DATA SHEET

Type 8010

bürkert
FLUID CONTROL SYSTEMS







Inline Paddle Wheel Flow Switch

- Economic integration in pipe systems without any additional piping
- Magnetic measuring principle
- Mechanical adjustment of setpoint

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

Type description

The Inline flow switch Type 8010 is specially designed for use in pure and water resembling fluids, free from air bubbles and magnetizable particles, to monitor minimum/ maximum values of flow.

The switch is made up of a sensor-fitting (Type S010) and a transmitter (Type SE10), quickly and easily connected together by a Quarter-Turn.

This device indicates the presence of a flow in the pipe by switching the Reed contact contained in the transmitter. The switching points min./max. for rising and falling velocities can be set with a screw within a defined range.

Two transmitter variants are available:
- Normally open (NO): The flow switches on the contact.
- Normally closed (NC): The flow switches off the contact.

These S010 sensor-fittings with different process connections are available in two versions:
- with a short blade “Range 1” fitted for the fittings DN 15…DN 40.
- with a long blade “Range 2” fitted for the fittings DN 32…DN 50.

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1. General Technical Data

Product properties	
Material	
Please make sure the device materials are compatible with the fluid you are using. Detailed information can be found in chapter "3.1. Chemical Resistance Chart – Bürkert resistApp" on page 4.	
Non wetted parts	
Housing, cover	PC, +20 % glass fibre reinforced
Setting screw	Plated brass
Screws	Stainless steel A4
Cable plug	PA
Wetted parts	
Sensor-fitting body, Sensor armature	Brass ($CuZn_{39}Pb_2$), stainless steel 316L (1.4404), PVC, PP, PVDF
Blade	PVDF
Axis	Stainless steel 316L
Seal	FKM (EPDM on request)
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 5.
Measuring element	Blade with magnet, Reed contact
Measuring principle	Magnetic by switching the Reed contact
Compatibility	Transmitter (SE10) compatible with Bürkert sensor-fitting (S010)
Pipe diameter	DN 15…DN 50
Switching range	4.7…75.4 l/min For the selection of the switching thresholds, see chapter "7.2. Selection of the switching threshold" on page 10.
Electrical data	
Operating voltage	Without
Outputs	Reed contact: potential free, form A, switch off or switch on • switching voltage: 150 V DC/250 V AC max. • switching current: 0.8 A max • switching power: 50 W max., 50 VA • operating current: 2.5 A
Recommended connection cable	0.14…0.5 mm^2 cross section; max. 100 m length
Medium data	
Fluid temperature	With sensor-fitting in: • PVC: 0…+50 °C (+32…+122 °F) • PP, PVDF, stainless steel or brass : 0…+55 °C (+32…+131 °F)
Fluid pressure	• Max. PN 10 (145 PSI) with plastic sensor-fitting • Max. PN 16 (232 PSI) with metal sensor-fitting Detailed information can be found in chapter "5.1. Pressure temperature diagram" on page 9.
Flow velocity	Max. 10 m/s
Viscosity	Max. 100 cSt
Rate of solid particles	Max. 1 %
Maximum particle size	0.5 mm
Process/Port connection & communication	
Port connection	• Metal: Internal or external thread, weld ends, clamp or flange • Plastic: True union with nut and solvent socket, external thread or spigot
Electrical connection	Cable plug: EN 175301-803 (provided)
Approvals and Certificates	
Standards	
Degree of protection according to IEC/EN 60529	IP65 with device wired and cable plug mounted and tightened
Directives	
CE directives	The applied standards, which verify conformity with the EU Directives, can be found on the EU Type Examination Certificate and/or the EU Declaration of conformity (if applicable).

