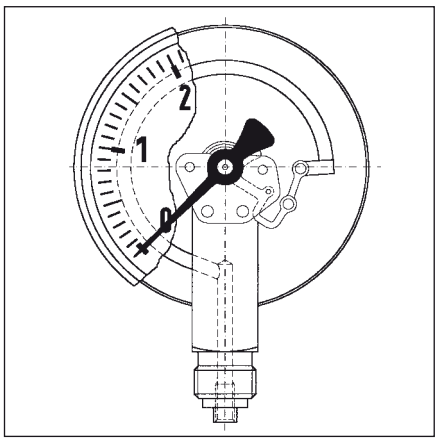
Bourdon tube pressure gauges with electrical contacts, nominal size 50



Application
For aggressive gaseous and liquid media which are not highly viscous and do not crystallize. For measurement in areas with limited space. Especially suitable for monitoring minimum pressure in gas cylinders together with AFRISO alarm unit for low gas level (refer to page 373).

Type
D 9

Nominal size
50

Accuracy class (EN 837-1/6)
1.6

Ranges (EN 837-1/5)
-1/+1.5 to -1/+15 bar
0/2.5 to 0/400 bar

Application area
Static load:
3/4 x full scale value
Dynamic load:
2/3 x full scale value
Short term:
full scale value

Contact types
Sliding contact (SK)

Minimum measuring ranges
Contact
SK single 2.5 bar
SK change-over contact 16 bar
(up to 60 bar max.)

Switching point
Exact details of the switching point are required to ensure optimum operation.

Operating temperature range
Medium: T_{max} = +150 °C
Ambient: T_{min} = -20 °C
T_{max} = +60 °C

Temperature performance
Indication error when the temperature of the measuring element deviates from 20 °C:
rising temp. approx. ±0.4 %/10K
falling temp. approx. ±0.4 %/10K
percentage of full scale value

Protection
IP 42 (EN 60529)

Standard version

Connection
Stainless steel 316 Ti or 316 L, bottom
G1/4B – spanner size 14
(EN 837-1/7.3)

Electrical connection
Cable gland, 2 m cable

Measuring element
Bourdon tube, stainless steel 316 Ti or 316 L
≤ 60 bar „C“ type bourdon tube
> 60 bar helical tube

Movement
Stainless steel

Dial
Aluminium, white
Dial marking black

Pointer
Aluminium, black

Housing
Stainless steel 304 with rear blow-out according to EN 562

Crimped bezel
Stainless steel 304

Contact cover
Makrolon, with contact adjustment lock

Options

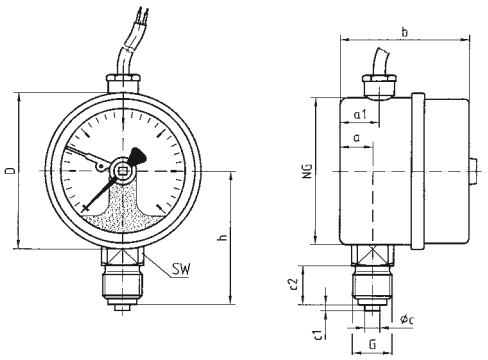
- *Wetted parts oil and grease free*
- *Damping screw*

Refer to page 370 for prices

Bourdon tube pressure gauges with electrical contacts, nominal size 50 *Type D 9*

Housing types and dimensions

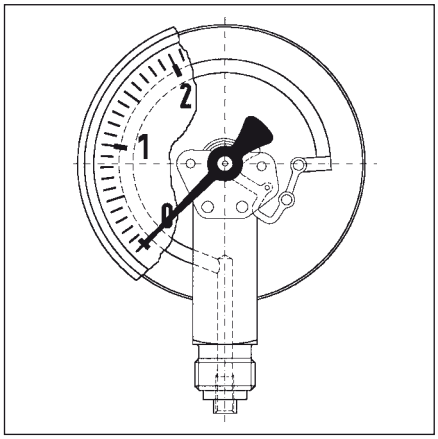
Bottom connection



Dimensions (mm)

Nominal size (NG)	a	a1	b	Øc	c1	c2	D	G	h	SW					
50	10.5	13	43	5	2	13	53	G1/4B	46	14					

Bourdon tube pressure gauges with electrical contacts, nominal size 63



Application
For aggressive gaseous and liquid media which are not highly viscous and do not crystallize. For measurement in areas with limited space. Especially suitable for monitoring minimum pressure in gas cylinders together with AFRISO alarm unit for low gas level (refer to page 373).

