

Brooks® Models GT 1350 / 1355 / 1357 Sho-Rate™ Purgemeter

DESIGN FEATURES

- Simple but rugged construction for easy flow indication
- Integral needle valves for process control
- Integral flow controllers to compensate for varying inlet and/or outlet pressures
- Tubes can be changed in line minimizing process down time
- Kynar™ construction option for corrosive fluids
- Interchangeable tubes and floats

DESCRIPTION

The Sho-Rate series of flow indicators provide an economical means of flow rate indication and control for general plant use, laboratory and analytical applications. The instruments are ideal for common applications like purging services, cooling water flow indication, bearing lubrication, carrier gas flow rate indication, fuel flow indication in chromatography and atomic absorption and indication and control of doping gas in electronic crystal growing furnaces.

SPECIFICATIONS

Performance

Scale length	Model 1350 65 mm Model 1355 150 mm Model 1357 250 mm
Accuracy	Model 1350 ± 10% F.S. Optional ± 5% F.S. Model 1355 ± 5% F.S. Optional ± 2% F.S. Model 1357 ± 3% F.S. Optional ± 2% F.S. or ± 1% F.S.
Repeatability	± 0.5%
Maximum operating pressure	1400 kPa (14 bar)
Maximum operating temperature	120 °C
Certified	Intrinsically safe according to ATEX (PTB 99ATEX2128 X) Pressure Equipment Directive (PED) 97/23/EC. Flow meter complies under Sound Engineering Practices (SEP).



Model GT 1350/1355 with Needle Valve on Inlet

CONSTRUCTION DATA

Fitting material	Brass or 316 SS
Connection material	Brass or 316 SS
Connection types	• Standard 1/8" NPT • Optional: - 1/4" NPT - 1/8" tube compression - 1/4" tube compression - 1/4" I.D. Hose
Side plate material	Anodized aluminium
Metering tubematerial	Borosilicate glass
Float material	Pyrex™, Sapphire, 316 SS, Carboloy™ or Tantalum
Float stop material	Teflon®
Tube packing material	Viton®
O-ring material	Viton

Models GT 1350/1355/1357

Capacity Table Model 1350

Tube	Float	Model Code	In/h Air*	l/h H ₂ O***	Decal** In/h Air*	Decal** SCFH Air*	Decal** l/h H ₂ O***	Decal** GPH H ₂ O***
R-265-5	Glass	A1	4.4	-	0.4-4.2	0.01-0.16	-	-
R-265-5	316 SS	A3	13	-	1.5-13.5	0.02-0.52	-	-
R-265-5	Carboloy	A4	23	-	2-22	0.04-0.85	-	-
1-65	Glass	B1	41	0.59	4-42	0.2-1.2	0.04-0.6	0.01-0.14
2-65A	Glass	C1	50	-	6-50	0.4-1.9	-	-
2-65B	316 SS	D3	160	4.6	15-165	0.5-5.0	0.4-4.6	0.1-1.0
2-65C	316 SS	E3	-	2.3	-	-	0.2-2.3	0.05-0.5
3-65	Glass	F1	180	3.6	15-180	0.5-6.0	0.3-3.6	0.05-0.7
3-65	316 SS	F3	310	7.9	30-310	1.0-10	0.6-7.8	0.1-1.6
4-65	Glass	G1	360	8.8	30-350	1.2-12	0.8-8.8	0.2-2.0
4-65	316 SS	G3	640	22	60-620	2.0-18	2-22	0.5-4.0
6-65	Glass	H1	1300	36	150-1300	5.0-55	3-37	1.0-11
6-65	316 SS	H3	2400	77	200-2300	15-90	6-76	2.0-20
6-65	Carboloy	H4	3600	100	300-3500	12-120	10-105	2.0-30

