

Thermowells and Bosses

TW, TS, TF, TJ and BS Series



FITOK
Valves and Fittings

www.fitokgroup.com

Thermowells

TW, TS, TF and TJ Series

Features

- ◎ FITOK thermowells provide reliable heat-transmission performance under high temperature, high pressure, and corrosive conditions.
- ◎ Rugged mechanical construction ensures resistance to distortion under sharp temperature fluctuation conditions.
- ◎ Straight, stepped, and tapered shank designs are available.
- ◎ Standard instrument connection is 1/2 NPT, other connections are available on request.
- ◎ Materials include 316 SS, 304 SS, 321 SS, F91, F92, 316H SS, carbon steel, brass, titanium, alloy C-276 and alloy 400.

Velocity Ratings

When selecting a thermowell, take maximum fluid velocity rating into consideration to avoid failure due to resonance vibration, as well as connection type, insertion length, and bore diameter.

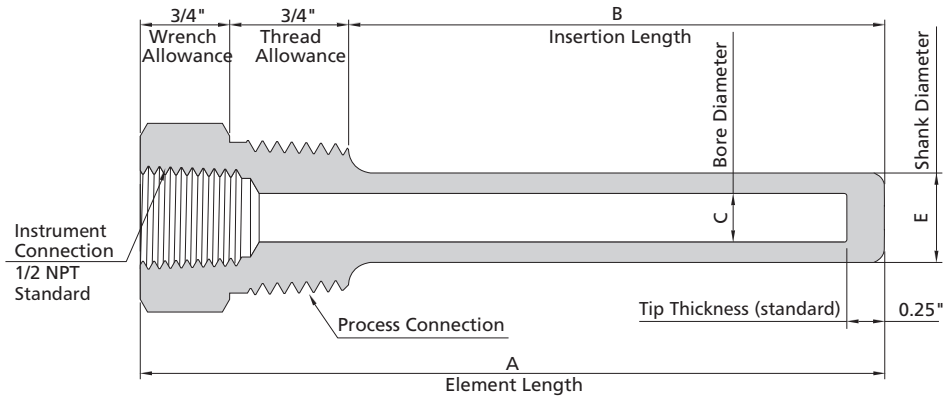
Please refer to the table below for the maximum fluid velocities:

Maximum Fluid Velocities (ft/sec)

| Shank Style | Root Dia. in. | Material | Process Fluid | Immersion Length | | | | | | | |
|-------------|------------------|----------------|---------------|------------------|-------------|-----------|-------|-------|-------|-------|-------|
| | | | | 2.5" | 4.5" | 7.5" | 10.5" | 13.5" | 16.5" | 19.5" | 22.5" |
| Stepped | 3/4 | Brass | Liquid/Gas | 59.3/207.0 | 39.8/89.1 | 23.9/32.3 | 16.4 | 9.9 | 6.6 | 4.8 | 3.6 |
| | | Carbon Steel | Liquid/Gas | 106.0/290.0 | 71.2/123.0 | 42.7/44.9 | 22.8 | 13.8 | 9.3 | 6.7 | 4.9 |
| | | 304 SS, 316 SS | Liquid/Gas | 148.0/300.0 | 99.3/128.0 | 46.4 | 23.6 | 14.3 | 9.6 | 6.9 | 5.1 |
| | | Monel | Liquid/Gas | 118.0/261.0 | 79.8/112.0 | 40.6 | 20.7 | 12.4 | 8.3 | 6.1 | 4.5 |
| | 7/8 | Brass | Liquid/Gas | 59.3/207.0 | 47.6/102.0 | 37.0/28.0 | 18.8 | 11.4 | 7.6 | 5.5 | 4.1 |
| | | Carbon Steel | Liquid/Gas | 106.0/290.0 | 84.3/143.0 | 51.6/50.6 | 26.2 | 15.9 | 10.6 | 7.6 | 5.7 |
| | | 304 SS, 316 SS | Liquid/Gas | 148.0/300.0 | 117.0/148.0 | 53.5 | 27.2 | 16.5 | 11.0 | 7.9 | 5.9 |
| | | Monel | Liquid/Gas | 118.0/261.0 | 93.3/128.0 | 46.7 | 23.7 | 14.4 | 9.5 | 6.9 | 5.1 |
| Straight | Any | Brass | Liquid/Gas | 145.0/290.0 | 80.0/150.0 | 48.0/54.1 | 27.6 | 16.7 | 11.1 | 8.0 | 6.0 |
| | | Carbon Steel | Liquid/Gas | 260.0/326.0 | 144.0/192.0 | 69.5 | 35.4 | 20.5 | 14.3 | 10.3 | 7.7 |
| | | 304 SS, 316 SS | Liquid/Gas | 360.0/349.0 | 199.0 | 71.9 | 36.6 | 21.2 | 14.8 | 10.7 | 8.0 |
| | | Monel | Liquid/Gas | 316.0/320.0 | 178.0/189.0 | 68.1 | 34.8 | 20.8 | 14.0 | 10.0 | 7.5 |
| Tapered | Any | Carbon Steel | Liquid/Gas | 270.0/410.0 | 150.0/249.0 | 90.3 | 45.6 | 27.8 | 18.5 | 13.2 | 9.8 |
| | | 304 SS, 316 SS | Liquid/Gas | 350.0/483.0 | 208.0/272.0 | 97.3 | 49.7 | 30.4 | 20.3 | 14.5 | 10.7 |
| | | Monel | Liquid/Gas | 300.0/396.0 | 167.0/214.0 | 77.5 | 39.2 | 23.8 | 16.0 | 10.3 | 7.7 |

