Pressure transmitter
For sanitary applications
Model SA-11

For further approvals, see page 13

Applications

- For gases, compressed air, vapour; liquid, pasty, powdery and crystallising media
- Pure-steam systems for SIP
- Hydrostatic level measurement
- Vacuum monitoring, e.g. vacuum conveyors, pump monitoring
- Food and beverage industry, pharmaceutical industry, biotechnology, sanitary applications

Special features

- Wide variety of aseptic process connections, for process temperatures up to 150 °C [302 °F]
- Diaphragm seal parts fully welded
- Suitable for SIP and CIP
- Ingress protection to IP68

Model SA-11 pressure transmitter with TRI-CLAMP® connection

Configurator

Standard articles

Description

The model SA-11 pressure transmitter is designed especially for the requirements of the food and beverage, pharmaceutical and biotechnology industries.
The instrument is particularly suitable for the special conditions of CIP/SIP cleaning processes, such as chemical stability towards cleaning liquids and high temperatures.
The flush diaphragm is directly welded to the process connection. This guarantees a crevice-free joint between the process connection and the measuring cell, additional seals are not required.
For dead-space free instrumentation, aseptic process connections (clamp, threaded, VARINLINE® and NEUMO®) are available.

The model SA-11 is 3-A marked and EHEDG-certified.

Construction
A diaphragm made of 1.4435 stainless steel forms a flush separation of the process medium from the pressure transmitter.
The process pressure is transmitted hydrostatically from the diaphragm, via an FDA-approved system fill fluid, to a piezoresistive sensor.
The measuring range extends from 0 ... 250 mbar to 0 ... 25 bar.
The model SA-11 is powered with a DC voltage of 10 ... 30 V.
As output signal, 4 ... 20 mA is available.

A stainless steel case, with an ingress protection of up to IP68, offers a secure protection for external cleaning with splash water and enables its use in high-humidity environments.
Through the integrated cooling element, process temperatures up to 150 °C [302 °F] can be realised.

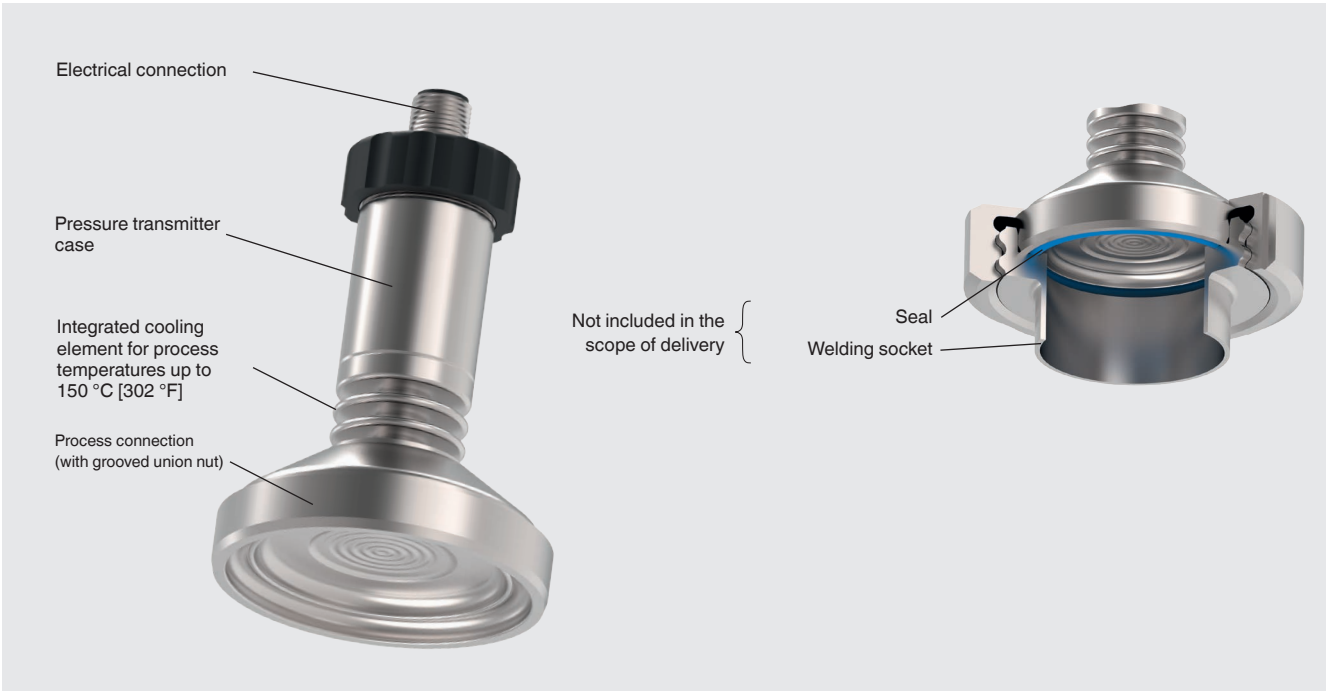
Data sheets showing similar products:
Electronic pressure switch; model PSA-31; see data sheet PE 81.85

