



You have purchased a high quality, modern instrument
from ABB Automation Products. We thank you for your purchase
and the confidence you have shown in us.

This Instruction Bulletin contains the instructions relating to the assembly and
installation of the instrument and the specifications for this design.
ABB Automation Products reserves the right to make hardware and software refinements
without prior notice. Any questions which may arise that are not specifically answered by
these instructions should be referred to our main plant in
Göttingen, Germany Phone +49 551 905-0 or to one of our
Technical Sales Bureaus.

Introductory Safety Notes

Specified Usage

The Variable Area Flowmeter is to be utilized exclusively in accordance with the specifications.

Every usage which exceeds the specifications is considered to be non-specified. Any damages resulting therefrom are not the responsibility of the manufacturer.

The user assumes all risk for such operation.

The specifications include the installation, start-up and maintenance requirements specified by the manufacturer.

Installation, Start-Up and Operating Personnel

Please read this Instruction Bulletin and the safety notes before attempting instrument installation, start-up or service.

Only qualified personnel should have access to the instrument.

The personnel should be familiar with the warnings and operating requirements contained in this Instruction Bulletin.

Observe the warning notes in this document indicated by the symbol:



Hazardous Material Regulations

In view of the Disposal Law of 27.08.86 (AbfG, §11 Special Wastes) the possessor of special wastes is responsible for their disposal and at the same time an employer has the responsibility, according to the Hazardous Material Law of 01.10.86 (GefStoffV, §17 General Responsibilities) to protect his employees, we must make note that

- a) all flowmeter primaries and/or converters returned to ABB Automation Products for repair are to be free of all hazardous materials (acids, bases, solutions, etc.).
 - b) the flowmeter primaries must be flushed so that the hazardous materials are neutralized.
There are cavities in the flowmeter primaries between the metering tube and the housing. Therefore after metering hazardous materials the cavities are to be neutralized (see Hazardous Material Law GefStoffV).
 - c) for service and repair, **written confirmation** is required that the measures described in a) and b) have been carried out.
 - d) any costs incurred to remove and dispose of the hazardous materials during the repair will be billed to the owner of the instrument.
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1. General

The Glass Tube Flowmeters of the Series 10A1187/10A1190 operate on the Variable Area principle and are suitable for metering the flowrate of liquids and gases.

The position of the float in the conical metering tube is proportional to the flowrate. The position is read on the scale on the metering tube. Four different scale formats are available:

- Diameter ratio scale Dt/Df.
The ratio of the inside diameter of the metering tube to the outside diameter of the float.
Only for metering tube sizes 1/16", 1/8" and 1/4"
- Percent scale
- Millimeter scale
- Direct reading scale in engineering units

A flowrate table is included with all flowmeters utilizing diameter ratio scales. When operating conditions change, the user can prepare appropriate flowrate tables using our Handbook 10A9010.

The standard design for flowmeter sizes 1/2" to 2" includes a percent scale. A factor tag is attached to the flowmeter indicating the flowrate equivalent to 100%. The remaining scale values can be calculated using a linear proportionality. A special flowrate curve is therefore not required. Upon request conversion equations for other operating conditions will be provided.

Flowmeter Designs

10A1187	with pipe coupling connections per DIN 2950
10A1195	with female threaded connections (upon request)
10A1197	with female threaded connections
10A1197	with threaded sanitary adapters per DIN 11851 for the Food Industry
10A1198	with flanged connections

1.1 Specifications

Accuracy Classes

Metering tube size 1/16"	6
Metering tube sizes 1/8" to 2"	1.6
Metering tube sizes 1/2" to 2"	6 with "BL" float

Connections

Threaded or flanged connections, see "Dimensions".

Weight

See "Dimensions"

Max. Allow. Operating Pressure

Metering Tube Size	Liquid	Gas
	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

The max. allow. pressure for metering tube sizes 1" to 2" is to be reduced by 1 % per 2 °C for operating temperatures over 95 °C

The reduction of the allowable pressure for gas applications results from safety considerations based on the Polycarbonate protection tube.

The strength of the Polycarbonate protection tube is reduced as the temperature increases. Therefore the following restrictions should be observed when metering gases:

- Listed max. allow. operating pressure applies to 30 °C fluid temperatures
- Max. ambient temperature = 40 °C
- Max. fluid temperature = 100 °C
- For fluid or ambient temperatures over 30 °C the max. allow. operating pressure is to be reduced by 1.05 % / 1 °C.

Max. Allow. Fluid Temperatures

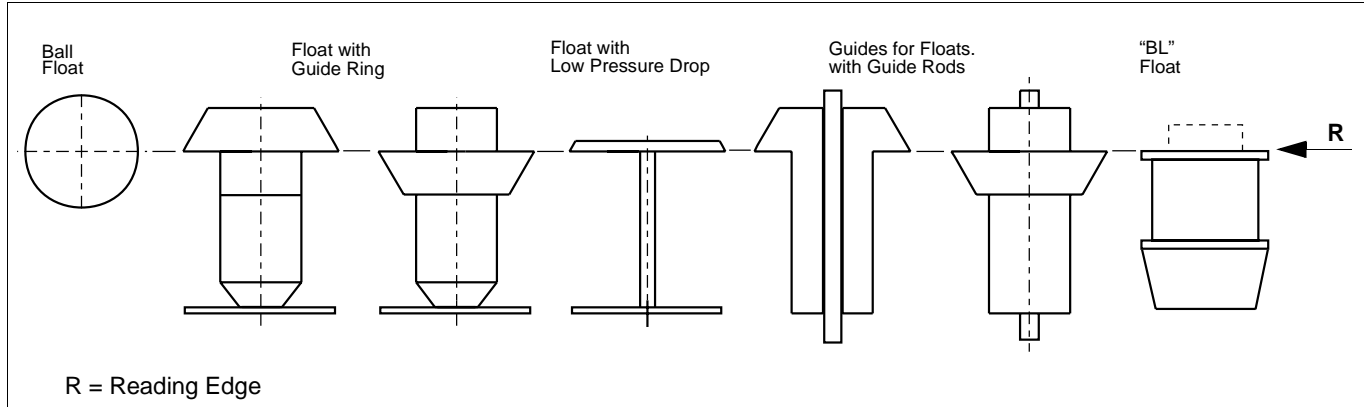
For Buna-N O-Rings	120 °C
For Viton A O-Rings	150 °C
For PVC-floats	40 °C

Glass Tube Flowmeter

10A1187 / 10A1190

2. Float Shapes

The reading edges of the floats, shown below, are different for the various float shapes.



3. Installation

3.1 General

Check that the allowable operating conditions will not be exceeded at the location where the flowmeter is to be installed (see Specifications). Possible injuries may result if the metering tube should break. Provide for flying glass protection if the instrument has been ordered **without** a polycarbonate protection tube. As a rule, flowmeters for gas applications should be installed as close as possible to pipe restrictions and if possible, a valve should be installed in the outlet fitting. The inside diameter of the pipeline should be reduced to its minimum size. For liquids however, the pipeline can be sized based on economic considerations.

Variable Area flowmeters must be installed vertically with the outlet at the top (the highest scale value should be at the top). It is recommended that a plumb bob or level be utilized to check the vertical installation. The floats for small size meters are generally packaged separately for shipping reasons and must be installed in the metering tube prior to meter start-up. To protect the critical metering edge of the float a plastic coating or tape has been applied which must be removed before installing the float in the metering tube. Detailed float installation information may be found in Section 4.

3.2 Pressurized and Volume Chambers

Pressurized or volume chambers tanks are often utilized in flowmeter installations in order to damp pulsations and quiet float oscillations. This is especially advantageous when the flow is produced by piston pumps or compressors. When pressurized chambers are utilized for liquids, the pressurizing gas connections should be at the top.

If the instrument and the fluid should not come in contact with each other, volume chambers are used. The correct size for the pressurized or volume chambers appropriate for the installation will be supplied upon request.

Installation Recommendations

See also VDI/VDE-Guideline 3513 Sheet 3, Selection and Installation Recommendations for Variable Area Flowmeters.

Damping and Compression Oscillations when Metering Gases

If a specific critical volume is exceeded between the closest throttling location up- or downstream of the flowmeter compression oscillations (float bounce) may occur when the operating pressure is low.

To prevent these self generating compression oscillations the following measures can be applied:

- Select a flowmeter with the lowest possible pressure drop.
- Minimize the pipeline length between the flowmeter and the closest up- or downstream throttling location.
- Increase the operating pressure, considering its effect on the flowrate values due to the changes in the gas density at the new operating conditions.

