

# Diaphragm Pressure Gauges

## Bayonet Ring Case Stainless Steel Standard (PCh) or Liquid Filled (PChG)

NCS 100 (4")  
160 (6")

Accuracy Class 1.6

Models  
**PCh**  
**PChG**

### Applications

Pressure gauges with horizontal diaphragm allow to find suitable versions for even difficult kinds of media, such as aggressive, contaminated or viscid media. The stainless steel bayonet ring case is designed for applications where a rust resistant, sealed case of high chemical resistance is required (dirty damp, or corrosive atmosphere).

### Nominal Case Sizes (NCS)

100 mm (4"), 160 mm (6")

### Accuracy Class (EN 837-3)

1.6 resp. 2.5 when the diaphragm is supplied with protection foil

### Pressure Ranges (EN 837-3)

PCh: 0-10 mbar resp. 0-4" WC up to 0-40 bar resp. 0-600 psi,  
PChG, and versions with PTFE foil: 0-40 mbar resp. 0-16" WC and up,  
also the corresponding vacuum and compound ranges

### Pressure Limitations (EN 837-3)

Steady pressure: full scale value

Cyclic pressure: 90% of full scale value

Overpressure: up to 5 times f.s., max. 40 bar (600 psi), resp.  
measuring flange Ø160 mm max. 2.5 bar (40 psi)

### Protection Type (EN 60 529 / IEC 529)

Model PCh = IP 54 / Model PChG = IP 65

Further information about advantages, applications, specifications, temperature limitations and pressure ranges can be found in our model overview 3000.

## Standard Configuration

### Process Connection

Bottom connection G ½ B (½" BSP, standard), ½" NPT or M 20x1.5,  
if with PTFE lining: inlet orifice Ø 7 mm (.28"); flange connections: see page 2 ff

### Wetted Parts

- 2	Lower flange:	carbon steel, zinc plated
	Gasket:	NBR
	Diaphragm:	10 to 250 mbar: 316 Ti (1.4571) 0.4 to 1.6 bar: Duratherm (=NiCrCo alloy) 2.5 to 40 bar: carbon steel, zinc plated
- 3	Lower flange:	316 Ti (1.4571)
	Gasket:	FPM
	Diaphragm:	10 to 250 mbar: 316 Ti (1.4571) 0.4 to 40 bar: Duratherm
- 4	Lower flange:	carbon steel, zinc plated, PTFE-lined
	Gasket:	PTFE
	Diaphragm:	40 to 250 mbar: 316 Ti (1.4571), PTFE-foil 0.4 to 40 bar: Duratherm, PTFE-foil
- 5	Lower flange:	316 Ti (1.4571), PTFE-lined
	Gasket:	PTFE
	Diaphragm:	40 to 250 mbar: 316 Ti (1.4571), PTFE-foil 0.4 to 40 bar: Duratherm, PTFE-foil

### Upper Flange

304 stainless steel (1.4301)

### Measuring Flange Ø

Pressure ranges ≤ 250 mbar (< 100" WC) = Ø 160 mm (6.3"),  
pressure ranges ≥ 400 mbar (> 160" WC) = Ø 100 mm (3.94")

### Movement

Stainless steel; version - 2 (see below): brass/German silver

### Dial

Aluminum alloy, black figures, white background

### Pointer

Aluminum alloy, black

### Case and Ring

Bayonett ring case 304 stainless steel (1.4301)