Specifications

Versions

Installation example

Model SA-11 pressure transmitter, with circular connector M12 x 1 and grooved union nut DIN 11864-1



The total height of the model SA-11 pressure transmitter includes the electrical connection, the transmitter case and the process connection

Accuracy specifications		
Non-linearity per BFSL (per IEC 61298-2)	≤ 0.2 % of span	
Accuracy [1]	■ ≤ 0.5 % of span ■ ≤ 0.25 % of span	
Mean temperature coefficients at 0 ... 80 °C [32 ... 176 °F]		
Zero point	Measuring range 0 ... 0.6 bar to 0 ... 25 bar	≤ 0.2 % of span / 10 K
	Measuring range 0 ... 0.4 bar	≤ 0.25 % of span / 10 K
	Measuring range 0 ... 0.25 bar	≤ 0.4 % of span / 10 K
Span	≤ 0.2 % of span / 10 K	
Long-term stability (per DIN 16086)	≤ 0.2 % of span/year	
Adjustability of zero point, span	Adjustment is made using potentiometers inside the instrument. Not possible for IP68 cable outlet.	
Non-repeatability (per IEC 61298-2)	≤ 0.1 % of span	
Influence of mounting position	Calibrated in vertical mounting position with process connection facing downwards.	

1) Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2), calibrated in vertical mounting position with process connection facing downwards.

Measuring ranges, gauge pressure

Measuring range	
bar	**psi**
0 ... 0.25	0 ... 5
0 ... 0.4	0 ... 10
0 ... 0.6	0 ... 15
0 ... 1	0 ... 30
0 ... 1.6	0 ... 60
0 ... 2.5	0 ... 100
0 ... 4	0 ... 160
0 ... 6	0 ... 200
0 ... 10	0 ... 300
0 ... 16	-
0 ... 25	-

Measuring ranges, absolute pressure

Measuring range	
bar abs.	**psi abs.**
0 ... 1	0 ... 15
0 ... 1.6	0 ... 25
0 ... 2.5	0 ... 50
0 ... 4	0 ... 100
0 ... 6	0 ... 250
0 ... 10	-
0 ... 16	-

Vacuum and compound measuring ranges

Measuring range	
bar	**psi**
-1 ... 0	-30 inHg ... 0
-1 ... +0.6	-30 inHg ... +30
-1 ... +1	-
-1 ... +2	-
-1 ... +3	-
-1 ... +4	-
-1 ... +5	-
-1 ... +9	-
-1 ... +10	-
-1 ... +15	-

→ Other measuring ranges on request

Further details on: measuring ranges	
Special measuring ranges	→ Other measuring ranges on request
Unit	■ bar ■ psi ■ bar abs. ■ psi abs.
Overpressure limit	
Measuring ranges ≤ 6 bar	4 times
Measuring ranges 10 bar and 16 bar	3 times
Measuring range 25 bar	2 times
Vacuum resistance	Vacuum-resistant to -1 bar

Process connection	
Standard	**Size**
TRI-CLAMP® (DIN 32676) For pipes per DIN 11866 row C or ASME BPE	■ DN 1 ½" ■ DN 2"
DIN 32676 For pipes per DIN 11866 row A or DIN 11850 row 2	■ DN 40 ■ DN 50
ISO 2852 For pipes per ISO 2037 and BS 4825 part 1	■ DN 38 ■ DN 40 ■ DN 51
DIN 11851 For pipes per DIN 11850 row 2	■ DN 25 ■ DN 40 ■ DN 50
SMS (SMS 1145) For pipes per ISO 1127 row 2 or ISO 2037/1992	■ DN 1 ½" ■ DN 2"
IDF (ISO/DIS 2853 and BS 4825 part 4) For pipes per ISO 1127 row 2 or ISO 2037/1992	■ DN 1 ½" ■ DN 2"
APV-RJT (BS 4825 part 5) For pipes per BS 4825 part 1 and O.D. tube	■ DN 1 ½" ■ DN 2"
VARINLINE® Suitable for installation in VARINLINE® components	■ Form F, PN 25 ■ Form N, PN 25
DIN 11864-1 form A For pipes per DIN 11866 row A or DIN 11850 row 2	■ DN 40 ■ DN 50
DIN 11864-2 form A For pipes per DIN 11866 row A or DIN 11850 row 2	■ DN 40 ■ DN 50
DIN 11864-3 form A For pipes per DIN 11866 row A or DIN 11850 row 2	■ DN 40 ■ DN 50
NEUMO BioControl® Suitable for installation in a BioControl® housing, see data sheet AC 09.14	■ Size 50 ■ Size 65
NEUMO BioConnect® Flange, form V	■ DN 40 ■ DN 50
NEUMO BioConnect® Liner and grooved union nut, form V	■ DN 40 ■ DN 50
DRD flange connection	-