Type
D 3

Nominal size
63

Accuracy class (EN 837-1/6)
1.6

Ranges (EN 837-1/5)
-1/+0.6 to -1/+15 bar
1/1.6 to 0/600 bar

Application area
Static load:
3/4 x full scale value
Dynamic load:
2/3 x full scale value
Short term:
full scale value

Contact types
Magnetic spring contact (MK)
Electronic contact (EK)
Inductive contact (IK)
Refer to pages 354–356 for technical specifications

Minimum measuring ranges
Contact
MK single 1.6 bar
MK double 1.6 bar
EK/IK single 1.6 bar
EK/IK double 1.6 bar

Operating temperature range
Medium: T_{max} = +150 °C
Ambient: T_{min} = -20 °C
T_{max} = +60 °C

Temperature performance
Indication error when the temperature of the measuring element deviates from 20 °C:
rising temp. approx. ±0.4 %/10K
falling temp. approx. ±0.4 %/10K
percentage of full scale value

Protection
IP 42 (EN 60529)

Standard version

Connection
Stainless steel 316 Ti or 316 L, bottom or bottom back
G1/4B – spanner size 14
(EN 837-1/7.3)

Electrical connection
Cable gland M 12 x 1.5
1 m cable

Measuring element
Bourdon tube, stainless steel 316 Ti or 316 L
≤ 60 bar „C“ type bourdon tube
> 60 bar helical tube

Movement
Stainless steel

Dial
Aluminium, white
Dial marking black

Pointer
Aluminium, black

Housing
Stainless steel 304 with rear blow-out

Push on bezel
Stainless steel 304

Front glass
Makrolon, with contact adjustment lock

Options

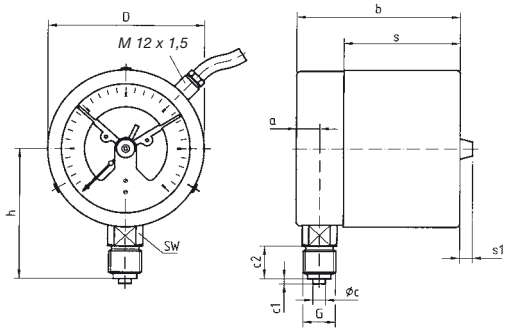
- *Wetted parts oil and grease free (≤ 0/400 bar)*
- *Ultra-pure gas version*
- *Back flange*
- *Damping screw*

Refer to page 370 for prices

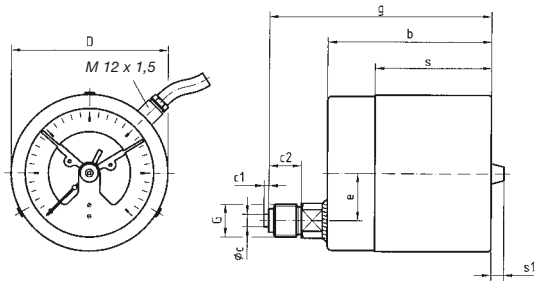
Bourdon tube pressure gauges with electrical contacts, nominal size 63 *Type D 3*

Housing types and dimensions

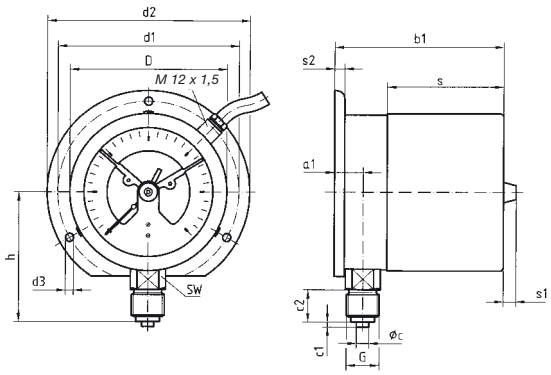
Bottom connection



Bottom back connection



Bottom connection, back flange

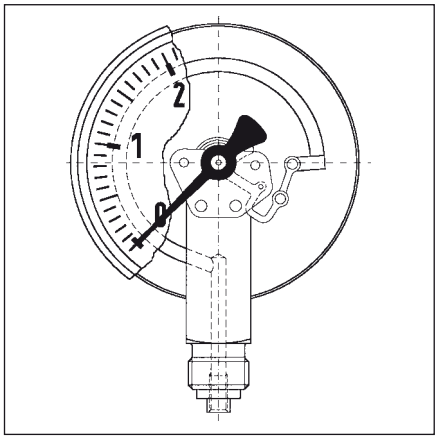


Dimensions (mm)

Nominal size (NG)	*a*	*a1*	*b*	*b1*	*Øc*	*c1*	*c2*	*D*	*g*	*G*	*h*	*s*	*s1*	*s2*	*SW*
63	*9.5*	*13*	*66*	*69.5*	*5*	*2*	*13*	*64*	*89*	*G1/4B*	*46*	*47.5*	*8*	*5.5*	*14*

11

Bourdon tube pressure gauges with electrical contacts for industrial applications



Application
For gaseous and liquid media which are not highly viscous, do not crystallize and do not attack copper alloys. For high accuracy measurement.

