

# safety pressure gauges "solid-front" MGS20 - DS 100-150

1.20



**CE** PED 97/23/CE  
ATEX 94/9/CE

**PG** ME 48  
Gost R Pattern Approval

These instruments are built in conformity with the construction and safety specifications of EN 837-1/S3 e ANSI B40.1. In case of leaks or break of the elastic element, the operator is protected by a solid separating wall placed on the front of the instrument and by the blow out back. They are usually used in the food, process, pharmaceutical, petrochemical industries and in conventional and nuclear power plants. The TIG welding between the case and the process socket, strengthens the instrument and assures a better tight in case of dampening fluid. The advantages of filling the case of the instrument with a dampening fluid are: reduced pointer fluctuation, reduced wear of rotating parts of the movement when pulsant vibrations and pulsations occur. Moreover condensation and corrosive atmospheres which could damage the internal

## Functional and constructive characteristics.

### 1.20.1 Standard

**Accuracy class:** 1 as per EN 837-1.  
**Ambient temperature:** -25...+65 °C.  
**Process fluid temperature:** -40...+150 °C.  
**Working pressure** (referred to the full scale value): max 90% for pulsating pressure; 100% for static pressure.  
**Over pressure limit:** 30% of full scale value.  
**Special over pressure limit:** 50% of full scale value, for pressure ranges ≤ 400 bar (max 1 hour) as option.  
**Protection:** IP 55 as per IEC 529.  
**Socket material:** AISI 316L st.st.  
**Elastic element:** AISI 316L st. st. seamless tube.  
**Case:** AISI 304 st.st.  
**Ring:** AISI 304 st.st., bayonet lock.  
**Blow out disk:** AISI 304 st.st.  
**Window:** safety glass.  
**Movement:** stainless steel with internal limit stops for minimum and maximum pressure.  
**Dial:** aluminium, white with black markings and "▼" symbol at the edges of the scale value.  
**Special dial:** ranges different from standard, custom artworks available on request.  
**Pointer:** aluminium, micrometric adjustable, black painted  
**Gasket, blow out disk and filling plug:** EPDM/NBR.

### 1.20.2 Fillable - Lower connection type only

**Protection:** IP 67 as per IEC 529.  
**Pointer:** aluminium, non-adjustable, black painted.  
**Note:** suitable for glycerine filling, silicone oil/Fluorolube filling available on request (code P01).  
**Other features:** as type 1.20.1 (as type 1.20.3, when filled).

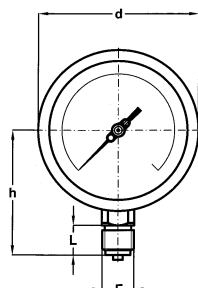
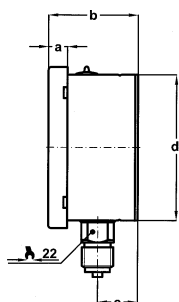
### 1.20.3 Liquid filled - Lower connection type only

**Ambient temperature:** max +65°C, (see DAMPING LIQUIDS table on page 2 for further information)  
**Process fluid temperature:** max +65 °C.  
**Protection:** IP 67 as per IEC 529.  
**Damping liquids:** glycerine 98%, silicone oil (code S10) or Fluorolube fluid (code F30) on request.  
**Pointer:** aluminium, non-adjustable, black painted.  
**Other features:** as type 1.20.1

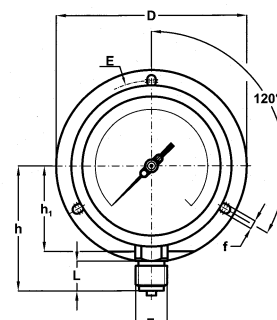
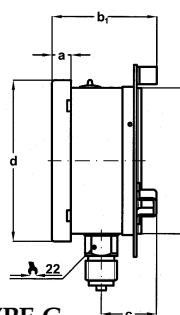


For use in potentially explosive atmospheres, instruments must be designed in conformity to ATEX 94/9/CE. This version is identified by code 2G1 and 2D1 and is shown on separate data sheet available on request.

## TYPE, DIMENSIONS AND WEIGHTS (dimensions : mm)

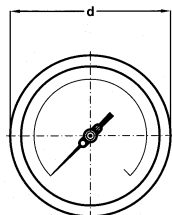
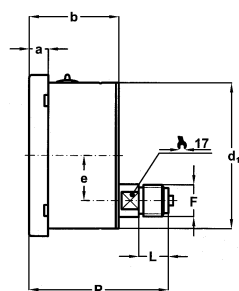
**TYPE A**

stem mounting;  
lower connection.