Output signal		
Signal type	4 ... 20 mA, 2-wire	
	→ Other output signals, e.g. CANopen, on request	
Load in Ω	$R_A \leq (U_+ - 10\ V) / 0.02\ A$	
Voltage supply		
Auxiliary power	DC 10 ... 30 V	
Surge protection / Dielectric strength [1]	DC 36 V	
Time response		
Response time (10 ... 90 %)	≤ 10 ms	

1) NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions)

Electrical connection	Ingress protection [1]	Wire cross-section	Cable diameter	Cable length
Angular connector DIN 175301-803 A	IP65	Max. 1.5 mm²	6 ... 8 mm	-
Field case	IP67	-	-	-
Circular connector M12 x 1 (4-pin)	IP67	-	-	-
Cable outlet, 1.5 m	IP68	Max. 0.5 mm²	6 ... 8 mm	1.5 m

1) The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.

→ Other electrical connections on request

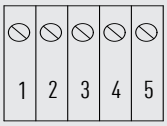
Further details on: electrical connection	
Short-circuit resistance	S+ vs. U-
Reverse polarity protection	U+ vs. U-
Insulation voltage	DC 500 V with NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions)

Pin assignment

Angular connector DIN 175301-803 A

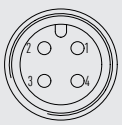
	2-wire	3-wire
U+	1	1
U-	2	2
S+	-	3

Field case



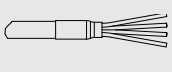
	2-wire	3-wire
U+	1	1
U-	2	2
S+	3	3

Circular connector M12 x 1 (4-pin)



	2-wire	3-wire
U+	1	1
U-	3	3
S+	-	4

Cable outlet



	2-wire	3-wire
U+	Brown (BN)	Brown (BN)
U-	Green (GN)	Green (GN)
S+	-	White (WH)

Materials	
Material (wetted)	Stainless steel 1.4435
Surface texture (wetted)	Ra ≤ 0.76 µm [30 µin] per ASME BPE SF3 (except for weld seam)
Material (in contact with the environment)	Stainless steel 1.4571
System fill fluid	■ Synthetic oil, KN 77, FDA-compliant, FDA-CFR no. 21CFR178.3750 ■ Neobee® M-20, KN 59, FDA-compliant, FDA-CFR no. 21CFR174.5

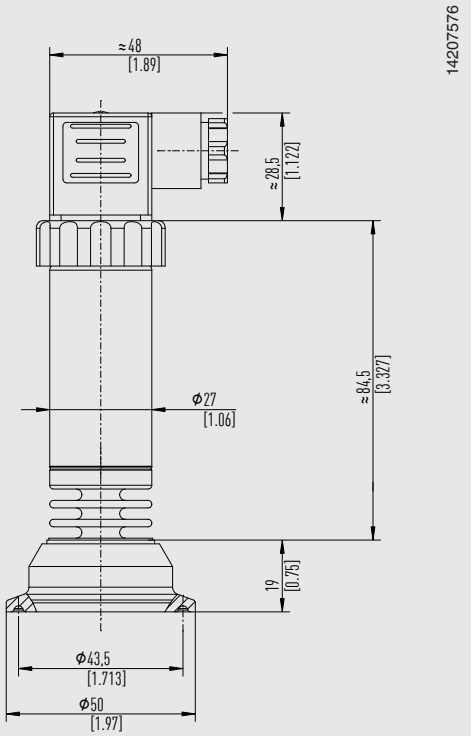
Operating conditions	
Temperature ranges [1]	
Medium temperature	-20 ... +150 °C [-4 ... +302 °F]
Ambient temperature	-20 ... +80 °C [-4 ... +176 °F]
Storage temperature	-40 ... +100 °C [-40 ... +212 °F]
Vibration resistance (per IEC 60068-2-6)	15g
Shock resistance (per IEC 60068-2-27)	500g

1) Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3

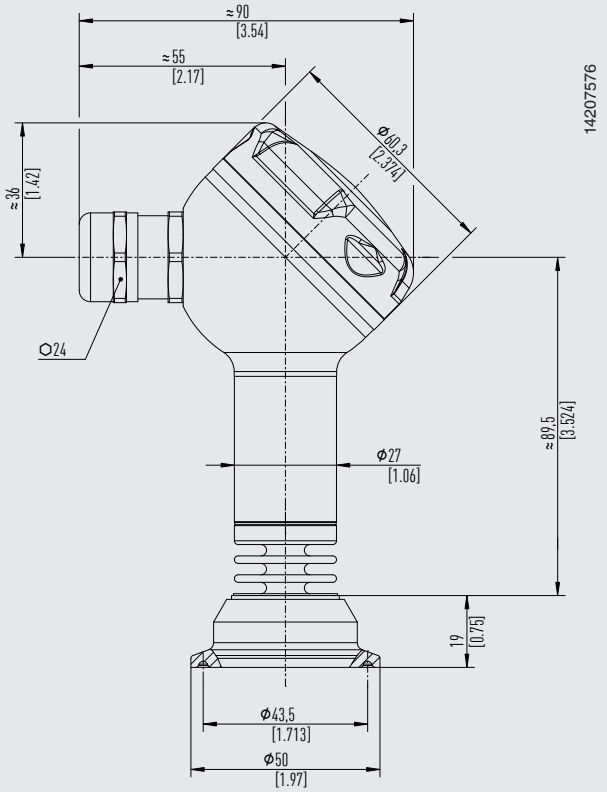
Dimensions in mm [in]

Representation of the electrical connection with TRI-CLAMP®, DN 1 ½"

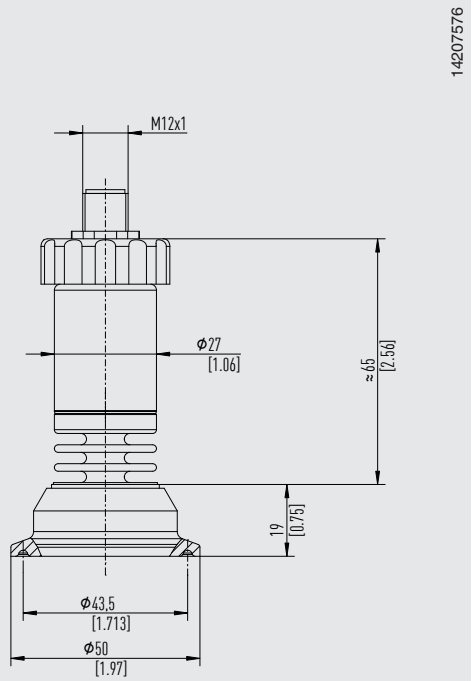
Angular connector DIN 175301-803 A



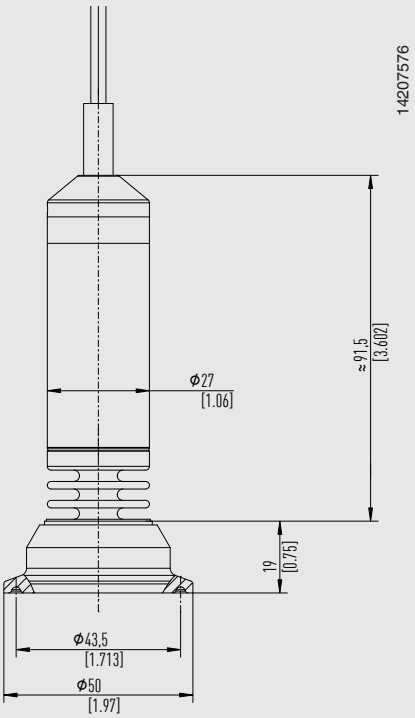
Field case



Circular connector M12 x 1

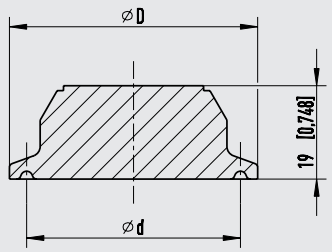


Cable outlet



Process connections

Clamp connection (clamp)

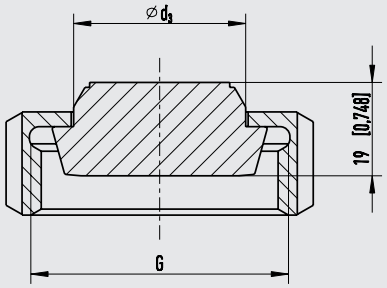


EHEDG-compliant only in combination with a Kalrez stainless steel gasket from Dupont de Nemours or with a T-ring seal from Combifit International B.V.

