Series RM

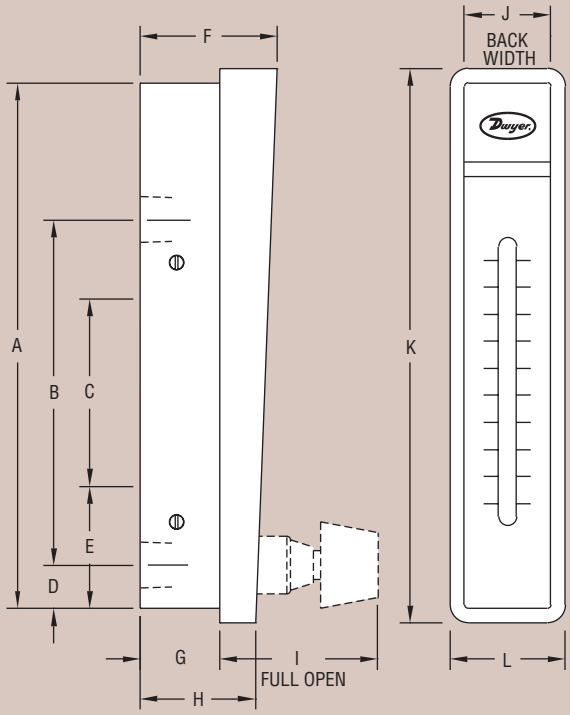
Rate-Master® Flowmeters

Polycarbonate, Gas Flow from 0.05-1800 SCFH, Water Flows to 10 GPM

Model RMC
10″ scale, 15-3/8″ high

Model RMB-SSV
5″ scale, 8-3/4″ high

Model RMA-TMV
2″ scale, 4-13/16″ high



Flowmeter Dimensions

	Model RMA	Model RMB	Model RMC
A	4 -9/16 (115.90)	8-1/2 (215.90)	15 -1/8 (384.20)
B	3 (76.20)	6-7/16 (163.50)	12 -1/4 (311.20)
	1/8 NPT CONN.	1/4 NPT CONN.	1/2 NPT CONN.
C	1-5/8 (41.28)	3-15/16 (100.00)	8-3/4 (222.30)
	10-32 MTG. HOLES	1/4-20 MTG. HOLES	3/8-24 MTG. HOLES
D	3/8 (9.525)	5/8 (15.88)	1 (25.40)
E	1-1/16 (26.99)	1-7/8 (47.63)	2-3/4 (69.85)
F	1-3/16 (30.16)	1-3/4 (44.45)	2-1/2 (63.50)
G	11/16 (17.46)	1 (25.40)	1-7/16 (36.51)
H	61/64 (24.21)	1-7/16 (36.51)	1-31/32 (50.00)
I	1-3/8 (34.92)	1-13/16 (46.04)	2-1/2 (63.50)
J	3/4 (19.05)	1-1/4 (31.75)	2 (50.80)
K	4-13/16 (122.20)	8-3/4 (222.30)	15-3/8 (390.50)
L	1 (25.40)	1-1/2 (38.10)	2-1/4 (57.15)

The Rate-Master® flowmeter line of direct reading precision flowmeters incorporates many unique user features at moderate cost. These low cost flowmeters are ideal for general use.

Easy to read design – The direct reading scales eliminate troublesome conversions. The scales are brushed aluminum, coated with epoxy and the graduations are on both sides of the indicating tube. Special integral flow guides stabilize the float throughout the range to keep it from hunting or wandering in the bore. The float is highly visible against a white background.

Construction assures accuracy – All Rate-Master® flowmeter bodies are injection molded of tough, clear, shatter-proof polycarbonate plastic around a precision tapered pin. The result is accurate and repeatable readings. The single piece plastic body is mounted to a stainless steel back bone into which pipe thread inserts are welded to absorb piping torque. Precision metering valves of brass or stainless steel (specify BV or SSV on order) are available as an optional extra and permit precise flow adjustments. For vacuum applications, Model RMA units are available with top mounted valves (specify TMV). The small Series RMA models are accurate within ±4% of full-scale reading; Series RMB within ±3%; large Series RMC within ±2%.

Installation is simple – The Rate-Master® Flowmeter can be neatly panel mounted to keep flow tube centers in the same plane as the panel surface or surface mounted on the panel by means of tapped holes in the backbone. When through-panel mounted, the bezel automatically positions the instrument at the correct depth in the panel cutout. Surface mounted units can also be held in place by the piping. All mounting hardware plus installation and operating instructions are included.

Easy-to-Interchange bodies – Within a given Series Rate-Master® flowmeter bodies can be instantly interchanged. Simply "unplug" the body from backbone and replace it with another. O-rings provide a tight seal on inlet and outlet. Piping remains undisturbed. Interchangeability is useful where different scale ranges are sometimes required at the same location in the laboratory or plant.