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Pressure equipment directives	Complying with Article 4, Paragraph 1 of 2014/68/EU directive Detailed information on the pressure equipment directive can be found in chapter "2.1. Pressure Equipment Directive" on page 4.
Environment and installation	
Ambient temperature	Operation and storage: 0…+55 °C (+32…+131 °F)
Relative air humidity	≤80 %, without condensation
Height above sea level	Max. 2000 m
Operating condition	Continuous
Equipment mobility	Fixed
Application range	Indoor and outdoor (Protect the device against electromagnetic interference, ultraviolet rays and against the effects of climatic conditions)
Installation category	Category I according to UL/EN 61010-1
Pollution degree	Degree 2 according to UL/EN 61010-1

2. Approvals

2.1. Pressure Equipment Directive

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

Device used on a pipe

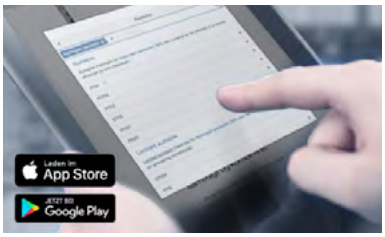
Note:

- The data in the table is independent of the chemical compatibility of the material and the fluid.
- PS = maximum admissible pressure, 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

3. Materials

3.1. Chemical Resistance Chart – Bürkert resistApp



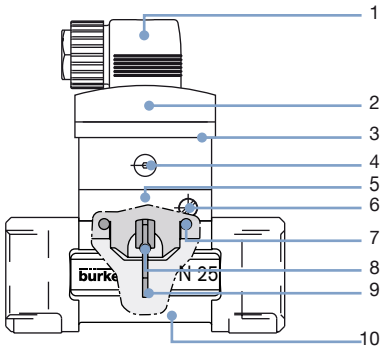
Bürkert resistApp – Chemical Resistance Chart

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

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3.2. Material specifications

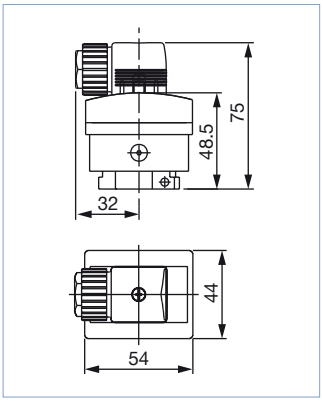


No.	Description	Material
1	Cable plug	PA
2	Cover	PC, +20 % glass fibre reinforced
3	Housing	PC, +20 % glass fibre reinforced
4	Setting screw	Plated brass
5	Sensor armature	Brass ($CuZn_{39}Pb_2$), stainless steel 316L (1.4404), PVC, PP or PVDF
6	Screw	Stainless steel A4
7	Seal	FKM (EPDM on request)
8	Axis	Stainless steel 316L
9	Blade	PVDF
10	Sensor-fitting body	Brass ($CuZn_{39}Pb_2$), stainless steel 316L (1.4404), PVC, PP or PVDF

4. Dimensions

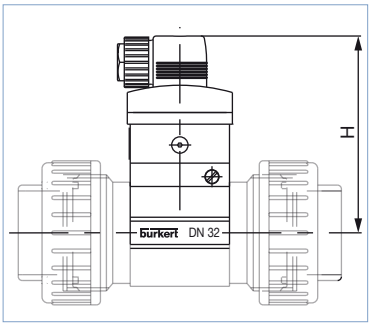
4.1. Transmitter Type SE10

Note:
Specifications in mm



4.2. Transmitter Type SE10 mounted in a Type S010 sensor-fitting

Note:
Specifications in mm



DN	H
15	100
20	97
25	97
32	101
40	105
50	111

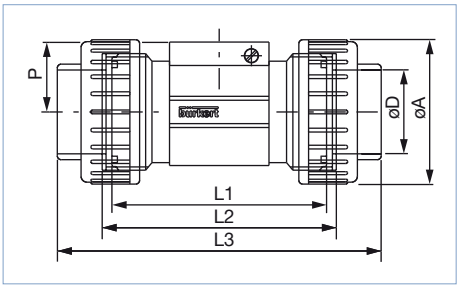
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4.3. Sensor-fitting Type S010

True union connection (with solvent or fusion spigot)

Note:
Specifications in mm (unless otherwise stated)