Standard	Size	Dimensions in mm [in]	
		D	d
TRI-CLAMP® 1) (DIN 32676) For pipes per DIN 11866 row C or ASME BPE	1 ½"	50.5 [1.99]	43.5 [1.71]
	2"	64 [2.52]	56.6 [2.23]
DIN 32676 For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	50.5 [1.99]	43.5 [1.71]
	DN 50	64 [2.52]	56.6 [2.23]
ISO 2852 For pipes per ISO 2037 and BS 4825 part 1	DN 38	50.5 [1.99]	43.5 [1.71]
	DN 40	64 [2.52]	56.6 [2.23]
	DN 51	64 [2.52]	56.6 [2.23]

1) TRI-CLAMP® is a registered trademark of Alfa Laval Corporate AB.

Grooved union nut DIN 11851

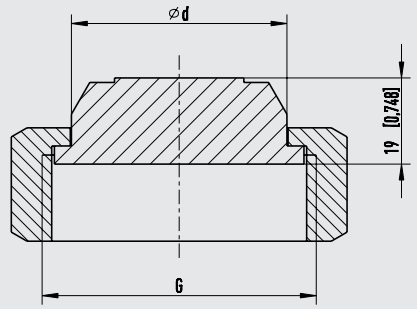


3-A marked only in combination with profile sealing from SKS-Komponenten BV or Kieselmann GmbH

EHEDG-compliant only in combination with ASEPTO-STAR k-flex upgrade seal from Kieselmann GmbH

Standard	Size	Dimensions in mm [in]	
		G	d_3
DIN 11851 For pipes per DIN 11850 row 2	DN 25	Rd 52 x 1/6	44 [1.73]
	DN 40	Rd 65 x 1/6	48 [1.89]
	DN 50	Rd 78 x 1/6	61 [2.40]

Grooved union nut SMS



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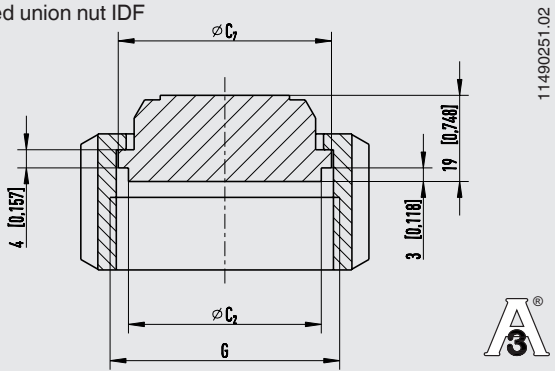
Standard	Size	Dimensions in mm [in]	
		G	d_3
SMS (SMS 1145) **For pipes per ISO 1127 row 2 or ISO 2037/1992**	1 ½"	Rd 60 x 1/6	47.5 [1.87]
	2"	Rd 70 x 1/6	60 [2.36]

Grooved union nut IDF



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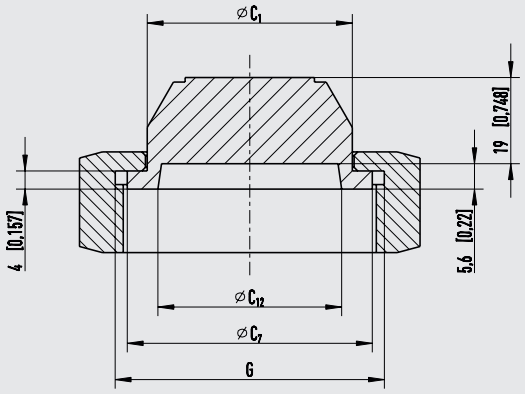
3-A marked only in combination with a seal with support ring per ISO 2853

Standard	Size	Dimensions in mm [in]		
		G	C_2	C_7
IDF (ISO/DIS 2853 and BS 4825 part 4) For pipes per ISO 1127 row 2 or ISO 2037/1992	1 ½"	IDF 1.5	42.5 [1.67]	47 [1.85]
	2"	IDF 2	56 [2.20]	60.5 [2.38]

