LPM	Sa	TW-32000-12	—	TW-32001-12	—	TW-32002-12	—	TW-32003-12	—	TW-32004-12	—	TW-32005-12	—
10.0 LPM	G	TW-32000-14	—	TW-32001-14	—	TW-32002-14	—	TW-32003-14	—	TW-32004-14	—	TW-32005-14	—
23 LPM	G	TW-32030-14	—	TW-32031-14	—	TW-32032-14	—	TW-32033-14	—	TW-32034-14	—	TW-32035-14	—
42 LPM	SS	TW-32030-15	—	TW-32031-15	—	TW-32032-15	—	TW-32033-15	—	TW-32034-15	—	TW-32035-15	—
60 LPM	C	TW-32030-16	—	—	—	TW-32032-16	—	TW-32033-16	—	TW-32034-16	—	TW-32035-16	—
2.5 scfh	C	—	—	TW-32001-16	—	—	—	TW-32003-16	—	TW-32004-16	—	—	—
8.25 scfh	G	TW-32000-18	—	TW-32001-18	—	—	—	TW-32003-18	—	TW-32004-18	—	TW-32005-18	—
16.5 scfh	SS	—	—	—	—	—	—	TW-32003-20	—	TW-32004-20	—	TW-32005-20	—
23.0 scfh	C	TW-32000-22	—	TW-32001-22	—	—	—	TW-32003-22	—	—	—	—	—
50.0 scfh	G	—	—	TW-32001-24	—	—	—	TW-32003-24	—	—	—	TW-32005-24	—
94.0 scfh	SS	—	—	—	—	—	—	TW-32003-26	—	TW-32004-26	—	TW-32005-26	—
1.5 scfm	SS	—	—	—	—	—	—	—	—	TW-32034-27	—	—	—
For water													
10 mL/min	Sa	TW-32000-28	—	TW-32001-28	—	TW-32002-28	—	TW-32003-28	—	TW-32004-28	—	TW-32005-28	—
20 mL/min	SS	—	—	TW-32001-30	—	TW-32002-30	—	TW-32003-30	—	TW-32004-30	—	TW-32005-30	—
50 mL/min	G	—	—	TW-32001-32	—	TW-32002-32	—	TW-32003-32	—	TW-32004-32	—	TW-32005-32	—
100 mL/min	G	TW-32000-34	—	TW-32001-34	—	TW-32002-34	—	TW-32003-34	—	TW-32004-34	—	TW-32005-34	—
200 mL/min	C	—	—	TW-32001-36	—	TW-32002-36	—	TW-32003-36	—	TW-32004-36	—	TW-32005-36	—
500 mL/min	SS	TW-32000-38	—	TW-32001-38	—	TW-32002-38	—	TW-32003-38	—	TW-32004-38	—	TW-32005-38	—
1.2 LPM	SS	TW-32030-40	—	—	—	TW-32032-40	—	TW-32033-40	—	—	—	TW-32035-40	—
2.0 LPM	T	—	—	—	—	—	—	TW-32033-42	—	—	—	TW-32035-42	—

[†]See our specification table (on page 606) for a complete listing of wetted parts.

[†]Sa = sapphire, C = carbonyl, SS = 316 stainless steel, G = glass, and T = tantalum

INNOCAL®
INNOVATIVE CALIBRATION SOLUTIONS

Ensure the accuracy of your flowmeter!

[TW-17080-00](#) NIST-traceable calibration with data for air/gas flowmeter
[TW-17080-12](#) NIST-traceable calibration with data for liquid flowmeter



Flowmeters

Variable Area, Direct Reading

Cole-Parmer® PTFE Flowmeters for Routine Gases

Ideal for gas applications where metal components must be minimized

- Inert PTFE and borosilicate glass wetted parts
- Rugged design with case-enclosed flow tube
- Tubes include a fused ceramic scale as a precise, permanent measuring guide

These meters eliminate the need for correlation charts with direct-reading scales for individual routine gases. The inert PTFE and glass wetted parts combine with the rigid anodized aluminum frame to offer a unique solution for ultra-pure gas applications.

Flowtubes are replaceable—contact your local dealer for details. A longitudinal magnifier lens is molded into the transparent front safety shield to enhance reading resolution by 16%.

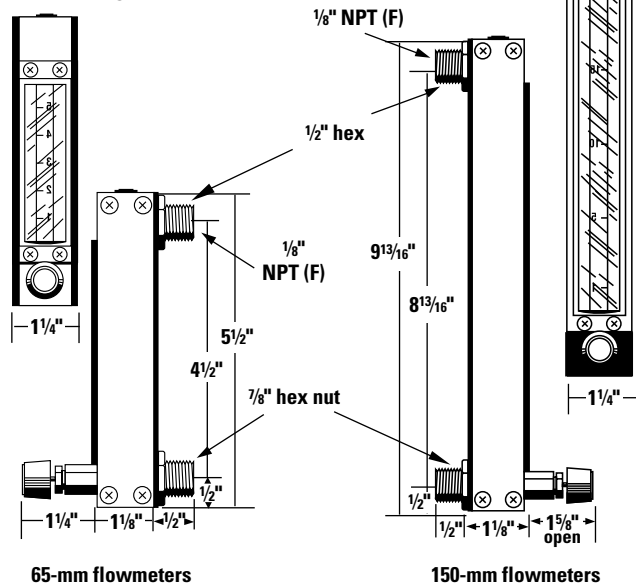


65-mm flowmeter
32006-08

150-mm flowmeter
32007-64

To Panel Mount

Two holes required to fit the inlet and outlet according to the diagrams below. Face width is 1 1/4" (3.2 cm). Secure flowmeter with the two retaining nuts (included).