3.3 Assembly and Installation in the Pipeline

The installation must be stress free. The Series 10A1187 and 10A1190 flowmeters are designed for pipeline installations. The smaller size flowmeters can usually be supported by the pipeline. If this is not possible, (e.g. in plastic pipelines or for larger size flowmeters), then the flowmeter and pipeline should be supported using wall or mounting brackets. In order to remove the flowmeter from the pipeline for maintenance an installation as shown in Fig.1 is recommended. The upper and lower coupling nuts in the Series 10A1187 can be loosened and the instrument removed to the side from the pipeline. The flowmeter can readily be removed and reinstalled for cleaning or any other purpose.

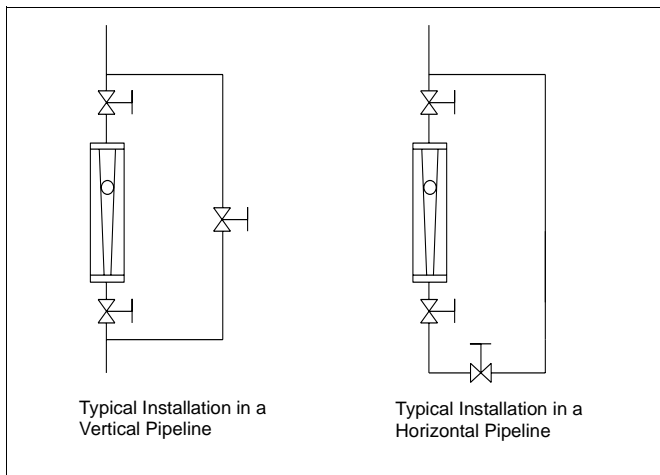


Fig.1 Flowmeter Installation

3.3.1 Minimum Required Upstream Pressure for Gas Metering

Even with pulsation free flow, spontaneous float oscillations (float bounce) may occur. They are caused when the critical volume is exceeded between the closest throttling location up- or downstream of the flowmeter at low operating pressures. To prevent these self generating compression oscillations the following measures should be employed:

- Minimize the pipeline length between the flowmeter and the closest up- or downstream throttling location
- Reduce the usual 10 - 100 % flow range to 25 - 100 %
- Set the lower flowrate value by approaching it from a higher value
- Increase the operating pressure, considering its effect on the flowrate values due to the changes in the gas density at the new operating conditions.

4. Start-Up

At start-up, increase the flowrate stepwise by slowly opening the shut off valve. This will preclude pressure shocks which could possibly damage the float, float stops or the glass metering tube.

When metering liquids, a method to bleed the pipeline system at start-up should be considered if required.

The flowrate is read from the graduations on the scale on the metering tube at the location of the reading edge of the float. The reading edges for the various float shapes are shown in the figure on Page 2.

If a strong float vibrations occur when metering low flowrates and the lower portion of the scale is normally not used, the problem can be resolved by utilizing a flowmeter with a longer inlet float stop.

This will preclude using the lower portion of the scale. Relief can also be attained by installing a larger sized flowmeter with a low pressure drop float.

5. Maintenance

5.1 Removal of the Metering Tube and Float

The float is a precision machined part. Therefore it is especially important to assure that the guide ring and metering edge are not damaged. A damaged float will result in inaccuracies and possible damage to the metering tube. The metering tube should not be exposed to any shock or other stresses. When removing the metering tube, note where the float stops are installed. During reassembly the float stops must be reinstalled in their original locations.

Use the following procedure to remove the float and metering tube:

- Remove the flowmeter from the pipeline. Slowly loosen the allen head screws in the upper fitting.
- Slowly pull the metering tube upward and remove it from the flowmeter housing. The float should not fall out of the metering tube or be damaged.

Reinstall in the reverse manner. Damaged O-rings should be replaced and coated with silicone or other lubricant prior to installing the metering tube.

Warning !

Do not grease the O-rings for oxygen metering. For these applications the BAM tested Voltalef * (Trifluoromonochlorethylene) lubricants may be used.

* Supplier: Lehmann + Voss & Co.

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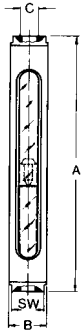
Hamburg, Germany

If the float incorporates a guide ring, it must point in the direction of the inlet.

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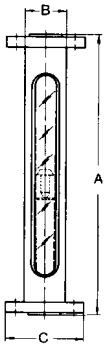
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6. Dimensions



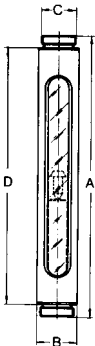
Mod. 10A1197DA (P)

Metering Tube Size	Threaded Connections			Dim. Across Flats SW	Weight approx. kg
	C	A ±1	∅ B		
1/16"/1/8"/1/4"	G 1/4	260	29	19	0.5
1/2"	G 1/2	405	40	31	1.7
3/4"	G 3/4	405	53	46	2.3
1"	G1	405	58,5	50	2.7
1 1/2"	G1 1/2	420	78	65	4.4
2"	G2	420	97	85	6.5



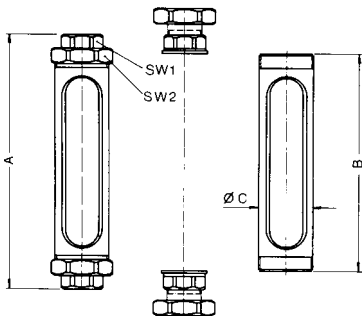
Mod. 10A1198DA (P)

Metering Tube Size	Flanged Connections per DIN 2501						ANSI - CL 300 Hole Pattern							Weight approx. kg
	DN	PN	C	k	No. of Holes	d2	Size	C	k	No. of Holes	d2	A ±1	∅ B	
1/16"/1/8"/1/4"	10	40	90	60	4	14	1/2"	95.2	66.7	4	15.9	270	29	1.4
1/2"	15	40	95	65	4	14	1/2"	95.2	66.7	4	15.9	415	40	2.4
3/4"	20	40	105	75	4	14	3/4"	117.5	82.6	4	19.0	415	53	3.5
1"	25	40	115	85	4	14	1"	123.8	88.9	4	19.0	415	58.5	4.7
1 1/2"	40	16	150	110	4	18	1 1/2"	156.6	114.3	4	22.5	425	78	7.5
2"	50	16	165	125	4	18	2"	165.1	127.0	8	19.0	425	97	10.0



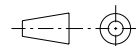
Mod. 10A1197(V)

Metering Tube Size	Threaded Sanitary Adapters per DIN 11851 DIN 405 Part 1						Weight approx. kg
	∅ B	C	Threaded Sanitary Adapter	A	D		
1/2"	40	Rd 34 x 1/8"	SC 15	413	383	1.7	
3/4"	53	Rd 44 x 1/6"	SC 20	409	379	2.3	
1"	58.5	Rd 52 x 1/6"	SC 25	409	379	2.7	
1 1/2"	78	Rd 65 x 1/6"	SC 40	423	393	4.4	
2"	97	Rd 78 x 1/6"	SC 50	420	390	6.5	



Mod. 10A1187

Size	A	B	∅ C	Dim. Across Flats SW 1	Dim. Across Flats SW 2	Weight approx. kg
1/4"	271	234	26	18	32	0.6
1/2"	409	366	38	25	46	1.4
3/4"	409	366	50	31	60	2.2
1"	417	366	60	38	70	2.9
1 1/2"	450	386	76	53	85	4.7
2"	455	386	95	66	105	6.8



