

Ar-Met® Armored Flowmeters

MT3620 and MT3630 Series

Models 3621, 3622, 3623, 3630, 3631, 3632, 3633, 3634, 3635, 3636, 3637

Features and Benefits

- For use with a variety of interchangeable extension equipment
- Standard accuracy $\pm 2\%$ full scale (1% full scale optional)
- Flange, threaded, or socket weld connections
- Precision-formed, heavy-walled metering tubes
- Removable float and bottom guide cartridge
- Ten-to-one rangeability
- Nominal scale length of 127mm (5 inches)
- Standard floats and extension rods interchangeable in a given meter size

Description

The Brooks® Ar-Met® Metal Tube Flowmeters are intended for applications where high pressures, temperatures, or corrosive conditions preclude the use of conventional glass or metal tube meters.

Specifications

Capacities

Refer to Table 1

Performance

Standard Flow Accuracy: Meter specified to have an accuracy of $\pm 2\%$ of maximum scale from 100% down to 10% of scale reading.

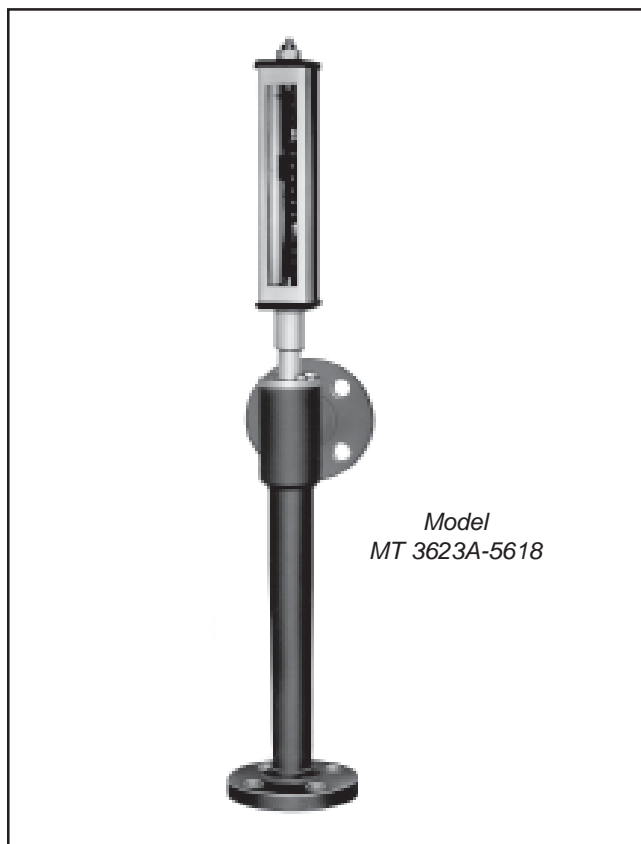
Optional Flow Accuracy: Meter specified to have an accuracy of $\pm 1\%$ of maximum scale from 100% down to 10% of scale reading.

Repeatability

0.5% full scale

Operating Pressure and Temperature

Refer to Table 2 for operating fluid temperature ranges. For flanged meters, maximum operating pressures are determined by the rating of the ANSI RF flange used. Approximate maximum non-shock pressure ratings in psig versus temperature °F for standard ANSI RF pipe flanges are tabulated in the tables below. For operating pressure of threaded and socket weld connections, See Figure 1.



Flange Rating	316 Stainless Steel*					
	100°F	200°F	300°F	400°F	500°F	600°F
150 lb.	275	240	215	195	170	140
300 lb.	720	620	560	515	480	450
600 lb.	1440	1240	1120	1030	955	905

*For pressure ratings of alternate materials please consult the factory.

Note:

Maximum temperature rating up to 1000°F. Over 450°F, cooling fins, metal O-rings, and all 316SS construction are required. Below 32°F, Teflon® O-rings, radiating fins and all 316SS construction are required.

