

# Accessories

Autoclave Engineers offers a complete selection of accessories to complete your system requirements.

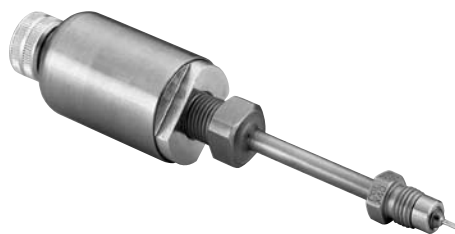
Components such as thermocouples and thermowells are used for monitoring and controlling temperatures in systems with operating pressures up to 100,000 psi (6895 bar).

Safety head assemblies are used to protect systems and pressure vessels from over-pressure conditions. Rupture discs are available in various pressure ranges and material options suitable for the application.

Pressure gauges are used to monitor and control pressure. Pressure gauges are available in two sizes, 4-1/2" and 6" (114.3 mm and 152.4 mm), and ranges from 0 to 80,000 psi (0 to 5116 bar). Optional electrical contact faces for pressure control are used to set high and low limits. Gauges are standard panel mount or can be flush mounted with an optional flush mount kit.

Gauge/instrument snubbers provide superior protection without compromising instrument accuracy or reaction time. Available with male and female connections in 1/4" and 3/8" sizes.

Accessories are also available as specials or non-standard items. Contact your local sales representative for more information.



**Autoclave  
Engineers**

Fluid Components  
Division of Snap-tite, Inc.  
[www.autoclave.com](http://www.autoclave.com)

# Accessories - Pencil-type Thermocouples

## Pressures to 15,000 psi (1034 bar)

Thermocouples provide reliable temperature measurement within a system.

The design permits installation of the element in direct contact with the fluid stream, thereby providing reliable temperature measurement. The quick-connector affords system flexibility. The thermocouple tip has a grounded-type junction.

### Materials

Precision-molded plastic connectors have heavy duty, spring-loaded jack inserts for positive contact. The sheath is type 316 stainless steel with 316 SS ferrule and gland. We offer a choice of iron constantan (J) or chromel-alumel (K) type elements (please specify when ordering). Basic assembly includes 1/8" Autoclave Speedbite connection with adapters for other connection sizes.

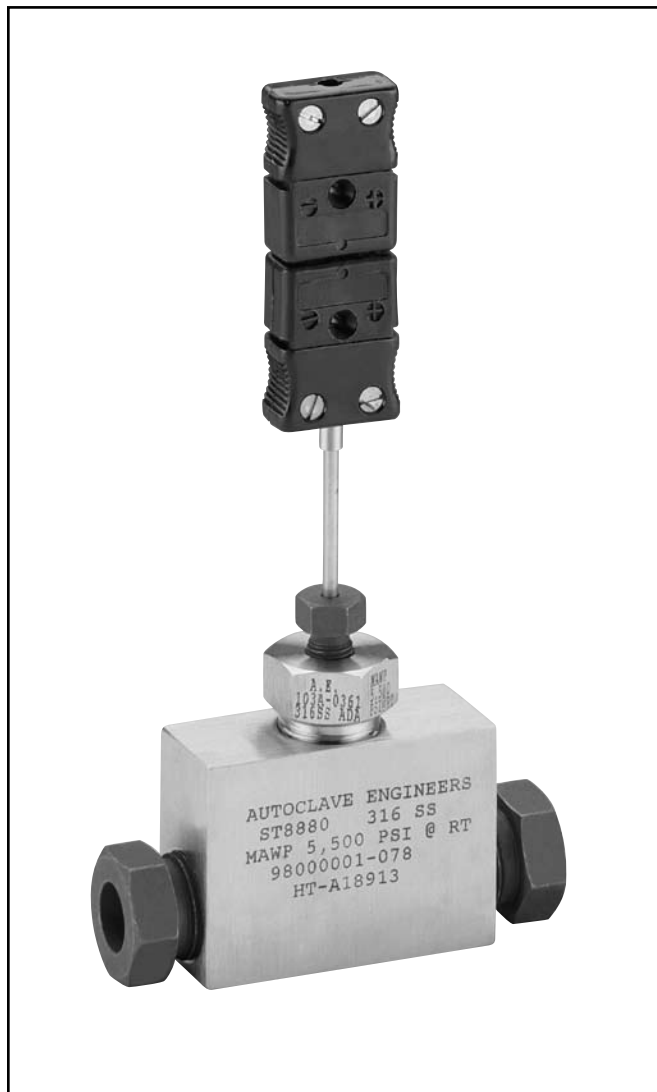
### Pressure/Temperature Ratings

Ratings to 15,000 psi (1034 bar) maximum working pressure. Temperature rating based on connection style. Low pressure Speedbite connection not recommended below 0°F (-17.8°C) or above 650°F (343°C)

### Ordering Information

**Catalog order numbers** in the table refer to the complete assembly. Add suffix "J" for iron constantan element or "K" for chromel-alumel. To order a basic thermocouple with plug/jack assembly and connection (**without through or angle block**), change last digit in order number to "0" and specify sheath length if different from standard 3.62" (91.94 mm) length.