All Dim's in mm ISO Projection Method E

Fig.2

7. Replacement Parts List Series 10A1190

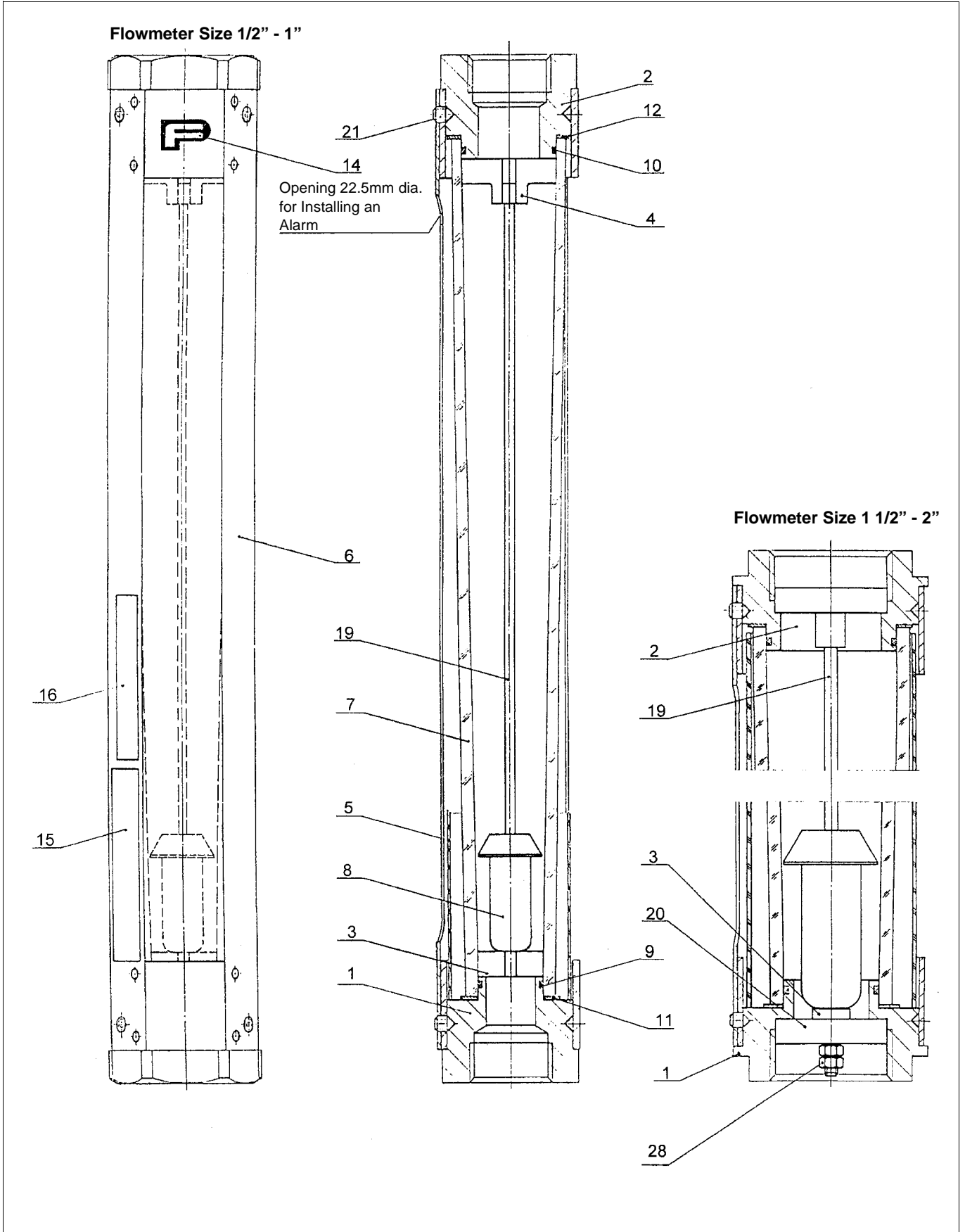


Fig.3 Model 10A1197DP
Model 10A1197DP

Glass Tube Flowmeter

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Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1197DP				
				1/2 "	3/4 "	1 "	1 1/2 "	2 "
1	1	Einlassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC mit NPT-Gewinde Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	Fitting inlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC with NPT-thread Brass Stn. Steel, 316 Ti Stn. Steel, 304	D301D122U01 D301D122U03 D301D122U04 D301D187U01 D301D176U01 D301D176U03 D301D176U04	D301D124U01 D301D124U03 D301D124U04 D301D188U01 D301D178U01 D301D178U03 D301D178U04	D301D126U01 D301D126U03 D301D126U04 D301D189U01 D301D180U01 D301D180U03 D301D180U04	D301D128U01 D301D128U03 D301D128U04 D301D190U01 D301D182U01 D301D182U03 D301D182U04	D301D130U01 D301D130U03 D301D133U04 D301D191U01 D301D184U01 D301D184U03 D301D184U04
2	1	Auslassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC mit NPT-Gewinde Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	Fitting outlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC with NPT-threads Brass Stn. Steel, 316 Ti Stn. Steel, 304	D301D123U01 D301D123U03 D301D123U04 D301D140U01 D301D177U01 D301D177U03 D301D177U04	D301D125U01 D301D125U03 D301D125U04 D301D142U01 D301D179U01 D301D179U03 D301D179U04	D301D127U01 D301D127U03 D301D127U04 D301D144U01 D301D181U01 D301D181U03 D301D181U04	D301D129U01 D301D129U03 D301D129U04 D301D192U01 D301D183U01 D301D183U03 D301D183U04	D301D132U01 D301D132U03 D301D132U04 D301D193U01 D301D186U01 D301D186U03 D301D186U04
3	1	Schwabekörperanschlag Einlass	Float stop inlet	1D304D1015	1D304D1017	1D304D1019	1D304D1007	
4	1	Schwabekörperanschlag Auslass	Float stop outlet	1D304D1016	1D304D1018	1D304D1020		
5	1	Schutzrohr	Housing	D351B009U01	D351B010U01	D351B011U01	D362A016U01	D362U017U01
6	1	Gehäuserohr	Tube	D609A818U02	D609A818U03	D609A818U04	D609A818U05	D609A818U06
7	1	Messrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr lt. Typenschild wird benötigt Serial No from Instrument Tag is required				
8	1	Schwabekörper ¹⁾	Float ¹⁾					
9	1*	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A707 101V707 101F707 101S707	101A905 101V905 101F905 101S905	101A908 101V908 101F908 101S908	101A925 101V925 101F925 101S925	101A933 101V933 101F933 101S933
10	1*	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A903 101V903 101F903 101S903	101A909 101V909 101F909 101S909	101A915 101V915 101F915 101S915	101A933 101V933 101F933 101S933	101A944 101V944 101F944 101S944
11	1*	Scheibe, Einlass	Washer, inlet	2D333C0249	2D333C0251	2D333C0253	2D333C0255	2D333C0257
12	1*	Scheibe, Auslass	Washer, outlet	2D333C0250	2D333C0252	2D333C0254	2D333C0256	2D333C0258
14	1	Firmenschild	Company tag	1D338B1008	1D338B1008	1D338B1008	1D338B1010	1D338B1010
15	1	Typenschild ¹⁾	Instrument Tag ¹⁾					
16	1	Hinweisschild	Note label	D338D100U01	D338D100U01	D338D100U01	D338D100U01	D338D100U01
19	1	Schwabekörperführung	Float guide				1D6041012U01	1D604A1006U01
19	1	Führungsstange	Guide rod	D402E006U01	D402E007U01	D402E008U01		
20	1	Steg	Segment				1D352B1013U01	1D352B1010U01
21	6	Gew. Stift DIN 914, M6x7	Hex Soc Set DIN 914	D396A016U01	D396A016U01	D396A016U01	D396A016U01	D396A016U01
28	2	Mutter, M5 DIN 934	Nut, Brass DIN 934				D072H100AU20	D072H100AU20
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfohlene Ersatzteile werden geliefert All recommended parts are included				

