

# Precision Monitoring Devices Helping You Stay in Control

An Overview



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Forbes Marshall Hyderabad specialises in the manufacture of high quality, sturdy and reliable mechanical Instrumentations such as pressure gauges, dial thermometers and circular chart recorders for pressure and temperature.

For over three decades, these products have been known for quality and reliability. The manufacturing process for these products is endorsed by quality control testing procedures and backed by an ISO 9001 certification.

Forbes Marshall's factory is certified by National Accreditation Board for Testing and Calibration Laboratories (NABL) in the field of mechanical calibration.

## Stainless Steel Pressure Gauge : SP



Nominal size : 100, 150, 200 and 250 mm  
 Compliance to latest EN837-1  
 Std. ranges : 0 to 0.6 kg/cm<sup>2</sup>...700 kg/cm<sup>2</sup>  
 Overload capacity upto 130 % of FSD  
 Protection to IP67  
 Accuracy class  $\pm 1.0\%$  of FS  
 Stainless steel casing  
 Dry or liquid filled version  
 External zero adjustment (optional) for 4", 6" only  
 Socket to case : TIG argon welded  
 CE marking as per PED 97/23/EC

## Solid Front Pressure Gauge : SF



Nominal size : 100 and 150 mm  
 Compliance to latest EN837-1  
 Std. ranges : 0 to 0.6 kg/cm<sup>2</sup>...700 kg/cm<sup>2</sup>  
 Overload capacity upto 130 % of FSD  
 Protection to IP67  
 Accuracy class  $\pm 1.0\%$  FS  
 Stainless steel casing  
 Dry or liquid filled version  
 External zero adjustment (optional)  
 Socket to case : TIG argon welded  
 CE Marking as per PED 97/23/EC

## Polypropylene Case Pressure Gauge : PP



Nominal size : 115 mm  
 Compliance to ASME - B 40.1, Grade 2A  
 Std. ranges : 0 to 0.6 kg/cm<sup>2</sup>...700 kg/cm<sup>2</sup>  
 Overload capacity upto 130 % of FSD  
 Protection to IP67  
 Accuracy class  $\pm 1.0\%$  FS  
 Polypropylene case with SS316L measuring system  
 Dry or liquid filled version  
 Solid front design features baffle wall interposed between the sensing system, the window and a pressure relieving back for increased safety

## Electric Contact Pressure Gauge : EP



Nominal size : 100 and 150 mm  
 Compliance to latest EN837-1  
 Std. ranges : 0 to 0.6 kg/cm<sup>2</sup>...700 kg/cm<sup>2</sup>  
 Overload capacity upto 100 % of FSD  
 Accuracy class  $\pm 1\%$  FS (contact accuracy 2.5%)  
 Stainless steel casing  
 Dry unfilled version  
 Socket to case : TIG argon welded

**Low Pressure Sensing  
Schaffer Diaphragm  
Pressure Gauge : SH**



Nominal size : 100, 150 mm  
 Compliance to latest EN837-3  
 Std. ranges : 0 to 250 mmWc...6000 mmWc  
 Overload capacity upto 125 % of FSD  
 Protection to IP67  
 Accuracy class  $\pm 1.6\%$  to 2% of FS  
 Stainless steel casing  
 Dry unfilled version  
 Socket to case : TIG argon welded

**Low Pressure Sensing  
Capsule Gauge : CG**



Nominal size : 100, 150 mm  
 Compliance to latest EN837-3  
 Std. ranges : 0 to 250 mmWc...6000 mmWc  
 Overload capacity upto 110 % of FSD  
 Protection to IP67  
 Accuracy class  $\pm 1.6\%$  to  $\pm 2\%$  FS  
 Stainless steel casing  
 Dry unfilled version

**General Purpose  
Pressure Gauge : GP  
For Hydraulic Applications**



Nominal size : 63 mm  
 Compliance to latest EN837-1  
 Std. ranges : 0 to 0.6 kg/cm²...700 kg/cm²  
 Overload capacity upto 130 % of FSD  
 Accuracy class  $\pm 1.6\%$  FS  
 Stainless steel casing  
 Dry or liquid filled version  
 Socket to case : TIG argon welded

**Chemical Seal for pressure  
and differential gauges :  
SP+DS/PP+DS/SF+DS/EP+  
DS/SD+DS/SDE+DS**



Available in threaded, flanged and triclover end connection  
 Transmitting fluid: Silicon DC200, Silicon DC704, Halocarbon, Flurolube oil (others on request).  
 Applications: Corrosive media, high temperature, viscous fluids, pharma (sanitary connection)