Cleaning is easy – To release the plastic flowmeter body from the stainless steel backbone, just remove four screws. Pipe thread flow connections remain undisturbed. Remove the slide cover and the plug ball stop, clean the flow tube with soap and water and reassemble. It's that simple.

How To Order
Series-Range No.("X")-Valve-Option
Example: RMA-2-SSV
Series RMA with .1-1 SCFH Air Range & Stainless Steel Valve

RMA

Model	Description
RMA-X	Standard RMA
RMA-X-BV	RMA with Brass Valve‡
RMA-X-SSV	RMA with Stainless Steel Valve‡
RMA-X-TMV	RMA with Top Mounted Valve*‡

RMB

Model	Description
RMB-X	Standard RMB
RMB-X-BV	RMB with Brass Valve‡
RMB-X-SSV	RMB with Stainless Steel Valve‡

RMC

Model	Description
RMC-X	Standard RMC
RMC-X-BV	RMC with Brass Valve‡
RMC-X-SSV	RMC with Stainless Steel Valve‡

*Top mounted metering valves provide same precision construction but for vacuum applications.
RMA models only.

Popular Ranges

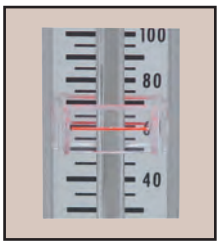
Model RMA-2˝ Scale		Model RMB-5˝ Scale		Model RMC-10˝ Scale	
Range SCFH Air	Range No.	Range SCFH Air	Range No.	Range SCFH Air	Range No.
.05-.5	**1**	.5-5	**49+**	5-50	**101**
.1-1	**2**	1-10	**50**	10-100	**102**
.2-2	**3**	3-20	**51**	20-200	**103**
.5-5	**4**	4-50	**52**	40-400	**104**
1-10	**5**	10-100	**53**	60-600	**105**
2-20	**6**	20-200	**54**	100-1000	**106**
5-50	**7**	40-400	**55**	120-1200	**107**
10-100	**8**	50-500	**56**	200-1800	**108**
15-150	**9**	60-600	**57**	**SCFM Air**	
20-200	**10**	**Gal. Water**		1-10	**121**
CC Air/min.		**per hour**		2-20	**122**
5-50	**151***	1-12	**82**	4-30	**123**
10-100	**150***	1-20	**83**		
30-240	**11**	4-40	**84**	**Gal. Water**	
50-500	**12**	10-100	**85**	**per hour**	
100-1000	**13**	**SCFH & LPM**		2-20	**134**
200-2500	**14**	**Air**		8-90	**135**
LPM Air		1.2-10/0.6-5	**50D**	**Gal.Water**	
.5-5	**26**	3-20/1.5-9.5	**51D**	**per minute**	
1-10	**21**	4-50/2-23	**52D**	.1-1	**141**
2-25	**22**	10-100/5-50	**53D**	.2-2.2	**142**
5-50	**23**	20-200/5-95	**54D**	.4-4	**143**
5-70	**24**	**GPH & LPM**		.8-7	**144**
10-100	**25**	**Water**		1.2-10	**145**
CC Water/min.		1-12/0.06-0.76	**82D**		
5-50	**32**	1-20/0.065-1.25	**83D**		
10-110	**33**	10-100/0.8-6.2	**85D**		
20-300	**34**				
Gal.Water/hr					
1-11	**42**				
2-24	**43**				
4-34	**44**				
5-50	**45**				

* Accuracy ±8%
+ Accuracy ±5%
‡ Valve is designed for flow adjustment only, not intended to be used as an open/shut-off valve.

SPECIFICATIONS
Service: Compatible gases and liquids.
Wetted Materials: Body: Polycarbonate; O-ring: Neoprene and Buna-N; Metal parts: SS (except for optional brass valve); Float: SS, black glass, aluminum, K monel, tungsten carbide depending on range.
Temperature Limit: 130°F (54°C).
Pressure Limit: 100 psi (6.9 bar).
Accuracy: RMA: 4%; RMB: 3%; RMC: 2% of full-scale.
Process Connection: RMA: 1/8˝; RMB: 1/4˝; RMC: 1/2˝ female NPT.
Weight: RMA: 4 oz (113.4 g); RMB: 13 oz (368.5 g); RMC: 39 oz (1105.6 g).

CAUTION
Dwyer® Rate-Master® flowmeters are designed to provide satisfactory long term service when used with air, water, or other compatible media. Refer to factory for information on questionable gases or liquids. Caustic solutions, anti-freeze (ethylene glycol) and aromatic solvents should definitely not be used.