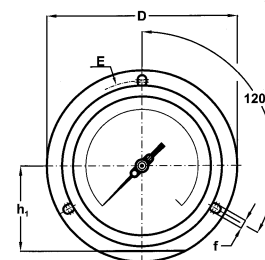
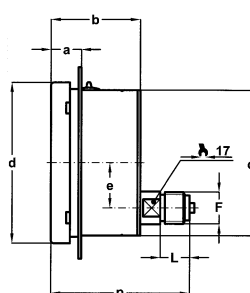
**TYPE C**

surface mounting, back flange;  
lower connection.

DS	TYPE	a	b	b <sub>1</sub>	c	c <sub>1</sub>	d	d <sub>1</sub>	h <sub>1</sub>	f	D	E	Weight 1.20.1	Weight 1.20.3
100	A-C	13	62,5	72,5	29,5	39,5	110,6	101	-	6	132	116...120	0,65 kg	1,08 kg
150	A-C	15	64	75,5	30	41,5	161	150,5	85	6	190	168...178	1,2 kg	2 kg

**TYPE D** - applicable on 1.20.1 only

stem mounting;  
back connection.

**TYPE E** - applicable on 1.20.1 only

flush mounting, front flange;  
back connection.

DS	TYPE	a	a <sub>2</sub>	b	d	d <sub>1</sub>	e	f	h <sub>1</sub>	D	E	Weight 1.20.1
100	D-E	13	20	62,5	110,6	101	31	6	-	132	116...120	0,7 kg
150	D-E	15	25,5	64	161	150,5	31	6	85	190	168...178	1,15 kg

## PROCESS CONNECTIONS

F	Code	DS 100			DS 150		
		L	h	p	L	h	p
G 1/4 A	21M	13	79	93,5	13	110	94
1/4-18 NPT	23M	15	81	95,5	15	112	96
G 3/8 A	31M	16	86	95,5	16	113	96
3/8-18 NPT	33M	16	86	95,5	16	113	96
G 1/2 A	41M	20	86	95,5	20	117	96
R 1/2-ISO 7/1	42M	20	86	95,5	20	117	96
1/2-14 NPT	43M	20	86	95,5	20	117	96
M 20 x 1,5	97M	20	86	95,5	20	117	96

## DAMPING LIQUIDS

Damping liquids	Ambient temperatur
Glycerine 98%	+15...+65 °C (+60...+150 °F)
Silicon oil	-45...+65 °C (-50...+150 °F)
"Fluorolube"	-60...+65 °C (-76...+150 °F)

Glycerine or silicone should not be used with highly oxidizing agents such as oxygen, chlorine, nitric acid or hydrogen peroxide, because of danger of spontaneous chemical reaction, inflammability or explosion. The use of fluorinated fluid is recommended in these cases.

## safety pressure gauges "solid-front"

## MGS20 - DS 100-150

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RANGES - "E" = DS 100; "G" = DS 150.

## PRESSURE

TAB. 1

RANGE	bar	kPa	MPa	bar ext.		bar ext.	
				psi int.	kPa int.	MPa int.	
0...0,6 (1)	E G			E G	E G		
0...1	E G		E G	E G	E G		
0...1,6	E G		E G	E G	E G		
0...2,5	E G		E G	E G	E G		
0...4	E G		E G	E G	E G		
0...6	E G		E G	E G	E G		
0...10	E G		E G	E G			E G
0...16	E G		E G	E G			E G
0...25	E G		E G	E G			E G
0...40	E G		E G	E G			E G
0...60	E G	E G (1)	E G	E G			E G
0...100	E G	E G	E G	E G			E G
0...160	E G	E G	E G	E G			E G
0...250	E G	E G		E G			E G
0...300	E G						
0...400	E G	E G		E G			E G
0...600	E G	E G		E G			E G
0...1000	E G	E G		E G			E G
0...1600	E G	E G		E G			E G
0...2500		E G					

(1) not available for 1.20.3

TAB. 2

RANGE	psi	psi int.		psi ext.	
		kPa ext.	bar int.	Kg/cm <sup>2</sup> int.	
0...15	E G	E G	E G	E G	E G
0...30	E G	E G	E G	E G	E G
0...60	E G	E G	E G	E G	E G
0...100	E G	E G	E G	E G	E G
0...160	E G	E G	E G	E G	E G
0...200	E G	E G	E G	E G	E G
0...300	E G	E G	E G	E G	E G
0...400	E G	E G	E G	E G	E G
0...600	E G	E G	E G	E G	E G
0...1000	E G	E G	E G	E G	E G
0...1500	E G	E G	E G	E G	E G
0...2000	E G	E G	E G	E G	E G
0...3000	E G	E G	E G	E G	E G
0...4000	E G	E G	E G	E G	E G
0...5000	E G	E G	E G	E G	E G
0...6000	E G	E G	E G	E G	E G
0...10000	E G	E G	E G	E G	E G
0...15000	E G	E G	E G	E G	E G
0...20000	E G	E G	E G	E G	E G
0...30000 (1)	E G	E G	E G	E G	E G