Specifications

- Accuracy:** ±5% full-scale
- Repeatability:** ±0.25% full-scale
- Minimum flow rate:** approximately 10% of maximum flow rate
- Max pressure:** 100 psi (6.9 bar)
- Max operating temp:** 150°F (65°C)

- Connections:** 1/8" NPT(F); optional 1/4" compression fittings or glass nipples available upon request
- Leak integrity:** meters are individually tested on a mass spectrometer leak detector and certified to a leak integrity rating of at least 1 x 10⁻⁷ sccs of helium

Materials of Construction

Part	Aluminum	Brass	316 SS
Flowtube	Borosilicate glass		
Fittings, valves	PTFE		
O-rings	PTFE		
Float	Glass, 316 SS, carbonyl, sapphire, or tantalum		
Frame	Aluminum, acrylic, polycarbonate		



65-mm PTFE Direct Reading Flowmeters

Maximum flow rate [†]	Float [‡]	Flowmeters without valve		Flowmeters with valve	
		Catalog number	Price	Catalog number	Price
For carbon dioxide					
20 mL/min	T	—	—	TW-32006-08	—
55 mL/min	G	—	—	TW-32006-10	—
220 mL/min	Sa	—	—	TW-32006-12	—
1 LPM	G	TW-32007-14	—	TW-32006-14	—
6 LPM	G	TW-32007-16	—	TW-32006-16	—
10 LPM	T	—	—	TW-32006-18	—
For hydrogen					
35 mL/min	G	TW-32007-24	—	TW-32006-24	—
100 mL/min	SS	—	—	TW-32006-26	—
150 mL/min	Sa	TW-32007-28	—	TW-32006-28	—
600 mL/min	G	TW-32007-30	—	TW-32006-30	—
1.5 LPM	C	TW-32007-32	—	TW-32006-32	—
3.5 LPM	G	TW-32007-34	—	TW-32006-34	—
6 LPM	G	—	—	TW-32006-36	—
42 LPM	SS	TW-32007-38	—	TW-32006-38	—

[†]Based on flow at STP conditions—70°F and 14.7 psi.
[‡]Float material key: G = glass, SS = stainless steel, C = carbonyl, Sa = sapphire, T = titanium

150-mm PTFE Direct Reading Flowmeters

Maximum flow rate [†]	Float [‡]	Flowmeters without valve		Flowmeters with valve	
		Catalog number	Price	Catalog number	Price
For argon gas					
33 mL/min	Sa	TW-32007-64	—	TW-32006-64	—
15 LPM	T	TW-32007-66	—	TW-32006-66	—
For helium					
100 mL/min	Sa	—	—	TW-32006-68	—
500 mL/min	C	TW-32007-70	—	TW-32006-70	—
1500 mL/min	G	TW-32007-72	—	TW-32006-72	—
5 LPM	C	—	—	TW-32006-74	—
40 LPM	SS	—	—	TW-32006-76	—
1025 scfh	Sa	—	—	—	—
For nitrogen					
100 mL/min	G	TW-32007-80	—	TW-32006-80	—
200 mL/min	C	TW-32007-82	—	TW-32006-82	—
300 mL/min	SS	—	—	TW-32006-84	—
500 mL/min	Sa	TW-32007-86	—	TW-32006-86	—
2 LPM	G	—	—	TW-32006-88	—
1.6 scfh	SS	—	—	TW-32006-90	—
For oxygen					
250 mL/min	SS	TW-32007-92	—	TW-32006-92	—
400 mL/min	G	TW-32007-94	—	TW-32006-94	—
5 LPM	Sa	TW-32007-96	—	TW-32006-96	—
16.5 LPM	SS	TW-32007-98	—	TW-32006-98	—
58 LPM	C	TW-32007-99	—	TW-32006-99	—

[†]Based on flow at STP conditions—70°F and 14.7 psi.
[‡]Float material key: G = glass, SS = stainless steel, C = carbonyl, Sa = sapphire, T = tantalum

Tripod Bases

Bench mount up to three flowmeters. Clear acrylic base features three leveling screws and spirit level.



Catalog number	Number of meters held	Price
TW-03226-10	One	—
TW-03226-30	One, two, or three	—

[TW-31320-07](#) Fitting; NPT(M) to compression adapter, PFA, 1/8"
[TW-17080-10](#) NIST-traceable calibration



Cole-Parmer® Heavy-Duty PTFE/PFA Flowmeters

Unique combination of rugged frame and chemically inert wetted materials

- The rigid aluminum frame is PFA coated to resist ambient corrosives
- Available in a 75-mm compact design or a 125-mm full-size for higher flows
- Ideal for etchants and high-purity water

Also included is a polycarbonate front shield that magnifies readings 16%. Within the tube is a guide rod to stabilize the float for better readings in extreme high/low flow or fluctuating flow conditions.

These meters are available with valves to control flow or without to simply monitor flow.

Each flowmeter is individually tested on a mass spectrometer leak detector and certified to a leak integrity rating of 1×10^{-7} sccs helium. All models come with correlation charts for water.



