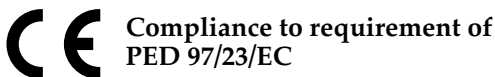


liquid filled pressure gauge

MS4 - DS 100

1.04



Instruments designed for use on power units, pump, hydro-cleaning machines, presses, engine compressors, turbines, diesel engines, chemical, petrochemical and refrigerating plants and on machines and equipment where pulsating pressures or mechanical vibrations are apparent. They can be used with gaseous or liquid media which do not corrode copper alloy and which do not have high viscosity or do not cristalize.

Functional and constructive characteristics.

1.04.1 Fillable

Accuracy class: 1,6 as per EN 837-1.

Ambient temperature: -25...+65 °C.

Process temperature: -25...+65 °C for pressure ranges ≤ 40 bar;
-25...+120 °C for pressure ranges ≥ 60 bar (max +65°C when filled).

Working pressure (referred to the full scale value): max 60% for fluctuating pressure; 75% for steady pressure.

Overpressure (referred to the full scale value):

25% for pressure ranges ≤ 100 bar;

15% for pressure ranges > 100 bar.

Protection degree: IP 67 as per IEC 529.

Socket material: brass, with internal restrictor ø 0,8 mm.

Elastic element: phosphor bronze for pressure ranges ≤ 400 bar;
AISI 316L st.st. for pressure ranges > 400 bar.

Welding: tin-copper alloy for pressure ranges ≤ 400 bar;
tin-silver alloy for pressure ranges 60...400 bar;
silver alloy for pressure ranges > 400 bar.

Case: AISI 304 st.st.

Ring: AISI 304 st.st. polished, crimped.

Window: Plexiglas.

Movement: brass.

Dial: aluminium, white with black markings.

Pointer: black anodized aluminium.

Window gasket, filling plug and blow out vent: EPDM.

Note: this version is suitable for glycerine filling only; other fillable version available (see OPTIONS table on pag. 4).

1.04.3 Liquid filled

Accuracy class: 1,6 as per EN 837-1.

Ambient temperature: max +65 °C, (see DAMPING LIQUIDS table on pag. 2, for further information)

Process temperature: max +65°C.

Working pressure (referred to the full scale value): max 60% for fluctuating pressure; 75% for steady pressure.

Overpressure (referred to the full scale value):

25% for pressure ranges ≤ 100 bar;

15% for pressure ranges > 100 bar.

Protection degree: IP 67 as per IEC 529.

Socket material: brass.

Elastic element: phosphor bronze for pressure ranges ≤ 400 bar;
AISI 316L st.st. for pressure ranges > 400 bar.

Welding: tin-copper alloy for pressure ranges ≤ 400 bar;
tin-silver alloy for pressure ranges 60...400 bar;
silver alloy for pressure ranges > 400 bar.

Case: AISI 304 st.st.

Ring: AISI 304 st.st. polished, crimped.

Window: Plexiglas.

Movement: brass.

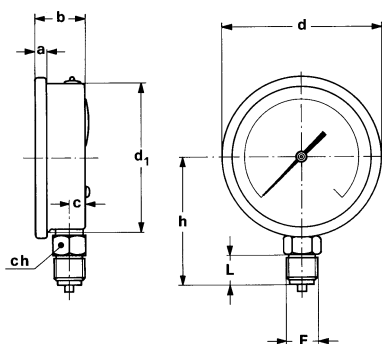
Dial: aluminium, white with black markings.

Pointer: black anodized aluminium.

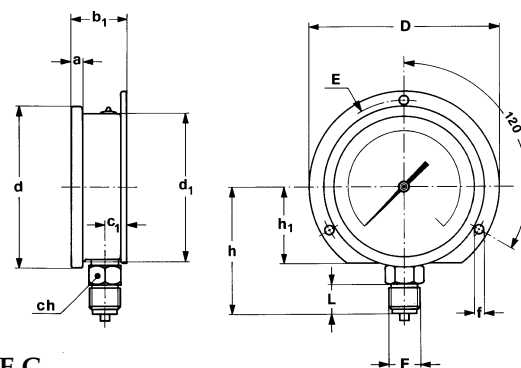
Window gasket, filling plug and blow out vent: EPDM.

Damping liquids: glycerine 98%, (optional silicon oil).

TYPE, DIMENSIONS AND WEIGHTS

**TYPE A**

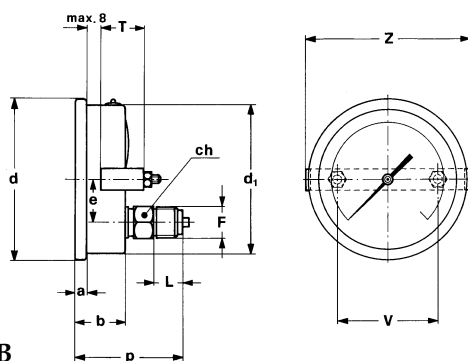
stem mounting;
lower connection.

**TYPE C**

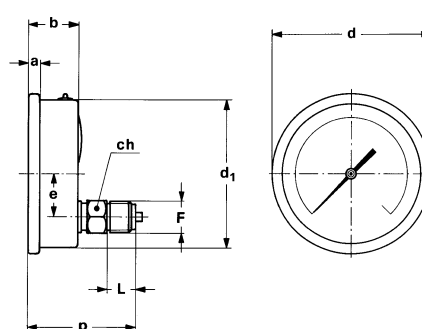
surface mounting, back flange;
lower connection.