Capacity Table Model 1355

Tube	Float	Model Code	In/h Air*	l/h H ₂ O***
R-2-15-AAAA	Glass	J1	2.8	0.034
R-2-15-AAAA	Sapphire	J2	4.4	0.067
R-2-15-AAAA	316 SS	J3	8.7	0.15
R-2-15-AAAA	Carboloy	J4	15	0.3
R-2-15-AAAA	Tantalum	J5	17	0.34
R-2-15-AA	Glass	B1	4.8	0.12
R-2-15-AA	Sapphire	B2	7.4	0.17
R-2-15-AA	316 SS	B3	14	0.26
R-2-15-AA	Carboloy	B4	24	0.51
R-2-15-AA	Tantalum	B5	26	0.57
R-2-15-D	Glass	F1	21	0.34
R-2-15-D	Sapphire	F2	28	0.63
R-2-15-D	316 SS	F3	46	1.2
R-2-15-D	Carboloy	F4	68	1.9
R-2-15-D	Tantalum	F5	73	2.1
R-2-15-A	Glass	C1	46	1
R-2-15-A	Sapphire	C2	61	1.5
R-2-15-A	316 SS	C3	94	2.7
R-2-15-A	Carboloy	C4	130	4.2
R-2-15-A	Tantalum	C5	140	4.5
R-2-15-B	Glass	D1	130	3.1
R-2-15-B	Sapphire	D2	170	4.7
R-2-15-B	316 SS	D3	250	8
R-2-15-B	Carboloy	D4	370	11
R-2-15-B	Tantalum	D5	390	12
R-2-15-C	Glass	E1	210	5
R-2-15-C	Sapphire	E2	280	7.7
R-2-15-C	316 SS	E3	420	13
R-2-15-C	Carboloy	E4	590	19
R-2-15-C	Tantalum	E5	620	20
R-6-15-A	Glass	G1	480	12
R-6-15-A	Sapphire	G2	620	17
R-6-15-A	316 SS	G3	920	29
R-6-15-A	Carboloy	G4	1200	43
R-6-15-A	Tantalum	G5	1300	46
R-6-15-B	Glass	H1	1300	34
R-6-15-B	Sapphire	H2	1600	50
R-6-15-B	316 SS	H3	2400	81
R-6-15-B	Carboloy	H4	3400	110
R-6-15-B	Tantalum	H5	3600	120

Capacity Table Model 1357

Tube	Float	Model Code	In/h Air*	l/h H ₂ O***
R-2-25-D	Glass	D1	20	0.33
R-2-25-D	Sapphire	D2	28	0.61
R-2-25-D	316 SS	D3	45	1.2
R-2-25-D	Carboloy	D4	67	1.9
R-2-25-D	Tantalum	D5	71	2.1
R-2-25-A	Glass	A1	47	1
R-2-25-A	Sapphire	A2	62	1.6
R-2-25-A	316 SS	A3	95	2.8
R-2-25-A	Carboloy	A4	130	4.3
R-2-25-A	Tantalum	A5	140	4.6
R-2-25-B	Glass	B1	120	2.9
R-2-25-B	Sapphire	B2	160	4.4
R-2-25-B	316 SS	B3	240	7.4
R-2-25-B	Carboloy	B4	340	11
R-2-25-B	Tantalum	B5	360	11
R-2-25-C	Glass	C1	210	4.9
R-2-25-C	Sapphire	C2	270	7.5
R-2-25-C	316 SS	C3	410	12
R-2-25-C	Carboloy	C4	580	19
R-2-25-C	Tantalum	C5	610	20
R-6-25-A	Glass	E1	470	11
R-6-25-A	Sapphire	E2	610	17
R-6-25-A	316 SS	E3	910	29
R-6-25-A	Carboloy	E4	1200	43
R-6-25-A	Tantalum	E5	1300	45
R-6-25-B	Glass	F1	1200	33
R-6-25-B	Sapphire	F2	1600	49
R-6-25-B	316 SS	F3	2300	78
R-6-25-B	Carboloy	F4	3200	110
R-6-25-B	Tantalum	F5	3400	110

ALARM CONTACTS

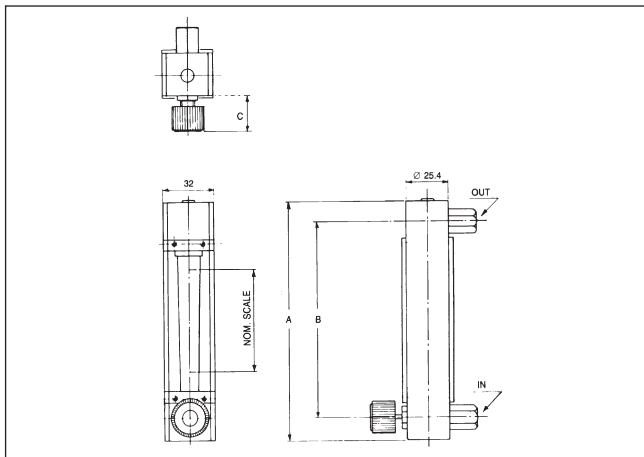
- Inductive bistable ring initiators for high and/or low flow alarm may be mounted to the instrument to create a highly sensitive, stable and accurate device for signalling high or low flows or deviations from a controlled flow. The inductive alarm, (Ex) II2G EEx ia IIC T6) can only be used in combination with 316 SS or carboloy ball floats and only with scales on tube. The alarm points may be adjusted over the entire flow meter range and be set so that any two contacts may be made to operate simultaneously. For hazardous area applications Brooks can supply an ATEX approved (Eex) ia IIC power supply/ amplifier/relay unit to obtain an intrinsic safe current circuit.

