

## All stainless steel pressure gauges with Bourdon tube with or without glycerine filling

Nominal dia. 63  
Accuracy class 1.6



measuring  
•  
monitoring  
•  
analysing



### Features

- Stainless steel housing and movement
- Protection IP65
- Accuracy class 1.6
- For use up to max. rating
- Overrange protection 1.3 times max. rating
- Housing with glycerine filling

### Description

The all stainless steel pressure gauges are ideal for the hard conditions and the resulting high demands on pressure measurement in production facilities in chemical industry and other comparable areas. Resistance to aggressive media and environments is achieved by using high graded materials such as stainless steel both for the movement and the housing.

The glycerine filling provides wear-protection for the movement through dampening, should pulsating pressures and mechanical vibrations occur.

### Ranges

-1 ... 0 bar to 0 ... 1000 bar

### Applications

Chemical and petrochemical industries, plastics and paper manufacturing industries, food and beverage industries, engineering industries

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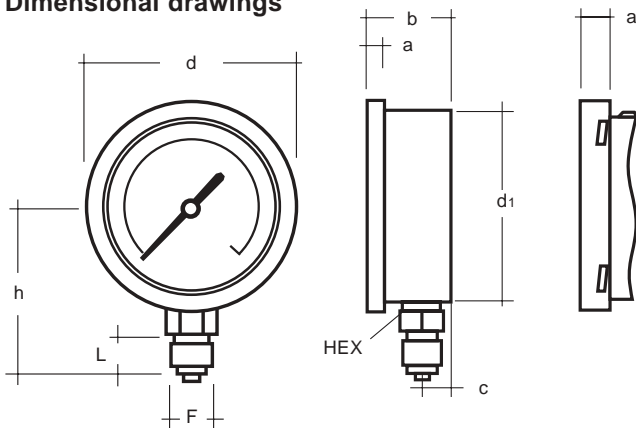
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D-65719 Hofheim/Ts.  
☎ (06192) 299-0  
☎ (06192) 23398  
E-mail: info.de@kobold.com  
Internet: www.kobold.com

## Technical Data

Model	MAN	RD2 (7)* 5...	RD2 (7)* 7...	RD2 (7)* 7...B	RD2 (7)* 7...V	Options
Nominal size	63 mm					
Symbol						
Accuracy class	1.6					
Ranges	-1...0 bar to 0...1000 bar Max. pressure: with static load: 3/4 of max. rating with alternating load: 2/3 of max. rating					
Overrange protection	short-term: 1.15...1.3 times max. rating					
Housing	stainless steel AISI 304					
Bezel	Bayonet ring AISI 304				front ring AISI 304	
Installation				panel clamp	front flange	
Window	Plexi glass					
Dial	ABS, white with black lettering					
Pointer	Aluminum, black					
Movement	stainless steel					
Measuring element	stainless steel 316 L					
Connection	AISI 316 L					
- position	bottom		back centre			
- thread	G 1/4 male		G 1/4 male			
Filling						
Protection	IP 65					
Temperatures						
- medium	max. +60 °C filled, +80 °C unfilled					
- ambient	max. +60 °C					

## Dimensional drawings

\*(7) Version with glycerine filling



	dia	a	b	c	d	d1	f
unfilled	63	9.5	28	10	68	62.6	3.6
filled	63	5.6	28	10	68	62.6	3.6

	F	L	HEX	h	p
G 1/4 male	13	14 x 9	55.3	54.8	
1/4" NPT	13	14 x 8	54.3	53.8	

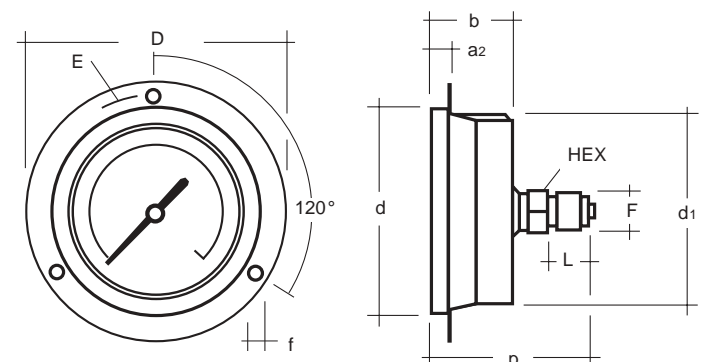
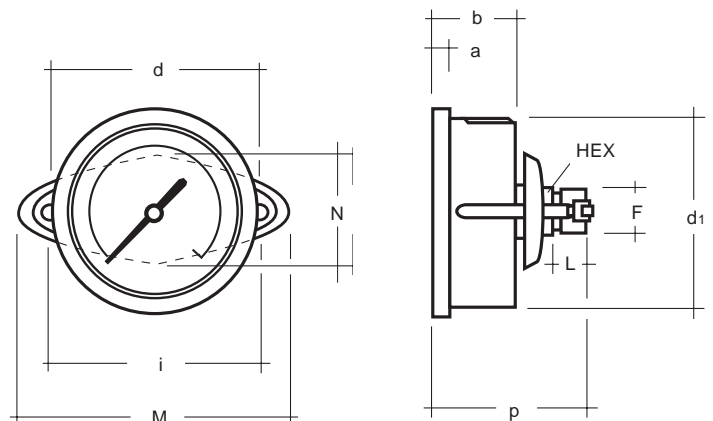
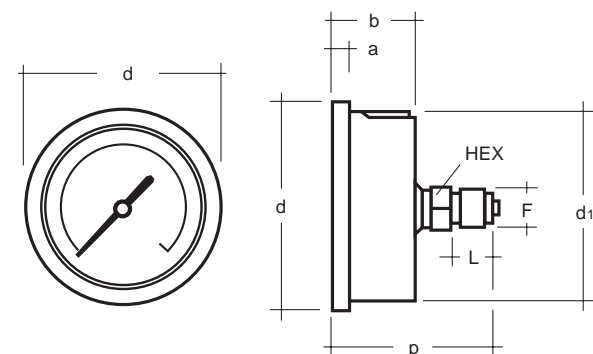


Table of dimensions for back connection

	dia	a	a2	b	d	d1
unfilled	63	9.5	10.5	28	68	62.6
filled	63	5.6	6.6	28	68	62.6

	f	i	D	E	M	N
unfilled						
filled	3.6	72	85	75	90	38

## All stainless steel pressure gauges with Bourdon tube with or without glycerine filling

Nominal dia. 100, 160; Accuracy class 1.0  
Bottom or back connection



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### Features

- Stainless steel housing and movement
- Protection IP 54 or IP 65 with filling
- Accuracy class 1.0
- For use up to max. rating
- Overrange protection 1.3 times max. rating
- Housing with or without glycerine filling

### Description

The all stainless steel pressure gauges are ideal for the hard conditions and the resulting high demands on pressure measurement in production facilities in chemical industry and other comparable areas. Resistance to aggressive media and environments is achieved by using high graded materials such as stainless steel both for the movement and the housing.

The glycerine-filled version is damped for wear-protection should pulsating pressures and mechanical vibrations occur.

The movement is of accuracy class 1.0, has overrange protection up to 1.3 times the max. rating and can be loaded up to the max. rating.

### Ranges

-1 ... 0 bar to 0 ... 1000 bar

### Applications

Chemical and petrochemical industries, plastics and paper-manufacturing industries, food and beverage industries, engineering industries

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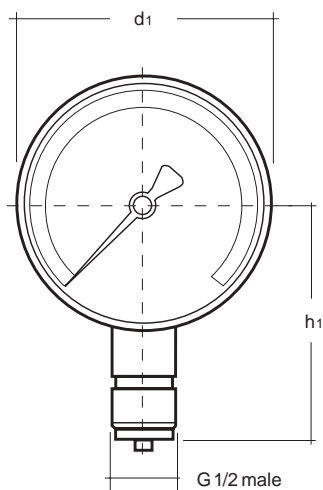
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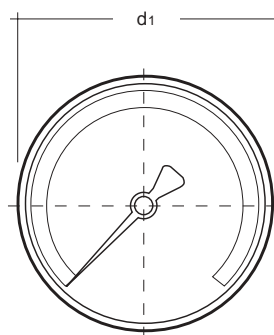
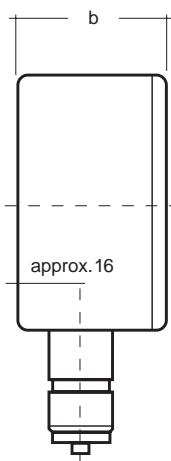
Model	MAN	RF2 (7)* 6...	RG2 (7)* 6...	RF2 (7)* 8...	RG2 (7)* 8...	Options
Nominal size		100	160	100	160	
Symbol						
Accuracy class	1.0					
Ranges	-1...0 bar to 0...600 bar					2500 bar ø160
Max. pressure	static load: to max. rating alternating load: 0.4 times max. rating					
Overrange protection	short term: 1.15...1.3 times max. rating					
Housing	1.4301 with blowout back					
Bezel	1.4301					
Window	safety glass					
Dial	aluminum, white with black lettering					
Pointer	aluminum, black					
Movement	stainless steel					
Measuring element	stainless steel					
Connection	1.4571 - position bottom - thread G 1/2 male			1.4571 back eccentric G 1/2 male		
Filling						glycerine*
Protection	IP 54 / IP 65 (with filling)					
Temperatures	- medium max. 80°C - ambient max. 60°C					

## Dimensional drawings

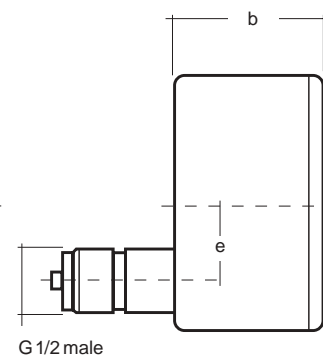
\*(7) Version with glycerine filling



Model RG2 (7)\* 6...



Model RF2 (7)\* 8...



Diameter of housing $d_1 \pm 1$	b	e	$h_1 \pm 1$
100	50	32	87
160	50	50	118

## All stainless steel pressure gauges for exceptional safety according to EN 837-1 with or without glycerine filling

Nominal dia. 63  
Bottom connection



measuring  
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### Features

- Movement of high corrosion-resistant materials
- Resistant to chemicals
- Rugged design
- Fullfills safety requirements according to EN 837-1
- Burstproof solid front between dial and movement
- Vibration-free indication and durability with glycerine filling

### Description

The all stainless steel pressure gauges for increased safety according to EN 837-1 are ideal for harsh conditions and the resulting high demands on pressure measurement in production facilities in chemical industry and other comparable areas.

Resistance to aggressive media and environments is achieved by using high graded materials such as stainless steel both for the measuring system and the case.

The glycerine-filled version is damped for wear-protection should pulsating pressures and mechanical vibrations occur. The movement is of accuracy class 1.6, has overrange protection of 1.3 times of the max. rating and can be loaded up to the max. rating.

The safety execution of the pressure gauges comprises a burstproof solid front between dial and Bourdon tube, a laminated safety glass as well as a blow-out back (according to EN 837-1).

Glycerine-filled pressure gauges are equipped with a pressure compensating diaphragm. This diaphragm prevents a pressure increase inside the housing due to volume expansion caused by the temperature increase of the glycerine filling-fluid, thus avoiding a wrong reading.