Glass Tube Flowmeter

10A1187 / 10A1190

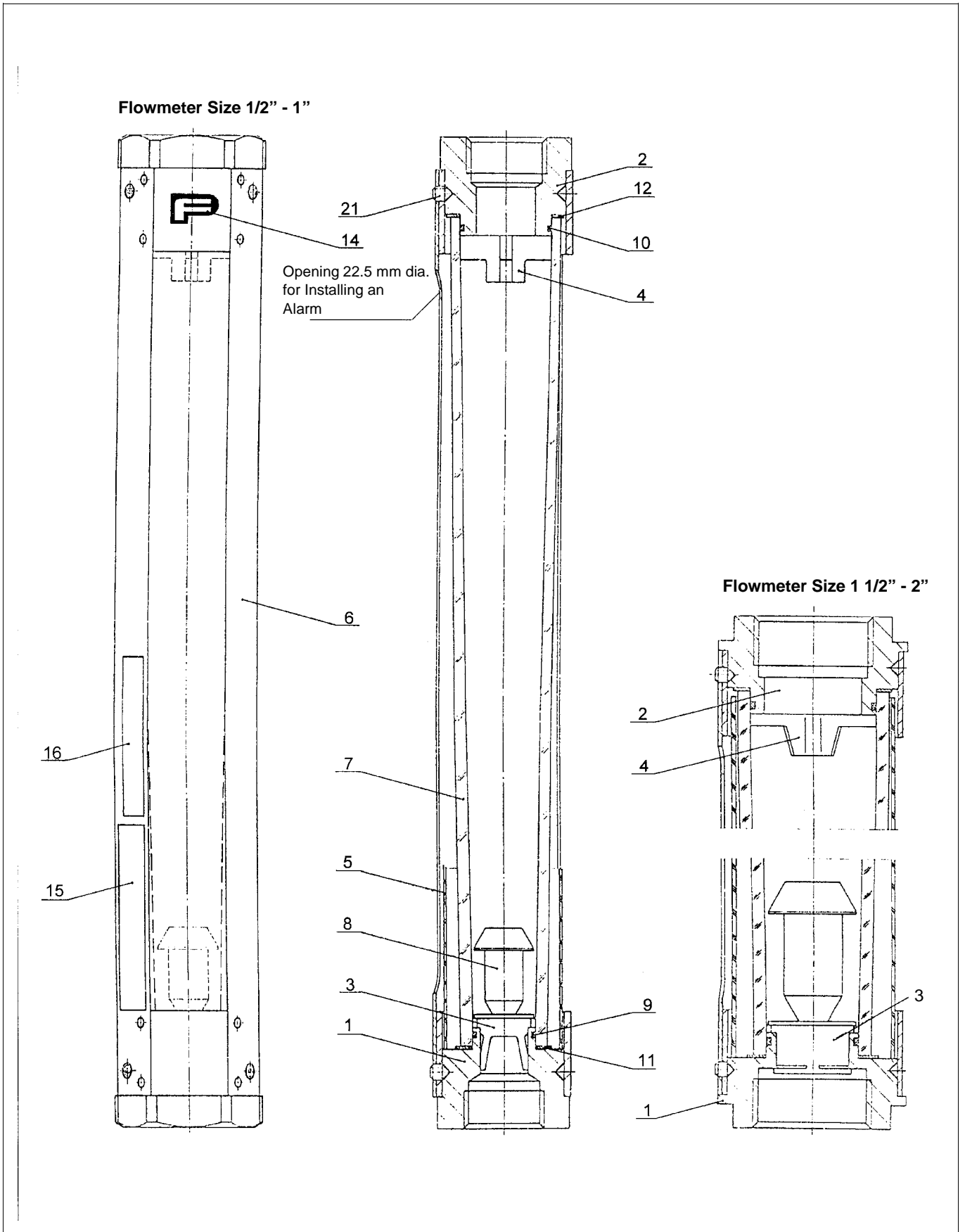


Fig.4 Model 1197DA
Model 1197DA

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1197DA		
				1/16 "	1/8 "	1/4 "
1	1	Einlassfiting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF mit NPT-Gewinde Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	Fitting inlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF with NPT-thread Brass Stn. Steel, 316 Ti Stn. Steel, 304	D301D119U01 D301D119U03 D301D119U04 D301D136U01 D301D136U02 D301D173U01 D301D173U03 D301D173U04	D301D120U01 D301D120U03 D301D120U04 D301D137U01 D301D137U02 D301D174U01 D301D174U03 D301D174U04	D301D126U01 D301D126U03 D301D126U04 D301D138U01 D301D138U02 D301D175U01 D301D175U03 D301D175U04
2	1	Auslassfiting Messing, MS 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF mit NPT-Gewinde Messing, MS 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	Fitting outlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF with NPT-thread Brass Stn. Steel, 316 Ti Stn. Steel, 304	D301D119U01 D301D119U03 D301D119U04 D301D136U01 D301D136U02 D301D173U01 D301D173U03 D301D173U04	D301D120U01 D301D120U03 D301D120U04 D301D137U01 D301D137U02 D301D174U01 D301D174U03 D301D174U04	D301D126U01 D301D126U03 D301D126U04 D301D138U01 D301D138U02 D301D175U01 D301D175U03 D301D175U04
3	1	Schwebekörperanschlag Einlass CrNi-Stahl, 1.4301 Hast. B PTFE	Float stop inlet Stn. Steel, 304 Hast. B PTFE	1D304B1032U01 1D304B1032U02	1D304B1023U01 1D304B1023U02	1D304B1021U01 1D304B1021U01 1D304C1004
4	1	Schwebekörperanschlag Auslass CrNi-Stahl 1.4301 Hast. B Viton PTFE	Float stop outlet Stn. Steel, 304 Hast. B Viton PTFE	1D304B1001U01 1D304B1001U02	1D304B1002U01 1D304B1002U02	1D304D1004U01 1D304D1004U02
5	1	Schutzrohr	Protection tube	D351B028U01	D351B028U01	D351B028U01
6	1	Gehäuserohr	Housing tube	D609A818U01	D609A818U01	D609A818U01
7	1	Messrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr. It. Typenschild wird benötigt Serial No from Instrument Tag is required		
8	1	Schwebekörper ¹⁾	Float ¹⁾			
9	1 *	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A794 101V794 101F794 101S794	101A701 101V701 101F701 101S701	101A705 101V705 101F705 101S705
10	1 *	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A794 101V794 101F794 101S794	101A701 101V701 101F701 101S701	101A705 101V705 101F705 101S705
11	1*	Scheibe, Einlass	Washer, inlet	1D333C1001	1D333C1002	1D333C1003
12	1*	Scheibe, Auslass	Washer, outlet	1D333C1001	1D333C1002	1D333C1003
14	1	Firmenschild	Company Tag	1D338B1007	1D338B1007	1D338B1007 (1D338B1008)
15	1	Typenschild ¹⁾	Instrument Tag ¹⁾			
16	1	Hinweisschild	Note label	D338D100U01	D338D100U01	D338D100U01
21	6	Gew. Stift DIN 914, M6x7	Hex Soc Set DIN 914	D396A016U01	D396A016U01	D396A016U01
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfehlende Ersatzteile werden geliefert All recommended parts are included		

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1197DA				
				1/2 "	3/4 "	1 "	1 1/2 "	2 "
1	1	Einlassfitting Messing, MS 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF mit NPT-Gewinde Messing, MS 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	Fitting inlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF with NPT-thread Brass Stn. Steel, 316 Ti Stn. Steel, 304	D301D122U01 D301D122U03 D301D122U04 D301D139U01 D301D139U02 D301D176U01 D301D176U03 D301D176U04	D301D124U01 D301D124U03 D301D124U04 D301D141U01 D301D141U02 D301D178U01 D301D178U03 D301D178U04	D301D126U01 D301D126U03 D301D126U04 D301D143U01 D301D143U02 D301D180U01 D301D180U03 D301D180U04	D301D128U01 D301D128U03 D301D128U04 D301D145U01 D301D145U02 D301D182U01 D301D182U03 D301D182U04	D301D130U01 D301D130U03 D301D130U04 D301D147U01 D301D147U02 D301D184U01 D301D184U03 D301D184U04
2	1	Auslassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF mit NPT-Gewinde Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	Fitting outlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF with NPT-thread Brass Stn. Steel, 316 Ti Stn. Steel, 304	D301D123U01 D301D123U03 D301D123U04 D301D140U01 D301D140U02 D301D177U01 D301D177U03 D301D177U04	D301D125U01 D301D125U03 D301D125U04 D301D142U01 D301D142U02 D301D179U01 D301D179U03 D301D179U04	D301D127U01 D301D127U03 D301D127U04 D301D144U01 D301D144U02 D301D181U01 D301D181U03 D301D181U04	D301D129U01 D301D129U03 D301D129U04 D632A016U01 D632A016U02 D301D183U01 D301D183U03 D301D183U04	D301D131U01 D301D131U03 D301D131U04 D632A017U01 D632A017U02 D301D185U01 D301D185U03 D301D185U04
3	1	Schwebekörperanschlag Einlass CrNi-Stahl, 1.4301 Hast. B	Float stop inlet Stn. Steel, 304 Hast. B	2D304A0141U01 2D304A0141U02	2D304A0142U01 2D304A0142U02	2D304A0143U01 2D304A0143U02	1D304A1001U01 1D304A1001U02	1D304A1002U01 1D304A1002U02
4	1	Schwebekörperanschlag Auslass CrNi-Stahl Hast. B Viton PTFE	Float stop outlet Stn. Steel Hast. B Viton PTFE	1D304D1005 1D304D1016	1D304D1007 1D304D1018	1D304D1009 1D304D1020	2D604A0198U01 2D604A0198U02	2D604A0199U01 2D604A0199U02
5	1	Schutzrohr	Protection tube	D351B009U01	D351B010U01	D351B011U01	D351B016U01	D351B017U01
6	1	Gehäuserohr	Housing tube	D609A818U02	D609A818U03	D609A818U04	D609A818U05	D609A818U06
7	1	Messrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr. lt Typenschild wird benötigt Serial No from Instrument Tag is required				
8	1	Schwebekörper ¹⁾	Float ¹⁾					
9	1 *	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A707 101V707 101F707 101S707	101A905 101V905 101F905 101S905	101A908 101V908 101F908 101S908	101A925 101V925 101F925 101S925	101A933 101V933 101F933 101S933
10	1 *	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A903 101V903 101F903 101S903	101A909 101V909 101F909 101S909	101A915 101V915 101F915 101S915	101A933 101V933 101F933 101S933	101A944 101V944 101F944 101S944
11	1*	Scheibe, Einlass	Washer, inlet	2D333C0249	2D333C0251	2D333C0253	2D333C0255	2D333C0257
12	1 *	Scheibe, Auslass	Washer, outlet	2D333C0250	2D333C0252	2D333C0254	2D333C0256	2D333C0258
14	1	Firmenschild	Company Tag	1D338B1008	1D338B1008	1D338B1008	1D338B1010	1D338B1010
15	1	Typenschild ¹⁾	Instrument Tag ¹⁾					
16	1	Hinweisschild	Note label	D338D100U01				
21	6	Gew. Stift DIN 914, M6x7	Hex Soc Set DIN 914	D396A016U01	D396A016U01	D396A016U01	D396A016U01	D396A016U01
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfohlene Ersatzteile werden geliefert All recommended parts are included				