TW series

Straight

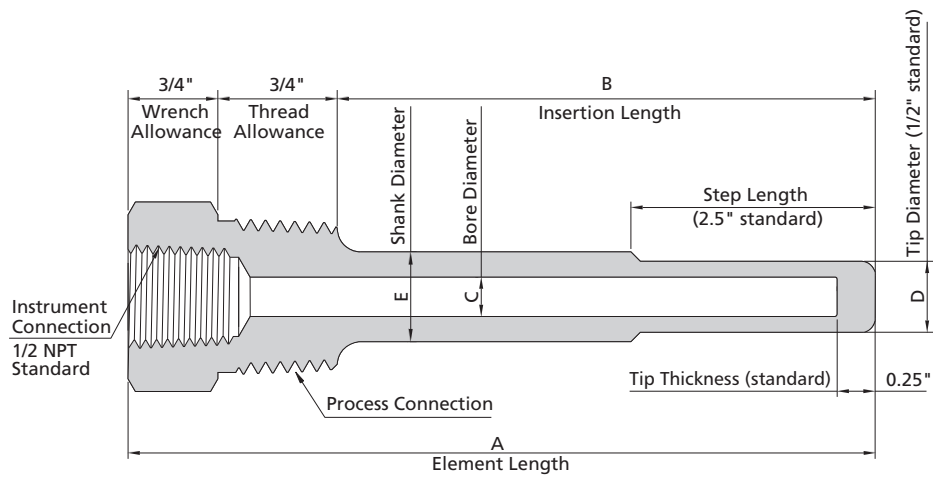


Standard Sizes

| Instrument Connection | Process Connection | Dimension, in. (mm) | | | | | |
|-----------------------|--------------------|---------------------|--------------|-------------|--------------|------------|-----------|
| | | C | E | B | A | | |
| 1/2 NPT Standard | 3/4 NPT | 0.413 (10.5) | 0.750 (19.0) | 4.5 (114.3) | 6 (152.4) | | |
| | 1 NPT | | | 7.5 (190.5) | 9 (228.6) | | |
| | 3/4 NPT | | | | | | |
| | 1 NPT | 0.656 (16.6) | 1.060 (27.0) | 0.385 (9.8) | 0.750 (19.0) | 2.5 (63.5) | 4 (101.6) |
| | 3/4 NPT | 4.5 (114.3) | 6 (152.4) | | | | |
| | | 7.5 (190.5) | 9 (228.6) | | | | |
| | | 10.5 (266.7) | 12 (304.8) | | | | |
| | | 13.5 (342.9) | 15 (381.0) | | | | |
| | | 16.5 (419.1) | 18 (457.2) | | | | |
| | 22.5 (571.5) | 24 (609.6) | | | | | |
| | 1 NPT | 2.5 (63.5) | 4 (101.6) | | | | |
| | | 4.5 (114.3) | 6 (152.4) | | | | |
| | | 7.5 (190.5) | 9 (228.6) | | | | |
| | | 10.5 (266.7) | 12 (304.8) | | | | |
| 13.5 (342.9) | | 15 (381.0) | | | | | |
| 16.5 (419.1) | 18 (457.2) | | | | | | |
| 22.5 (571.5) | 24 (609.6) | | | | | | |

3 Thermowells and Bosses

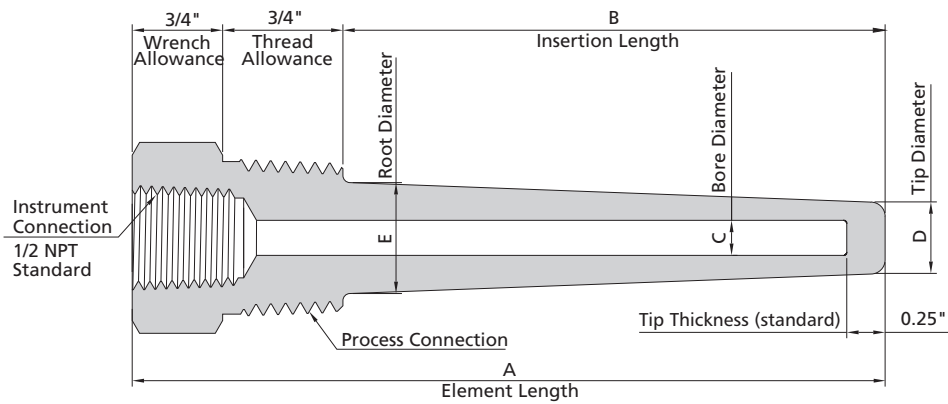
Stepped



Standard Sizes

| Instrument Connection | Process Connection | Dimension, in. (mm) | | | |
|-----------------------|--------------------|---------------------|--------------|--------------|------------|
| | | C | E | B | A |
| 1/2 NPT Standard | 1/2 NPT | 0.260 (6.6) | 0.625 (16.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | 3/4 NPT | 0.260 (6.6) | 0.750 (19.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | 1 NPT | 0.260 (6.6) | 0.875 (22.3) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | | | 22.5 (571.5) | 24 (609.6) | |