Meter Dimensions

Refer to Figure 1

Materials of Construction

Metering Tubes

Standard: 316 stainless steel

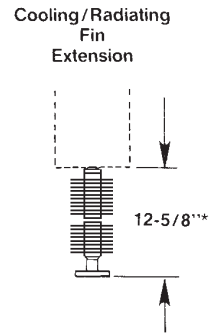
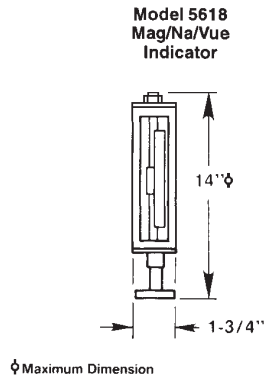
Optional: Hastelloy® B2 or C-276, Monel® (Sizes 7-11 only)

Table 1 Capacities (maximum capacity will be reduced by approximately 8% when meter is inverted for saturated steam service)

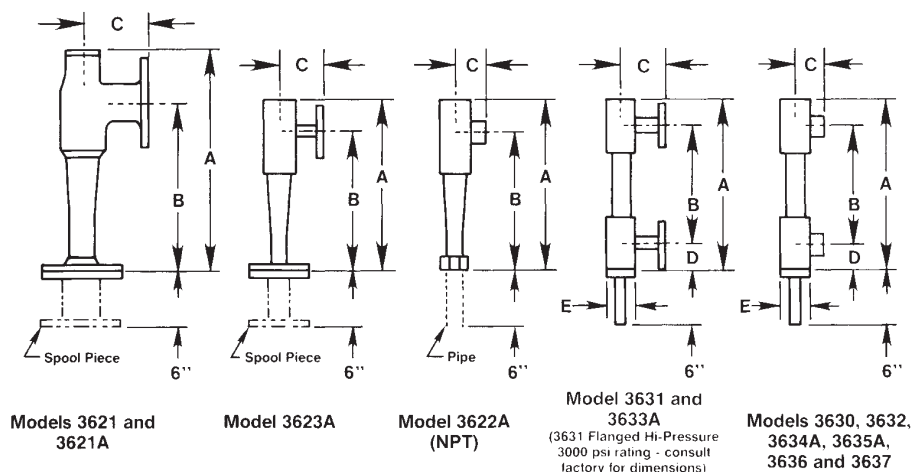
Meter Size	Tube Taper	Float Number	Water				Air @ 14.7 psia and 70°F					
			gpm	lpm	Pressure Drop Inches W.C.	Viscosity Immunity Ceiling, CS*	scfm	slpm	Pressure Drop Inches W.C.	psi Critical		
7	1.40	7AV-22	0.60	2.27	4.0	5.0	2.50	70.8	5.0	30		
		7-AV-29	0.86	3.26	6.0	5.0	3.50	99.1	7.0	30		
8	1.21	8-AV-30	1.00	3.79	9.0	10.0	4.10	116	10.0	0		
		8-AV-34	1.42	5.37	11.0	10.0	5.84	165	13.0	0		
		8-AV-57	1.85	7.00	18.0	10.0	7.62	216	21.0	0		
		8-AV-113	2.46	9.31	38.0	7.0	10.1	286	44.0	30		
		8-AV-158	3.10	11.73	60.0	7.0	12.8	362	69.0	30		
		8-AS-158	4.00	15.14	66.0	2.0	16.5	467	76.0	30		
	1.35	8-AV-30	2.00	7.57	12.0	10.0	8.2	232	14.0	0		
		8-AV-34	2.60	9.84	16.0	10.0	10.7	303	19.0	0		
		8-AV-57	3.25	12.30	30.0	10.0	13.4	379	35.0	0		
		8-AV-113	4.30	16.28	55.0	7.0	17.4	493	63.0	30		
		8-AV-158	5.30	20.06	67.0	7.0	21.8	617	77.0	30		
		8-AS-158	7.00	26.50	90.0	2.0	28.8	816	104.0	30		
	10	1.21	10-AV-55	3.40	12.87	5.0	17.0	14.0	396	6.0	0	
			10-AV-108	4.50	17.03	11.0	18.0	18.5	524	13.0	0	
10-AV-174			6.20	23.47	18.0	15.0	25.5	722	21.0	0		
10-AV-289			8.10	30.66	35.0	15.0	33.4	946	30.0	30		
10-AS-289			10.80	40.88	32.0	2.0	44.5	1260	37.0	30		
1.35		10-AV-55	5.74	21.73	8.0	18.0	23.6	668	9.0	0		
		10-AV-108	8.1	30.7	17.0	18.0	33.5	949	20.0	0		
		10-AV-174	10.5	39.7	25.0	15.0	43.3	1226	29.0	0		
		10-AV-289	14.8	56.0	45.0	15.0	61.0	1728	52.0	30		
		10-AS-289	20.8	78.7	70.0	2.0	85.7	2427	81.0	30		
		10-AV-498	27.8	105.2	125.0	2.0	114.0	4078	144.0	30		
		10-AS-325	36.0	136.3	152.0	1.0	148.0	4191	175.0	30		
		12	1.35	12-AV-213	16.6	62.8	11.0	25.0	68.4	1937	13.0	0
				12-AV-388	23.5	88.9	21.0	25.0	96.8	2741	24.0	0
12-AV-605	30.5			115.4	32.0	25.0	126.0	3568	37.0	30		
12-AS-605	41.0			155.2	43.0	3.0	169.0	4786	50.0	30		
12-AS-812	78.0			295.2	125.0	1.0	321.0	9091	144.0	30		
13	1.35	13-AV-231	24.1	91.2	8.0	70.0	99.3	2812	9.0	0		
		13-AV-561	37.8	143.1	17.0	70.0	156.0	4418	20.0	0		
		13-AV-923	51.5	195	27.0	60.0	212.0	6004	31.0	0		
		13-AV-1323	63.3	240	89.0	60.0	261.0	7392	45.0	30		
		13-AS-1323	89.4	338	58.0	5.0	368.0	10422	67.0	30		
		13-AV-1697	102.0	386	72.0	10.0	420.0	11894	83.0	30		
		13-AS-1203	150.0	568	60.0	1.0	618.0	17502	70.0	30		
		13-AS-1550	207.0	783	205.0	1.0	853.0	24157	236.0	30		

