



# Chambers

Level Gauge

Gauge Valve

Safety Relief Valves

Sight Flow Indicator

Magnetic Level Gauge

Level Switches



# BLISS ANAND



## Our Mission Statement

To Develop, manufacturing & market, Field Instruments and Speciality Valves with innovative technology for the Global market, with extra care for customer comforts.

To Build a sustainable, profitable, human value and growth oriented socially responsible corporate through strong and effective systems, committed team and satisfied customer base.

With a modest beginning in 1975 as a trading company in Valves and Fittings, today BLISS ANAND is a leading Indian Field Instrument manufacturer and is striving to be world leader in high quality Process Instrument Products providing cost effective solutions to the customers.

The company has achieved a number of milestones in its history- thanks to the passion, dedication and team work of BLISS family.



Mr. Prem Anand  
Chairman  
Bliss Anand Group

A Blend of Modern technology and education with hard core human values based culture, creating a new mould of individuals forming an Organisation, entering into the Global Business arena, is a matter of pride for Bliss Anand.

We started our organisation with burning desire to cater to various needs of customer applications through innovative and cost-effective solutions. Bliss Anand has grown to global standards and is competing with developing and developed countries.

The company has achieved a number of milestones in its history- thanks to the passion, dedication and team work of our employees. Field Instrumentation in the global market is slowly shifting to developing countries, due to cost effectiveness and labour intensive processes. I perceive Bliss Anand to be a leading player in Field Instrument manufacturing.

Bliss Anand manufacturing / assembly offices worldwide  
for high quality process instrumentation





