Insertion fitting for volume flow rate or analytical measurements

- Universal fitting for insertion measuring devices for neutral, aggressive or contaminated fluids
- A wide range of process connections: DN 06...DN 400 in PVC, PP, PVDF, PE, stainless steel or brass
- Transmitters can be supplied for display, monitoring, signal transmission, 2-point control and dosing control

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 8020
Insertion flowmeter with paddle wheel for continuous flow measurement

Type 8025
Insertion flowmeter or batch controller with paddle wheel and flow transmitter or remote batch controller

Type 8026
Insertion flowmeter with paddle wheel, ELEMENT design

Type 8041
Electromagnetic insertion flowmeter

Type 8045
Electromagnetic insertion flowmeter

Type 8228
Inductive conductivity meter, ELEMENT Design

Type 8200
Armatures for analytical sensors

Type description

The Type S020 fitting can be used to connect any insertion devices for in-pipeline measurement, such as for flow rate, pH, redox potential (ORP) or conductivity measurements.

The fitting is available for paddle-wheel and magnetic inductive flowmeters, as well as analytical measurement devices, with G 2" or clamp connections.

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Table of contents

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1. General technical data

Product properties	
Material	
Make sure the device materials are compatible with the fluid you are using. Further information can be found in chapter "3.1. Bürkert resistApp" on page 6.	
Non wetted parts	
Screw	Stainless steel (316L - 1.4404)
Wetted parts	
Fitting body	• For G 2" flowmeter connection: Body & adapter respectively in brass ($CuZn_{39}Pb_2$) & stainless steel (316L - 1.4404) or all in stainless steel (316L - 1.4404), PVC, PP, PVDF or PE (depending on the fitting variant Type S020) • For clamp flowmeter connection: Stainless steel 316L
Seal	• For G 2" flowmeter connection: FKM or EPDM (depending on the fitting variant Type S020) • For clamp flowmeter connection: none
Surface quality	For fitting in stainless steel: • For G 2" flowmeter connection – T-fitting – inner surface: Ra < 1.6 µm – outer surface: Ra < 3.2 µm – Straight connection and measuring chamber – inner surface: Ra < 1.6 µm – outer surface: Ra < 6.3 µm • For clamp flowmeter connection – T-fitting – inner surface: Ra < 0.8 µm (excluding welding seams) – outer surface: Ra < 1.6 µm – Straight connection – inner surface: Ra < 0.6 µm – outer surface: Ra < 1.2 µm
Compatibility	With flowmeters Type 8020, 8025, 8026, 8041, 8045 or analytical measuring devices Type 8200/8203, 8220 or 8228
Pipe diameter	• For G 2" flowmeter connection: DN 06...DN 400 Combination between fitting and measuring device is sometimes restricted to some DN. Further information can be found in chapter "8.3. Combination of the S020 with a measuring device for flow rate, pH or ORP, conductivity measurement" on page 21.) • For clamp flowmeter connection: DN 32...DN 100
Dimensions	Further information can be found in chapter "4. Dimensions" on page 6.
Medium data	
Fluid temperature [1.]	For fitting in: • PVC: 0...+ 50 °C (+ 32...+ 122 °F) • PP: 0...+ 80 °C (+ 32...+ 176 °F) • PVDF: - 15...+ 100 °C (+ 5...+ 212 °F) • PE: + 5...+ 70 °C (+ 41...+ 158 °F) • stainless steel, brass: - 15...+ 160 °C (+ 5...+ 320 °F)
Fluid pressure [1.]	For fitting in: • plastic: max. PN 10 • metal: max. PN 16 Further information can be found in chapter "5.1. Pressure temperature diagram" on page 15.
Process/Pipe connection & communication	
Measuring devices connection	G 2" or clamp connection
Pipe connection	For fitting in: • plastic: true union with nut and solvent/fusion socket, spigot or external thread, saddle • metal: internal or external thread, weld ends, clamp or flange

Approvals and conformities	
Directives	
CE directive	Further information on the CE directive can be found in chapter "2.3. Standards" on page 5.
Pressure equipment directive	Complying with article 4, paragraph 1 of 2014/68/EU directive Further information on the pressure equipment directive can be found in chapter "2.4. Pressure Equipment Directive (PED)" on page 5.
Foods and beverages/Hygiene	FDA declaration of conformity (stainless steel fitting only with EPDM seal) Must be ordered separately. Further information can be found in chapter "Accessories for all variants" on page 25.
Materials	• Inspection certificate 3.1 (according to EN-ISO 10204) • Certification of Conformity for the surface Quality (according to DIN4762, DIN4768, ISO/4287/1) Must be ordered separately. Further information can be found in chapter "Accessories for all variants" on page 25.
Others	• 3 points flow calibration certificate • Test report 2.2 (according to EN-ISO 10204) Must be ordered separately. Further information can be found in chapter "Accessories for all variants" on page 25.
Environment and installation	
Ambient temperature	Operation and storage: the temperature limits also depend on the temperature limits of the inserted device, see the relevant data sheet or operating instructions for more information

1.) The temperature and pressure limits also depend on the temperaturen or pressure limits of the inserted device, see the relevant data sheet or operating instructions for more information. If the specified temperature or pressure ranges for the fitting and the inserted device are different, use the most restrictive range.

2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available variants of the device can be supplied with the below mentioned approvals or conformities.

2.2. Conformity

In accordance with the Declaration of Conformity, the product is compliant with the EU Directives.

2.3. Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

2.4. Pressure Equipment Directive (PED)

The device conforms to article 4, paragraph 1 of the Pressure Equipment Directive (PED) 2014/68/EU under the following conditions:

Device used on a pipe

Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure (in bar), DN = nominal diameter of the pipe

Type of fluid	Conditions
Fluid group 1, article 4, paragraph 1.c.i	DN ≤ 25
Fluid group 2, article 4, paragraph 1.c.i	DN ≤ 32 or PS*DN ≤ 1000
Fluid group 1, article 4, paragraph 1.c.ii	DN ≤ 25 or PS*DN ≤ 2000
Fluid group 2, article 4, paragraph 1.c.ii	DN ≤ 200 or PS ≤ 10 or PS*DN ≤ 5000

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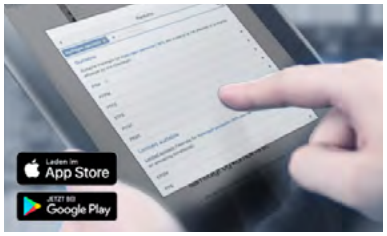
2.5. Foods and beverages/Hygiene

Conformity	Description
FDA	**FDA – Code of Federal Regulations** The variants with the housing made of stainless steel materials and the seal made of EPDM materials are compliant in their composition with the Code of Federal Regulations published by the FDA (Food and Drug Administration, USA) according to the manufacturer's declaration.

