

## APPROVALS



Directive 2014/34/UE (ATEX)

## FEATURES

- Solid front with full blow back
- Externally adjustable without opening the case ring (bezel)
- All stainless steel system
- Fillable / Liquid filled
- CE marking

## APPLICATION

- Oil & Gas applications
- High pressure applications
- Corrosive & Hazardous environments

**Bourdon tube element**  
 ≥ DN100  
**External Zero Adjustment**



### EN 837-1

#### STANDARD PARAMETERS

Accuracy	: CL 1.0
Ambient temperature	: -40...+65 °C [dry or silicon oil dampening filling] : -20...+65 °C [with dampening filling, glycerin]
Service temperature	: -40...+200 °C [without dampening filling] : -20...+100 [with dampening filling, glycerin] : -40...+100 [with dampening filling, silicon oil]
Pressure limits	: Steady pressure up to FS value : Fluctuating pressure up to 90% of FS value : Short time 130% of FS value [ ≤ 100 bar] : Short time 115% of FS value [ > 100 bar ≤ 600 bar] : Short time 110% of FS value [ > 600 bar ≤ 1600 bar]

#### MATERIAL OF CONSTRUCTION

Sensing element	: Bourdon tube
Case & Ring material	: AISI 304 SS [Bayonet type]
Bourdon tube & Shank	: AISI 316L SS [Shank welded directly to case]
Movement mechanism	: AISI 304 SS
Dial	: Aluminum, black graduation on white background
Pointer	: Micro-zero adjustable, aluminum, black powder coated
Gaskets & filling plug	: NBR
Window	: Shatterproof safety glass
Blow off disc	: AISI 304 SS with NBR diaphragm

#### STANDARD SPECIFICATIONS

Dial size	: DN100 / DN150
Range	: -1...0...1600 bar [or equivalent other units of pressure or vacuum ranges]
Mounting pattern	: Direct, Bottom connection
Process connection	: 1/2" NPT (M) / 1/2" BSP (M)
Ingress protection	: IP 65
Execution	: Dry but fillable
Zero adjustment	: External screw with locking mechanism

#### STANDARD SPECIFICATIONS : FILLED VERSION

Window	: Shatterproof Safety glass
Dampening liquid	: Glycerin [service temperature up to 65 °C] : Silicon oil [Service temperature up to 100°C]

#### TEMPERATURE EFFECT

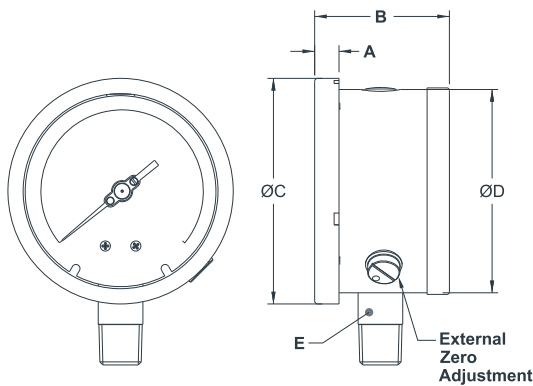
The variation of indication caused by effects of temperature is to be calculated as per the below formula; which is to be added in the specified accuracy while measurement :-

$$\text{Formula: } \pm 0.04 \times (t_2 - t_1) \% \text{ of Full Scale Value}$$

Where  $t_1$  = reference temperature (+20°C) &  $t_2$  = ambient temperature in °C.