Glass Tube Flowmeter

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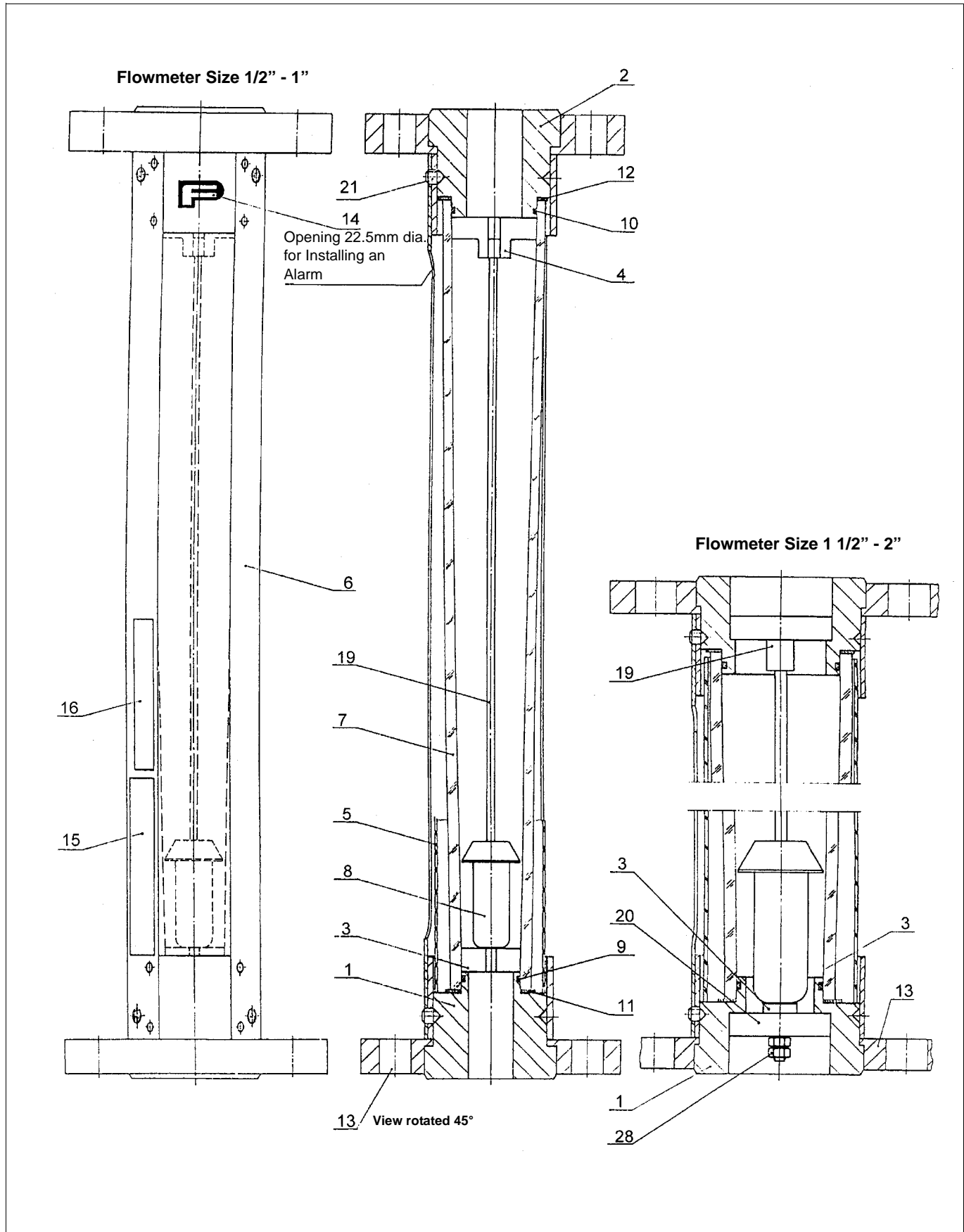


Fig.5 Model 1198DP
Model 1198DP

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1198DP				
				1/2 "	3/4 "	1 "	1 1/2 "	2 "
1	1	Einlassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF	Fitting inlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF	D301E146U01 D301E146U03 D301E146U04 D301E167U01 D301E167U02	D301E148U01 D301E148U03 D301E148U04 D301E169U01 D301E169U02	D301E150U01 D301E150U03 D301E150U04 D301E171U01 D301E171U02	D301E152U01 D301E152U03 D301E152U04 D301E173U01 D301E173U02	D301E154U01 D301E154U03 D301E154U04 D301E175U01 D301E175U02
2	1	Auslassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF	Fitting outlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF	D301E147U01 D301E147U03 D301E147U04 D301E168U01 D301E168U02	D301E149U01 D301E149U03 D301E149U04 D301E170U01 D301E170U02	D301E151U01 D301E151U03 D301E151U04 D301E172U01 D301E172U02	D301E153U01 D301E153U03 D301E153U04 D301E174U01 D301E174U02	D301E156U01 D301E156U03 D301E156U04 D301E176U01 D301E176U02
3	1	Schwebekörperanschlag Einlass	Float stop inlet	1D304D1015	1D304D1017	1D304D1019	1D304D1007	
4	1	Schwebekörperanschlag Auslass	Float stop outlet	1D304D1016	1D304D1018	1D304D1020		
5	1	Schutzrohr	Protection Tube	D351B009U01	D351B010U01	D351B011U01	D362A016U01	D362U017U01
6	1	Gehäuserohr	Housing tube	D609A818U02	D609A818U03	D609A818U04	D609A818U05	D609A818U06
7	1	Messrohr ¹⁾	Metering tube ¹⁾	Geräte Nr. lt. Typenschild wird benötigt Serial No from Instrument Tag is required				
8	1	Schwebekörper ¹⁾	Float ¹⁾					
9	1*	O-Ring Buna-N Viton-A EPDM Silicone	O-ring Buna-N Viton-A EPDM Silicone	101A707 101V707 101F707 101S707	101A905 101V905 101F905 101S905	101A908 101V908 101F908 101S908	101A925 101V925 101F925 101S925	101A933 101V933 101F933 101S933
10	1 *	O-Ring Buna-N Viton-A EPDM Silicone	O-ring Buna-N Viton-A EPDM Silicone	101A903 101V903 101F903 101S903	101A909 101V909 101F909 101S909	101A915 101V915 101F915 101S915	101A933 101V933 101F933 101S933	101A944 101V944 101F944 101S944
11	1*	Scheibe, Einlass	Washer, inlet	2D333C0249	2D333C0251	2D333C0253	2D333C0255	2D333C0257
12	1 *	Scheibe, Auslass	Washer, outlet	2D333C0250	2D333C0252	2D333C0254	2D333C0256	2D333C0258
13	2	DIN Flasch Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 ANSI CL 300 Flansch Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 ANSI CL 150 Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	DIN flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304 ANSI CL 300 flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304 ANSI CL 150 flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304	1D363C1051U01 1D363C1051U02 1D363C1051U03 1D363B1022U01 1D363B1022U02 1D363B1022U03 1D363B1072U01 1D363B1072U02 1D363B1072U03	1D363C1053U01 1D363C1053U02 1D363C1053U03 1D363B1023U01 1D363B1023U02 1D363B1023U03 1D363B1073U01 1D363B1073U02 1D363B1073U04	1D363C1054U01 1D363C1054U02 1D363C1054U03 1D363B1024U01 1D363B1024U02 1D363B1024U03 1D363B1074U01 1D363B1074U02 1D363B1074U03	1D363C1055U01 1D363C1055U02 1D363C1055U03 1D363B1025U01 1D363B1025U02 1D363B1025U03 1D363B1075U01 1D363B1075U02 1D363B1075U03	1D363C1056U01 1D363C1056U02 1D363C1056U03 1D363B1026U01 1D363B1026U02 1D363B1026U03 1D363B1076U01 1D363B1076U02 1D363B1076U03
14	1	Firmenschild	Company Tag	1D338B1008	1D338B1008	1D338B1008	1D338B1010	1D338B1010
15	1	Typenschild ¹⁾	Instrument Tag ¹⁾					
16	1	Hinweisschild	Note label	D338D100U01	D338D100U01	D338D100U01	D338D100U01	D338D100U01
19	1	Schwebekörperführung	Float guide				1D6041012U01	1D604A1006U01
19	1	Führungsstange	Guide rod	D402E006U01	D402E007U01	D402E008U01		
20	1	Steg					1D352B1013U01	1D352B1010U01
21	6	Gew. Stift DIN 914, M6x7	Hex Soc Set DIN 914	D396A016U01	D396A016U01	D396A016U01	D396A016U01	D396A016U01
28	2	Mutter, M5 DIN 934	Nut, M5 DIN 934				D072H100AU20	D072H100AU20
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfohlene Ersatzteile werden geliefert All recommended parts are included				

