



## PHT Pressure Transmitter for Sanitary Applications

The high-quality SICK PHT pressure transmitters are perfectly suited for sanitary applications in the food and beverage, pharmaceutical and cosmetics industry.

Regarding the process the pressure transmitters are characterized by their design free from cavities using flush-mounted membranes and a large range of available sanitary process connections. Amongst others, the devices are available with tri-clamp, DIN and ISO clamp connections, female union nut connections according to DIN 11851 and 11862-1 as well as VARIVENT connections. Wetted parts are made from high-grade 1.4435 stainless steel with surface roughness  $Ra < 0.4\mu\text{m}$ .

To accommodate the frequent elevated process temperatures as well as the requirements of CIP and SIP processes the PHT pressure transmitters are rated for process temperatures up to  $150^\circ\text{C}$ . According to the requirements in the food and beverage industry the pressure transmitting fluid is FDA compliant.

The pressure transmitters PHT are distinguished by their highly precise measurement technology based on piezo-resistive sensors. Between  $0\text{...}0.25\text{ bar}$  and  $0\text{...}25\text{ bar}$  a wide range of usefully graded gauge measurement ranges is available. In addition, there are absolute measurement ranges from  $0\text{...}0.25\text{ bar}$  up to  $0\text{...}16\text{ bar}$  and compound ranges between  $-1\text{...}0\text{ bar}$  and  $-1\text{...}+15\text{ bar}$  available. The PHT pressure transmitters provide an output signal that is proportional to the applied pressure. They are available with output signals  $4\text{...}20\text{mA}$ ,  $0\text{...}5\text{V}$ , or  $0\text{...}10\text{V}$ .

For specifically harsh environmental conditions the PHT pressure transmitters are available with a stainless steel field housing. The variant with field housing and current output  $4\text{...}20\text{ mA}$  features test terminals that allow metering of the signal current without having to disconnect the device.

### Benefits

- Safe hygienic operation through EHEDG certification
- High reliability and availability through robust design and use of high-grade materials
- High system availability due to CIP/SIP-ability
- Good cleanability of the transmitter housing
- Optimized solutions through versatile configurability



## Technical Data

Measuring ranges	Unit	Pressure ranges	Overpressure safety	Burst pressure	Pressure ranges	Overpressure safety	Burst pressure
	bar	0 ... 0.25	2	2.4	0 ... 4	17	20.5
		0 ... 0.4	2	2.4	0 ... 6	35	42.0
		0 ... 0.6	4	4.8	0 ... 10	35	42.0
		0 ... 1	5	6.0	0 ... 16	80	96.0
		0 ... 1.6	10	12.0	0 ... 25	80	96.0
		0 ... 2.5	10	12.0			
	bar abs	0 ... 0.25	2	2.4	0 ... 4	17	20.5
		0 ... 0.4	2	2.4	0 ... 6	35	42.0
		0 ... 1	5	6.0	0 ... 10	35	42.0
		0 ... 1.6	10	12.0	0 ... 16	80	96.0
		0 ... 2.5	10	12.0			
	bar	-1 ... 0	5	6.0	-1 ... +5	35	42.0
		-1 ... +0.6	10	12.0	-1 ... +9	35	42.0
		-1 ... +3	17	20.5	-1 ... +15	80	96.0
	<b>Unit</b>	<b>Pressure ranges</b>	<b>Overpressure safety</b>	<b>Burst pressure</b>	<b>Pressure ranges</b>	<b>Overpressure safety</b>	<b>Burst pressure</b>
	MPa	-0.1 ... 0	0.5	0.6	0 ... 0.4	1.7	2.0
		-0.1 ... +0.3	1.7	2.0	0 ... 0.6	3.5	4.2
		-0.1 ... +1.5	8.0	9.6	0 ... 1	3.5	4.2
		0 ... 0.04	0.2	0.24	0 ... 1.6	8	9.6
		0 ... 0.1	0.5	0.6	0 ... 2.5	8	9.6
		0 ... 0.25	1.0	1.2			
	<b>Unit</b>	<b>Pressure ranges</b>	<b>Overpressure safety</b>	<b>Burst pressure</b>	<b>Pressure ranges</b>	<b>Overpressure safety</b>	<b>Burst pressure</b>
	psi	0 ... 5	29	34.8	0 ... 100	500	600
		0 ... 10	29	34.8	0 ... 160	500	600
		0 ... 30	145	170	0 ... 200	1160	1390
		0 ... 60	246	297	0 ... 300	1160	1390
	psi abs	0 ... 15	72.5	87	0 ... 100	500	600
		0 ... 25	145	170	0 ... 250	1160	1390
		0 ... 50	240	290			
	psi	-30 InHg...0	72.5	87			
	<b>Unit</b>	<b>Pressure ranges</b>	<b>Overpressure safety</b>	<b>Burst pressure</b>	<b>Pressure ranges</b>	<b>Overpressure safety</b>	<b>Burst pressure</b>
	kg/cm <sup>2</sup>	-1...0	5	6.0	0 ... 10	35	42.0
		0 ... 2.5	10	12.0	0 ... 16	80	96.0
		0 ... 4	17	20.5	0 ... 25	80	96.0
		0 ... 6	35	42.0			