# Chamber



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# CHAMBER SELECTION GUIDE

CHAMBER

|   | Selection                  | Suffix Codes |                            |   |  |  |  |  |  |  |  | Description                          |
|---|----------------------------|--------------|----------------------------|---|--|--|--|--|--|--|--|--------------------------------------|
| A | Instrument Type            | G            |                            |   |  |  |  |  |  |  |  | MLT Displacer or GWR                 |
|   |                            | V            |                            |   |  |  |  |  |  |  |  | Vertical Level Switch                |
|   |                            | H            |                            |   |  |  |  |  |  |  |  | Horizontal Level Switch              |
| B | Design                     | 1            |                            |   |  |  |  |  |  |  |  | Standard – PED compliant             |
|   |                            | 2            |                            |   |  |  |  |  |  |  |  | Standard – non PED                   |
|   |                            | 5            |                            |   |  |  |  |  |  |  |  | T-Construction – PED compliant       |
|   |                            | 6            |                            |   |  |  |  |  |  |  |  | T-Construction – non PED             |
|   |                            | X            |                            |   |  |  |  |  |  |  |  | Special Type ( Please Specify)       |
| C | Material                   | C            |                            |   |  |  |  |  |  |  |  | Carbon Steel                         |
|   |                            | S            |                            |   |  |  |  |  |  |  |  | Stainless Steel                      |
|   |                            | X            |                            |   |  |  |  |  |  |  |  | Special Type ( Please Specify)       |
|   |                            |              |                            |   |  |  |  |  |  |  |  |                                      |
| D | Instrument/ Chamber Size   | 1            |                            |   |  |  |  |  |  |  |  | 1"                                   |
|   |                            | 3            |                            |   |  |  |  |  |  |  |  | 3" 80 mm (DN 80)                     |
|   |                            | 4            |                            |   |  |  |  |  |  |  |  | 4" 100 mm (DN 100)                   |
|   |                            | X            |                            |   |  |  |  |  |  |  |  | Special Type ( Please Specify)       |
|   |                            |              |                            |   |  |  |  |  |  |  |  |                                      |
| E | Instrument/ Chamber Rating | AA           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 150                 |
|   |                            | AB           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 300                 |
|   |                            | AC           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 600                 |
|   |                            | AD           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 900                 |
|   |                            | AE           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 1500                |
|   |                            | DA           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN16 (EN 1092-1)            |
|   |                            | DB           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN40 (EN 1092-1)            |
|   |                            | DC           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN63 (EN 1092-1)            |
|   |                            | DD           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN100 (EN 1092-1)           |
|   |                            | DE           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN160 (EN 1092-1)           |
|   |                            | DF           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN250 (EN 1092-1)           |
|   |                            | DH           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN25 (EN 1092-1)            |
|   |                            | F            | Instrument Connection Type | R |  |  |  |  |  |  |  |                                      |
| T |                            |              |                            |   |  |  |  |  |  |  |  | Ring Type Joint – RTJ (Flanged)      |
| N |                            |              |                            |   |  |  |  |  |  |  |  | NPT (Threaded)/ Bottle               |
| X |                            |              |                            |   |  |  |  |  |  |  |  | Special Type ( Please Specify)       |
|   |                            |              |                            |   |  |  |  |  |  |  |  |                                      |
| G | Connection Orientation     | C            |                            |   |  |  |  |  |  |  |  | Side and Bottom                      |
|   |                            | B            |                            |   |  |  |  |  |  |  |  | Side and Side                        |
|   |                            | A            |                            |   |  |  |  |  |  |  |  | Top and Bottom                       |
|   |                            |              |                            |   |  |  |  |  |  |  |  |                                      |
| H | Process Connection Size    | 1            |                            |   |  |  |  |  |  |  |  | 1" / 25mm (DN25)                     |
|   |                            | 2            |                            |   |  |  |  |  |  |  |  | 2" / 50mm (DN50)                     |
|   |                            | 5            |                            |   |  |  |  |  |  |  |  | 1 1/2" / 40mm (DN40)                 |
|   |                            |              |                            |   |  |  |  |  |  |  |  |                                      |
| I | Process Connection Rating  | AA           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 150                 |
|   |                            | AB           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 300                 |
|   |                            | AC           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 600                 |
|   |                            | AD           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 900                 |
|   |                            | AE           |                            |   |  |  |  |  |  |  |  | ASME B16.5 Class 1500                |
|   |                            | DA           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN16 (EN 1092-1)            |
|   |                            | DB           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN40 (EN 1092-1)            |
|   |                            | DC           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN63 (EN 1092-1)            |
|   |                            | DD           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN100 (EN 1092-1)           |
|   |                            | DE           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN160 (EN 1092-1)           |
|   |                            | DF           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN250 (EN 1092-1)           |
|   |                            | DH           |                            |   |  |  |  |  |  |  |  | EN (DIN) PN25 (EN 1092-1)            |
|   |                            | J            | Process Connection Type    | R |  |  |  |  |  |  |  |                                      |
| T |                            |              |                            |   |  |  |  |  |  |  |  | Ring Type Joint – RTJ (Flanged)      |
| N |                            |              |                            |   |  |  |  |  |  |  |  | NPT (Threaded)/ Bottle               |
| X |                            |              |                            |   |  |  |  |  |  |  |  | Special Type ( Please Specify)       |
| S |                            |              |                            |   |  |  |  |  |  |  |  | Stock Weld                           |
| B |                            |              |                            |   |  |  |  |  |  |  |  | BSP (Threaded)                       |
| K | Centers                    | 0356         |                            |   |  |  |  |  |  |  |  | 356 mm (14")                         |
|   |                            | 1000         |                            |   |  |  |  |  |  |  |  | 1000mm (39.4")                       |
|   |                            | 4877         |                            |   |  |  |  |  |  |  |  | 4877mm (192")                        |
| L | Drain                      | D            |                            |   |  |  |  |  |  |  |  | Drain                                |
|   |                            | N            |                            |   |  |  |  |  |  |  |  | None/ Special Type ( Please Specify) |
| M | Drain Size                 | 1            |                            |   |  |  |  |  |  |  |  | 1"                                   |
|   |                            | N            |                            |   |  |  |  |  |  |  |  | None/ Special Type ( Please Specify) |
|   |                            | 8            |                            |   |  |  |  |  |  |  |  | 1/2"                                 |
|   |                            | 9            |                            |   |  |  |  |  |  |  |  | 3/4"                                 |
| N | Drain Type                 | R            |                            |   |  |  |  |  |  |  |  | Raised Face – RF (Flanged)           |
|   |                            | T            |                            |   |  |  |  |  |  |  |  | Ring Type Joint – RTJ (Flanged)      |
|   |                            | N            |                            |   |  |  |  |  |  |  |  | NPT (Threaded)/ Bottle               |
|   |                            | X            |                            |   |  |  |  |  |  |  |  | Special Type ( Please Specify)       |
|   |                            | S            |                            |   |  |  |  |  |  |  |  | Stock Weld                           |
|   |                            | B            |                            |   |  |  |  |  |  |  |  | BSP (Threaded)                       |
| O | Vent                       | V            |                            |   |  |  |  |  |  |  |  | Vent                                 |
|   |                            | X            |                            |   |  |  |  |  |  |  |  | None/ Special Type ( Please Specify) |
| P | Vent Size                  | 1            |                            |   |  |  |  |  |  |  |  | 1"                                   |
|   |                            | N            |                            |   |  |  |  |  |  |  |  | None/ Special Type ( Please Specify) |
|   |                            | 8            |                            |   |  |  |  |  |  |  |  | 1/2"                                 |
|   |                            | 9            |                            |   |  |  |  |  |  |  |  | 3/4"                                 |
| Q | Vent Type                  | R            |                            |   |  |  |  |  |  |  |  | Raised Face – RF (Flanged)           |
|   |                            | T            |                            |   |  |  |  |  |  |  |  | Ring Type Joint – RTJ (Flanged)      |
|   |                            | N            |                            |   |  |  |  |  |  |  |  | NPT (Threaded)/ Bottle               |
|   |                            | X            |                            |   |  |  |  |  |  |  |  | None/ Special Type ( Please Specify) |
|   |                            | S            |                            |   |  |  |  |  |  |  |  | Stock Weld                           |
|   |                            | B            |                            |   |  |  |  |  |  |  |  | BSP (Threaded)                       |