3. Materials

3.1. Bürkert resistApp



Bürkert resistApp – Chemical resistance chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start chemical resistance check

4. Dimensions

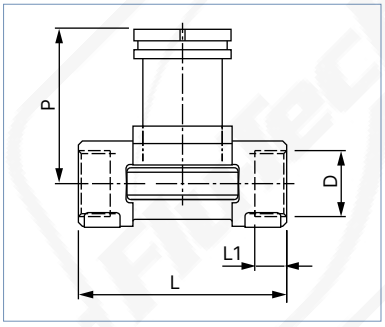
4.1. Metal T-fitting for measuring device with G 2" process connection

Internal thread connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable from DN 32 for use with an analytical measuring device

According to G, NPT or Rc in stainless steel (316L - 1.4404) and/or brass ($CuZn_{39}Pb_2$)



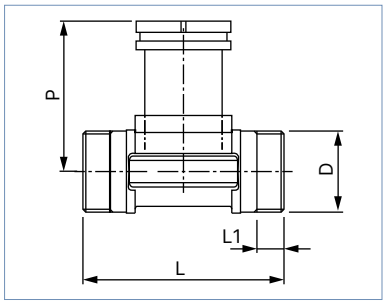
DN	P	L	L1	D [inch]
15	80.3	84.0	16.0	G ½
			17.0	NPT ½
			15.0	Rc ½
20	77.8	94.0	17.0	G ¾
			18.3	NPT ¾
			16.3	Rc ¾
25	78.0	104.0	23.5	G 1
			18.0	NPT 1
			18.0	Rc 1
32	81.6	119.0	23.5	G 1 ¼
			21.0	NPT 1¼
			21.0	Rc 1¼
40	85.4	129.0	23.5	G 1½
			20.0	NPT 1½
			19.0	Rc 1½
50	91.5	148.5	27.5	G 2
			24.0	NPT 2
			24.0	Rc 2

External thread connection

Note:

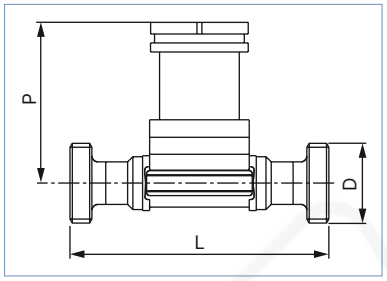
- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable from DN 32 for use with an analytical measuring device

According to G in stainless steel (316L - 1.4404) and/or brass ($CuZn_{39}Pb_2$) or PVC (only DN 06 and DN 08)



DN	P	L	L1	D	
				[Inch]	[mm]
06	75.3	90.0	14.0	G ½	–
08	75.3	90.0	14.0	G ½	–
15	80.3	84.0	11.5	G ¾	–
20	77.8	94.0	13.5	G 1	–
25	78.0	104.0	14.0	G 1¼	–
32	81.6	119.0	18.0	G 1½	–
40	85.4	129.0	19.0	–	M55 × 2
50	91.5	148.5	20.0	–	M64 × 2

According to SMS 1145 in stainless steel (316L - 1.4404)



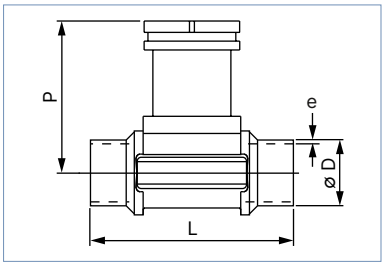
DN	P	L	D
25	77.8	130	Rd 40 x ⅙"
40	81.6	164	Rd 60 x ⅙"
50	85.4	173	Rd 70 x ⅙"

Weld spigot connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable from DN 32 for use with an analytical measuring device

According to EN ISO 1127/ISO 4200/DIN 11866 series B, SMS 3008 or BS 4825-1/ASME BPE/DIN 11866 series C in stainless steel (316L - 1.4404)



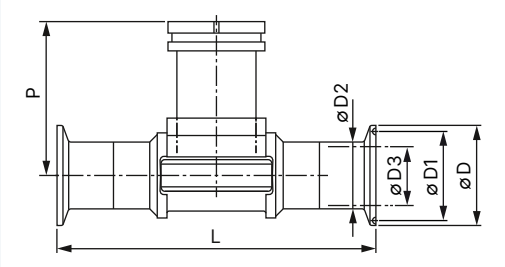
DN	P	Standard	L	ØD	e
15	80.3	EN ISO 1127/ISO 4200/DIN 11866 Series B	84.0	21.30	1.60
	–	SMS 3008	–	–	–
	–	ASME BPE/DIN 11866 Series C	–	–	–
20	77.8	EN ISO 1127/ISO 4200/DIN 11866 Series B	94.0	26.9	1.60
	–	SMS 3008	–	–	–
	83.3	ASME BPE/DIN 11866 Series C	84.0	19.05	1.65
25	78.0	EN ISO 1127/ISO 4200/DIN 11866 Series B	104.0	33.70	2.00
	77.8	SMS 3008	94.0	25.00	1.20
	77.8	BS 4825-1/ASME BPE/DIN 11866 Series C	94.0	25.40	1.65
32	81.6	EN ISO 1127/ISO 4200/DIN 11866 Series B	119.0	42.40	2.00
	–	SMS 3008	–	–	–
	78.0	BS 4825-1/ASME BPE/DIN 11866 Series C	104.0	32.00	1.65
40	85.4	EN ISO 1127/ISO 4200/DIN 11866 Series B	129.0	48.30	2.00
	81.6	SMS 3008	119.0	38.00	1.20
	81.6	BS 4825-1/ASME BPE/DIN 11866 Series C	119.0	38.10	1.65
50	91.5	EN ISO 1127/ISO 4200/DIN 11866 Series B	148.5	60.30	2.60
	85.4	SMS 3008	128.0	51.00	1.20
	85.4	BS 4825-1/ASME BPE/DIN 11866 Series C	128.0	50.80	1.65
65	–	EN ISO 1127/ISO 4200/DIN 11866 Series B	–	–	–
	91.5	SMS 3008	147.0	63.50	1.60
	91.5	BS 4825-1/ASME BPE/DIN 11866 Series C	147.0	63.50	1.65

Clamp connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable from DN 32 for use with an analytical measuring device

According to DIN 32676 series B, SMS 3017 or BS 4825-3/ASME BPE in stainless steel (316L - 1.4404)



DN	P	Standard	L	ØD	ØD1	ØD2	ØD3
15	80.3	DIN 32676 Series B 1.)	130	34.0	27.5	21.30	18.10
	–	SMS 3017	–	–	–	–	–
	–	ASME BPE	–	–	–	–	–
20	77.8	DIN 32676 Series B	150	50.5	43.5	26.90	23.70
	–	SMS 3017	–	–	–	–	–
	80.3	ASME BPE	119	25.0	19.6	19.05	15.75
25	78.0	DIN 32676 Series B	160	50.5	43.5	33.70	29.70
	77.8	SMS 3017	129	50.5	43.5	25.00	22.60
	77.8	BS 4825-3/ASME BPE	129	50.5	43.5	25.40	22.10
32	81.6	DIN 32676 Series B	180	50.5	43.5	42.40	38.40
	–	SMS 3017	–	–	–	–	–
	–	BS 4825-3/ASME BPE	–	–	–	–	–
40	85.4	DIN 32676 Series B	200	64.0	56.5	48.30	44.30
	81.6	SMS 3017	161	50.5	43.5	38.00	35.60
	81.6	BS 4825-3/ASME BPE	161	50.5	43.5	38.10	34.80
50	91.5	DIN 32676 Series B	230	77.5	70.5	60.30	55.10
	85.4	SMS 3017	192	64.0	56.5	51.00	48.60
	85.4	BS 4825-3/ASME BPE	192	64.0	56.5	50.80	47.50
65	–	DIN 32676 Series B	–	–	–	–	–
	91.5	SMS 3017	216	77.5	70.5	63.50	60.30
	91.5	BS 4825-3/ASME BPE	216	77.5	70.5	63.50	60.20