### Case Filling

Model PChG only: Glycerine



### Window

Laminated safety glass, model -2 single strength glass

### Safety Features

PCh: 1" Blow-out in the back of the case, PChG: Top blow-out assembly

### Venting

Model PChG with ventilation bore at the top blow-out assembly

## Optional Special Configurations

- Inlet port orifice up to Ø 10 mm (.39") for versions -2 or -3
- Hygienic connection, e.g. according to DIN 11851, DN 25 to DN 50, with or without lateral cleaning valve (compare data sheets 7300, 7301)
- Other connection flanges upon request (e.g. according to former DIN),
- Diaphragm with protection foil:
  - PTFE (≥ 40 mbar, vacuum tight), sealing PTFE;
  - Fine-silver (≥ 160 mbar, vacuum tight), sealing FPM;
  - Tantalum (≥ 160 mbar, vacuum tight upon request), sealing PFTE, others upon request
- Other materials lower measuring flange/process connection up. request
- Upper measuring flange with body 316 Ti (1.4571)
- Top or side connection, or other than vertical installation position
- Movement stainless steel for version -2
- Acrylic glass lens or laminated safety glass for version -2
- Special scales such as dual ranges, fine-division (with knife-edge pointer)
- Stationary red pointer on the dial, or with external adjustment <sup>1)</sup>
- Maximum indicating pointer, external adjustment <sup>1)</sup> (≥ 100 mbar, ≥ 4" WC)
- Micro-adjustable pointer, mechanism aluminum
- up to 10-times overrange protection, but
  - max. 40 bar (600 psi) for measuring flange Ø 100 mm (3.94"),
  - max. 2.5 bar (40 psi) for measuring flange Ø 160 mm (6.3")
- Accuracy class 1.0 or .6 (EN 837-3) upon request
- Other filling fluid for PChG, e.g. silicone oil for temp. down to -40 °C (-40 °F)
- Version for temperatures > +100 °C (> +212 °F)
- NCS 250 (10"), dry version only, model PCh 250
- American type (wide) bayonet ring, models PCha, PChaG
- Electrical accessories, please see data sheets 3291, 9000 ff

<sup>1)</sup> If adjustable from outside: with acrylic glass resp. polycarbonate window

## How to Order:

Model code: **PCh** = dry version, IP 54  
**PChG** = liquid filled version, IP 65

Nom. case size: **100** (4"), **160** (6")

Wetted parts: Ordering code **-2**, **-3**, **-4** or **-5** (compare left)

Pressure range: According to EN 837-3 e.g. 0-4 bar or 0-60 psi

Connection: Thread connection **G ½ B** (½" BSP = standard),  
**½" NPT**, **M 20x1.5**, others upon request  
For flange connection please specify flange type and size as on tables page 2-4

Special options: (see above)

### Examples for Ordering Information:

- PCh 100-3, 0-60 mbar, ½" BSP
- PChG 100-4, 0-2.5 bar, DN 25 (DIN EN flange connection)



**INSTRUMENTS TO INDUSTRY LTD**

Euro Works - Hawksley Industrial Estate - Hawksley Street  
Oldham - OL8 4PQ - United Kingdom

Instruments To  
Industry Ltd

T: +44 (0)161 652 7741

F: +44 (0)161 621 0389

E: sales@itiuk.com

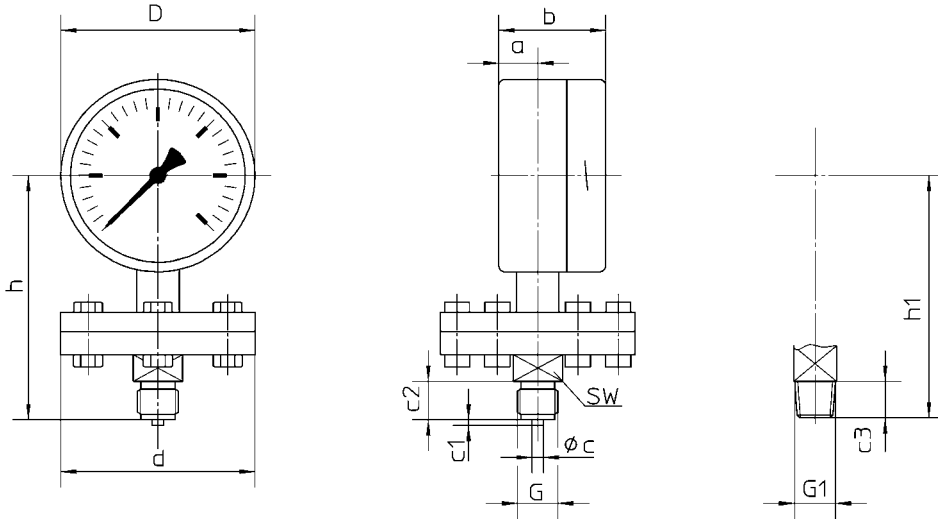
W: www.itiuk.com

**3201**

**3/06**

# Case Configuration, Flange Connections, Dimensional Data and Weight

Bottom connection



Dimensional Data ( mm / inches ) and Weight ( kg / lb )