Tapered

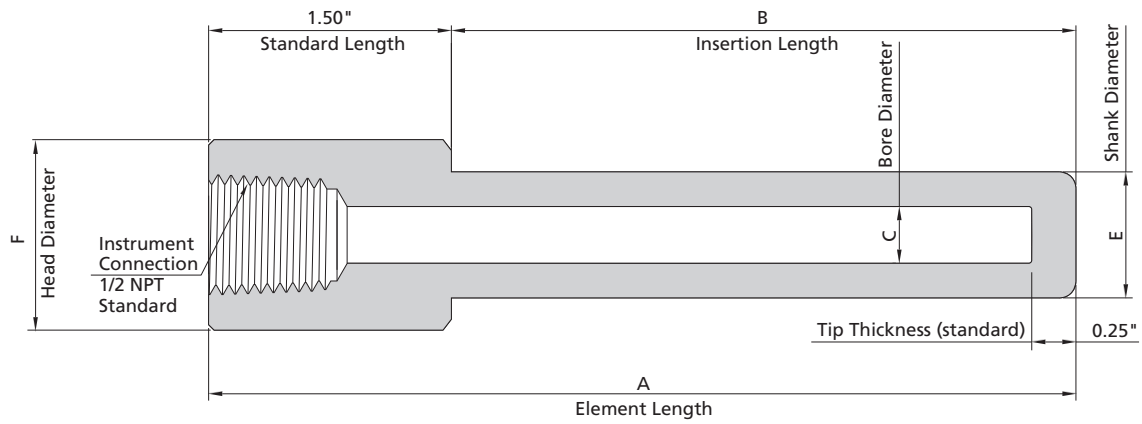


Standard Sizes

| Instrument Connection | Process Connection | Dimension, in. (mm) | | | | |
|-----------------------|--------------------|---------------------|--------------|--------------|--------------|------------|
| | | C | E | D | B | A |
| 1/2 NPT Standard | 3/4 NPT | 0.260 (6.6) | 0.875 (22.3) | 0.625 (16.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | | 16.5 (419.1) | 18 (457.2) |
| | 1 NPT | 0.260 (6.6) | 1.060 (27.0) | 0.625 (16.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | | 16.5 (419.1) | 18 (457.2) |
| | 3/4 NPT | 0.385 (9.8) | 0.875 (22.3) | 0.750 (19.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | | 16.5 (419.1) | 18 (457.2) |
| | 1 NPT | 0.385 (9.8) | 1.060 (27.0) | 0.750 (19.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | | 16.5 (419.1) | 18 (457.2) |
| | | | | | 22.5 (571.5) | 24 (609.6) |

TS series

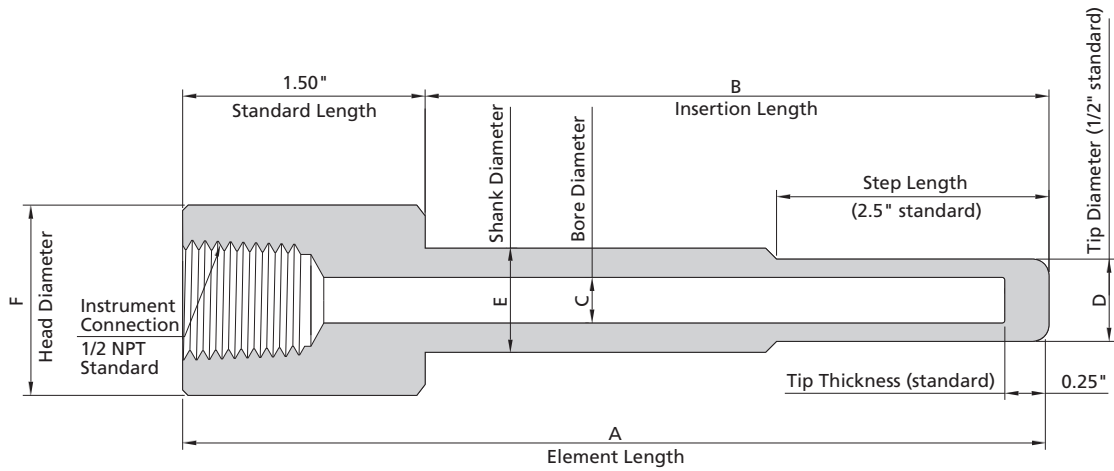
Straight



Standard Sizes

| Instrument Connection | Dimension, in. (mm) | | | | |
|-----------------------|---------------------|--------------|--------------|--------------|------------|
| | C | E | F | B | A |
| 1/2 NPT Standard | 0.260 (6.6) | 0.750 (19.0) | 1.060 (27.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | 0.260 (6.6) | 0.875 (22.3) | 1.315 (33.5) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | | | 22.5 (571.5) | 24 (609.6) | |