### Ranges

0...1 bar to 0...1000 bar

### Applications



Process measurement in the chemical and pharmaceutical, machine and plant construction

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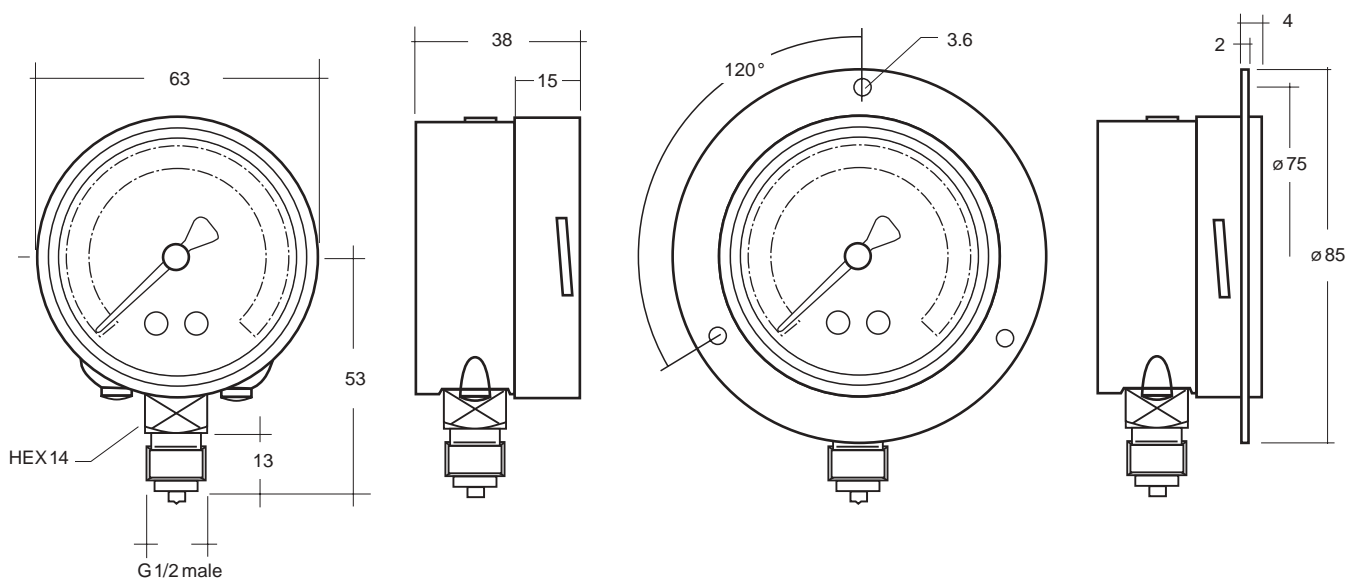
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Internet: www.kobold.com

## Technical Data

Model	MAN	RD25...S	RD75...S	Options
Nominal size		63		
Symbol				
Accuracy class		1.6 to DIN 16005		
Ranges		0...1 bar to 0...1000 bar negative or positive or compound ranges		
Max. pressure		static load: to max. rating alternating load: to 0.9 times max. rating short-term: overload 1.3 times max. rating		
Housing		stainless steel 1.4301 with blow-out back, separation wall		
Bezel		stainless steel 1.4301, bayonet ring		front flange
Window		laminated safety glass		
Dial		aluminum, white, scale and lettering black acc. DIN 16109		
Pointer		aluminum, black acc. DIN 16099		
Movement		stainless steel		
Measuring element		stainless steel, 1.4571 Bourdon tube up to 40 bar, helical tube from 60 bar		
Connection		stainless steel, 1.4571		
- position		bottom		
- thread		G 1/4 male		other threads on request
Temperatures				
- medium		Tmin. -20°C, Tmax. +100°C		
- ambient		Tmin. -25°C, Tmax. +60°C		
Temperature behaviour		0.3% / 10 K on deviation from normal temperature +20°C		
Filling		none	glycerine	
Protection		IP 54 acc. DIN 40050	IP 65 acc. DIN 40050	
Throttle				ø 0.4, ø 0.8
Weight approx.		0.200 kg	0.280 kg	

## Dimensional drawings



## All stainless steel pressure gauges for exceptional safety according to EN 837-1 with or without glycerine filling

Nominal dia. 100  
Bottom connection



measuring  
•  
monitoring  
•  
analysing



### Features

- Movement of high corrosion-resistant materials stainless steel
- Resistant to chemicals
- Accuracy class 1.0
- Fullfills safety requirements according to EN 837-1
- Burstproof solid front between dial and movement
- Vibration-free indication and durability with glycerine filling

### Description

The all stainless steel pressure gauges for increased safety according to EN 837-1 are ideal for harsh conditions and the high demands on pressure measurement in production facilities in chemical industry and other comperable branches. Resistance to aggressive media and environments is achieved by using high graded materials such as stainless steel both for the movement and the housing.

The glycerine-filled version is damped for wear-protection should pulsating pressures and mechanical vibration occur. The movement is of accuracy class 1.0, has overrange protection of 1.3 times of the max. rating and can be loaded up to the max. rating.

The safety execution of the pressure gauges comprises a burstproof solid front between dial and Bourdon tube, a laminated safety glass as well as a blow-out back (according to EN 837-1).

Glycerine-filled pressure gauges are equipped with a pressure compensating diaphragm. The diaphragm prevents a pressure increase inside the housing due to volume expansion caused by the temperature increase of the glycerine filling-fluid, thus avoiding a wrong reading.

### Ranges

0...0.6 bar to 0...1000 bar

### Applications

Process measurement, machine and plant construction, compressed-air generation

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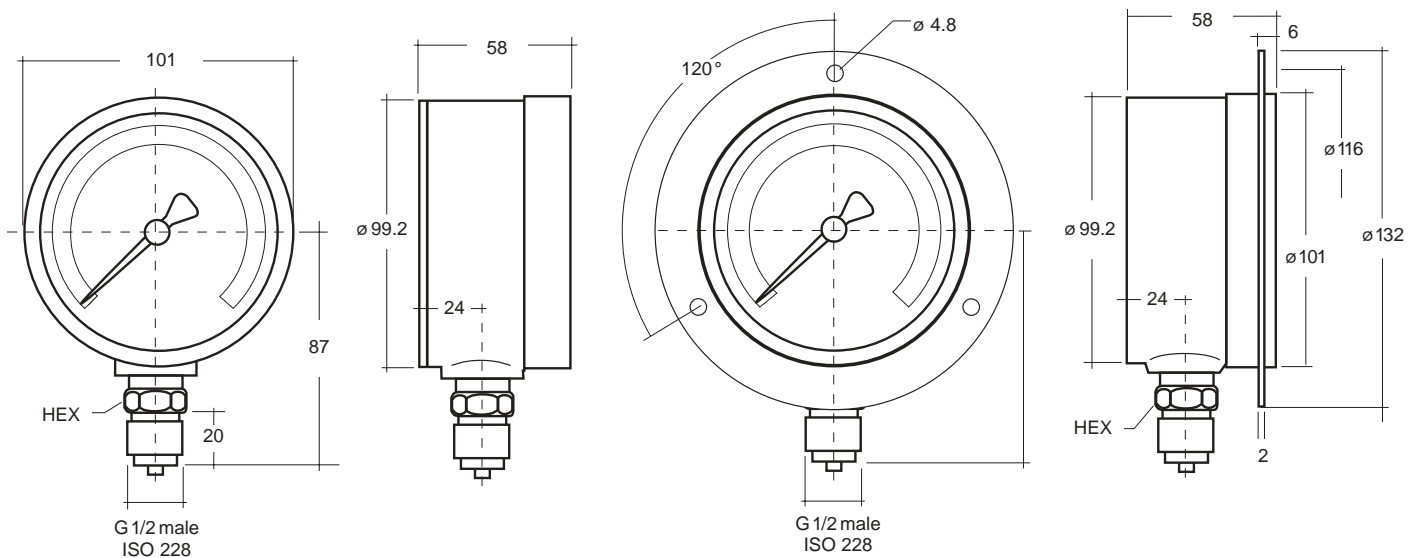
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## Technical Data

Model	MAN	RF26...S	RF76...S	Options
Nominal size	100 mm			
Symbol				
Accuracy class	1.0 to DIN 16005			
Ranges	0...0.6 bar to 0...1000 bar negative or positive and negative/positive overpressure			up to 2500 bar
Max. pressure	static load: up to max. rating alternating load: to 0.9 times of max. rating short-term: overload 1.3 times of max. rating			1.5 to 2 times
Housing	stainless steel 1.4301 with blow-out back, safety separation wall			
Bezel	stainless steel 1.4301, bayonet ring			front flange
Window	laminated safety glass			
Dial	aluminum, white, scale and lettering black acc. DIN 16109			dual scale
Pointer	aluminum, black acc. DIN 16099			
Movement	stainless steel			
Measuring element	stainless steel, 1.4571 Bourdon tube up to 40 bar, helical tube from 60 bar			
Connection	stainless steel, 1.4571			
- position	bottom			
- thread	G 1/2 male			other threads on request
Temperatures				
- medium	Tmin. -20 °C, Tmax. +100 °C			200 °C (without filling) on request
- ambient	Tmin. -20 °C, Tmax. +60 °C			
Temperature behaviour	0.3% / 10 K on deviation from standard temperature +20 °C			
Filling	none	glycerine		
Protection	IP 54 acc. DIN 40050	IP 65 acc. DIN 40050		
Throttle				ø 0.4, ø 0.8
Weight approx.	0.600 kg	1.000 kg		

## Dimensional drawings





## All stainless steel pressure gauges for exceptional safety according to EN 837-1 with or without glycerine filling

Nominal dia. 160



measuring  
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monitoring  
•  
analysing



### Features

- Movement made of high corrosion-resistant materials
- Resistant to chemicals
- Rugged design
- Fullfills safety requirements according to EN 837-1
- Burstproof solid front between dial and movement
- Vibration-free indication and durability with glycerine filling

### Description

The all stainless steel pressure gauges for increased safety according to EN 837-1 are ideal for the hard conditions and the resulting high demands on pressure measurement in production facilities in chemical industry and other comparable areas.

Resistance to aggressive medias and environments is achieved by using high-graded materials such as stainless steel both for the movement and the housing.

The glycerine-filled version is damped for wear-protection should pulsating pressures and mechanical vibrations occur. The movement is accuracy class 1.0, has overrange protection of 1.3 times of the max. rating and can be loaded up to the max. rating.

The safety execution of the pressure gauges comprises a burstproof solid front between dial and Bourdon tube, a laminated safety glass as well as a blow-out back (according EN 837-1).

Glycerine-filled pressure gauges are equipped with a pressure compensating diaphragm. This diaphragm prevents a pressure increase inside the housing due to volume expansion caused by the temperature increase of the glycerine filling-fluid, thus avoiding a wrong reading.

### Ranges

0...0.6 bar to 0...1600 bar

### Applications

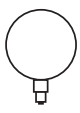

Chemical and petrochemical industries, plastics and paper-manufacturing industries, food and beverage industries, machine and plant construction, research and development, high-pressure test rigs, explosion test rigs, compressors

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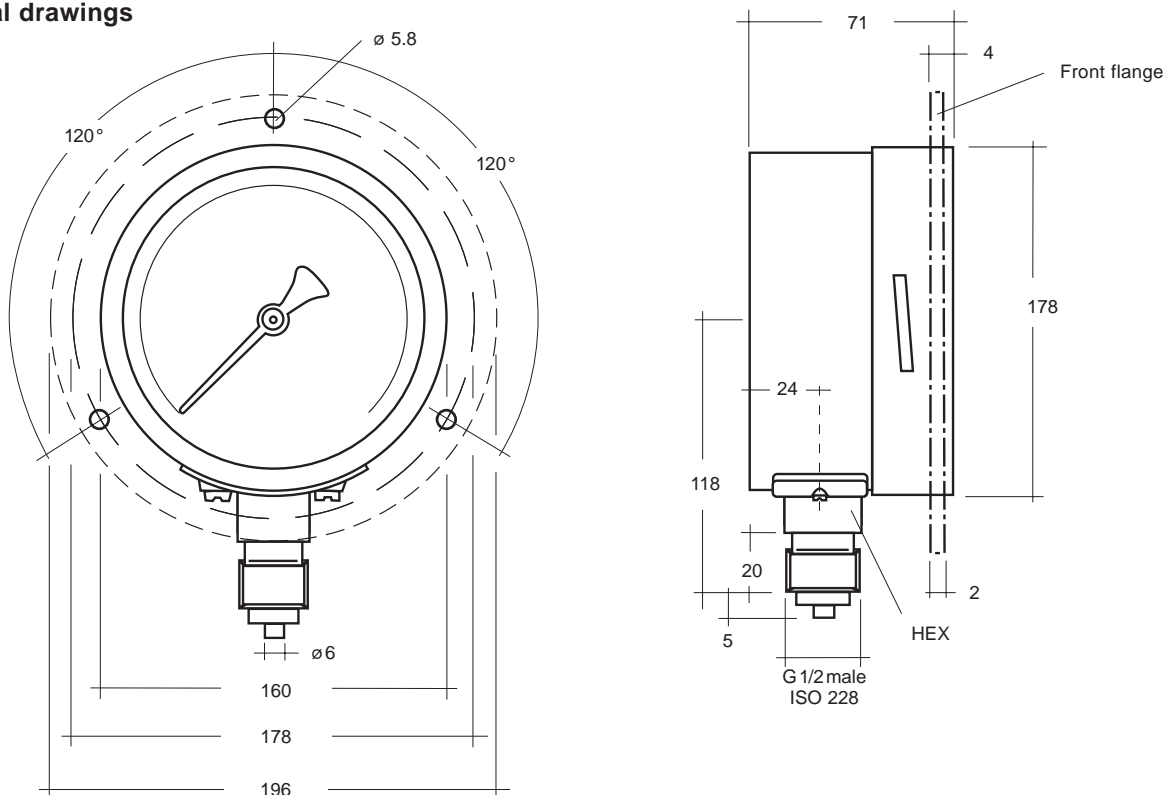
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## Technical Data

Model	MAN	RG26...S	RG76...S	Options
Nominal size	160 mm			
Symbol				
Accuracy class	1.0 to DIN 16005			
Ranges	-0.6...0 bar to 0...1600 bar negative or positive and negative/positive overpressure			
Max. pressure	static load: up to max. rating alternating load: to 0.9 times of max. rating			
Overrange protection	short-term: 1.3 times max. rating			
Housing - Blow out disk	stainless steel 1.4301 with blow-out back, safety separation wall stainless steel 1.4301			
Bezel	stainless steel 1.4301, bayonet ring			
Installation				front flange, st. steel 1.4301
Window	laminated safety glass, 6 mm			
Dial	aluminum, white, scale and lettering black acc. DIN 16109			dual scale
Pointer	aluminum, black acc. DIN 16099			marking pointer on scale
Movement	stainless steel 1.4301 / 1.4305			
Measuring element	stainless steel, 1.4571 Bourdon tube up to 40 bar, helical tube from 60 bar			
Connection - position - thread	stainless steel, 1.4571 bottom G 1/2 male			9/16-18 UNF 3B; G 3/8 male; 1/2 NPT; protection cap for thread
Filling	none	glycerine/water		
Pressure compensation with filling		compensation diaphragm		
Protection	IP 54 acc. DIN 40050 without filling IP 65 acc. DIN 40050 with filling			IP 65
Throttle				ø 0.8
Temperatures - medium - ambient	Tmax. +100°C Tmax. -25°C to +60°C			
Weight approx.	1.6 kg	3 kg		

## Dimensional drawings



## All stainless steel pressure gauges with capsule element

Nominal dia. 63, 100, 160  
Bottom or central back connection



measuring  
•  
monitoring  
•  
analysing



### Features

- Millibar ranges
- Corrosion resistant
- Zero-point adjustment
- For use up to max. rating

### Description

The pressure gauges with capsule element are being used for measuring low positive and negative pressures in gaseous medias. The capsule system consists of two half capsule elements which are welded together. The element makes a defined stroke when subjected to pressure. A special measuring mechanism converts this movement into pointer-rotation.