Flowmeter without valve
32050-10



Flowmeter with valve
32051-10

Specifications

Accuracy: ±5% full-scale
Max pressure: 100 psi (6.9 bar)
Operating temp: 32 to 250°F (0 to 120°C)
Dimensions (W x H x D)
 Low-range models: 75-mm scale
 1¼" x 6½" x 3¼" (3.2 x 15.6 x 8.3 cm)
 High-range models: 125-mm scale
 2" x 10½" x 4" (5.1 x 26.4 x 10.2 cm)



Materials of Construction

Flowtube	PTFE
Fittings, valves	PTFE
Float	PTFE or sapphire
Shield	Polycarbonate
Frame	PFA-clad aluminum

Flow range [†]	Float [‡]	Connections	Flowmeters without valve		Flowmeters with valve	
			Cat. no.	Price	Cat. no.	Price
Low-range flowmeters						
5 to 75 mL/min	Sa	¼" NPT(F)	TW-32050-00		TW-32051-00	
5 to 250 mL/min	PTFE	¼" NPT(F)	TW-32050-02		TW-32051-02	
50 to 400 mL/min			TW-32050-04		TW-32051-04	
90 to 500 mL/min			TW-32050-06		TW-32051-06	
100 to 1000 mL/min			TW-32050-08		TW-32051-08	
350 to 2000 mL/min	PTFE	¾" NPT(F)	TW-32050-10		TW-32051-10	
800 to 2500 mL/min			TW-32050-12		—	—
1250 to 3000 mL/min			TW-32050-14		—	—
1750 to 5000 mL/min			TW-32050-16		TW-32051-16	
High-range flowmeters						
0.75 to 13 LPM	PTFE	½" NPT(F)	—	—	TW-32051-18	
2 to 20 LPM			—	—	TW-32051-20	

[†]Correlation data sheets for water is included with flowmeters.
[‡]Float material key: Sa = sapphire

- [TW-31320-09 Fitting:](#) NPT(M) to compression adapter, PFA, ¼"
- [TW-31320-13 Fitting:](#) NPT(M) to compression adapter, PFA, ½"
- [TW-31320-11 Fitting:](#) NPT(M) to compression adapter, PFA, ¾"
- [TW-31321-26 Fitting:](#) NPT(M) to compression adapter, PFA, ¾"

Cole-Parmer® Safe-Design PTFE/PFA Flowmeters

Economical design includes safety features for metering the most aggressive fluids

- Includes a removable polycarbonate shield for added safety
- Individually leak tested with certified leak-proof integrity[†]
- Sight tube guide rod prevents float oscillation in dynamic systems

Ideal for use in applications requiring the high purity/high temperature suitability that fluoropolymer materials are capable of. Common applications include those with acids, caustics, solvents, and high purity liquids. The solid PTFE float is designed to maximize each meter's flow range so that many models provide an outstanding turn-down ratio. Choose from models with a valve to both monitor and control your flow or without a valve to simply monitor flow. Flowmeters are calibrated and come with correlation charts for water.



Flowmeter with valve
32057-08

Specifications

Accuracy: ±5% full-scale
Max pressure: 100 psi (6.9 bar)
Max operating temp: 250°F (121°C)
Dimensions
 Low-range models: 5½" (14.4 cm) L x 1¼" OD
 High-range models: 10½" (26.7 cm) L x 2" OD



Materials of Construction

Fittings, valves	PTFE/PCTFE
Shield	Polycarbonate
Flowtube	PTFE/PFA
Float	PTFE

Flow range	Connection	Flowmeters without valve		Flowmeters with valve	
		Catalog number	Price	Catalog number	Price
Low-range flowmeters					
10 to 125 mL/min	¼" NPT(F)	TW-32056-00		TW-32057-00	
5 to 250 mL/min		TW-32056-02		TW-32057-02	
50 to 400 mL/min		TW-32056-04		TW-32057-04	
90 to 500 mL/min		TW-32056-06		—	—
100 to 1000 mL/min	¾" NPT(F)	TW-32056-08		TW-32057-08	
350 to 2000 mL/min		TW-32056-10		TW-32057-10	
800 to 2500 mL/min		TW-32056-12		TW-32057-12	
1250 to 3000 mL/min		TW-32056-14		TW-32057-14	
1750 to 5000 mL/min	TW-32056-16		TW-32057-16		
High-range flowmeters					
0.75 to 13 LPM	½" NPT(F)	TW-32056-18		TW-32057-18	
2 to 20 LPM		TW-32056-20		—	—
3 to 30 LPM	¾" NPT(F)	TW-32056-22		—	—
4 to 40 LPM		—	—	TW-32057-24	

[†]Leak integrity rating of 1×10^{-7} sccs Helium or better.

- [TW-31320-09 Fitting:](#) NPT(M) to compression adapter, PFA, ¼"
- [TW-31320-13 Fitting:](#) NPT(M) to compression adapter, PFA, ½"

Flowmeters

Variable Area, Direct Reading

Benchtop Flowmeters with PTFE Fittings

Design makes each meter suitable for a broad range of laboratory applications

- Modular components allow for meter flexibility across a wide range of flow rates
- Multiple end connections to suit process requirements

Unshielded Flowmeters work well in low-pressure applications. Connect the flowtube end directly to tubing having the proper inner diameter—flowtube outer diameters are listed below. Glass taper joints are an alternate connection option which slip on the PTFE stops that contain the float (contact our Application Specialists to order the glass taper joints).