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

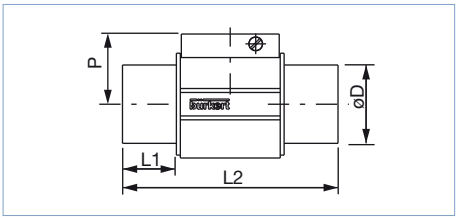


DN	P	L1	L2	Standard	L3	ØD	ØA
15	34.5	90	96	DIN/ISO	128.0	20.0	43
				ASTME	130.0	21.3	
				JIS	129.0	18.4	
20	32.0	100	106	DIN/ISO	144.0	25.0	53
				ASTME	145.6	26.7	
				JIS	145.0	26.45	
25	32.2	110	116	DIN/ISO	160.0	32.0	60
				ASTME	161.4	33.4	
				JIS	161.0	32.55	
32	35.8	110	116	DIN/ISO	168.0	40	44
				ASTME	170.0	42.2	
				JIS	169.0	38.60	
40	39.6	120	127	DIN/ISO	188.0	50	83
				ASTME	190.2	48.3	
				JIS	190.0	48.70	
50	45.7	130	136	DIN/ISO	212.0	63	103
				ASTME	213.6	60.3	
				JIS	213.0	60.80	

Spigot connection (with solvent or fusion spigot)

Note:
Specifications in mm (unless otherwise stated)

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



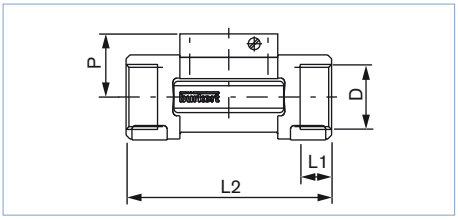
DN	P	Standard	L1	L2	ØD
15	34.5	DIN 8063	16.5	90	20
		DIN 16962	14.0	85	14
		ISO 10931			
20	32.0	DIN 8063	20.0	100	25
		DIN 16962	16.0	92	16
		ISO 10931			
25	32.2	DIN 8063	23.0	110	32
		DIN 16962	18.0	95	18
		ISO 10931			
32	35.8	DIN 8063	27.5	110	40
		DIN 16962	20.0	100	20
		ISO 10931			
40	39.6	DIN 8063	30.0	120	50
		DIN 16962	23.0	106	23
		ISO 10931			
50	45.7	DIN 8063	37.0	130	63
		DIN 16962	27.0	110	27
		ISO 10931			

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Internal thread connection

Note:
Specifications in mm (unless otherwise stated)

G, NPT or Rc in stainless steel or brass

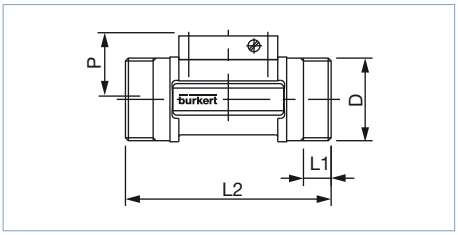


DN	P	L1	L2	D [inch]
15	34.5	16.0	85	G ½
		17.0		NPT ½
		15.0		Rc ½
20	32.0	17.0	95	G ¾
		18.3		NPT ¾
		16.3		Rc ¾
25	32.2	23.5	105	G 1
		18.0		NPT 1
		18.0		Rc 1
32	35.8	23.5	120	G 1¼
		21.0		NPT 1¼
		21.0		Rc 1¼
40	39.6	23.5	130	G 1½
		20.0		NPT 1½
		19.0		Rc 1½
50	45.7	27.5	150	G 2
		24.0		NPT 2
		24.0		Rc 2

External thread connection

Note:
Specifications in mm (unless otherwise stated)

G in stainless steel

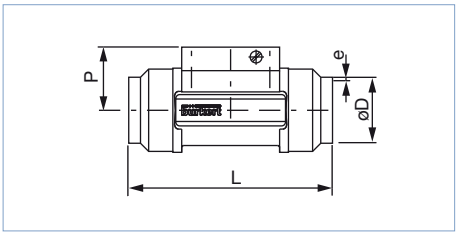


DN	P	L1	L2	D [inch]
15	34.5	11.5	84	G ¾
20	32.0	13.5	94	G 1
25	32.2	14.0	104	G 1¼
32	35.8	18.0	119	G 1½
40	39.6	19.0	129	M55 x 2
50	45.7	20.0	149	M64 x 2

