

Description

Compact single point flow monitor with 4 ... 20 mA analogue output and MIN or MAX monitoring options. 10 x LED bar which shows the actual flow speed and the status of the switching point. Suitable for water, oil and air. Available as screw-in type, plug-in type for sensor adapter TP/ball valve BV or push-in type.

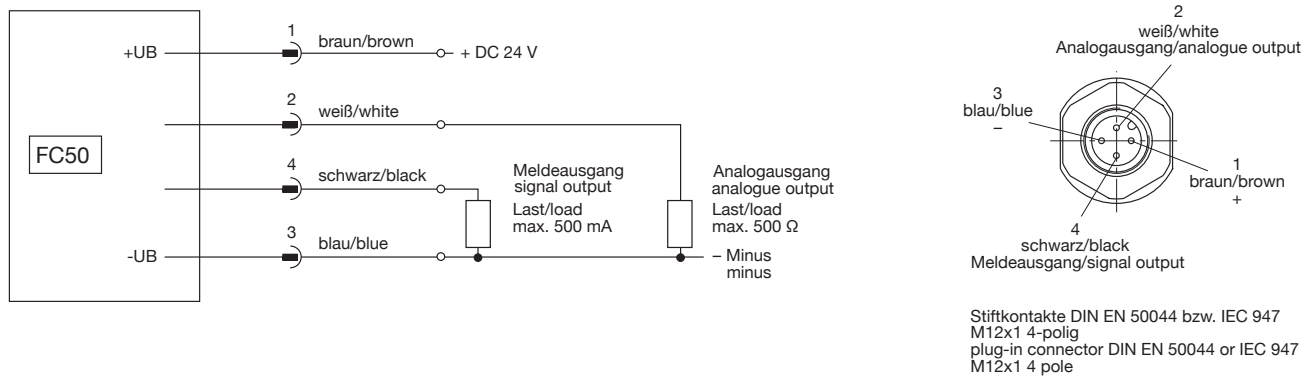
Features

- wear-resistant compact design, with stainless steel 1.4571 monitoring head and housing
- 4 ... 20 mA analogue output (4 mA = 0 m/s, 20 mA = operating range final value)
- switch point can be adjusted steplessly or to 10 predefined values regardless of the actual flow speed
- 10 x LED bar (red, green, orange) which shows the actual flow speed and the status of the switching point
- fluid temperature -25 ... 100 °C (screw-in type, plug-in type for sensor adapter TP/ball valve BV) and -25 ... 130 °C (push-in type) respectively
- M12 plug-in electrical connection
- signal output with HighSide-FET output
- protected against short circuits and overloads



FC50

Electrical connection



Ordering information

Flow meter (calorimetric)

FC50 in compact housing

Power supply
U1 DC 24 V

Flow switching point

MIN minimum switching point

MAX maximum switching point

Analogue output

C11 4 ... 20 mA (0 m/s ... operating range final value)

Operating range

FB2 operating range final value 100 m/s (air), 4 m/s (water, oil)

FB1 operating range final value 25 m/s (air), 1 m/s (water)

Fluid

A air

W water

S special fluid, e.g. oil (on request) – only with process connection 11 (TP-01 ... TP-04)

Process connection

00 push-in type, length 300 mm - without flange, threaded installation bush as accessory

22 push-in type, length 200 mm - without flange, threaded installation bush as accessory

01 screw-in type, G1/2A (to DIN 3852-A), length 36 mm

02 screw-in type, NPT1/2"-14, length 36 mm

11 plug-in type (following DIN ISO 6149), length 18.2 mm for TP or BV adapters

Fitting material

M1 stainless steel 1.4571

Electrical connection

E12 M12x1, 4-pole

Certification

T0 without certificate *)

FC50 - U1 MIN C11 FB2 A 01 M1 E12 T0 ordering information

* for detailed information please see section 0.

TECHNICAL DATA (T_U = 25 °C, U_B = DC 24 V)

