Inline sensor fitting with integrated paddle wheel for measuring flow rate

- DN 06...DN 65
- Many different materials and process connections are available in order to optimally adapt to individual applications and process conditions.
- Closed pipeline system, i.e. the sensor is a component of the fitting
- Quarter-turn technology (Bürkert bayonet catch)
- 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 SE30
Transmitter for Inline sensor-fitting

Type SE32
Transmitter for Inline sensor-fitting

Type SE35
Transmitter or batch controller for Inline sensor-fitting

Type SE36
ELEMENT transmitter for Inline sensor fitting

Type 8611
eCONTROL - Universal controller

Type description

The Type S030 sensor fitting has an integrated paddle wheel for measuring flow rate, and is specifically designed for use with neutral, mildly aggressive, particle-free liquids

The compact sensor fitting (Type S030) must be equipped with a Bürkert transmitter (Type SE30, Type SE30 Ex, Type SE32, Type SE35, Type SE36, or Type 8611), which can be quickly and easily connected using a bayonet catch.
Bürkert's "Inline Quarter-Turn" technology guarantees leak-free operation.

The rotation of the paddle wheel (with permanent magnets in the paddles) is detected without contact by the sensitive transmitter element through the sensor fitting wall. The transmitter can be installed and uninstalled without having to open up the pipeline or interrupt the operating process.

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Visit product website

Table of contents

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

1. General technical data

Note:
In the range of sensor fittings, there are specific ones for the measurement of flow rates at high temperature and pressure. These are the Type S030-HT models, which can only be used with the Type SE30 transmitter in the high temperature variant (Type SE30-HT).

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 7.	
Further information on the materials can be found in chapter "3.2. Material specifications" on page 7.	
Non wetted parts	
Screw	Stainless steel (316L - 1.4404)
Wetted parts	
Sensor armature	Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP or PVDF (depending on the sensor fitting variant Type S030)
Axis	Ceramics (Al_2O_3)
Bearing	• Ceramics (Al_2O_3) • Iglidur® (only for Type S030-HT variant)
Paddle wheel	• PVDF • Stainless steel (316L - 1.4404) (only for Type S030-HT variant) • PP on request
Sensor-fitting body	Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP or PVDF (depending on the sensor fitting variant Type S030)
Seal	FKM or EPDM (depending on the sensor fitting variant Type S030) Further information can be found in chapter "11.5. Ordering chart accessories" on page 21.
Surface quality	For sensor-fitting in stainless steel: • inner surface: Ra < 1.6 µm • outer surface: Ra < 3.2 µm
Compatibility	• Bürkert flow transmitter Type SE30, Type SE30 Ex, Type SE32, Type SE35, Type SE36, batch controller Type SE35 or Universal controller Type 8611 • Bürkert flow transmitter Type SE30-HT (only for Type S030-HT variant)
Pipe diameter	DN 06...DN 65
Dimensions	Further information can be found in chapter "4. Dimensions" on page 8.
Measuring principle	Paddle wheel
Measuring range	Flow rate: 0.5...1200 l/min (0.13...317 gpm)
Performance data	
Measurement deviation	• Teach-in (via a remote transmitter): ± 1 % of the measured value [1.] at teach-in flow rate value • Standard K factor: ± 2.5 % of the measured value [1.]
Linearity	± 0.5 % of full scale [1.]
Repeatability	± 0.4 % of the measured value [1.]
Medium data	
Fluid	Clean, neutral or slightly aggressive, solid-free liquids
Fluid temperature	For sensor-fitting in: • PVC: 0...+ 50 °C (+ 32...+ 122 °F) • PP: 0...+ 80 °C (+ 32...+ 176 °F) • PVDF, stainless steel or brass: - 15...+ 100 °C (+ 5...+ 212 °F) • stainless steel (Type S030-HT variant): - 15...+ 125 °C (+ 5...+ 257 °F)
Fluid pressure	For sensor-fitting in: • plastic: max. PN 10 • metal: max. PN 16 • stainless steel (Type S030-HT variant): – max. PN 40 (for - 15...+ 90 °C (+ 5...+ 194 °F) temperature range) – max. PN 25 (for + 90...+ 125 °C (+ 194...+ 257 °F) temperature range) Further information can be found in chapter "5.1. Pressure temperature diagram" on page 13.
Viscosity	Max. 300 cSt.
Rate of solid particles	Max. 1 %

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Maximum particle size	0.5 mm
Flow velocity	• 0.3...10 m/s • 0.5...10 m/s (only for Type S030-HT variant) Further information can be found in chapter "6.2. Selection of the nominal diameter" on page 15.
Process/Pipe connection & communication	
Measuring devices connection	Bürkert bayonet catch
Pipe connection	For sensor-fitting in: • plastic: true union with nut and solvent/fusion socket, spigot or external thread • metal: internal or external thread, weld ends, clamp or flange • stainless (Type S030-HT variant): internal or external thread, weld ends (clamp or flange on request)
Approvals and conformities	
Directives	
CE directive	Further information on the CE directive can be found in chapter "2.3. Standards" on page 6.
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 6.
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 "11.5. Ordering chart accessories" on page 21.
Materials	• Inspection certificate 3.1 (according to EN-ISO 10204) • Certification of conformity for the surface finish (according to DIN4762, DIN4768, ISO/4287/1) Must be ordered separately. Further information can be found in chapter "11.5. Ordering chart accessories" on page 21.
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 "11.5. Ordering chart accessories" on page 21.
Environment and installation	
Ambient temperature	Operation and storage: for sensor-fitting in • PVC: - 15...+ 60 °C (+ 5...+ 122 °F) • PP: - 15...+ 80 °C (+ 5...+ 176 °F) • PVDF, stainless steel or brass: - 15...+ 100 °C (+ 5...+ 212 °F) The temperature limits also depend on the used transmitter, see the relevant data sheet or operating instructions for more information.

1.) Under reference conditions i.e. measuring medium = water, ambient and water temperature = + 20 °C (+ 68 °F), observing the minimum the minimum inlet and outlet sections and the appropriate inner diameter of the pipe.