Glass Tube Flowmeter

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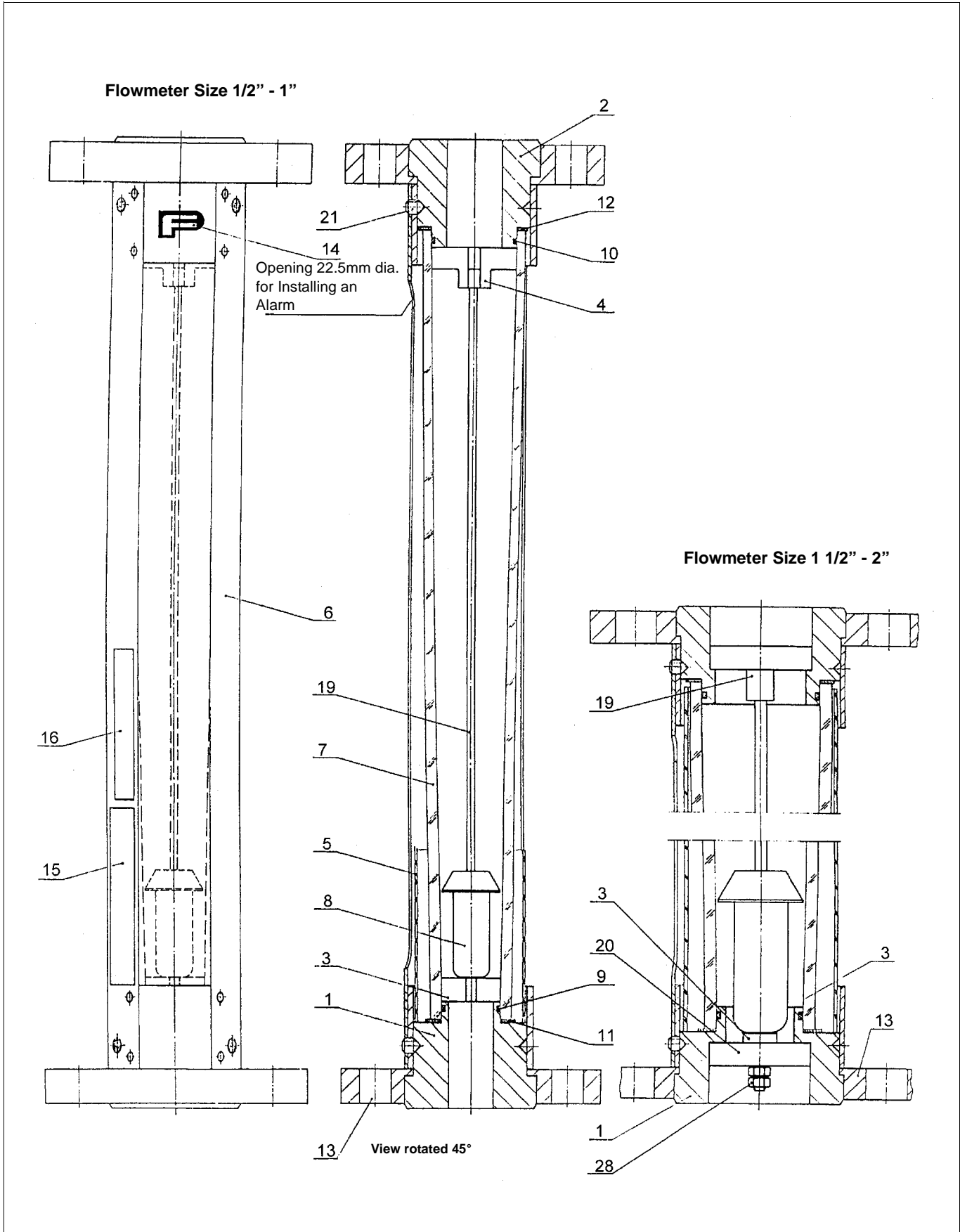


Fig.6 Model 1198DA
Model 1198DA

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1198A		
				1/16 "	1/8 "	1/4 "
1	1	Einlassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF	Fitting inlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF	D301E117U01 D301E117U03 D301E117U04 D301E120U01 D301E120U02	D301E117U01 D301E117U03 D301E117U04 D301E121U01 D301E121U02	D301E119U01 D301E119U03 D301E119U04 D301E122U01 D301E122U02
2	1	Auslassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF	Fitting outlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF	D301E117U01 D301E117U03 D301E117U04 D301E120U01 D301E120U02	D301E117U01 D301E117U03 D301E117U04 D301E121U01 D301E121U02	D301E119U01 D301E119U03 D301E119U04 D301E122U01 D301E122U02
3	1	Schwebekörperanschlag Einlass CrNi-Stahl, 1.4301 Hast. B PTFE	Float stop inlet Stn. Steel, 304 Hast. B PTFE	1D304B1032U01 1D304B1032U02	1D304B1023U01 1D304B1023U02	1D304B1021U01 1D304B1021U01 1D304C1004
4	1	Schwebekörperanschlag Auslass CrNi-Stahl 1.4301 Hast. B PTFE	Float stop outlet Stn. Steel, 304 Hast. B PTFE	1D304B1001U01 1D304B1001U02	1D304B1002U01 1D304B1002U02	1D304D1004U01 1D304D1004U02 1D304C1004
5	1	Schutzrohr	Protection tube	D351B028U01	D351B028U01	D351B028U01
6	1	Gehäuserohr	Housing tube	D609A818U01	D609A818U01	D609A818U01
7	1	Messrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr. lt. Typenschild wird benötigt Serial No from Instrument Tag is required		
8	1	Schwebekörper ¹⁾	Float ¹⁾			
9	1 *	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A794 101V794 101F794 101S794	101A701 101V701 101F701 101S701	101A705 101V705 101F705 101S705
10	1 *	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A794 101V794 101F794 101S794	101A701 101V701 101F701 101S701	101A705 101V705 101F705 101S705
11	1 *	Scheibe, Einlass	Washer, inlet	1D333C1001	1D333C1002	1D333C1003
12	1 *	Scheibe, Auslass	Washer, outlet	1D333C1001	1D333C1002	1D333C1003
13	2	DIN Flansch Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 ANSI CL 300 Flansch Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 ANSI CL 150 Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	DIN flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304 ANSI CL 300 flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304 ANSI CL 150 flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304	D363C568U01 D363C568U02 D363C568U03 D363C569U01 D363C569U02 D363C569U03 D363B099U01 D363B099U02 D363B099U03	D363C568U01 D363C568U02 D363C568U03 D363C569U01 D363C569U02 D363C569U03 D363B099U01 D363B099U02 D363B099U03	D363C568U01 D363C568U02 D363C568U03 D363C569U01 D363C569U02 D363C569U03 D363B099U01 D363B099U02 D363B099U03
14	1	Firmenschild	Company Tag	1D338B1007	1D338B1007	1D338B1007
15	1	Typenschild ¹⁾	Instrument Tag ¹⁾			
16	1	Hinweisschild	Note label	D338D100U01	D338D100U01	D338D100U01
21	6	Gew. Stift DIN 914, M6x7	Hex Soc Set DIN 914	D396A016U01	D396A016U01	D396A016U01
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfehlende Ersatzteile werden geliefert All recommended parts are included		

