

**■ Function**

- Rugged and simple industrial instrument for metering the flow of liquids and gases.

**■ Application Areas**

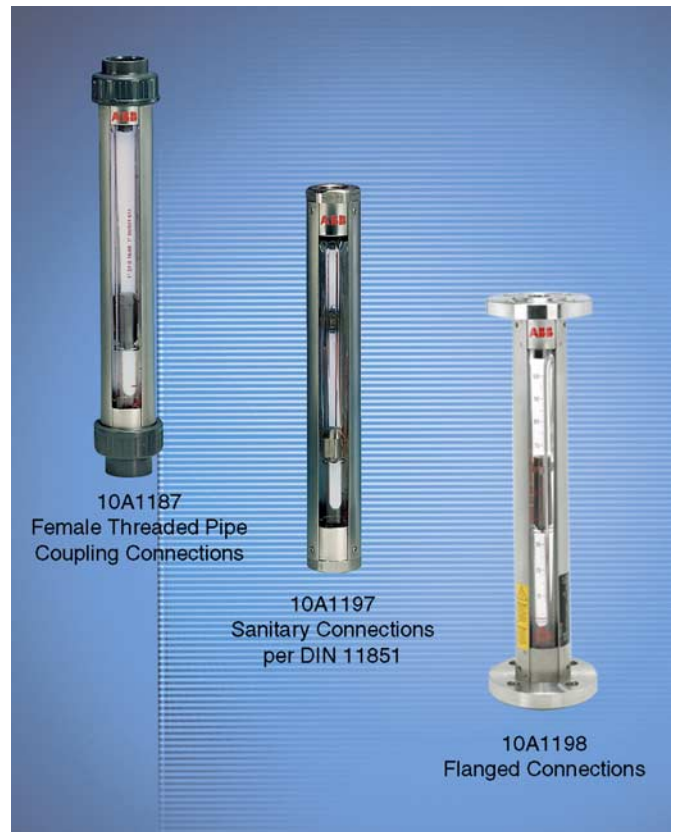
- Suitable for many industries including apparatus manufacture, food industry, water treatment and chemistry industry.
- A large variety of fluid wetted materials are available for metering aggressive fluids.

**■ Advantages**

- Precision meter tubes incorporating flat guides, bead guides or pole guides.
- Stainless steel housing standard.
- O-ring seals assure easy meter tube removal.
- Meter tubes and floats can be interchanged independent of each other.

**■ Important Design Features**

- A magnetic actuated alarm transmitter can be added in meter sizes 1/2" [DN15] and larger. (See 55AX1000 (Ex) iG5).
- Functional usefulness certified by the DVGW-Research Center of the Engler-Bunte-Institute.
- Suitable for vacuum service.
- Polycarbonate safety protection tube for metering gases.
- Couplings allow quick and easy installation and removal of the flowmeter.



**Rugged and simple  
industrial instrument**

## Specifications

### Scale Designs

#### Diameter Ratio Scale Dk/Ds

For meter sizes 1/16" to 1/4", direct reading if desired

#### Percent Scale

For meter sizes 1/16" to 1/4", direct reading or mm scale if desired

#### Materials, Connections, Weight

Materials			
Fluid Wetted Parts		Standard	Others
Meter tube		Borosilicate glass	
Float	Meter size 1/16" & 1/8"	Glass SS316 No. 1.4401 Sapphire	Carboloy Tantalum
	1/4"	Glass SS316 No. 1.4401	Sapphire Carboloy Tantalum
	1/2" to 2"	SS304 No.1.4301	SS316Ti No.1.4571 Hast. B/C PVC AL Bronze PVC (lead filled) PTFE
Float stop Inlet	1/16" 1/8" & 1/4" 1/2" to 2"	SS304 No. 1.4310 SS316 No. 1.4401	- - Hast. B/304-1.4301
	Outlet	1/16" to 1/4" 1/2" to 1"  1 1/2" to 2"	- SS304 No. 1.4301 PTFE PVDF, PVC, SS304 No. 1.4301
Fittings	1/16" to 2"	SS316Ti No. 1.4571	Steel PVC <sup>1)</sup> PCDF
O-Rings		Buna N	Viton A Ethylen-Propyl.
Others			
Housing		SS304 No.1.4301	
Flanges		SS304 No.1.4301	

#### Scale Lengths

100 mm for meter tube size 1/16"  
130 mm for meter tube sizes 1/8" to 1/4"  
250 mm for meter tube sizes 1/2" to 2"

#### Accuracy Classes (per VDI/VDE 3513)

Meter tube size 1/16": 6  
Meter tube sizes 1/8" to 2": 1,6  
Meter tube size 1/2" to 2" w/ "BL" float design: 6

#### Connections

hreaded or flanged connections, see Dimensions Page 9

#### Weight

See Dimensions Page 9

### Max. Allow. Operating Pressure

Meter Size	Liquids	Gases
	Pressure [bar]	Pressure [bar]
1/16"	30	30
1/8"	30	30
1/4"	30	30
1/2"	21	17
3/4"	17	13
1"	14	10
1 1/2"	9	4
2"	7	2

Reductions to the max. allow. operating pressure:

For meter sizes 1" to 2" the max. allow. operating pressure is reduced by 1 % per 2 °C for operating temperatures over 95 °C.

The pressures are lower for gas applications due to safety considerations .

The strength of the Polycarbonate protection tube is reduced as the temperature increases. Therefore the additional restrictions listed below are to be considered when metering gases:

- Listed max. allow. operating pressures applicable at 30 °C fluid temperature and 30 °C ambient temperature.
- Max. ambient temperature: 40 °C.
- Max. fluid temperature: 100 °C
- For fluid and/or ambient temperatures above 30 °C the max. allow. operating pressure is reduced by 1.05 % / 1 °C.

#### Fluid Temperatures

For Buna N O-rings: 0 to 120 °C  
For O-Ringen aus Viton A: 0 to 150 °C  
For PVC floats: 40 °C

#### Allowable min./max. Temperatures TS

- Combinations Glass /Metal with liquid fluids  
TSmin = 0 °C TSmax = +150 °C
- Combinations Glass /Metal with gaseous fluids  
TSmin = 0 °C TSmax = +100 °C
- Combinations Glass /PVC, all fluids  
TSmin = 0 °C TSmax = +60 °C
- Combinations Glass /PVDF with gaseous fluids  
TSmin = 0 °C TSmax = +100 °C
- Combinations Glass /PVDF with liquid fluids  
TSmin = 0 °C TSmax = +120 °C

## Floats

### Ball Floats

are used to meter smaller flowrates in sizes 1/16" to 1/4". In order to attain a large number of flow ranges within each meter tube ball floats made of different materials with differing densities are utilized.

### Floats with Guide Rings

are used in combination with bead guide meter tubes. The percent scale is the standard design.

Float designs "GSVT" are essentially viscosity immune and are available in the individual meter sizes in a variety of materials and numerous weights. An increase of flowrate of 25 to 30 % can be achieved if a reversed float head design "GNSVT" is utilized. This float head design is not suitable for fluids with higher viscosities. The VIC values listed in the flow range tables are to be observed.