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

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

2.5. Foods and beverages/Hygiene

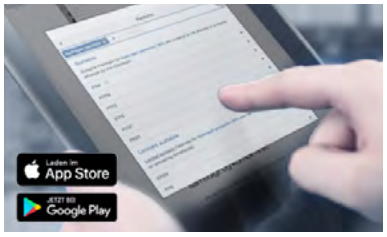
Note:
The specific sensor fittings (S030-HT) for the measurement of flow rates at high temperature and pressure is not covered by this certificat.

Conformity	Description
FDA	**FDA – Code of Federal Regulations** The variants with the body and the sensor armature made of PVDF or stainless steel materials, the paddle wheel made of PVDF material and the seal made of FKM or 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.

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

3. Materials

3.1. Bürkert resistApp



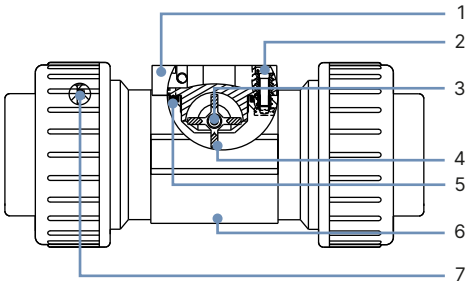
Bürkert resistApp – Chemical resistance chart

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

3.2. Material specifications

Note:
The following picture describes the sensor-fitting with a process true union connection with nut and solvent/fusion socket, but this also applies to all variants of process connection.



No.	Element	Material
1	Sensor armature	Stainless steel
2	Screws	Stainless steel
3	Axis and bearings	• Axis in ceramics (Al_2O_3) • Bearings in: – ceramics (Al_2O_3) – Iglidur® (only for Type S030-HT variant)
4	Paddle wheel	• PVDF • Stainless steel (only for Type S030-HT variant)
5	Seal	FKM or EPDM (depending on Type S030 variant)
6	Sensor-fitting body	• Stainless steel (316L - 1.4404), brass ($CuZn_{39}Pb_2$), PVC, PP, PVDF (depending on the sensor-fitting variant Type S030) • Stainless steel (316L - 1.4404) (only for Type S030-HT)
7	Seals	FKM or EPDM (depending on the sensor-fitting variant Type S030 and only for true union connection with nut and solvent/fusion socket)

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

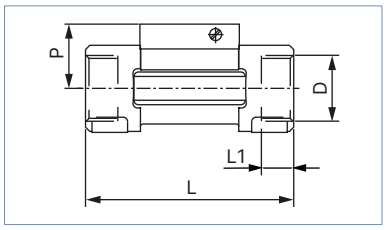
4. Dimensions

4.1. Metal sensor-fitting

Internal thread connection

Note:
Dimensions in mm, unless otherwise stated

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

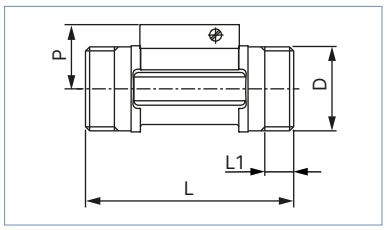


DN	P	L	L1	D
				[inch]
15	34.5	84.0	16.0	G ½
			17.0	NPT ½
			15.0	Rc ½
20	32.0	94.0	17.0	G ¾
			18.3	NPT ¾
			16.3	Rc ¾
25	32.2	104.0	23.5	G 1
			18.0	NPT 1
			18.0	Rc 1
32	35.8	119.0	23.5	G 1¼
			21.0	NPT 1¼
			21.0	Rc 1¼
40	39.6	129.0	23.5	G 1½
			20.0	NPT 1½
			19.0	Rc 1½
50	45.7	148.5	27.5	G 2
			24.0	NPT 2
			24.0	Rc 2

External thread connection

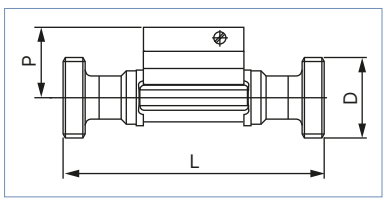
Note:
Dimensions in mm, unless otherwise stated

G, NPT or Rc in stainless steel (316L - 1.4404) or brass ($CuZn_39Pb_2$)



DN	P	L	L1	D
				[inch]
06	29.5	90.0	14.0	G ½
08	29.5	90.0	14.0	G, NPT or Rc ½
15	34.5	84.0	11.5	G ¾
20	32.0	94.0	13.5	G 1
25	32.2	104.0	14.0	G 1¼
32	35.8	119.0	18.0	G 1½

SMS 1145 in stainless steel (316L - 1.4404)



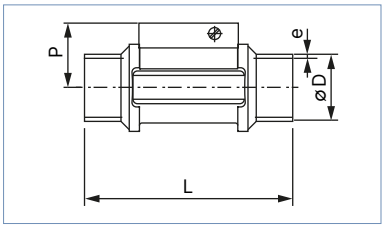
DN	P	L	D
25	32.0	130	Rd 40 × ⅙"
40	35.8	164	Rd 60 x ⅙"
50	39.6	173	Rd 70 x ⅙"

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Weld spigot connection

Note:
Dimensions in mm, unless otherwise stated

EN ISO 1127/ISO 4200/DIN 11866 series B, 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 - 1.4404)