**Single Diaphragm  
Differential Pressure  
Gauge : SD**



Nominal size : 100, 150 mm  
 Compliance to latest EN837-3  
 Std. ranges : 0 to 250 mmwc...10 kg/cm²  
 Static pressure max upto 40 Bar  
 Also available with contacts  
 Protection to IP67  
 Accuracy class  $\pm 1.6\%$  FS to 2.5% FS  
 Stainless steel casing  
 Dry or liquid filled version

**Double Diaphragm  
Differential Pressure  
Gauge : DD**



Nominal size : 100, 150 mm  
 Compliance to latest EN837-3  
 Std. ranges : 0 to 250 mmwc...10 kg/cm²  
 Static pressure max upto 100 Bar  
 others on request  
 Also available with contacts  
 Protection to IP67  
 Accuracy class  $\pm 1.6\%$  FS to 2.5% FS  
 Stainless steel casing  
 Dry version

**Double Diaphragm  
Differential Pressure  
Gauge With Electrical  
Contact : DDE**

Nominal size : 100 and 150 mm  
Compliance to latest EN837-3  
Std. ranges : 0 to 250 mmwc...10 kg/cm<sup>2</sup>  
Overload capacity upto 110 % of FSD  
Protection to IP67  
Accuracy class  $\pm 1.6\%$  FS to 2.5% FS  
Stainless steel casing  
Dry unfilled version

**Single Diaphragm  
Differential Pressure  
Gauge With Electrical  
Contact : SDE**

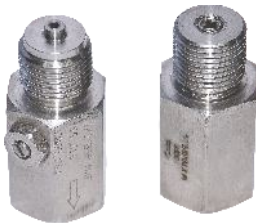
Nominal size : 100 and 150 mm  
Compliance to latest EN837-3  
Std. ranges : 0 to 250 mmwc...10 kg/cm<sup>2</sup>  
Overload capacity upto 110 % of FSD  
Protection to IP67  
Accuracy class  $\pm 1.6\%$  FS to 2.5% FS  
Stainless steel casing  
Dry unfilled version

**Test (Master Gauge) : MG**

Nominal size : 150 mm  
Compliance to latest EN837-1  
Std. ranges : 0 to 2.5... 700 kg/cm<sup>2</sup>  
Overload capacity upto 130 % of FSD  
Accuracy class  $\pm 0.25\%$  FS  
Standard Casing with Berillium Copper / SS316 Bourdon with Jewel Bearing movement  
Dry unfilled version

**Accessories**

**Snubber**



Working pressure : Upto 6000 Psi  
Connection : 1/2"NPT (FxM) as std.  
Material : SS316/SS316L/Monel etc.

**Gauge Saver**



Connection : 1/2"NPT (FxM) as std.  
Material : SS316/SS316L/Monel etc.

**Gauge Cock**



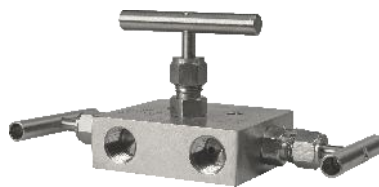
2-way / 3-way construction  
Connection : 1/2"NPT (FxM) as std.  
Material : SS316/SS316L etc.  
with/without bleed hole

**Syphon**



Construction : Pigtail / Coil / U-Type  
Connection : 1/2"NPT (FxM) as std.  
Material : SS316/SS316L/Monel etc.  
IBR as Optional

**Manifolds**



Construction: 2-way ,3-way ,4-way and 5-way  
Connection : 1/2"NPT (FxF) as std.  
Material : SS316/SS316L/Monel etc.

**Needle Valve**



Working pressure : Upto 6000 Psi  
Connection : 1/2"NPT (FxF) as std.  
Material : SS316/SS316L etc.