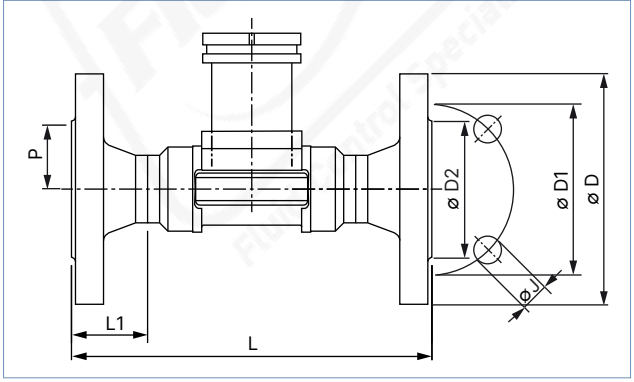
1.) Similar to DIN 32676 series B but with 34.0 mm clamp connection

Flange connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable from DN 32 for use with an analytical measuring device

According to EN1092-1/B1/PN 16 or ANSI B16- 5 in stainless steel (316L - 1.4404)



DN	P	Stand-ard	L	L1	ØD	ØD1	ØD2	ØJ
15	80.3	EN	130	23.5	95.0	65.0	45.0	4 × 14.0
		ANSI	130		89.0	60.3	34.9	4 × 15.8
20	77.8	EN	150	28.5	105.0	75.0	58.0	4 × 14.0
		ANSI	150		99.0	69.8	42.9	4 × 15.8
25	78.0	EN	160	28.5	115.0	85.0	68.0	4 × 14.0
		ANSI	160		108.0	79.4	50.8	4 × 15.8
32	81.6	EN	180	31.0	140.0	100.0	78.0	4 × 18.0
		ANSI	180		117.0	88.9	63.5	4 × 15.8
40	85.4	EN	200	36.0	150.0	110.0	88.0	4 × 18.0
		ANSI	200		127.0	98.4	73.0	4 × 15.8
50	91.5	EN	230	41.0	165.0	125.0	102.0	4 × 18.0
		ANSI	230		152.0	120.6	92.1	4 × 19.0

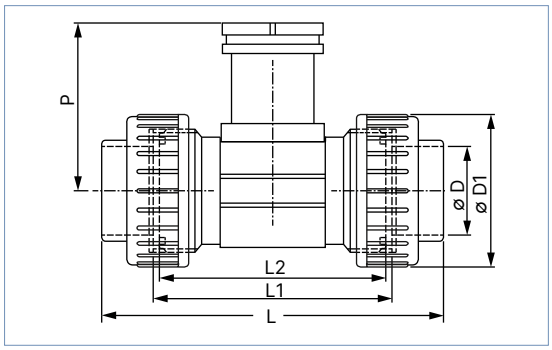
4.2. Plastic T-fitting for measuring device with G 2" process connection

True union connection with nut and solvent/fusion socket

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable for use with an analytical measuring device. Please note that the fittings DN 15...DN 25 to be used for the analytical measurement differ from those for the flow measurement.

According to DIN 8063, ASTM D 1785/76 or JIS K in PVC, DIN 16962 in PP or ISO 10931 in PVDF



DN	P	Standard	L	L1	L2	ØD	ØD1
15	80.4	DIN/ISO	128.0	96	90	20.00	43
		ASTM	130.0			21.30	
		JIS	129.0			18.40	
15 1.)	81.4	DIN/ISO	148.0	116	110	20.00	74
20	77.8	DIN/ISO	144.0	106	100	25.00	53
		ASTM	145.6			26.70	
		JIS	145.0			26.45	
20 1.)	81.4	DIN/ISO	154.0	116	110	25.00	74
25	78.0	DIN/ISO	160.0	116	110	32.00	60
		ASTM	161.4			33.40	
		JIS	161.0			32.55	
25 1.)	81.4	DIN/ISO	160.0	116	110	32.00	74
32	81.4	DIN/ISO	168.0	116	110	40.00	74
		ASTM	170.0			42.20	
		JIS	169.0			38.60	
40	85.2	DIN/ISO	188.0	127	120	50.00	83
		ASTM	190.2			48.30	
		JIS	190.0			48.70	
50	91.5	DIN/ISO	212.0	136	130	63.00	103
		ASTM	213.6			60.30	
		JIS	213.0			60.80	

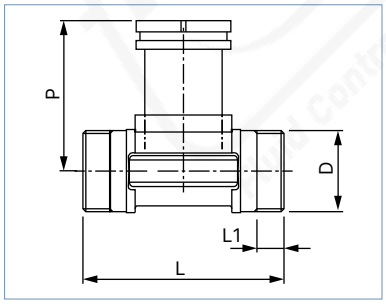
1.) Fitting for analytical measurement

External thread connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Not suitable for use with an analytical measuring device

According to G in PVC (only DN 06 and DN 08)



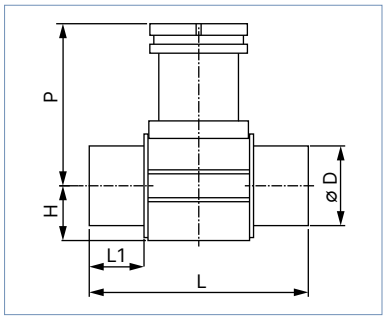
DN	P	L	L1	D
				[Inch]
06	75.3	90.0	14.0	G ½
08	75.3	90.0	14.0	G ½

Solvent/fusion spigot connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor
- Suitable from DN 32 for use with an analytical measuring device

According to DIN 8063 in PVC, DIN 16962 in PP or ISO 10931 in PVDF



DN	P	Standard	H	L	L1	ØD
15	80.4	DIN 8063	17.5	90	16.5	20
		DIN 16962		85	14.0	
		DIN 10931		85	14.0	
20	77.8	DIN 8063	17.5	100	20.0	25
		DIN 16962		92	16.0	
		DIN 10931		92	16.0	
25	78.0	DIN 8063	21.5	110	23.0	32
		DIN 16962		95	18.0	
		DIN 10931		95	18.0	
32	81.4	DIN 8063	27.5	110	27.5	40
		DIN 16962		100	20.0	
		DIN 10931		100	20.0	
40	85.2	DIN 8063	31.5	120	30.0	50
		DIN 16962		106	23.0	
		DIN 10931		106	23.0	
50	91.5	DIN 8063	39.5	130	37.0	63
		DIN 16962		110	27.0	
		DIN 10931		110	27.0	

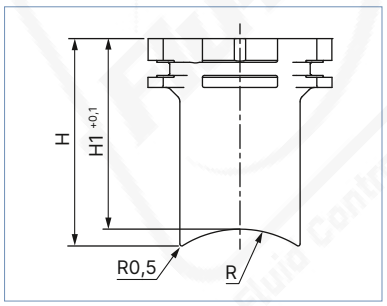
4.3. Straight connection for measuring device with G 2" process connection

Weld spigot connection with radius

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor for DN 50...DN 200 and with long sensor for DN 250...DN 350
- Only suitable from DN 50...DN 200 for use with an analytical measuring device

In stainless steel (316L - 1.4404)