The float is guided by the metering edge and the guide ring along the bead guides in the meter tube.

### Floats with Minimum Pressure Drop

have been specially developed for metering gases at low operating pressures and assure an extremely low pressure drop through the flowmeter. They are used in the bead guide meter tubes.

### Floats for Pole Guides

have a hole through their longitudinal axis and their vertical movement is guided along a stationary rod mounted in the center of the meter tube.

### Float Shapes "BL"...

are especially suitable for high flowrates in the smaller sizes. They are guided by the bead guides in the meter tube.

There are approximately 100,000 possible meter tube - float - scale combinations available for the Variable Area Flowmeters.

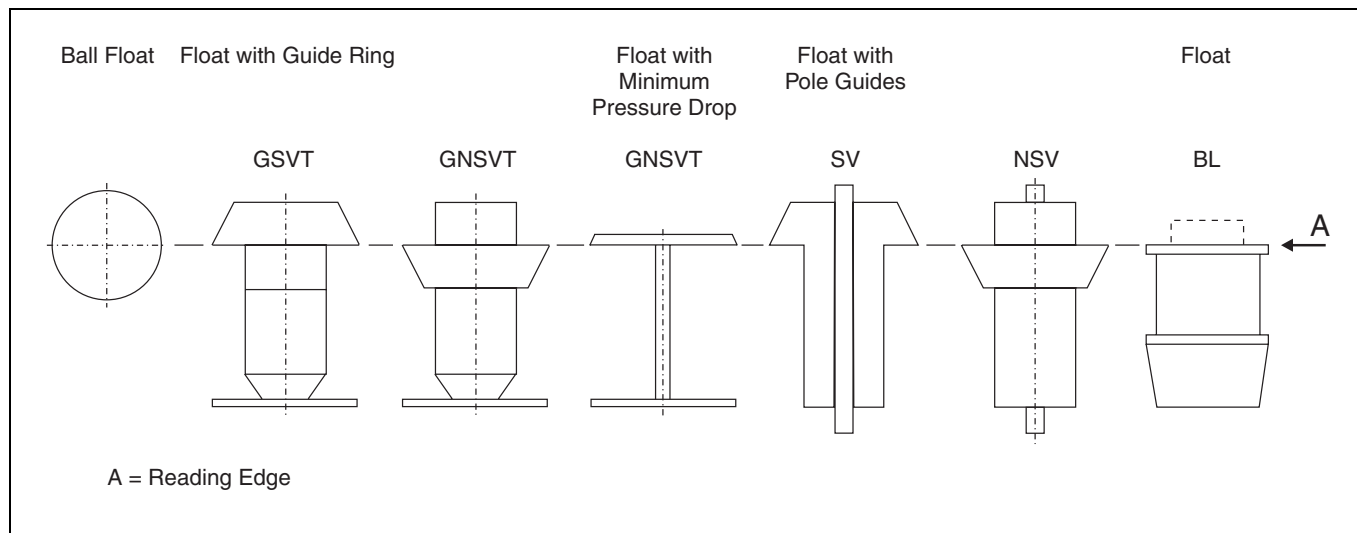


Fig. 1: Float Designs

## Meter Tubes

### Glass Meter Tubes

#### Triflat Meter Tubes (Fig. 2)

are utilized in the smallest sizes from 1/16" to 1/4". There are three flat surfaces which extend along the length of the conical meter tube parallel to its center axis. These flat surfaces guide the float throughout the entire measurement range. The minimal spacing between the float and the meter tube guide surfaces assures that the reading edge of the float is readily visible and that the flowrate value can be determined from the scale even when metering cloudy fluids. The float is guided exactly in the middle of the meter tube.

#### Plain Taper Meter Tubes 1/2" to 2" (Fig. 3)

are usually installed only for extreme operating conditions (pressure shocks, vibrating pipelines, etc.). The greater cross sectional area relative to the bead guide meter tubes provides larger flow ranges in sizes 1/2" - 2". The float is guided by the pole guide rod in the plain taper meter tubes.

#### Bead Guide Meter Tubes (Fig. 4)

are the standard meter tubes in sizes 1/2" to 2". In this design the beads, which are parallel to the center axis of the meter tube, serve the same function as the triflats described previously. They guide the float throughout the entire measurement range. In this design too the minimum space between the float reading edge and the meter tube bead guides assures that the float reading edge will be readily visible even in cloudy fluids. They are used in conjunction with the floats with guide rings.

### Scales

#### Diameter Ratio Scale Dt/Df

The diameter ratio scales are a numerical representation of the flow area to float head area ratio. This scale is universally used for gases and liquids and is of particular benefit when the operating conditions vary. A flowrate table is included at no charge for determining the flowrate values from the scale readings. Conversion calculations for other operating conditions are easily made using our "FlowCalc" calculation program. This scale design is the standard scale for the triflat meter tubes with ball floats.

#### Percent Scale

The linearized percent scale is the standard scale design for all the other Variable Area Flowmeters, predominantly for the bead guide and plain taper meter tubes. It indicates the flowrate expressed as a percentage of the maximum flowrate and generally covers a range from 8 to 100%. The maximum flowrate can be readily calculated from a knowledge of the physical properties of the fluid and the float design. Each percent scale has its accuracy guaranteed by us.

#### Direct Reading Scale

These scales indicate the volume or mass flow per unit time directly: (e.g. l/h Hydrogen, cm<sup>3</sup>/Min H<sub>2</sub>O). They are valid only for a single fluid and a specific set of operating conditions. Universal applicability of the direct reading scales is subject to certain limitations.

#### Millimeter Scale

This scale design is usually utilized when a specific flowrate value is to be reproduced and the actual flowrate value plays a secondary role. In combination with viscous fluids this scale can be considered to be universal.