Grooved union nut APV-RJT



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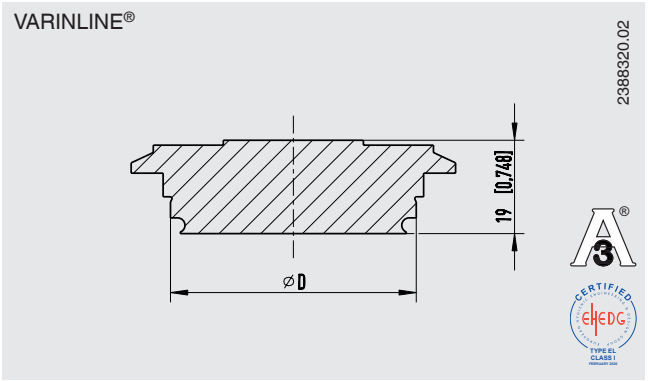
Standard	Size	Dimensions in mm [in]			
		G	C_1	C_7	C_{12}
APV-RJT (BS 4825 part 5) For pipes per BS 4825 part 1 and O.D. tube	1 ½"	2 5⁄16" x 8	45.2 [1.78]	54 [2.13]	40.5 [1.59]
	2"	2 7⁄8" x 8	57.7 [2.27]	66.6 [2.62]	53.2 [2.09]

VARINLINE®

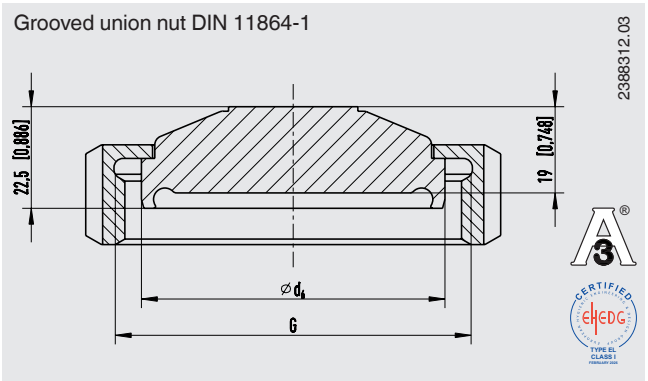


Size	Dimensions in mm [in]
	D
VARINLINE® form F, PN 25	50 [1.97]
VARINLINE® form N, PN 25	68 [2.68]

Suitable VARINLINE® component	EHEDG-compliant	
	Form F	Form N
Case	No	Yes
Type T case connecting flange	Yes	Yes
Type T-S case connecting flange	No	No
Type U case connecting flange	No	No
Type U-S case connecting flange	No	No
Type P tank connecting flange	Yes	Yes

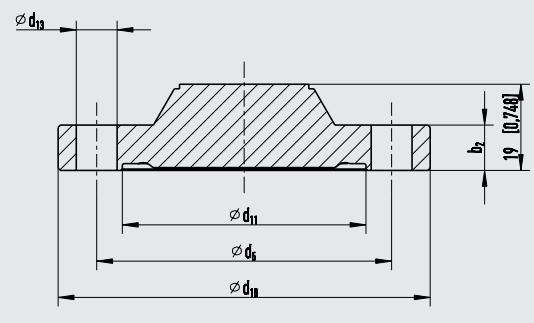
EHEDG-compliant only in combination with an EPDM O-ring

Grooved union nut DIN 11864-1



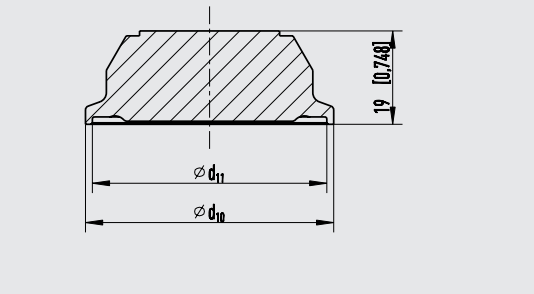
Standard	Size	Dimensions in mm [in]	
		G	d_6
DIN 11864-1 form A For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	Rd 65 x 1/6	54.9 [2.16]
	DN 50	Rd 78 x 1/6	66.9 [2.63]

Flange connection DIN 11864-2



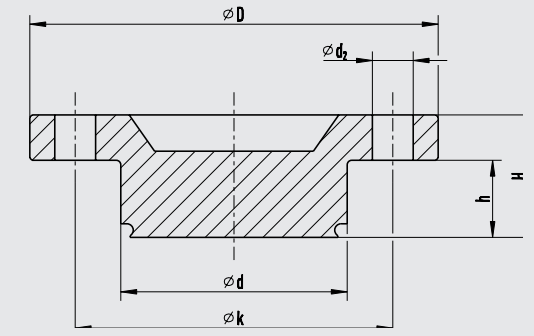
Standard	Size	Dimensions in mm [in]				
		d_5	d_{10}	d_{11}	d_{13}	b_2
DIN 11864-2 form A For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	65 [2.56]	82 [3.23]	53.7 [2.11]	4 [0.16] x 9 [0.35]	10 [0.39]
	DN 50	77 [3.03]	94 [3.70]	65.7 [2.59]	4 [0.16] x 9 [0.35]	10 [0.39]