## Technical Data

Type	PHT
Process connections	Tri-Clamp 1 ½ ", 2 "
	Clamp DIN 32 676 DN 32, 40, 50
	Clamp ISO 2852 DN 33,7, 38, 40, 51
	Female union nut DIN 11 851 DN 25, 40, 50
	Female union nut SMS DN 1 ½ ", 2 "
	VARIVENT® form F, N
	Female union nut DIN 11 864-1 DN 40 DN 50, flange DIN 11 864-2 DN 40 DN 50, clamp DIN 11 864-3 DN 40 DN 50
	NEUMO BioControl® size 50, 65
	NEUMO BioConnect® form V - DN 40, 50
	NEUMO BioConnect® thread with union nut DN 40, 50
	Flange connection DRD
	Further connections on request
Materials	
■ Wetted parts	Stainless steel 1.4435
■ Housing	Stainless steel 1.4571
■ Pressure transmitting fluid	Synthetic oil, FDA approved
Power supply L <sup>+</sup>	10 ... 30 V 14 ... 30 V with signal output 0 ... 10 V 11 ... 30 V with signal output 4 ... 20 mA and field housing
Signal output and maximum load R <sub>A</sub>	4 ... 20 mA, 2-wire, R <sub>A</sub> ≤ (L <sup>+</sup> - 10 V) / 0.02 A [Ohm] The variant with field housing and current output 4...20 mA features test terminals that allow metering of the signal current without having to disconnect the device.
	0 ... 10 V, 3-wire, R <sub>A</sub> > 10 kOhm (optional)
	0 ... 5 V, 3-wire, R <sub>A</sub> > 5 kOhm (optional)
Adjustability zero/span	± 5 % using potentiometer inside the instrument <sup>1)</sup>
Response time (10 ... 90 %)	≤ 10 ms
Dielectric strength	500 V DC <sup>2)</sup>
Accuracy <sup>3)</sup>	≤ ± 0.5 % of span, optional 0.25 % of span (adjusted in vertical mounting position with lower pressure connection)
Non-linearity	≤ ± 0.2 % of span, (BFSL) per IEC 61298-2
Non-repeatability	≤ ± 0.1 % of span
1-year stability	≤ ± 0.2 % of span, (at reference conditions)
Permissible temperature ranges	
■ Medium	-20 ... +150 °C
■ Ambient	-20 ... +80 °C
■ Storage	-40 ... +100 °C
Compensated temperature range	0 ... +80 °C
Temperature coefficients within compensated temperature range:	
■ Mean TC of zero	≤ 0.2 % of span/ 10 K, with pressure ranges 0 ... 0.6 bar to 0 ... 25 bar
	≤ 0.25 % of span/ 10 K, with pressure range 0 ... 0.4 bar
	≤ 0.4 % of span/ 10 K, with pressure range 0 ... 0.25 bar
■ Mean TC of range	≤ 0.2 % of span/ 10 K