OPTIONS & ACCESSORIES



Adjustable pointer flags – Red lined pointer flags provide quick visual reference to a required flow level. Of clear plastic, they snap into place inside bezel and slide to desired level.

Model RMA-X-APF, Adjustable Pointer Flag for RMA Series
Model RMB-X-BPF, Adjustable Pointer Flag for RMB Series
Model RMC-X-CPF, Adjustable Pointer Flag for RMC Series

Regulator Kits – Available as optional extras for both Rate-Master® Flowmeters and Visi-Float® Flowmeters models. This view shows Model VFA Visi-Float® flowmeter with integrally connected constant differential pressure regulator. Recommended for use where inlet air pressure fluctuates widely and constant flow is required.
The regulator maintains a constant pressure differential of approximately 3 ± .15 psig. Supply pressure must be at least 3 psig above the flowmeter discharge to operate. The standard regulator may be used with any Dwyer Series RM or VF flowmeter up to 200 scfh. For higher flow rates consult the factory.

Model RKA, Regulator Kit for RMA Series
Model RK-RMB, Regulator Kit for RMB Series

OPTION
-NIST, NIST traceable calibration certificate

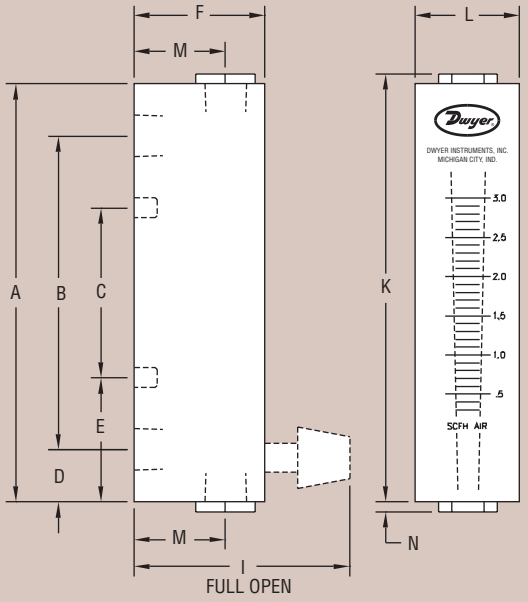
Specials – Special ranges, scales, mounting arrangements, etc., are available on special order, or in OEM quantities.

Series VF

Visi-Float® Flowmeters

Used to Indicate or Manually Control Air or Water Flow

Model VFB Model VFA-SSV



Flowmeter Dimensions		
	Model VFA	Model VFB
A	4 (101.6)	6-1/2 (165.1)
B	3 (76.20)	5-1/2 (139.7)
	1/8 NPT CONN.	1/8 NPT CONN.
C	1-5/8 (41.28)	3-1/2 (88.90)
	10-32 THD	10-32 THD
D	1/2 (12.70)	1/2 (12.70)
E	1-3/16 (30.16)	1-1/2 (38.10)
F	1-1/4 (31.75)	1-1/4 (31.75)
I	2-1/16 (52.39)	2-1/16 (52.39)
	OPEN	OPEN
K	4-3/32 (104.0)	6-11/16 (169.9)
L	1 (25.40)	1-3/8 (34.93)
M	7/8 (22.23)	7/8 (22.23)
	1/8 NPT	1/8 NPT
N	3/32 (2.381)	3/32 (2.381)

The Visi–Float® flowmeter bodies are cut and precision machined from solid, clear acrylic plastic blocks. This construction not only produces a handsome finished product, but permits complete visual inspection. As a result, the Visi-Float® flowmeters are especially popular for medical and laboratory equipment applications.

Scales are easy to read – The front scale location and white background provides excellent visibility. The direct reading scales are hot stamped into the plastic and will not wear off. Mid-range calibration is established with a master flowmeter. Accuracy is ±5% of full-scale for VFA models, ±3% for VFB. Scales average 2" long on the VFA models, 4″ long on VFB.

Durable and attractive construction – The machined acrylic bodies of the Visi-Float® flowmeters are practically unbreakable. Fabrication is backed by over 60 years of experience in acrylic instrument machining. The tapered bore is precision machined to a smooth surface that provides perfect visibility of the indicating float. The VFA and VFB models are available with either brass or stainless steel inlet and outlet connections and are tapped for 1/8″ NPT thread. VFB models 85 and 86 have either 1/4″ back or 3/8″ end connections. All standard models employ Buna-N O-rings for leak proof operation and are available with either back or end connections for horizontal or vertical piping. Precision metering valves in brass or stainless steel are available for most VFA and VFB models.

Easy installation – All Visi-Float® flowmeters have metal mounting inserts on rear for panel mounting. They can also be supported directly by system piping.

SPECIFICATIONS

Service: Compatible gases & liquids.