Clamp connection (clamp) DIN 11864-3



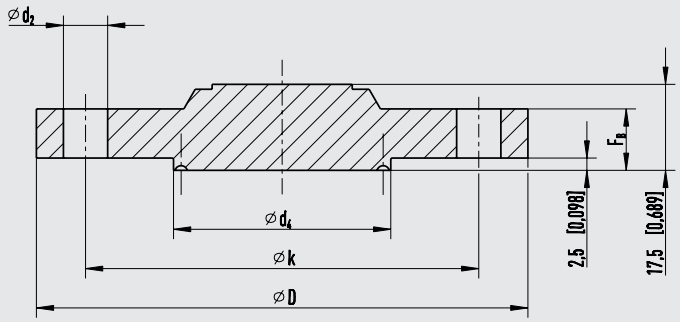
Standard	Size	Dimensions in mm [in]	
		d_{10}	d_{11}
DIN 11864-3 form A For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	64 [2.52]	53.7 [2.11]
	DN 50	77.5 [3.05]	65.7 [2.59]

NEUMO BioControl®



Standard	Size	Dimensions in mm [in]					
		d	d_2	D	k	h	H
NEUMO BioControl® Suitable for installation in NEUMO BioControl® housing, see data sheet AC 09.14	Size 50	50 [1.97]	4 [0.16] x 9 [0.35]	90 [3.54]	70 [2.76]	17 [0.67]	27 [1.06]
	Size 65	68 [2.68]	4 [0.16] x 11 [0.43]	120 [4.72]	95 [3.74]	17 [0.67]	27 [1.06]

NEUMO BioConnect®



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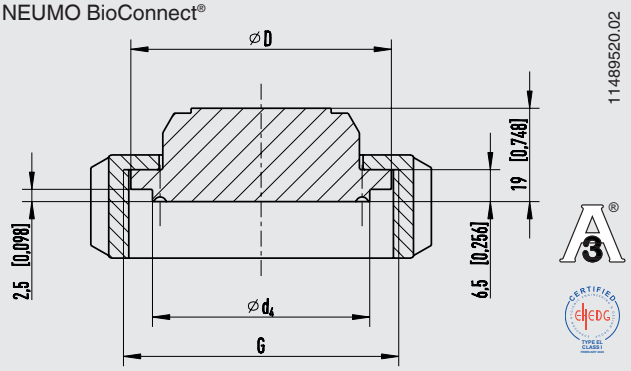
Standard	Size	Dimensions in mm [in]				
		d_2	d_4	D	k	F_B
NEUMO BioConnect® Flange, form V	DN 40	4 [0.16] x 9 [0.35]	44.2 [1.74]	100 [3.94]	80 [3.15]	10 [0.39]
	DN 50	4 [0.16] x 9 [0.35]	56.2 [2.21]	110 [4.33]	90 [3.54]	12 [0.47]

NEUMO BioConnect®



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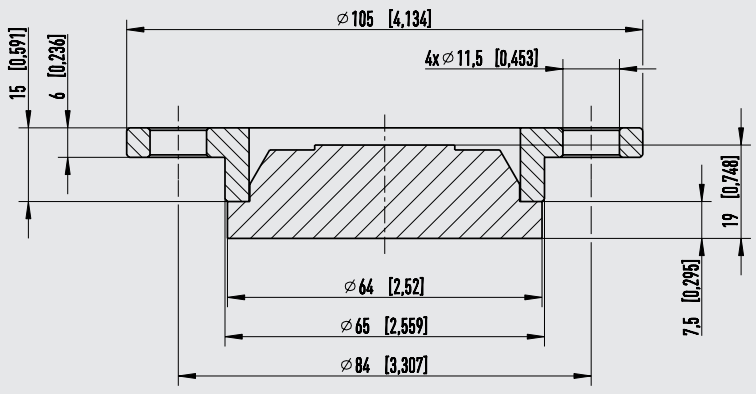
Standard	Size	Dimensions in mm [in]		
		G	d_4	D
NEUMO BioConnect® Liner and grooved union nut, form V	DN 40	M56 x 2	44.2 [1.74]	53 [2.09]
	DN 50	M68 x 2	56.2 [2.21]	65 [2.56]

DRD flange connection



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3-A marked in self-draining mounting position, see data sheet DS 99.39, bottom of page 2