General data		FC50
Suitable for		air, water, oil
Temperature range	fluid	-25 ... +100 °C (-13 ... +212 °F) / -25 ... +130 °C (-13 ... +266 °F) ⁽⁵⁾
	ambience	-25 ... +65 °C (-13 ... +149 °F)
Status indication		10 x LED bar (red, green, orange)
Electrical data		
Operating voltage U _B		DC 24 V (18 ... 32 V)
Power consumption (without load)		ca. 75 mA
Analogue output	flow speed	4 ... 20 mA (12 bit), 4 mA = 0 m/s, 20 mA = operating range final value
Switching output	flow speed	Power FET, high side switch, short circuit proof max. load 500 mA, inductive load max. 100 mA
Connection to DIN 50044		M12 plug-in connection, 4-pole
MTTF (SN 29500)		267 years
Flow measurement ⁽⁶⁾		
Measuring range (operating range)	air operating range FB1	0 ... 20 m/s (0 ... 25 m/s) – FB1, see ordering information
	air operating range FB2	0 ... 20 m/s (0 ... 100 m/s) – FB2, see ordering information
	water operating range FB1	0 ... 1 m/s (0 ... 1 m/s) – FB1, see ordering information
	water operating range FB2, oil	0 ... 3 m/s (0 ... 4 m/s) – FB2, see ordering information
Accuracy ⁽⁴⁾ (in measuring range)	air	± 2 % of measured value ± 2 % of measuring range final value
	water 0 ... 2 m/s	± 1 % of measured value ± 3 % of measuring range final value
	water 2 ... 3 m/s	± 8 % of measuring range final value
Reproducibility ⁽¹⁾		± 1 % of measured value ± 0,5 % of measuring range final value
Response time	air ⁽³⁾	approx. 2 s
	water ⁽²⁾	approx. 1 s
	oil ⁽²⁾	approx. 1,5 s
Temperature drift	air (+10 ... +70 °C)	± 0,5 % of measured value/°C
	water (+10 ... +70 °C)	± 1 % of measured value/°C
Mechanical data		
Type and size of monitoring head	plug-in type	following DIN ISO 6149
	screw-in type	G 1/2 A, NPT 1/2"
	push-in type	shank diameter 18 mm/0.709 in. without thread
Pressure resistance of monitoring head	plug-in type	100 bar
	screw-in type	100 bar
	push-in type	100 bar (observe pressure resistance of installation)
Degree of protection		IP67 (when plugged in)
Material	fitting	stainless steel 1.4571 (wetted)
	sensor	stainless steel 1.4571 (wetted)
	connection sensor/fitting	laser welded
	housing	stainless steel 1.4571
	M12 connector	CuZn, nickel-plated
	cap	PA
	O-ring	FKM (wetted, plug-in and push-in type)
Weight	plug-in type	approx. 300 g
	screw-in type	approx. 240 g
	push-in type	approx. 740 g

⁽¹⁾ at constant temperature and flow conditions, and stable thermal conductivity

⁽²⁾ delay with the switch point set to 1,8 m/s and the flow at 2 m/s, after a sudden complete stop

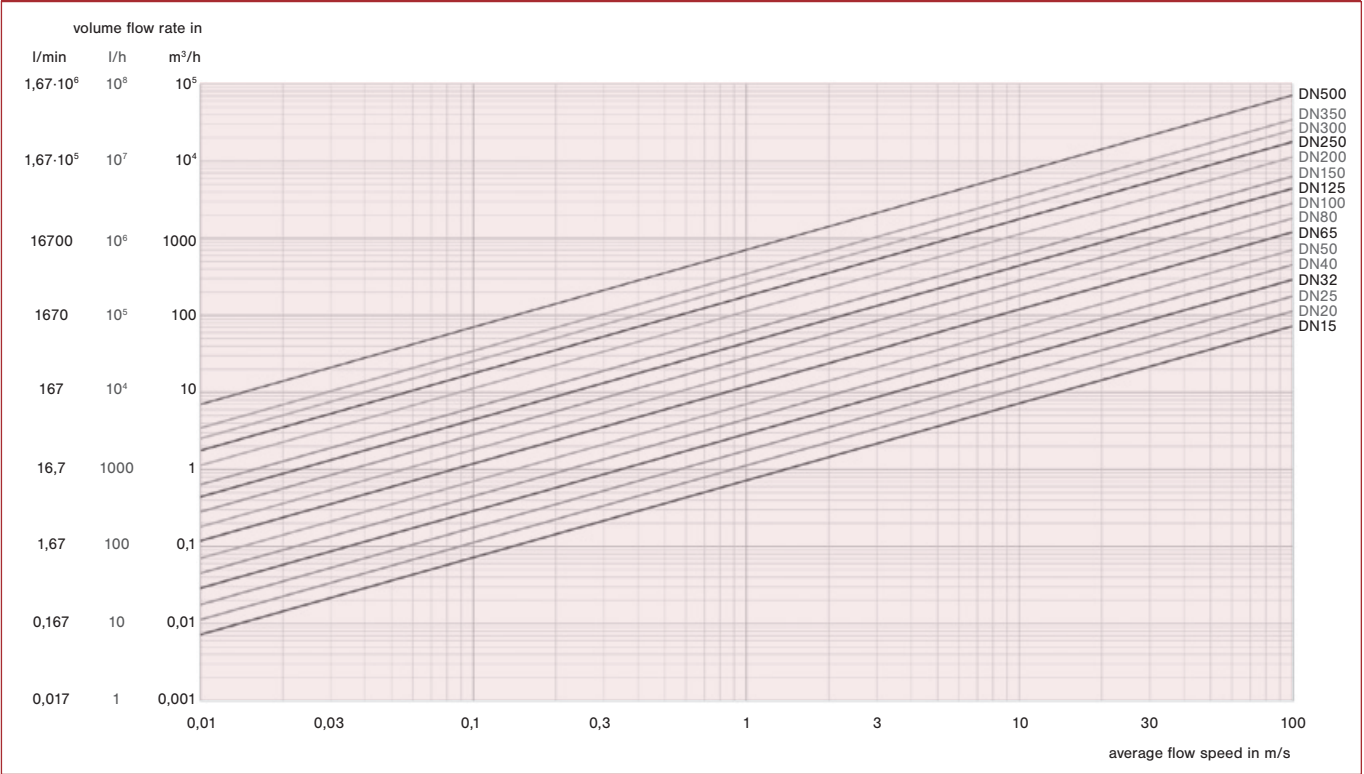
⁽³⁾ delay with the switch point set to 18 m/s and the flow at 20 m/s, after a sudden complete stop