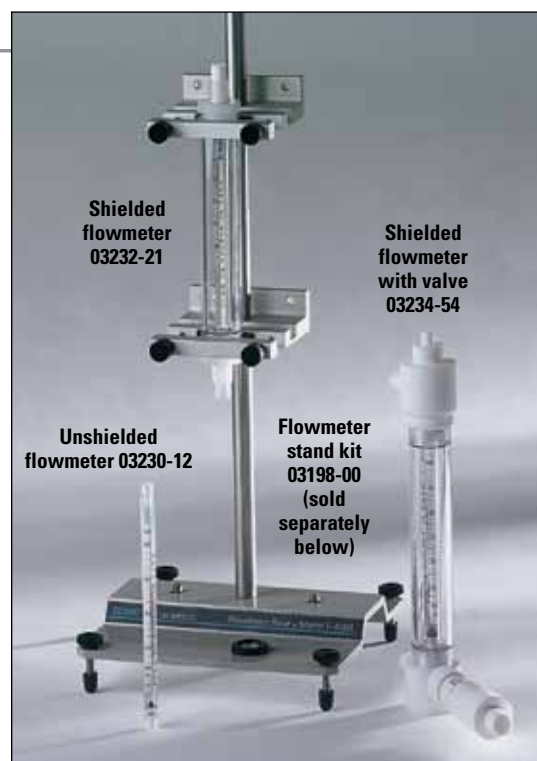
Shielded Flowmeters are better suited to higher-pressure applications or for installations requiring a panel-mounted flowmeter. End bushings are molded with dual connection capability—tubing or threaded; listed below are the appropriate tubing and threaded connections provided with each meter.

Shielded Flowmeters with Valves offer flow monitoring along with precise control through an integrated 20-turn micrometer valve. The valve can be adjusted from 0.1 to 100% of maximum flow (semilogarithmic) and provides precise regulation from 0.3 to 60% of maximum flow.

Materials of Construction

Part	Unshielded	Shielded	Shielded with Valve
Tube	Borosilicate glass		
O-rings	Viton®		
Inserts	PTFE	—	
Body	—	PTFE	
Couplings	—	Polypropylene (PP) with PTFE inserts†	
Shield	—	Polycarbonate	
Valve	—	Glass chamber with PCTFE plug‡	

†Order PTFE couplings (below) for a full PTFE connection. ‡Tube sizes 14 and 15 have PTFE plug.



Specifications

Accuracy: ±5% of reading or 2 mm of the scale length, whichever is greater

Repeatability: ±1% of reading or 1/2 scale graduation, whichever is greater

Max pressure: 60 psi (4.1 bar)

Max operating temp: 150°F (65°C)

Connections

For shielded flowmeters:
 Tube sizes 10, 11, 12, 13: 3/8" ID tubing
 Tube sizes 14, 15: 5/8" ID tubing

For unshielded flowmeters:
 Refer to OD dimensions in table, or contact your local dealer for tapered glass fittings

Dimensions

Tube size(s)	Unshielded	Shielded	Shielded with valves
10, 11, 12	5 1/8" H x 5/16" OD	8" H x 1" OD	8 7/8" H x 6" W x 1 1/16" OD
13	5 1/8" H x 7/16" OD		
14	5 1/2" H x 1 1/16" OD	9 3/4" H x 1 1/2" OD	
15	5 1/2" H x 1 5/16" OD		11" H x 7" W x 1 5/16" OD



Flow ranges		Floats†† included	Tube size	Unshielded flowmeters			Shielded flowmeters				Shielded flowmeters with valves			
Air (mL/min)	Water (mL/min)			Catalog number	Max psi	Price	Catalog number	Ports†† NPT	Max psi	Price	Catalog number	Ports† NPT	Max psi	Price
0.2 to 90 0.36 to 160	0.002 to 1.1 0.004 to 2.3	Glass 316 SS	10	TW-03230-10	15		TW-03232-20	1/4"	125		TW-03234-51	1/8"	125	
1 to 280 2 to 500	0.01 to 4.0 0.02 to 8.6	Glass 316 SS	11	TW-03230-11	15		TW-03232-21	1/4"	125		TW-03234-52	1/8"	125	
20 to 2100 36 to 3700	0.4 to 40 0.86 to 86	Glass 316 SS	12	TW-03230-12	15		TW-03232-22	1/4"	100		TW-03234-53	1/8"	100	
200 to 14,000 360 to 25,000	2 to 300 4 to 640	Glass 316 SS	13	TW-03230-13	15		TW-03232-23	1/4"	75		TW-03234-54	1/8"	75	
1000 to 6,000 1800 to 64,000	10 to 850 21 to 1820	Glass 316 SS	14	TW-03230-14	15		TW-03232-24	1/2"	60		TW-03234-56	1/4"	60	
3000 to 77,000 5300 to 137,000	30 to 1900 64 to 4100	Glass 316 SS	15	TW-03230-15	15		TW-03232-25	1/2"	50		TW-03234-57	1/4"	50	

††When using the stainless steel float, refer to the correlation chart (included) for proper readings.

**Port sizes are relevant only if couplings are removed; otherwise, users should reference information in the specifications list.

Flowmeter Stand Kit contains everything you need to mount your Gilmont flowmeter on a benchtop or wall. Mount valved flowmeters directly—base accepts two large flowmeters (tube size 14 or 15) or three of the smaller flowmeters (tube size 10, 11, 12, and 13).