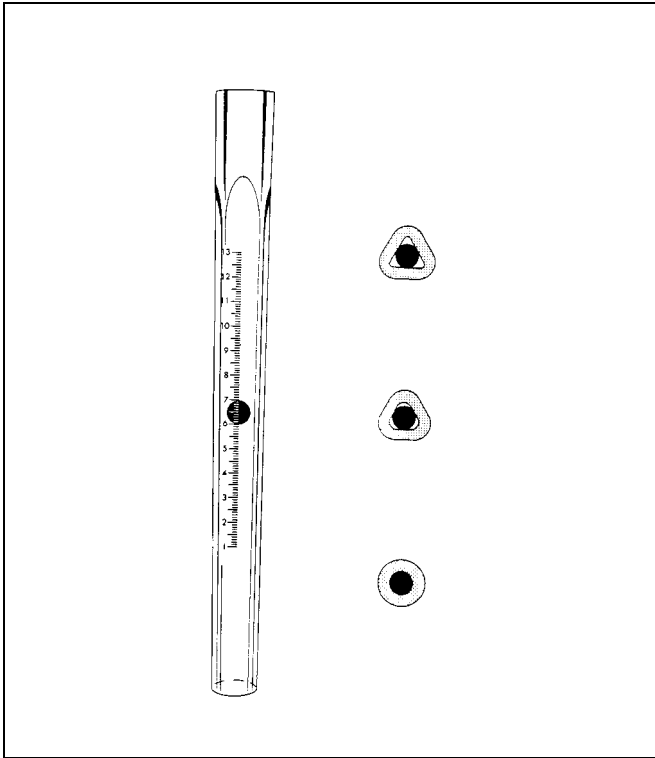


Fig. 2: Triflat Meter Tube

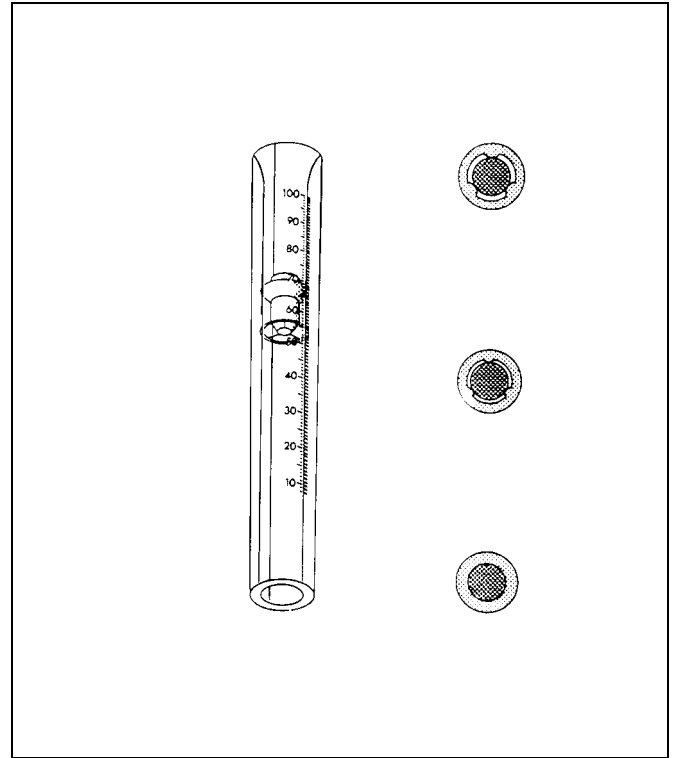


Fig. 4: Bead Guide Meter Tube

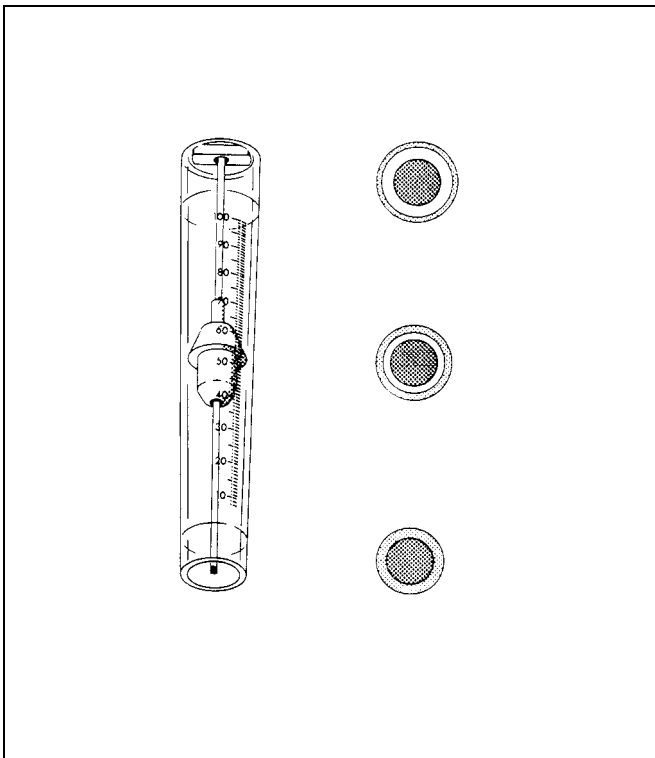


Fig. 3: Plain Taper Meter Tube

## Specifications

### Meter Size and Flow Range Overview

Meter Size	Meter Tube Size	Min. Flow Range				Max. Flow Range			
		l/h Water		m <sup>3</sup> /h Air <sup>1)</sup>		l/h Water		m <sup>3</sup> /h Air <sup>1)</sup>	
1/4"	1/16"	0,003	bis 0,03	0,00029	bis 0,0029	0,1	bis 1,12	0,004	bis 0,04
1/4"	1/8"	0,037	bis 0,37	0,0022	bis 0,022	1	bis 10	0,033	bis 0,33
1/4"	1/4"	0,47	bis 4,7	0,0223	bis 0,223	13	bis 132	0,4	bis 4,03
1/2"	1/2"	4	bis 43	0,13	bis 1,3	45	bis 419	1,8	bis 12,3
3/4"	3/4"	14	bis 144	0,4	bis 4,3	130	bis 1300	3,8	bis 38,7
1"	1"	30	bis 310	0,9	bis 9,2	420	bis 2800	12	bis 83,0
1 1/2"	1 1/2"	50	bis 560	1,7	bis 17,3	400	bis 4800	12	bis 142,5
2"	2"	140	bis 1420	4	bis 42,6	1800	bis 9650	54	bis 285,4
2"	2"p	800	bis 9000	20	bis 270	3400	bis 17000	100	bis 510