⁽⁴⁾ the accuracy values were determined under ideal conditions:
symmetrical complete flow profile, correct mounting in the pipe, inlets and outlets according to EN ISO 5167-1

⁽⁵⁾ the extended temperature range up to 130 °C/266 °F is only allowed with FC50...00/22... (push-in type) and a minimum distance of 15 cm (5.91 in) between electronic housing and fluid, in this case max. ambient temperature must not exceed 50 °C (122 °F)

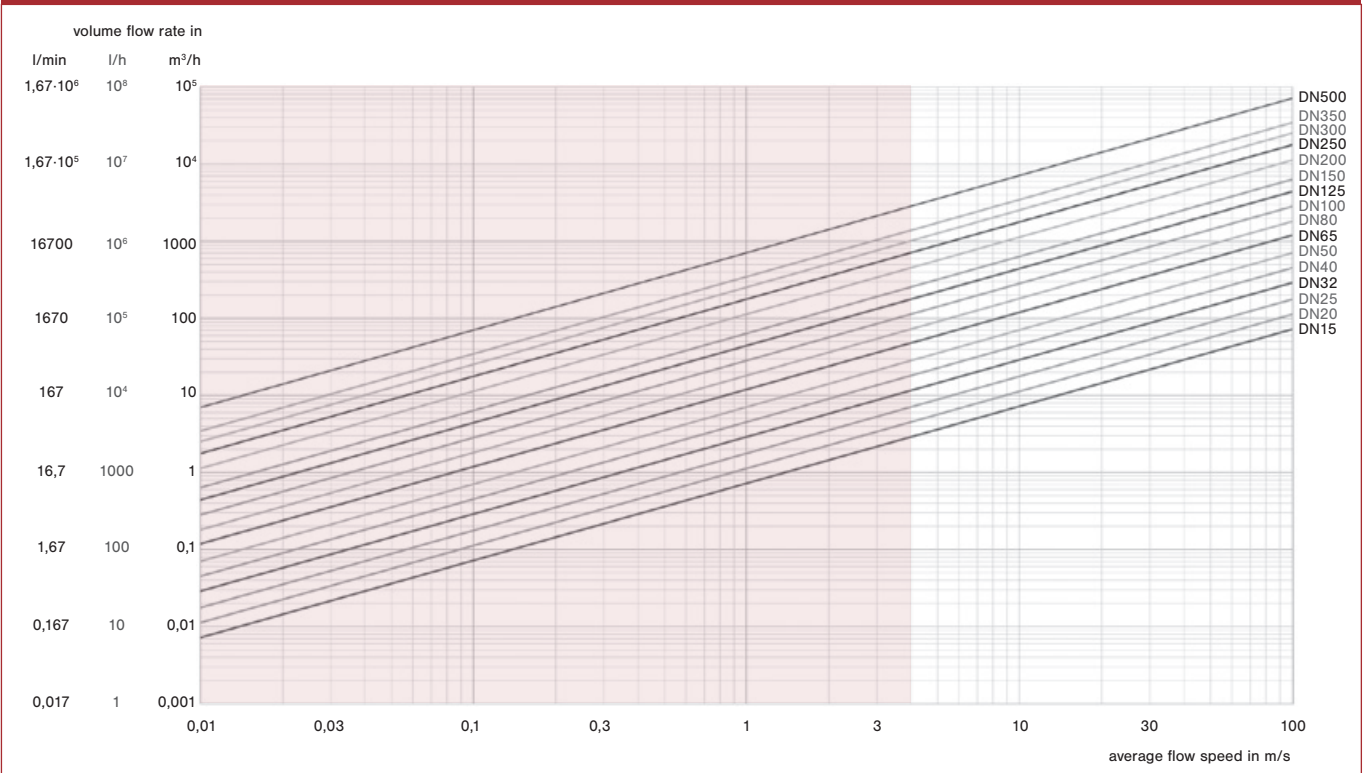
⁽⁶⁾ sensor calibration is performed at approx. 25 °C in TP-03 (water), inside pipe diameter 29,7 mm (water) and inside pipe diameter 73,4 mm at approx. 970 mbar abs. (air) (punctual measurement).
water: specifications dependent on the measuring range final value always refer to 3 m/s (FB2).