*Viscosity immunity ceiling listed is for stainless steel float and fluid Sp. Gr. 1.0

EXTENSIONS



AR-MET METERS



Model Number	Meter Size	Conn. Size (Inches)	A	B	C				D	E	Max. Working** Pressure of Meter Body (psi at 200°F)
					150 lb.	300 lb.	600 lb.	1500 lb.			
3623A* (Flanged)	7,8,&10	1	14	12-1/2*	3-1/2*	4*	4-1/4	5			Up to 1500
3621A	12	1-1/2	16-1/4	14-1/2	4*	4-1/2	4-3/4	5-1/2			Up to 1500
3621A	13	2	17-11/16	15-1/2*	4-1/2*	5*	5-3/4	6-1/2			Up to 1500
3633A (Flanged)	7 & 8	1/2	14-3/8	11	3-1/2*	4*	4-1/4	5	1-7/8	2	Up to 1500
3633A (Flanged)	10	1	14-3/8	11	3-1/2*	4*	4-1/4	5	1-7/8	2	Up to 1500
3622A (Threaded)	7 & 8	1/2	15-1/4	13-3/4		1-7/8					Up to 1500
3622A (Threaded)	10	1	15-1/4	13-3/4		1-7/8					Up to 1500
3632A,3637A (Threaded)	7 & 8	1/2	12-1/2	9		1-7/8			1-3/4	2***	3630 & 3632
& 3630A,3636A (Threaded)	10	1	16-1/2	11-3/8		1-1/2			2-9/16	3	Up to 3000
(Socket Weld)	12	1-1/2	16-1/2	11-3/8		2			2-9/16	4	3636 & 3637
	13	1-1/2	16-1/2	11-3/8		2			2-9/16	4	Up to 6000
3634A (Socket)	7 & 8	1/2	14-3/8	11		1-7/8			1-7/8	2	Up to 1500
3634A (Socket)	10	1	14-3/8	11		1-7/8			1-7/8	2	Up to 1500
3635A (Threaded)	7 & 8	1/2	14-3/8	11		1-7/8			1-7/8	2	Up to 1500
3635A (Threaded)	10	1	14-3/8	11		1-7/8			1-7/8	2	Up to 1500

*Dimensions are those recommended by ISA RP-16.2.