NCS	Measuring flange Ø d <sup>1)</sup>	a	b <sub>1)</sub>	c	c <sub>1</sub>	c <sub>2</sub>	c <sub>3</sub>	D	G	G1	h ± 2	h <sub>1</sub> ± 2	SW	Weight (approx.) <sup>2)</sup>	
														PCh	PChG
100 4	100 4	20 .79	55 2.17	6 .24	3 .12	20 .79	19 .75	101 3.98	G ½ B ½" BSP	½" NPT	127 5	126 4.96	22 .87	1.85	2.25
	4.08													4.96	
160 6	160 6	20 .79	55 2.17	6 .24	3 .12	20 .79	19 .75	161 6.34	G ½ B ½" BSP	½" NPT	157 6.18	156 6.14	22 .87	3.45	3.65
	7.61													8.05	
160 6	100 4	20 .79	55 2.17	6 .24	3 .12	20 .79	19 .75	161 6.34	G ½ B ½" BSP	½" NPT	157 6.18	156 6.14	22 .87	2.20	3.20
	4.85													7.05	
160 6	160 6	20 .79	55 2.17	6 .24	3 .12	20 .79	19 .75	161 6.34	G ½ B ½" BSP	½" NPT	157 6.18	156 6.14	22 .87	3.80	4.80
	8.38													10.58	

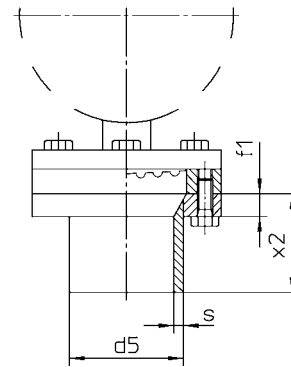
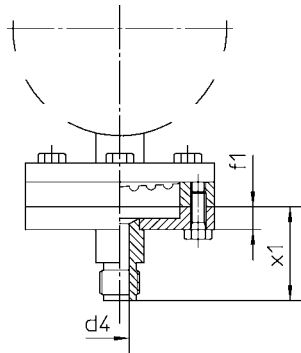
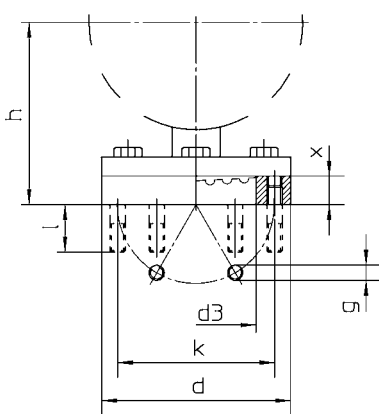
## Flange 2707 a

(with double-end studs if requested)

Optionally available for flange 2707a:

Connection flange with thread connection G ½ B (½" BSP) or ½" NPT, with enlarged inlet orifice

Connection flange with welding connection for measuring flange Ø 100 mm (3.94")



Dimensional Data ( mm / inches ) and Weight ( kg / lb )

Measuring flange Ø d <sup>1)</sup>	d <sub>3</sub>	d <sub>4</sub>	d <sub>5</sub> <sup>3)</sup>	f <sub>1</sub>	g	h <sup>±2</sup>		k	l	x	x <sub>1</sub>	x <sub>2</sub>	s	Weight (approx.) <sup>2)</sup>			
						NCS 100	NCS 160							NCS 100		NCS 160	
														PCh	PChG	PCh	PChG
100 4	63.5 2.5	10 .39	60.3 2.37	12 .47	6 x M 8	96 3.78	126 4.96	83 3.27	25 .98	15 .59	46 1.81	50 1.97	5 .2	1.65	2.05	2.00	3.00
														3.64	4.52	4.41	6.61
160 6	123 4.84	10 .39	—	—	8 x M 8	96 3.78	126 4.96	140 5.51	25 .98	15 .59	46 1.81	—	—	2.80	3.20	3.15	4.15
														6.17	7.05	6.94	9.15