Wetted Materials:

Body: Acrylic plastic;
O-ring: Buna-N (fluoroelastomer available);
Metal parts: Brass standard, SS optional;
Float: SS, black glass, aluminum, K monel depending on range.

Temperature & Pressure Limits:

Without Valve: 100 psig (6.9 bar) @ 150°F (65°C); 150 psig (10 bar) @ 100°F (38°C);
With Valve: 100 psig (6.9 bar) @ 120°F (48°C).

Accuracy: VFA = 5% of full-scale; VFB = 3% of full-scale.

Process Connection: 1/8″ female NPT. VFB ranges 85 and 86 have 1/4″ NPT back connections or 3/8″ NPT end connections. These ranges not available with brass valves.

Scale Length: VFA 2″ typical length; VFB 4″ typical length.

Mounting Orientation: Mount in vertical position.

Weight: VFA: 4.0 to 4.8 oz (.11 to .14 kg); VFB: 7.2 to 8.8 oz (.20 to .25 kg).

How To Order
Series—Range No. ("X")—Valve—Option
Example: VFA-9-BV
Series VFA with 20-200 SCFH Air Range & Brass Valve

VFA

Model	Description
VFA-X	Standard VFA
VFA-X-SS*	VFA with Stainless Metal Wetted Parts
VFA-X-BV‡	VFA with Brass Valve
VFA-X-SSV‡	VFA with Stainless Steel Valve
VFA-X-EC	VFA with End Connections
VFA-X-EC-SS	VFA with End Connections and Stainless Steel Metal Wetted Parts

VFB

Model	Description
VFB-X*	Standard VFB
VFB-X-SS	VFB with Stainless Metal Wetted Parts
VFB-X-BV	VFB with Brass Valve
VFB-X-SSV	VFB with Stainless Steel Valve
VFB-X-EC	VFB with End Connections
VFB-X-EC-SS	VFB with End Connections and Stainless Steel Metal Wetted Parts

* Shown model
‡ Valve is designed for flow adjustment only, not intended to be used as an open/shut-off valve.

Popular Ranges

Model VFA — 2˝ Scale			
Range No.	**Range SCFH Air**	**Range No.**	**Range LPM Air**
1	.1-1	21	.06-0.5
2	.2-2	22	.15-1
3	.6-5	23	.6-5
4	1-10	24	1-10
5	2-20	25	3-25
6	4-30	26	6-50
7	5-50	27	10-100
8	10-100		
9	20-200		
	CC Water per min.		**Gal. Water per hour**
32	6-50	41	.6-5
33	10-100	42	2-10
34	20-200	43	3-20
		44	8-40

Model VFB — 4˝ Scale			
Range No.	**Range SCFH Air**	**Range No.**	**LPM Air**
50	.3-3	65	.2-4
91⁺	1-10	66	1-10
51⁺	2-20	67	1-20
52	4-40	68	3-30
53⁺	10-100	69	4-40
54⁺	10-150		**CC/Min. Water**
55⁺	20-200	82	2-30
	SCFM Air		**GPH Water**
90	.3-3	80⁺	.5-12
	CC/Min. Air	83⁺	1-20
60	100-1000	84	6-40
		81	6-60
			GPM Water
		85*	.2-2
		86*	.6-5

⁺ For dual range models in English and Metric add "D" to end of Range No.

OPTIONS & ACCESSORIES

Special Multi-Column Visi-Float® Flowmeters
Perfect for OEM applications, Visi-Float® flowmeters can be custom made with up to 10 columns in a single block of acrylic plastic.
Available with or without valves. Consult factory for more information.

OEM Specials – Special flowmeter designs can be supplied to meet a wide range of requirements and specific applications. These include: on-off plunger and push-to-test valves, special gas or fluid calibration, special ranges, scales, name brand or other identification. Pointer flags can be furnished for instant visual reference. For specific information, please supply an outline of your requirements.

Regulator Kits

Regulator Kits – Available as optional extras for both Rate-Master® Flowmeters and Visi-Float® Flowmeters models. This view shows Model VFA Visi-Float® flowmeter with integrally connected constant differential pressure regulator. Recommended for use where inlet air pressure fluctuates widely and constant flow is required.
The regulator maintains a constant pressure differential of approximately 3 ± .15 psig. Supply pressure must be at least 3 psig above the flowmeter discharge to operate. The standard regulator may be used with any Dwyer Series RM or VF flowmeter up to 200 scfh. For higher flow rates consult the factory.

Model RKA, Regulator Kit for VFA Series
Model RK-VFB, Regulator Kit for VFB Series

OPTIONS
-PF, Red ABS Plastic Pointer Flag
-VIT, Fluoroelastomer O-rings
-NIST, NIST traceable calibration certificate