Stepped

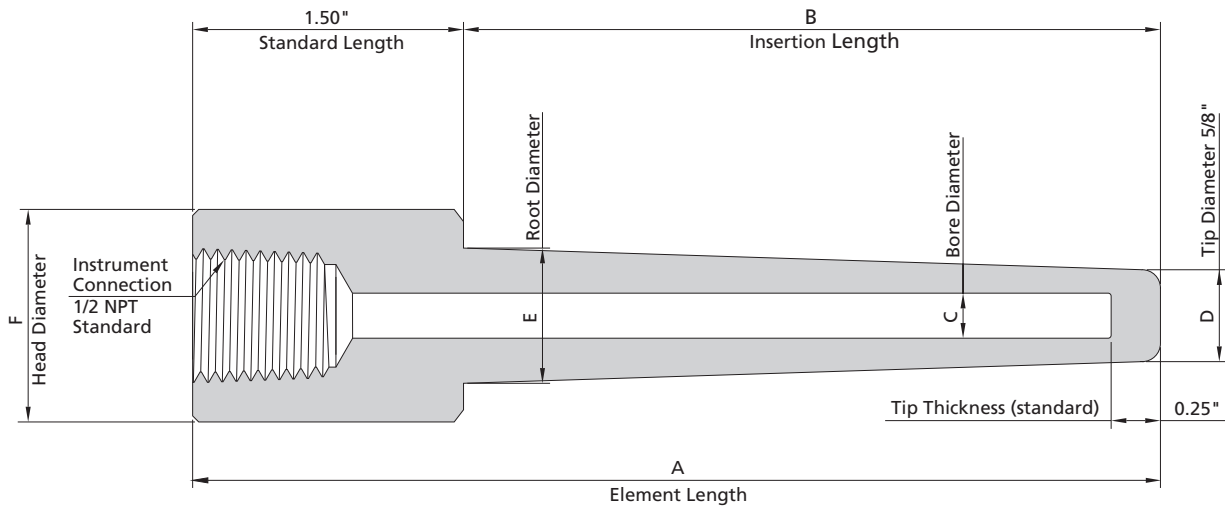


Standard Sizes

| Instrument Connection | Dimension, in. (mm) | | | | |
|-----------------------|---------------------|--------------|--------------|--------------|------------|
| | C | E | F | B | A |
| 1/2 NPT Standard | 0.260 (6.6) | 0.750 (19.0) | 1.060 (27.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | | | | 22.5 (571.5) | 24 (609.6) |
| | 0.260 (6.6) | 0.875 (22.3) | 1.315 (33.5) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | | | | 22.5 (571.5) | 24 (609.6) |

7 Thermowells and Bosses

Tapered

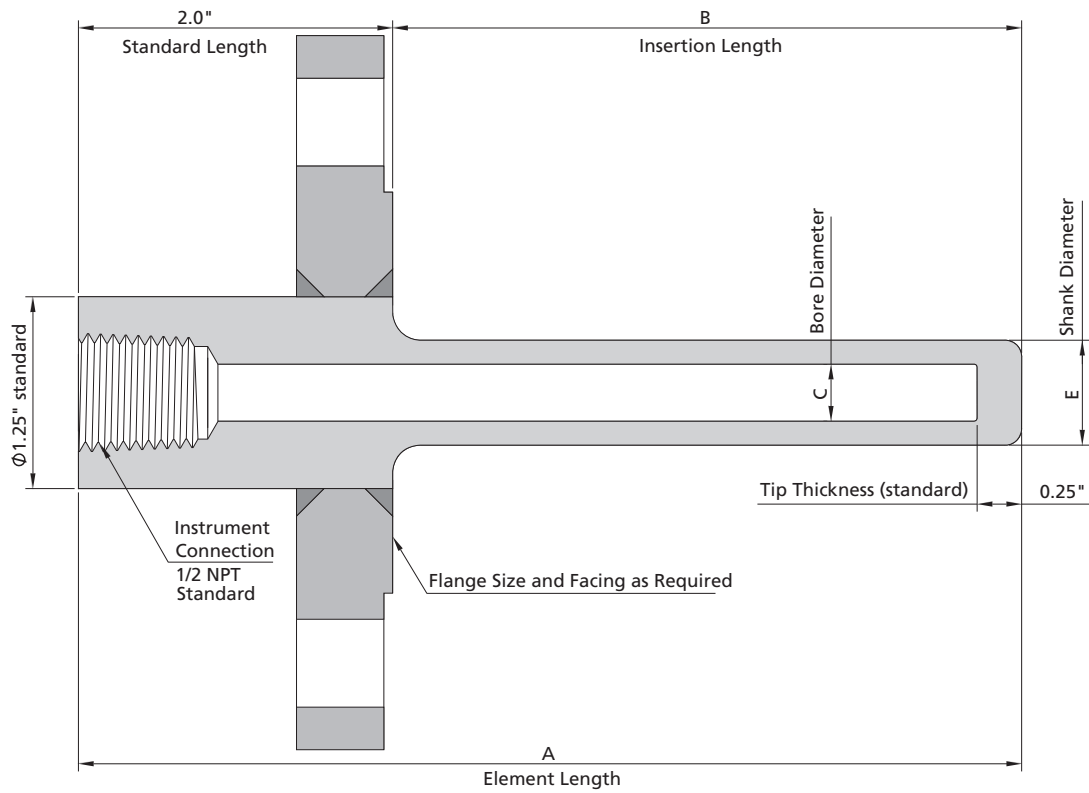


Standard Sizes

| Instrument Connection | Dimension, in. (mm) | | | | |
|-----------------------|---------------------|--------------|--------------|--------------|------------|
| | C | E | F | B | A |
| 1/2 NPT Standard | 0.260 (6.6) | 0.750 (19.0) | 1.060 (27.0) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | | | | 22.5 (571.5) | 24 (609.6) |
| | 0.260 (6.6) | 1.060 (27.0) | 1.315 (33.5) | 2.5 (63.5) | 4 (101.6) |
| | | | | 4.5 (114.3) | 6 (152.4) |
| | | | | 7.5 (190.5) | 9 (228.6) |
| | | | | 10.5 (266.7) | 12 (304.8) |
| | | | | 13.5 (342.9) | 15 (381.0) |
| | | | | 16.5 (419.1) | 18 (457.2) |
| | | | | 22.5 (571.5) | 24 (609.6) |