<sup>1)</sup> nominal flange size

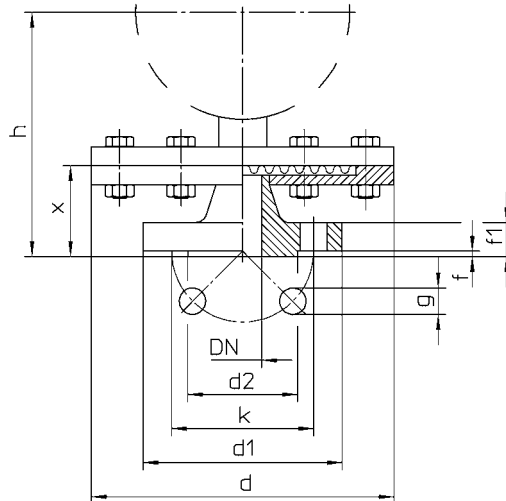
<sup>2)</sup> For different pressure ranges and materials the weights differ considerably.

<sup>3)</sup> other pipe diameters upon request

# DIN EN 1092-1 Flange Connections DN 15, 20, 25 and 50, PN 10 to PN 40

Suitable for flanges in accordance with DIN EN 1092-1 type 11 (corresponding to former DIN 2633, 2635)

## Measuring Flange-Ø d = 160 mm (6.3")

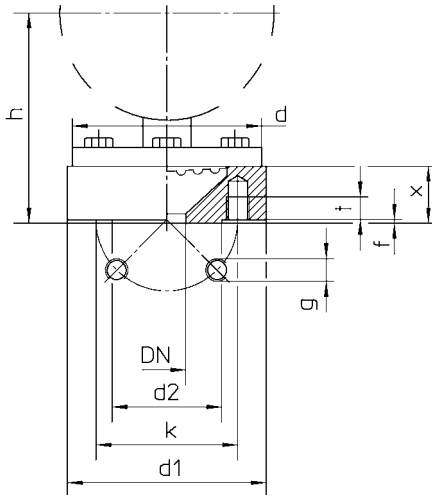


Dimensional Data ( mm / inches ) and Weight ( kg / lb )

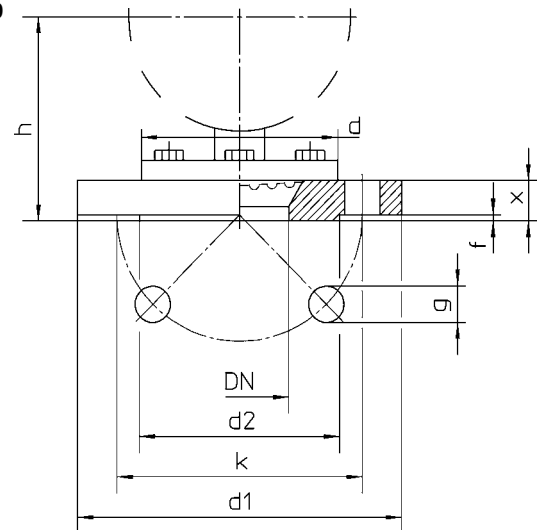
Measuring flange Ø d <sup>1)</sup>	DN	d1	d2	f	f1	g	h <sup>±2</sup>		k	x	Weight (approx.) <sup>2)</sup>			
							NCS 100	NCS 160			NCS 100		NCS 160	
											PCh	PChG	PCh	PChG
160 6	15 (½")	95 3.74	45 1.77	2 .08	16 .63	4 x 14 4 x .55	127 5	157 6.18	65 2.56	46 1.81	4.15 9.15	4.55 10.03	4.50 9.92	5.50 12.13
	20 (¾")	105 4.13	58 2.28		18 .71		129 5.08	159 6.26	75 2.95	48 1.89	4.45 9.81	4.85 10.69	4.80 10.58	5.80 12.79
	25 (1")	115 4.53	68 2.68		20 .79	4 x 18 4 x .71	137 5.39	167 6.58	85 3.35	56 2.20	4.60 10.14	5.00 11.02	4.95 10.91	5.95 13.12
	50 (2")	165 6.5	102 4.02		137 5.39	167 6.58	125 4.92	56 2.20	6.05 13.34	6.45 14.22	6.40 14.11	7.40 16.31		