Operating range FB2 air



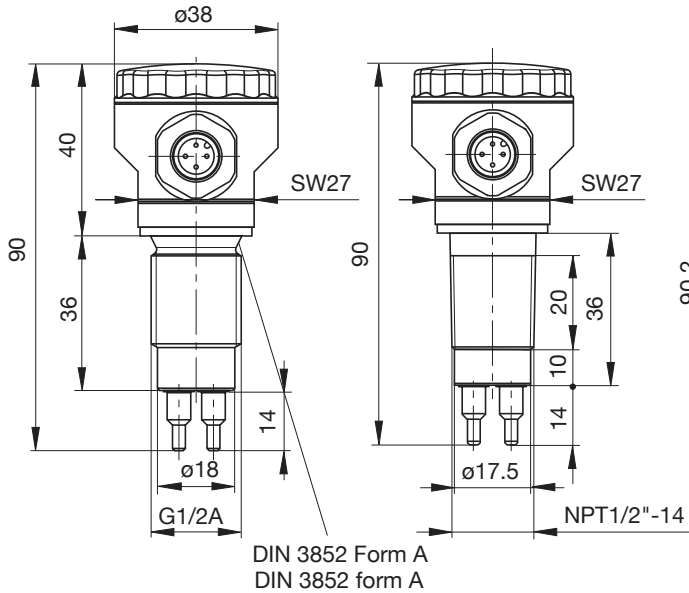
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Operating range FB2 water/oil