DS	Type	F	a	b	b ₁	c	c ₁	d	d ₁	f	h	h ₁	D	E	ch	L	Weight 04.1	Weight 04.3
100	A	1/2"BSP or NPT	7,5	33,9		10,8		109,8	101		86,8				22	20	0,4 kg	0,6 kg
100	C	1/2"BSP or NPT	7,5		37,9		14,8	109,8	101	6	86,8	52	130	118	22	20	0,47 kg	0,67 kg

(dimensions : mm.)

**TYPE B**

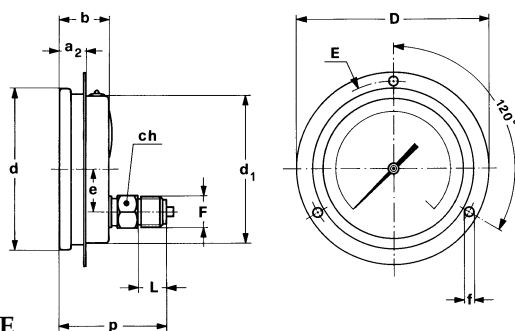
flush mounting, "U" clamp;
back connection.

**TYPE D**

stem mounting;
back connection.

DS	Type	F	a	a ₂	b	d	d ₁	e	f	p	D	E	T	V	Z	ch	L	Weight 04.1	Weight 04.3
100	B	1/2"BSP or NPT	7,5		33,9	109,8	101	29		73,9			30,5	70	112	22	20	0,57 kg	0,9 kg
100	D	1/2"BSP or NPT	7,5		33,9	109,8	101	29		73,9						22	20	0,57 kg	0,9 kg
100	E	1/2"BSP or NPT		18	33,9	109,8	101	29	6	73,9	132	118				22	20	0,57 kg	0,9 kg

(dimensions : mm.)

**TYPE E**

flush mounting, front flange;
back connection.

DAMPING LIQUIDS

Damping liquids	Ambient temperature
Glycerine 98%	+15...+65 °C (+60...+150 °F)
Silicone oil	-45...+65 °C (-50...+150 °F)

INSTRUMENTS FOR OXYGEN

To suit safety criteria of standard EN837-1/2, the pressure gauges for oxygen service must be solid-front type (with baffle wall and safety bursting back).

Pressure gauges suitable for this service are detailed on 1.20 DS 100-150 sheet.

liquid filled pressure gauge

MS4 - DS 100

1.04

RANGES

PRESSURE

TAB. 1

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

(1) Available also kg/cm²

VACUUM & COMPOUND

TAB. 3

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

* vacuum unit of measurement: "inHg"

TAB. 2

RANGE	psi	psi int.	psi ext.	psi ext.
		kPa ext.	Bar int.	kg/cm ² int.
0...15	♦	♦	♦	♦
0...30	♦	♦	♦	♦
0...60	♦	♦	♦	♦
0...100	♦	♦	♦	♦
0...160	♦	♦	♦	♦
0...200	♦	♦	♦	♦
0...300	♦	♦	♦	♦
0...400	♦	♦	♦	♦
0...600	♦	♦	♦	♦
0...800	♦	♦	♦	♦
0...1000	♦	♦	♦	♦
0...1500	♦	♦	♦	♦
0...2000	♦	♦	♦	♦
0...3000	♦	♦	♦	♦
0...4000	♦	♦	♦	♦
0...6000	♦	♦	♦	♦
0...10000	♦	♦	♦	♦
0...15000	♦	♦	♦	♦

TAB. 4

RANGE	psi*	psi int.*	psi ext.*	psi ext.*
		kPa ext.	bar int.	kg/cm ² int.
-30÷0	♦	♦	♦	♦
-30÷15	♦	♦	♦	♦
-30÷30	♦	♦	♦	♦
-30÷150	♦			

* vacuum unit of measurement: "inHg"

TAB. 5 - FREON Triple scale ranges

Bar	R12 - °C	R22 - °C	R502 - °C
-1...+9	-70...+40	-80...+20	-70...+20
-1...+15	-60...+60	-60...+40	-60...+35
-1...+24	-50...+80	-60...+60	-60...+55
-1...+39	-60...+110	-70...+80	-60...+80

OPTIONS

DESCRIPTION	CODE	1.04.1	1.04.3
Individual testing	C06	◆	◆
S1 version - (Tin-silver alloy welding for ranges ≤ 40 bar - P.T. ≤ 120 °C) (2)	E03	◆	◆
Suitable for filling with silicon (1)	P01	◆	
Restrictor ø 0,4 mm.	S06	◆	◆
Silicone filling (1)	S10		◆

(1) Window gasket: silicone rubber; filling plug & blow out vent: VITON.

(2) Min. quantity 50 pcs.

HOW TO ORDER

1	1- bourdon tube pressure gauges
04	04 - liquid filled pressure gauge MS4
3	1 - fillable version 3 - filled version
C	A - lower connection - stem mounting B - back connection, flush mounting; "U" clamp C - lower connection - surface mounting, back flange D - back connection - stem mounting; E - back connection, flush mounting; front flange
E	E - DS 100
2	1 - up to 2,5 bar 2 - from 4 to 40 bar 3 - from 40 to 400 bar 4 - over 400 bar
0/10 bar	see ranges tables
24M	21M - 1/4" BSP M 23M - 1/4" NPT M 22M - 1/4" BSP TAPER M 24M - 1/4" SAE M 31M - 3/8" BSP M 41M - 1/2" BSP M 43M - 1/2" NPT M 97M - M20 x 1,5
S10	see options table

ACCESSORIES

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.