→ Other process connections on request

Approvals

Logo	Description	Country
CE	**EU declaration of conformity**	European Union
	EMC Directive EN 61326 emission (group 1, class B) and immunity (industrial environment)	
	RoHS directive	
CSA	**CSA** Safety (e.g. electr. safety, overpressure, ...)	Canada
3-A	**3-A** [1] Hygienic design This instrument is 3-A marked, based on a third party verification for conformance to the 3-A standard.	USA
EHEDG	**EHEDG** [2] Hygienic design	European Union

1) 3-A marked only in conjunction with the marked process connections
2) EHEDG-conformity only in conjunction with the marked process connections

Optional approvals

Logo	Description	Country
EAC	**EAC** EMC Directive	Eurasian Economic Community
	PAC Kazakhstan Metrology, measurement technology	Kazakhstan
-	**PAC Ukraine** Metrology, measurement technology	Ukraine
-	**CRN** Safety (e.g. electr. safety, overpressure, ...)	Canada

Manufacturer's declaration

Logo	Description
-	**Manufacturer's statement GB 4806.1-2016 National Food Safety Standard / Good Manufacturing Practice (GMP) GB 31603-2015**
-	**Manufacturer's declaration regarding EU regulation 1935/2004 EC**
-	**China RoHS directive**

Certificates

Certificates	
Certificates	■ 2.2 test report per EN 10204 - State-of-the-art manufacturing, material proof, indication accuracy - FDA conformity of the system fill fluid - 3-A marking of the diaphragm seal, based on a third party verification ■ 3.1 inspection certificate per EN 10204 - Material proof, wetted metal parts - Indication accuracy ■ Others on request

→ For approvals and certificates, see website

Accessories

Instruments for on-site calibration

Model		Description
	**CPG-KITP**	Pneumatic service kit, accuracy 0.1 % FS (0.05 % FS or 0.025 % FS also available) ■ Model CPG1500 precision digital pressure gauge ■ Model CPP30 pneumatic hand test pump, pressure generation -0.95 ... +35 bar ■ Adapter set ■ Service case → See data sheet CT 93.01
	**CPH7000**	Portable process calibrator, accuracy 0.025 % FS ■ Model CPH7000 process calibrator, integrated manual pressure generation -0.85 ... +25 bar ■ Power supply unit ■ Service case → See data sheet CT 15.51
	**CPH7650**	Portable pressure calibrator, accuracy 0.025 % FS ■ Model CPH7650 pressure calibrator, integrated electrical pressure generation -0.85 ... +20 bar ■ Test cables ■ Battery charger → See data sheet CT 17.02

FS = Full span = End of measuring range - Start of measuring range

Calibration adapter

Description	Order number
Calibration adapter TRI-CLAMP®, 1 ½"	11563206
Calibration adapter TRI-CLAMP®, 2"	14332415

→ Other calibration adapters on request

WIKA-Cal calibration software

Easy and fast creation of a high-quality calibration certificate

The WIKA-Cal calibration software is used for generating calibration certificates or logger protocols for pressure measuring instruments and is available as a demo version for free download.
A template guides the user through the creation process of a document.
In order to switch from the demo version to a full version of the respective template, a USB stick with the template must be purchased.
The preinstalled demo version changes automatically to the selected full version when the USB stick is inserted and remains available as long as the USB stick is connected to the computer.

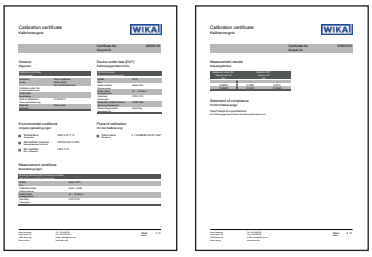
- Creation of calibration certificates for mechanical and electronic pressure measuring instruments
- A calibration assistant guides you through the calibration
- Automatic generation of the calibration steps
- Generation of 3.1 certificates per DIN EN 10204
- Creation of logger protocols
- User-friendly interface
- Languages: German, English, Italian and more due with software updates

→ For further information, see data sheet CT 95.10

Calibration certificates can be created with the Cal template and logger protocols can be created with the Log template.

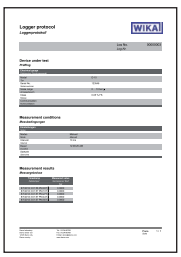
Cal Demo
Generation of calibration certificates limited to 2 measuring points, with automatic initiation of pressures via a pressure controller.

Cal Light
Generation of calibration certificates with no limitations on measuring points, without automatic initiation of pressures via a pressure controller.



Log Demo
Creation of data logger test logs, limited to 5 measured values.

Log
Creation of data logger test logs without limiting the measured values.



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Ordering information
Model / Output signal / Measuring range / Process connection / Electrical connection / Certificates / Options

Standard articles

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