Type
D 2

Nominal size
100

Accuracy class (EN 837-1/6)
Class 1.0

Ranges (EN 837-1/5)
-1/0 to -1/+15 bar
0/1 to 0/1,000 bar

Application area
Static load:
≤ 600 bar = full scale value
> 600 bar = 3/4 x full scale value
Dynamic load:
≤ 600 bar = 0.9 x full scale value
> 600 bar = 2/3 x full scale value
Short term:
≤ 600 bar = 1.3 x full scale value
> 600 bar = full scale value

Contact types
Magnetic spring contact (MK)
Electronic contact (EK)
Inductive contact (IK)
Refer to pages 354–356 for technical specifications

Minimum measuring ranges
Contact
MK single 1.6 bar
MK double 1.6 bar
EK/IK single 1 bar
EK/IK double 1 bar

Operating temperature range
Medium: T_{max} = +60 °C
Ambient: T_{min} = -20 °C
T_{max} = +60 °C

Temperature performance
Indication error when the temperature of the measuring element deviates from 20 °C:
rising temp. approx. ±0.4 %/10K
falling temp. approx. ±0.4 %/10K
percentage of full scale value

Protection
IP 32 (EN 60529)

Standard version

Connection
Brass, bottom or bottom back
G1/2B – spanner size 22
(EN 837-1/7.3)

Electrical connection
Cable gland M 12 x 1.5
1 m cable

Measuring element
Bourdon tube element,
≤ 60 bar „C“ type bourdon tube, copper alloy
> 60 bar helical tube, 316 Ti or 316 L

Movement
Brass

Dial
Aluminium, white
Dial marking black

Pointer
Aluminium, black

Housing
Sheet steel, black

Push-on bezel
Sheet steel, black

Front glass
Makrolon, with contact adjustment lock

Options

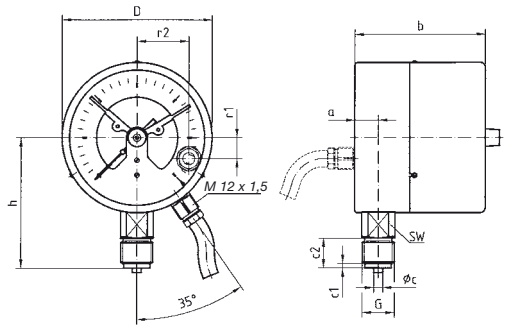
- *Back flange*
- *3-hole fixing, panel mounting bezel*
- *Damping screw*
- *Junction box*
- *Plug-in connectors*

Refer to page 370 for prices

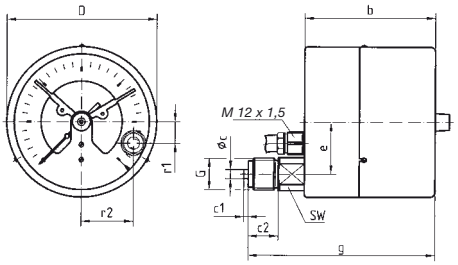
Bourdon tube pressure gauges with electrical contacts for industrial applications **Type D 2 – NG 100**