<sup>1)</sup> Not with cable connections order codes 4 and 5

<sup>2)</sup> NEC Class O2 power supply (low voltage and low current max. 100 VA even under fault conditions)

<sup>3)</sup> Including non-linearity, hysteresis, zero point and full scale error (corresponds to error of measurement per IEC 61298-2)

Technical Data

Type	PHT
CE-conformity	
■ EMC directive	2004/108/EEC, EN 61 326-2-3
Protection class	III
Shock resistance	500g per IEC 60068-2-27 (mechanical shock)
Vibration resistance	15g per IEC 60068-2-6 (vibration under resonance)
Electrical connection	4-pin L-connector per EN 175301-803, form A Stainless steel field housing with internal spring clip terminal, cross section max. 2.5 mm <sup>2</sup> Circular connector M12 x 1, 4-pin Flying leads with 1,5 m or 3 m vented cable (zero/span not adjustable), other lengths upon request
Wiring protection	
■ Wiring protection	36 V DC
■ Overvoltage protection	Q <sub>A</sub> towards M
■ Short-circuit proofness	L <sup>+</sup> towards M
Enclosure rating	IP 67 for configuration with field housing IP 68 for configuration with integrated cable output IP 67 for configuration with electrical connector M12x1 IP 65 for configuration with L-connector Per IEC 60 529 / EN 60 529. The ingress protection classes specified only apply when the pressure transmitter is connected with female connectors that provide the corresponding ingress protection.)
Weight	Approx. 0.5 kg (ca. 0.6 kg with option accuracy 0.25 % of span)

Electrical connections

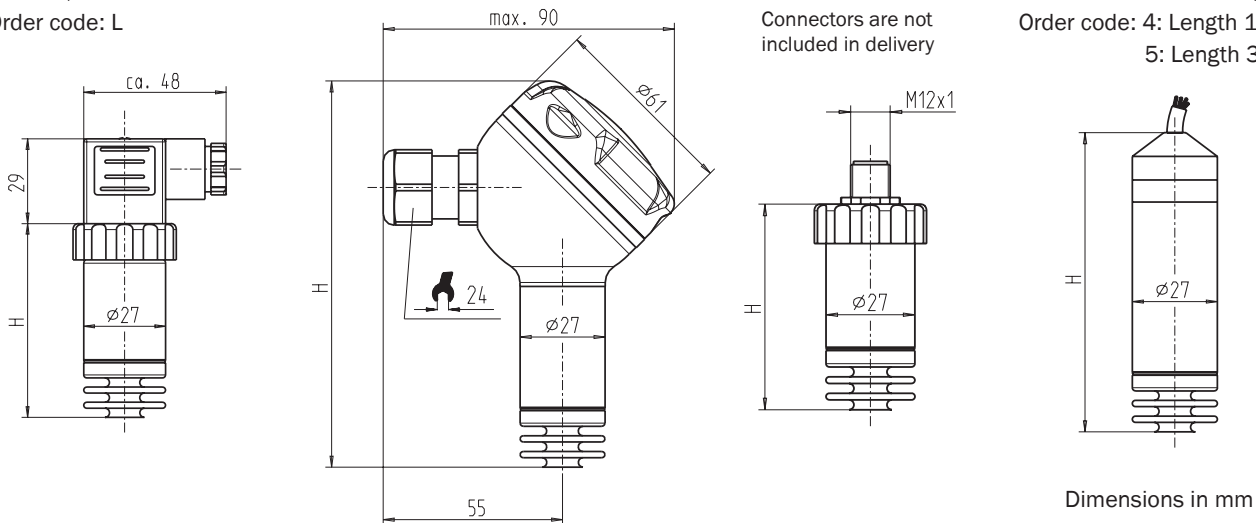
DIN 175301-803 A  
L-connector  
Conductor cross section  
up to max. 1.5 mm<sup>2</sup>,  
conductor outer diameter  
6-8 mm, IP 65  
Order code: L