- H2 Service
- Helium Leak Test
- PMI Tester
- D.P. Test
- Radiography
- Ultra Sonic
- Weld Procedures Requirement
- Dissimilar Metal Welding
- Nace requirements including HAZ Hardness test
- HIC requirements
- SP. Alloy weldings (alloy 825, StSt, Monel, LF2 etc.)



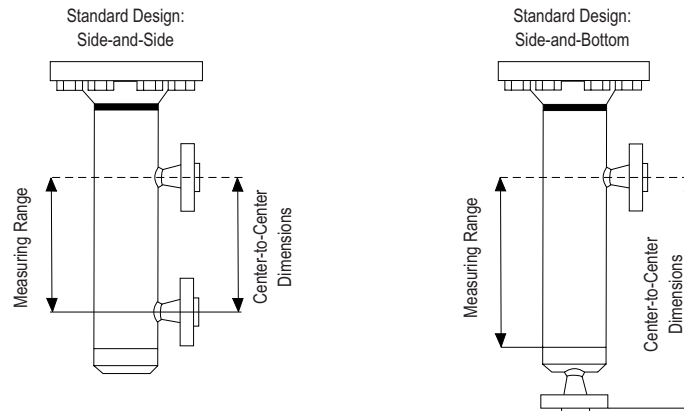
# CHAMBER

## CHAMBER

### Introduction to Bliss Manufactured Chambers

The chamber is called as cage. It houses the liquid being measured and instrument's sensing element. There are two types of process connections on the body of the chamber which allow mounting to the vessel.

Figure below show the most common configurations.



Externally mounting an instrument in a chamber means it can be isolated for routine maintenance while keeping the plant operational. It is also useful for in-tank restrictions that do not allow mounting of the instrument in a vessel. This approach offers many advantages when solving application challenges. The instrument is mounted on top of the chamber through the flanged or threaded instrument connection. A thread version is available for the vertical float level switch.

When ordering, specify the center-to-center dimension in feet and inches, or meters and millimeters.



## **BLISS ANAND Chamber for Process Level Instrumentation**

- \* Allows external mounting of process level instrumentation.
- \* Ideal for critical area and general purpose applications.
- \* Power, Petro-Chemical, Refining, Oil & gas, chemical and process Steam Raising sectors.
- \* 35 years of experience in designing and manufacturing chambers in accordance with international codes.
- \* Variety of process connections and optional drain and vent connections.
- \* Used by major industries worldwide.
- \* Enables live maintenance.
- \* Designed to ASME B31.3.
- \* Pressure Equipment Directive (PED) compliant.
- \* Custom design service available.
- \* For use in applications up to ASME B16.5 Class 1500 and EN1092 PN250.
- \* Available in carbon steel and stainless steel.

### **Chamber Design**

The Bliss chamber is designed to the ASME B31.3 standard, and is Pressure Equipment Directive (PED) compliant. Weld neck flanges and full penetration welds in accordance with EN ISO 15614-1:2004 and ASME Boiler and pressure Vessel Code Section IX are used throughout. All welders are qualified to EN 287-1:2004 and ASME Boiler and pressure Vessel code section IX. All construction materials have full traceability in accordance with the EN 10204 type 3.1 certificates. Every chamber is hydro-tested as standard. There are two designs available: the Standard Design and T-piece Design.

### **Standard Design**

With the standard design, the process connections are welded directly onto the chamber body. This keeps the number of welds to a minimum for increased Safety.

Pressure ratings up to and including ASME B16.5 Class 1500 and EN1092 PN250 are available.

### **T-Piece Design**

T-Piece design is used, Unequal T's are used so the larger process connections can fit on the smaller chamber body.

Pressure ratings of up to and including ASME B16.5 Class 600 and EN1092 PN100 are available.