1) bezogen auf 0 °C 1013 mbar

### Drei-Rippen-Messrohre

Meter Tube Size	Max. Flowrate		Meter Tube		Float		Pressure Drop mbar <sup>1)</sup>	VIC <sup>2)</sup>	Min. Pressure Required for Gas Metering bar <sup>3)</sup>	
	H <sub>2</sub> O l/h	Air (Qn) 1013 mbar 0 °C, m <sup>3</sup> /h	Designation	Part No.	Designation	Part No.				
1/2"	110 <sup>4)</sup>	3,25 <sup>4)</sup>	FP-1/2 17-G-10/80	D600D041_ _ _	1/2-GSVT-45	D603B033_ _ _	5,5	5,1	1,3	
	136 <sup>4)</sup>	4,0 <sup>4)</sup>	21	D500D043_ _ _	1/2-GSVT-45	D603B033_ _ _	5,5	5,1	0,8	
	148	4,3	17	D600D041_ _ _	1/2-GSVT-44	D603B032_ _ _	11,5	7,1	1,2	
	158	4,7	17	D500D041_ _ _	1/2-GSVT-48	D603B034_ _ _	11,0	7,8	1,3	
	184 <sup>4)</sup>	5,5 <sup>4)</sup>	27	D600D045_ _ _	1/2-GSVT-45	D603B033_ _ _	6,1	5,1	0,6	
	201	6,0	21	D600D043_ _ _	1/2-GSVT-48	D603B034_ _ _	12,0	7,8	1,8	
	232 <sup>4)</sup>	6,9 <sup>4)</sup>	27	D600D045_ _ _	1/2-GNSVT-45	D603B043_ _ _	21,0	1,0	0,6	
	235	7,0	21	D600D043_ _ _	1/2-GNSVT-44	D603B042_ _ _	9,4	1,1	2,3	
	254	7,5	27	D600D045_ _ _	1/2-GSVT-44	D603B032_ _ _	11,8	7,1	1,2	
	270	8,0	27	D600D045_ _ _	1/2-GSVT-48	D603B034_ _ _	13,2	7,6	1,3	
	345	10,3	27	D600D045_ _ _	1/2-GNSVT-48	D603B044_ _ _	14,7	1,1	1,3	
	418*	12,3*	27	D600D045_ _ _	1/2-GNSVT-43	D603B041_ _ _	20,8	1,3	1,9	
3/4"	445	13,2	FP-3/4 21-G-10/80	D600D047_ _ _	3/4-GSVT-54	D603C032_ _ _	9,7	10,4	0,9	
	584	17,3	21	D600D047_ _ _	3/4-GNSVT-54	D603C042_ _ _	20,0	1,6	0,9	
	613	18,2	27	D600D049_ _ _	3/4-GSVT-54	D603C032_ _ _	11,2	10,4	0,7	
	715*	21,3*	21	D600D047_ _ _	3/4GSVT-53	D603C031_ _ _	28,3	16,8	2,5	
	806	24,0	27	D600D049_ _ _	3/4-GNSVT-54	D603C042_ _ _	137,	1,6	0,7	
	874	26,0	27	D600D049_ _ _	3/4-GSVT-56	D603C033_ _ _	23,0	14,9	1,4	
	987*	29,5*	27	D600D049_ _ _	3/4-GSVT-53	D603C031_ _ _	33,5	16,8	1,8	
	1146	34,1	27	D600D049_ _ _	3/4-GNSVT-56	D603C043_ _ _	27,7	2,2	1,4	
	1294*	38,7*	27	D600D049_ _ _	3/4-GNSVT-53	D603C041_ _ _	40,9	2,5	1,8	
	1"	1067	31,8	FP-1- 27-G-10/80	D600D053_ _ _	1-GSVT-64	D603D032_ _ _	19,3	14,8	0,8
1210		35,9	27	D600D053_ _ _	1-GSVT-65	D603D033_ _ _	24,6	17,5	1,1	
1420		42,2	27	D600D053_ _ _	1-GNSVT-64	D603D042_ _ _	29,6	2,2	0,8	
1498		44,3	35	D600D055_ _ _	1-GSVT-64	D603D032_ _ _	28,2	14,8	0,5	
1703		50,8	35	D600D055_ _ _	1-GSVT-65	D603D033_ _ _	36,4	16,9	0,6	
1975		59,0	35	D600D055_ _ _	1-GNSVT-64	D603D042_ _ _	42,2	2,2	0,5	
2134*		64,0*	35	D600D055_ _ _	1-GSVT-63	D603D031_ _ _	61,0	20,8	1,0	
2280		67,4	35	D600D055_ _ _	1-GNSVT-65	D603D043_ _ _	55,1	2,5	0,6	
2000		71,5	35	D600D055_ _ _	1-GSVT-66	D603D034_ _ _	72,2	8,5	1,0	
2800*		83,0*	35	D600D055_ _ _	1-GNSVT-63	D603D041_ _ _	87,5	2,9	0,9	
1 1/2"		3042	90,2	FP-1 1/2-27-G-10/80	D600D057_ _ _	1 1/2-GSVT-84	D603E032_ _ _	22,3	27,6	1,1
		3496	104,1	27	D600D057_ _ _	1 1/2-GSVT-85	D603E033_ _ _	27,0	33,0	1,6
		3600	108,0	27	D600D057_ _ _	1 1/2-GSVT-83	D603E031_ _ _	31,9	33,0	1,5
		3995	118,1	27	D600D057_ _ _	1 1/2-GNSVT-84	D603E042_ _ _	26,4	4,2	1,1
	4631	137,8	27	D600D057_ _ _	1 1/2-GNSVT-85	D603E043_ _ _	30,0	5,0	1,6	
	4800	142,5	27	D600D057_ _ _	1 1/2-GNSVT-83	D603E041_ _ _	37,6	4,9	1,5	
2"	6018	180,4	FP-2- 27-G-10/80	D600D059_ _ _	2-GSVT-94	D603F032_ _ _	31,5	26,5	1,2	
	7037*	210,0*	27	D600D059_ _ _	2-GSVT-93	D603F031_ _ _	47,5	49,0	1,7	
	7945	236,2	27	D600D059_ _ _	2-GNSVT-94	D603F042_ _ _	44,2	6,1	1,2	
	9300	277,0	27	D600D059_ _ _	2-GNSVT-96	D603F043_ _ _	57,1	3,3	1,5	
	9648*	285,4*	27	D600D059_ _ _	2-GNSVT-93	D603F041_ _ _	62,0	7,3	1,7	