All stainless steel pressure gauges with capsule element are manufactured by using high-quality stainless steel and are therefore suitable for use with corrosive gases.

Depending on the required installation the instruments can be supplied with a panel clamp, triangular front ring or mounting flange.

### Ranges

0...25 mbar to 0...600 mbar

### Applications

Medical technology, air-conditioning technology, leak testing, filter status measurements, exhaust-gas measurements, gas production, level metering, laboratories

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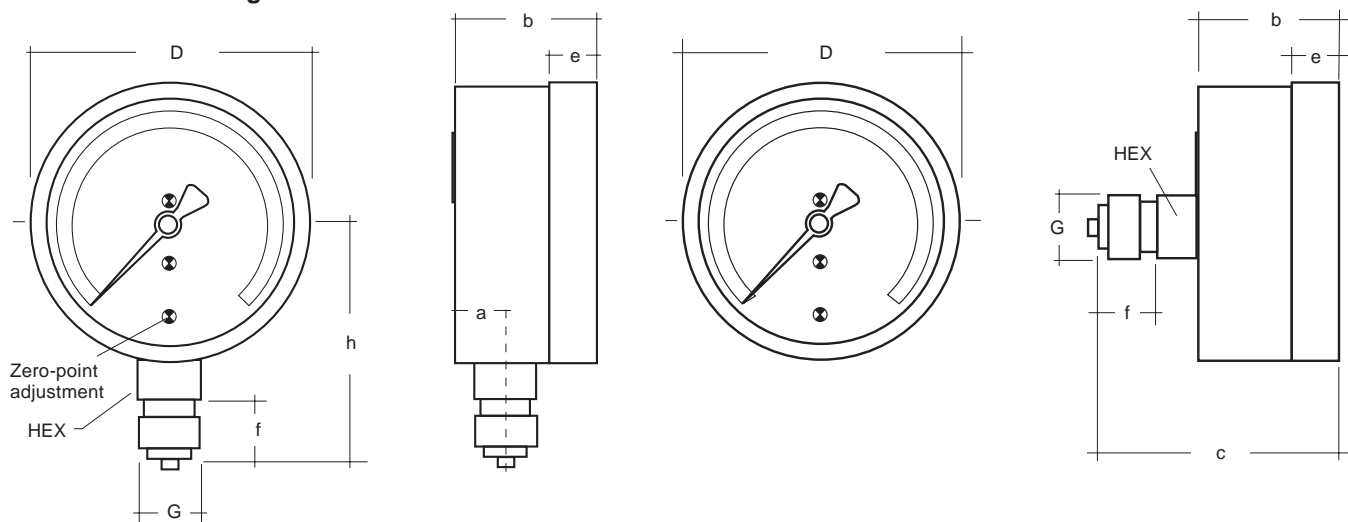
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E-mail: info.de@kobold.com  
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## Technical Data

Model	MAN	KD 25...	KD 27...	KF 26...	KF 28...	KG 26...	Options
Nominal size		63 mm		100 mm		160 mm	
Symbol							
Accuracy class		1.6 to DIN 16005					
Indicating range		0...25 mbar to 0...600 mbar negative or positive and negative/positive overpressure					
Max. pressure		static load: to max. rating alternating load: to 0.9 times max. rating short-term: overload 1.3 times max. rating					
Housing		stainless steel 1.4301					rear flange
Bezel		stainless steel 1.4301 Sleeve ring		stainless steel 1.4301 bayonet ring			rear flange, triangular front ring and clamp
Window		laminated safety glass					
Dial		aluminum, white, scale and lettering black					dual scale
Pointer		aluminum, black acc. DIN 16099					
Movement		stainless steel with zero-point adjustment					
Measuring element		stainless steel 1.4571					
Connection		stainless steel 1.4571					
- position		bottom	rear central	bottom	rear central	bottom	
- thread		G 1/4 male		G 1/2 male			other threads on request
Temperatures							
- medium		Tmin. -20°C, Tmax. +80°C					
- ambient		Tmin. -25°C, Tmax. +60°C					
Temperature behaviour		0.3% / 10 K on deviation from normal temperature +20°C					
Protection		IP 43 acc. DIN 40050		IP 45 acc. DIN 40050			
Throttle							ø 0.4, ø 0.8
Weight approx.		0.250 kg		0.600 kg		1.000 kg	

## Dimensional drawings



Model: MAN KD25..., KF26, KG26

Model: MAN KD27..., KF28

Model	Dimensions (mm)									
	dia.	a ± 0.5	b ± 1	c ± 1	D ± 1	e ± 0.5	f ± 0.5	G	h ± 1	HEX
KD 25	63	10	37	-	63	12	13	G 1/4 male	53	14
KD 27	63	-	34	53	63	12	13	G 1/4 male	-	14
KF 26	100	17	51	-	101	20	20	G 1/2 male	87	22
KF 28	100	-	51	85.5	101	20	20	G 1/2 male	-	22
KG 26	160	21	60	-	160	20	20	G 1/2 male	118	22

## All stainless steel diaphragm pressure gauges with or without filling

Nominal dia. 100, 160  
Accuracy class 1.6



measuring  
•  
monitoring  
•  
analysing



### Features

- Highly resistant to chemical corrosion
- High resistance to overpressure
- Constant display resulting from glycerine filling
- Process reliability with highly viscous or crystallizing medias
- Protection IP 45 or IP 65

### Description

The design principle and the material selection of pressure gauges allows them to meet the stringent demands occurring in service, chemicals, and petrochemicals industries.

Diaphragm pressure gauges have a relatively high actuating force. The annular clamped diaphragm is insensitive to jarring or vibration. An extremely high resistance to overpressure is achieved by underpropping the diaphragm.

The special material coating on the components in contact with the process medium protects them from attack by chemically aggressive medium. CrNi steels for the housing and instrument flange also make these diaphragm gauges resistant to chemically aggressive environments.

Open process connections ensure that the pressure gauges are easy to clean even with highly viscous or crystallizing process media, thus guaranteeing process reliability.

### Ranges

0...16 to 0...250 mbar and all corresponding ranges for negative or negative/positive gauge pressure

### Applications


Chemical and petrochemical industries; food and beverages industries; mechanical engineering, plant and machinery construction

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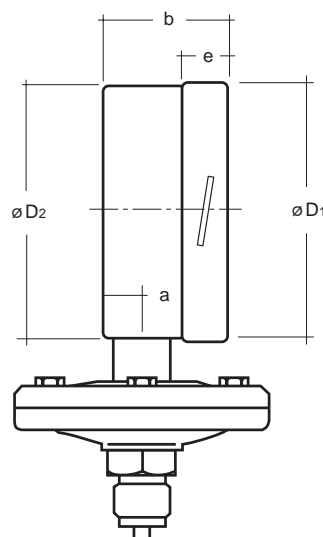
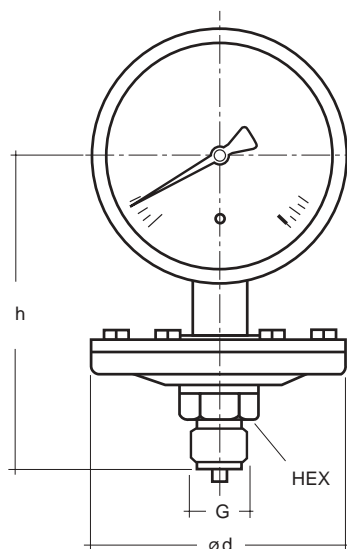
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## Technical Data

Model	MAN	Without filling		With filling		Options
		PF 26...	PG 26...	PF 76...	PG 76...	
Nominal size		100 mm	160 mm	100 mm	160 mm	
Symbol						
Accuracy class <sup>1)</sup>		1.6 (DIN 16005)				
Design		acc. DIN 16026				
Indicating range		0...16 to 0...250 mbar; flange $\varnothing$ 160 mm and all ranges for negative or negative/positive overpressure				
Max. pressure		static load: to max. rating alternating load: 0.9 times max. rating				
Overpressure		5 x max. rating				overload: 10 x max. rating max. 40 bar; vacuum safe to -1 bar
Filling		none		glycerine		
Temperature range		ambient: T <sub>max.</sub> +60°C, T <sub>min.</sub> -20°C medium: T <sub>max.</sub> +100°C				
Protection		IP 45		IP 65		
Housing and upper flange		stainless steel, with blow-out disc				
Connection with lower flange		stainless steel, 1.4571, G 1/2 male, HEX 27 (DIN 16288)				
Elastic measuring element		0.4 bar stainless steel 1.4571 > 0.4 bar stainless steel (Duratherm 600)				
Movement		stainless steel 1.4301/1.4305				
Dial		aluminum, white; scale and lettering black acc. DIN 16109				dual scale
Pointer		aluminum, black acc. DIN 16099				
Window		laminated safety glass				
Ring		bayonet ring, stainless steel 1.4301				
Sea to:						
- pressure compartment		FPM				
- filled interior		NBR bellows				st. steel bellows
Wetted parts		see "Connection with lower flange" and "Measuring element"				coated with PTFE, PFA, Hastelloy, Monel, nickel, tantalum, titanium, silver
Flange connection						to DIN /ANSI from DN15 to DN80 (DN 25 and 50 preferred)

## Dimensions

Standard model



<sup>1)</sup> with filling: 0...16 mbar, accuracy class 2.5

Dia.	Range (bar)	Dimensions (mm)									Weight (kg)	
		d	a	b	D <sub>1</sub>	D <sub>2</sub>	e	G	h $\pm$ 2	HEX	unfilled	filled
100	0.4	160	15.5	49.5	101	99	17.5	G 1/2 male	135	27	3.4	3.9
160			15.5	49.5	161	159	17.5	G 1/2 male	165	27	4.0	4.9

Connection to DIN 16288

## All stainless steel contact pressure gauges with or without filling

Nominal dia. 100, 160 with magnetic spring or inductive contacts  
Bottom connection



measuring  
•  
monitoring  
•  
analysing



### Features

- High reliability and durability
- Vibration-free indication by fluid damping
- Chemically resistant due to stainless steel design
- Housing stainless steel 1.4301
- Movement stainless steel 1.4571
- Protection IP 54 / IP 65
- Accuracy class 1.0
- Up to four alarm contacts possible

### Description

Contact pressure gauges with electrical alarm contacts are suitable for controlling or regulating process sequences with the aid of the process pressure.

The contacts open or close electrical circuits in relation to the position of the pointer on the pressure gauge.

Contact pressure gauges with the Bourdon tube system are used at process pressures of approximately 1 bar and upwards. The materials used make the gauges suitable for chemically aggressive gases or liquids, although these may not be too viscous or be susceptible to crystallization.

The tested Bourdon tube system coupled with a modern modular principle provides a very reliable yet inexpensive contact pressure gauge.

Gauges with filling are damped if pressure pulses or mechanical vibrations occur. This prolongs the service life and the gauge display remains largely vibration free.

Electric alarm contacts are used as magnetic snap-action contacts, especially in harsh industrial conditions. The high contact pressure and the choice of different electrical contact materials enable high currents to be switched reliably.