Housing types and dimensions

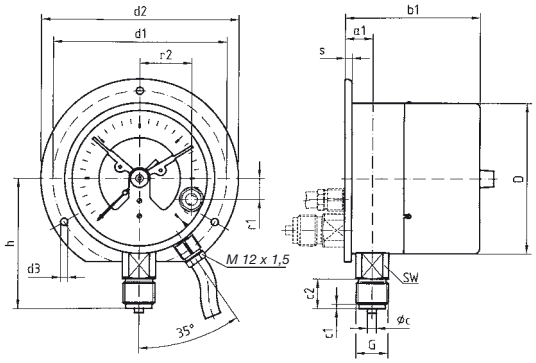
Bottom connection



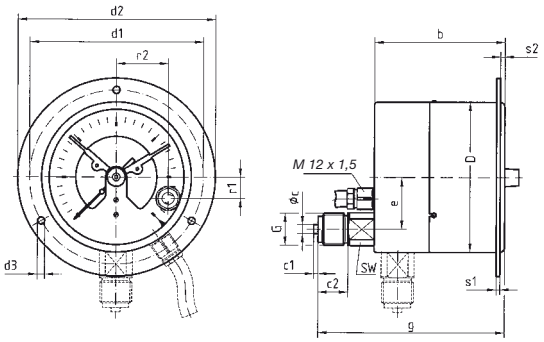
Bottom back connection



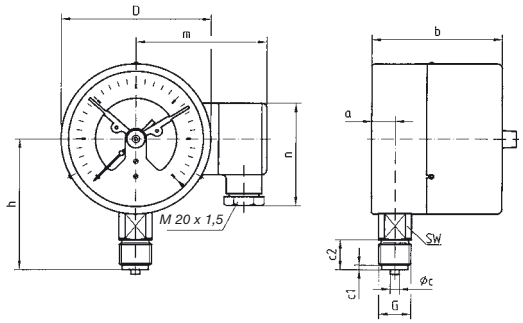
Bottom connection (back), back flange



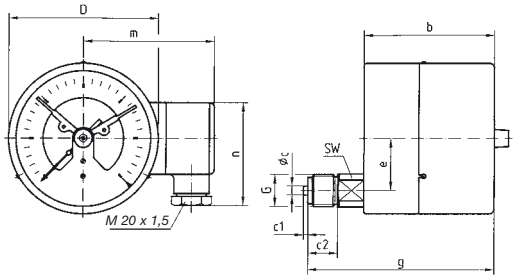
Bottom back connection (or bottom), 3-hole fixing, panel mounting bezel



Bottom connection, with junction box (option)



Bottom back connection, with junction box (option)

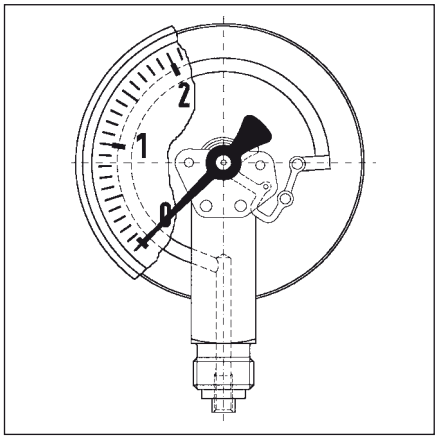


Dimensions (mm)

Nominal size (NG)	a	a1	b	b1	Øc	c1	c2	d1*	d2*	d3*	D	e	g	G	h	m	n	r1	r2	s	s1
100	15.6	19.1	87	90.5	6	3	20	116	132	4.8	100.5	26.5	119	G1½B	86	92	72	14	34.5	5.5	3
Nominal size (NG)	s2	SW																			
100	2.5	22																			

* Dimensions according to DIN 16064

Bourdon tube pressure gauges with electrical contacts for industrial applications



Application
For gaseous and liquid media which are not highly viscous, do not crystallize and do not attack copper alloys. For high accuracy measurement.

Type
D 4

Nominal size
100 – 160

Accuracy class (EN 837-1/6)
1.0

Ranges (EN 837-1/5)
-1/0 to -1/+15 bar
0/1 to 0/1,000 bar

Application area
Static load:
≤ 600 bar = full scale value
> 600 bar = 3/4 x full scale value
Dynamic load:
≤ 600 bar = 0.9 x full scale value
> 600 bar = 2/3 x full scale value
Short term:
≤ 600 bar = 1.3 x full scale value
> 600 bar = full scale value

Contact types
Magnetic spring contact (MK)
Electronic contact (EK)
Inductive contact (IK)
Refer to pages 354–356 for technical specifications

Minimum measuring ranges
Contact
MK single 1.6 bar
MK double 1.6 bar
EK/IK single 1 bar
EK/IK double 1 bar

Operating temperature range
Medium: T_{max} = +60 °C
Ambient: T_{min} = -20 °C
T_{max} = +60 °C

Temperature performance
Indication error when the temperature of the measuring element deviates from 20 °C:
rising temp. approx. ±0.4 %/10K
falling temp. approx. ±0.4 %/10K
percentage of full scale value

Protection
IP 54 (EN 60529)

Standard version

Connection
Brass, bottom or bottom back
G1/2B – spanner size 22
(EN 837-1/7.3)

Electrical connection
Cable gland M 12 x 1.5
1 m cable

Measuring element
Bourdon tube element,
≤ 60 bar „C“ type bourdon tube, copper alloy
> 60 bar helical tube, 316 Ti or 316 L