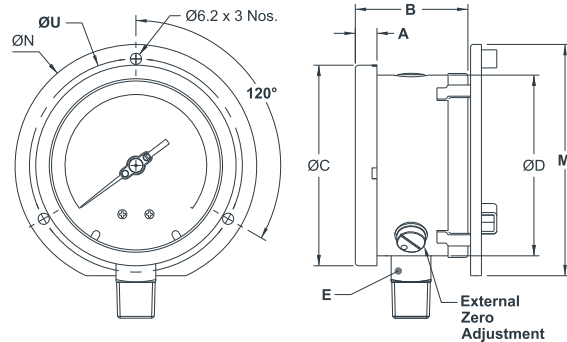
DIMENSIONAL DRAWING

Type B0



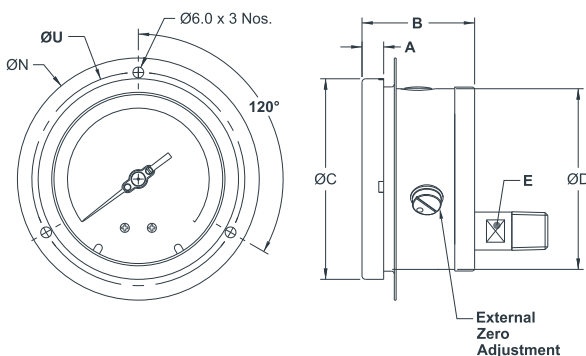
DN	A	B	ØC	ØD	E	Weight (grams)
100	12	66.5	111	100	SQ.22	874
150	17	68.5	161	149	SQ.22	1682

Type B1



DN	A	B	ØC	ØD	E	M	ØN	ØU	Weight (grams)
100	12	66.5	111	100	SQ.22	128	134	118	955
150	17	68.5	161	149	SQ.22	172	186	168	1790

Type L1



DN	A	B	ØC	ØD	E	ØN	ØU	Weight (grams)
100	12	66.5	111	100	A/F-17	134	118	950
150	17	68.5	161	149	A/F-17	186	168	1798

RANGE TABLE FOR HIGH OVER-PRESSURE PROTECTION [OPTION: OS] (For Short Duration)

RANGE "bar"	OVER-PRESSURE "bar"
0...1	4
0...1.6	6
0...2.5	10
0...4	16
0...6	24
0...10	40
0...16	48
0...25	75
0...40	80
0...60	120
0...100	200
0...160	320
0...250	500
0...400	800
0...600	1200

NOTE

For other 'unit of measurements' and scales refer RANGE TABLE

Drawings are not to Scale, all dimensions are in mm. The weight mentioned are approximate and of standard version. Consult ITEC for other executions.

DAMPENED MOVEMENT [OPTION : GM]



It has been noticed that in applications where heavy vibration and pulsation is present, a dry gauge is not preferred due to the reduced life span and pointer fluttering.

The conventional option is a liquid filled gauge. But some of the filling option like Halocarbon oil is quite costly.

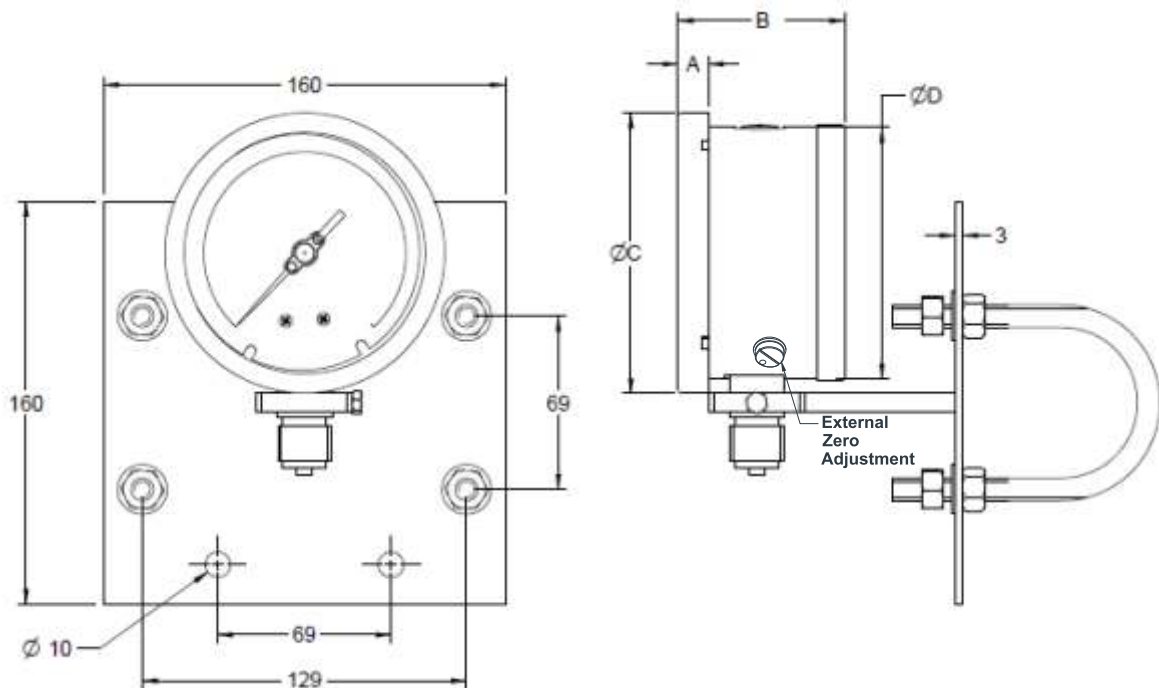
Solution! Use a dampened movement in the gauges. The movement utilize a DERLIN® tip Rack with jelly filled dashpot dampening for Rack & Pinion shafts which will reduce the effect of the pointer jerking due to the vibrations and pulsations. In effect avoid the use of a dampening liquid. This will nullify the leakage problem regularly associated with the filled gauges.