If the electrical switching capacity of the alarm contacts is exceeded or not reached, a relay is to be used to provide an appropriate current rating.

Inductive alarm contacts operate without physical contact and thus have no unfavourable effects on the pressure measuring system while having an unlimited service life. A control unit is always needed to operate these contacts. Contact pressure gauges with inductive alarm contacts can be used in potentially explosive atmospheres, provided that the appropriate regulations are complied with.

### Ranges

0...1 bar to 0...1000 bar

### Applications

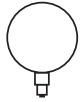
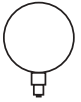
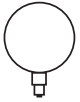
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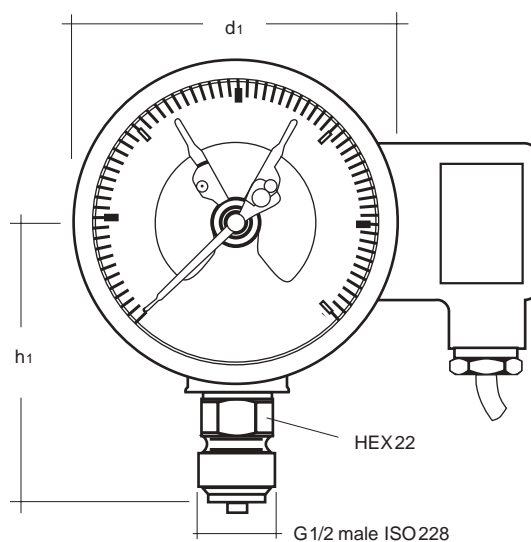
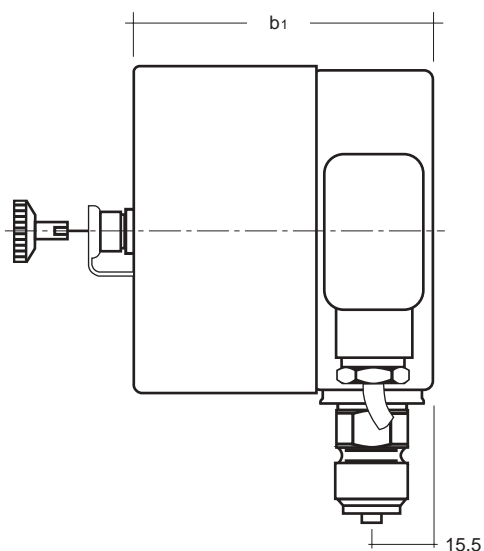
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KOBOLD Messing GmbH  
Nordring 22-24  
D-65719 Hofheim/Ts.  
☎ (06192) 299-0  
☎ (06192) 23398  
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Internet: www.kobold.com

## Technical Data

Model	MAN	RF 26 (M), (I)	RF 76 (M), (I)	RG 26 (M), (I)	RG 76 (M), (I)	Options
Nominal size	100 mm			160 mm		
Symbol						
Contact type	magnetic spring (M) or inductive contact (I)					
No. of contacts	1-4 depending on measuring range and housing diameter					
Filling	paraffin oil			paraffin oil		
Position of cable socket	on side					
Cable connection	PG 13.5					
Accuracy class	1.6 bar, class 1.6, DIN 16005 > 1.6 bar, class 1, DIN 16005					
Indicating range	-1...0 bar to 0...1000 bar					0...2500 bar ø160
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating					
Housing	1.4301 with blowout disc					
Bezel	1.4301					
Window	safety glass					
Dial	aluminum, white					
Pointer	aluminum, black					
Movement	stainless steel					
Connection	1.4571					
- position	bottom					
- thread	G 1/2 male					
Temperatures	- medium - ambient					
	max. 80°C max. 60°C					
Protection DIN 40050	IP 54	IP 65	IP 65	IP 54	IP 65	

## Dimensional drawings



Housing diameter $d_1 \pm 1$	$b_1$	$h_1 \pm 1$
100	90	87
160	96	118

$b_1$  = up to two contacts



## All stainless steel contact pressure gauges with or without filling

Nominal dia. 100/160 with magnetic spring or inductive contacts  
Back connection



measuring  
•  
monitoring  
•  
analysing



### Features

- High reliability and durability
- Vibration-free indication by fluid damping
- Chemically resistant due to stainless steel design
- Housing stainless steel 1.4301
- Movement stainless steel 1.4571
- Protection IP 54 / IP 65
- Accuracy class 1.0

### Description

Contact pressure gauges with electrical alarm contacts are suitable for controlling or regulating process sequences with the aid of the process pressure.

The contacts open or close electrical circuits in relation to the position of the pointer on the pressure gauge.

Contact pressure gauges with the Bourdon tube system are used at process pressures of approximately 1 bar and upwards. The materials used make the gauges suitable for chemically aggressive gases or liquids, although these may not be too viscous or be susceptible to crystallization.

The tested Bourdon tube system coupled with a modern modular principle provides a very reliable yet inexpensive contact pressure gauge.

Gauges with filling are damped if pressure pulses or mechanical vibrations occur. This prolongs the service life and the gauge display remains largely vibration free.

Electric alarm contacts are used as magnetic snap-action contacts, especially in harsh industrial conditions. The high contact pressure and the choice of different electrical contact materials enable high currents to be switched reliably. If the electrical switching capacity of the alarm contacts is exceeded or not reached, a relay is to be used to provide an appropriate current rating.

Inductive alarm contacts operate without physical contact and thus have no unfavourable effects on the pressure measuring system while having an unlimited service life.

A control unit is always needed to operate these contacts.

Contact pressure gauges with inductive alarm contacts can be used in potentially explosive atmospheres, provided that the appropriate regulations are complied with.

**Ranges** 0...1 bar to 0...1000 bar

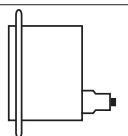
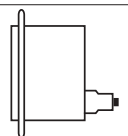
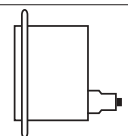
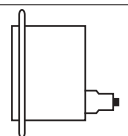
**Applications** Process engineering, mechanical engineering and plant construction, water treatment

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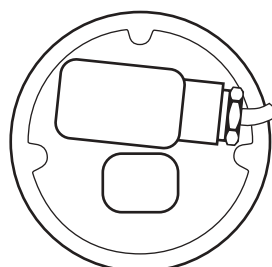
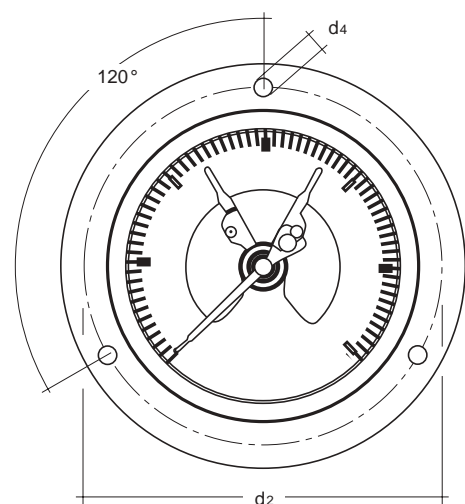
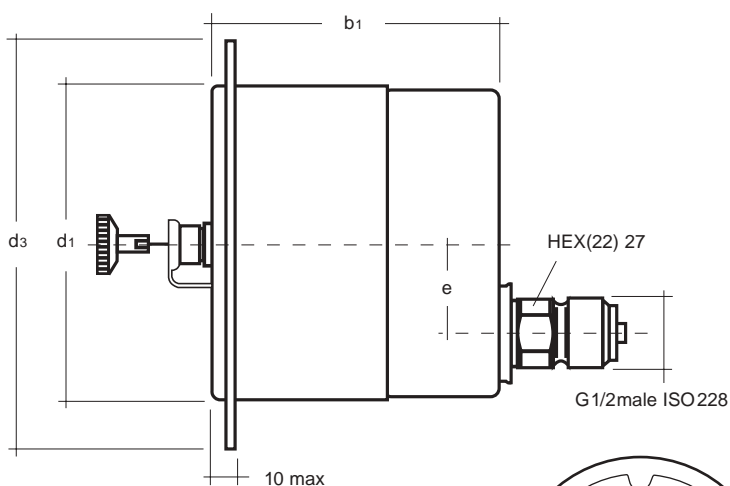
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Nordring 22-24  
D-65719 Hofheim/Ts.  
☎ (06192) 299-0  
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Internet: www.kobold.com

## Technical Data

Model	MAN	RF 28 (M), (I)...V	RF 78 (M), (I)...V	RG 28 (M), (I)...V	RG 78 (M), (I)...V	Options
Nominal size	100 mm			160 mm		
Symbol						
Contact type	magnetic spring (M) or inductive contact (I)					
No. of contacts	1-4 depending on measuring range and housing diameter					
Filling				paraffin oil		
Position of cable socket	on side					
Cable connection	PG 13.5					
Accuracy class	1.6 bar, class 1.6, DIN 16005 > 1.6 bar, class 1, DIN 16005					
Indicating range	-1...0 bar to 0...1000 bar					2500 bar on request
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating					
Housing	1.4301 with blow-out disc					
Bezel	1.4301					
Installation	front flange					cover ring triangular front ring
Window	safety glass					
Dial	aluminum, white					
Pointer	aluminum, black					
Movement	stainless steel					
Measuring element	stainless steel					
Connection	1.4571					
- position	back eccentrical					
- thread	G 1/2 male					
Temperatures	- medium - ambient					
	max. 80°C max. 60°C					
Protection DIN 40050	IP 54	IP 65	IP 65	IP 54	IP 65	

## Dimensional drawings

\* Available without front ring



Cable socket at rear

Housing diameter $d_1 \pm 1$	$b_1$	$d_2$	$d_3$	$d_4$	$e$
100	90	116	132	4.8	32
160	96	178	196	5.8	50

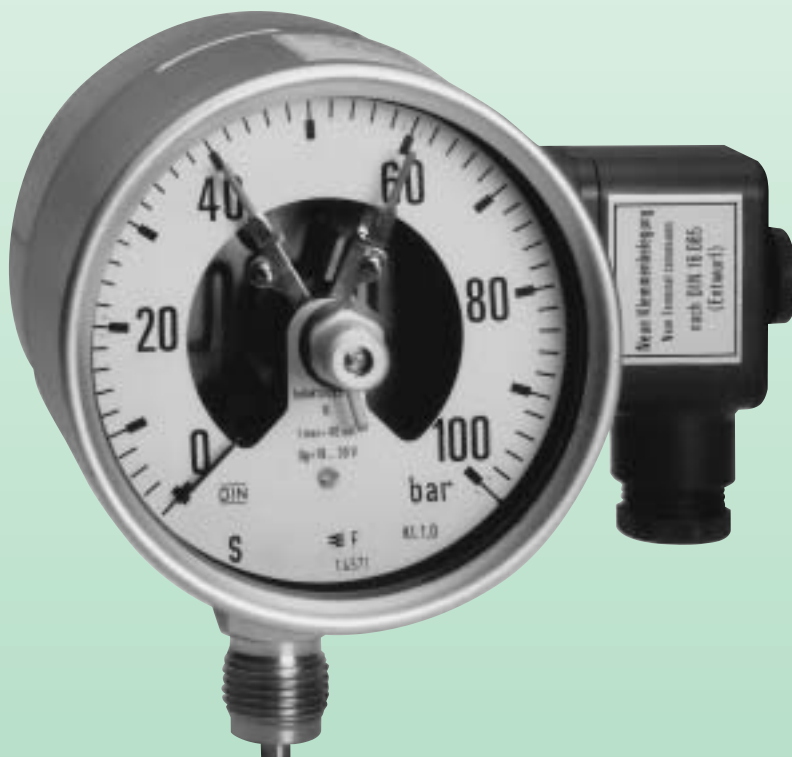
$b_1 =$  up to two contacts

## All stainless steel contact pressure gauges for exceptional safety according to EN 837-1 with or without glycerine filling

Nominal dia. 100 with magnetic spring or inductive contacts  
Bottom connection



measuring  
•  
monitoring  
•  
analysing



### Features

- Special safety acc. EN 837-1
- Vibration-free indication by fluid damping
- Chemically resistant due to stainless steel design
- Overrange protection 1.3 times max. rating
- Protection IP65
- Accuracy class 1.0
- Housing made of stainless steel 1.4301
- Movement stainless steel 1.4571
- Suitable for programmable logic controller (PLC)

**Ranges** 0...1 bar to 0...1000 bar

**Applications** Process engineering, mechanical engineering and plant construction

### Description

Contact pressure gauges with electrical alarm contacts are suitable for controlling or regulating process sequences with the aid of the process pressure. The contacts open or close electrical circuits in relation to the position of the pointer on the pressure gauge.

Contact pressure gauges with the Bourdon tube system are used at process pressures of approximately 1 bar and upwards. The materials used make the gauges suitable for chemically aggressive gases or liquids, although these may not be too viscous or be susceptible to crystallization. A laminated safety pane, unbreakable partition between the measuring system and dial a blow-off back cover help to prevent accidents caused by escaping media or projected parts and thus injuries to employees if a pressure overload of the gauge occurs.