Weld ends connection

Note:
Specifications in mm (unless otherwise stated)

EN ISO 1127/ISO 4200/DIN 11866 series B in stainless steel



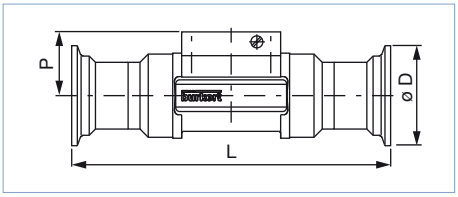
DN	P	L	ØD	e
15	34.5	84	21.3	1.6
20	32.0	94	26.9	1.6
25	32.2	104	33.7	2.0
32	35.8	119	42.4	2.0
40	39.6	129	48.3	2.0
50	45.7	149	60.3	2.6

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Clamp connection

Note:
Specifications in mm (unless otherwise stated)

DIN 32676 series B in stainless steel

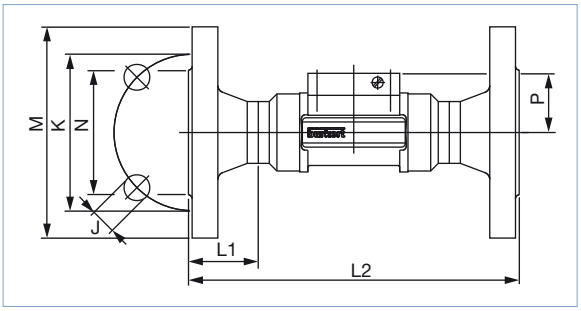


DN	P	L	ØD
15	34.5	130	34.0
20	32.0	150	50.5
25	32.2	160	50.5
32	35.8	180	50.5
40	39.6	200	64.0
50	45.7	230	77.5

Flange connection

Note:
Specifications in mm (unless otherwise stated)