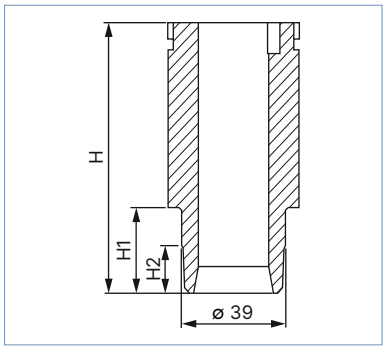
DN	H	H1	R
50	61.6	56.6	30.2
65	58.6	54.5	36.7
80	56.4	53.1	44.5
100	53.2	50.7	57.2
125	50.3	48.2	70.7
150	47.4	45.7	84.2
200	42.3	41.0	109.6
250	74.7	73.6	136.6
300	68.7	67.8	162.0
350	64.7	63.9	177.8

Fusion spigot connection

Note:

- Dimensions in mm, unless otherwise stated
- For use with a flowmeter with short sensor for DN 65...DN 100 and with long sensor for DN 125...DN 400
- Only suitable for DN 65...DN 100 for use with an analytical measuring device

In PE, PP or PVDF



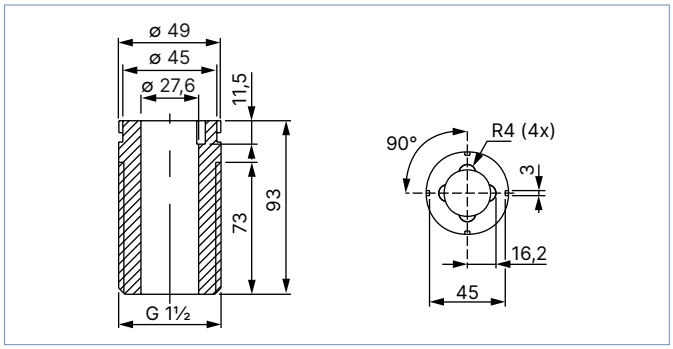
DN	H	Materials	H1	H2
65	72.5	PE	13.0	–
		PP	13.0	–
		PVDF	10.4	–
80	72.5	PE	15.6	–
		PP	15.6	–
		PVDF	12.5	–
100	72.5	PE	19.0	5.0
		PP	19.0	5.0
		PVDF	15.2	6.0
125	102.0	PE	24.2	8.0
		PP	–	–
		PVDF	–	–
150	102.0	PE	27.7	10.0
		PP	27.7	10.0
		PVDF	–	–
200	102.0	PE	38.9	16.0
		PP	38.9	16.0
		PVDF	–	–
250	102.0	PE	48.4	21.0
		PP	48.4	21.0
		PVDF	–	–
300	102.0	PE	54.5	24.0
		PP	54.5	24.0
		PVDF	–	–
350	102.0	PE	61.3	28.0
		PP	61.3	28.0
		PVDF	–	–
400	102.0	PE	69.1	31.5
		PP	–	–
		PVDF	–	–

Screw-on spigot connection

Note:

- Dimensions in mm, unless otherwise stated
- Only for use with a flowmeter with long sensor

In PVC, PP, PE

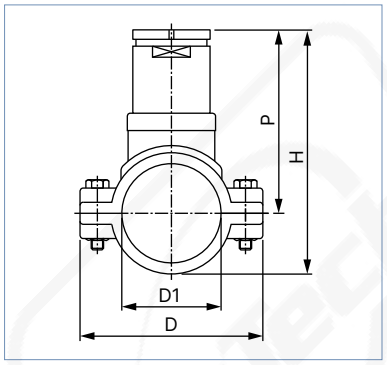


4.4. Saddle for flowmeter with G 2" process connection

Note:

- Dimensions in mm, unless otherwise stated
- Only for use with a flowmeter with long sensor

Body and adapter in PP, seal in EPDM, reinforcing ring in stainless steel



DN	P	H	D	D1
50	116.0	155	116	63
65	115.0	160	129	75
80	119.0	171	144	90
100	124.0	187	166	110
110	120.0	191	181	125
125	127.0	205	196	140
150	137.0	225	216	160
180	161.0	271	266	200
200	173.0	291	290	225

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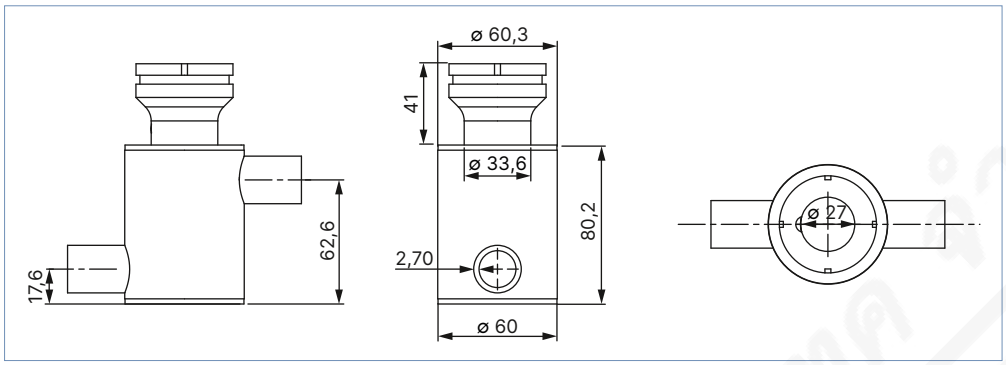
4.5. Measuring chamber for analytical measuring device with G 2" process connection

Note:
Dimensions in mm, unless otherwise stated

In stainless steel 316L - 1.4404, G ½" pipe connection

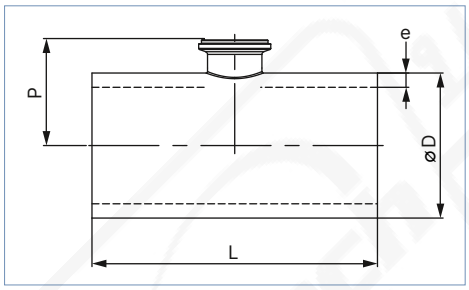


4.6. T-fitting for flowmeter with clamp process connection

Weld spigot connection

Note:
Dimensions in mm, unless otherwise stated

According to SMS 3008, BS 4825-1/ASME BPE/DIN 11866 Series C or DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A in stainless steel 316L



DN	P	Standard	L	ØD	e
40	42.5	SMS 3008	140.0	38.0	1.20
	43.7	ASME BPE/DIN 11866 Series C	120.6	38.1	1.65
	44.3	DIN 11850 Series 2/DIN 11866 Series A/ DIN EN 10357 Series A	120.0	41.0	1.50
50	49.3	SMS 3008	164.0	51.0	1.20
	50.6	BS 4825-1/ASME BPE/DIN 11866 Series C	146.0	50.8	1.65
	50.8	DIN 11850 Series 2/DIN 11866 Series A/ DIN EN 10357 Series A	160.0	53.0	2.00
65	54.4	SMS 3008	210.0	63.5	1.60
	55.4	BS 4825-1/ASME BPE/DIN 11866 Series C	158.8	63.5	1.65
	59.6	DIN 11850 Series 2/DIN 11866 Series A/ DIN EN 10357 Series A	210.0	70.0	2.00
80	60.7	SMS 3008	220.0	76.1	1.60
	62.0	BS 4825-1/ASME BPE/DIN 11866 Series C	171.5	76.2	1.65
	67.3	DIN 11850 Series 2/DIN 11866 Series A/ DIN EN 10357 Series A	260.0	85.0	2.00
100	73.8	BS 4825-1/ASME BPE/DIN 11866 Series C	209.6	101.6	2.11
	77.1	DIN 11850 Series 2/DIN 11866 Series A/ DIN EN 10357 Series A	310.0	104.0	2.00