Stainless steel field housing  
IP 67  
Ground terminals, brass  
nickel-plated  
Order code: F

M12 x 1  
Circular connector  
4-pin  
IP 67  
Order code: M

Flying leads  
zero/span not adjustable,  
for conductor cross section  
up to max. 0.5 mm<sup>2</sup>, AWG 20  
with end splices, conductor  
outer diameter 6.8 mm, IP 68  
Order code: 4: Length 1.5 m  
5: Length 3 m

Connectors are not  
included in delivery

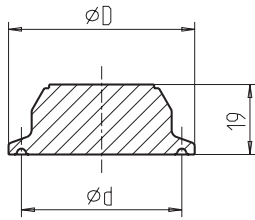


Dimensions in mm

Design	Dimension H in mm with accuracy 0.5 %	Dimension H in mm with accuracy 0.25 %
L-connector	64	84
Field housing	123	138.5
M12 x 1	64	84
Flying leads	79.5	95

Process connections

Clamp

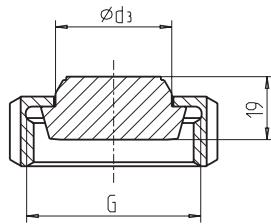


Design		Dimensions in mm	
		ØD	Ød
Tri-Clamp	1 1/2"	50	43.5
	2"	64	56.6
DIN 32 676	DN 32	50	43.5
	DN 40	50	43.5
	DN 50	64	56.6
ISO 2852	DN 33.7	50	43.5
	DN 38	50	43.5
	DN 40	64	56.6
	DN 51	64	56.6

Female union nut

DIN 11 851

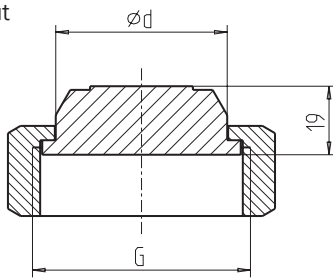
with union nut,  
for pipes per  
DIN 11 850



Design		Dimensions in mm	
		G	Ød <sub>3</sub>
DIN 11 851	DN 25	Rd 52 x 1/6	44
	DN 40	Rd 65 x 1/6	48
	DN 50	Rd 78 x 1/6	61

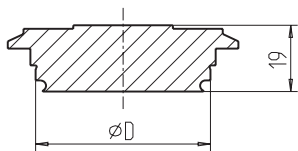
Female union nut

SMS



Design		Dimensions in mm	
		G	Ød <sub>3</sub>
SMS	1 1/2"	Rd 60 x 1/6	47.5
	2"	Rd 70 x 1/6	60

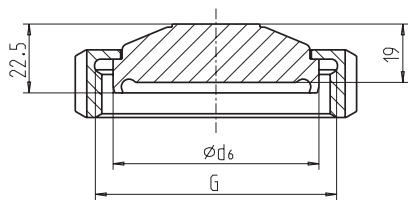
VARIVENT®



Design		Dimensions in mm	
		ØD	
VARIVENT®	Form F	50	
	Form N	68	

Female union nut  
DIN 11 864-1

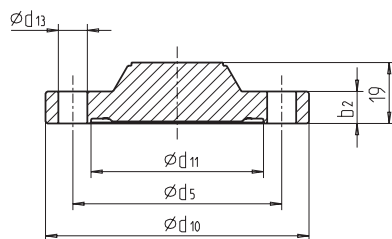
with union nut, Form A for pipes per DIN 11 850 and DIN 11 866, row A