The tested Bourdon tube system coupled with a modern modular principle provides a very reliable yet inexpensive contact pressure gauge. Gauges with filling are damped if pressure pulses or mechanical vibrations occur. This prolongs the service life and the gauge display remains largely vibration free.

Electric alarm contacts are used as magnetic snap-action contacts, especially in harsh industrial conditions.

The high contact pressure and the choice of different electrical contact materials enable high currents to be switched reliably. If the electrical switching capacity of the alarm contacts is exceeded or not reached, a relay is to be used to provide an appropriate current rating.


Inductive alarm contacts operate without physical contact and thus have no unfavourable effects on the pressure measuring system while having an unlimited service life. A control unit is always needed to operate these contacts. Contact pressure gauges with inductive alarm contacts can be used in potentially explosive atmospheres, provided that the appropriate regulations are complied with.

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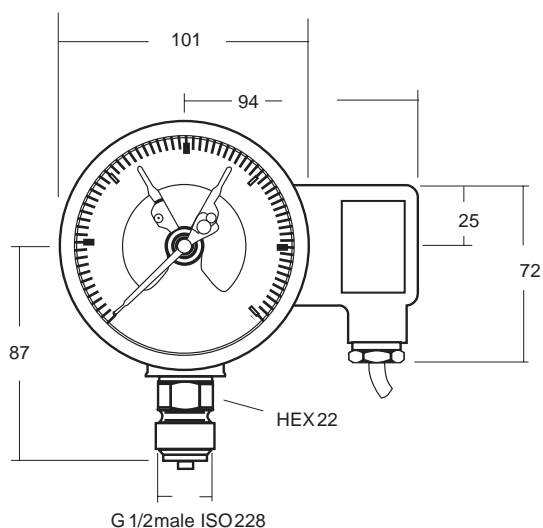
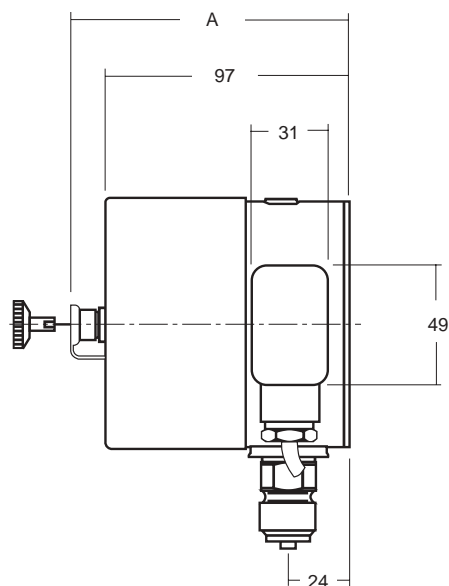
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Nördring 22-24  
D-65719 Hofheim/Ts.  
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☎ (06192) 23398  
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Internet: www.kobold.com

## Technical Data

Model	MAN	RF26 S ...M	RF26 S ...I	RF76 S ...I	Options
Nominal size	100 mm				
Symbol					
Contact type	magnetic spring	inductive	inductive		
No. of contacts *)	1-3 depending on measuring range	1-3 depending on measuring range	1-3 depending on measuring range		
Filling	without		polybutene		
Position of cable socket	right-hand side				
Cable connection	PG 13.5				
Accuracy class	1.6 bar, class 1.6 to DIN 16005 > 1.6 bar, class 1.0 to DIN 16005				
Indicating range	0...1 bar to 0...1000 bar to DIN 16128 negative or positive and negative/positive overpressure				
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating short-term overload, 1.3 times				
Blow-out disc	stainless steel 1.4301				
Housing	stainless steel 1.4301				
Bezel	stainless steel 1.4301				
Installation	none				front flange, st. steel 1.4301
Window	laminated safety glass				
Dial	aluminum, white; scale and lettering black acc. DIN 16109				
Pointer	aluminum, black; equivalent to DIN 16099				
Movement	stainless steel				
Measuring element	stainless steel (Bourdon tube)				
Connection	stainless steel 1.4571				
- position	bottom				
- thread	G 1/2 male ISO 228				other threads on request
Temperatures					
- medium	Tmin. -20°C, Tmax. +80°C				
- ambient	Tmin. -25°C, Tmax. +60°C				
Temperature behaviour	0.3% / 10K on deviation from normal temperature +20°C				
Protection DIN40050	IP 43	IP 43	IP 65		
Throttle					∅ 0.3; ∅ 0.4; ∅ 0.8
Weight (approx.)	0.9 kg	0.9 kg	1.2 kg		

**Dimensions:** bottom connection; design to DIN 16006 for increased safety



**\* No. of contacts**

Measuring range	Magnetic-spring contact	Inductive contact
up to 1 bar	1	1
1.6 bar	2	3
from 4 bar	4	-

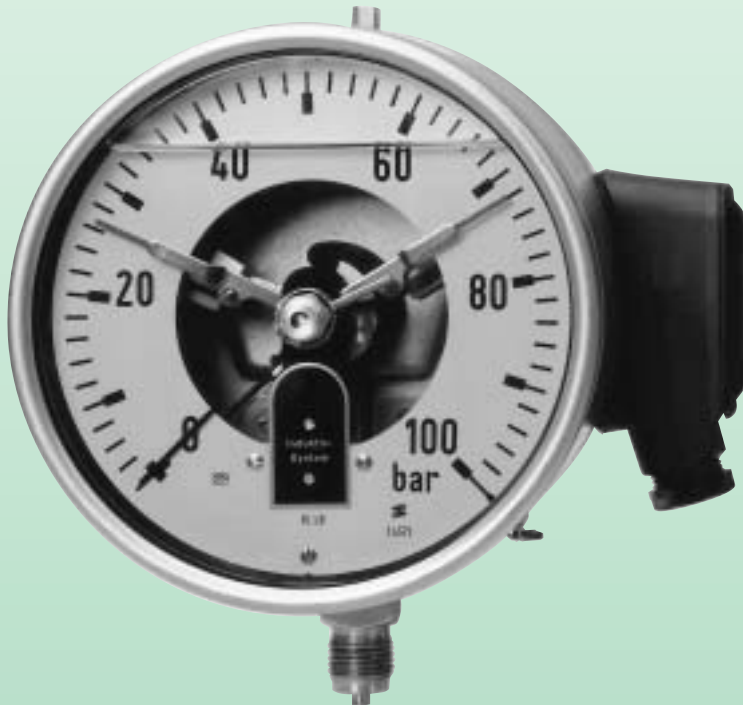
Model	RF26 M, (I)	RF76 I...
dimension "A"	104 mm	108 mm

## All stainless steel contact pressure gauges for exceptional safety according to EN 837-1 with or without glycerine filling

Nominal dia. 160 with inductive contacts  
Bottom connection



measuring  
•  
monitoring  
•  
analysing



### Features

- Modular construction system ensures high reliability and long service life
- Vibration-free indication by fluid damping
- Chemically resistant due to stainless steel 1.4571
- Housing made of stainless steel 1.4301
- Special safety acc. EN 837-1
- Protection IP65
- Accuracy class 1.0
- Up to three alarm contacts possible

### Description

Contact pressure gauges with electrical alarm contacts are suitable for controlling or regulating process sequences with the aid of the process pressure. The contacts open or close electrical circuits in relation to the position of the pointer on the pressure gauge.

Contact pressure gauges with the Bourdon tube system are used at process pressures of approximately 1 bar and upwards. The materials used make the gauges suitable for chemically aggressive gases or liquids, although these may not be too viscous or be susceptible to crystallization. A laminated safety pane, unbreakable partition between the measuring system and dial a blow-off back cover help to prevent accidents caused by escaping media or projected parts and thus injuries to employees if a pressure overload of the gauge occurs.

The tested Bourdon tube system coupled with a modern modular principle provides a very reliable yet inexpensive contact pressure gauge. Gauges with filling are damped if pressure pulses or mechanical vibrations occur. This prolongs the service life and the gauge display remains largely vibration free.

Electric alarm contacts are used as inductive alarm contacts and operate without physical contact.

Inductive alarm contacts have no unfavourable effects on the pressure measuring system while having an unlimited service life.

A control unit is always needed to operate these contacts. Contact pressure gauges with inductive alarm contacts can be used in potentially explosive atmospheres, provided that the appropriate regulations are complied with.

### Ranges

0...1 bar to 0...1000 bar

### Applications


Process engineering, mechanical engineering and plant construction, water treatment

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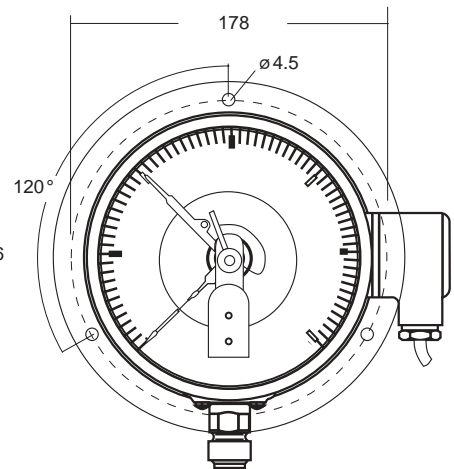
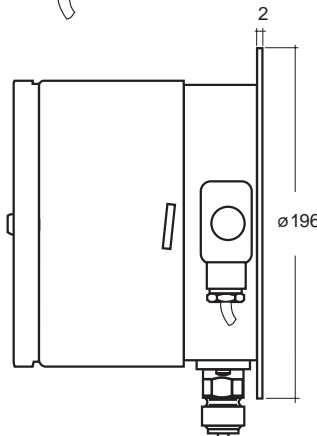
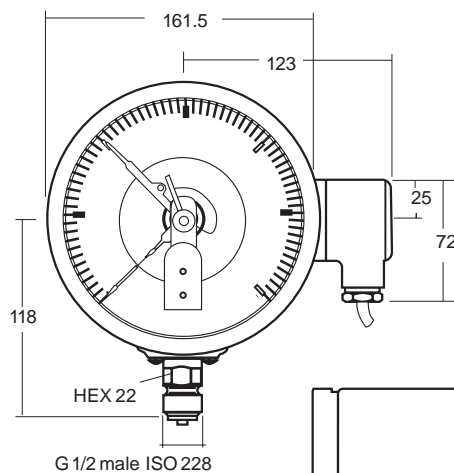
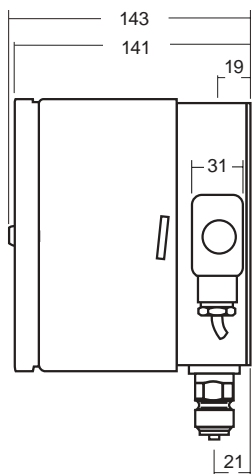
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Nordring 22-24  
D-65719 Hofheim/Ts.  
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Internet: www.kobold.com

## Technical Data

Model	MAN	RG 26 S ...I	RG 76 S ...I	Options
Nominal size	160 mm			
Symbol				
Contact type	inductive		inductive	
No. of contacts	1-3 depending on measuring range		1-3 depending on measuring range	
Filling			polybutene	
Position of cable socket	right-hand side			
Cable connection	PG 16			
Accuracy class	1.6 bar, class 1.6 to DIN 16005 > 1.6 bar, class 1.0, DIN 16005			
Indicating range	0...1 bar to 0...1000 bar to DIN 16128 negative or positive and negative/positive overpressure			0.6 bar or 1600 bar
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating short-term overload, 1.3 times			
Housing	stainless steel 1.4301 with blow-out back, safety separation wall			
Bezel	stainless steel 1.4301			
Installation				front flange, bayonet ring, stainless steel 1.4301
Window	laminated safety glass			
Dial	aluminum, white; scale and lettering black acc. DIN 16109			
Pointer	aluminum, black			
Movement	stainless steel			
Measuring element	stainless steel (Bourdon tube)			
Connection	stainless steel 1.4571			
- position	bottom			
- thread	G 1/2 male ISO 228			other threads on request
Temperatures				
- medium	Tmin. -20 °C, Tmax. +80 °C			
- ambient	Tmin. -25 °C, Tmax. +60 °C			
Temperature behaviour	0.3% / 10K on deviation from normal temperature +20 °C			
Protection	IP 43		IP 65	
Throttle				∅ 0.3; ∅ 0.4; ∅ 0.8
Weight (approx.)	2.3 kg		3.9 kg	

### Dimensions: bottom connection



### \*No. of contacts

Measuring range	Inductive contact
0.6 bar	1
1.0 bar	2
from 1.6 bar	3

## Diaphragm pressure gauges in st. st. housing with alarm contacts, with or without filling

Nominal dia. 100, 160 with magnetic spring or inductive contact  
Accuracy class 1.6



measuring  
•  
monitoring  
•  
analysing



### Features

- Magnetic spring or inductive contacts
- Suitable for programmable logic controller (PLC)
- Up to four alarm contacts possible
- Use in hazardous locations with inductive contacts
- Precise display from liquid damping
- Overrange protection 10 times max. rating
- Protection IP54 or IP65

### Description

The design principle and material selection of these diaphragm gauges allow them to meet the stringent demands occurring above all in industrial service. Special corrosion resistant materials are used for service with chemically aggressive media.