[TW-03198-00](#) Flowmeter stand kit. Includes one base, one rod, and two mounting clamps

[TW-03198-10](#) Replacement flowmeter base

[TW-03198-20](#) Replacement rod, 18"L (45.7 cm)

[TW-03198-30](#) Replacement mounting clamp

[TW-03198-40](#) PTFE coupling adapter with Viton O-rings replaces the threaded polypropylene bushings on shielded flowmeters to provide an all-PTFE connection; 1/4" NPT(F) port

[TW-31320-07 Fitting:](#) NPT(M) to compression adapter, PFA, 1/8"
[TW-31320-09 Fitting:](#) NPT(M) to compression adapter, PFA, 1/4"
[TW-31320-13 Fitting:](#) NPT(M) to compression adapter, PFA, 1/2"



Ensure the accuracy of your flowmeter!

[TW-17080-00](#) NIST-traceable calibration with data for air/gas flowmeter

[TW-17080-12](#) NIST-traceable calibration with data for liquid flowmeter



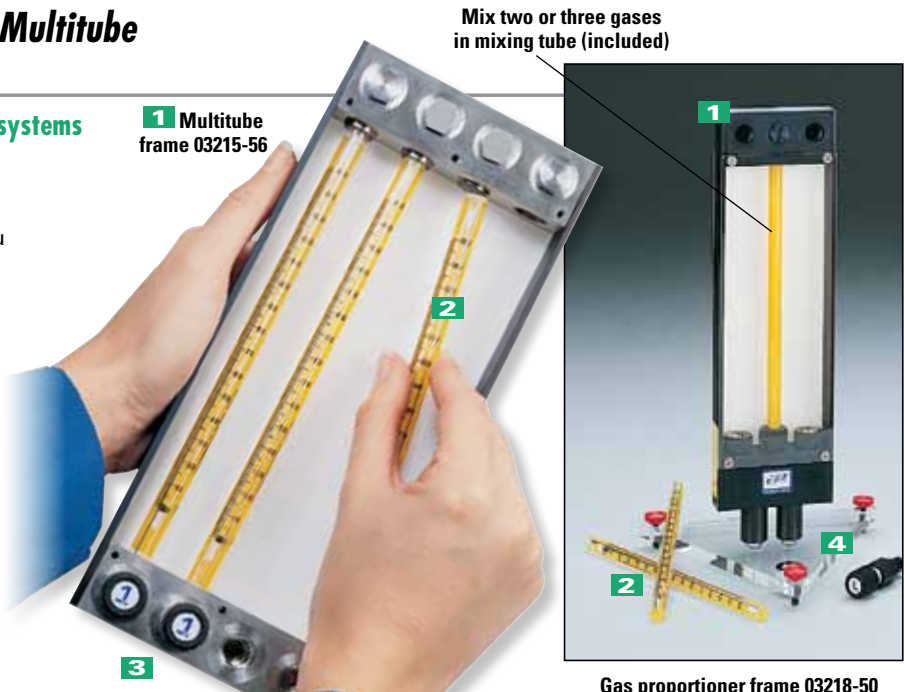
Cole-Parmer Single and Multitube Flowmeter Systems

Create your own multitube or gas proportioner systems for complete flexibility

Design a flow system to meet your multi-channel metering, mixing, or monitoring applications. We offer a variety of frames and flowtubes so that you can create the system to meet your exact needs. If you need assistance in putting together a system, call your local dealer.

REQUIRED SYSTEM Components

- 1 Frame: single or multitube 611
- 2 Flowtube(s) for air, water, and various gases 612-613
- 3 Valve cartridge(s) to control flow rates 613
- 4 Tripod base for your benchtop applications . . . 613



Gas proportioner frame 03218-50 shown with tripod base 03218-58

1 Frames

Choose a frame depending on the flowtube capacity, flow pattern, and wetted parts that you require. For frames with PTFE wetted parts, call your local dealer for information. Single and multitube frames accept both direct-reading and correlated flowtubes; gas proportioner frames accept only correlated flowtubes. All frames include an instruction manual.

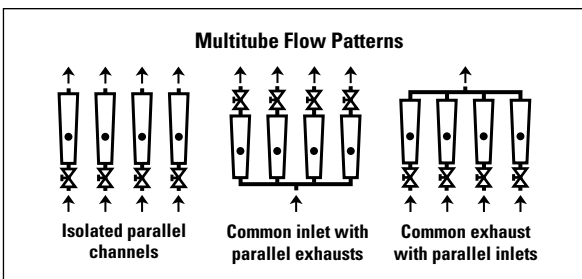
Specifications

- Minimum flow rate:** approx 10% of max flow rate of flowtube
- Max pressure:** 200 psi (13.7 bar)
- Operating temp:** -15 to 250°F (-26 to 121°C)
- Connections:** 1/8" NPT(F)



Materials of construction

- Side panels: black anodized aluminum
- Front shield: 1/8"-thick polycarbonate
- Back plate: 1/8"-thick acrylic
- O-rings and packing: Buna N for aluminum models, Viton® for 316 SS models



Single-Tube Frames

Choose a frame with valve port if you plan on adding a valve cartridge (page 613) to control flow.