TF series

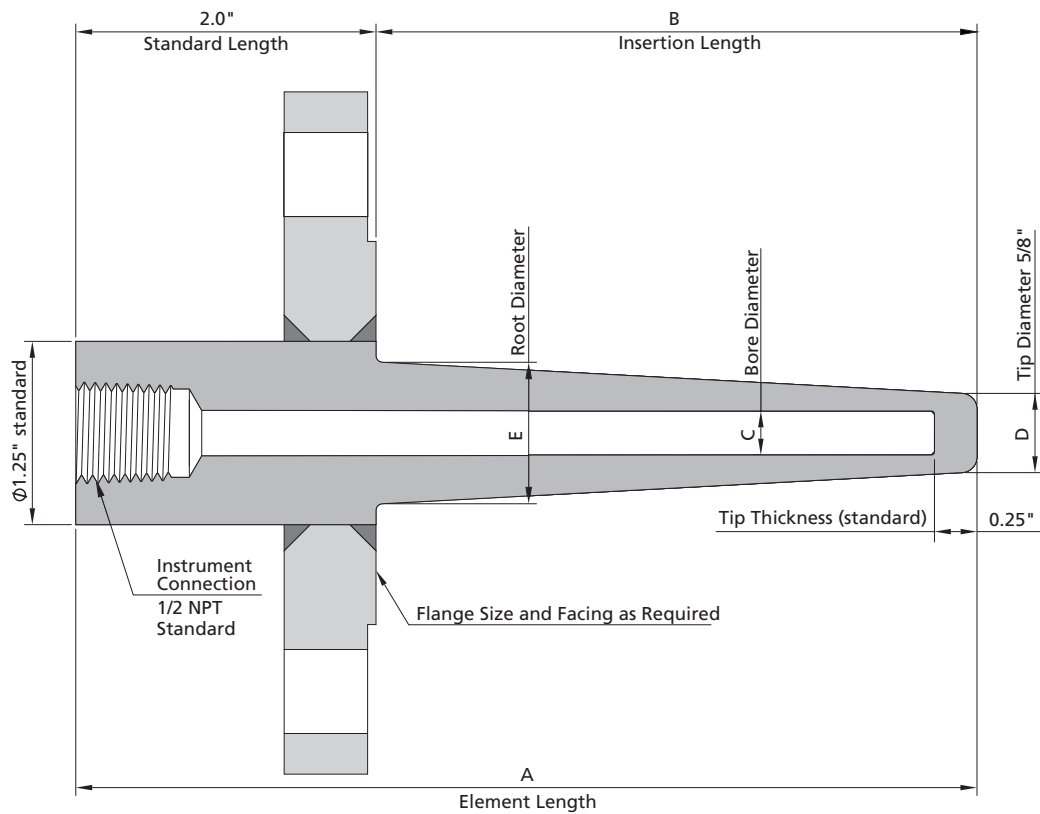
Straight



Standard Sizes

| Instrument Connection | Process Connection | Dimension, in. (mm) | | | |
|-----------------------|-------------------------------------|---------------------|--------------|------------|------------|
| | | C | E | B | A |
| 1/2 NPT Standard | 1 Flange Raised Face ANSI Class 150 | 0.260 (6.6) | 0.750 (19.0) | 4 (101.6) | 6 (152.4) |
| | | | | 7 (177.8) | 9 (228.6) |
| | | | | 10 (254.0) | 12 (304.8) |
| | | | | 13 (330.2) | 15 (381.0) |
| | | | | 16 (406.4) | 18 (457.2) |
| | | 0.385 (9.8) | 0.875 (22.3) | 22 (558.8) | 24 (609.6) |
| | | | | 4 (101.6) | 6 (152.4) |
| | | | | 7 (177.8) | 9 (228.6) |
| | | | | 10 (254.0) | 12 (304.8) |
| | | | | 13 (330.2) | 15 (381.0) |
| | | | | 16 (406.4) | 18 (457.2) |
| | | | | 22 (558.8) | 24 (609.6) |