Movement
Brass

Dial
Aluminium, white
Dial marking black

Pointer
Aluminium, black

Housing
Stainless steel 304 with blow-out

Bayonet type bezel
Stainless steel 304

Front glass
Makrolon, with contact adjustment lock

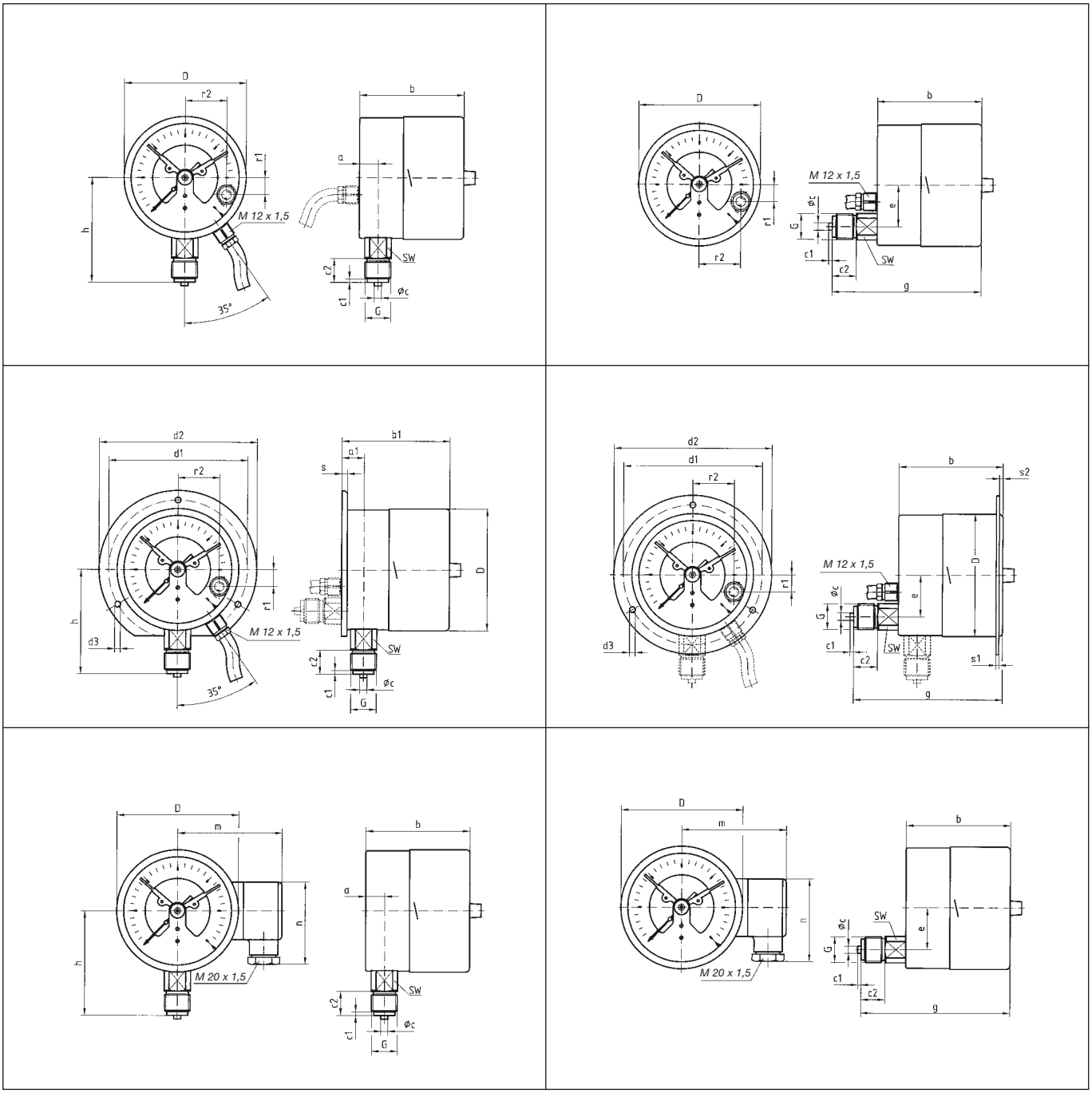
Options

- *Back flange*
- *3-hole fixing, panel mounting bezel*
- *Damping screw*
- *Junction box*
- *Plug-in connectors*

Refer to page 371 for prices

Bourdon tube pressure gauges with electrical contacts for industrial applications **Type D 4 – NG 100/160**

Housing types and dimensions

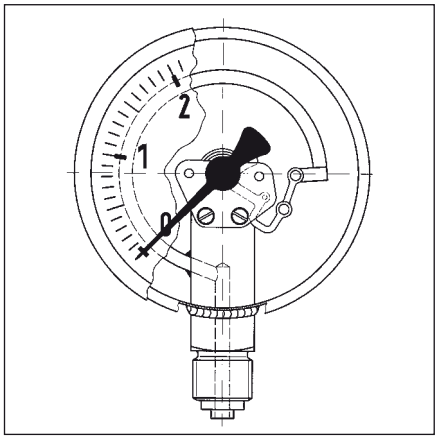


Dimensions (mm)

Nominal size (NG)	a	a1	b	b1	Øc	c1	c2	d1*	d2*	d3*	D	e	g	G	h	m	n	r1	r2	s	s1
100	15.6	19.1	87	90.5	6	3	20	116	132	4.8	101.5	26.5	119	G1½B	86	92	72	14	34.5	5.5	2
160	17.5	20.5	97	100	6	3	20	178	196	5.8	161.5	26.5	129	G1½B	116	122	72	14	34.5	6	2
Nominal size (NG)	s2	SW																			
100	4	22																			
160	4	22																			

* Dimensions according to DIN 16064

Bourdon tube pressure gauges with electrical contacts for chemical applications



Application
For corrosive, gaseous and liquid media which are not highly viscous and do not crystallize. Suitable for use in corrosive atmospheres. For high accuracy measurement.

