

## BARSTOCK (FLANGED)

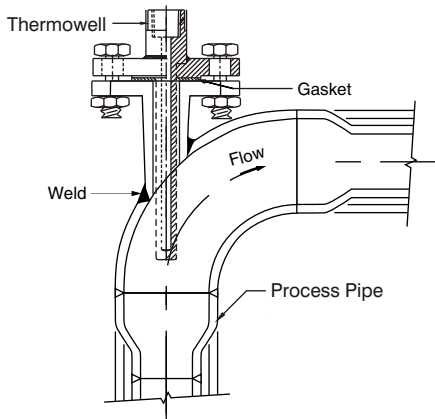


### Special Features

- Design as per PTC 19.3.
- These Thermowells are manufactured from solid bar stock and installed into the process by using a flanged connection.
- This design is suitable for all type of RTD's, Thermocouples, mechanical as well as digital thermometers.
- Full Penetration Welded.
- Available in various shapes like Straight, Straight with reduced tip, Partial taper & full taper.
- All type of flanges and flange facings are available as per ANSI / DIN / JIS & BS.

IPS-TW-04

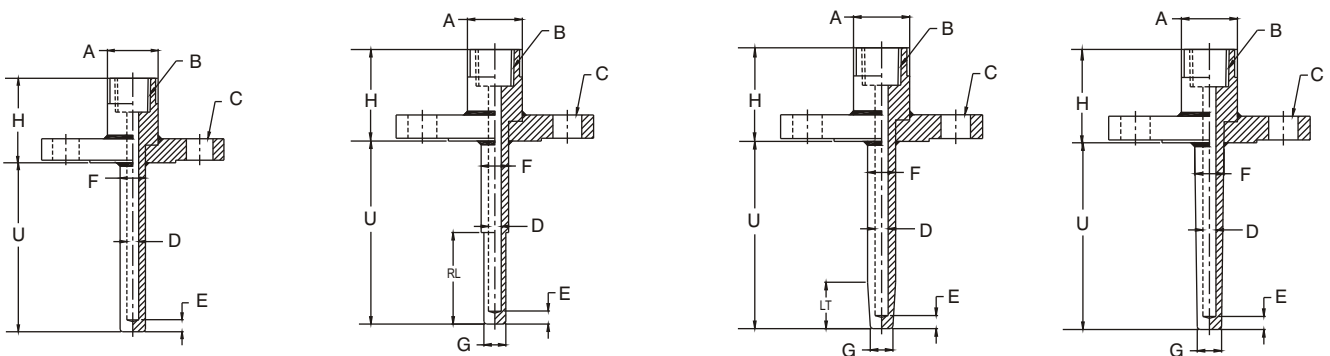
### Thermowell Installation



### Applications

Chemical plants, Petrochemical Plants, Engineering Plants, On shore, Offshore & other similar process industries.

### Thermowell Drawings



S - STRAIGHT

R - STRAIGHT REDUCED TIP

P - PARTIAL TAPER

F - FULL TAPER

A - Finished Head Size

E - Tip Thickness

U - Insertion Length

B - Instrument Connection

F - Major Diameter

RL - Reduced Tip Length

C - Flange

G - Minor Diameter

LT - Taper Length

D - Bore Diameter

H - Extension Length



## HOW TO ORDER

### BASIC MODEL

IPS-TW-04

#### TYPE

**S** - STRAIGHT      **R** - STRAIGHT REDUCED TIP      **P** - PARTIAL TAPER      **F** - FULL TAPER

X

#### WELL MATERIAL

(It is recommended that the well material and flange material (wetted area) should be same.)

|                        |                         |                        |                       |
|------------------------|-------------------------|------------------------|-----------------------|
| <b>LM</b> AISI 316 SS  | <b>EP</b> AISI 410 SS   | <b>LT</b> Monel        | <b>LV</b> Titanium    |
| <b>LN</b> AISI 316L SS | <b>LO</b> AISI 316Ti SS | <b>LU</b> Inconel 600  | <b>LX</b> Nickel      |
| <b>LP</b> AISI 304 SS  | <b>EO</b> AISI 310 SS   | <b>ES</b> Inconel 625  | <b>LY</b> HRS 446     |
| <b>ER</b> AISI 304L SS | <b>LQ</b> Carbon Steel  | <b>ET</b> Incolloy 800 | <b>LZ</b> Alloy 20    |
| <b>EN</b> AISI 321 SS  |                         | <b>EU</b> Incolloy 825 | <b>LS</b> Hastelloy C |

XX

Note : Other Materials are available on request.