***3000 lb. rating "E" dimension for 6000 lb. rating is 3 inches.

**For higher ratings, write to factory. Maximum working pressure for the meter is determined by the flange rating or the meter body rating, whichever is lower.

Figure 1 Dimensions

Table 2 Fluid Temperature Guide for Extension Design Ar-Mets

Model 3620-3630 Series	Cryogenic to 32°F	33°F to 250°F	251°F to 450°F	451°F to 1000°F
Indicating Extension Only 5618	O-ring or Gasket Material: Teflon Radiating Fins All 316SS Construction	Standard No Options Required for Temperature	O-ring or Gasket Material: Viton/Teflon	Metal O-ring or Gaskets Cooling Fins

Rugged Designs for metering conditions:

- High temperatures (up to 1000°F, in 3620-30 Series using metal O-rings and cooling fins)
- Extremely low temperatures (Cryogenic Service in 3620 Series using Teflon O-ring and radiating fins)
- High pressures (up to 6000 psig in 3620 Series)
- Steam service - saturated or superheated (inverted or high temperature design in 3620 Series)

End Fittings

Standard: 316 stainless steel

Optional: Hastelloy B2 or C-276, Monel (Sizes 7-11 only)

Floats, Extensions, and Cartridges

Standard: 316 stainless steel

Optional: Hastelloy B2 or C-276, Monel (Sizes 7-11 only)

Gaskets and O-rings

Teflon®: Cryogenic to 450°F

Buna-N: 0°F to 250°F

Viton® fluoroelastomers and Silicone: 0°F to 450°F

Metal O-ring: 450°F to 1000°F

EPDM: 0° to 300°F

Kalrez®: 0°F to 500°F

Ordering Information

(Refer to Tables 3 through 5)

To order, please specify:

1. Model number and size of flowmeter
2. Connection arrangement and orientation
3. Materials of construction
4. Scale data and float type required
5. Options if desired
6. Complete flow metering data:
 - Type of fluid
 - Maximum minimum, normal flows
 - Temperature, pressure
 - Viscosity, specific gravity
 - Maximum allowable pressure drop

Optional Equipment

Coatings:

Epoxy coating of external surfaces of extensions.

Inlet Spool Pieces:

316 stainless steel (Standard)

Special Flange Facings:

Flat face, ring joint, tongue and groove, Ra finishes

Table 3 Ordering Information and Model Code

Approximate Weight (lbs.) of Meter Extensions

	5618
WEIGHT	2

Approximate Weight (lbs.) of Meter Body Only

MODEL	SIZE		
	7-10	12	13
3621/3623	15	35	37
3622	15		
3630-32	30	48	48
3631	37	56	56
3634-35	8		
3633	12		

MODEL	MT 3620 ARMORED FLOWMETER
3621A	VERTICAL INLET HORIZONTAL OUTLET FLANGED SIZE 12 AND 13
3622A	VERTICAL INLET HORIZONTAL OUTLET 1500 # NPT
3623A	VERTICAL INLET HORIZONTAL OUTLET FLANGED SIZE 7 TO 10
3630A	HORIZONTAL INLET AND OUTLET 3000 # SOCKET
3631A	HORIZONTAL INLET AND OUTLET FLANGED
3632A	HORIZONTAL INLET AND OUTLET 3000 # NPT
3633A	HORIZONTAL INLET AND OUTLET FLANGED
3634A	HORIZONTAL INLET AND OUTLET 1500 # SOCKET WELD
3635A	HORIZONTAL INLET AND OUTLET 1500 # NPT
3636A	HORIZONTAL INLET AND OUTLET 6000 #SOCKET WELD
3637A	HORIZONTAL INLET AND OUTLET 6000 # NPT