Type
D 4

Nominal size
100 – 160

Accuracy class (EN 837-1/6)
1.0

Ranges (EN 837-1/5)
-1/0 to -1/+15 bar
0/1 to 0/1,000 bar

Application area
Static load:
≤ 600 bar = full scale value
> 600 bar = 3/4 x full scale value
Dynamic load:
≤ 600 bar = 0.9 x full scale value
> 600 bar = 2/3 x full scale value
Short term:
≤ 600 bar = 1.3 x full scale value
> 600 bar = full scale value

Contact types
Magnetic spring contact (MK)
Electronic contact (EK)
Inductive contact (IK)
Refer to pages 354–356 for technical specifications

Minimum measuring ranges
Contact
MK single 1.6 bar
MK double 1.6 bar
EK/IK single 1 bar
EK/IK double 1 bar

Operating temperature range
Medium: T_{max} = +150 °C
Ambient: T_{min} = -20 °C
T_{max} = +60 °C

Temperature performance
Indication error when the temperature of the measuring element deviates from 20 °C:
rising temp. approx. ±0.4 %/10K
falling temp. approx. ±0.4 %/10K
percentage of full scale value

Protection
IP 54 (EN 60529)

Standard version

Connection
Stainless steel 316 Ti or 316 L, bottom or bottom back
G1/2B – spanner size 22
(EN 837-1/7.3)

Electrical connection
Junction box

Measuring element
Bourdon tube, stainless steel 316 Ti or 316 L
≤ 60 bar „C“ type bourdon tube
> 60 bar helical tube