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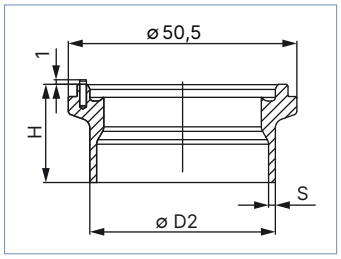
4.7. Straight connection for flowmeter with clamp process connection

Weld spigot connection

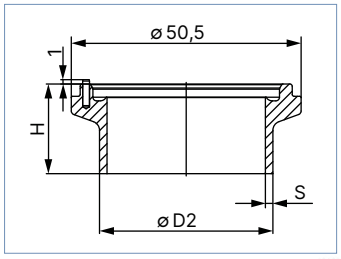
Note:
Dimensions in mm, unless otherwise stated

According to SMS 3008, DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A in stainless steel 316L



DN	Standard	H	S	D2
40	SMS 3008	21.7	1.2	38
	DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A	21.7	1.5	41
50	SMS 3008	21.7	1.2	38
	DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A	21.7	1.5	41
65	SMS 3008	19.7	1.2	38
	DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A	21.7	1.5	41
80	SMS 3008	19.7	1.2	38
	DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A	21.7	1.5	41
100	DIN 11850 Series 2/DIN 11866 Series A/DIN EN 10357 Series A	19.7	1.5	41

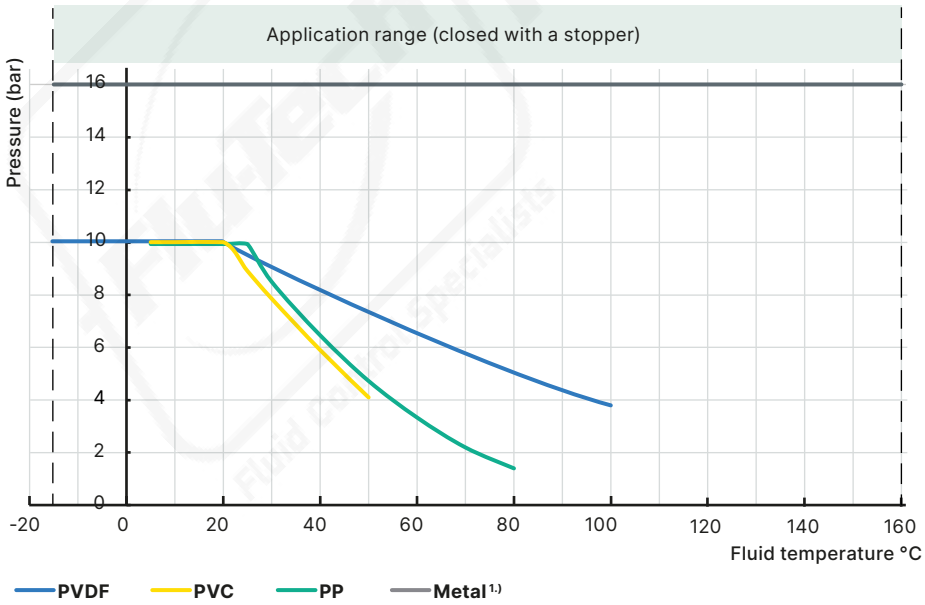
According to BS 4825-1/ASME BPE/DIN 11866 Series C in stainless steel 316L



DN	Standard	H	S	D2
40	ASME BPE/DIN 11866 Series C	23.7	1.65	38.1
50	BS 4825-1/ASME BPE/DIN 11866 Series C	23.7	1.65	38.1
65	BS 4825-1/ASME BPE/DIN 11866 Series C	19.7	1.65	38.1
80	BS 4825-1/ASME BPE/DIN 11866 Series C	19.7	1.65	38.1
100	BS 4825-1/ASME BPE/DIN 11866 Series C	19.7	1.65	38.1

5. Performance specifications

5.1. Pressure temperature diagram



1.) Excepted fitting DN 100 (- 15...+ 160 °C, PN 10) with clamp measuring device connection

6. Product installation

6.1. Installation notes

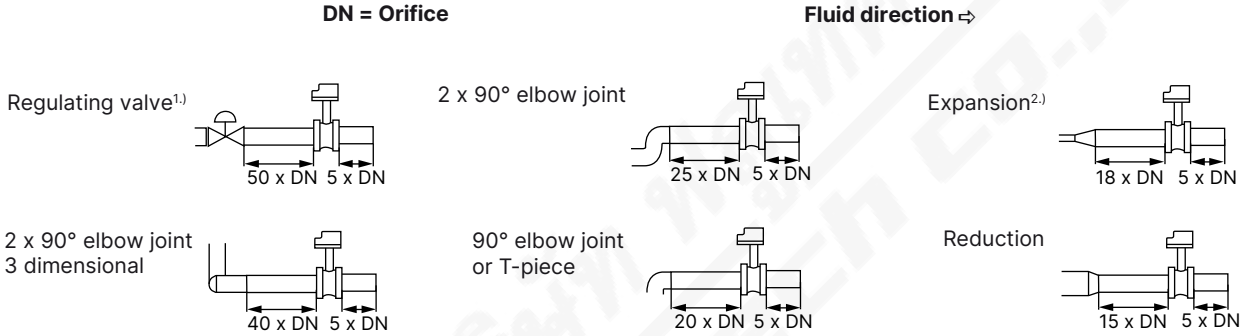
Flow measurement

Note:
The fitting combined with a measuring device is not suitable for use in gaseous media and steam.

Minimum straight distances upstream and downstream of the sensor must be observed. These stabilizing distances depend on the pipe's design. Increasing these distances or installing a flow conditioner may be necessary to obtain the best accuracy. For more information, refer to EN ISO 5167-1.

EN ISO 5167-1 specifies the straight inlet and outlet distances that must be complied with when installing fittings in pipe lines in order to achieve calm flow conditions. The most commonly used elements that could lead to turbulence in the flow are shown below. The related minimum inlet and outlet distances that ensure a calm flow are also specified.

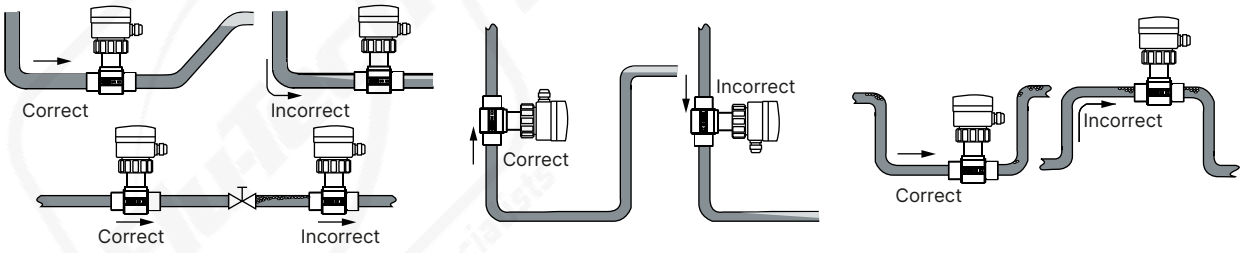
Make sure that the measuring conditions at the point of measurement are calm and problem-free.