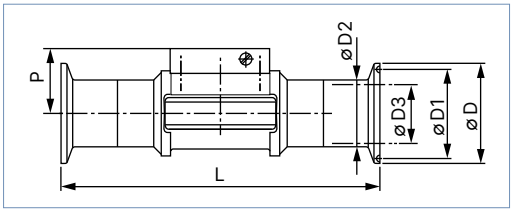
DN	P	Standard	L	ØD	e
08	–	EN ISO 1127/ISO 4200/DIN 11866 series B	–	–	–
	–	SMS 3008	–	–	–
	–	ASME BPE/DIN 11866 series C	–	–	–
	29.5	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	96.0	13.00	1.50
15	34.5	EN ISO 1127/ISO 4200/DIN 11866 series B	84.0	21.30	1.60
	–	SMS 3008	–	–	–
	–	ASME BPE/DIN 11866 series C	–	–	–
	34.5	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	84.0	19.0	1.50
20	32.0	EN ISO 1127/ISO 4200/DIN 11866 series B	94.0	26.9	1.60
	–	SMS 3008	–	–	–
	34.5	ASME BPE/DIN 11866 series C	84.0	19.05	1.65
	34.5	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	84.0	23.00	1.50
25	32.2	EN ISO 1127/ISO 4200/DIN 11866 series B	104.0	33.70	2.00
	32.0	SMS 3008	94.0	25.00	1.20
	32.0	BS 4825-1/ASME BPE/DIN 11866 series C	94.0	25.40	1.65
	32.0	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	94.0	29.00	1.50
32	35.8	EN ISO 1127/ISO 4200/DIN 11866 series B	119.0	42.40	2.00
	–	SMS 3008	–	–	–
	32.2	BS 4825-1/ASME BPE/DIN 11866 series C	104.0	32.00	1.65
	32.2	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	104.0	35.00	1.50
40	39.6	EN ISO 1127/ISO 4200/DIN 11866 series B	129.0	48.30	2.00
	35.8	SMS 3008	119.0	38.00	1.20
	35.8	BS 4825-1/ASME BPE/DIN 11866 series C	119.0	38.10	1.65
	35.8	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	119.0	41.00	1.50
50	45.7	EN ISO 1127/ISO 4200/DIN 11866 series B	148.5	60.30	2.60
	39.6	SMS 3008	128.0	51.00	1.20
	39.6	BS 4825-1/ASME BPE/DIN 11866 series C	128.0	50.80	1.65
	39.6	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	128.0	53.00	1.50
65	–	EN ISO 1127/ISO 4200/DIN 11866 series B	–	–	–
	45.7	SMS 3008	147.0	63.50	1.60
	45.7	BS 4825-1/ASME BPE/DIN 11866 series C	147.0	63.50	1.65
	–	DIN 11850 series 2/DIN 11866 series A/ DIN EN 10357 series A	–	–	–

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Clamp connection

Note:
Dimensions in mm, unless otherwise stated

DIN 32676 series B, SMS 3017 [1.], BS 4825-3/ASME BPE [1.] or DIN 32676 series A in stainless steel (316L - 1.4404)



DN	P	Standard	L	ØD	ØD1	ØD2	ØD3
08	–	DIN 32676 series B [2.]	–	–	–	–	–
	–	SMS 3017	–	–	–	–	–
	–	ASME BPE	–	–	–	–	–
	29.5	DIN 32676 series A	125	34.0	27.5	13.00	10.00
15	34.5	DIN 32676 series B [2.]	130	34.0	27.5	21.30	18.10
	–	SMS 3017	–	–	–	–	–
	–	ASME BPE	–	–	–	–	–
	29.5	DIN 32676 series A	119	34.0	27.5	19.00	16.00
20	32.0	DIN 32676 series B	150	50.5	43.5	26.90	23.70
	–	SMS 3017	–	–	–	–	–
	34.5	ASME BPE	119	25.0	19.6	19.05	15.75
	34.5	DIN 32676 series A	119	34.0	27.5	23.00	20.00
25	32.2	DIN 32676 series B	160	50.5	43.5	33.70	29.70
	32.0	SMS 3017	129	50.5	43.5	25.00	22.60
	32.0	BS 4825-3/ASME BPE	129	50.5	43.5	25.40	22.10
	32.0	DIN 32676 series A	136	50.5	43.5	29.00	26.00
32	35.8	DIN 32676 series B	180	50.5	43.5	42.40	38.40
	–	SMS 3017	–	–	–	–	–
	–	BS 4825-3/ASME BPE	–	–	–	–	–
	–	DIN 32676 series A	–	–	–	–	–
40	39.6	DIN 32676 series B	200	64.0	56.5	48.30	44.30
	35.8	SMS 3017	161	50.5	43.5	38.00	35.60
	35.8	BS 4825-3/ASME BPE	161	50.5	43.5	38.10	34.80
	35.8	DIN 32676 series A	161	50.5	43.5	41.00	38.00
50	45.7	DIN 32676 series B	230	77.5	70.5	60.30	55.10
	39.6	SMS 3017	192	64.0	56.5	51.00	48.60
	39.6	BS 4825-3/ASME BPE	192	64.0	56.5	50.80	47.50
	39.6	DIN 32676 series A	170	64.0	56.5	53.00	50.00
65	–	DIN 32676 series B	–	–	–	–	–
	45.7	SMS 3017	216	77.5	70.5	63.50	60.3
	45.7	BS 4825-3/ASME BPE	216	77.5	70.5	63.50	60.2
	–	DIN 32676 series A	–	–	–	–	–

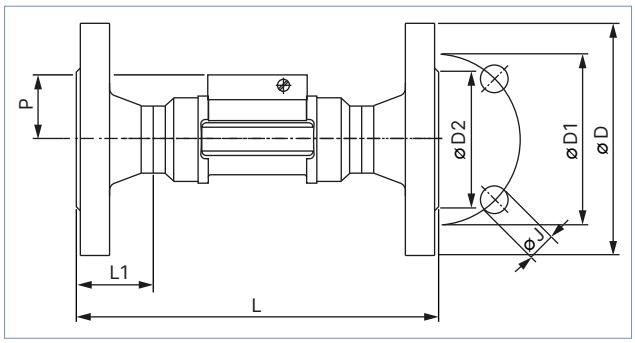
1.) Available with internal surface finish Ra < 0.8 µm
2.) Similar to DIN 32676 series B, but with 34.0 mm clamp connection

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Flange connection

Note:
Dimensions in mm, unless otherwise stated

EN1092-1/B1/PN 16, ANSI B16- 5 or JIS 10 K in stainless steel (316L - 1.4404)