#### FLANGE MATERIAL

|                        |                         |                       |                    |
|------------------------|-------------------------|-----------------------|--------------------|
| <b>LM</b> AISI 316 SS  | <b>EN</b> AISI 321 SS   | <b>LT</b> Monel       | <b>LV</b> Titanium |
| <b>LN</b> AISI 316L SS | <b>LO</b> AISI 316Ti SS | <b>LU</b> Inconel 600 | <b>LX</b> Nickel   |
| <b>LP</b> AISI 304 SS  | <b>EO</b> AISI 310 SS   | <b>ES</b> Inconel 625 | <b>LZ</b> Alloy 20 |
| <b>ER</b> AISI 304L SS | <b>LQ</b> Carbon Steel  | <b>LS</b> Hastelloy C |                    |

XX

Note : Other Materials are available on request.

#### INSTRUMENT CONNECTION

|                        |                        |                        |                          |                          |
|------------------------|------------------------|------------------------|--------------------------|--------------------------|
| <b>4BF</b> ½" BSP (F)  | <b>5TF</b> ¾" BSPT (F) | <b>6NF</b> 1" NPT (F)  | <b>3MF</b> M18 x 1.5 (F) | <b>6MF</b> M24 x 1.5 (F) |
| <b>4NF</b> ½" NPT (F)  | <b>5NF</b> ¾" NPT (F)  | <b>6BF</b> 1" BSP (F)  | <b>4MF</b> M20 x 1.5 (F) | <b>7MF</b> M27 x 2 (F)   |
| <b>4TF</b> ½" BSPT (F) | <b>5BF</b> ¾" BSP (F)  | <b>6TF</b> 1" BSPT (F) | <b>5MF</b> M22 x 1.5 (F) | <b>9MF</b> M33 x 2 (F)   |
| <b>4FF</b> ½" PF (F)   | <b>5PF</b> ¾" G (F)    | <b>6PF</b> 1" G (F)    |                          |                          |
| <b>4PF</b> ½" G (F)    |                        |                        |                          |                          |

XXX

Note : Other Connections are available on request.

#### FLANGE TYPE

**1** Slip on      **3** Threaded (Hub type)      **5** Socket Weld  
**2** Welding Neck      **4** Lap Joint

X

#### FLANGE "C" (SIZE & RATING)

Refer Flange table for code selection.

XXX

#### FLANGE FACING TYPE

**R** Raised Face      **F** Flat Face      **J** Ring type joint

X

#### FLANGE FINISH

**1** - 125 AARH (Standard)      **2** - 63 AARH

Note: Flange finish are available as per request

X

#### EXTENSION / LAGGING LENGTH "H" (In case of welding neck flange & threaded flange, consult factory)

Please specify in mm For e.g. : for length 50 mm, mention **H50**

XXX

#### FINISHED HEAD SIZE "A" (Refer Table 1.1 for selection of Head Size for Thermowell.)

Please Specify in mm e.g. : For 28 mm Finished head Size, Specify **A28**

XXX

#### TYPE OF HEAD

**K** HEX HEADED\*      **L** ROUND HEADED      **M** ROUND HEADED WITH SPANNER SLOTS.

X

\* Maximum "U" Length below Flange will be 250 mm.

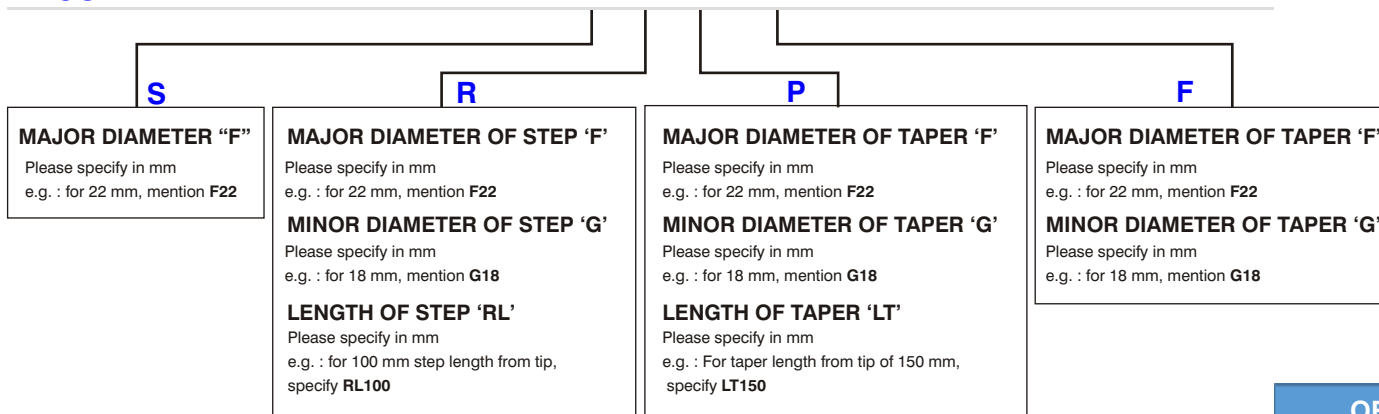
#### BORE DIAMETER "D"