## Triflat Meter Tubes (Ball Floats)

Housing Size	Meter Tube Size	Max. Flowrate <sup>1)</sup>		Meter Tube		Float		
		H <sub>2</sub> O cm <sup>3</sup> /min	Air (Qn) 1013 mbar 0 °C, cm <sup>3</sup> /min	Designation ...81	Part No.	Designation	Part No.	
1/4"	1/16"	0,53	48,1	FP-1/16-10-G-5/_	D600D001_ _ _ _	BG-16	D303F001U13	
		0,92	80,0	12	D600D004_ _ _ _			
		1,61	131,1	16	D600D007_ _ _ _			
		2,45	192,5	20	D600D010_ _ _ _			
		1,05	73,2	FP-1/16-10-G-5/_	D600D001_ _ _ _	SA-16	D303F001U14	
		1,58	117,0	12	D600D004_ _ _ _			
		3,2	188,6	16	D600D007_ _ _ _			
		4,82	270,1	20	D600D010_ _ _ _			
		2,46	136,0	FP-1/16-10-G-5/_	D600D001_ _ _ _	SS-16	D303F001U01	
		4,2	203,5	12	D600D004_ _ _ _			
		7,2	319,2	16	D600D007_ _ _ _			
		10,3	430,5	20	D600D010_ _ _ _			
	4,71	217,9	FP-1/16-10-G-5/_	D600D001_ _ _ _	CA-16	D303F001U15		
	7,6	307,1	12	D600D004_ _ _ _				
	12,3	475,3	16	D600D007_ _ _ _				
	17,8	636,2	20	D600D010_ _ _ _				
	5,25	234,2	FP-1/16-10-G-5/_	D600D001_ _ _ _	TA-16	D303F001U09		
	8,4	326,7	12	D600D004_ _ _ _				
	13,5	508,5	16	D600D007_ _ _ _				
	18,6	678,0	20	D600D010_ _ _ _				
	1/8"	1/8"	6,1	373,6	FP-1/8-08-G-5/_	D600D013_ _ _ _	BG-18	D303F002U13
			13,9	696,3	12	D600D016_ _ _ _		
			22,6	1046,2	16	D600D019_ _ _ _		
			31,5	1426,6	20	D600D022_ _ _ _		
			43,7	1885,1	25	D600D025_ _ _ _		
		10,5	511,3	FP-1/8-08-G-5/_	D600D013_ _ _ _	SA-18	D303F002U14	
		23,0	928,8	12	D600D016_ _ _ _			
		35,7	1384,7	16	D600D019_ _ _ _			
		48,5	1857,6	20	D600D022_ _ _ _			
		64,5	2454,0	25	D600D025_ _ _ _			
		20,5	804,4	FP-1/8-08-G-5/_	D600D013_ _ _ _	SS-18	D303F002U01	
		39,5	1421,4	12	D600D016_ _ _ _			
		60,0	2092,8	16	D600D019_ _ _ _			
		81,0	2788,3	20	D600D022_ _ _ _			
		107,0	3629,1	25	D600D025_ _ _ _			
		33,6	1205,7	FP-1/8-08-G-5/_	D600D013_ _ _ _	CA-18	D303F002U15	
61,2		2089,4	12	D600D016_ _ _ _				
90,6		3014,3	16	D600D019_ _ _ _				
121,7	3997,8	20	D600D022_ _ _ _					
159,7	5136,7	25	D600D025_ _ _ _					
36,5	1287,9	FP-1/8-08-G-5/_	D600D013_ _ _ _	TA-18	D303F002U09			
66,0	2219,0	12	D600D016_ _ _ _					
97,5	3202,4	16	D600D019_ _ _ _					
130,0	4229,3	20	D600D022_ _ _ _					
171,5	5456,3	25	D600D025_ _ _ _					
1/4"	1/4"	78	3717	FP-1/4-10-G-5/_	D600D028_ _ _ _	CD-14	D303F003U12	
		152	6742	16	D600D031_ _ _ _			
		206	8928	20	D600D034_ _ _ _			
		275	11479	25	D600D037_ _ _ _			
	134	5200	FP-1/4-10-G-5/_	D600D028_ _ _ _	SA-14	D303F003U14		
	253	9245	16	D600D031_ _ _ _				
	337	12231	20	D600D034_ _ _ _				
	446	15650	25	D600D037_ _ _ _				
	228	7793	FP-1/4-10-G-5/_	D600D028_ _ _ _	SS-14	D303F003U01		
	415	13672	16	D600D031_ _ _ _				
	547	17979	20	D600D034_ _ _ _				
	703	22900	25	D600D037_ _ _ _				
	346	10967	FP-1/4-10-G-5/_	D600D028_ _ _ _	CA-14	D303F003U15		
	612	19227	16	D600D031_ _ _ _				
	805	25293	20	D600D034_ _ _ _				
1036	32200	25	D600D037_ _ _ _					
370	11704	FP-1/4-10-G-5/_	D600D028_ _ _ _	TA-14	D303F003U09			
660	20457	16	D600D031_ _ _ _					
860	26703	20	D600D034_ _ _ _					
1105	34276	25	D600D037_ _ _ _					
1510	48340	FP-1/4-40-G-6/208	D600D160_ _ _ _	SS-14	D303F003U01			
2223	67420	"	D600D160_ _ _ _	CA-14	D303F003U15			
2362	71280	"	D600D160_ _ _ _	TA-14	D303F003U09			

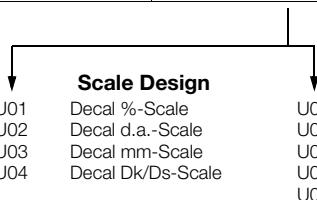
**Bead Guide Meter Tubes (Floats with Low Pressure Drop)+**

Size	Max. Flowrate		Meter Tube		Float		Pressure Drop mbar <sup>1)</sup>	VIC <sup>2)</sup>	Min. Pressure Required for Gas Metering pbar (bar) <sup>3)</sup>	
	H <sub>2</sub> O l/h	Air (Qn) 1013 mbar 0 °C, m <sup>3</sup> /h	Designation	Part No.	Designation	Part No.				
1/2"	43	1,3	FP-1/2- 17-G-10/80	D600D041_	1/2-GUSVT-410	D603B312_	1,3	2,2	0,26	
	53	1,6		D600D043_			D603B312_			1,4
	59	1,8		D600D041_			D603B311_			2,0
	72	2,16	21	D600D043_	1/2-GUSVT-40	D603B311_	2,0	2,9	0,25	
	73	2,2		D600D045_			D603B312_			2,4
96	2,9	D600D045_		D603B311_			2,0			
3/4"	144	4,3	FP-3/4- 21-G-19/80	D600D047_	3/4-GUSVT-510	D603C311_	1,4	3,3	0,23	
	192	5,8		D600D049_			D603C311_			1,9
	260	7,7		D600D049_			D603C312_			2,0
1"	310	9,2	FP-1- 27-G-10/80	D600D053_	1-GUSVT-611	D603D315_	2,7	4,0	0,1	
	340	10,1		D600D053_			D603D313_			2,7
	425	12,8		D600D055_			D603D315_			4,0
	460	13,8	27	D600D055_	1-GUSVT-62A	D603D313_	4,0	4,2	0,14	
	520	15,4		D600D053_			D603D311_			8,7
	660	19,8		D600D053_			D603D314_			14,2
	730	21,6		D600D055_			D603D311_			8,7
920	27,6	D600D055_	D603D314_	20,6						
1 1/2"	750	22,5	FP-1 1/2-27-G-10/80	D600D057_	1 1/2-GUSVT-813	D603E312_	3,2	6,4	0,14	
	1000	29,7		D600D057_			D603E313_			3,7
	1960*	58,5*		D600D057_			D603E311_			15,5
2"	1420	42,6	FP-2- 27-G-10/80	D600D059_	2-GUSVT-913	D603F311_	3,4	8,9	0,14	
	3520	105,0		D600D059_			D603F312_			19,0

**Glattkonische Messrohre (Führung des Schwebekörpers durch Führungsstange [P])**

Size	Max. Flowrate		Meter Tube		Float		Pressure Drop mbar <sup>1)</sup>	VIC <sup>2)</sup>	Min. Pressure Required for Gas Metering pbar (bar) <sup>3)</sup>	
	H <sub>2</sub> O l/h	Air (Qn) 1013 mbar 0 °C, m <sup>3</sup> /h	Designation	Part No.	Designation	Part No.				
1/2"	95	2,8	FP-1/2- 19-P-10/80	D600D063_	1/2-SVP-4-205	D603B113_	4,0	3,6	0,6	
	141	4,2		D600D064_			D603B113_			4,0
	174	5,2		D600D063_			D603B112_			10,6
	242*	7,3*		D600D063_			D603B111_			21,0
	262	7,9		D600D064_			D603B112_			10,6
	361*	10,8*		D600D064_			D603B111_			21,0
3/4"	458	13,7	FP-3/4- 17-P-10/80	D600D065_	3/4-SVP-5-204	D603C112_	13,4	12,2	1,6	
	620*	18,6*		D600D065_			D603C111_			23,5
	816*	24,5*		D600D065_			D603C121_			24,2
1"	1140	34,2	FP-1- 25-P-10/80	D600D066_	1-SVP-6-204	D603D113_	24,0	16,0	1,13	
	1560	46,8		D600D066_			D603D123_			31,6
	1700*	51,0*		D600D066_			D603D112_			51,0
	2330*	69,9*		D600D066_			D603D122_			67,3
	2670*	80,1*		D600D066_			D603D121_			27,6
+ 1 1/2"	3620	108,6	FP-1 1/2-27-P-10/80	D600D067_	1 1/2-SVP-8-204	D603E112_	25,7	30,7	1,39	
	4890*	146,7*		D600D067_			D603E111_			43,9
	5000	150,0		D600D067_			D603E122_			36,6
	6720*	201,6*		D600D067_			D603E121_			57,1
+ 2"	9000	270,0	FP-2- 37-P-10/80	D600D069_	2-SVP-9-204	D603F112_	63,2	42,7	1,07	
	12000*	360,0*		D600D069_			D603F111_			108,1
	12800	384,0		D600D069_			D603F122_			106,7
	17000*	510,0*		D600D069_			D603F121_			170,3

Table 10A1187/3



\* Flow range < 1:12.5  
 + Only available for sizes 1 1/2"P and 2"F with Alarm Signal Transmitter 55AX1000 .