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1198DA				
				1/2 "	3/4 "	1 "	1 1/2 "	2 "
1	1	Einlassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF	Fitting inlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF	D301E146U01 D301E146U03 D301E146U04 D301E157U01 D301E157U02	D301E148U01 D301E148U03 D301E148U04 D301E159U01 D301E159U02	D301E150U01 D301E150U03 D301E150U04 D301E161U01 D301E161U01	D301E152U01 D301E152U03 D301E152U04 D301E163U01 D301E163U01	D301E154U01 D301E154U03 D301E154U04 D301E165U01 D301E165U02
2	1	Auslassfitting Messing, Ms 58 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 PVC PVDF	Fitting outlet Brass Stn. Steel, 316 Ti Stn. Steel, 304 PVC PVDF	D301E147U01 D301E147U03 D301E147U04 D301E158U01 D301E158U02	D301E149U01 D301E149U03 D301E148U04 D301E160U01 D301E160U02	D301E151U01 D301E151U03 D301E151U04 D301E162U01 D301E162U02	D301E153U01 D301E153U03 D301E153U04 D632A031U01 D632A031U02	D301E155U01 D301E155U03 D301E155U04 D632A032U01 D632A032U02
3	1	Schwebekörperanschlag Einlass CrNi-Stahl, 1.4301 Hast. B	Float stop inlet Stn. Steel, 304 Hast. B	2D304A0141U01 2D304A0141U02	2D304A0142U01 2D304A0142U02	2D304A0143U01 2D304A0143U02	1D304A1001U01 1D304A1001U02	1D304A1002U01 1D304A1002U02
4	1	Schwebekörperanschlag Auslass CrNi-Stahl Hast. B Viton PTFE	Float stop outlet Stn. Steel Hast. B Viton PTFE	1D304D1005 1D304D1016	1D304D1007 1D304D1018	1D304D1009 1D304D1020	2D604A0198U01 2D604A0198U02	2D604A0199U01 2D604A0199U02
5	1	Schutzrohr	Housing	D351B009U01	D351B010U01	D351B011U01	D351B016U01	D351B017U01
6	1	Gehäuserohr	tube	D609A818U02	D609A818U03	D609A818U04	D609A818U05	D609A818U06
7	1	Messrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr. lt. Typenschild wird benötigt Serial No from Instrument Tag is required				
8	1	Schwebekörper ¹⁾	Float ¹⁾					
9	1 *	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A707 101V707 101F707 101S707	101A905 101V905 101F905 101S905	101A908 101V908 101F908 101S908	101A925 101V925 101F925 101S925	101A933 101V933 101F933 101S933
10	1 *	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A903 101V903 101F903 101S903	101A909 101V909 101F909 101S909	101A915 101V915 101F915 101S915	101A933 101V933 101F933 101S933	101A944 101V944 101F944 101S944
11	1 *	Scheibe, Einlass	Washer, inlet	2D333C0249	2D333C0251	2D333C0253	2D333C0255	2D333C0257
12	1 *	Scheibe, Auslass	Washer, outlet	2D333C0250	2D333C0252	2D333C0254	2D333C0256	2D333C0258
13	2	DIN Flansch Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 ANSI CL 300 Flansch Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301 ANSI CL 150 Stahl, C22 CrNi-Stahl, 1.4571 CrNi-Stahl, 1.4301	DIN flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304 ANSI CL 300 flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304 ANSI CL 150 flange Steel, C22 Stn. Steel, 316 Ti Stn. Steel, 304	1D363C1051U01 1D363C1051U02 1D363C1051U03 1D363B1022U01 1D363B1022U02 1D363B1022U03 1D363B1072U01 1D363B1072U02 1D363B1072U03	1D363C1053U01 1D363C1053U02 1D363C1053U03 1D363B1023U01 1D363B1023U02 1D363B1023U03 1D363B1073U01 1D363B1073U02 1D363B1073U04	1D363C1054U01 1D363C1054U02 1D363C1054U03 1D363B1024U01 1D363B1024U02 1D363B1024U03 1D363B1074U01 1D363B1074U02 1D363B1074U03	1D363C1055U01 1D363C1055U02 1D363C1055U03 1D363B1025U01 1D363B1025U02 1D363B1025U03 1D363B1075U01 1D363B1075U02 1D363B1075U03	1D363C1056U01 1D363C1056U02 1D363C1056U03 1D363B1026U01 1D363B1026U02 1D363B1026U03 1D363B1076U01 1D363B1076U02 1D363B1076U03
14	1	Firmenschild	Company Tag	1D338B1008	1D338B1008	1D338B1008	1D338B1010	1D338B1010
15	1	Typenschild ¹⁾	Instrument Tag ¹⁾					
16	1	Hinweisschild	Note label	D338D100U01				
21	6	Gew. Stift DIN 914, M6x7	Hex Soc Set DIN 914	D396A016U01	D396A016U01	D396A016U01	D396A016U01	D396A016U01
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfehlende Ersatzteile werden geliefert All recommended parts are included				

¹⁾ siehe Datenblatt; wird jedem Gerät beigelegt. Bei Anfragen und Bestellungen bitte immer die Geräte-Nr. angeben.
Sie ist auf dem Typenschild am Gerät zu finden.
A metering tube or metering float may be ordered only by specifying the meter serial number. The instrument serial number is recorded on the Instrument Tag on the housing of the flowmeter.

* Empfohlenes Ersatzteil. Recommended replacement part
Bei Schriftwechsel bitte vollständige Geräte-Nr. angeben. Please refer to the BF&P Serial No. on all correspondence.