Open process connections ensure that the gauges are easy to clean with highly viscous or crystallizing process media, thus guaranteeing process reliability. As a result of the high actuating forces, diaphragm pressure gauges are particularly suitable for connection of contacts. Electric alarm contacts open and close circuits in response to the position of the pressure gauge pointer.

Magnetic snap-action contacts are used in adverse operating conditions. The high contact pressure and the selection of various contact materials result in reliable and cost-effective solutions, above all when high currents have to be switched.

Signal output does however take place slightly in advance of or lagging slightly behind the motion of the actual pointer value.

If the permissible switching capacity of the magnetic snap-action contacts is no longer sufficient, the use of a contact protection relay is to be recommended.

Inductive contacts have an almost unlimited service, as the signal is switched without physical contact.

Closing or opening takes place without any feedback effect on the measuring system, eliminating any signal lead or lag. A corresponding control unit is always required for operation.

Units with inductive contacts may be operated in areas with potentially explosive atmospheres, assuming compliance with existing specifications.

### Ranges

0...25 mbar to 0...40 bar

### Applications


mechanical engineering,  
plant and machinery construction,  
food and beverages industries

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## Technical Data

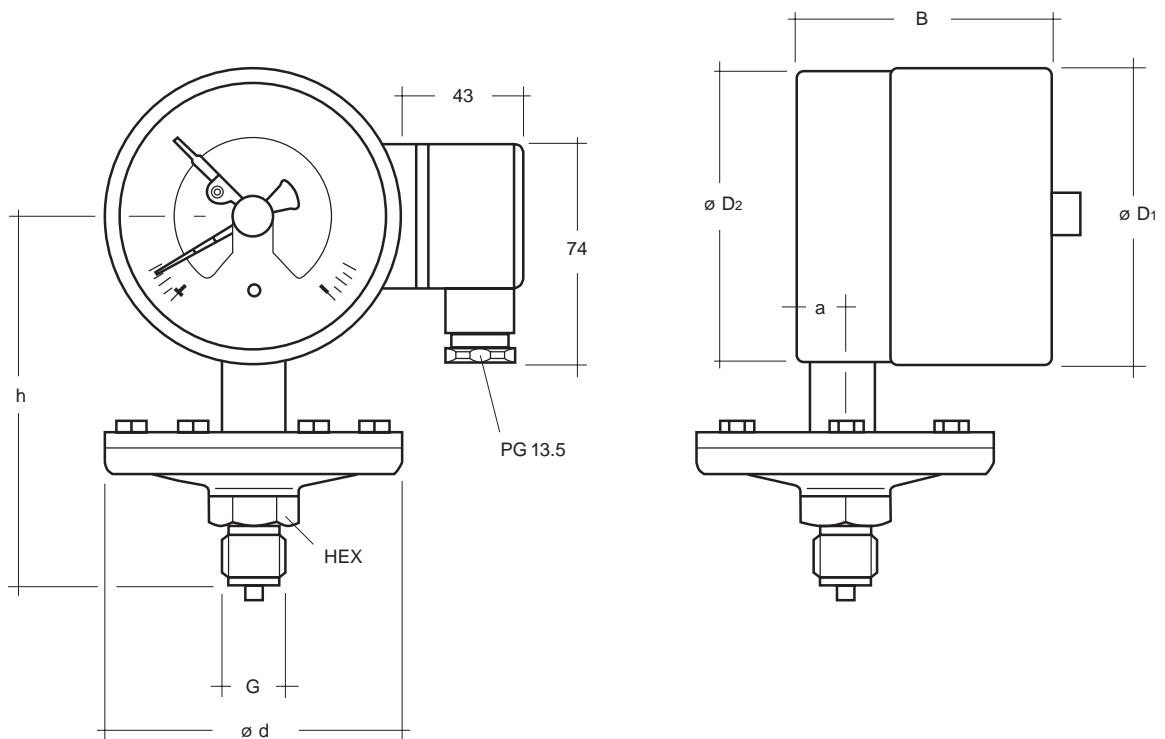
Model	MAN	PF 80M...	PF 90M...	PF 80I...	PF 90I...	PG 80M...	PG 90M...	PG 80I...	PG 90I...	Options
Nominal size	100 mm					160 mm				
Symbol										
Contact type	magnetic-spring			inductive			magnetic-spring			inductive
No. of contacts *)	1-3 depending on measuring range			1-3 depending on measuring range			1-4 depending on measuring range			1-3 depending on measuring range
Filling		silicone oil			silicone oil			silicone oil		
Position of cable socket	right side									back
Cable connection	PG 13.5									
Accuracy class	1.6 to DIN 16005 2.5 with filling and measurement range 0...25 to 0...100 mbar									
Indicating range	0...25 mbar to 0...250 mbar: flange ø 160 mm 0...0.4 bar to 0...40 bar: flange ø 100 mm negative or positive or negative/positive overpressure									
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating									
Overrange protection	0.4 bar: 5 times max. rating > 0.4 bar to 2.5 bar: 3 times max. rating > 2.5 bar: 5 times max. rating, max. 40 bar									overload: 10 x max. rating; max. 40 bar vacuum safe to -1 bar
Housing and upper flange	stainless steel									
Connection with lower flange	steel, black									
- position	bottom									
- thread	G 1/2 male, HEX27 (DIN 16288)									other thread or flange on request
Bezel	st. st., black, bayonet ring									
Window	instrument glass									lamin. safety glass
Dial	aluminum, white, scale and lettering black acc. DIN 16 109									dual scale
Pointer	aluminum, black									
Movement	Brass, moving parts argentan									
Measuring unit	2.5 bar: stainless steel 1.4571 > 2.5 bar: stainless steel (Duratherm 600)									
Seal to										FPM or PTFE
- pressure compartment	NBR									
- filled interior	NBR									
Temperatures										
- medium	Tmin. -20 °C, Tmax. +100 °C									
- ambient	Tmin. -20 °C, Tmax. +60 °C									
Temperature behaviour	0.5% / 10K on deviation from normal temperature +20 °C									
Protection to EN60529/IEC259	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65		
Wetted parts	see "Connection with lower flange" and "Measuring unit"									special materials on request
Throttle										ø 0.3; ø 0.4; ø 0.8

### \* Maximum possible number of contacts

Measuring range	Magnetic-spring contact	Inductive contact
25 mbar	2	2
40 - 160 mbar	3	3
from 250 mbar	4	3



## Dimensions



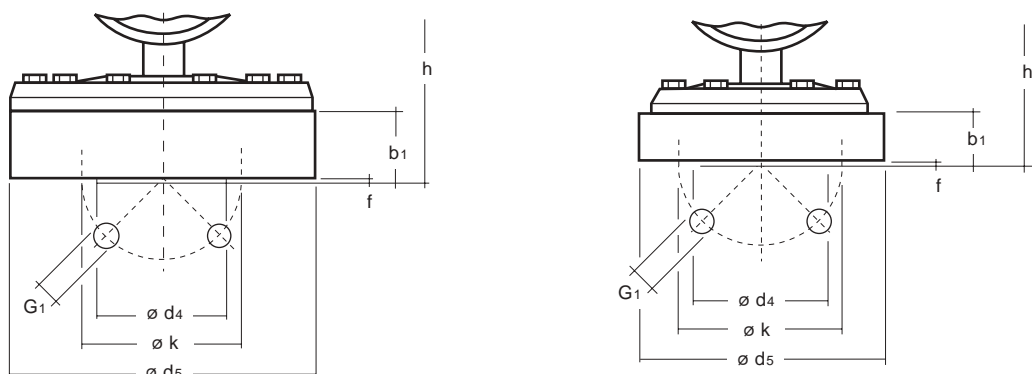
Dia.	Indication range (bar)	Dimensions (mm)					Weight (kg) approx. unfilled with				filled with			
		ø d	a	B±1 mit		D <sub>1</sub>	D <sub>2</sub>	G	h±2	HEX	1+2 cont.	3 cont.	1+2 cont.	3 cont.
100	0.25	160	15.5	88	96	101	99	G1/2	135	27	3.75	3.78	4.20	4.23
160				161	159	male	165	4.65	4.70		5.85	6.00		
100	> 0.25	100	15.5	88	96	101	99	G1/2	135	27	2.25	2.27	2.70	2.76
160				161	159	male	165	3.10	3.15		4.30	4.45		

Connection to DIN 16 288

### Options with connecting flange DIN DN25, PN10 to PN40

Indication range 0...25 to 0...250 bar

Indication range 0...0.4 to 0...40 bar



Dia.	Connection flange DIN DN25 PN10 to 40 <sup>1)</sup>	Dimensions (mm)							Weight <sup>2)</sup> (kg) approx.
		d <sub>5</sub>	k	d <sub>4</sub>	b <sub>1</sub>	f	G <sub>1</sub>	h±2	
100	0.25 bar	160	85	68	36	2	4 x M12	122	3.0
160								152	
100	> 0.25 bar	115	85	68	25	2	4 x M12	111	0.9
160								141	

Other dimensions as for standard model

1) Can be mounted on counterflange to DIN, sealing strip form D to DIN 2526

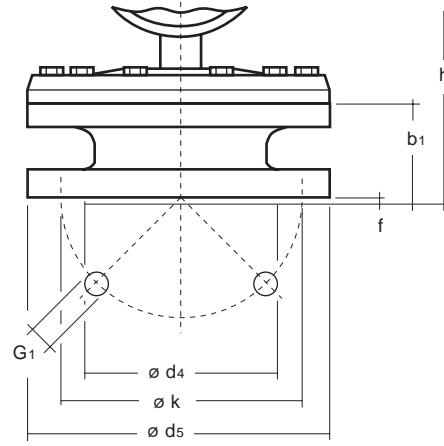
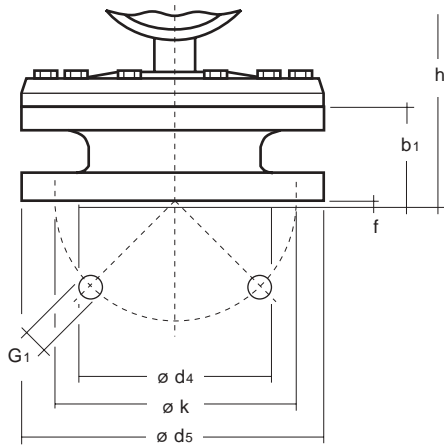
2) The weights stated are additional weights which should be added to the weight of the standard model (with connection G 1/2 male to DIN 16288).

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Options with connecting flange DIN DN50, PN10 to PN40

Indication range 0...25 to 0...250 mbar

Indication range 0...0.4 to 0...40 bar



Dia.	Connection flange DIN DN50 PN10 to 40 <sup>1)</sup>	Dimensions (mm)							Weight <sup>2)</sup> (kg) approx.
		$d_5$	$k$	$d_4$	$b_1$	$f$	$G_1$	$h_{\pm 2}$	
100	0.25 bar	165	125	102	54	3	4 x $\varnothing 18$	140	2.6
160								170	
100	> 0.25 bar	165	125	102	30	3	4 x $\varnothing 18$	106	2.5
160								136	

Other dimensions as for standard model

- 1) Can be mounted on counterflange to DIN, sealing strip form D to DIN 2526
- 2) The weights stated are additional weights which should be added to the weight of the standard model (with connection G 1/2 male to DIN 16288).

## Diaphragm pressure gauge in aluminium or stainless steel housing with contacts

Nominal dia. 100, 160 with magnetic-spring or inductive contacts  
Accuracy class 1.6



measuring  
•  
monitoring  
•  
analysing



### Features

- Magnetic-spring or inductive contacts
- Use in hazardous locations with inductive contacts
- Measuring element stainless steel
- Process connection of stainless steel
- Highly corrosion resistant coating for wetted parts
- Overrange protection

### Description

The design principle and material selection of the diaphragm pressure gauge allows them to meet the stringent demands occurring in service and industrial processing plants. All wetted parts can be coated with special materials to protect them against aggressive media.

As a result of the high actuating forces, diaphragm pressure gauges are particularly suitable for connection of contacts. The series of diaphragm pressure gauges can be equipped with magnetic spring or inductive contacts. Inductive contacts are available for hazardous areas, assuming compliance with existing specifications.

The selection of the contact versions depends on the process condition and the applicable safety requirements.

Magnetic snap-action contacts are used in adverse operating conditions. The high contact pressure and the selection of various contact materials result in reliable and cost-effect solutions, above all when high currents have to be switched.