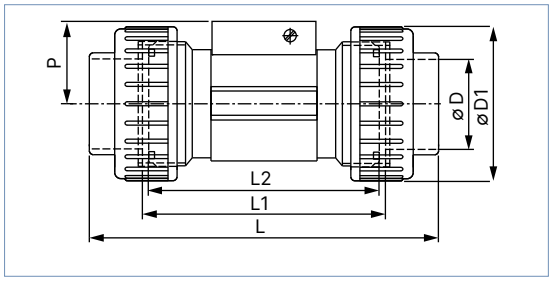
DN	P	Standard	L	L1	ØD	ØD1	ØD2	ØJ
15	34.5	EN	130	23.5	95.0	65.0	45.0	4 × 14.0
		ANSI	130		89.0	60.3	34.9	4 × 15.8
		JIS	152		95.0	70.0	51.0	4 × 15.0
20	32.0	EN	150	28.5	105.0	75.0	58.0	4 × 14.0
		ANSI	150		99.0	69.8	42.9	4 × 15.8
		JIS	178		100.0	75.0	56.0	4 × 15.0
25	32.2	EN	160	28.5	115.0	85.0	68.0	4 × 14.0
		ANSI	160		108.0	79.4	50.8	4 × 15.8
		JIS	216		125.0	90.0	67.0	4 × 19.0
32	35.8	EN	180	31.0	140.0	100.0	78.0	4 × 18.0
		ANSI	180		117.0	88.9	63.5	4 × 15.8
		JIS	229		135.0	100.0	76.0	4 × 19.0
40	39.6	EN	200	36.0	150.0	110.0	88.0	4 × 18.0
		ANSI	200		127.0	98.4	73.0	4 × 15.8
		JIS	241		140.0	105.0	81.0	4 × 19.0
50	45.7	EN	230	41.0	165.0	125.0	102.0	4 × 18.0
		ANSI	230		152.0	120.6	92.1	4 × 19.0
		JIS	267		155.0	120.0	96.0	4 × 19.0

4.2. Plastic sensor-fitting

True union connection with nut and solvent/fusion socket

Note:
Dimensions 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



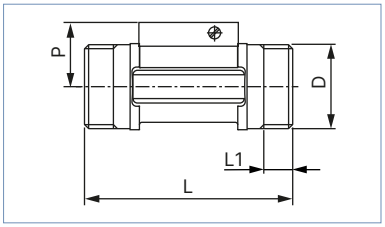
DN	P	Standard	L	L1	L2	ØD	ØD1
08 [1.)]	29.5	DIN/ISO	122.0	92	90	12.00	–
		ASTM	–	–	–	–	–
		JIS	–	–	–	–	–
15	34.5	DIN/ISO	128.0	96	90	20.00	43
		ASTM	130.0			21.30	
		JIS	129.0			18.40	
20	32.0	DIN/ISO	144.0	106	100	25.00	53
		ASTM	145.6			26.70	
		JIS	145.0			26.45	
25	32.2	DIN/ISO	160.0	116	110	32.00	60
		ASTM	161.4			33.40	
		JIS	161.0			32.55	
32	35.8	DIN/ISO	168.0	116	110	40.00	74
		ASTM	170.0			42.20	
		JIS	169.0			38.60	
40	39.6	DIN/ISO	188.0	127	120	50.00	83
		ASTM	190.2			48.30	
		JIS	190.0			48.70	
50	45.7	DIN/ISO	212.0	136	130	63.00	103
		ASTM	213.6			60.30	
		JIS	213.0			60.80	

1.) Only available in PVC

External thread connection

Note:
Dimensions in mm, unless otherwise stated

G, NPT or Rc in PVC (only DN 06 and DN 08) or PVDF (only DN 08)

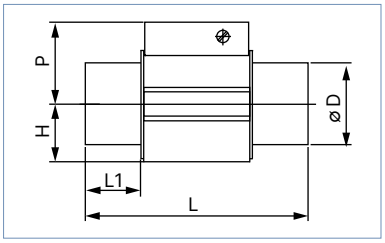


DN	P	L	L1	D [inch]
06	29.5	90.0	14.0	G ½
08	29.5	90.0	14.0	G, NPT or Rc ½

Solvent/fusion spigot connection

Note:
Dimensions in mm, unless otherwise stated

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



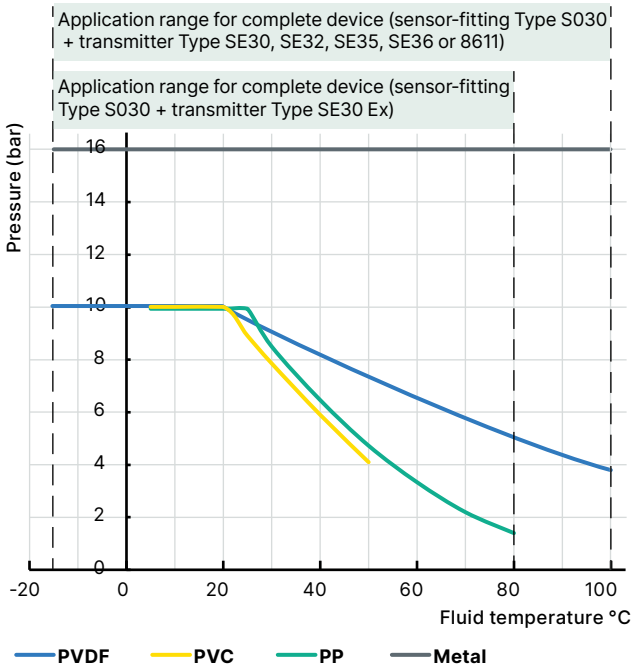
DN	P	Standard	H	L	L1	ØD
15	34.5	DIN 8063	17.5	90	16.5	20
		DIN 16962		85	14.0	
		DIN 10931		85	14.0	
20	32.0	DIN 8063	17.5	100	20.0	25
		DIN 16962		92	16.0	
		DIN 10931		92	16.0	
25	32.2	DIN 8063	21.5	110	23.0	32
		DIN 16962		95	18.0	
		DIN 10931		95	18.0	
32	35.8	DIN 8063	27.5	110	27.5	40
		DIN 16962		100	20.0	
		DIN 10931		100	20.0	
40	39.6	DIN 8063	31.5	120	30.0	50
		DIN 16962		106	23.0	
		DIN 10931		106	23.0	
50	45.7	DIN 8063	39.5	130	37.0	63
		DIN 16962		110	27.0	
		DIN 10931		110	27.0	