8. Replacement Parts List Series 10A1187

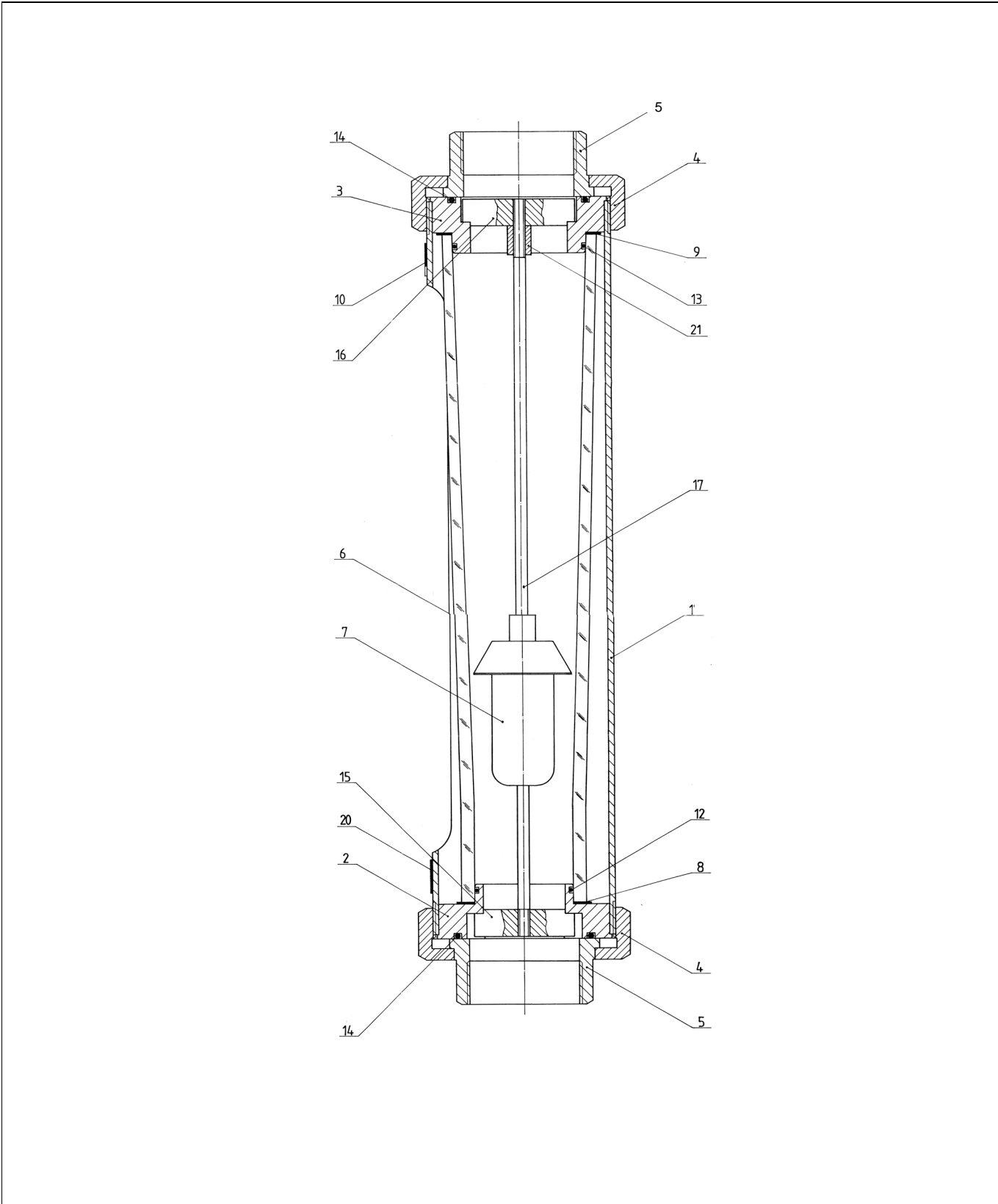


Fig.7 Model 10A1187
Model 10A1187

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1187P/A				
				1/2 "	3/4 "	1 "	1 1/2 "	2 "
1	1	Gehäuserohr	Housing tube	D609A819U02	D609A819U03	D609A819U04	D609A819U05	D609A819U06
2	1	Meßrohrhalter, Einlass PVC PVDF 9S20K CrNi-Stahl 1.4571 MS58	Meter tube holder inl. PVC PVDF Steel 9S20K Stn. Steel, 316 Ti Brass	D376C097U01 D376C097U02 D376C087U01 D376C087U02 D376C087U03	D376C099U01 D376C099U02 D376C006U01 D376C006U02 D376C006U03	D376C101U01 D376C101U02 D376C091U01 D376C091U02 D376C091U03	D376C107U01 D376C107U02 D376C116U01 D376C116U02 D376C116U03	D376C109U01 D376C109U02 D376C018U01 D376C018U02 D376C018U03
3	1	Meßrohrhalter, Auslass PVC PVDF 9S20K CrNi-Stahl 1.4571 MS58	Meter tube holder, outl. PVC PVDF Steel 9S20K Stn. Steel, 316 Ti Brass	D376C098U01 D376C098U02 D376C088U01 D376C088U02 D376C088U03	D376C100U01 D376C100U02 D376C007U01 D376C007U02 D376C007U03	D376C102U01 D376C102U02 D376C092U01 D376C092U02 D376C092U03	D376C108U01 D376C108U02 D376C017U01 D376C017U02 D376C017U03	D376C110U01 D376C110U02 D376C019U01 D376C019U02 D376C019U03
4	2	Überwurfmutter PVC PVDF 9S20K CrNi-Stahl 1.4571 MS58	Coupling nut PVC PVDF Steel 9S20K Stn. Steel, 316 Ti Brass	D110A036U05 D110A037U03 D397A018U01 D397A018U02 D397A018U03	D397A025U01 D397A025U02 D397A019U01 D397A019U02 D397A019U03	D110A036U07 D110A037U5 D397A020U01 D397A020U02 D397A020U03	D397A027U01 D397A027U02 D397A021U01 D397A021U02 D397A021U03	D397A028U01 D397A028U02 D397A022U01 D397A022U02 D397A022U03
5	2	Einlegeeteil PVC PVDF Temperguss CrNi-Stahl 1.4571 Rotguss	Insertable part PVC PVDF Malleable cast iron Stn. Steel, 316 Ti Red cast iron	D112A030U05 D112A031U03 D365B003U01 D365B054U01 D365B062U01	D112A030U06 D112A031U04 D365B004U01 D365B055U01 D365B063U01	D112A030U07 D112A031U05 D365B005U01 D365B056U01 D365B064U01	D112A030U08 D112A031U06 D365B006U01 D365B057U01 D365B065U01	D112A030U09 D112A031U07 D365B007U01 D365B058U01 D365B066U01
6	1	Meßrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr. lt. Typenschild wird benötigt Serial No from Instrument Tag is required				
7	1	Schwefkörper ¹⁾	Float ¹⁾					
8	1*	Scheibe, Einlass	Washer, inlet	2D333C0249	2D333C0251	2D333C0253	2D333C0255	2D333C0257
9	1*	Scheibe, Auslass	Washer, outlet	2D333C0250	2D333C0252	2D333C0254	2D333C0256	2D333C0258
10	1	Firmenschild	Company Tag					
12	1*	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A707 101V707 101F707 101S707	101A905 101V905 101F905 101S905	101A908 101V908 101F908 101S908	101A925 101V925 101F925 101S925	101A933 101V933 101F933 101S933
13	1*	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A903 101V903 101F903 101S903	101A909 101V909 101F909 101S909	101A915 101V915 101F915 101S915	101A933 101V933 101F933 101S933	101A944 101V944 101F944 101S944
14	2*	O-Ring Buna-N Viton-A EPDM Silicone	O-ring Buna-N Viton-A EPDM Silicone	101A918 101V918 101F918 101S918	101A923 101V923 101F923 101S923	101A926 101V926 101F926 101S926	101A805 101V805 101F805 101S805	101A809 101V809 101F809 101S809
15	1	Schwefkörperanschlag Einlass	Float stop, inlet	1D304D1015	1D304D1017	1D304D1019	D352B001U01	D352B003U01
16	1	Schwefkörperanschlag Auslass	Float stop, outlet	1D304D1016	1D304D1018	1D304D1020	D352B002U01	D352B004U01
17	1	Führungsstange (wenn vorhanden)	Guide rod (if present)	D402E001U01	D402E001U01	D402E002U01	D402E003U01	D402E004U01
18	1	Typenschild ¹⁾	Instrument Tag ¹⁾					
21	1	Buchse	Sleeve				D368A043U01	D368A043U02
22	1	Schutzrohr	Protection tube	D351B009U01	D351B010U01	D351B011U01	D351B016U01	D351B017U01
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfehlende Ersatzteile werden geliefert All recommended parts are included				

¹⁾ siehe Datenblatt; wird jedem Gerät beigelegt. Bei Anfragen and Bestellungen bitte immer die Geräte-Nr. angeben.
Sie ist auf dem Typenschild am Gerät zu finden.
A metering tube or metering float may be ordered only by specifying the meter serial number. The instrument serial number is recorded on the Instrument Tag on the housing of the flowmeter.

* Empfohlenes Ersatzteil. Recommended Replacement Part
Bei Schriftwechsel bitte vollständige Geräte-Nr. angeben. Please refer to the BF&P Serial No. on all correspondence.

Glass Tube Flowmeter

10A1187 / 10A1190

Pos. Item	Stck. Quantity	Benennung	Description	Model D10A1187P		
				1/16 "	1/8 "	1/4 "
1	1	Gehäuserohr	tube	D609A819U01	D609A819U01	D609A819U01
2	1	Meßrohrhalter, Einlass PVC PVDF 9S20K CrNi-Stahl 1.4571 MS58	Metering tube holder, inlet PVC PVDF Steel 9S20K Stn. Steel, 316 Ti Brass	D376C094U01 D376C094U02 D376C001U01 D376C001U02 D376C001U03	D376C095U01 D376C094U02 D376C002U01 D376C002U02 D376C002U03	D376C096U01 D376C096U02 D376C003U01 D376C003U02 D376C003U03
3	1	Meßrohrhalter, Auslass PVC PVDF 9S20K CrNi-Stahl 1.4571 MS58	Metering tube holder, outlet PVC PVDF Steel 9S20K Stn. Steel, 316 Ti Brass	D376C094U01 D376C094U02 D376C001U01 D376C001U02 D376C001U03	D376C095U01 D376C094U02 D376C002U01 D376C002U02 D376C002U03	D376C096U01 D376C096U02 D376C003U01 D376C003U02 D376C003U03
4	2	Überwurfmutter PVC 9S20K	Coupling nut PVC 9S20K	D110A036U03 D397A017U01	D110A036U03 D397A017U01	D110A036U03 D397A017U01
5	2	Einlegeteil PVC PVDF Temperguss CrNi-Stahl 1.4571 Rotguss	Insertable part PVC PVDF Malleable cast iron Stn. Steel, 316 Ti Red cast iron	D112A030U05 D112A031U01 D365B002U01 D365B053U01 D365B061U01	D112A030U05 D112A031U01 D365B002U01 D365B053U01 D365B061U01	D112A030U05 D112A031U01 D365B002U01 D365B053U01 D365B061U01
6	1	Meßrohr ¹⁾	Metering tube ¹⁾	Geräte-Nr. lt. Typenschild wird benötigt Serial No from Instrument Tag is required		
7	1	Schwebekörper ¹⁾	Float ¹⁾			
8	1 *	Scheibe, Einlass	Washer, inlet	1D333C1001	1D333C1002	1D333C1003
9	1 *	Scheibe, Auslass	Washer, outlet	1D333C1001	1D333C1002	1D333C1003
10	1	Firmenschild	Company Tag			
12	1 *	O-Ring, Einlass Buna-N Viton-A EPDM Silicone	O-ring, inlet Buna-N Viton-A EPDM Silicone	101A794 101V794 101F794 101S794	101A701 101V701 101F701 101S701	101A705 101V705 101F705 101S705
13	1 *	O-Ring, Auslass Buna-N Viton-A EPDM Silicone	O-ring, outlet Buna-N Viton-A EPDM Silicone	101A794 101V794 101F794 101S794	101A701 101V701 101F701 101S701	101A705 101V705 101F705 101S705
14	2*	O-Ring Buna-N Viton-A EPDM Silicone	O-ring Buna-N Viton-A EPDM Silicone	101A712 101V712 101F712 101S712	101A712 101V712 101F712 101S712	101A712 101V712 101F712 101S712
15	1	Schwebekörperanschlag Einlass 1.4301 Hast. B	Float stop, inlet Stn. Steel, 304 Hast B	1D304B1032U01 1D304B1032U02	1D304B1023U01 1D304B1023U02	1D304B1021U01 1D304B1021U02
16	1	Schwebekörperanschlag Auslass 1.4301 Hast. B	Float stop, outlet Stn. Steel, 304 Hast. B	1D304B1001U01 1D304B1001U02	1D304B1002U01 1D304B1002U02	1D304B1004U01 1D304B1004U02
19	1	Typenschild ¹⁾	Instrument Tag ¹⁾			
22	1	Schutzrohr	Protection tube	D351B028U01	D351B028U01	D351B028U01
500	1	Satz aller empfohlener Ersatzteile	Recommended parts kit	empfohlene Ersatzteile werden geliefert All recommended parts are included		



ABB Automation Products GmbH

Dransfelder Str. 2, D-37079 Goettingen

Tel.: +49 (0) 5 51 9 05 - 0

Fax: +49 (0) 5 51 9 05 - 777

<http://www.abb.com/automation>