- |     |                   |     |                      |
|-----|-------------------|-----|----------------------|
| U01 | Decal %-Scale     | U05 | Engraved %-Scale     |
| U02 | Decal d.a.-Scale  | U06 | Engraved d.a.-Scale  |
| U03 | Decal mm-Scale    | U07 | Engraved mm-Scale    |
| U04 | Decal Dk/Ds-Scale | U08 | Engraved Dk/Ds-Scale |
|     |                   | U09 | without Scale        |

**Float-Material**  
 The listed max. flowrate is based on a stainless steel float.  
 Floats made of other materials are available. Their max. flowrate values may be different.

- 1) Total pressure drop with a stainless steel float.
- 2) The Viscosity Immunity Ceiling "VIC" is the upper limit for the viscosity of the liquid to be metered. The flowrate value values are not affected if the viscosity of the fluid in mPa s ≤  $VUZ \cdot \sqrt{\rho_1}$ . If the VIC number is exceeded, the flowrate values may be affected resulting in a scale shift. Please contact the factory for such applications..
- 3) These Meter Tube-Float combinations are not recommended for gas service if the upstream pressure p<sub>abs</sub> in bar is less than the value listed in the table. For low upstream or low operating pressures, the meter tube - float combinations listed in Table 10A1187/3 are to be used or contact factory.