|                  |                |                 |                  |
|------------------|----------------|-----------------|------------------|
| <b>A</b> 6.6 mm  | <b>B</b> 7 mm  | <b>C</b> 8.5 mm | <b>D</b> 9 mm    |
| <b>E</b> 10.5 mm | <b>F</b> 11 mm | <b>G</b> 13 mm  | <b>H</b> 13.5 mm |

X

Note : Refer Table 1.3 of Thermowell Design Procedure for dimensions as per PTC 19.3

**MAJOR DIAMETER “F”**



Note : Refer Table 1.3 of Thermowell Design Procedure for dimensions as per PTC 19.3

**TIP THICKNESS “E”**

Standard Tip Thickness is 5 mm. e.g. : Specify **E5** for 5 mm Tip Thickness. For others, please specify in mm.

**INSERTION LENGTH “U”**

Please specify in mm e.g. : for 250 mm, mention **U250**

Note : Refer Table 1.4 of Thermowell Design Procedure for dimensions as per PTC 19.3

**OPTIONS**

|                                |  |
|--------------------------------|--|
| <b>GG</b> Plug and chain in SS | <b>TC</b> Counter flange with studs, nuts & gasket |
| <b>FW</b> Electro polishing    | <b>CW</b> Marking by Laser                         |
| <b>CX</b> Marking by Engraving | <b>SX</b> SS Tag Plate                             |

**LINING & COATINGS** (User to specify thickness during enquiry)

|                                    |                                   |
|------------------------------------|-----------------------------------|
| <b>FI</b> PTFE Lining*             | <b>EW</b> Zirconium Oxide Coating |
| <b>FM</b> Silicon Carbide Coating  | <b>EX</b> Stellite Coating        |
| <b>GK</b> Rubber Lining*           | <b>EY</b> PTFE Coating            |
| <b>GJ</b> Tungsten Carbide Coating |                                   |

\* Lining will be on wetted area of straight type wells only.

**OVERLAY ON FLANGE RF** (User to specify thickness during enquiry)

|                         |                       |                    |                    |
|-------------------------|-----------------------|--------------------|--------------------|
| <b>LS</b> Hastelloy ‘C’ | <b>LT</b> Monel       | <b>LV</b> Titanium | <b>LX</b> Nickel   |
| <b>LR</b> Hastelloy ‘B’ | <b>LU</b> Inconel 600 | <b>LW</b> Tantalum | <b>LZ</b> Alloy 20 |

**SLEEVE MATERIAL** (Wall Thickness : 1 mm)

|                         |                       |                             |
|-------------------------|-----------------------|-----------------------------|
| <b>GM</b> Hastelloy ‘C’ | <b>FQ</b> Monel       | <b>FT</b> Tantalum (0.4 mm) |
| <b>FO</b> Hastelloy ‘B’ | <b>FR</b> Inconel 600 | <b>FV</b> Alloy 20          |
| <b>FP</b> Nickel        | <b>FJ</b> Titanium    |                             |

**TESTS & CERTIFICATION**

|  |  |
|--|--|
| <b>C1</b> Radiography for Bore Concentricity           | <b>C8</b> Certification for Hydrogen Service   |
| <b>C2</b> IBR Certification                            | <b>C9</b> Certification for Oxygen Service     |
| <b>C3</b> Mechanical Test                              | <b>T1</b> Chemical Composition Test            |
| <b>C4</b> Ultrasonic Test                              | <b>T2</b> 3.1B Material Conformity Certificate |
| <b>C5</b> PMI Test                                     | <b>T3</b> Radiography for Welding              |
| <b>C6</b> IGC Test                                     | <b>T4</b> Dye Penetration Test                 |
| <b>C7</b> Wake Frequency Calculations as per PTC 19.3# | <b>TF</b> Tested to NACE Standard              |

#Please Specify Fluid, Max. Pressure, Temperature & Flow velocity for wake frequency calculations as per PTC 19.3

Note : Specifications and dimensions given in this product catalogue represents the state of engineering at the time of printing.  
 Modifications may take place and materials specified may be replaced by others without prior notice.