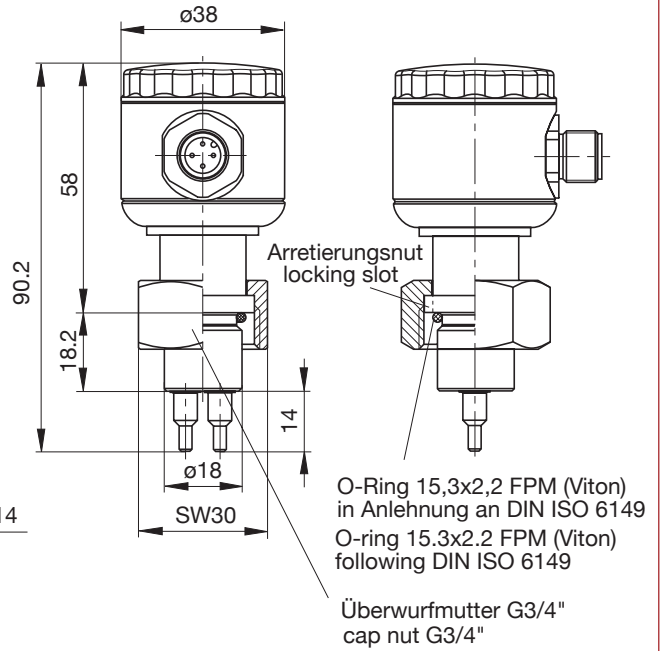


Dimensions

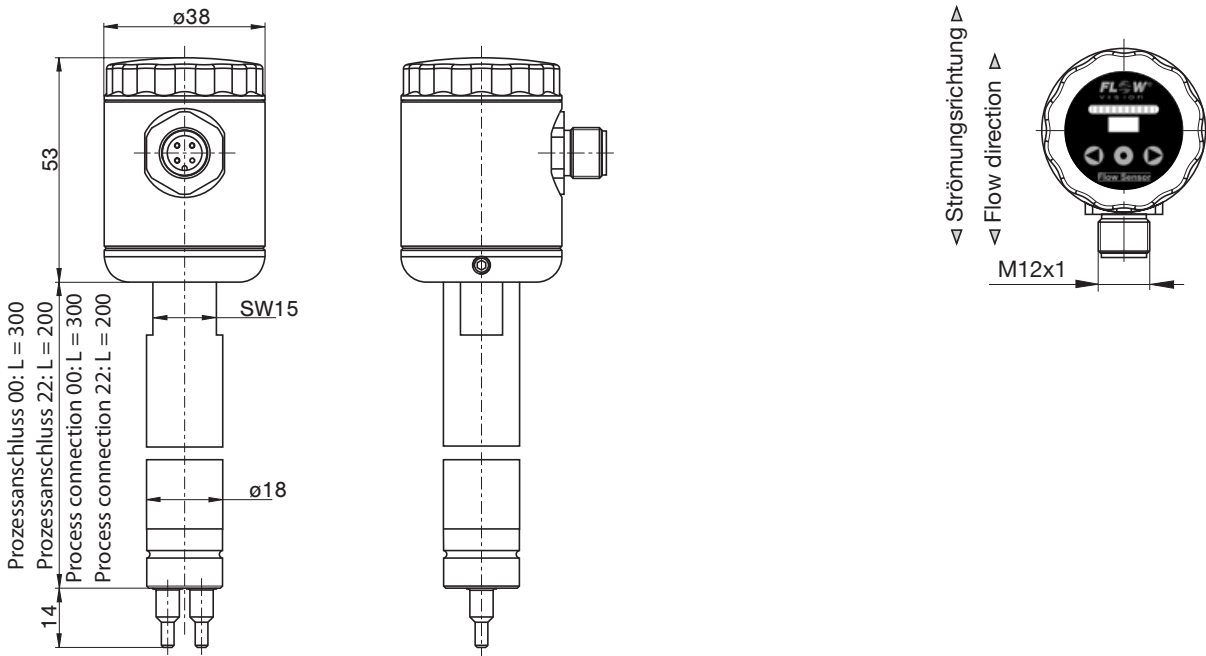
Gewindeanschluss
Screw-in type process connection



Einsteckanschluss
Plug-in type process connection



Einschiebeanschluss
Push-in type process connection



All dimensions in mm

Die zur Verfügung gestellten Informationen sind nach unserem Wissen genau und zuverlässig, jedoch übernimmt FlowVision keine Verantwortung für den Einsatz in einer Anwendung, die nicht der vorliegenden Spezifikation entspricht. FlowVision behält sich das Recht vor, Spezifikationen im Sinne des technischen Fortschritts jederzeit zu ändern. Maßänderungen sind vorbehalten, bei Bedarf bitte neuestes Maßblatt mit Toleranzen anfordern. Maße, Daten, Abbildungen und Beschreibung entsprechen dem neuesten Stand bei Herausgabe dieses Kataloges, sind aber unverbindlich! Änderungen sowie auch Irrtümer und Druckfehler vorbehalten. Die Bestellbezeichnung der Geräte kann von deren Beschriftung abweichen.

Sensor adapter TP/Ball valve BV



TP-...

BV-...

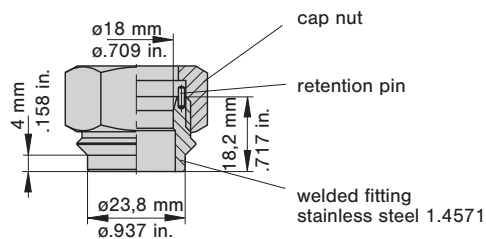
Ordering information

Type	
BV	ball valve with internal thread
Process connection/Nominal size	
03	DN 25 G1 internal thread length: 88 mm/3.46 in.
04	DN 32 G1 1/4 internal thread length: 100 mm/3.94 in.
05	DN 40 G1 1/2 internal thread length: 110 mm/4.33 in.
06	DN 50 G2 internal thread length: 131 mm/5.16 in.
Material of the area exposed to fluid	
M3	nickel plated brass, Delrin seal
BV - 03	M3 ordering example

Accessories

Description	Ref. No.
Blanking plug, brass, with O ring	OZ121Z000186
Union nut, brass	Y 306 901 01
Blanking plug, stainless steel 1.4571/AISI 316 Ti, with viton O ring	OZ121Z000187
Union nut, stainless steel	Y 306 901 03

Welding set 05 OZ122Z000202



Description

Sensor adapters TP and BV facilitate correct positioning and exchange of FC50...11... (plug-in type connection) in pipes with process connection DN 15...DN 50.