## Temperature Gauges

### Bimetallic Temperature Gauge : TG-BM



Nominal size : 100 and 150 mm  
 Compliance to latest EN13190  
 Std. ranges : -20°C to 400°C  
 Overload capacity 110 % of FSD  
 Protection to IP67  
 Accuracy class : Tolerance class 1 as per EN 13190  
 High repeatability, low hysteresis  
 Stainless steel casing  
 Dry or liquid filled version  
 External zero adjustment

### Gas Filled Temperature Gauge : TG-GF



Nominal size : 100 and 150 mm, 200 mm, 250 mm  
 Compliance to latest EN13190  
 Std. ranges : -20°C to 600°C  
 Overload capacity 110 % of FSD  
 Protection to IP67  
 Accuracy class : Tolerance class 1 as per EN 13190  
 High repeatability, low hysteresis  
 Stainless steel casing  
 Dry or liquid filled version

### Electrical Contact Filled Temperature Gauge : TG-ECGF



Nominal size : 100 and 150 mm  
 Compliance to latest EN13190  
 Std. ranges : -20°C to 600°C  
 Overload capacity 100 % of FSD  
 Protection to IP67  
 Accuracy class : Tolerance class 1 as per EN 13190 (contact accuracy 2.5%)  
 High repeatability, low hysteresis  
 Stainless steel casing  
 Dry or liquid filled version

### RTD



No. of elements : Simplex / Duplex  
 Element type : PT-100  
 Range : -200 to 450 Deg. Cel.  
 Accuracy : Class A / Class B (As per IEC-60751 / DIN 43760)  
 Wire configuration : 2 / 3 / 4 wire (Simplex) / (Duplex)  
 Sheath material : SS316  
 Sheath dia. : 6 mm  
 Total stem length ( L ) : As per customer requirement.

### Thermocouple



No. of elements : Simplex / Duplex  
 Element type : J/K/N/R/S/B/T/E  
 Range : Please specify to select suitable element type  
 Hot junction type : Grounded / Un-Grounded  
 Accuracy : Class I / Class II (As per IEC-584.2 / ANSI MC 96.1)  
 Wire configuration : 2 wire (Simplex) / 4 wire (Duplex)  
 Sheath material : SS316 / Other's on request  
 Sheath dia. : 6 mm / Other's on request  
 Total stem length ( L ) : As per customer requirement.

### Temperature Transmitter



Solder jumpers for : Span, Zero, Upscale/down Scale  
 Output range 4~20 mA/20~4 mA for selection  
 Multirange : 8 SPAN ranges, 25 to 600°C / 45 to 1080 F°  
 4 ZERO ranges, -100 to +70 °C / -148 to +158 °F  
 Accuracy : 0.1% temperature linear 4~20 mA output

## Accessories

### Thermowell Screwed - TS



Design as per ASME PTC 19.3  
 Type : Barstock / Fabricated  
 Construction : Straight, Full taper, Stepped and Partial Taper  
 Stem material : SS316 / Others on request  
 Head : Round with Spanner Slots / Hexagonal  
 Note : Single piece barstock thermowell available upto 600mm, above 600mm options available in multiple barstock and fabricated from pipe.

### Thermowell Flanged - TF



Design as Per ASME PTC 19.3  
 Type-Barstock / Fabricated  
 Construction : Straight, Full taper, Stepped and Partial Taper  
 Stem material : SS316 / Others on request  
 Head : Round  
 Note : Single piece barstock thermowell available upto 600mm, above 600mm options available in multiple barstock and fabricated from pipe.

### Special Thermowells



Design as Per ASME PTC 19.3  
 Type-Barstock / Fabricated  
 Construction : Straight, Full taper, Stepped and Partial Taper  
 Stem material : SS316 / Others on request  
 Note : Van stone type thermowell  
 Thermowell with sleeve  
 Thermowell with collar

## Transmitters

### Pressure Transmitters



Ceramic core element  
 Low cost  
 Compact structure  
 Simple installation  
 Measuring ranges from 0 to 1 bar, 0 to 600 bar  
 Measuring accuracy of + 0.5%FS (+ 0.2% optional)  
 High accuracy, high stability  
 The output of pressure transducers is 4 to 20mA / 0 to 5V (or) 1 to 5 V.  
 Wide operating temperature range

### Flush Diaphragm Flush Or TC end Type Pressure Transmitter



Multi-structures, material safety, oil proof, high performance of stability and reliability  
 Multi-output forms, a wide measurement range  
 Wide range of power supply and output  
 Protection of reversed circuit  
 Stainless steel

### Pressure Transmitter with local display



Piezo-resistive sensor  
 Unique conductive seal that eliminates internal wire bonding thus enhancing reliability  
 Zero and full scale adjusters are provided under the top cover  
 Used in areas requiring exact pressure measurement  
 Low hysteresis and long term stability  
 Accuracy 0.5%  
 Output 4-20mA / 1.5V / 0.5V