* Flow is given at normal conditions (0°C & 1.013 bar absolute) when the meter is operated at 20°C & 1.013 bar absolute

** In case the instruments are supplied with a direct reading decal fused on the tube the flow range values stated in these columns must be used

*** Flow is given for H₂O at 20°C

DIMENSIONAL DRAWINGS



MODEL	CONNECTIONS	A	B	C
1350	1/8" NPT	140	114	26
1355	1/8" NPT	249	224	26
1357	1/8" NPT	376	351	26

OPTIONAL FEATURES/EQUIPMENT

• Kynar fitting material

The Kynar (P.V.D.F.) fitting material provides an economical means of flow rate indication for difficult to handle, corrosive fluids encountered in chemical plants, research laboratories, semiconductor and film processing industries.

• Standard Valve or ELF Needle Valve

The Standard Valve is a multi-purpose valve. The ELF Needle Valve (Non Rising Stem design) provides a greater number of turns affording greater precision control with higher resolution. Both valves provide positive shut-off and both are directly interchangeable. Both valves can be installed at the inlet or the outlet fitting of the flowmeter.

• Panel Mounting Arrangements

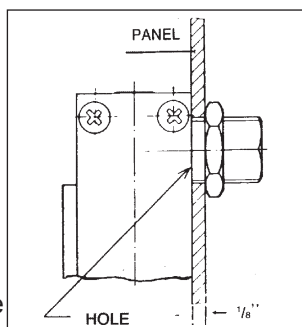
Flush mounting bezel

The instrument can be equipped with an aluminium (Model 1350 and 1355) or plastic (Model 1357) bezel for flush panel mounting.

Threaded adapters with mounting nuts for front panel mounting (See drawing below)

• Integrally mounted flow controllers

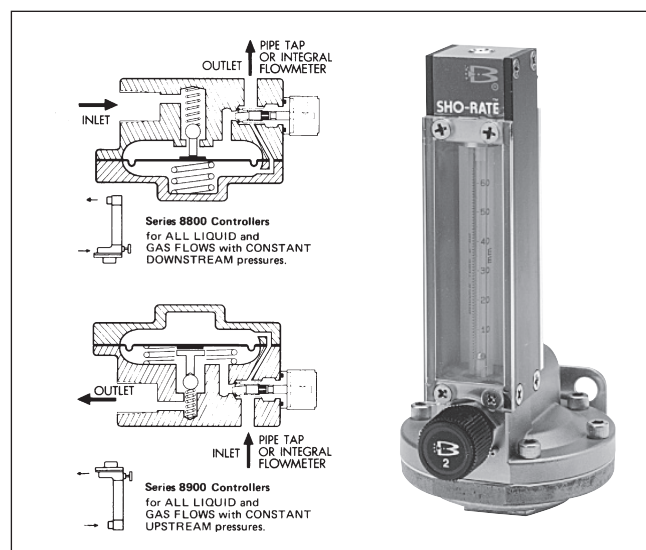
Brooks self-contained flow controllers are constant differential regulators with built-in flow control needle valve. The internal diaphragm-actuated control valve is positioned by the incoming fluid pressure on one side of the diaphragm, and outlet pressure + spring action on the other side. Variations in the supply and/or discharge pressure, disturb the balance of forces on the



diaphragm, causing the control valve to close or to open, thus maintaining a fixed differential across the manual flow regulating valve. The Series 8800 controllers are designed for all liquid and gas flows with constant downstream pressure. Series 8900 controllers are designed for all liquids and gas flows with constant upstream pressure.

The 8800/8900 controllers are designed to offer an economical way of controlling all your liquid and gas flows.

The 8840/8940 controllers are designed to offer the most accurate way of controlling all your liquid and gas flows.



- Inductive switches for high and low flow alarm. One or more inductive sensing coils may be mounted to the instrument to create a highly sensitive, stable and accurate device for signalling high or low flows or deviations from a controlled flow (only for use with 316 SS or Carboloy ball floats).
- In-line sintered metal filter.
- Circular or triangle base plates with screws and spirit level.
- Multi-tube construction with manifold or individual inlet/outlet.