Signal output does however take place slightly in advance of or lagging slightly behind the motion of the actual pointer value.

Inductive contacts have an almost unlimited service, as the signal is switched without physical contact. Closing or opening takes place without any feedback effect on the measuring system, eliminating any signal lead or lag. A corresponding control unit is always required for operation. Units with inductive contacts may be operated in areas with potentially explosive atmospheres, assuming compliance with existing specifications.

### Ranges

-1 ... 0 bar to 0 ... 25 bar

### Applications





Plastic and paper industries, machine construction, level monitoring, water treatment

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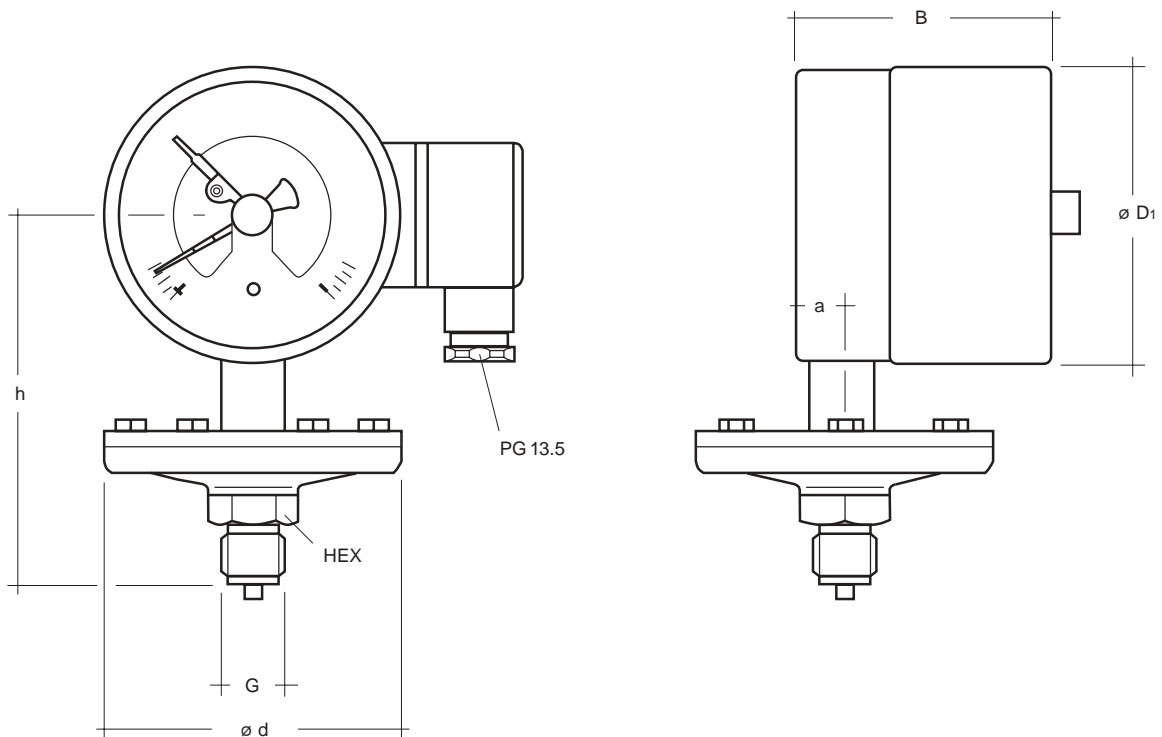
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## Technical Data

Model	MAN	PF2(7)*6W (M), (I)...	PG3(6)*6W (M), (I)...	PF2(7)*6H (M), (I)...	PG2(7)*6H (M), (I)...	Options
Nominal size		100 mm	160 mm	100 mm	160 mm	
Symbol						
Contact type	magnetic-spring or inductive contact (M), (I)					
No. of contacts	1-4 depending on measuring range and housing diameter					
Filling	paraffin oil					
Position of cable socket	on side					
Cable connection	PG 13.5					
Accuracy class	1.6					
Indicating range	-1...0 bar to 0...25 bar					
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating					
Housing	1.4301	aluminum		1.4301	1.4301	
Bezel	1.4301	steel black		1.4301	1.4301	
Window	glass			safety glass		
Dial	aluminum, white					
Pointer	aluminum, black					
Movement	brass			stainless steel		
Measuring element	Duatherm 600			stainless steel		
Connection	upper and lower flange 1.4571					hole $\varnothing$ 10 mm
- position	bottom					
- thread	G 1/2 male					
Temperatures						
- medium	max. 80 °C					
- ambient	max. 60 °C					
Protection DIN 40050	IP 54					IP 65

## Dimensions

(W) movement brass; (H) movement stainless steel  
(6), (7) filled version



Dia.	Measuring range (bar)	Dimensions (mm)							Weight (kg) approx	
		ø d	a	B±1 mit 1+2 cont.	D <sub>1</sub>	G	h±2	HEX	unfilled with 1+2 contacts	filled with 1+2 contacts
100	> 0.6	100	15.5	96	100	G1/2 male	150	(27) 22	2.25	2.70
160					160		185		3.10	4.30

Connection to DIN 16 288

## All stainless steel diaphragm pressure gauges with alarm contacts, with or without filling

Nominal dia. 100, 160 with magnetic spring or inductive contacts  
Accuracy class 1.6



measuring  
•  
monitoring  
•  
analysing



### Features

- Magnetic spring or inductive contacts
- Suitable for programmable logic controller (PLC)
- Up to four alarm contacts possible
- Use in hazardous locations with inductive contacts
- Precise display from liquid damping
- Overrange protection 10 times max. rating
- Movement stainless steel 1.4571
- Protection IP 54 or IP 65

### Description

The design principle and material selection of these diaphragm gauges allows them to meet the stringent demands occurring above all in chemicals and petrochemicals industries. Special corrosion resistant materials protect the wetted parts in service from chemically aggressive media.

Open process connections ensure that the gauges are easy to clean with highly viscous or crystallizing process media, thus guaranteeing process reliability. The principle of the diaphragm system makes the gauge almost completely insensitive to jarring or vibration.

As a result of the high actuating forces, diaphragm pressure gauges are particularly suitable for connection of contacts. Electric alarm contacts open and close circuits in response to the position of the pressure gauge pointer.

Magnetic snap-action contacts are used in adverse operating conditions. The high contact pressure and the selection of various contact materials result in reliable and cost-effective solutions, above all when high currents have to be switched.

Signal output does however take place slightly in advance of or lagging slightly behind the motion of the actual value pointer.

If the permissible switching capacity of the magnetic snap-action contacts is no longer sufficient, the use of a contact protection relay is to be recommended. Inductive contacts have an almost unlimited service, as the signal is switched without physical contact. Closing or opening takes place without any feedback effect on the measuring system, eliminating any signal lead or lag.

A corresponding control unit is always required for operation.

Units with inductive contacts may be operated in areas with potentially explosive atmospheres, assuming compliance with existing specifications.

**Ranges** 0...25 mbar to 0...250 mbar

### Applications


Chemicals and petrochemicals industries, food and beverages industries, mechanical engineering, plant and machinery construction

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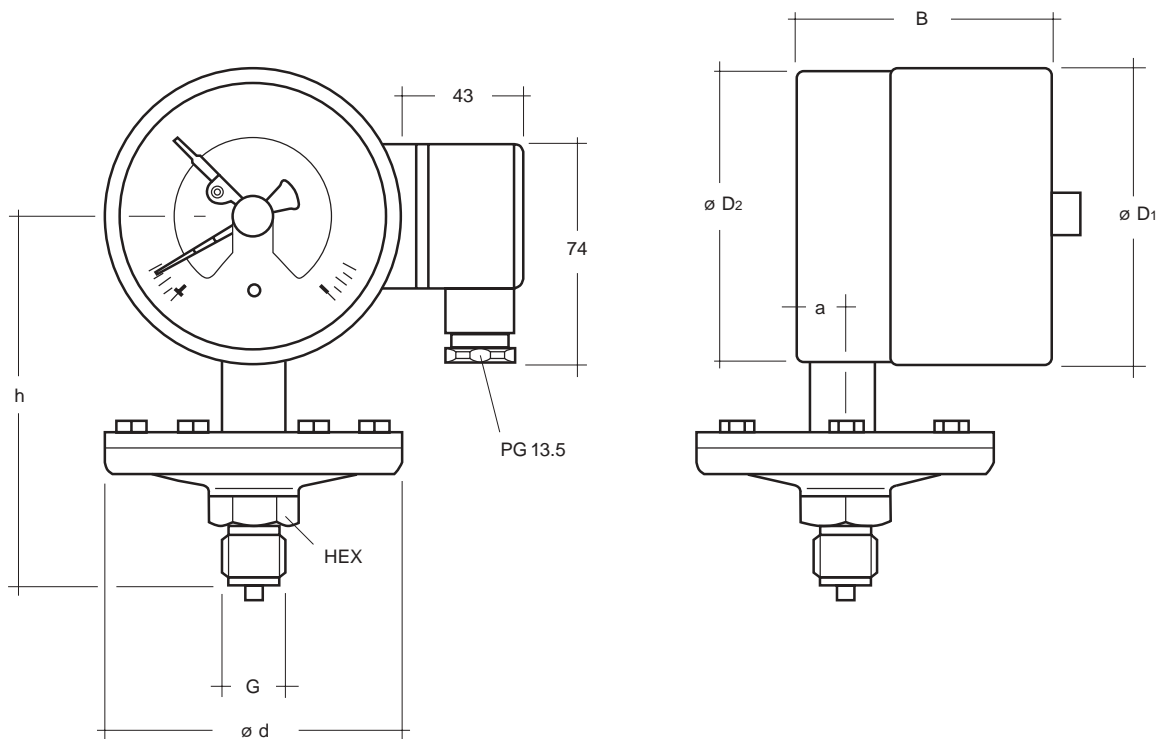
## Technical Data

Model	MAN	PF 26M...	PF 76M...	PF 26I...	PF 76I...	PG 26M...	PG 76M...	PG 26I...	PG 76I...	Options
Nominal size	100 mm					160 mm				
Symbol										
Contact type	magnetic-spring			inductive			magnetic-spring			inductive
No. of contacts*	1-3 depending on measuring range			1-3 depending on measuring range			1-4 depending on measuring range			1-3 depending on measuring range
Filling		diester oil			diester oil			diester oil		
Position of cable socket	right side									back
Cable connection	PG 13.5									
Accuracy class	1.6 to DIN 16005 2.5 with filling and measurement range 0...25 to 0...100 mbar									
Indicating range	0...25 mbar to 0...250 mbar: flange ø 160 mm negative or positive or negative/positive overpressure									
Max. pressure	static load: to max. rating alternating load: 0.9 times max. rating									
Overrange protection	5 times max. rating									overload: 10 x max. rating; max. 40 bar vacuum safe to -1 bar
Housing and upper flange	stainless steel, bare, with pressure relief									
Connection with lower flange	stainless steel 1.4571, bare									
- position	bottom									
- thread	G 1/2 male, HEX27 (DIN 16288)									
Bezel	stainless steel, bare, bayonet ring									
Window	laminated safety glass									plexi glass
Dial	aluminum, white, scale and lettering black acc. DIN 16 109									dual scale
Pointer	aluminum, black									
Movement	stainless steel									
Measuring unit	2.5 bar: stainless steel 1.4571 > 2.5 bar: stainless steel (Duratherm 600)									
Seal to										PTFE st. steel bellows
- pressure compartment	FPM									
- filled interior	NBR									
Temperatures										
- medium	Tmin. -20 °C, Tmax. +100 °C									
- ambient	Tmin. -20 °C, Tmax. +60 °C									
Temperature behaviour	0.5% / 10K on deviation from normal temperature +20 °C									
Protection to EN60529/IEC529	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65	IP 54	IP 65		
Wetted parts	see "Connection with lower flange" and "Measuring unit"									special materials on request
Throttle										ø 0.4; ø 0.8

### \* Maximum possible number of contacts

Measuring range	Magnetic-spring contact	Inductive contact
25 mbar	2	2
40 - 160 mbar	3	3
from 250 mbar	4	3

## Dimensions

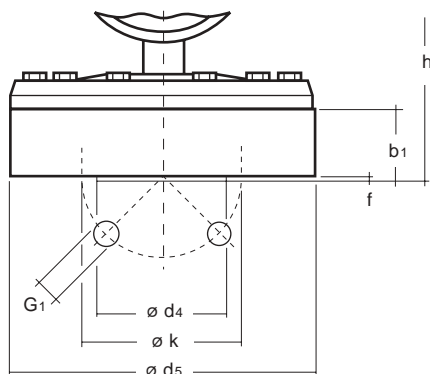


Dia.	Indication range (bar)	Dimensions (mm)						Weight (kg) approx.						
		ø d	a	B±1 mit		D <sub>1</sub>	D <sub>2</sub>	G	h±2	HEX	unfilled with		filled with	
				1+2 cont.	3 cont.						1+2 cont.	3 cont.	1+2 cont.	3 cont.
100	0.25	160	15.5	88	96	101	99	G1/2	135	27	2.9	3.0	3.4	3.5
160				101	101	161	159	male	165	3.5	3.6	5.1	5.2	

Connection to DIN 16 288

### Options with connecting flange DIN DN25, PN10 to PN40

Indication range 0...25 to 0...250 mbar



Dia.	Connection flange DIN DN25 PN10 to 40 <sup>1)</sup>	Dimensions (mm)						Weight <sup>2)</sup> (kg) approx.	
		d <sub>5</sub>	k	d <sub>4</sub>	b <sub>1</sub>	f	G <sub>1</sub>	h±2	
100	0.25 bar	160	85	68	36	2	4 x M12	122	3.0
160								152	3.0

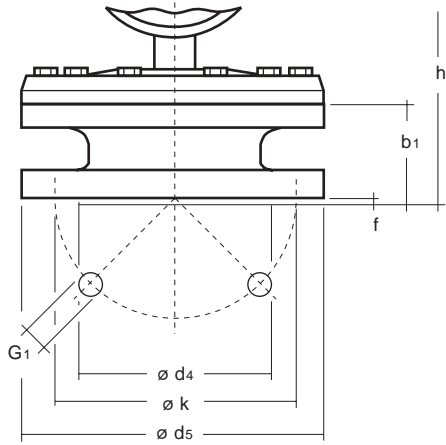
Other dimensions as for standard model

1) Can be mounted on counterflange to DIN, sealing strip form D to DIN 2526

2) The weights stated are additional weights which should be added to the weight of the standard model (with connection G 1/2 male to DIN 16288).