1.) If the valve cannot be mounted after the measuring device, the minimal distances have to be respected.
2.) If an expansion cannot be avoided, the minimal distances have to be respected.
Please note minimum flow velocity

The complete measuring device can be installed in either horizontal or vertical pipes, but following additional conditions should be respected:

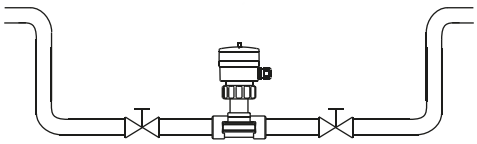
- The pipe always has to be filled with fluid at all times near the device.
- The pipe design must be such that no air bubbles or cavitation can form within the medium near the device at any time.



Pressure and temperature ratings must be respected according to the selected fitting material. The suitable pipe size is selected using the diagram in the chapter "Nominal size selection" of the fitting, see chapter "6.2. Selection of the nominal diameter" on page 17.

Analytical measurement

For these analytical measurements, we recommended a "U"- form bypass installation to ensure that the sensor does not dry out and can also be calibrate without stopping the whole process or to use the special designed measuring chamber.



The specially designed measuring chamber enables to install all pH, ORP, conductivity measuring devices in all pipe systems, either directly in the main flow or in a by-pass line. Additionally, the electrode is always be kept wet and is easily isolated from the main flow for calibration purposes.

6.2. Selection of the nominal diameter

The following graph is used to determine the appropriate DN of the pipe and fitting for the application, according to the fluid velocity and the flow rate. On the chart, the intersection of flow velocity and flow rate gives the appropriate diameter.

Note:

- For the fittings listed below, the corresponding nominal size in the bracket must be used:
  - External threads acc. to SMS 1145
  - Weld ends acc. to SMS 3008, BS4825-1/ASME BPE/DIN 11866 series C or DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A
  - Clamp acc. to SMS 3017, BS 4825-3/ASME BPE or DIN 32676 series A.
- For all other fittings, the corresponding nominal diameter without bracket applies.

Example 1:

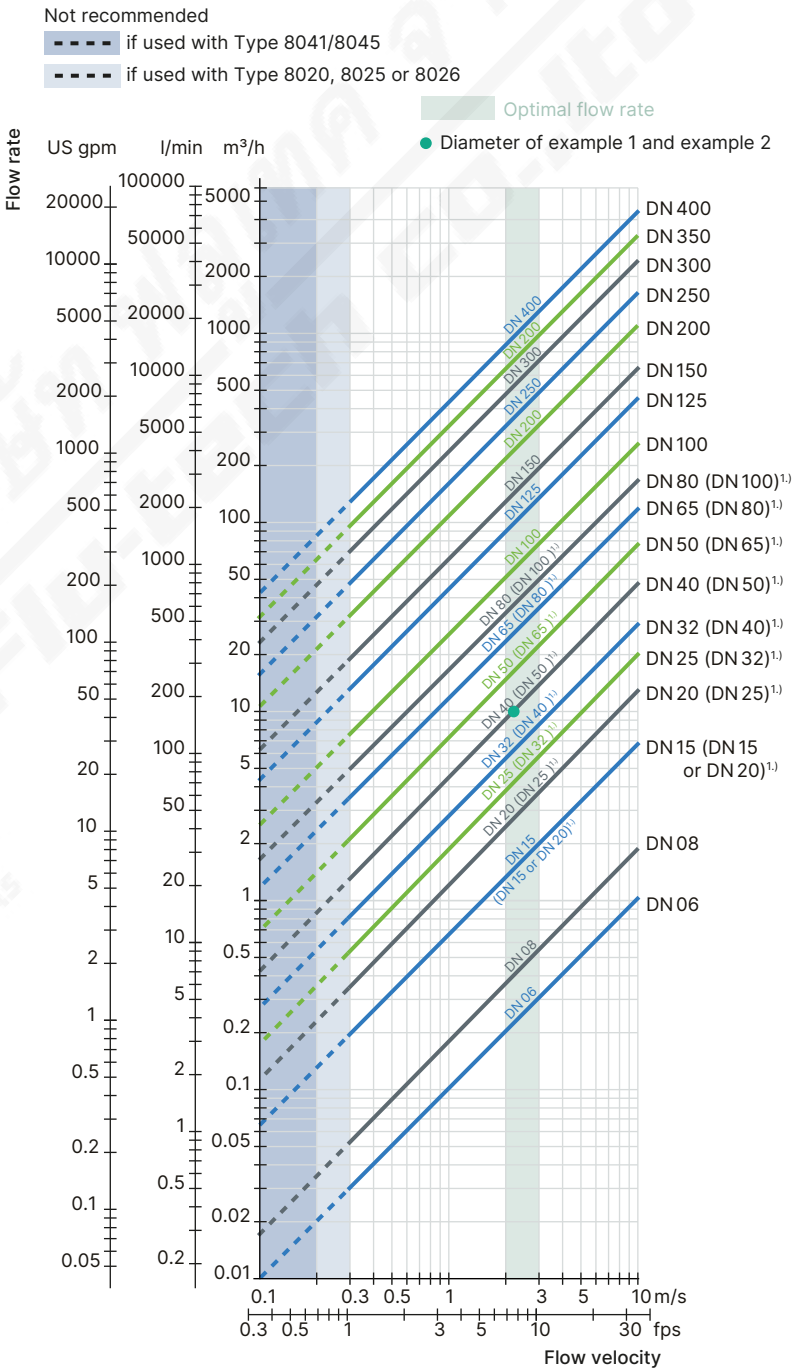
- Nominal flow: 10 m³/h
- Optimal flow rate: 2...3 m/s

Result: Select a pipe size of DN 40

Example 2 with external threads acc. to SMS 1145:

- Nominal flow: 10 m³/h
- Optimal flow rate: 2...3 m/s

Result: Select a pipe size of DN 50

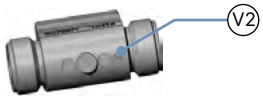


1.) See note at the beginning of this chapter.

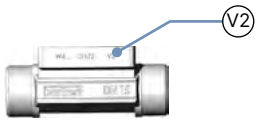
7. Product accessories

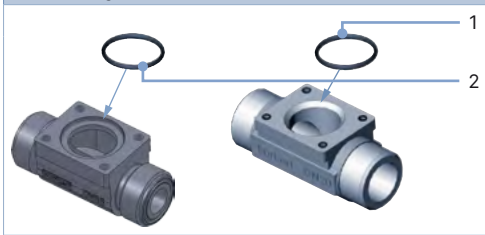
Note:
Since March 2012, the Type S020 fittings in DN 15 and DN 20 have been available in 2 variants with different K factors. Further information can be found in the user manual in the K factor chapter, see **Type S020** ▶.
The 2nd variant is identified by the "v2" marking. This "v2" marking can be found:

- on the bottom of the DN 15 or DN 20 fitting in plastic



- on the side of the DN 15 or DN 20 fitting in metal



Accessory	No.	Description
	**1**	O-ring seal for metal fitting
	2	O-ring seal [1.] for plastic fitting

1.) The O-ring is only intented for fitting body with flat bottom groove. The O-ring is not suitable for fitting body with ribbed groove (old variant).