## Measuring Flange-Ø d = 100 mm (3.94")

### DN 15, 20 and 25



### DN 50



Dimensional Data ( mm / inches ) and Weight ( kg / lb )

Measuring flange Ø d <sup>1)</sup>	DN	d1	d2	f	g	h <sup>±2</sup>		k	t	x	Weight (approx.) <sup>2)</sup>			
						NCS 100	NCS 160				NCS 100		NCS 160	
											PCh	PChG	PCh	PChG
100 4	15 (½")	99 3.9	45 1.77	2 .08	4 x M 12 <sup>3)</sup>	106 4.17	136 5.35	65 2.56	12 .47	25 .98	2.20 4.85	2.40 5.29	2.35 5.18	3.35 7.39
	20 (¾")	105 4.13	58 2.28			103 4.06	133 5.24	75 2.95		22 .87	2.07 4.56	2.47 5.44	2.42 5.33	3.42 7.54
	25 (1")	115 4.53	68 2.68			101 3.98	131 5.16	85 3.35		20 .79	2.50 5.51	2.90 6.39	2.85 6.28	3.85 8.49
	50 (2")	165 6.5	102 4.02			4 x Ø 18 4 x Ø .71	125 4.92	—		3.60 7.94	4.00 8.82	3.95 8.71	4.95 10.91	

<sup>1)</sup> nominal flange size

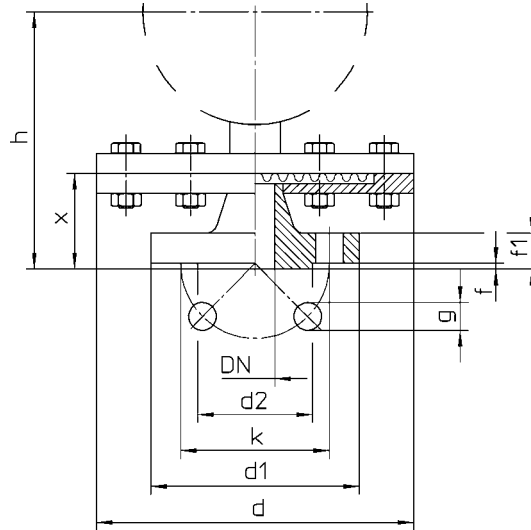
<sup>2)</sup> For different pressure ranges and materials the weights differ considerably.

<sup>3)</sup> if requested with double-end studs M 12 x 45

# ASME Flange Connections 1/2", 1" and 2", PN 150, 300, or 600 lb/sq.in.

ASME B 16.5 RF

Measuring Flange-Ø d = 160 mm (6.3")  
PN 150 lb/sq.in.

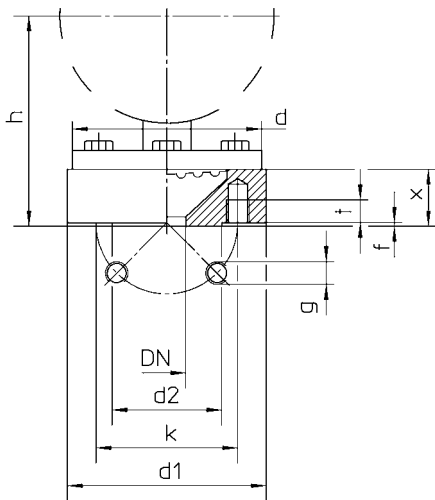


Dimensional Data ( mm / inches ) and Weight ( kg / lb )