Ball valve BV enables pressure-free installation or removal of FC50...11... (plug-in type connection) simply by closing the input and output pipe. The measuring points are suited to temporary measurements; after completion of the measuring cycle they can be closed by means of blanking plugs.

Features

- Correct positioning of sensor
- Ease of sensor replacement
- Measuring point can be closed if not used
- Sensor adapter available as screw-in or welding type
- Ball valve also serves as a shutoff valve (both input and out output)

Ordering information

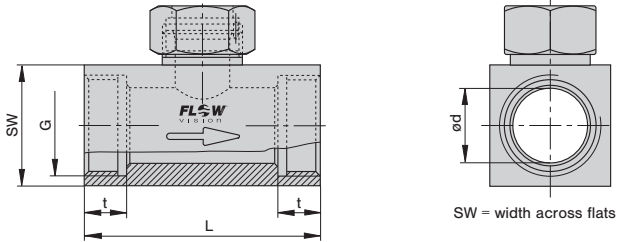
Type	
TP	Sensor adapter with internal thread
Process connection/Nominal size	
01	DN 15 G1/2 internal thread length: 50 mm/1.97 in.
02	DN 20 G3/4 internal thread length: 64 mm/2.52 in.
03	DN 25 G1 internal thread length: 78 mm/3.07 in.
04	DN 32 G1 1/4 internal thread length: 94 mm/3.70 in.
05	DN 40 G1 1/2 internal thread length: 110 mm/4.33 in.
06	DN 50 G2 internal thread length: 138 mm/5.43 in.
Material of the area exposed to fluid	
M1	stainless steel 1.4571/AISI 316Ti PN 315 bar/4570 psi
M3	brass (not TP-03..) PN 25 bar/363 psi
M5	red brass (only TP-03..) PN 16 bar/232 psi
TP - 01	M3 ordering example

Ordering information

Type	
TP	Sensor adapter with welding nipples
Process connection/Nominal size	
01	DN 15 dia.d: 16 mm/.630 in. length: 80 mm/3.15 in.
02	DN 20 dia.d: 20 mm/.787 in. length: 70 mm/2.76 in.
03	DN 25 dia.d: 25 mm/.984 in. length: 80 mm/3.15 in.
04	DN 32 dia.d: 32 mm/1.26 in. length: 100 mm/3.94 in.
05	DN 40 dia.d: 40 mm/1.57 in. length: 110 mm/4.33 in.
06	DN 50 dia.d: 50 mm/1.97 in. length: 140 mm/5.51 in.
Material of the area exposed to fluid	
M1	stainless steel 1.4571/AISI 316Ti
Process connection	
SA	welded connection
TP - 01	M1 - SA ordering example

Dimensions

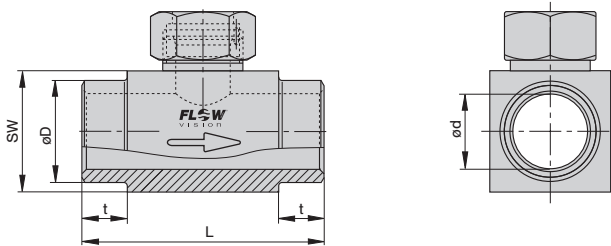
TP... sensor adapter with internal thread



Material stainless steel (-M1): PN 315 bar / 4569 psi
 Material brass (-M3): PN 25 bar / 363 psi
 Material red brass (-M5): PN 16 bar / 232 psi

Type	DN		dia. d		G	t		L		SW	
	mm	in.	mm	in.	in.	mm	in.	mm	in.	mm	in.
TP-01 ...	15	.591	16	.630	1/2"	11	.433	50	1.97	27	1.06
TP-02 ...	20	.787	20	.787	3/4"	12	.472	64	2.52	32	1.26
TP-03 ...	25	.984	25	.984	1"	14	.551	78	3.07	40	1.57
TP-04 ...	32	1.26	32	1.26	1.1/4"	15	.591	94	3.70	50	1.97
TP-05 ...	40	1.57	40	1.57	1.1/2"	15	.591	110	4.33	55	2.16
TP-06 ...	50	1.97	50	1.97	2"	19	.748	138	5.43	70	2.76