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

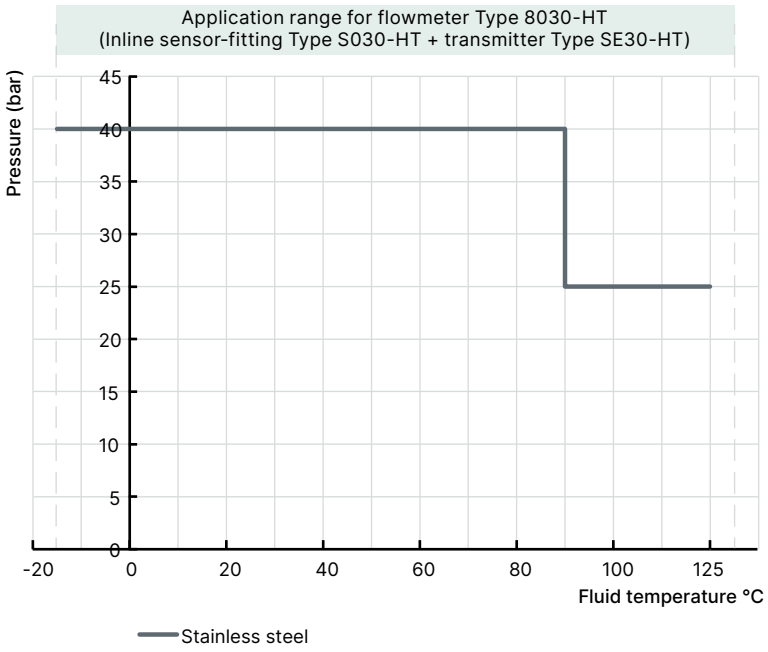
5. Performance specifications

5.1. Pressure temperature diagram

With Inline sensor-fitting Type S030 standard



With Inline sensor-fitting Type S030 -HT



6. Product installation

6.1. Installation notes

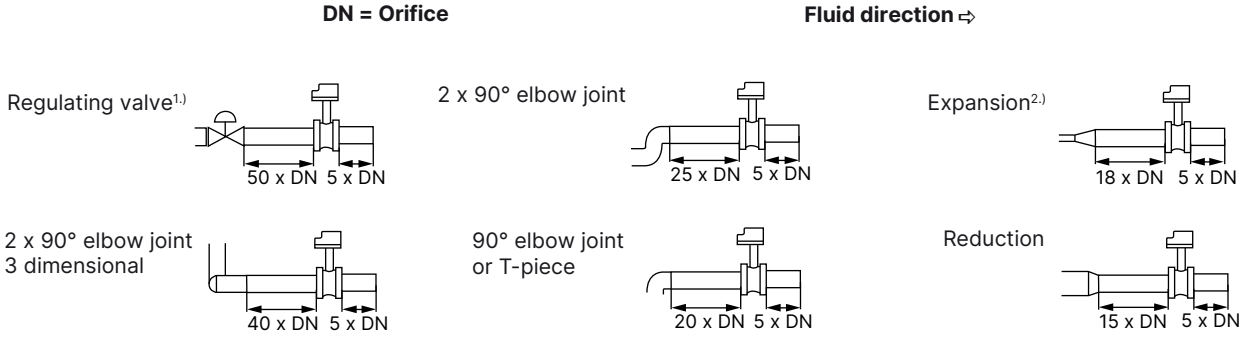
Flow measurement

Note:
The 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.

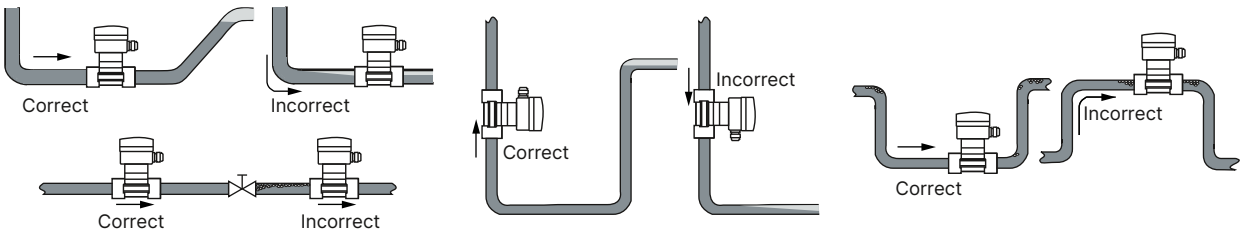
Make sure that the measuring conditions at the point of measurement are calm and problem-free.



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 15.

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

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:

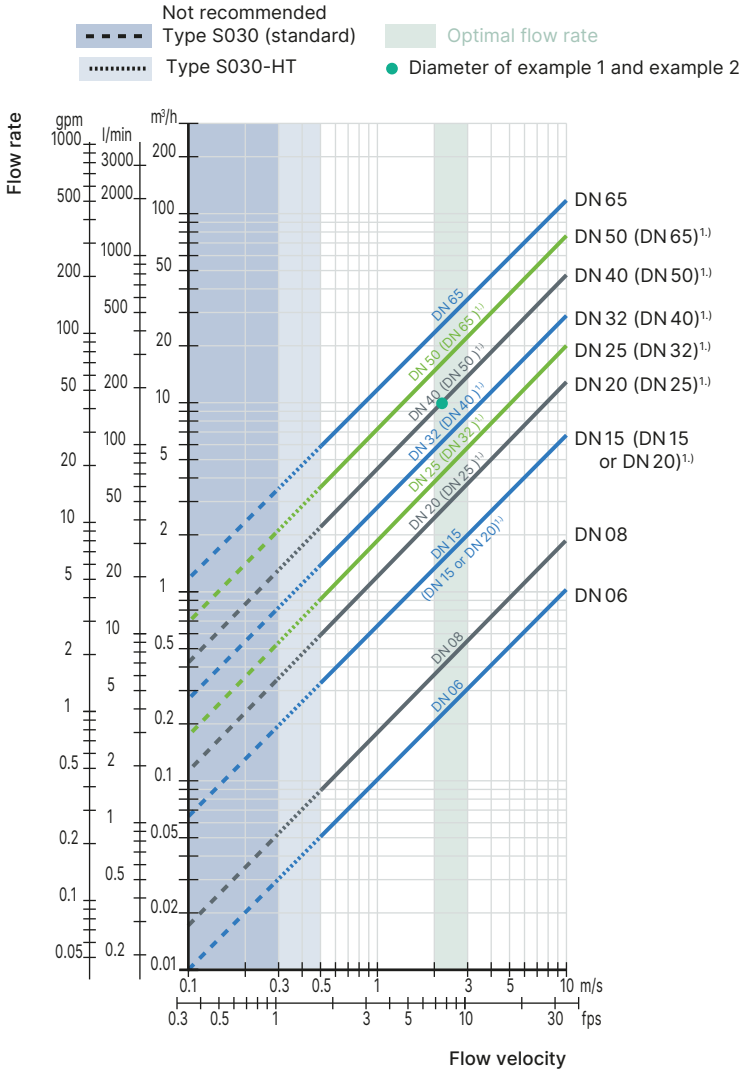
- Nominal flow: 10 m³/h
- Optimal flow rate: 2...3 m/s