OR  
XX  
OR  
XXXX  
XX  
  
XXXX  
  
XX  
  
XX  
  
XX



# FLANGE TABLE WITH CONNECTION CODES

## AS PER DIN 2527

| DN | PN  | CODE |
|----|-----|------|
| 10 | 6   | A01  |
|    | 10  | A02  |
|    | 16  | A03  |
|    | 25  | A04  |
|    | 40  | A05  |
|    | 64  | A06  |
|    | 100 | A07  |
|    | 160 | A08  |
|    | 250 | A09  |
|    | 400 | A10  |

|    |     |     |
|----|-----|-----|
| 15 | 6   | A11 |
|    | 10  | A12 |
|    | 16  | A13 |
|    | 25  | A14 |
|    | 40  | A15 |
|    | 64  | A16 |
|    | 100 | A17 |
|    | 160 | A18 |
|    | 250 | A19 |
|    | 400 | A20 |

|    |    |     |
|----|----|-----|
| 20 | 6  | A21 |
|    | 10 | A22 |
|    | 16 | A23 |
|    | 25 | A24 |
|    | 40 | A25 |

|     |     |     |
|-----|-----|-----|
| 25  | 6   | A26 |
|     | 10  | A27 |
|     | 16  | A28 |
|     | 25  | A29 |
|     | 40  | A30 |
|     | 64  | A31 |
|     | 100 | A32 |
|     | 160 | A33 |
| 250 | A34 |     |
| 400 | A35 |     |

|    |    |     |
|----|----|-----|
| 32 | 6  | A36 |
|    | 10 | A37 |
|    | 16 | A38 |
|    | 25 | A39 |
|    | 40 | A40 |

|     |     |     |
|-----|-----|-----|
| 40  | 6   | A41 |
|     | 10  | A42 |
|     | 16  | A43 |
|     | 25  | A44 |
|     | 40  | A45 |
|     | 64  | A46 |
|     | 100 | A47 |
|     | 160 | A48 |
| 250 | A49 |     |
| 400 | A50 |     |

|    |     |     |
|----|-----|-----|
| 50 | 6   | A51 |
|    | 10  | A52 |
|    | 16  | A53 |
|    | 25  | A54 |
|    | 40  | A55 |
|    | 64  | A56 |
|    | 100 | A57 |
|    | 160 | A58 |
|    | 250 | A59 |
|    | 400 | A60 |

| DN | PN  | CODE |
|----|-----|------|
| 65 | 6   | A61  |
|    | 10  | A62  |
|    | 16  | A63  |
|    | 25  | A64  |
|    | 40  | A65  |
|    | 64  | A66  |
|    | 100 | A67  |
|    | 160 | A68  |
|    | 250 | A69  |
|    | 400 | A70  |

|    |     |     |
|----|-----|-----|
| 80 | 6   | A71 |
|    | 10  | A72 |
|    | 16  | A73 |
|    | 25  | A74 |
|    | 40  | A75 |
|    | 64  | A76 |
|    | 100 | A77 |
|    | 160 | A78 |
|    | 250 | A79 |
|    | 400 | A80 |

## AS PER JIS - B 2210

| NOMINAL SIZE | RATING /CLASS | CODE |
|--------------|---------------|------|
| 10A          | 5K            | B57  |
|              | 10K           | B58  |
|              | 40K           | B59  |
| 15A          | 5K            | B60  |
|              | 10K           | B61  |
|              | 40K           | B62  |
| 20A          | 5K            | B63  |
|              | 10K           | B64  |
|              | 40K           | B65  |

|     |     |     |
|-----|-----|-----|
| 25A | 5K  | B66 |
|     | 10K | B67 |
|     | 40K | B68 |
| 32A | 5K  | B69 |
|     | 10K | B70 |
|     | 40K | B71 |
| 40A | 5K  | B72 |
|     | 10K | B73 |
|     | 40K | B74 |

|     |     |     |
|-----|-----|-----|
| 50A | 5K  | B75 |
|     | 10K | B76 |
|     | 40K | B77 |
|     | 5K  | B78 |
| 65A | 10K | B79 |
|     | 40K | B80 |
|     | 5K  | B81 |
| 80A | 10K | B82 |
|     | 40K | B83 |