Additionally, comparing to the dry gauge the life span of the instrument will increase. The dampened movement also eliminate the environmental issues of the dampening liquid at the time of product disposal.

ITEC offer the DAMPENED MOVEMENT [GM] option in many premium models, such as P101, P102, P104, P201, P202 & P204.

## DIMENSIONAL DRAWING

Type B2



DN	A	B	ØC	ØD	E	Weight (grams)
100	12	66.5	111	100	SQ.22	830
150	17	68.5	161	149	SQ.22	1638

## COMPATIBLE ACCESSORIES

CODE	DESCRIPTION
A101	Gauge cock
A102	Gauge siphon
A201	Gauge snubber / Pulsation dampener
A202	Gauge saver / Overload protector
A203	Cooling tower

CODE	DESCRIPTION
DXXX	Diaphragm seals
VXXX	Needle valves
A304	Adaptors
M102	Two valve manifolds

### RANGE TABLE

#### GUIDE TO MAKE RANGE CODE

1. While selecting the dual scales (bar/psi), primary scale bar in "**BLACK**" and secondary scale psi in "**RED**" color.
2. **Approximate unit conversion**; 1 bar = 1.019 kg/cm<sup>2</sup> = 14.503 psi = 100 kPa = 750.061 mmHg = 1000 mbar = 10197 mmWC
3. **Equivalent scales** are available in UOMs like mbar, mmWC, Inch WC, kPa/psi or custom dial design, contact **ITEC**

UOM : SINGLE SCALE			UOM : DUAL SCALE	
UOM	UOM	UOM	UOM	UOM
bar	kg/cm <sup>2</sup>	Mpa	bar/psi	kg/cm <sup>2</sup> /psi
psi	mmHg		psi/bar	psi/kg/cm <sup>2</sup>
kPa	Inch Hg		bar/kPa	

RANGE	RANGE	RANGE	RANGE	RANGE
0...0.6	0...6	0...28	0...160	0...400
0...1	0...7	0...35	0...200	0...600
0...1.6	0...10	0...40	0...250	0...700
0...2	0...14	0...60	0...280	0...1000
0...2.5	0...16	0...70	0...350	0...1600*
0...4	0...20	0...100		
0...3.5	0...25	0...140		

\*Higher Ranges available on Request

SINGLE SCALE RANGES : VACUUM & COMPOUND				
VACUUM	VACUUM	"bar"	"bar"	"bar"
-1bar...0	-30 Inch Hg...0	-1...0.6	-1...3	-1...15
-1kg/cm <sup>2</sup> ...0	-100kPa...0	-1...1	-1...5	-1...20
-760 mmHg...0	-15psi...0	-1...1.6	-1...9	-1...24
				-1...39