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8. Networking and combination with other Bürkert products

8.1. Fitting for measuring device with G 2" process connection

Example:

Type S020

Flowmeter

Type 8020 ▸
Insertion flowmeter with paddle wheel

Type 8025 ▸
Insertion flowmeter or batch controller with paddle wheel

Type 8026 ▸
Insertion flowmeter with paddle wheel, ELEMENT design

Type 8041 ▸
Magnetic inductive Insertion flowmeter

Type 8045 ▸
Magnetic inductive Insertion flowmeter

Analytical measuring device

Type 8200 ▸
+
Type 8203 ▸
Armatures and pH- or ORP probes

Type 8220 ▸
Conductivity sensor

Type 8228 ▸
Conductivity sensor, ELEMENT design

Transmitter

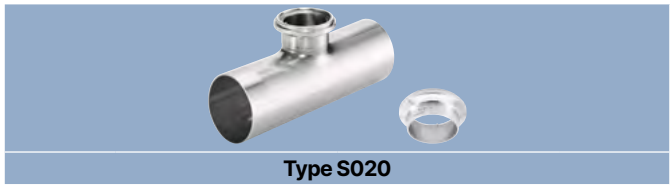
Type 8619 ▸
multiCELL - transmitter/controller

Type 8025 ▸
Flow transmitter
(only for flowmeter)

Type 8611 ▸
eCONTROL - Universal controller
panel, wall or rail-mounting variant

8.2. Fitting for for flowmeter with clamp process connection

Example:



Type S020

Flowmeter

Type 8041 ▸
Magnetic inductive Insertion flowmeter

Type 8045 ▸
Magnetic inductive Insertion flowmeter

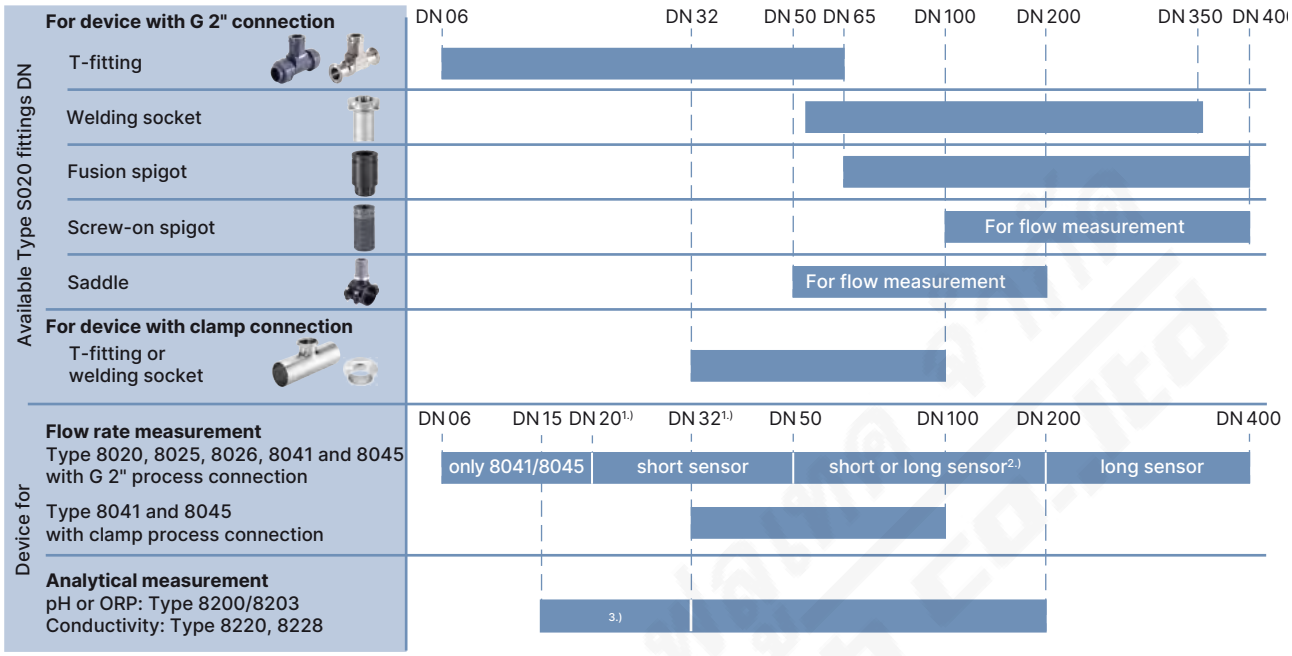
Transmitter

Type 8619 ▸
multiCELL - transmitter/controller

Type 8025 ▸
Flow transmitter

Type 8611 ▸
eCONTROL - Universal controller
panel, wall or rail-mounting variant

8.3. Combination of the S020 with a measuring device for flow rate, pH or ORP, conductivity measurement



1.) DN 20 fittings according to the following standards cannot be used with flowmeters Type 8020, Type 8025 and Type 8026.
DN 32 fittings according to the following standards cannot be used with analytical measuring devices Type 8200/8203, Type 8220 and Type 8228.
Standards: fittings with external threads according to SMS 1145, weld ends according to SMS 3008, BS 4825-1/ASME BPE/DIN 11866 series C or DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A, Clamp according to SMS 3017, BS 4825-3/ASME BPE, DIN 32676 series A.

2.) See the note for the use of the fitting in chapter "4. Dimensions" on page 6

3.) Only use plastic fittings with true union process connection in analytical variant, with nut and solvent/fusion socket according to DIN 8063 (PVC), to DIN 16962 (PP) or to ISO 10931 (PVDF), other materials are available on request.

For further details about the various combination possibilities (measuring device and fitting), please **consult the measuring device related data sheet**.

9. Ordering information

9.1. Bürkert eShop

Bürkert eShop – Easy ordering and quick delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

Order online now

9.2. Bürkert product filter

Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements?
Use the Bürkert product filter and find suitable articles for your application quickly and easily.

Try out our product filter

9.3. Ordering chart

Metal T-fitting DN 06...DN 65 for measuring device with G 2" process connection

Standard	Article no.								
	DN 06 - ½"	DN 08 - ½"	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65
Brass body & stainless steel adapter - Fluid temperature max. 160 °C, PN 16									
FKM seal									
Internal thread connection									
G	–	–	428712	428713	428714	428715	428716	428717	–
NPT	–	–	428718	428719	428720	428721	428722	428723	–
Rc	–	–	428724	428725	428726	428727	428728	428729	–
External thread connection									
G	–	–	428730	428731	428732	428733	428734	428735	–
Stainless steel body & stainless steel adapter - Fluid temperature max. 160 °C, PN 16									
FKM seal									
Internal thread connection									
G	–	–	428736	428737	428738	428739	428740	428741	–
NPT	–	–	428742	428743	428744	428745	428746	428747	–
Rc	–	–	428748	428749	428750	428751	428752	428753	–
External thread connection									
G	552434	552432	428754	428755	428756	428757	428758	428759	–
Weld spigot connection									
EN ISO 1127/ISO 4200/ DIN 11866 series B	–	–	428760	428761	428762	428763	428764	428765	–
Clamp connection									
DIN 32676 series B	–	–	428766 1.)	428767	428768	428769	428770	428771	–
Flange connection									
EN 1092-1/B1/PN 16	–	–	428772	428773	428774	428775	428776	428777	–
ANSI B16- 5	–	–	428778	428779	428780	428781	428782	428783	–
EPDM seal									
External thread connection									
SMS 1145	–	–	–	–	443317	–	443318	443319	–
Weld spigot connection									
SMS 3008	–	–	–	–	443309	–	443310	443311	443944 3.)
BS 4825-1/ASME BPE/ DIN 11866 series C	–	–	–	443734 2.)	443735	443736	443942	443943	443944
Clamp connection									
SMS 3017	–	–	–	–	443313	–	443314	443315	443969 3.)
BS 4825-3/ ASME BPE	–	–	–	443965 2.)	443966	–	443967	443968	443969