Design		Dimensions in mm	
		G	Ød <sub>6</sub>
DIN 11 864-1	DN 40	Rd 65 x 1/6	54.9
	DN 50	Rd 78 x 1/6	66.9

Flange connection  
DIN 11 864-2

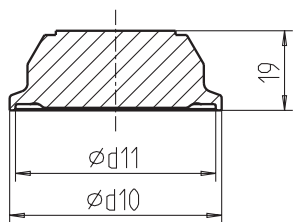
with aseptic flange with notch, for pipes per  
DIN 11 850 and DIN 11 866, row A



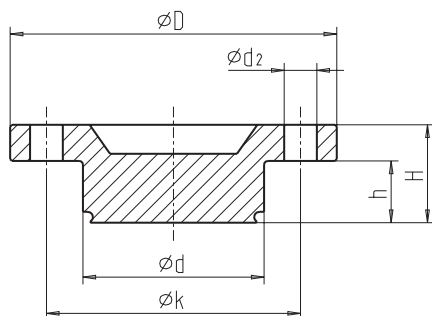
Design		Dimensions in mm				
		Ød <sub>5</sub>	Ød <sub>10</sub>	Ød <sub>11</sub>	Ød <sub>13</sub>	Øb <sub>2</sub>
DIN 11 864-2	DN 40	65	82	53.7	4 x 9	10
	DN 50	77	94	65.7	4 x 9	10

Process connections

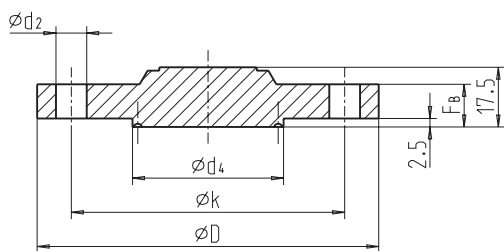
Clamp  
DIN 11 864-3 with aseptic clamp connection with notch, for pipes per DIN 11 850 and DIN 11 866, row A



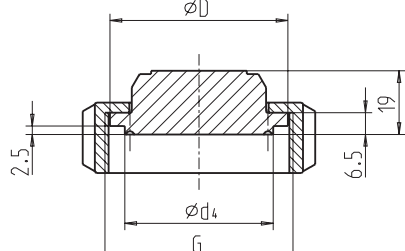
NEUMO  
BioControl®



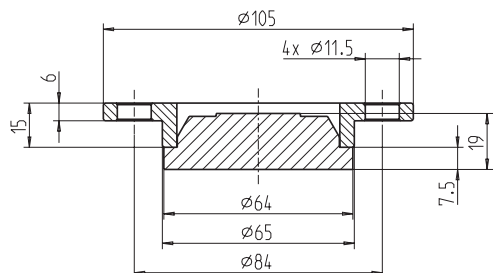
NEUMO  
BioConnect® Flange form V



NEUMO  
BioConnect® Thread with union nut (Form V)



Flange connection  
DRD



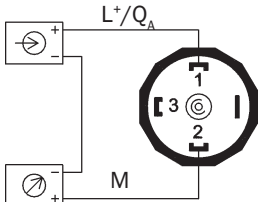
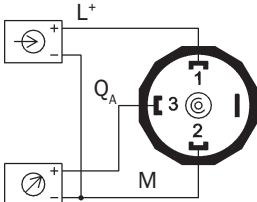
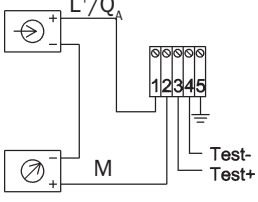
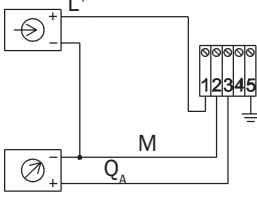
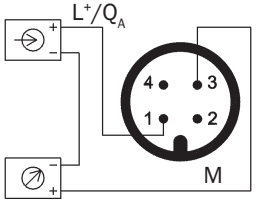
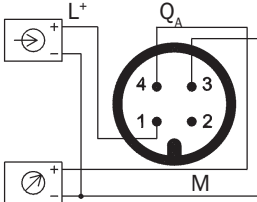