Result: Select a pipe size of DN 40

Example 2 with external threads according 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 operation

7.1. Measuring principle

When liquid flows through the pipe, the paddle wheel with 4 inserted magnets is set in rotation producing a frequency signal in the transducer (Hall sensor) of the mounted transmitter. The rotation is detected contactless through the sensor-fitting wall. The frequency modulated induced voltage is proportional to the flow velocity of the fluid.

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

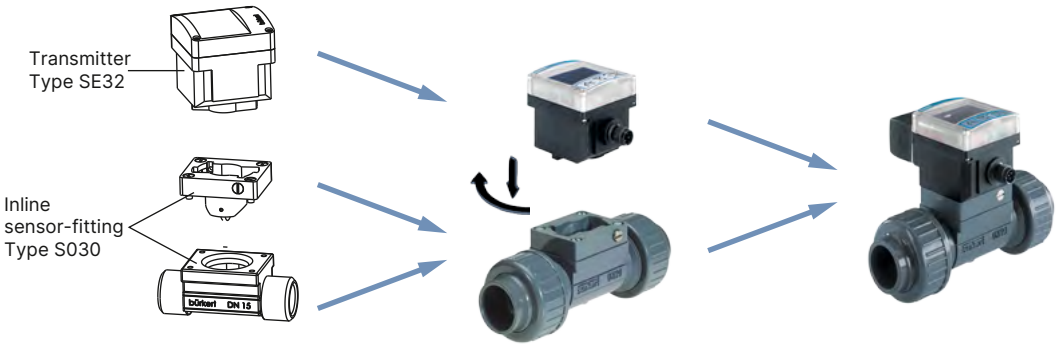
8. Product design and assembly

8.1. Product assembly

Note:

- A complete device to measure the flow rate is made up of an sensor-fitting Type S030 equipped with a paddle wheel sensor and a Bürkert transmitter Type SE30, SE30 Ex, SE32, SE35, SE36 or 8611.
- The sensor-fitting Type S030 ensures simple installation into pipes from DN 06...DN 65. The transmitter Type SE30, SE30 Ex, SE32, SE35, SE36 or 8611 can be mounted on any sensor-fitting Type S030 and fastened with a bayonet catch.
- The drawing shows the assembly of a sensor-fitting Type S030 with a process true union connection with nut and solvent/fusion socket and a transmitter Type SE32 (Type S030 + Type SE32 = Type 8032). This also applies to all variants of process connection and compatible type of transmitter.

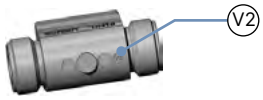
See **Data sheet Type 8030** ▶ Inline flowmeter, **Data sheet Type 8032** ▶ Inline flowmeter/threshold detector, **Data sheet Type 8035** ▶ Inline flowmeter or batch controller, **Data sheet Type 8036** ▶ Inline flowmeter, ELEMENT design or **Data sheet Type 8611** ▶ eCONTROL - Universal controller for more information.



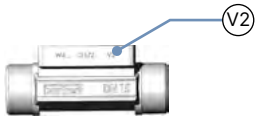
9. Product accessories

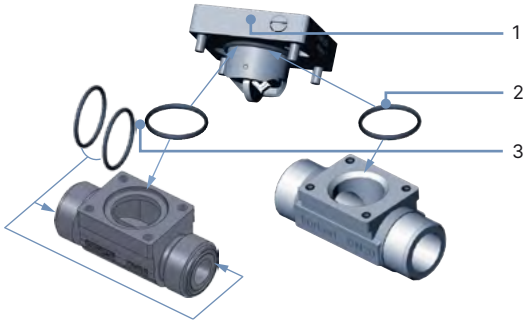
Note:
Since March 2012, the Type S030 sensor-fittings in DN 15 and DN 20 have been available in 2 variants with different K factors. Further information can be found in the user manual in the K factor chapter, see **Type S030 ▶/Type S030-HT ▶**.
The 2nd variant is identified by the "v2" marking. This "v2" marking can be found:

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



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



Accessories	No.	Description
	1	Sensor holder
	2	O-ring set for metal sensor-fitting
	3	O-ring set for plastic sensor-fitting: • O-rings for process connection (2 seals) • O-ring for fitting body/sensor holder (1 seal [1)])

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).

10. Networking and combination with other Bürkert products

Example:

Type S030

Transmitter

Type SE30 ▶
Flow transmitter for Inline sensor-fitting

Type SE30 Ex ▶
Flow transmitter for hazardous areas

Type SE32 ▶
Flow transmitter for Inline sensor-fitting

Type SE35 ▶
Flow transmitter for Inline sensor-fitting

Type SE35 ▶
Batch controller for Inline sensor-fitting

Type SE36 ▶
ELEMENT transmitter for Inline sensor-fitting

Type 8611 ▶
eCONTROL - Universal controllers

Flowmeter/Threshold detector/ Batch controller/Universal controller

Type 8030 ▶
Inline flowmeter

Type SE30 Ex ▶
Inline flowmeter for hazardous areas

Type 8032 ▶
Inline flowmeter/ threshold detector

Type 8035 ▶
Inline flowmeter

Type 8035 ▶
Inline batch controller

Type 8036 ▶
Inline flowmeter, ELEMENT design

Type 8611 ▶
eCONTROL - Inline Universal controllers

PNP/NPN output or current modulation according to NAMUR [1.)]