Number of flowtubes held	Valve port	Aluminum wetted parts		316 SS wetted parts	
		Cat. no.	Price	Cat. no.	Price
Single-tube frames for 65-mm flowtubes					
One	No	TW-03220-00		TW-03220-40	
	Yes	TW-03220-08		TW-03220-44	
Single-tube frames for 150-mm flowtubes					
One	No	TW-03220-06		TW-03220-42	
	Yes	TW-03220-10		TW-03220-46	

Multitube Frames

These frames have valve ports which accept valve cartridges to control flow. A tripod base is required to use the multitube frame with the common inlet flow pattern; all other multitube frames are designed for panel and tripod mounting.

Number of flowtubes held	Flow pattern	Aluminum wetted parts		316 SS wetted parts	
		Cat. no.	Price	Cat. no.	Price
Multitube frames for 65-mm flowtubes					
Two	Isolated Common	TW-03214-10		TW-03214-16	
		TW-03214-12		TW-03214-18	
Three	Isolated Common	TW-03214-28		TW-03214-34	
		TW-03214-30		TW-03214-36	
Four	Isolated Common	TW-03214-46		TW-03214-52	
		TW-03214-50		TW-03214-56	
Five	Isolated Common	TW-03214-62		TW-03214-66	
		TW-03214-64		TW-03214-68	
Six	Isolated Common	TW-03214-74		TW-03214-78	
		TW-03214-76		TW-03214-80	
Multitube frames for 150-mm flowtubes					
Two	Isolated Common	TW-03215-10		TW-03215-16	
		TW-03215-12		TW-03215-18	
Three	Isolated Common	TW-03215-28		TW-03215-34	
		TW-03215-30		TW-03215-36	
Four	Isolated Common	TW-03215-46		TW-03215-52	
		TW-03215-50		TW-03215-56	
Five	Isolated Common	TW-03215-62		TW-03215-66	
		TW-03215-64		TW-03215-68	
Six	Isolated Common	TW-03215-74		TW-03215-78	
		TW-03215-76		TW-03215-80	

Gas Proportioner Multitube Frames

These multitube frames with valves allow you to increase or decrease gas concentrations accurately at any time during an experiment—blend two or three gases at the exact concentration you require. Frames include a installation tool and mixing tube. **Note:** use only with the 150-mm correlated flowtubes on page 612. Flow tubes come with gas correlation charts.

Number of flowtubes held	Flow pattern	Aluminum wetted parts		316 SS wetted parts	
		Cat. no.	Price	Cat. no.	Price
Gas proportioner frames for 150-mm correlated flowtubes					
Two	—	TW-03218-50		TW-03218-52	
Three	—	TW-03218-54		TW-03218-56	

See next page for more...



Flowmeters

Variable Area, Component Systems

Cole-Parmer Single and Multitube Flowmeter Systems

2A Flowtubes for Air and Water

Choose 65- or 150-mm flowtubes depending on the selected frame size. Flowtubes are calibrated for direct-reading or correlated reading of air or water at STP (70°F/21.1°C and 14.7 psi/1 atm).

Flowtubes for specialty gases—argon, nitrogen, hydrogen, helium, carbon dioxide, and oxygen—are available on page 613.

Flowtube 32047-28

Flowtube 32047-56

Specifications



Repeatability: ±0.25% full-scale

Minimum flow rate: approx 10% of max flow rate

Materials of construction

Flowtube: heavy-walled borosilicate glass
Float: glass, stainless steel (SS), carbonyl, sapphire, or tantalum

Direct-Reading Flowtubes for Air (Accuracy: ±5%)

Catalog number	Max flow rate	Float	Price
65-mm flowtubes			
TW-32047-00	2.2 scfh	Glass	
TW-32047-01	6.0 scfh	Glass	
TW-32047-02	10 scfh	SS	
TW-32047-04	25 scfh	SS	
TW-32047-08	1.9 scfm	SS	
TW-32047-09	1.0 LPM	Glass	
TW-32047-10	1.15 LPM	Glass	
TW-32047-11	2.0 LPM	SS	
TW-32047-12	4.0 LPM	SS	
TW-32047-13	5.0 LPM	Glass	
TW-32047-14	10 LPM	SS	
TW-32047-15	16 LPM	SS	
TW-32047-16	25 LPM	SS	
TW-32047-17	40 LPM	SS	
TW-32047-18	7 mL/min	Glass	
TW-32047-19	50 mL/min	SS	
TW-32047-20	75 mL/min	SS	
TW-32047-21	100 mL/min	Glass	
TW-32047-22	250 mL/min	Carbonyl	
TW-32047-23	500 mL/min	Carbonyl	
150-mm flowtubes			
TW-32047-50	2.5 scfh	Carbonyl	
TW-32047-51	5 scfh	Glass	
TW-32047-53	10 scfh	SS	
TW-32047-55	23 scfh	Carbonyl	
TW-32047-56	50 scfh	Glass	
TW-32047-57	90 scfh	SS	
TW-32047-60	1.25 LPM	Carbonyl	
TW-32047-61	2.5 LPM	Glass	
TW-32047-62	4.0 LPM	Glass	
TW-32047-63	4.5 LPM	Sapphire	
TW-32047-64	5.0 LPM	Sapphire	
TW-32047-65	10 LPM	Carbonyl	
TW-32047-67	23 LPM	Glass	
TW-32047-68	42 LPM	SS	
TW-32047-69	60 LPM	Carbonyl	
TW-32047-70	25 mL/min	Sapphire	
TW-32047-71	50 mL/min	Sapphire	
TW-32047-72	75 mL/min	Carbonyl	
TW-32047-73	100 mL/min	Sapphire	
TW-32047-74	200 mL/min	SS	
TW-32047-76	500 mL/min	Sapphire	
TW-32047-77	800 mL/min	Glass	