Movement
Stainless steel

Dial
Aluminium, white
Dial marking black

Pointer
Aluminium, black

Housing
Stainless steel 304 with pressure relief port

Bayonet type bezel
Stainless steel 304

Front glass
Makrolon, with contact adjustment lock

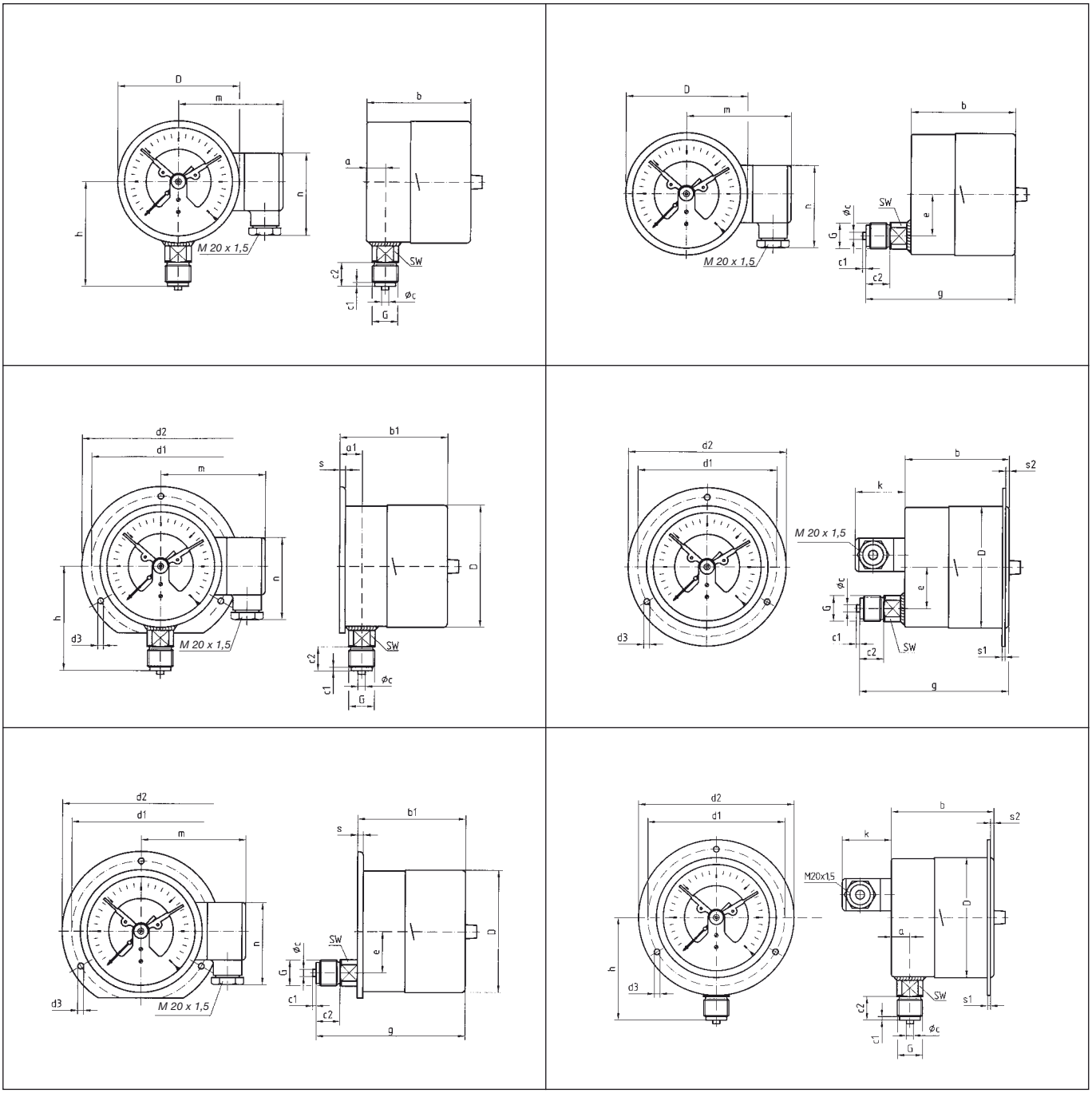
Options

- *Liquid filling (silicone oil)*
- *Back flange*
- *3-hole fixing, panel mounting bezel*
- *Damping screw*
- *Plug-in connectors*

Refer to page 371 for prices

Bourdon tube pressure gauges with electrical contacts for chemical applications *Type D 4 - NG 100/160*

Housing types and dimensions



Dimensions (mm)

Nominal size (NG)	*a*	*a1*	*b*	*b1*	*Øc*	*c1*	*c2*	*d1**	*d2**	*d3**	*D*	*e*	*g*	*G*	*h*	*k*	*m*	*n*	*s*	*s1*	*s2*
100	*15.6*	*19.1*	*87*	*90.5*	*6*	*3*	*20*	*116*	*132*	*4.8*	*101.5*	*34.5*	*121*	*G1½B*	*86*	*40*	*92*	*72*	*5.5*	*2*	*4*
160	*17.5*	*20.5*	*97*	*100*	*6*	*3*	*20*	*178*	*196*	*5.8*	*161.5*	*34.5*	*131*	*G1½B*	*116*	*40*	*122*	*72*	*6*	*2*	*4*
Nominal size (NG)	*SW*																				
100	*22*																				
160	*22*																				

** Dimensions according to DIN 16064*

Bourdon tube pressure gauges with electrical contacts

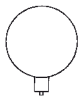
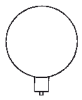
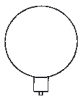
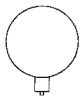
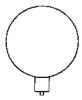
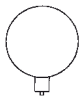
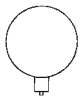
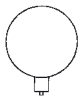
DG: M

Type	RF50SK1, D902	RF50SKW, D902	RF63MK1, D302	RF63MK2, D302	RF63IK1, D302	RF63IK2, D302	RF100IMK1, D201	RF100IMK2, D201
Version								
Housing Ø	50	50	63	63	63	63	100	100
Housing	Stainless steel 304 with crimped bezel		Stainless steel 304 with push-on bezel				Sheet steel, black, with push-on bezel	
Meas. elem.	Bourdon tube, stainless steel 316 Ti or 316 L						Copper alloy	
Accuracy class	1.6	1.6	1.6	1.6	1.6	1.6	1.0	1.0
Connection	G 1/4 B	G 1/4 B	G 1/4 B	G 1/4 B	G 1/4 B	G 1/4 B	G 1/2 B	G 1/2 B
Contact type	Sliding single	Sliding change-over	Magnetic spring single	Magnetic spring double	Inductive single	Inductive double	Magnetic spring single	Magnetic spring double
Range (bar)	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
Price €								
-1/0	---	---	---	---	---	---	---	---
-1/+0.6	---	---	87402302	87502302	87452302	87552302	87602201	87652201
-1/+1.5	87430902	---	87403302	87503302	87453302	87553302	87603201	87653201
-1/+3	87431902	---	87404302	87504302	87454302	87554302	87604201	87654201
-1/+5	87432902	---	87405302	87505302	87455302	87555302	87605201	87655201
-1/+9	87433902	---	87406302	87506302	87456302	87556302	87606201	87656201
-1/+15	87434902	87480902	87407302	87507302	87457302	87557302	87607201	87657201
Price €								
0/0.6	---	---	---	---	---	---	---	---
0/1	---	---	---	---	---	---	---	---
0/1.6	---	---	87411302	87511302	87461302	87561302	87611201	87661201
0/2.5	87435902	---	87412302	87512302	87462302	87562302	87612201	87662201
0/4	87436902	---	87413302	87513302	87463302	87563302	87613201	87663201
0/6	87437902	---	87414302	87514302	87464302	87564302	87614201	87664201
0/10	87438902	---	87415302	87515302	87465302	87565302	87615201	87665201
0/16	87439902	87481902	87416302	87516302	87466302	87566302	87616201	87666201
0/25	87440902	87482902	87417302	87517302	87467302	87567302	87617201	87667201
0/40	87441902	87483902	87418302	87518302	87468302	87568302	87618201	87668201
Price €								
0/60	87442902	87484902	87419302	87519302	87469302	87569302	87619201	87669201
0/100	87443902	---	87420302	87520302	87470302	87570302	87620201	87670201
0/160	87444902	---	87421302	87521302	87471302	87571302	87621201	87671201
0/250	87445902	---	87422302	87522302	87472302	87572302	87622201	87672201
0/400	87446902	---	87423302	87523302	87473302	87573302	87623201	87673201
Price €								
0/600	---	---	87424302	87524302	87474302	87574302	87624201	87674201
0/1000	---	---	---	---	---	---	87625201	87675201