Dimensions

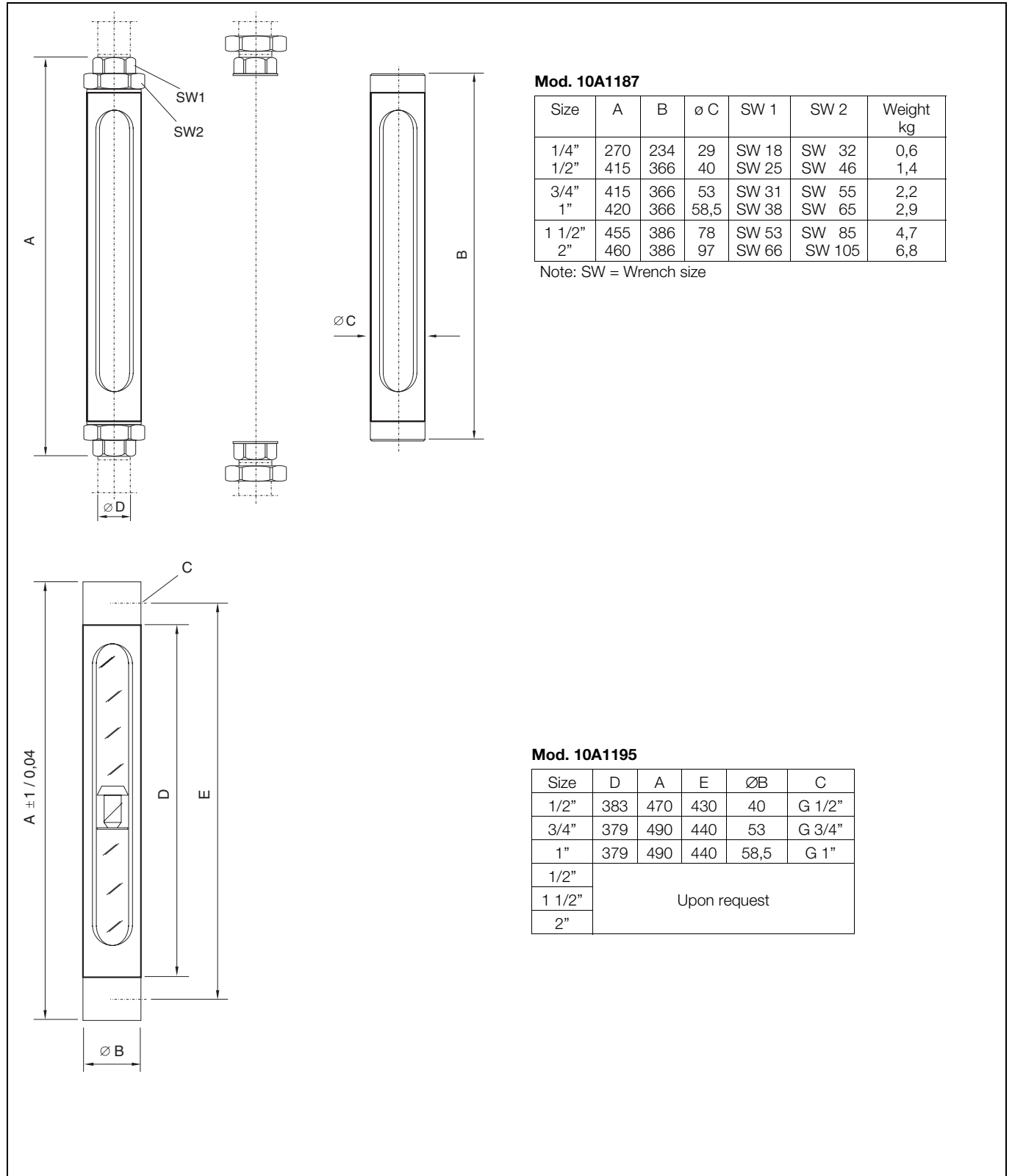


Fig. 5: Dimensions

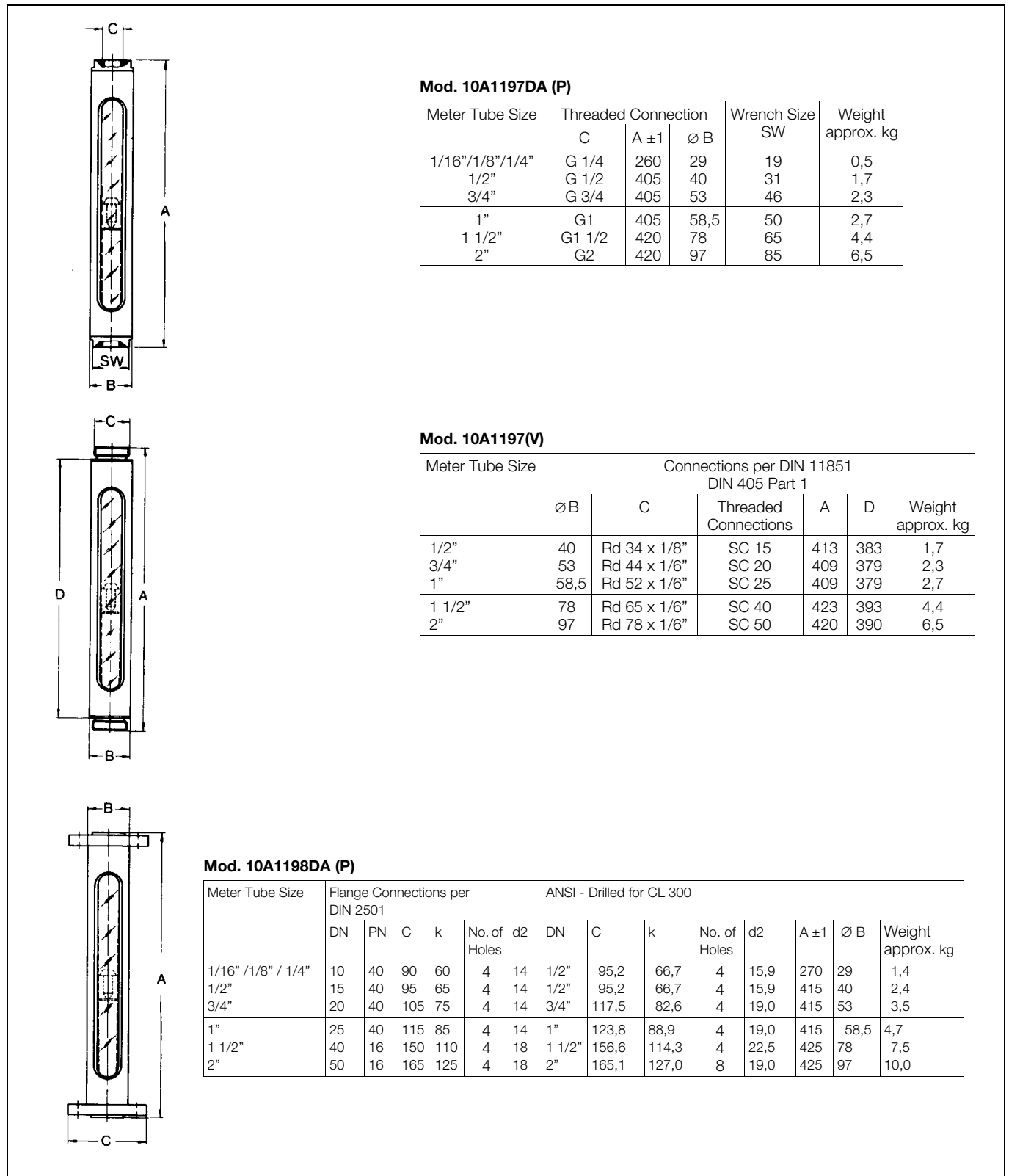


Fig. 6: Dimensions

## Alarm Signal Transmitter for Glass Tube Flowmeters 55AX1000

### Application

The Alarm Signal Transmitter includes one or two limit switches, (inert gas switches) which are actuated by a magnet embedded in the float. It is used in conjunction with the float designs G(N)SVT, (N)SVP and BL. (Please observe the footnotes in the Flow Range tables).

### Operation

The Alarm Signal Transmitter is positioned in a guide slot in the flowmeter housing and can be adjusted over the entire flow range. The inert gas switches are configured as bistable contacts. The signal from the lower alarm is initiated when the float drops below the lower alarm switch position. The contact is closed. The signal from the upper alarm is initiated when the float travels above the upper switch position. The contact is closed. The circuits (between the alarm switches and the transistorized Switch Amplifier WE 77) are intrinsically safe. The Switch Amplifier must, however, be installed outside of the Ex-Zone.

### Specifications

#### Alarm Switch Transmitter

Inert gas switch (reed contact)

#### Switch Type

Bistable

#### Contact Configuration

Lower alarm value:  
Contact opens for a rising float  
Upper alarm value:  
Contact closes for a rising float

#### Power

Max. 10 VA, max. 48 V, 50/60 Hz

#### Connection Cable

LIFYY 2x0.14

#### Cable Length

1.75 m

#### Protection Class per DIN 40050

IP 65

#### Allow. Ambient Temperature

-10 to +80 °C

#### Switch Amplifier (Ex)

KF\_SR2-Ex1W: for 1 alarm switch  
KF\_SR2-Ex2W: for 2 alarm switches



Fig. 7:

#### Supply Power

230 V +10 %, -15 %; 45-60 Hz  
115 V +10 %, -15 %; 45-60 Hz

#### Output

1 or 2 switch relays with potential free contacts

#### Power

Max. 250 V, max. 4 A, max. 500 VA

#### Max. allow. Cable Length

Switch Amplifier/ Alarm Signal Transmitter: 300 m

#### Control Circuit

(Ex)I G5 Zone 0

#### Certificate of Compliance

Ex PTB 79/2043X  
 $J_k \leq 31 \text{ mA}$ ,  $J_{knenn} = 8 \text{ mA}$   
 $U_o \leq 13,5 \text{ V}$ -,  $J_{onenn} = 8 \text{ V}$ -  
 $I_a \leq 31 \text{ mA}$   
 $C_a \leq 609 \text{ nF}$   
 $C_i \leq 71 \text{ }\mu\text{F}$

#### Allow. Ambient Temperature

-25 to +60 °C

## Alarm Signal Transmitter for Glass Tube Flowmeters 55AX1000

### Materials, Connections, Weights

**Alarm Switch**

Nickel plated brass

**Housing**

Polyamide

**Electrical Connections**

Screw terminals

**Weight**

approx. 0.7 kg

### Ordering Information

Instrument Name, Ordering Number

Ordering Number	55AX1				
<b>Alarm Signals</b>					
Max.		1			
Min.		2			
Max. and Min.		3			
<b>Switch Amplifier</b>					
Without		0			
1-chanel		1			
2-channels		2			
<b>Supply Power</b>					
Withput				0	
115 V, +10 %, -15 %, 45-60 Hz				1	
230 V, +10 %, -15 %, 45-60 Hz				2	
Others				9	
<b>Design Level</b>					A
<b>Applications</b>					F
Model 10A1187, 10A1197					

## Needle Valves for Series 10A1187 and 10A1197

### Application

Installed separately in the pipeline up- or downstream from the flowmeter.