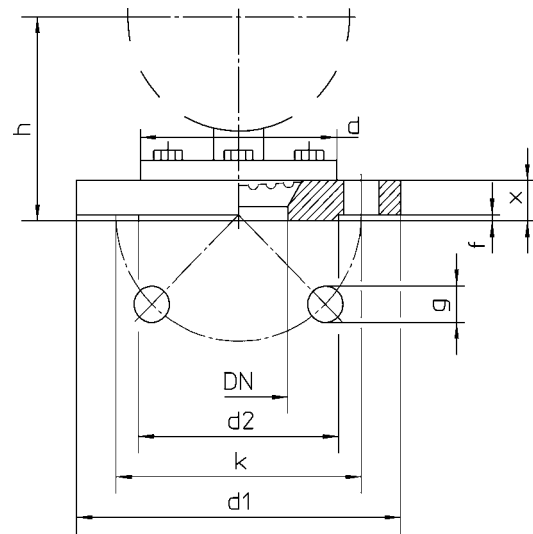
Measuring flange Ø d <sup>1)</sup>	DN	d1	d2	f	f1	g	h ± 2		k	x	Weight (approx.) <sup>2)</sup>			
							NCS 100	NCS 160			NCS 100		NCS 160	
											PCh	PChG	PCh	PChG
160 6	1/2"	88.9	34.9	1.6	11.1	16	137	167	60.3	56	3.85	4.25	4.20	5.20
		<b>3.5</b>	<b>1.37</b>		<b>.44</b>		<b>5.39</b>	<b>6.57</b>			<b>2.37</b>	<b>2.2</b>	<b>8.49</b>	<b>9.37</b>
	1"	108	50.8	.06	14.3	.63	145	175	79.4	64	4.45	4.85	4.80	5.80
		<b>4.25</b>	<b>2</b>		<b>.56</b>		<b>5.71</b>	<b>6.89</b>			<b>3.13</b>	<b>2.52</b>	<b>9.81</b>	<b>10.69</b>
	2"	152	92.1	.75	19	.75	153	183	121	72	6.10	6.50	6.45	7.45
		<b>5.98</b>	<b>3.63</b>		<b>.75</b>		<b>6.02</b>	<b>7.20</b>			<b>4.76</b>	<b>2.83</b>	<b>13.45</b>	<b>14.33</b>

Measuring Flange-Ø d = 100 mm (4"), PN 150, 300 or 600 lb/sq.in.

DN 1/2" and 1"



DN 2"



Dimensional Data ( mm / inches ) and Weight ( kg / lb )

Measuring flange Ø d <sup>1)</sup>	DN	d1		d2	f		g	h ± 2 <sup>5)</sup> for 300 lb/sq.in		k		t	x			Weight (approx.) <sup>2)</sup> for 300 lb/sq.in.					
		150	300		150	300		4xUNF 2B	NCS 100	NCS 160	150		300	150	150	300	600	NCS 100		NCS 160	
		lb/sq.in.	lb/sq.in.		lb/sq.in.	lb/sq.in.					lb/sq.in.		lb/sq.in.		lb/sq.in.	lb/sq.in.	lb/sq.in.	lb/sq.in.	lb/sq.in.	lb/sq.in.	PCh
100	1/2"	99	34.9	1.6	6.4	.25	1/2 - 20	111	141	60.3	66.7	15	30	35	2.55	2.95	2.90	3.90			
		<b>3.9</b>	<b>1.37</b>							<b>4.37</b>	<b>5.55</b>				<b>2.37</b>	<b>2.63</b>	<b>5.62</b>	<b>6.50</b>	<b>6.39</b>	<b>8.60</b>	
	1"	108	124	.06	.25	5/8 - 18 <sup>3)</sup>	4.37	5.55	79.4	88.9	.59	1.18	1.38	3.50	3.90	3.85	4.85				
		<b>4.25</b>	<b>4.88</b>						<b>2</b>	<b>7.72</b>				<b>8.60</b>	<b>8.49</b>	<b>10.69</b>					
	2"	152	165	.75	.25	5/8 - 18 <sup>4)</sup>	4.06	5.24	103	133	—	19.1	22.2	32	3.90	4.30	4.25	5.25			
		<b>5.98</b>	<b>6.5</b>						<b>3.63</b>	<b>4.06</b>					<b>5.24</b>	<b>4.76</b>	<b>5</b>	<b>.75</b>	<b>.87</b>	<b>1.26</b>	<b>8.60</b>

<sup>1)</sup> nominal flange size

<sup>2)</sup> For different pressure ranges and materials the weights differ considerably.

<sup>3)</sup> 150 lb/sq.in: 1/2 - 20 UNF - 2 B

<sup>4)</sup> 300 and 600 lb/sq.in: 8 x Ø 19 (.75")

<sup>5)</sup> 150 and 600 lb/sq.in: differences as of dimension "x"

Many other process connection types are available upon request, e.g. with female thread 1" BSP or union nut acc. to DIN 11851 et.al.