REQUIRED SYSTEM Components

- 1 Frame: single or multitube 611
- 2 Flowtube(s) for air, water, and various gases 612-613
- 3 Valve cartridge(s) to control flow rates 613
- 4 Tripod base for your benchtop applications 613



Direct-Reading Flowtubes for Water (Accuracy: ±5%)

Catalog number	Max flow rate	Float	Price
65-mm flowtubes			
TW-32047-27	6.0 mL/min	SS	
TW-32047-28	60 mL/min	SS	
TW-32047-29	115 mL/min	SS	
TW-32047-31	250 mL/min	Glass	
TW-32047-32	500 mL/min	Glass	
150-mm flowtubes			
TW-32047-81	1.2 LPM	SS	
TW-32047-82	2.0 LPM	Tantalum	
TW-32047-84	10 mL/min	Sapphire	
TW-32047-86	50 mL/min	Glass	
TW-32047-88	100 mL/min	Glass	
TW-32047-89	200 mL/min	Carbonyl	
TW-32047-90	500 mL/min	SS	

Correlated Flowtubes for Air and Water (Accuracy: ±2%)

Catalog number	Max flow rate			Float	Price
	Air	Air (50 psi)	Water		
65-mm flowtubes					
TW-03219-50	5.8 mL/min	—	0.065 mL/min	Glass	
TW-03219-51	16.7 mL/min	—	0.283 mL/min	SS	
TW-03219-52	48.7 mL/min	—	0.55 mL/min	Glass	
TW-03219-53	145 mL/min	—	2.38 mL/min	SS	
TW-03219-54	202.1 mL/min	—	2.6 mL/min	Glass	
TW-03219-55	522 mL/min	—	12 mL/min	SS	
TW-03219-56	1249 mL/min	—	27 mL/min	Glass	
TW-03219-58	2040 mL/min	—	39.7 mL/min	Glass	
TW-03219-57	2520 mL/min	—	70.7 mL/min	SS	
TW-03219-59	3990 mL/min	—	108.3 mL/min	SS	
TW-03219-60	6318 mL/min	—	147 mL/min	Glass	
TW-03219-62	23,169 mL/min	—	522 mL/min	Glass	
TW-03219-66	58,500 mL/min	—	1866 mL/min	Carbonyl	
150-mm flowtubes					
TW-03219-70	18.9 mL/min	83 mL/min	0.19 mL/min	Glass	
TW-03217-05	49.1 mL/min	191.6 mL/min	0.49 mL/min	Glass	
TW-03217-07	60.6 mL/min	242 mL/min	0.945 mL/min	SS	
TW-03217-09	92 mL/min	324 mL/min	0.85 mL/min	Glass	
TW-03217-11	137 mL/min	460 mL/min	2.34 mL/min	SS	
TW-03217-15	264 mL/min	825 mL/min	4.74 mL/min	SS	
TW-03217-13	374 mL/min	1086 mL/min	5.5 mL/min	Glass	
TW-03217-17	814 mL/min	2024 mL/min	20.4 mL/min	SS	
TW-03217-21	2313 mL/min	5528 mL/min	53.5 mL/min	Glass	
TW-03217-19	4562 mL/min	10,813 mL/min	130.4 mL/min	SS	
TW-03217-29	8678 mL/min	19,767 mL/min	210 mL/min	Glass	
TW-03217-23	16,737 mL/min	38,995 mL/min	506 mL/min	SS	
TW-03217-33	22,536 mL/min	49,374 mL/min	541 mL/min	Glass	
TW-03219-72	41,512 mL/min	89,880 mL/min	1288 mL/min	SS	
TW-03219-74	59,494 mL/min	123,846 mL/min	1881 mL/min	Carbonyl	

[TW-17080-00](#) NIST-traceable calibration with data for air/gas flowmeter
[TW-17080-12](#) NIST-traceable calibration with data for liquid flowmeter

See previous page for frames...



2B Direct Reading Flowtubes for Specialty Gases

Choose 65- or 150-mm flowtubes, depending on the selected frame size. Flowtubes read directly in argon, nitrogen, hydrogen, helium, carbon dioxide, or oxygen at STP (70°F/21°C and 14.7 psi/1 atm).

Specifications

Accuracy: ±5% full-scale
Repeatability: ±0.25% full-scale
Minimum flow rate: approx 10% of maximum flow rate

Materials of construction
Flowtube: heavy-walled borosilicate glass
Float: glass, stainless steel (SS), carbonyl, or sapphire



Flowtubes
32048-06 and
32048-62

Direct-Reading, Carbon Dioxide

Cat. no.	Max flow rate	Float	Price
65-mm flowtubes			
TW-32048-04	1.0 LPM	Glass	
TW-32048-05	6.0 LPM	Glass	
TW-32048-06	10 LPM	SS	
TW-32048-07	20 mL/min	SS	
TW-32048-08	55 mL/min	Glass	
TW-32048-09	220 mL/min	Sapphire	