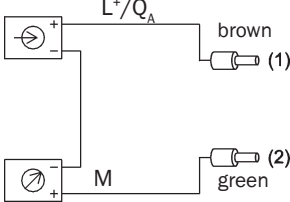
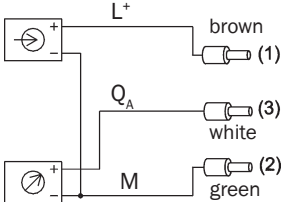
Design	Dimensions in mm		
		$\varnothing d_{10}$	$\varnothing d_{11}$
DIN 11 864-3	DN 40	64	53.7
	DN 50	77.5	65.7

Design	Dimensions in mm						
		$\varnothing d$	$\varnothing d_2$	$\varnothing D$	$\varnothing k$	h	H
BioControl®	Gr. 50	50	4x9	90	70	17	27
	Gr. 65	68	4x11	120	95	17	27

Design	Dimensions in mm					
		$\varnothing d_2$	$\varnothing d_4$	$\varnothing D$	$\varnothing k$	$F_B$
BioConnect®	DN 40	4x9	44.2	100	80	10
	DN 50	4x9	56.2	110	90	12

Design	Dimensions in mm			
		G	$\varnothing d_4$	$\varnothing D$
BioConnect®	DN 40	M56 x 2	44.2	53
	DN 50	M68 x 2	56.2	65

Wiring details

Version	2-wire	3-wire
L-Connector DIN 175301-803 A		
Stainless steel field housing		
Circular connector M12 x 1, 4-pin		
Flying leads  Legend:  Power supply  Load (e.g. display)		

Type Code

**Pressure type**

R	Gauge
A	Absolute
C	Compound

**Pressure unit**

B	bar
M	MPa
P	psi
K	kg/cm <sup>2</sup>

Standard measurement ranges see the following pages

**Accuracy**

S	Accuracy +/- 0.5% of Span (BFSL)
E	Accuracy +/- 0.25% of Span (BFSL)

**Process connector**

T1	Tri-Clamp DN 1 ½" <sup>1)</sup>
T2	Tri-Clamp DN 2" <sup>1)</sup>
52	Female union nut DIN 11851 DN 25 <sup>1)</sup>
54	Female union nut DIN 11851 DN 40 <sup>1)</sup>
55	Female union nut DIN 11851 DN 50 <sup>1)</sup>
64	Female union nut DIN 11864-1 DN 40
65	Female union nut DIN 11864-1 DN 50 <sup>1)</sup>
74	Clamp DIN 11864-3, DN 40
75	Clamp DIN 11864-3, DN 50
84	Flange DIN 11684-2, DN 40
85	Flange DIN 11684-2, DN 50
C2	Clamp ISO 2852 DN 33.7 <sup>1)</sup>
C3	Clamp ISO 2852 DN 38 <sup>1)</sup>
C4	Clamp ISO 2852 DN 40 <sup>1)</sup>
C5	Clamp ISO 2852 DN 51 <sup>1)</sup>
D3	Clamp DIN 32676 DN 32 <sup>1)</sup>
D4	Clamp DIN 32676 DN 40 <sup>1)</sup>
D5	Clamp DIN 32676 DN 50 <sup>1)</sup>
N4	NEUMO BioConnect DN 40 Form V
N5	NEUMO BioConnect DN 50 Form V
N6	NEUMO BioConnec thread with union nut DN 40
N7	NEUMO BioConnec thread with union nut DN 50
N8	NEUMO BioControl Size 50
N9	NEUMO BioControl Size 65
VF	Varivent Connector Type F <sup>1)</sup>
VN	Varivent Connector Type N <sup>1)</sup>
DR	DRD Connector with clamping elements