1.) Refer to clamp with D dimensions of 34 mm (see chapter "Clamp connection" on page 9)
2.) DN 20 (¾") only available in ASME BPE
3.) Refer to ASME BPE

Further variants on request

Process connection

- Weld spigot connection according to DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A
- Clamp according to DIN 32676 series A

Plastic T-fitting DN 06...DN 65 for measuring device with G 2" process connection

Standard	Article no.								
	DN 06 -½"	DN 08 -½"	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65
PVC body & PVC adapter - Fluid temperature max. 50 °C, PN 10									
FKM seal									
True union connection with nut and solvent socket									
DIN 8063	–	–	428670	428671	428672	428673	428674	428675	–
ASTM D 1785/76	–	–	428682	428683	428684	428685	428686	428687	–
JIS K	–	–	429078	429079	429080	429081	429082	429083	–
Solvent spigot connection									
DIN 8063	–	–	428676	428677	428678	428679	428680	428681	–
Analytical variant - True union connection with nut and solvent socket									
DIN 8063	–	–	430837	430838	430839	428673	428674	428675	–
EPDM seal									
External thread connection									
G	552561	550062	–	–	–	–	–	–	–
PP body & PP adapter - Fluid temperature max. 80 °C, PN 10									
FKM seal									
True union connection with nut and fusion socket									
DIN 16962	–	–	428688	428689	428690	428691	428692	428693	–
Fusion spigot connection									
DIN 16962	–	–	428694	428695	428696	428697	428698	428699	–
Analytical variant - True union connection with nut and fusion socket									
DIN 16962	–	–	430840	430841	430842	428691	428692	428693	–
PVDF body & PVDF adapter - Fluid temperature max. 100 °C, PN 10									
FKM seal									
True union connection with nut and fusion socket									
ISO 10931	–	–	428700	428701	428702	428703	428704	428705	–
Fusion spigot connection									
ISO 10931	–	–	428706	428707	428708	428709	428710	428711	–
Analytical variant - True union connection with nut and fusion socket									
ISO 10931	–	–	430843	430844	430845	428703	428704	428705	–

Straight connection DN 50...DN 400 for measuring device with G 2" process connection

Article no.										
DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350	DN 400
Weld/fusion spigot connection										
Stainless steel - with radius - Fluid temperature max. 160 °C, PN 16										
418111	418112	418113	418114	418115	418116	418117	418756	420070	416637	–
PE - Fluid temperature max. 70 °C, PN 10										
–	418642	418643	418644	418590	418645	418646	418647	418648	418649	418598
Analytical variant - PE - Fluid temperature max. 70 °C, PN 10										
–	418644	418644	418644	–	–	–	–	–	–	–
PP - Fluid temperature max. 80 °C, PN 10										
–	418650	418651	418652	–	418653	418654	418655	418656	418657	–
Analytical variant - PP - Fluid temperature max. 80 °C, PN 10										
–	418652	418652	418652	–	–	–	–	–	–	–
PVDF - Fluid temperature max. 100 °C, PN 10										
–	418658	418659	418660	–	–	–	–	–	–	–
Analytical variant - PVDF - Fluid temperature max. 100 °C, PN 10										
–	418660	418660	418660	–	–	–	–	–	–	–
Screw-on spigot connection										
PVC - Fluid temperature max. 50 °C, PN 10										
–	–	–	418170	418170	418170	418170	–	–	–	–
PE - Fluid temperature max. 70 °C, PN 10										
–	–	–	436489	436489	436489	436489	436489	436489	436489	436489
PP - Fluid temperature max. 50 °C, PN 10										
–	–	–	436488	436488	436488	436488	436488	436488	436488	436488

Saddle for flowmeter with G 2" process connection

Seal	Article no.								
	DN 50	DN 65	DN 80	DN 100	DN 110	DN 125	DN 150	DN 180	DN 200
PP body and PP adapter - Fluid temperature max. 60 °C, PN 10 (for PVC or PP pipe)									
EPDM	425138	425139	425140	425141	425142	425143	425144	433873	425416

Measuring chamber for analytical measuring device with G 2" process connection

Description	Article no.
Measuring chamber in stainless steel 316L - 1.4404 (other material on request)	553611

T-fitting DN 32...DN 100 for flowmeter Type 8041/8045 with clamp process connection

Standard	Article no.					
	DN 32 PN 16	DN 40 PN 16	DN 50 PN 16	DN 65 PN 16	DN 80 PN 16	DN 100 PN 10
Stainless steel - Fluid temperature max. 160 °C						
SMS 3008	–	564915	564916	564917	564918	1.)
BS 4825-1/ASME BPE/DIN 11866 series C	–	564920	564921	564922	564923	564924
DIN 11850 series 2/DIN 11866 series A/DIN EN 10357 series A	–	564925	564926	564927	564928	564929

Straight connection DN 32...DN 100 for flowmeter Type 8041/8045 with clamp process connection

Standard	Article no.					
	DN 32 PN 16	DN 40 PN 16	DN 50 PN 16	DN 65 PN 16	DN 80 PN 16	DN 100 PN 10
Stainless steel - Fluid temperature max. 160 °C						
SMS 3008	–	564696	564696	564697	564697	1.)
BS 4825-1/ASME BPE/DIN 11866 series C	–	564698	564698	564699	564699	564699
DIN 11850 series 2/DIN 11866 series A/DIN EN 10357 series A	–	565069	565069	565069	565069	565390

1.) Refer to BS 4825-1/ASME BPE/DIN 11866 series C or to DIN 11850 series 2/DIN 11866 series A/DIN EN 10357 series A.

Further variants on request

Process connection
According to EN ISO 1127/ISO 4200/DIN 11866 series B (DN 32...DN 80)

9.4. Ordering chart accessories

Accessories for all variants

Description	Article no.
Approvals/Certificates	
3 points flow calibration certificate 1.)	550676
Inspection certificate 3.1 (according to EN-ISO 10204)	803723
Test report 2.2 (according to EN-ISO 10204)	803722
Certification of Conformity for the surface Quality (according to DIN4762, DIN4768, ISO/4287/1)	804175
FDA declaration of conformity	803724

1.) S020 in combination with the inserted flow measuring device inserted, only for DN ≤ 200

Accessories for fitting for measuring device with G 2" process connection

Note:
Since March 2012, the Type S020 fittings in DN 15 and DN 20 have been available in 2 variants with different K factors. The 2nd variant is identified by the "v2" marking.

See chapter "7. Product accessories" on page 18.

Accessory	Description	Article no.
Sealing plug with ring, union nut and O-ring		
	Stainless steel	438755
	PVC	438754
	PP	627614
Adapter with 4 screws (DN 06...DN 65)		
	Stainless steel	555484
	PVC	561175
	PP	561176
	PVDF	561177
O-Ring set (DN 06...DN 65)		
Between fitting body & adapter		
FKM - for metal fitting (5 parts)		428971
EPDM - for metal fitting (5 parts)		428972
FKM - for plastic fitting (1 part 1.)		561043
EPDM - for plastic fitting (1 part 1.)		561044

1.) The O-ring is only intented for fitting body with flat bottom groove. The O-ring is not suitable for fitting body with ribbed groove (old variant).

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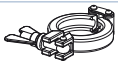
Accessories for fitting for flowmeter Type 8041/8045 with clamp process connection

Accessory	Description	Article no.
	1 EPDM fitting/measuring device seal	730837
	1 FEP fitting/measuring device seal	730839
	Clamp collar	731164
	Sealing plug for fitting	565200

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