Tapered

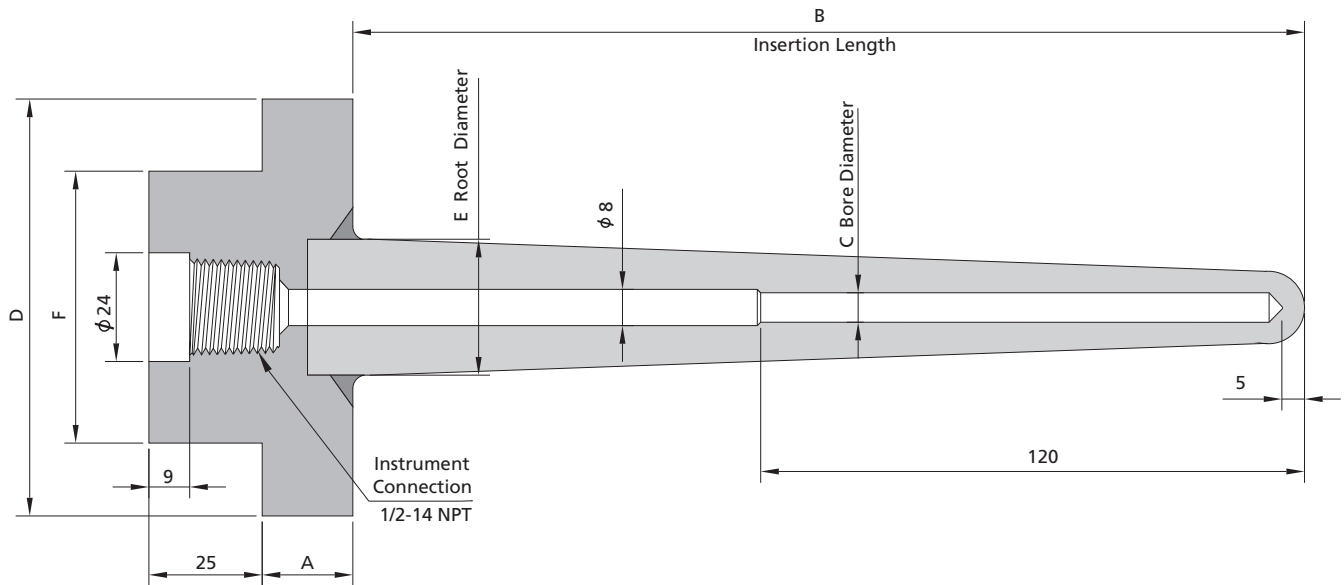


Standard Sizes

| Instrument Connection | Process Connection | Dimension, in. (mm) | | | |
|-----------------------|---|---------------------|--------------|------------|------------|
| | | C | E | B | A |
| 1/2 NPT Standard | 1 Flange Raised Face ANSI Class 150 | 0.260 (6.6) | 1.060 (27.0) | 4 (101.6) | 6 (152.4) |
| | | | | 7 (177.8) | 9 (228.6) |
| | | | | 10 (254.0) | 12 (304.8) |
| | | | | 13 (330.2) | 15 (381.0) |
| | | | | 16 (406.4) | 18 (457.2) |
| | | | | 22 (558.8) | 24 (609.6) |
| | 1 1/2 Flange Raised Face ANSI Class 150 | | | 4 (101.6) | 6 (152.4) |
| | | | | 7 (177.8) | 9 (228.6) |
| | | | | 10 (254.0) | 12 (304.8) |
| | | | | 13 (330.2) | 15 (381.0) |
| | | | | 16 (406.4) | 18 (457.2) |
| | | | | 22 (558.8) | 24 (609.6) |