Direct-Reading, Nitrogen

Cat. no.	Max flow rate	Float	Price
65-mm flowtubes			
TW-32048-20	12 LPM	SS	
TW-32048-21	6 mL/min	Glass	
TW-32048-22	50 mL/min	SS	
TW-32048-23	60 mL/min	Sapphire	
TW-32048-24	120 mL/min	Glass	
TW-32048-25	200 mL/min	Sapphire	
150-mm flowtubes			
TW-32048-58	1.6 scfm	SS	
TW-32048-59	2.0 LPM	Glass	
TW-32048-60	100 mL/min	Glass	
TW-32048-61	200 mL/min	Carbonyl	
TW-32048-62	300 mL/min	Carbonyl	
TW-32048-63	500 mL/min	Sapphire	

Direct-Reading, Hydrogen

Cat. no.	Max flow rate	Float	Price
65-mm flowtubes			
TW-32048-12	1.5 LPM	Carbonyl	
TW-32048-13	3.5 LPM	Glass	
TW-32048-14	6.0 LPM	Glass	
TW-32048-15	42 LPM	SS	
TW-32048-16	35 mL/min	Glass	
TW-32048-17	100 mL/min	SS	
TW-32048-18	150 mL/min	Sapphire	
TW-32048-19	600 mL/min	Glass	

Direct-Reading, Helium

Cat. no.	Max flow rate	Float	Price
65-mm flowtubes			
TW-32048-10	65 mL/min	Sapphire	
TW-32048-11	120 mL/min	Glass	
150-mm flowtubes			
TW-32048-53	5.0 LPM	Carbonyl	
TW-32048-54	40 LPM	SS	
TW-32048-55	100 mL/min	Sapphire	
TW-32048-56	500 mL/min	Carbonyl	
TW-32048-57	1500 mL/min	Glass	

REQUIRED SYSTEM Components

- 1 Frame: single or multitube 611
- 2 Flowtube(s) for air, water, and various gases 612-613
- 3 Valve cartridge(s) to control flow rates 613
- 4 Tripod base for your benchtop applications 613



Direct-Reading, Argon

Cat. no.	Max flow rate	Float	Price
65-mm flowtubes			
TW-32048-00	2.5 scfh	Glass	
TW-32048-01	10 scfh	SS	
TW-32048-02	22 scfh	SS	
TW-32048-03	50 scfh	Glass	
150-mm flowtubes			
TW-32048-50	15 LPM	SS	
TW-32048-51	33 mL/min	SS	

Direct-Reading, Oxygen

Cat. no.	Max flow rate	Float	Price
65-mm flowtubes			
TW-32048-26	1.0 LPM	Glass	
TW-32048-27	4.0 LPM	SS	
TW-32048-28	8.0 LPM	SS	
TW-32048-29	15 LPM	SS	
TW-32048-30	50 mL/min	Glass	
TW-32048-31	300 mL/min	SS	
TW-32048-32	500 mL/min	SS	
150-mm flowtubes			
TW-32048-64	5.0 LPM	Sapphire	
TW-32048-65	16.5 LPM	SS	
TW-32048-66	58 LPM	Carbonyl	
TW-32048-67	250 mL/min	SS	
TW-32048-68	400 mL/min	Sapphire	

3 Valve Cartridges

Use these metering needle valve cartridges to control flow rate. Simply insert into the valve port on the flowmeter frame. Select a valve cartridge compatible with your frame material: aluminum or stainless steel (SS). Choose a high-resolution metering valve cartridge for greater precision of flow rate.



Specifications

Materials of Construction

Frame	Aluminum	316 SS
Standard		
Body	Aluminum	316 SS
Needle	316 SS	
Orifice	PTFE	
O-rings	Buna N	Viton®
High-resolution		
Body	Brass	316 SS
Needle	316 SS	
Orifice	PTFE	
O-rings	Buna N	Viton

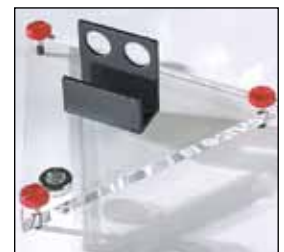
Flow ranges (mL/min) [†]		Aluminum frame		316 SS frame	
For air and gases	For water	Catalog number	Price	Catalog number	Price
Standard valve cartridges, 10 turn					
5000 to 20,000	0 to 350	TW-03217-92		TW-03217-82	
20,000 to 60,000	0 to 1200	TW-03217-88		TW-03217-84	
60,001	0 to 3500	TW-03217-96		TW-03217-86	
High-resolution valve cartridges, 16 turn					
0 to 200	0 to 6	TW-03218-72		TW-03218-74	
201 to 1000	3.1 to 30	TW-03218-61		TW-03218-67	
1001 to 2500	30 to 70	TW-03218-62		TW-03218-68	
2501 to 6200	71 to 200	TW-03218-63		TW-03218-69	
≥ 6201	≥ 650	TW-03218-64		TW-03218-70	

[†]If your flowtube is in units other than mL/min, convert them to mL/min and choose a valve within that flow range. See pages 2013-2016 for conversion factors.

4 Tripod Bases

Use base for benchtop applications. Three leveling screws and spirit level are built into a clear acrylic base.

Note: a tripod base is required to use the multitube frame with the common inlet flow pattern; all other multitube frames are designed for panel and tripod mounting.



Tripod base 03226-50

Catalog number	Use with	Price
For multitube frames		
TW-03226-50	2-, 4-, or 6-tube models; or isolated models	
TW-03226-40	3- or 5-tube models; or common inlet models	
For gas proportioner frames		
TW-03218-58	Models 03218-50, -52	
TW-03218-59	Models 03218-54, -56	