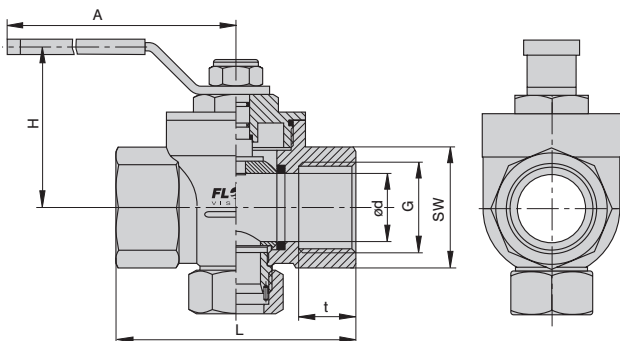
TP... M1-SA sensor adapter with welding nipples



PN 315 bar / 4569 psi

Type	DN		dia. d		dia. D		t		L		SW	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
TP-01M1-SA	15	.591	16	.630	21.3	.839	15	.591	80	3.15	27	1.06
TP-02M1-SA	20	.787	20	.787	26.9	1.06	15	.591	70	2.76	32	1.26
TP-03M1-SA	25	.984	25	.984	33.7	1.33	15	.591	80	3.15	40	1.57
TP-04M1-SA	32	1.26	32	1.26	42.4	1.67	15	.591	100	3.94	50	1.97
TP-05M1-SA	40	1.57	40	1.57	48.3	1.90	15	.591	110	4.33	55	2.16
TP-06M1-SA	50	1.97	50	1.97	60.3	2.37	15	.591	140	5.51	70	2.76

BV... M3 Ball valve with internal thread

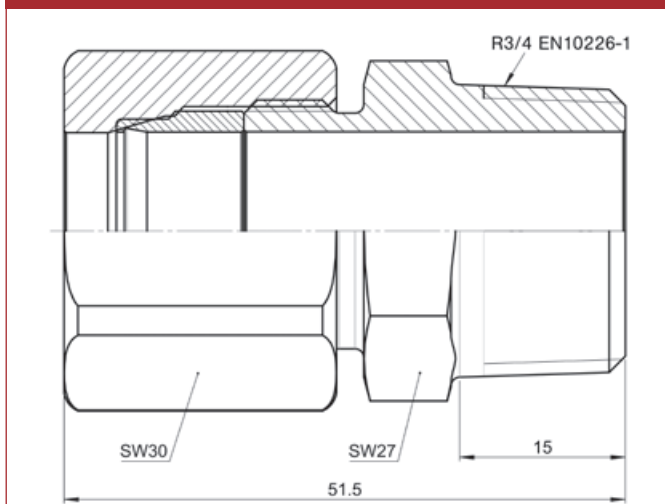


PN 25 bar / 363 psi

Type	DN		dia. d		G	t		L		SW		H		A	
	mm	in.	mm	in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
BV-03M3	25	.984	25	.984	1"	21	.827	88	3.47	41	1.61	59	2.32	115	4.53
BV-04M3	32	1.26	32	1.26	1.1/4"	24	.945	100	3.94	50	1.97	65	2.56	115	4.53
BV-05M3	40	1.57	40	1.57	1.1/2"	24	.945	110	4.33	54	2.13	77	3.03	150	5.91
BV-06M3	50	1.97	50	1.97	2"	28	1.10	131	5.16	70	2.76	85	3.35	150	5.91

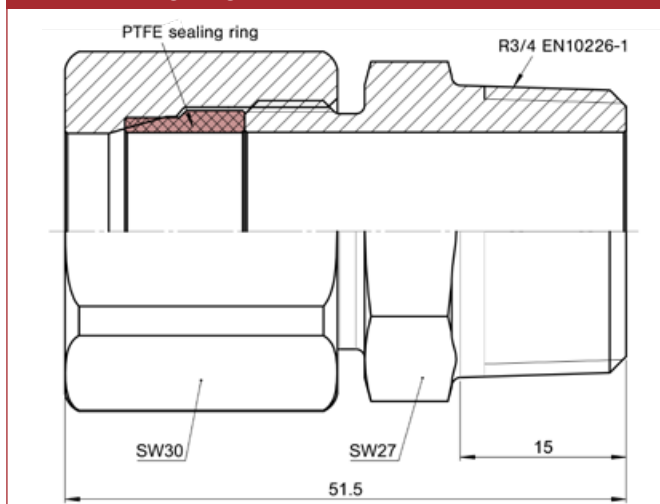
This is a metric design and millimeter dimensions take precedence ($\frac{mm}{inch}$)

Threaded installation bush



Suitable up to 25 bar/363 psi abs. if used with push-in sensors.
Please observe assembly instructions and safety guidelines!
Metal sealing ring can't be disassembled after assembly.