EN 1092-1/B1/PN 16, ANSI B16-5, JIS 10K in stainless steel

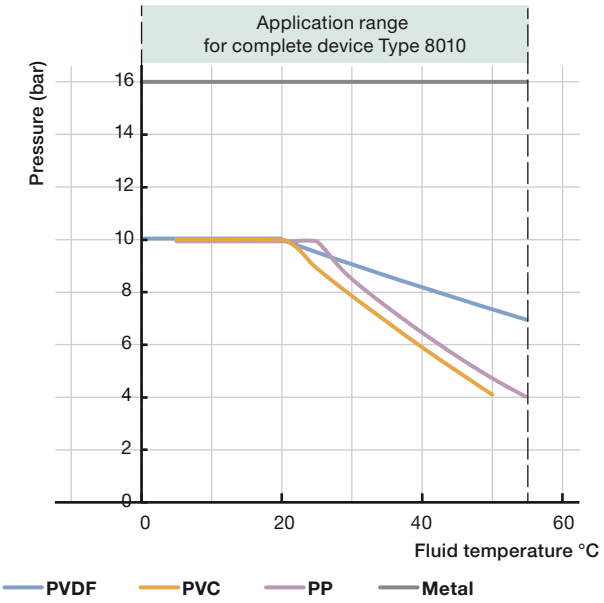


DN	P	Standard	L1	L2	J	M	K	N
15	34.5	EN	23.5	130	4 x 14.0	95.0	65.0	45.0
		ANSI			4 x 15.8	89.0	60.3	34.9
		JIS		152	4 x 15.0	95.0	70.0	51.0
20	32.0	EN	28.5	150	4 x 14.0	105.0	75.0	58.0
		ANSI			4 x 15.8	99.0	69.8	42.9
		JIS		178	4 x 15.0	100.0	75.0	56.0
25	32.2	EN	28.5	160	4 x 14.0	115.0	85.0	68.0
		ANSI			4 x 15.8	108.0	79.4	50.8
		JIS		216	4 x 19.0	125.0	90.0	67.0
32	35.8	EN	31.0	180	4 x 18.0	140.0	100.0	78.0
		ANSI			4 x 15.8	117.0	88.9	63.5
		JIS		229	4 x 19.0	135.0	100.0	76.0
40	39.6	EN	36.0	200	4 x 18.0	150.0	110.0	88.0
		ANSI			4 x 15.8	127.0	98.4	73.0
		JIS		241	4 x 19.0	140.0	105.0	81.0
50	45.7	EN	41.0	230	4 x 18.0	165.0	125.0	102.0
		ANSI			4 x 19.0	152.0	120.6	92.1
		JIS		267	4 x 19.0	155.0	120.0	96.0

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5. Performance specifications

5.1. Pressure temperature diagram



6. Product installation

6.1. Installation notes

Note:

- Use only with pure and water resembling fluids (solids content max. 1 %, viscosity max.100 cSt).
- The flow switch is not suitable for use in gaseous media and steam.

The 8010, which is unidirectional, must be installed according to the arrows (shown on Type S010 and Type SE10) indicating the direction of the flow.

The minimum straight upstream and downstream distances must be observed, respectively 10 x DN in and 3 x DN out from device. Make sure that the measuring conditions at the point of measurement are calm and problem-free.

The flow switch can be installed into either horizontal or vertical pipes. Important criteria for this are; to ensure that the measurement pipe is fully filled and that the measurement pipe is free from air bubbles and magnetisable particles.

7. Product operation

7.1. Measuring principle

The S010 Inline sensor-fitting is made up of a blade with a magnet. The SE10 transmitter contains a rocker arm with a magnet on each end.

When liquid flows through the pipe, the blade rotates and, by magnetic adherence, actuates the rocker arm. With this rotation, the upper magnet switches the Reed contact opening or closing the circuit, according to the version of the transmitter (normally open (NO): The flow switches on the contact; normally closed (NC): The flow switches off the contact).

The switching points can be set with a screw within a defined flow range, which depends on the type of blade and on the sensor-fitting DN. These are selected using the diagrams for selecting the switching threshold.

See chapter "7.2. Selection of the switching threshold" on page 10.

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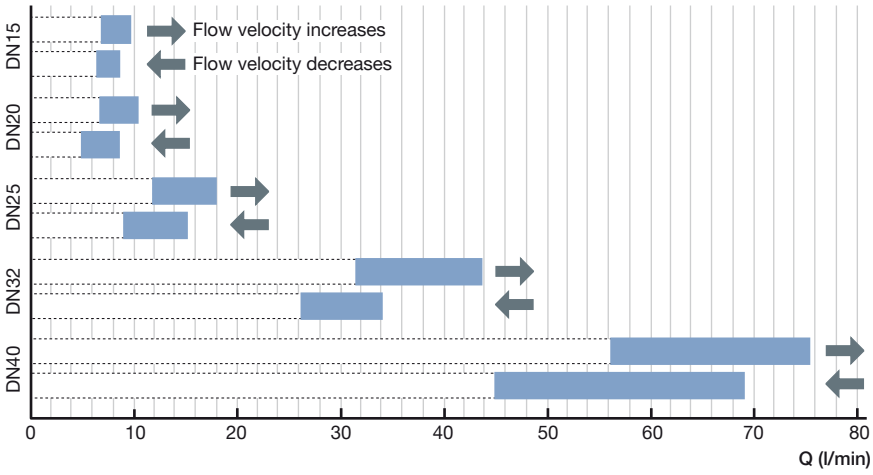
7.2. Selection of the switching threshold

Note:
The sensor-fitting with nominal diameters of 32 and 40 mm are designed for two different switching ranges (1 and 2) in relation to flow velocity and equivalent flow values. For all other sizes, there is only one switching range (1 or 2).