DUAL SCALE RANGES : COMPOUND (Vacuum Side mmHg/ 11Hg, Positive Side - kg/cm <sup>2</sup> /psi)			
"kg/cm <sup>2</sup> "	"kg/cm <sup>2</sup> "	"kg/cm <sup>2</sup> "	"kg/cm <sup>2</sup> "
-760mmHg...0.6	-760mmHg...2.5	-760mmHg...10	-760mmHg...24
-760mmHg...1	-760mmHg...4	-760mmHg...15	-760mmHg...39
-760mmHg...2	-760mmHg...7	-760mmHg...21	

## ORDERING CODES

### 1. DIAL SIZE

<b>04</b>	100 mm / 4"
<b>06</b>	150 mm / 6"

### 2. RANGE

<b>XXXX</b>	Refer "Range Table"
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### 3. MOUNTING PATTERN

<b>B0</b>	Direct, Bottom connection
<b>B1</b>	Wall/Surface/Projection mounting, Bottom connection
<b>B2</b>	2" pipe bracket, bottom connection
<b>L1</b>	Panel Front flange mounting, Lower Back connection

### 4. PROCESS CONNECTION

<b>12B</b>	1/4" BSP (M)	<b>12N</b>	1/4" NPT (M)
<b>13B</b>	3/8" BSP (M)	<b>13N</b>	3/8" NPT (M)
<b>14B</b>	1/2" BSP (M)	<b>14N</b>	1/2" NPT (M)
<b>14M</b>	M20 X 1.5 mm (M)	<b>15N</b>	3/4" NPT (M)
<b>13T</b>	3/8" BSPT(M)	<b>15B</b>	3/4" BSP(M)
		<b>14T</b>	1/2" BSPT(M)

Other thread sizes and standards are available on request.

### 5. INGRESS PROTECTION

<b>ER</b>	IP 65	<b>ET</b>	IP 67
<b>ES</b>	IP 66	<b>EU</b>	IP 68

### 6. EXECUTION

<b>EB</b>	Fillable
<b>EG</b>	Dampening liquid filled, glycerine
<b>EH</b>	Dampening liquid filled, silicon oil

### 7. OTHER OPTIONS

<b>BA</b>	Case & Ring in AISI 316 SS (B0)
<b>BB</b>	Case & Ring in AISI 316 SS (B1)
<b>BL</b>	Case & Ring in AISI 316 SS (L1)
<b>BC</b>	Case & Ring in AISI 316 SS (B2)
<b>B0</b>	2" Pipe / Yoke mounting, SS304
<b>B01</b>	2" Pipe / Yoke mounting, SS316
<b>EM</b>	Dampening screw, Monel
<b>EN</b>	Dampening screw, AISI 316 SS
<b>EX</b>	Internal overload stop
<b>EY</b>	Internal vacuum stop
<b>EZ</b>	Pointer stop on dial
<b>GL</b>	AISI 316 SS movement
<b>GM</b>	Dampened movement
<b>GW</b>	Maximum Reading pointer [Combined accuracy within CL 2.5]
<b>GX</b>	Knife edge pointer
<b>MN</b>	Monel wetted parts
<b>OP</b>	Over range protection 150% full scale (Confirm with Factory)
<b>OS</b>	Short over-pressure protection (Refer High Over pressure Range Table)
<b>P8</b>	Epoxy coating [Case & Ring]
<b>RN</b>	Rubber parts, Viton
<b>RW</b>	Vent plug, ON-OFF type
<b>TA</b>	5 - point calibration certificate
<b>TC</b>	Material test certificate 3.1
<b>TE</b>	ATEX certificate
<b>TI</b>	IBR certification
<b>TL</b>	Helium leak testing
<b>TN</b>	Tested to NACE standards
<b>TO</b>	Certification for O <sub>2</sub> service & Acetylene
<b>TT</b>	Certificate with NABL traceability
<b>XA</b>	Accuracy CL 0.5 / CL 0.6 of FS
<b>XF</b>	SS tag plate, AISI 304 SS
<b>XG</b>	SS tag plate, AISI 316 SS
<b>XR</b>	Custom designed dial
<b>XT</b>	Dial Tag marking
<b>TF</b>	PMI test

Ordering Example : P202-04-XXXX-B0-14N-ER-EB

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