CODE	METER SIZE
07	7
08	8 (1.20 TAPER)
09	8 (1.35 TAPER)
10	10 (1.20 TAPER)
11	10 (1.35 TAPER)
12	12
13	13

CODE	FLOAT NUMBER				
	LIQUID (NOTE 1)			ALL	
	SIZE 7	SIZE 8&9	SIZE 10&11	SIZE 12	SIZE 13
B	7-AV-22	8-AV-30	10-AV-55	12-AV-213	13-AV-231
C	7-AV-29	8-AV-34	10-AV-108	12-AV-388	13-AV-561
D		8-AV-57	10-AV-174	12-AV-605	13-AV-923
E		8-AV-113	10-AV-289	12-AS-605	13-AV-1323
F		8-AV-158	10-AS-289	12-AS-812	13-AS-1323
G		8-AS-158	11-AV-498		13-AV-1697
H			11-AS-325		13-AS-1203
J					13-AS-1550
	GAS				
K	7-AV-22	8-AV-30	10-AV-55		
L	7-AV-29	8-AV-34	10-AV-108		
M		8-AV-57	10-AV-174		
N		8-AV-113	10-AV-289		
P		8-AV-158	10-AS-289		
R		8-AS-158	11-AV-498		
S			11-AS-325		

3623A 08 B 1 C 1 A TYPICAL MODEL CODE

NOTE 1: 11-AV-498 AND 11-1S-325 FLOAT AVAILABLE SIZE 11 (SIZE 10 W/ 1.35 TAPER) ONLY.

Table 3 Ordering Information and Model Code (Continued)

CODE	MATERIALS OF CONSTRUCTION	
2	ALL 316 S.S.	
4	ALL HASTELLOY C	
6	ALL MONEL	
	CODE	CONNECTION SIZE (SEE TABLE B FOR METER VS. CONN. SIZE)
	A	1/2"
	C	1"
	D	1 1/2"
	E	2"
	CODE	CONNECTION TYPE
	1	150 # RF FLANGE (3621A, 3623A OR 3633A ONLY)
	2	300 # RF FLANGE (3621A, 3623A OR 3633A ONLY)
	3	600 # RF FLANGE (3621A, 3623A OR 3633A ONLY)
	4	NPT (3622A, 3632A, 3635A OR 3637A ONLY)
	5	SOCKET WELD (3634A OR 3636A ONLY)
	CODE	ACCESSORY (NOTE 2)
	A	NONE
	D	INVERTED FOR STEAM SERVICE W/ 5618 SECONDARY
	J	BROACHED GUIDE CARTRIDGE
	N	125 RMS FINISH (250 RMS IS STANDARD)

3623A B 1 C 1 A TYPICAL MODEL CODE

NOTE 2: FOR OTHER ACCESSORIES REFER TO TABLE B

Note 2: For Indicator/Transmitter/Alarm Model Codes see Tables 4 and 5.

Table 4 Ordering Information and Model Code for Model 5618 Extension Indicator

MODEL	5618 EXTENSION INDICATOR		
5618-	BASIC EXTENSION INDICATOR		
	CODE	PRIMARY METER SIZE	
	1	SIZE 7 TO 12	
	2	SIZE 13	
		CODE	PRIMARY MODEL NUMBER
		A	3621 THRU 3623, 3633 THRU 3635
		B	3632
		C	3636, 3637
		CODE	EXTENSION MATERIAL
		1	316 S.S.
		3	HASTELLOY C
		5	MONEL
		CODE	ACCESSORY
		A	NONE
		B	HI-TEMP, ULTRA HI-TEMP, OR LOW TEMP OPTION
		C	INVERTED FOR SATURATED STEAM SERVICE
		F	METAL O'RING
5618-	1	A	1
		A	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 Instrument 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:

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

TRADEMARKS

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Brooks Brooks Instrument, LLC
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Kalrez DuPont Dow Elastomers
Monel Huntington Alloys Inc.
Teflon E.I. DuPont de Nemours & Co.
Viton DuPont Performance Elastomers



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