Please specify required switching function (normally closed/normally open). Refer to page 371/372 for other versions.

Bourdon tube pressure gauges with electrical contacts

DG: M

Type	RF100I MK1, D401	RF100I MK2, D401	RF100I IK1, D401	RF100I IK2, D401	RF100Ch MK1, D402	RF100Ch MK2, D402	RF100Ch IK1, D402	RF100Ch IK2, D402
Version								
Housing Ø	100	100	100	100	100	100	100	100
Housing	Stainless steel 304 with bayonet type bezel							
Meas. elem.	Bourdon tube, copper alloy				Bourdon tube, stainless steel 316 Ti or 316 L			
Accuracy class	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Connection	G1/2B	G1/2B	G1/2B	G1/2B	G1/2B	G1/2B	G1/2B	G1/2B
Contact type	Magnetic spring single	Magnetic spring double	Inductive single	Inductive double	Magnetic spring single	Magnetic spring double	Inductive single	Inductive double
Range (bar)	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.	Part no.
Price €								
-1/0	---	---	87701401	87751401	---	---	87701402	87751402
-1/+0.6	87602401	87652401	87702401	87752401	87602402	87652402	87702402	87752402
-1/+1.5	87603401	87653401	87703401	87753401	87603402	87653402	87703402	87753402
-1/+3	87604401	87654401	87704401	87754401	87604402	87654402	87704402	87754402
-1/+5	87605401	87655401	87705401	87755401	87605402	87655402	87705402	87755402
-1/+9	87606401	87656401	87706401	87756401	87606402	87656402	87706402	87756402
-1/+15	87607401	87657401	87707401	87757401	87607402	87657402	87707402	87757402
Price €								
0/0.6	---	---	87709401	87759401	---	---	87709402	87759402
0/1	---	---	87710401	87760401	---	---	87710402	87760402
0/1.6	87611401	87661401	87711401	87761401	87611402	87661402	87711402	87761402
0/2.5	87612401	87662401	87712401	87762401	87612402	87662402	87712402	87762402
0/4	87613401	87663401	87713401	87763401	87613402	87663402	87713402	87763402
0/6	87614401	87664401	87714401	87764401	87614402	87664402	87714402	87764402
0/10	87615401	87665401	87715401	87765401	87615402	87665402	87715402	87765402
0/16	87616401	87666401	87716401	87766401	87616402	87666402	87716402	87766402
0/25	87617401	87667401	87717401	87767401	87617402	87667402	87717402	87767402
0/40	87618401	87668401	87718401	87768401	87618402	87668402	87718402	87768402
Price €								
0/60	87619401	87669401	87719401	87769401	87619402	87669402	87719402	87769402
0/100	87620401	87670401	87720401	87770401	87620402	87670402	87720402	87770402
0/160	87621401	87671401	87721401	87771401	87621402	87671402	87721402	87771402
0/250	87622401	87672401	87722401	87772401	87622402	87672402	87722402	87772402
0/400	87623401	87673401	87723401	87773401	87623402	87673402	87723402	87773402
Price €								
0/600	87624401	87674401	87724401	87774401	87624402	87674402	87724402	87774402
0/1000	87625401	87675401	87725401	87775401	87625402	87675402	87725402	87775402

Please specify required switching function (normally closed/normally open). Refer to page 370/372 for other versions.