**Options with connecting flange DIN DN50, PN10 to PN40**

Indication range 0...25 to 0...250 mbar



Dia.	Connection flange DIN DN50 PN10 to 40 <sup>1)</sup>	Dimensions (mm)							Weight <sup>2)</sup> (kg) approx.
		d <sub>5</sub>	k	d <sub>4</sub>	b <sub>1</sub>	f	G <sub>1</sub>	h±2	
100	0.25 bar	165	125	102	54	3	4 x ø18	140	3.0
16o								170	

Other dimensions as for standard model

1) Can be mounted on counterflange to DIN, sealing strip form D to DIN 2526

2) The weights stated are additional weights which should be added to the weight of the standard model (with connection G 1/2 male to DIN 16288).



# Alarm contacts for pressure gauges



measuring  
•  
monitoring  
•  
analysing

Electrical alarm contacts with magnetic snap-action contact

## Operating principle

Magnetic snap-action contacts in pressure gauges serve as electric alarm contacts and are designed to close or open electrical circuits with the aid of a wiper moved by the actual value pointer.

The wiper in the magnetic snap-action contact is fitted with a magnet. The circuit is closed as the moving wiper with the contact pin is attracted by the magnet and the contact springs shut. The circuit is opened as the actuating force of the pressure measuring element exceeds the effect magnetic force attracting the wiper and the contact springs open.

## Contact materials

standard	silver-nickel	composite material (80% Ag, 20% Ni) standard material, high resistance against electric erosion, low propensity to welding, satisfactory electrical contact resistance, minimum voltage 24 V, max. switching capacity see table 1
options	gold-silver	alloy (80% Au, 20% Ag), resistant to corrosion and oxidation, very low and constant electrical contact resistance, suitable for low switching currents and voltages, minimum voltage 12 V
	Platinum-iridium	alloy (75% Pt, 25% Ir), high switching capacities, highly resistant against electric erosion, resistant to corrosion and oxidation
		special materials on request

**Table 1** Maximum electrical switching capacity: contact material silver-nickel (standard material)

voltage DINIEC38 AC or DC  V	magnetic snap-action contact					
	unfilled gauges			filled gauges		
	ohmic load		inductive load $\cos\phi > 0.7$	ohmic load		Inductive load $\cos\phi > 0.7$
DC	AC	DC		AC		
	mA	mA	mA	mA	mA	mA
220/230	100	120	65	65	90	40
110/110	200	240	130	130	180	85
48/48	300	450	200	190	330	130
24/24	400	600	250	250	450	150

An inductive alarm contact with switching amplifier (SVA), (example: programmable controller), should be used if switching currents are less than 20 mA. If loads are higher than stated in table 1 and for gauges with liquid filling, a relay to avoid an electrical arc must be used for magnetic snap-action contacts.

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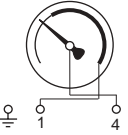
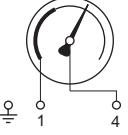
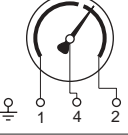

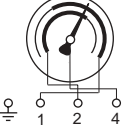
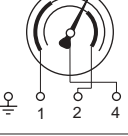
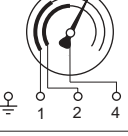

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## Switching functions

- Clockwise pointer motion: normally closed (N/C) or normally open (N/O)
- Code "M" for magnetic snap-action contact

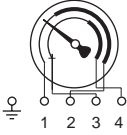
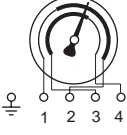
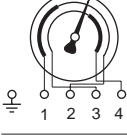
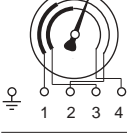
**Table 2** Magnetic snap-action contact (standard version)

single contact		
switching operations	clockwise pointer motion	contact designation
	switching functions	magnetic snap-action contact
	contact closes (N/O) when specified value is exceeded	M 1
	contact opens (N/C) when specified value is exceeded	M 2
	contact switches (SPDT) when specified value is exceeded	M 3
double contact		
	1st and 2nd contact closes (N/O) when specified value is exceeded	M 11
	1st contact closes (N/O), 2nd contact opens (N/C) when specified value is exceeded	M 12
	1st contact opens (N/C), 2nd contact closes (N/O) when specified value is exceeded	M 21
	1st and 2nd contact opens (N/C) when specified value is exceeded	M 22
triple contact		
	1st contact opens (N/C), 2nd contact closes (N/O), 3rd contact opens (N/C) when specified value is exceeded	M 212

The connection terminals are labelled in accordance with the above table

- Following numbers indicate the switching operation  
1: normally open (N/O)  
2: normally closed (N/C)  
3: single pole double throw (SPDT)
- The quantity of numbers indicate the quantity of contacts, for examples see table 2 and 3

**Table 3** Magnetic snap-action contact with separate circuit (on request)

double contact		
switching operations	clockwise pointer motion	contact designation
	switching functions	magnetic snap-action contact
	1st and 2nd contact closes (N/O) when specified value is exceeded	M 11
	1st contact closes (N/O), 2nd contact opens (N/C) when specified value is exceeded	M 12
	1st contact opens (N/C), 2nd contact closes (N/O) when specified value is exceeded	M 21
	1st and 2nd contact opens (N/C) when specified value is exceeded	M 22

The connection terminals are labelled in accordance with the above table

Note: The magnetic snap-action contact can also be named with "1." instead of "M".

## Alarm contacts for pressure gauges

Electrical alarm contacts with inductive contacts to DIN 19234 (Namur)  
Electrical alarm contacts with integrated switching amplifier SVA



measuring  
•  
monitoring  
•  
analysing

### Electrical alarm contacts with inductive contacts to DIN 19234 (Namur)

Inductive alarm contacts operate without physical contact and with very little effect on the mechanical pressure measuring system. They do not cause any electrical contact problems such as electronic contact erosion, welding or excessive electrical contact resistance.

Inductive alarm contacts are used in applications where high reliability and a high frequency of switching operations, i.e. a long service life, are required.

### Advantages of the inductive alarm contact:

- Contact closing without any physical contact ensures a long service life
- Little effect on the display
- Universal max. pressure, including in filled gauges
- Insensitive to aggressive atmospheres (encapsulated electronics, contact closing without physical contact)
- Explosion protected, usable in zones 1 and 2

### Operating principle

The inductive alarm contact basically consists of the control head (initiator) with completely encapsulated electronics fitted to the specified value pointer, and the mechanical structure with the moving control lug.

The control lug is moved by the instrument pointer (actual value pointer). The control head is supplied with DC.

As the control lug enters the gap in the control head, the internal resistance of the former increases (attenuated condition - the initiator is highly resistant). The resulting change in current intensity is the input signal for the switching amplifier of the control unit.

### Explosion protection

Pressure gauges with inductive alarm contacts and an external control unit can be used in areas with potentially explosive atmospheres (zones 1 and 2). The necessary control unit (e.g. WE 77/Ex1) is to be installed outside the potentially explosive atmospheres.

**Table 4** Inductive alarm contact: technical data

Type of protection EEx ia IIC T6 EEx ib IIC T6	Normal version to DIN 19234 (NAMUR)	Protective circuit to DIN 19234 (NAMUR)	Normal version to DIN 19234 (NAMUR)	Protective circuit to DIN 19234 (NAMUR)
For gauge size	100		160	
Proximity switch type	SJ2-N	SJ2-SN	SJ3,5-N	SJ3,5-SN
Operating voltage	5...25 V <sub>DC</sub>			
Gap width	2 mm		3,5 mm	
Switching frequency	5 kHz		3 kHz	
Self-capacitance	20 nF			
Self-inductance	29 µH		160 µH	
Rated voltage	8 V <sub>DC</sub>			
Protection	IP 65 to DIN 40050			
Housing	Plastic			
Connection type	Mini-flat cable 0.5 mg lg.; 2 x 0.06 mm <sup>2</sup>	"LIYV" litz wire 0.5 m lg.; 2 x 0.14 mm <sup>2</sup>	Mini-flat cable 0.5 lg.; 2 x 0.06 mm <sup>2</sup>	"LIYV" litz wire 0.5 m lg.; 2 x 0.14 mm <sup>2</sup>
Temperature range	-25 °C to +70 °C			

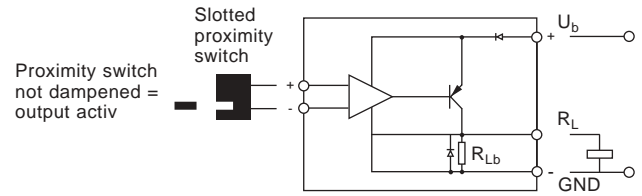
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## Integral amplifier Series SVA

- Intended for low-power electronic control systems
- Provides 1 electronic signal output with each contact
- Integral part of the instrument



Because of its small size, this switching amplifier can be installed directly in the pressure gauge. The amplifier is not intrinsically safe and thus may not be used in potentially explosive atmospheres. It is suitable for switching small powers e.g. in programmable controllers. The amplifier is fitted with a PNP transistor. A control unit is not necessary.

**Table 5** Technical data integral amplifier

Power supply $U_b$	$U_b$	8...30 V <sub>DC</sub>
Consumption $I_b$	$I_b$	max. 15 mA + $I_L$
Output	PNP transistor	short-term short circuit safe (10 secs.)
Current rating $I_L = 40$ mA	$R_L = 600 \Omega$ at 24 V	$I_L = 40$ mA
Switch point	typ. at $U_b = 24$ V <sub>DC</sub>	$I_{ON} > 3$ mA, $I_{OFF} < 1.9$ mA
Environment		according to pressure gauge or following max. values
Temperature range		-25 °C...85 °C
Max. rel. humidity		10...90% r.H.
Quantity of amplifiers		per measuring device max. 3
Polarity protection	included	
Disturbance	according to	EN 50082 part 2
Emission	according to	EN 50081 part 2
Mounting, in factory		to inductive alarm contact

## Switching functions

- Clockwise pointer motion: normally closed (N/C) or normally open (N/O)
- Code "I" for inductive contact
- Following numbers indicate the switching operation
  - 1: normally open (N/O)
  - 2: normally closed (N/C)
- The quantity of numbers indicate the quantity of contacts, for examples see table 6

**Table 6** Inductive contact

single contact				double contact			
switching operations	as the gauge pointer moves clockwise it moves the control lug (when the set specified value is exceeded) ...	switching function	contact designation				
	...out of the control head	control-current circuit closes	I 1		... of the 1st and 2nd contact out of the control head	1st and 2nd control circuit closes (N/O)	I 11
	...into the control head	control-current circuit opens	I 2		... of the 1st contact out of the control head, of the 2nd contact into the control head	1st control circuit closes (N/O) 2nd control circuit opens (N/C)	I 12
	...into the control head	control-current circuit opens	I 2		... of the 1st contact into the control head, of the 2nd contact out of the control head	1st control circuit opens (N/C) 2nd control circuit closes (N/O)	I 21
	...into the control head	control-current circuit opens	I 2		... of the 1st and 2nd contact into the control head	1st and 2nd control circuit opens (N/C)	I 22

The connection terminals are labelled in accordance with the above table

Note: The inductive contact can also be named with "3." instead of "I".