(1) working pressure: max 75% of the full scale value  
over pressure limit: 10% of the full scale value

## VACUUM &amp; COMPOUND

TAB. 4

RANGE	bar	kPa	bar ext.	
			psi int.*	kPa int.
-1...0	E G		E G	E G
-1...0,6	E G		E G	E G
-1...1,5	E G		E G	E G
-1...3	E G		E G	E G
-1...5	E G		E G	E G
-1...9	E G		E G	E G
-1...15	E G		E G	E G
-1...24	E G		E G	E G
-100...0		E G		
-100...150		E G		
-100...300		E G		
-100...500		E G		
-100...900		E G		
-100...1500		E G		
-100...2400		E		

\* vacuum unit of measurement: "inHg"

TAB. 3 - Receiver

External	Internal	
	0÷100 linear	0÷10 quadratic
0,2...1 bar	E G	E G
0,2...1 kg/cm <sup>2</sup>	E G	E G
3...15 psi	E G	E G
20...100 kPa	E G	E G

TAB. 5

RANGE	psi*	psi int.*		psi ext.*	
		kPa ext.	bar int.	Kg/cm <sup>2</sup> int.	
-30...0	E G	E G	E G	E G	E G
-30...15	E G	E G	E G	E G	E G
-30...30	E G	E G	E G	E G	E G
-30...150	E G	/	E G	/	/

\* vacuum unit of measurement: "inHg"

TAB. 6 - NH3

bar external	NH3 internal	
-1...5	-70...+9°C	E
-1...9	-70...+25°C	E
-1...15	-70...+40°C	E
-1...24	-70...+56°C	E

## safety pressure gauges "solid-front"

## MGS20 - DS 100-150

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OPTIONS - "E" = DS 100; "G" = DS 150.

DESCRIPTION	CODE	1.20.1 (standard)	1.20.2 (fillable)	1.20.3 (filled)
ATEX version II 2G c	2G1	<i>Constructive characteristics and ordering guide please refer to the relevant ATEX version data sheet.</i>		
ATEX version II 2GD c	2D1			
AISI 316 st. st. case and ring	C40	E G	E G	E G
"Fluorolube" filling (6)	F30			E G
Accuracy class: 0,6 as per EN 837-1 (1)	K06	E G	E G (2)	
Non adjustable pointer	L01	E G		
Adjustable pointer	L02		E G	E G
DIN pointer	L05	E	E	E
Suitable for filling with silicon and "Fluorolube" (6)	P01		E G	
Oxygen service (5)	P02	E G	E G (3)	E G (4)
Compensating device	P03	E	E	E
Without restrictor	S03	E G	E G	E G
Silicon filling (6)	S10			E G
Overpressure 50% of the scale value	SVP	E G	E G	E G
Tropicalization	T01	E G	E G	E G
Stainless steel label	T25	E G	E G	E G

(1) for ranges up to 400 bar / 6000 PSI, not available for receivers

(2) to be ordered with option L02

(3) to be ordered with option P01

(4) to be ordered with option F30

(5) for ranges up to 1000 bar

(6) window gasket: silicone rubber; filling plug &amp; blowout disk gasket: VITON

## HOW TO ORDER

During 2004 ordering guide could be modified. We regret for any inconvenience that could arise in ordering this product.

<b>1</b>	1- bourdon tube pressure gauges
<b>20</b>	20 - safety pressure gauge "solid-front" MGS20
<b>2</b>	1 - standard version 2 - fillable version 3 - filled version
<b>C</b>	A - lower connection - stem mounting C - lower connection - surface mounting, back flange D - back connection - stem mounting E - back connection - flush mounting, front flange
<b>E</b>	E - DS 100 G - DS 150
<b>2</b>	1 - up to 2,5 bar 2 - from 4 to 40 bar 3 - over 40 bar
<b>0/10 bar</b>	see ranges table
<b>41M</b>	see process connections table
<b>C40</b>	see options table

## ACCESSORIES

**Diaphragm seals:** a complete range of diaphragm seals are available with a choice of materials of construction. Specifically for corrosive and difficult process fluids plus hygienic applications. For further details refer to relevant data sheets.

**Adjustable over-load protector:** this is useful for installations which may generate high overpressures; the pressure gauges is automatically excluded at the pre-set pressure and cut in again automatically when the operating pressure returns to normal. For further details refer to relevant data sheet.

**Valves:** for construction details and for use limits refer to relevant data sheet.

**Pigtail and siphons:** recommended with temperatures of 65° C (150° F) or over. For further details refer to relevant data sheet.

**Pressure snubbers:** for further details refer to relevant data sheet.