## AS PER DIN 2642

| DN | PN | CODE |
|----|----|------|
| 10 | 10 | A90  |
|    |    | A91  |
|    |    | A92  |
|    |    | A93  |
|    |    | A94  |
|    |    | A95  |
|    |    | A96  |
|    |    | A97  |
|    |    | A98  |

## AS PER DIN 2633

| DN | PN | CODE |
|----|----|------|
| 10 | 16 | A81  |
|    |    | A82  |
|    |    | A83  |
|    |    | A84  |
|    |    | A85  |
|    |    | A86  |
|    |    | A87  |
|    |    | A88  |
|    |    | A89  |

## AS PER DIN 2635

| DN | PN | CODE |
|----|----|------|
| 10 | 40 | A99  |
|    |    | B01  |
|    |    | B02  |
|    |    | B03  |
|    |    | B04  |
|    |    | B05  |
|    |    | B06  |
|    |    | B07  |
|    |    | B08  |

## AS PER ANSI B 16.5

| NOMINAL SIZE | RATING /CLASS | CODE |
|--------------|---------------|------|
| 1/2"         | 150           | B09  |
|              | 300           | B10  |
|              | 600           | B11  |
|              | 900           | B12  |
|              | 1500          | B13  |
|              | 2500          | B14  |
| 3/4"         | 150           | B15  |
|              | 300           | B16  |
|              | 600           | B17  |
|              | 900           | B18  |
|              | 1500          | B19  |
|              | 2500          | B20  |

|        |      |     |
|--------|------|-----|
| 1"     | 150  | B21 |
|        | 300  | B22 |
|        | 600  | B23 |
|        | 900  | B24 |
|        | 1500 | B25 |
|        | 2500 | B26 |
| 1 1/4" | 150  | B27 |
|        | 300  | B28 |
|        | 600  | B29 |
|        | 900  | B30 |
|        | 1500 | B31 |
|        | 2500 | B32 |

|        |      |     |
|--------|------|-----|
| 1 1/2" | 150  | B33 |
|        | 300  | B34 |
|        | 600  | B35 |
|        | 900  | B36 |
|        | 1500 | B37 |
|        | 2500 | B38 |
| 2"     | 150  | B39 |
|        | 300  | B40 |
|        | 600  | B41 |
|        | 900  | B42 |
|        | 1500 | B43 |
|        | 2500 | B44 |

|        |      |     |
|--------|------|-----|
| 2 1/2" | 150  | B45 |
|        | 300  | B46 |
|        | 600  | B47 |
|        | 900  | B48 |
|        | 1500 | B49 |
| 3"     | 2500 | B50 |
|        | 150  | B51 |
|        | 300  | B52 |
|        | 600  | B53 |
|        | 900  | B54 |
| 3"     | 1500 | B55 |
|        | 2500 | B56 |

## AS PER BS - 10

| NOMINAL SIZE | TABLE | CODE |
|--------------|-------|------|
| 1/2"         | D     | B84  |
|              | E     | B85  |
|              | F     | B86  |
|              | H     | B87  |
|              | J     | B88  |
| 3/4"         | K     | B89  |
|              | D     | B90  |
|              | E     | B91  |
|              | F     | B92  |
|              | H     | B93  |
| 3/4"         | J     | B94  |
|              | K     | B95  |

|        |   |     |
|--------|---|-----|
| 1"     | D | B96 |
|        | E | B97 |
|        | F | B98 |
|        | H | B99 |
|        | J | C01 |
| 1"     | K | C02 |
|        | D | C03 |
|        | E | C04 |
|        | F | C05 |
|        | H | C06 |
| 1 1/4" | J | C07 |
|        | K | C08 |

|        |   |     |
|--------|---|-----|
| 1 1/2" | D | C09 |
|        | E | C10 |
|        | F | C11 |
|        | H | C12 |
|        | J | C13 |
| 1 1/2" | K | C14 |
|        | D | C15 |
|        | E | C16 |
|        | F | C17 |
|        | H | C18 |
| 2"     | J | C19 |
|        | K | C20 |

|        |   |     |
|--------|---|-----|
| 2 1/2" | D | C21 |
|        | E | C22 |
|        | F | C23 |
|        | H | C24 |
|        | J | C25 |
| 2 1/2" | K | C26 |
|        | D | C27 |
|        | E | C28 |
|        | F | C29 |
|        | H | C30 |
| 3"     | J | C31 |
|        | K | C32 |

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