PTFE sealing ring for threaded installation bush

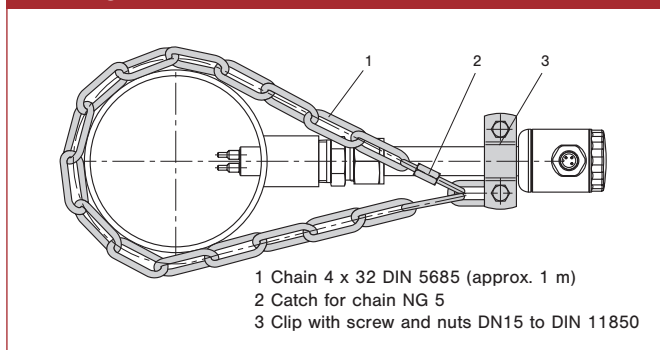


Suitable for threaded installation bush VK-04D8
Applicable up to 2 bar/29 psi abs. if used with push-in sensors and threaded installation bush VK.
Ordering no.: Y50005101

Ordering information – threaded installation bush

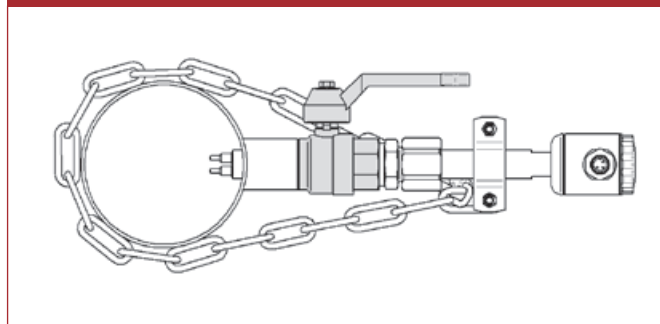
Type			
VK	threaded installation bush		
Process connection			
	04	thread R3/4"	
Bore			
	D8	18 mm	
Material			
	M1	stainless steel 1.4571	
	M3	Hastelloy C22 2.4602	
	M14	tantalum (coating 50±20 µm), base material 1.4571	
	M...	further materials upon request	
VK -	04	D8	M1 ordering example

Locking set



Locking set for push-in sensors.
Ordering no.: 0Z122Z000204

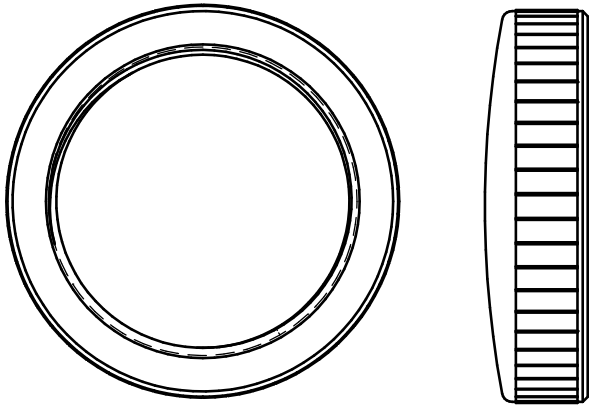
Ball valve for installation under pressure



Material (body, ball):
Brass nickel plated
Material (ball seal): PTFE
Length: 65 mm
Outside thread: G3/4", L = 13 mm
Inside thread: G3/4", L = 15 mm
Fluid temperature: -20...120 °C
Ambient temperature: 0...80 °C
Pressure: PN 25 bar (up to 80 °C)
Ordering number: BV-02M3-PI

Material (body, ball):
Stainless steel 1.4408, 1.4401
Material (ball seal): PTFE
Length: 78 mm
Outside thread: R3/4", L = 17 mm
Inside thread: Rp3/4", L = 13 mm
Fluid temperature: -30...180 °C
Ambient temperature: 0...80 °C
Pressure: PN 64 bar (up to 80 °C)
Ordering number: BV-02M15-PI

Stainless steel cap



Description

Protective cap, material stainless steel 1.4571
Ordering no.: Z00025

1

Cable type 25 with connectors



Description

M12 plug-in electrical connection for connection of supply voltage and switching output.

1

Technical data

Cable type 25

Features: IP67 (only when connector plugged in)
Resistant to chemicals and oils

Temperature range: -25 °C ... +80 °C

Current carrying capacity: 4 A

Insulation resistance: > 10⁹ Ω

Withstand voltage: 1,5 kV/60 s

Ordering information

Typ

Do + Ka Typ 25 - 5 m with connector to IEC60947-5-2, 4-pole, M12 and PUR insulated cable 3x0.34 mm² (AWG 22), halogen-free

Do + Ka Typ 25 - 5 m ordering example