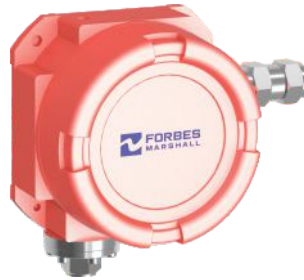
## Pressure and Temperature Switches

### Weather/Flame/Explosion Proof Low Pressure Switch



Type : Diaphragm SS316 , SS316L, Monel and Hastelloy/Piston SS316  
Accuracy, Repeatability : (+/- 1 % of FSR)  
Ranges : (- 200 mm WC to 40 BAR) above 40 BAR Piston type  
Enclosure : Aluminium die cast LM6 IP 67  
Switch type : Micro switch 1SPDT, 2SPDT, DPDT silver, gold and hermetically sealed contact  
Differential : Fixed and adjustable type  
Set point : External field adjustable and internal locking  
Process Conn. : 1/4 " NPT(F) Std, 3/8" 1/2" BSP, NPT as per requirement

### Weather/Flame/Explosion Proof Differential Pressure Switch



Type : Diaphragm SS316L, Monel and Hastelloy  
Accuracy, Repeatability : (+/- 1 % of FSR )  
Ranges : 0.1 to 25 BAR )  
Enclosure : Aluminum die cast LM6 IP 66 IIA,IIB,IIC  
Switch type : Micro switch 1SPDT, 2SPDT, DPDT silver, gold and hermetically sealed contact  
Differential : Fixed and adjustable type  
Set Point : External field adjustable and internal locking  
Process connection : 1/4 " NPT(F) Std, 3/8" 1/2" BSP, NPT as per requirement

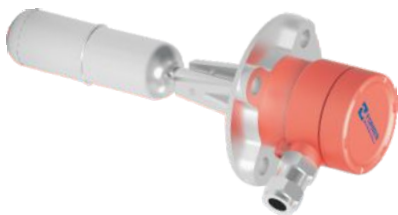
### Weather/Flame/Explosion Proof Temperature Switch



Type : Diaphragm type with gas field  
Accuracy, Repeatability : (+/- 3 % of FSR)  
Ranges : 10 to 300 Deg C  
Enclosure : Aluminum die cast LM6 IP 67  
Switch type : Micro switch 1SPDT, 2SPDT, DPDT silver ,gold and hermetically sealed contact  
Differential : Fixed and adjustable type  
Set point : External field adjustable and internal locking  
Process connection : Fixed and adjustable 3/8" / 1/2" BSP, NPT as per requirement

## Level Switches and Gauges

### Side Mounted Level Switch



Type : General purpose, high temperature, float adjustable type  
Specific gravity : 0.75  
Float : Dia 42,52,75 mm SS316  
Enclosure : Weather proof IP 67 or LM24  
Micro switch type : Switch 1SPDT, 2SPDT silver and gold contact  
Process connection : Square/ round flange 92 PCD Std or as per requirement  
Maximum pressure : 20 bar  
Maximum temperature : 10 to 350°C

### Top Mounted Level Switch



Type : General purpose, sanitary  
Specific gravity : 0.75  
Float : Dia 28,52 mm SS316  
Enclosure : Weather proof IP 67 or LM24  
Reed switch type : Switch 1SPST, 1SPDT hermetically sealed  
Switching point : 1no/ 2nos / 3 nos / 4 nos  
Process connection : Flange or thread 1" BSP/ NPT connection  
Maximum pressure : 12 bar  
Maximum temperature : 125°C

### Reflex / Transparent / Tubular



Type : SIDE / SIDE,  
Indicator system : Gauge glass  
Process connection : Flange / Screwed as per requirement  
Distance C – C : 250 to 2000 mm  
Maximum pressure : Up to 200 kg/cm<sup>2</sup> @ 400°C  
Maximum temperature : 10 to 250°C

## Test Pumps and Service

### Comparison Test Pumps



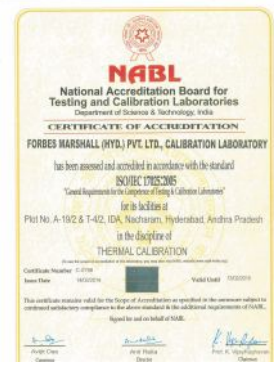
Ranges: 0-40 kg  
0-400 kg  
760mmHg to 0

### Services: Filling



Seal replacement / filling for all types makes of Transmitters

### Services: Calibration



For Pressure and Temperature Gauges  
NABL Accredited Laboratory for pressure and temperature calibration.



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