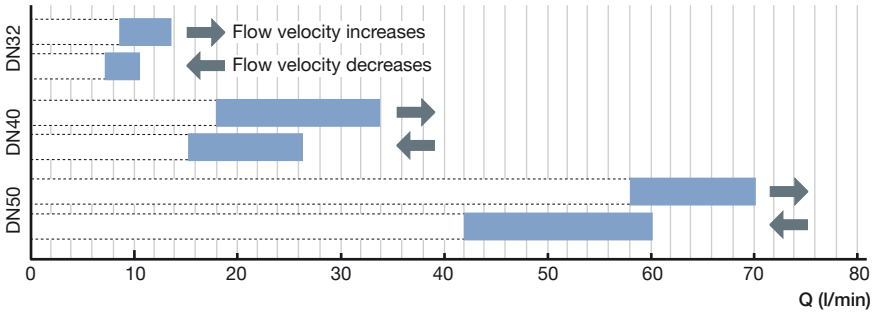
The type of blade (Range 1 or 2) and the sensor-fitting DN define the flow range in which the switching thresholds can be adjusted. The table below shows the switching end values depending on the selected model of type 8010.

Type of blade	Sensor-fitting DN	Flow velocity (Water) [m/s]			Flow rate [l/min]		Flow rate [m³/h]	
		Min.	Max.	Variation way	Min.	Max.	Min.	Max.
Range 1	15	0.65	0.90	Increasing	6.9	9.5	0.41	0.57
		0.60	0.80	Decreasing	6.4	8.5	0.38	0.51
	20	0.35	0.55	Increasing	6.6	10.4	0.40	0.62
		0.25	0.45	Decreasing	4.7	8.5	0.28	0.51
	25	0.40	0.60	Increasing	11.8	17.7	0.71	1.06
		0.30	0.50	Decreasing	8.8	14.7	0.53	0.88
	32	0.65	0.90	Increasing	31.4	43.4	1.88	2.61
		0.55	0.70	Decreasing	26.5	33.8	1.59	2.03
	40	0.75	1.00	Increasing	56.5	75.4	3.39	4.52
		0.60	0.90	Decreasing	45.2	67.9	2.71	4.07
Range 2	32	0.18	0.28	Increasing	8.5	13.5	0.51	0.81
		0.15	0.22	Decreasing	7.0	10.5	0.42	0.63
	40	0.25	0.45	Increasing	18.8	33.9	1.13	2.04
		0.20	0.35	Decreasing	15.1	26.4	0.90	1.58
	50	0.49	0.59	Increasing	58.0	70.0	3.48	4.20
		0.36	0.51	Decreasing	42.0	60.0	2.52	3.60

Type of blade: Range 1



Type of blade: Range 2



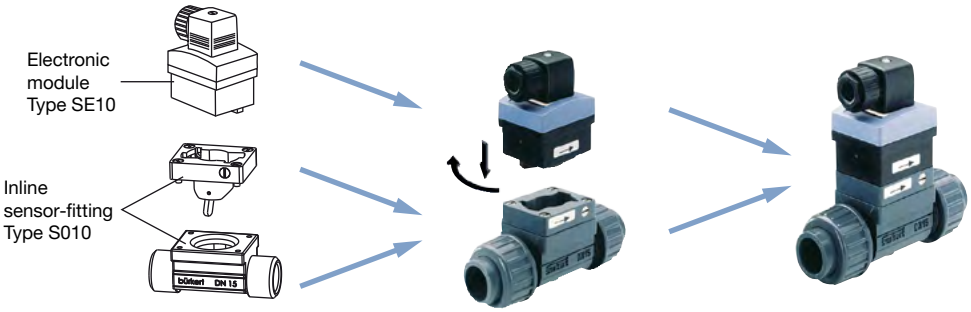
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8. Product design and assembly

8.1. Product assembly

Note:

- A complete device is made up of a compact Inline sensor-fitting Type S010 with blade and a transmitter Type SE10.
- The Inline sensor-fitting Typ S010 ensures simple installation into pipes from DN 15…DN 50. The transmitter can easily be installed into any Bürkert sensor-fitting system Type S010, by means of a quarter turn.
- The drawing shows the assembly of a sensor-fitting Type S010 with a process True union connection with nut and solvent/fusion socket and a transmitter Type SE10 (Type S010 + Type SE10 = Type 8010). This also applies to all versions of process connection and transmitter.