### Design

Female threaded connections

### Design Features

- Material: Brass, PN 100, Max. 100 °C
- In-line valve fitting
- Good adjustability

### Specifications

Part No	Part No for O <sub>2</sub> Application	Dimensions					
		DN	ØD	A	C	E	SW1
1D125D1004	D125D001U01	G 1/4	50	72	10	50	22
1D125D1005	D125D001U02	G 1/2	63	72	12	55	25
1D125D1006	D125D001U03	G 3/4	63	95	14	67	32
1D125D1017	D125D001U04	G 1	90	130	17	74,5	40

Note: SW = Wrench size

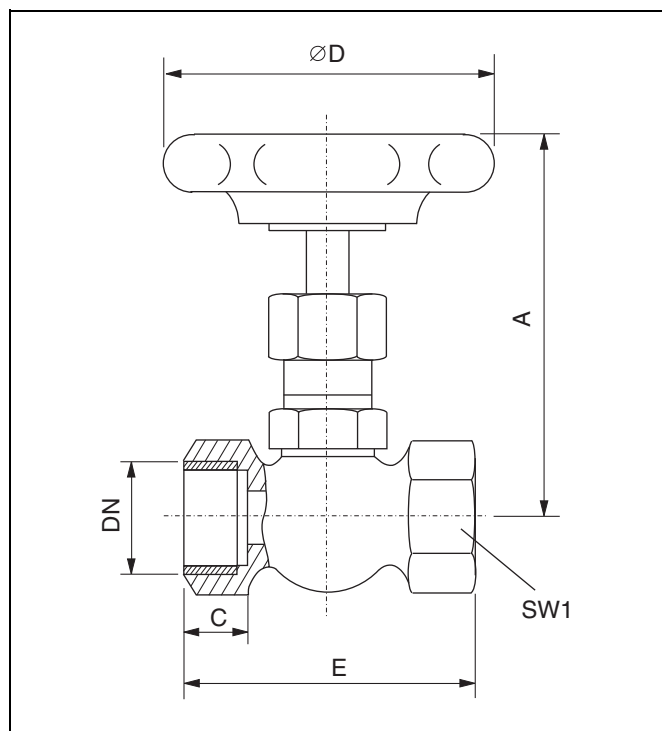


Fig. 8:

### Application

Installed separately in the pipeline up- or downstream from the flowmeter.

### Design

Female threaded connections

### Design Features

- Material: SS 316Ti [No. 1.4571], PN 200, Max. 350 °C
- In-line valve fitting
- Good adjustability

### Specifications

Part No.	Dimensions					
	DN	ØD	A	B	C	E
1D125D1001	G 1/4	50	72	25	13	50
1D125D1002	G 1/2	63	72	30	16	60
1D125D1003	G 3/4	63	95	35	18	75
1D125D1019	G 1	90	130	45	22	100
D125D003U02	1/4" NPT	50	72	25	13	50
D125D003U01	3/8" NPT	50	72	25	13	55
D125D003U03	1/2" NPT	63	72	30	16	60

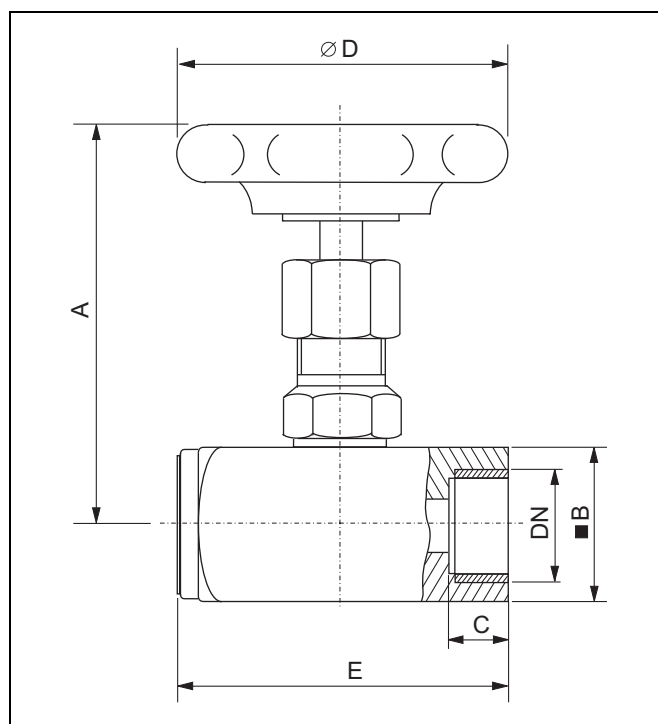


Fig. 9:

**Ordering Information 10A1187, Threaded Connections with Couplings**

Please include the Meter Name, Model No., flow range, fluid, density and viscosity at operating temperature, operating and max. pressure, operating and max. temperature, scale design: e.g. % or direct reading in l/h m<sup>3</sup>/Min or as desired.

<b>Ordering Number</b>	D10A1187									
<b>Connection Type</b>	Flanges vertical									
<b>Design Level</b>	D									
<b>Meter Design</b>	A									
Standard	P									
With pole guide										
<b>Alarm Signal Transmitter</b>	0									
Without	1									
Suitable for later addition										
<b>Fitting Material</b>	C									
PVC	F									
PVDF	S									
Steel	T									
SS316TI No. 1.4571										
<b>Connection Material, In-/Outlet</b>	X									
*See Attachment										
<b>Burst Protection</b>	20									
Without	40									
With										
<b>Materials O-Rings</b>	A									
Viton A	F									
Ethylene-Propylene	N									
Buna N	S									
Siliconc										
<b>Meter Connections</b>	3									
Threaded couplings										
<b>Meter Tube SizeThreads (Gi)</b>	1									
1/4"	3									
1/2"	3									
3/4"	4									
1"	5									
1 1/2"	6									
2"	7									
1/16"	8									
1/8"										
<b>Accuracy</b>	A									
Standard	B									
Calibration	C									
Viscosity calculation 4 % of max.										
<b>Instrument Tag</b>	D									
German	E									
English										

**Ordering Information 10A1195/97, Threaded Connections Vertical / Horizontal**

Please include the Meter Name, Model No., flow range, fluid, density and viscosity at operating temperature, operating and max. pressure, operating and max. temperature, scale design: e.g. % or direct reading in l/h m<sup>3</sup>/Min or as desired.

<b>Ordering Number</b>	<b>D10A119</b>									
<b>Connection Type</b>										
Threaded horizontal (upon request)	5									
Threaded vertical	7									
<b>Design Level</b>	D									
<b>Meter Design</b>										
Standard	A									
With pole guide	P									
<b>Alarm Signal Transmitter</b>										
Without	0									
Suibtale for later addition	1									
<b>Fitting Material</b>										
PVC	C									
PVDF	F									
Steel	S									
SS316Ti No.1.4571	T									
<b>Connection Material, In-/Outlet</b>										
*See Attachment	X									
<b>Installation Method</b>										
Pipeline mounting / without	20									
Pipeline mounting with Burst Protection	40									
Panel mounting	50									
Panel mounting with Burst Protection	60									
<b>Material O-Rings</b>										
Viton A	A									
Ethylene-Propylene	F									
Buna N	N									
Silicone	S									
<b>Meter Connections</b>										
Pipe threads	1									
Threads per DIN 11851	2									
NPT-Threads	6									
<b>Meter Tube Size</b>	<b>Threads (Gi)</b>	<b>11851</b>								
1/4"	1/4	-								1
1/2"	1/2	SC 15								3
3/4"	3/4	SC 20								3
1"	1	SC 25								4
1 1/2"	1 1/2	SC 40								5
2"	2	SC 50								6
1/16"	1/4	-								7
1/8"	1/4	-								8
<b>Accuracy</b>										
Standard	A									
Calibration	B									
Viscosity calculation 3 % of max.	C									
<b>Instrument Tag</b>										
German	D									
English	E									