PHT -						0	S					0	Z
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<sup>1)</sup> EPDM sealing optional available



Type Code

**Process connector**

- S1 Grooved union nut SMS standard DN 1 ½"
- S2 Grooved union nut SMS standard DN 2"

**Sealing**

- E EPDM <sup>2)</sup>
- 0 Without sealing

**Signal output**

- A 4 ... 20 mA, 2-wire
- V 0 ... 10 V, 3-wire
- U 0 ... 5 V, 3-wire

**Electrical connector and housing**

- M M12 x 1, 4-pin, IP 67
- L L-connector DIN EN 175301-803 A, IP65
- 4 flying leads, 1.5 m, IP 68 (zero and span not adjustable)
- 5 flying leads, 3 m, IP 68 (zero and span not adjustable)
- F Field housing IP 67

**Supply voltage**

- S 10 ... 30 V DC
- Z 14...30 V DC with signal output 0 ... 10 V
- T 11 ... 30 V DC with signal output 4 ... 20 mA and field housing

PHT -						0	S						0	Z
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<sup>2)</sup> Availability of sealing refer to footnote 1) on previous page.

## Type Code

Measurement ranges	bar / Gauge Pressure		bar / Absolute Pressure		bar / Compound Pressure	
X25	0 ... 0,25 bar		X25	0 ... 0.25 bar abs	1X0	-1 ... 0 bar
X40	0 ... 0,4 bar		X40	0 ... 0.4 bar abs	1X6	-1 ... +0.6 bar
X60	0 ... 0,6 bar		1X0	0 ... 1 bar abs	4X0	-1 ... +3 bar
1X0	0 ... 1 bar		1X6	0 ... 1.6 bar abs	6X0	-1 ... +5 bar
1X6	0 ... 1,6 bar		2X5	0 ... 2.5 bar abs	010	-1 ... +9 bar
2X5	0 ... 2,5 bar		4X0	0 ... 4 bar abs	016	-1 ... +15 bar
4X0	0 ... 4 bar		6X0	0 ... 6 bar abs		
6X0	0 ... 6 bar		010	0 ... 10 bar abs		
010	0 ... 10 bar		016	0 ... 16 bar abs		
016	0 ... 16 bar					
025	0 ... 25 bar					

MPa / Gauge Pressure		MPa / Compound Pressure	
40M	0 ... 0.04 MPa	X10	-0,1 ... 0 MPa
X10	0 ... 0.1 MPa	X40	-0,1 ... +0,3 MPa
X25	0 ... 0.25 MPa	1X6	-0,1 ... +1,5 MPa
X40	0 ... 0.4 MPa		
X60	0 ... 0.6 MPa		
1X0	0 ... 1 MPa		
1X6	0 ... 1.6 MPa		
2X5	0 ... 2.5 MPa		

psi / Gauge Pressure		psi / Absolute Pressure		psi / Compound Pressure	
5X0	0 ... 5 psi	015	0 ... 15 psi abs	015	-30 InHg ...0 psi
010	0 ... 10 psi	025	0 ... 25 psi abs		
030	0 ... 30 psi	050	0 ... 50 psi abs		
060	0 ... 60 psi	100	0 ... 100 psi abs		
100	0 ... 100 psi	250	0 ... 250 psi abs		
160	0 ... 160 psi				
200	0 ... 200 psi				
300	0 ... 300 psi				

kg/cm <sup>2</sup> / Gauge Pressure		kg/cm <sup>2</sup> / Compound Pressure	
2X5	0 ... 2,5 kg/cm <sup>2</sup>	1X0	-1...0 kg/cm <sup>2</sup>
4X0	0 ... 4 kg/cm <sup>2</sup>		
6X0	0 ... 6 kg/cm <sup>2</sup>		
010	0 ... 10 kg/cm <sup>2</sup>		
016	0 ... 16 kg/cm <sup>2</sup>		
025	0 ... 25 kg/cm <sup>2</sup>		