TJ series

Tapered

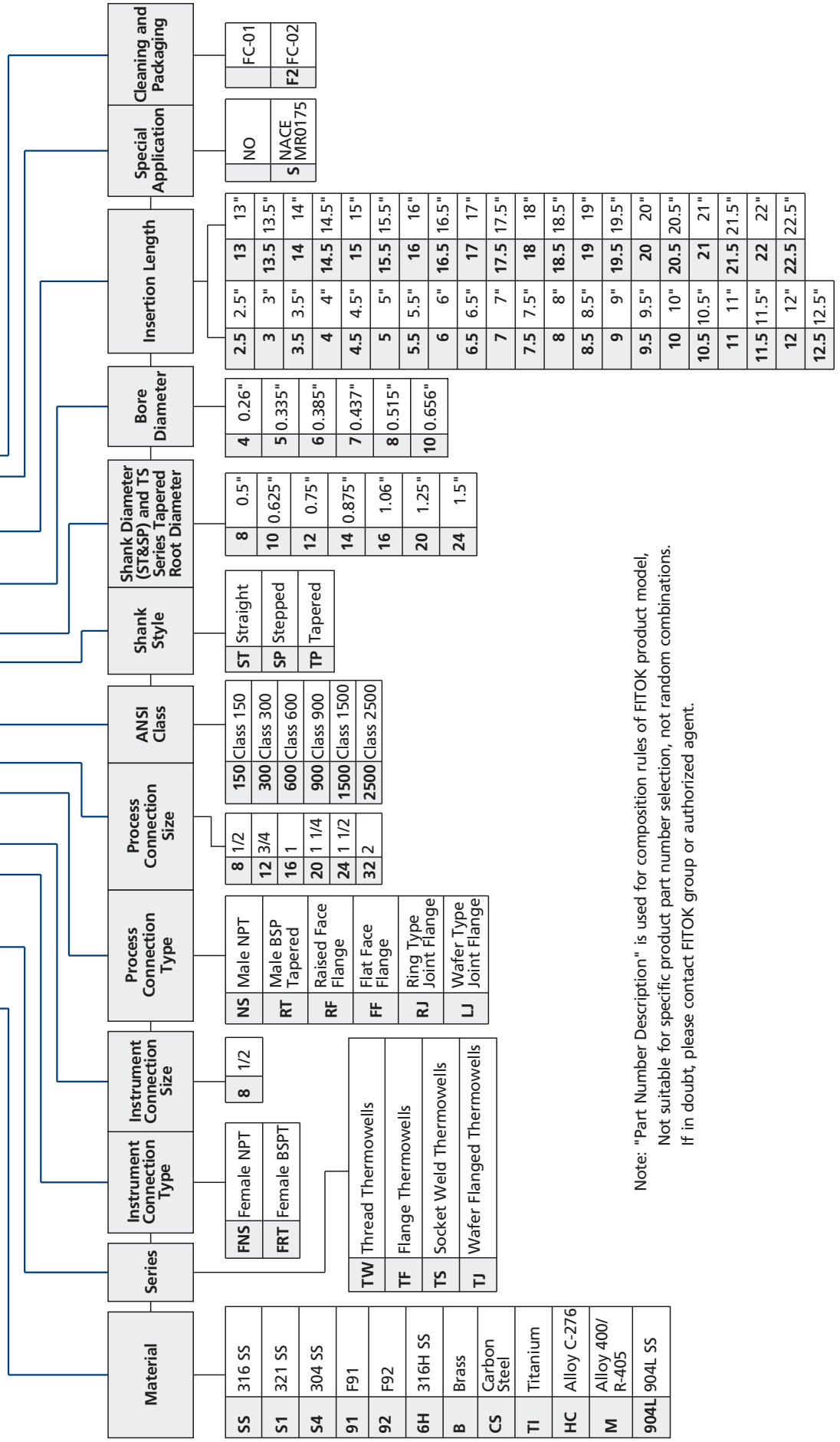


Standard Sizes

| Instrument Connection | Process Connection | Dimension, mm | | | | | | Application Liquid flow rate is less than 8m/s; Gas flow rate is less than 40m/s |
|-----------------------|---|----------------|----|-----|----|--|--|--|
| | | C | E | B | A | D | F | |
| 1/2 NPT Normative | NPS 1 1/2 Flange Raised Face ANSI Class 300 | 6.5 | 30 | 215 | 15 | 73 | 48 | Only apply to installation of pipeline |
| | | | | 240 | | | | |
| | | | | 290 | | | | |
| | | | | 340 | | | | |
| | | | | 390 | | | | |
| | 440 | | | | | | | |
| | NPS 2 Flange Raised Face ANSI Class 300 | Base on Design | 20 | 92 | 60 | Only apply to installation of pipeline | Only apply to installation of equipment and vessel | |

Part Number Description

SS - TW - FNS8 - RF12150 - ST10 - 6 - 4.5 - SF2



Note: "Part Number Description" is used for composition rules of FITOK product model.
 Not suitable for specific product part number selection, not random combinations.
 If in doubt, please contact FITOK group or authorized agent.

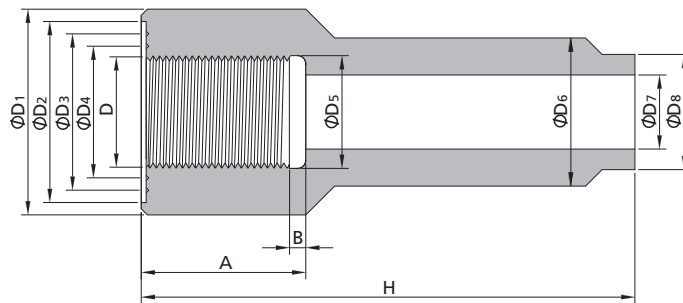
Bosses

BS Series

Features

- Working pressure up to: 1500 psig (104 bar)
- Solid bar stock boss
- Variety of end connections