9. Ordering information

9.1. Bürkert eShop – Easy ordering and quick delivery



Bürkert eShop – Easy ordering and fast 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. Recommendation regarding product selection

A complete flow switch Type 8010 consists of a transmitter Type SE10 and an Inline sensor-fitting Type S010.

Two different components must be ordered in order to select a complete device. The following information is required:

- **Article no.** of the desired Type SE10 transmitter (see chapter "9.4. Ordering chart" on page 12)
- **Article no.** of the selected Type S010 Inline sensor-fitting (see chapter "9.4. Ordering chart" on page 12)

9.3. 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

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9.4. Ordering chart

Transmitter Type SE10 for sensor-fitting Type S010

Output	Electrical connection	Article no.
Reed contact, NO	Cable plug EN 175301-803	438087
Reed contact, NC	Cable plug EN 175301-803	438088

Sensor-fitting Type S010

Port connection	Standard	Article no. Range 1					Article no. Range 2		
		DN 15	DN 20	DN 25	DN 32	DN 40	DN 32	DN 40	DN 50
Brass, seal in FKM - Temperature max. 55 °C, PN 16									
Internal thread	G	438163	438164	438165	438166	438167	438169	438170	438171
	NPT	438172	438173	438174	438175	438176	438178	438179	438180
	Rc	438181	438182	438183	438184	438185	438187	438188	438189
Stainless steel, seal in FKM - Temperature max. 55 °C, PN 16									
Internal thread	G	438199	438200	438201	438202	438203	438205	438206	438207
	NPT	438208	438209	438210	438211	438212	438214	438215	438216
	Rc	438217	438218	438219	438220	438221	438223	438224	438225
External thread	G	438226	438227	1.)	1.)	1.)	1.)	1.)	1.)
Weld ends	EN ISO 1127/ ISO 4200/ DIN 11866 series B	438235	1.)	438237	1.)	1.)	1.)	1.)	438243
PVC, seal in FKM - Temperature max. 50 °C, PN 10									
True union	DIN 8063	438091	438092	438093	438094	438095	438097	438098	438099
	ASTM D 1785/76	438109	438110	438111	438112	438113	438115	438116	438117
	JIS 10K	438118	438119	438120	1.)	438122	1.)	438125	438126
Spigot	DIN 8063	438100	1.)	438102	438103	438104	1.)	1.)	1.)
PP, seal in FKM - Temperature max. 55 °C, PN 10									
True union	DIN 16962	438127	438128	438129	1.)	438131	438133	1.)	1.)
Spigot	DIN 16962	1.)	1.)	438138	1.)	438140	1.)	1.)	438144

1.) On request

Further versions on request

Process connection
- Weld ends 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 DIN 32676 series B, SMS 3017, BS 4825-3/ ASME BPE or DIN 32676 series A
- Flange EN 1092-1/B1/PN 16, ANSI B16-5 or JIS 10K
- True union ISO 10931
- Spigot ISO 10931

Material
PVDF - Temperature max. 55 °C, PN 10

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9.5. Ordering chart accessories

Seals for sensor-fitting body

Specification	Article no.					
	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
In FKM for sensor-fitting in metal	426340	426340	426340	426340	426340	426340
In EPDM for sensor-fitting in metal	426341	426341	426341	426341	426341	426341
In FKM for sensor-fitting in plastic	431555	431556	431557	431558	431559	431560
In EPDM for sensor-fitting in plastic	431561	431562	431563	431564	431565	431566

Sensor holder

Description	Article no.
Brass with short blade “range 1”, seal in FKM, screws for DN 15…DN 40	561761
Brass with long blade “range 2”, seal in FKM, screws for DN 32…DN 50	560906

Further versions on request

Material
Stainless steel sensor holder

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