Type 8619 ▶
multiCELL - transmitter/controller

Type 8025 ▶
Flow transmitter

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

1.) Only for SE30Ex: depending on the category, to be used with an intrinsic safety barrier with NAMUR input

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

11. Ordering information

11.1. Bürkert eShop

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Order online now

11.2. Recommendation regarding product selection

A complete device to measure the flow rate is made up of a compact sensor-fitting (Type S030) with paddle wheel and a transmitter (Type SE30, Type SE30 Ex, Type SE32, Type SE35, Type SE36 or Type 8611).

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

- **Article no.** of the desired flow transmitter (see **Data sheet Type 8030** ▶, **Data sheet Type 8032** ▶, **Data sheet Type 8035** ▶, **Data sheet Type 8036** ▶ or **Data sheet Type 8611** ▶)
- **Article no.** of the selected Type S030 sensor-fitting (see chapter "11.4. Ordering chart" on page 19)

11.3. Bürkert product filter

Bürkert product filter – Get quickly to the right product

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DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

11.4. Ordering chart

Metal sensor-fitting

Standard	Article no.									
	DN 06 [1]- ¼"	DN 06 [1]- ½"	DN 08 [1]- ½"	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65
Brass - with PVDF paddle wheel - Fluid temperature max. 100 °C, PN 16										
FKM seal										
Internal thread connection										
G	–	–	–	423980	423981	423982	423983	423984	423985	–
NPT	–	–	–	423986	423987	423988	423989	423990	423991	–
Rc	–	–	–	423992	423993	423994	423995	423996	423997	–
External thread connection										
G	552557	552527	444023	423998	423999	424000	424001	–	–	–
NPT	–	–	449182	–	–	–	–	–	–	–
Rc	–	–	448668	–	–	–	–	–	–	–
Stainless steel - with PVDF paddle wheel - Fluid temperature max. 100 °C, PN 16										
FKM seal										
Internal thread connection										
G	–	–	–	424004	424005	424006	424007	424008	424009	–
NPT	–	–	–	424010	424011	424012	424013	424014	424015	–
Rc	–	–	–	424016	424017	424018	424019	424020	424021	–
External thread connection										
G	552733	552559	444029	424022	424023	424024	424025	–	–	–
NPT	–	–	449050	–	–	–	–	–	–	–
Rc	–	–	448669	–	–	–	–	–	–	–
Weld end spigot connection										
EN ISO 1127/ ISO 4200/ DIN 11866 series B	–	–	552845 [3]	424028	424029	424030	424031	424032	424033	–
Clamp connection										
DIN 32676 series B	–	–	–	424034 [4]	424035	424036	424037	424038	424039	–
Flange connection										
EN 1092-1/B1/PN 16	–	–	–	424040	424041	424042	424043	424044	424045	–
ANSI B16- 5	–	–	–	424046	424047	424048	424049	424050	424051	–
JIS 10K	–	–	–	430108	430109	430110	430111	430112	430113	–
EPDM seal										
External thread connection										
SMS 1145	–	–	–	–	–	443306	–	443307	443308	–
Weld end spigot connection										
SMS 3008	–	–	–	–	–	443298	–	443299	443300	443374 [6]
BS 4825-1/ ASME BPE/ DIN 11866 series C	–	–	–	–	443369 [5]	443370	443371	443372	443373	443374
DIN 11850 series 2/ DIN 11866 series A/ DIN EN 10357 series A	–	–	551788	551789	551790	551791	–	551792	551793	–
Clamp connection										
SMS 3017	–	–	–	–	–	443302	–	443303	443304	443399 [6]
SMS 3017 [2]	–	–	–	–	–	443387	–	443388	443389	443720 [6]
BS 4825-3/ ASME BPE	–	–	–	–	443395 [5]	443396	–	443397	443398	443399
BS 4825-3/ ASME BPE [2]	–	–	–	–	443400	443717	–	443718	443719	443720
DIN 32676 series A	–	–	551794 [4]	551795 [4]	551796	551797	–	551798	551799	–

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Standard	Article no.									
	DN 06 [1.]- ¼"	DN 06 [1.]- ½"	DN 08 [1.]- ½"	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65
Stainless steel - with PVDF paddle wheel - Fluid temperature max. 100 °C, PN 40										
FKM seal										
Internal thread connection										
G	–	–	–	427138	425737	425729	427152	427153	427154	–

1.) External thread
2.) Internal surface finish Ra < 0.8 µm
3.) EPDM seal
4.) Refer to clamp with D dimensions of 34 mm (see chapter "Clamp connection" on page 10)
5.) DN 20 (¾") only available in ASME BPE
6.) Refer to ASME BPE

Further variants on request

Process connection
External thread connection: Metric in mm

Plastic sensor-fitting

Standard	Article no.									
	DN 06 [1.]- ¼"	DN 06 [1.]- ½"	DN 08 [1.]- ½"	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65
PVC - with PVDF paddle wheel - Fluid temperature max. 50 °C, PN 10										
FKM seal										
True union connection with nut and solvent socket										
DIN 8063	–	–	444022	423938	423939	423940	423941	423942	423943	–
ASTM D 1785/76	–	–	–	423950	423951	423952	423953	423954	423955	–
JIS K	–	–	–	429072	429073	429074	429075	429076	429077	–
External thread connection										
G	–	552560	444025	–	–	–	–	–	–	–
Solvent spigot connection										
DIN 8063	–	–	–	423944	423945	423946	423947	423948	423949	–
True union connection with nut and without socket										
–	–	–	–	430734	430735	430736	430737	430738	430739	–
EPDM seal										
True union connection with nut and without socket										
–	–	–	–	430740	430741	430742	430743	430744	430745	–
PP - with PVDF paddle wheel - Fluid temperature max. 80 °C, PN 10										
FKM seal										
True union connection with nut and fusion socket										
DIN 16962	–	–	–	423956	423957	423958	423959	423960	423961	–
Fusion spigot connection										
DIN 16962	–	–	–	423962	423963	423964	423965	423966	423967	–
PVDF - with PVDF paddle wheel - Fluid temperature max. 100 °C, PN 10										
FKM seal										
True union connection with nut and fusion socket										
ISO 10931	–	–	–	423968	423969	423970	423971	423972	423973	–
External thread connection										
ISO 10931	–	–	444028	–	–	–	–	–	–	–
Fusion spigot connection										
ISO 10931	–	–	–	423974	423975	423976	423977	423978	423979	–

1.) External thread

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Stainless steel sensor-fitting (S030-HT variant)

Note:
Only mount with transmitter Type SE30 in variant High Temperature (Type SE30-HT). This combination gives the High Temperature flowmeter variant (Type 8030-HT), see **Data sheet Type 8030** ▶.