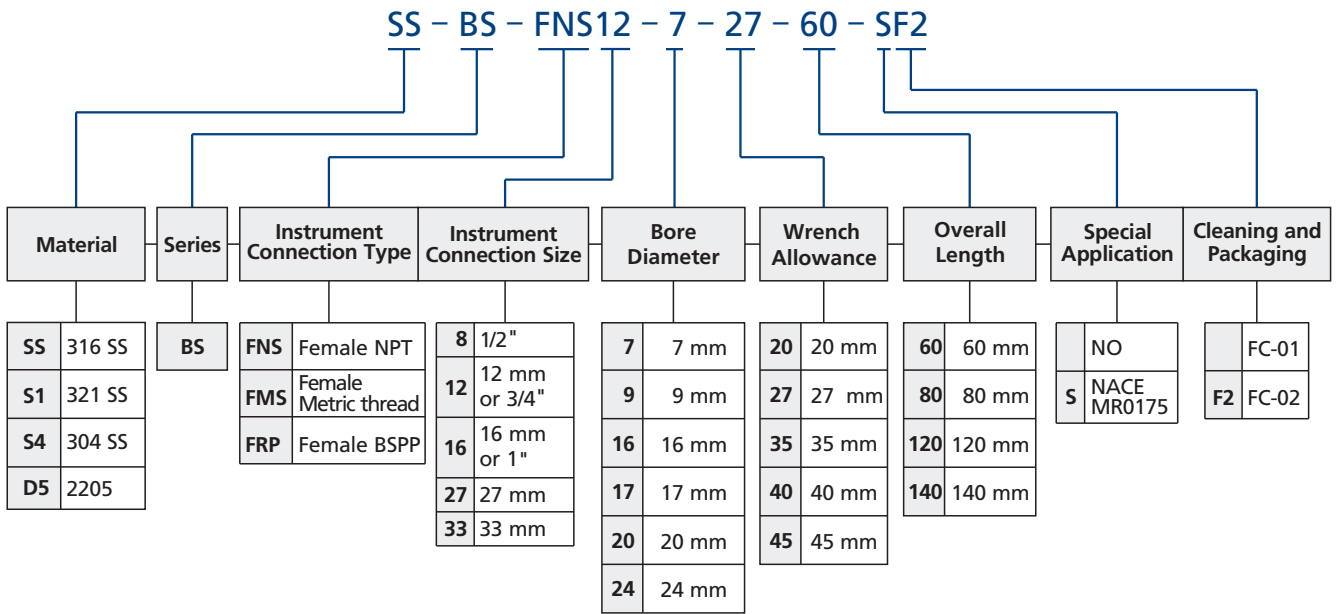
Dimensions



| End Connection | Dimensions (mm) | | | | | | | | | | | Basic Ordering Number | |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----|---|-----------------------|---------------------|
| | D | ØD ₁ | ØD ₂ | ØD ₃ | ØD ₄ | ØD ₅ | ØD ₆ | ØD ₇ | ØD ₈ | A | B | | H |
| M12 x 1.5 | | 32 | 28 | 23 | 17 | 12.3 | 18 | 7 | 12 | 27 | 3 | 60 | -BS-FMS12-7-27-60 |
| | | | | | | | | | | | | 120 | -BS-FMS12-7-27-120 |
| M16 x 1.5 | | 36 | 32 | 27 | 21 | 16.3 | 18 | 9 | 14 | 27 | 3 | 60 | -BS-FMS16-9-27-60 |
| | | | | | | | | | | | | 120 | -BS-FMS16-9-27-120 |
| M27 x 2.0 | | 47 | 43 | 38 | 32 | 27.4 | 28 | 17 | 22 | 40 | 4 | 60 | -BS-FMS27-17-40-60 |
| | | | | | | | | | | | | 120 | -BS-FMS27-17-40-120 |
| M33 x 2.0 | | 55 | 51 | 44 | 38 | 33.4 | 36 | 24 | 30 | 40 | 5 | 60 | -BS-FMS33-24-40-60 |
| | | | | | | | | | | | | 120 | -BS-FMS33-24-40-120 |
| 1/2 Female BSPP | | 39 | 35 | 31 | 25 | 21.5 | 27 | 16 | 21 | 35 | 4 | 60 | -BS-FRP8-16-35-60 |
| | | | | | | | | | | | | 120 | -BS-FRP8-16-35-120 |
| 3/4 Female BSPP | | 47 | 43 | 38 | 32 | 27.0 | 31 | 20 | 25 | 40 | 4 | 60 | -BS-FRP12-20-40-60 |
| | | | | | | | | | | | | 120 | -BS-FRP12-20-40-120 |
| 1 Female BSPP | | 55 | 51 | 44 | 38 | 34.0 | 41 | 30 | 35 | 45 | 6 | 60 | -BS-FRP16-30-45-60 |
| | | | | | | | | | | | | 120 | -BS-FRP16-30-45-120 |
| M27 x 2.0 | | 47 | 43 | | | 27.4 | 28 | 14 | 22 | 20 | 4 | (80) | -BS-FMS27-14-20-80 |
| | | | | | | | | | | | | (140) | -BS-FMS27-14-20-140 |

- The boss with H in brackets shall be used for the thermometer with movable male thread (such as bimetal therm).
- When the boss is used for bimetal therm, the sealing slot at D₃ and D₄ shall not be processed.
- The boss of M27 x 2 shall be used for TIC or RTD when a=40, used for bimetal therm when a=20.
- The boss with H=120 or 140 shall be used for thermo-insulation objects.
- Dimensions are for reference only and are subject to change.
- Sizes and types listed are standard. Other sizes and types are available on request.
- Materials same as TW series, add the material designator as a prefix to the basic ordering number to get the complete ordering number.

Part Number Description



Note: "Part Number Description" is used for composition rules of FITOK product model, Not suitable for specific product part number selection, not random combinations. If in doubt, please contact FITOK group or authorized agent.

FITOK Group

FITOK GmbH (Headquarter)

Sprendlinger Landstr. 115, 63069 Offenbach am Main, Germany
Tel.: +49 69 8900 4498 Fax: +49 69 8900 4495

FITOK, Inc.

13843 North Promenade Blvd., Suite 750, Stafford, Texas 77477, USA
Tel.: +1 281 888 0077 Fax: +1 281 582 4051

FITOK Incorporated

1-4F, Block C, Zone E, Yingtailong Industrial Park, Dalang Street,
Longhua District, Shenzhen, 518109, China
Tel.: +86 755 2803 2500 Fax: +86 755 2803 2619

FITOK Middle East Oil Equipment Trading LLC

208-209, Makateb Tower, Airport Road, P.O.Box 185412, Deira, Dubai, UAE
Tel.: +971 4 2959 853 Fax: +971 4 2959 854

info@fitokgroup.com
www.fitokgroup.com

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