Example Dimensional Drawing Multi-Tube Sho-Rate

No of Tube	A
2T	50.8
3T	76.2
4T	101.6
5T	127
6T	152.4

ORDERING INFORMATION

BASE MODEL NUMBER		DESCRIPTION
1350/D		SHO-RATE '65'
1355/D		SHO-RATE '150'
1357/D		SHO-RATE '250'
FITTING / O-RING MATERIAL		
1		BRASS FITTINGS/VITON O-RINGS
2		316 SS FITTINGS/VITON O-RINGS
TUBE TYPE		
X		TO BE SELECTED FROM CAPACITY TABLE
FLOAT MATERIAL		
X		TO BE SELECTED FROM CAPACITY TABLE
SCALE TYPE		
A		MM DECAL + CALIBRATION CURVE
D		DIRECT READING SCALE (NOT WITH ALARM)
E		DIRECT READING DECAL (l/h AIR @ 20 °C & 1,013 BAR ABS)
F		DIRECT READING DECAL (l/h WATER)
G		DIRECT READING DECAL (SCFH AIR @ 70 °F & 14,7psig)
H		DIRECT READING DECAL (GPH WATER)
ACCURACY		
		MODEL 1350 MODEL 1355 MODEL 1357
1		± 10 % F.S. + 5% F.S. + 3% F.S.
2		± 5 % F.S. + 2% F.S. ± 2% F.S.
3		± 1% F.S.
CONNECTIONS		
A		1/8" NPT FEMALE (NOT WITH FLOW CONTROLLER)
B		1/4" NPT FEMALE (ST'D WITH FLOW CONTROLLER)
C		1/8" TUBE COMPRESSION
D		1/4" TUBE COMPRESSION
E		1/4" I.D. HOSE
FLOW CONTROLLER/NEEDLE VALVE		
0		NONE
1		8800 FLOW CONTROLLER
2		8900 FLOW CONTROLLER
3		8840 FLOW CONTROLLER
4		8940 FLOW CONTROLLER
5		VALVE POSITIONED AT INLET SIDE
6		VALVE POSITIONED AT OUTLET SIDE
VALVE SIZE		
0		NONE
A		STANDARD VALVE # 1
B		STANDARD VALVE # 2
C		STANDARD VALVE # 3
D		NRS NEEDLE VALVE # 1
E		NRS NEEDLE VALVE # 2
F		NRS NEEDLE VALVE # 3
G		NRS NEEDLE VALVE # 4
H		NRS NEEDLE VALVE # 5
J		NRS NEEDLE VALVE # 6
K		NRS NEEDLE VALVE # 7
BISTABLE ALARM		
0		NONE
A		1 LIMIT SENSOR
B		2 LIMIT SENSORS
C		1 LIMIT SENSOR+ I.S. RELAY, 230/110VAC KFA6/KFA5-SR2-Ex1.W
D		2 LIMIT SENSORS+ I.S. DOUBLE RELAY, 230/110Vac KFA6/KFA5-SR2-Ex2.W
MOUNTING		
0		NONE
1		ALUMINIUM BEZEL
2		THREADED ADAPTERS (NPT ONLY) WITH PANEL MOUNTING NUTS
3		MOUNTING BRACKET FOR CONTROLLER
4		CIRCULAR BASEPLATE (ALUMINIUM)
9		SELECT "9" OR "Z" IF SPECIAL AND SPECIFY
1350 / D 2 A 1 A 1 A 5 D A 1 = TYPICAL MODEL NUMBER		

BROOKS SERVICE AND SUPPORT

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration. The primary standard calibration equipment to calibrate our flow products is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards. Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks can provide customer seminars and dedicated training to engineers, end users and maintenance persons. Please contact your nearest sales representative for more details.

HELP DESK

In case you need technical assistance:
 Americas ☎ 1-888-554-FLOW
 Europe ☎ +31 (0) 318 549 290
 Asia ☎ +81 (0) 3 5633 7100

Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.



Brooks Instrument
 407 West Vine Street
 P.O. Box 903
 Hatfield, PA 19440-0903 USA
 T (215) 362 3700
 F (215) 362 3745
 E-Mail BrooksAm@BrooksInstrument.com
www.BrooksInstrument.com

Brooks Instrument
 Neonstraat 3
 6718 WX Ede, Netherlands
 T +31 (0) 318 549 300
 F +31 (0) 318 549 309
 E-Mail BrooksEu@BrooksInstrument.com

Brooks Instrument
 1-4-4 Kitasuna Koto-Ku
 Tokyo, 136-0073 Japan
 T +81 (0) 3 5633 7100
 F +81 (0) 3 5633 7101
 E-Mail BrooksAs@BrooksInstrument.com