Standard	Article no.							
	DN 06 [1.] -¼"	DN 08 [1.] -½"	DN 15	DN 20	DN 25	DN 32	DN 40	DN 50
With stainless steel paddle wheel - Fluid temperature max. 125 °C, PN 25 (max. 90 °C, PN 40)								
FKM seal								
Internal thread connection								
G	–	–	449726	449727	449728	449729	449730	449731
NPT	–	–	449733	449734	449735	449736	449737	449738
Rc	–	–	449740	449741	449742	449743	449744	449745
External thread connection								
G	552735	449725	–	–	–	–	–	–
NPT	–	449732	–	–	–	–	–	–
Rc	–	449739	–	–	–	–	–	–
Weld end connection								
EN ISO 1127/ISO 4200/DIN 11866 series B	–	–	551757	551758	551759	551760	551761	551762

1.) External thread

Further variants on request

Material EPDM seal	**Process connection** Clamp or flange

11.5. Ordering chart accessories

Note:
Since March 2012, the Type S030 sensor-fittings in DN 15 and DN 20 exist in 2 variants, with different K factors. The 2nd variant is identified by the "v2" marking.

See chapter "9. Product accessories" on page 16.

Description	Article no.
Sensor armature set	
Sensor armature made of stainless steel with paddle wheel (PVDF), seal (FKM), screws and test certificate for DN 06, DN 08, DN 15 v2 and DN 20 v2	448678
Sensor armature made of stainless steel with paddle wheel (PVDF), seal (FKM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	432306
Sensor armature made of stainless steel with paddle wheel (PVDF), seal (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	432305
Sensor armature made of stainless steel with paddle wheel (PVDF), seal (EPDM), screws and test certificate, Ra int. < 0.8 µm for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	434149
Sensor armature made of stainless steel with paddle wheel (PP), seal (EPDM), screws and test certificate for DN 06, DN 08, DN 15 v2 and DN 20 v2	554896
Sensor armature made of stainless steel with paddle wheel (PP), seal (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	449425
Sensor armature made of brass with paddle wheel (PVDF), seal (FKM), screws and test certificate for DN 06, DN 08, DN 15 v2 and DN 20 v2	448677
Sensor armature made of brass with paddle wheel (PVDF), seal (FKM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	432304
Sensor armature made of brass with paddle wheel (PVDF), seal (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	432303
Sensor armature made of brass with paddle wheel (PP), seal (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65	449866
Sensor armature made of PVC with paddle wheel (PVDF), seal [1.] (FKM), screws and test certificate for DN 06, DN 08, DN 15 v2 and DN 20 v2	448674

DTS 1000011766 EN Version: AM Status: RL (released | freigegeben | validé) printed: 27.01.2025

Sensor armature made of PVC with paddle wheel (PVDF), seal [1.] (FKM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65		432298
Sensor armature made of PVC with paddle wheel (PVDF), seal [1.] (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65		432297
Sensor armature made of PVC with paddle wheel (PP), seal [1.] (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65		443982
Sensor armature made of PP with paddle wheel (PVDF), seal [1.] (FKM), screws and test certificate for DN 15...DN 65		432300
Sensor armature made of PP with paddle wheel (PVDF), seal [1.] (EPDM), screws and test certificate for DN 15...DN 65		432299
Sensor armature made of PP with paddle wheel (PP), seal [1.] (FKM), screws and test certificate for DN 15...DN 65		552881
Sensor armature made of PP with paddle wheel (PP), seal [1.] (EPDM), screws and test certificate for DN 15...DN 65		443983
Sensor armature made of PVDF with paddle wheel (PVDF), seal [1.] (FKM), screws and test certificate for DN 06, DN 08, DN 15 v2 and DN 20 v2		448676
Sensor armature made of PVDF with paddle wheel (PVDF), seal [1.] (FKM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65		432302
Sensor armature made of PVDF with paddle wheel (PVDF), seal [1.] (EPDM), screws and test certificate for DN 15 (except DN 15 v2 and DN 20 v2)...DN 65		432301
Sensor armature set for High Temperature variant		
Sensor armature made of stainless steel with paddle wheel (stainless steel), seal (FKM) and screws for DN 15 (except DN 15 v2 and DN 20 v2)...DN 50		551764
Sensor armature made of stainless steel with paddle wheel (stainless steel), seal (FKM) and screws for DN 06, DN 08, DN 15 v2 and DN 20 v2		449723
Sensor armature made of stainless steel with paddle wheel (stainless steel), seal (EPDM) and screws for DN 15 (except DN 15 v2 and DN 20 v2)...DN 50		551763
Sensor armature in stainless steel with paddle wheel (stainless steel), seal (EPDM) and screws for DN 06, DN 08, DN 15 v2 and DN 20 v2		449724
Seal set		
O-ring made of FKM for fitting in metal, DN 06...DN 65		426340
O-ring made of EPDM for fitting in metal, DN 06...DN 65		426341
O-ring made of FKM for fitting in plastic [1.]	DN 08	448679
	DN 15	431555
	DN 20	431556
	DN 25	431557
	DN 32	431558
	DN 40	431559
	DN 50	431560
O-ring made of EPDM for fitting in plastic [1.]	DN 08	448680
	DN 15	431561
	DN 20	431562
	DN 25	431563
	DN 32	431564
	DN 40	431565
	DN 50	431566
Approvals and conformities		
3-point flow calibration certificate [2.]		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 finish (according to DIN4762, DIN4768, ISO/4287/1)		804175
FDA declaration of conformity		803724

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).
2.) S030 combined with the plugged-in flow transmitter, only for DN ≤ 200

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