### **Drain and Vent (Optional)**

A drain allows liquid to be drained away and allows maintenance of the instrument. It is always specified for a side-and-side chamber. A vent is optional and allows gas in the upper zone above the liquid to be vented off. Both the drain and vent are available as threaded or flanged in a variety of sizes. Special types are also available upon request.



## CHAMBER

## CHAMBER

### Technical Specification of Chambers

#### MATERIALS OF CONSTRUCTION

Only materials suitable for pressure use and certified to ASME B31.3 are used in the construction of chambers. Other materials are available on special order.

Table 1: Chamber Materials

| COMPONENT  | CARBON STEEL       | STAINLESS STEEL          |
|--|--------------------|--------------------------|
| Instrument Mounting Flange                       | ASTM A105          | ASTM A182 F316/F316L     |
| Chamber Body Tube                                | ASTM A106 Grade B  | ASTM A312 TP316/TP316L   |
| Chamber End Cap                                  | ASTM A105          | ASTM A182 F316/F316L     |
| Process Flange / Fitting                         | ASTM A105          | ASTM A182 F316/F316L     |
| T-Pieces and Reducers                            | ASTM A234 WPB      | ASTM A403 WP316/WP316L-S |
| Standard Alloy Steel Studbolts                   | ASTM A193 B7       | ASTM A320 L7             |
| Standard Alloy Steel Nuts                        | ASTM A194 2H       | ASTM A194 Grade 7 + S3   |
| Stainless Studbolts<br>(Maximum PN40/Class 300)  | ASTM A193 B8M CI 1 | ASTM A193 B8M CI 1       |
| Stainless Nuts<br>(Maximum PN40/Class 300)       | ASTM A194 Grade 8M | ASTM A194 Grade 8M       |
| Stainless Studbolts<br>(Maximum PN100/Class 600) | ASTM A194 Grade 8M | ASTM A193 B8M CI 2       |
| Stainless Nuts<br>(Maximum PN100/Class 600)      | ASTM A194 Grade 8M | ASTM A194 Grade 8M       |



# CHAMBER

## Technical Specification of Chambers

CHAMBER

### PRESSURE RATINGS

Table 2: Maximum Pressure Ratings for Bliss Chambers  
With Alloy Steel Bolting - PSI and Bar.

| Chamber Rating        | CARBON STEEL  |               |                |                | STAINLESS STEEL |               |                |                |
|-----------------------|---------------|---------------|----------------|----------------|-----------------|---------------|----------------|----------------|
|                       | PSI<br>(68°F) | Bar<br>(20°C) | PSI<br>(752°F) | Bar<br>(400°C) | PSI<br>(68°F)   | Bar<br>(20°C) | PSI<br>(752°F) | Bar<br>(400°C) |
| ASME B16.5 Class 150  | 285           | 19.6          | 95             | 6.5            | 275             | 19            | 95             | 6.5            |
| ASME B16.5 Class 300  | 740           | 51.1          | 505            | 34.7           | 720             | 49.6          | 425            | 29.4           |
| ASME B16.5 Class 600  | 1480          | 102.1         | 1015           | 69.4           | 1440            | 99.3          | 855            | 58.9           |
| ASME B16.5 Class 900  | 2220          | 153.2         | 1520           | 104.2          | 2160            | 148.9         | 1280           | 88.3           |
| ASME B16.5 Class 1500 | 3705          | 255.3         | 2517           | 173.6          | 3600            | 248.2         | 2135           | 147.2          |
| EN1092 PN16           | 232           | 16            | 137            | 9.5            | 227             | 15.7          | 134            | 9.3            |
| EN1092 PN25           | 362           | 25            | 214            | 14.8           | 356             | 24.6          | 211            | 14.6           |
| EN1092 PN40           | 580           | 40            | 345            | 23.8           | 569             | 39.3          | 339            | 23.4           |
| EN1092 PN63           | 913           | 63            | 543            | 37.5           | 899             | 62            | 536            | 37             |
| EN1092 PN100          | 1450          | 100           | 862            | 59.5           | 1427            | 98.4          | 851            | 58.7           |
| EN1092 PN160          | 2320          | 160           | 1380           | 95.2           | 2291            | 158           | 1361           | 93.9           |
| EN1092 PN250          | 3625          | 250           | 2157           | 148.8          | 3567            | 246           | 2132           | 147            |

### TEMPERATURE RATINGS

Table 3: Chamber Temperature Ratings

| Material                | Chamber Temperature Range     |
|-------------------------|-------------------------------|
| Carbon Steel Chamber    | 14 to 752°F (-10 to 400°C)    |
| Stainless Steel Chamber | -148 to 752°F (-100 to 400°C) |



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