**Ordering examples:** TP4400K 6" (152.4 mm) denotes basic thermocouple to fit into a 1/4" Autoclave SpeedBite connection with chromel-alumel element and 6" (152.4 mm) sheath. TP 4401K denotes the above unit complete with through-type block and standard 3.62" (91.94 mm) sheath.



### Thermocouple Specification Table

Calibration Type	Type of Thermocouple	Temperature Range	Comments
J	Iron (+) Constantan (-)	32 - 1400°F (0 - 760°C)	Reducing atmosphere recommended. Iron leg subject to oxidation to elevated temperatures- use larger gauge to compensate.
K	Chromel (+) Alumel (-)	-328 - 2300°F (-200 - 1260°C)	Well suited for oxidizing atmosphere. Most commonly used calibration type.

# Accessories - Pencil-type Thermocouples

Catalog Number	Fits Connection Type	Tubing Size Inches (mm)	Dimensions - inches (mm)						Block Thickness	Fitting Pattern
			A	B	C	D	E	H		

## Through-Type

TP2201	W125	1/8	1.38	0.69	0.31	3.62	1.00	7.18	0.50	See Figure 1
		(3.18)	(35.05)	(17.53)	(7.87)	(91.95)	(25.40)	(182.37)	(12.70)	
TP4401	SW250	1/4	1.75	0.88	0.44	3.62	1.19	7.25	0.62	
		(6.35)	(44.45)	(22.35)	(11.18)	(91.95)	(30.23)	(184.15)	(15.75)	
TP6601	SW375	3/8	2.00	1.00	0.53	3.62	1.38	7.31	0.75	
		(9.52)	(50.80)	(25.40)	(13.46)	(91.95)	(35.05)	(185.67)	(19.05)	
TP8801	SW500	1/2	2.50	1.25	0.53	3.62	1.75	7.44	1.00	
		(12.70)	(63.50)	(31.75)	(13.46)	(91.95)	(44.45)	(188.98)	(25.40)	

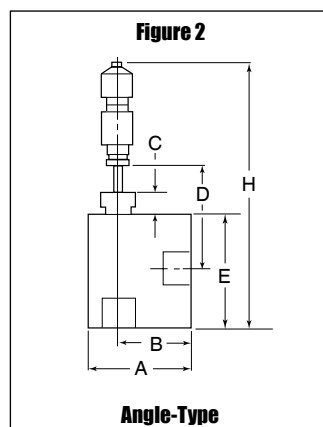
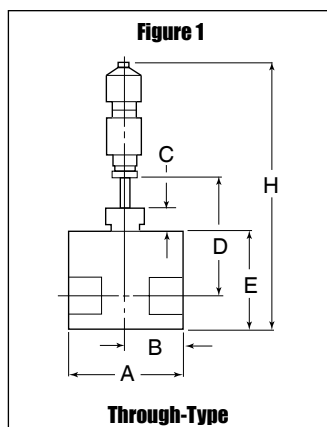
## Angle-Type

TP2202	W125	1/8	1.00	0.75	0.31	3.62	1.38	7.62	0.50	See Figure 2
		(3.18)	(25.40)	(19.05)	(7.87)	(91.95)	(35.05)	(193.55)	(12.70)	
TP4402	SW250	1/4	1.19	0.88	0.44	3.62	1.75	7.81	0.62	
		(6.35)	(30.23)	(22.35)	(11.18)	(91.95)	(44.45)	(198.37)	(15.75)	
TP6602	SW375	3/8	1.38	1.00	0.53	3.62	2.00	7.94	0.75	
		(9.52)	(35.05)	(25.40)	(13.46)	(91.95)	(50.80)	(201.68)	(19.05)	
TP8802	SW500	1/2	1.75	1.25	0.53	3.62	2.50	8.19	1.00	
		(12.70)	(44.45)	(31.75)	(13.46)	(91.95)	(63.50)	(208.03)	(25.40)	

Note: All thermocouples are furnished complete with connection components unless otherwise specified.

All dimensions for reference only and subject to change.  
For prompt service, Autoclave stocks select products. Consult your local representative.

Maximum pressure rating is based on the lowest rating of any component.  
Actual working pressure may be determined by tubing pressure rating, if lower.



Note: Tee or elbow is included in standard catalog number.

# Accessories - Sheath-type Thermocouples

## Pressures to 60,000 psi (4137 bar)

Thermocouples provide reliable temperature measurement within a fluid system.

Similar to low pressure thermocouples, this design also permits direct temperature monitoring at any point in a fluid system. The sheath type thermocouple features grounded junction and rapid response - 100 milliseconds or less at 63.3% of a step charge.

### Temperature Rating

Rating to 2,000 °F (1093°C) at tip of thermocouple. (Refer to adjacent Pressure/Temperature chart for elevated temperatures.) Minimum operating temperature 0°F (-17.8°C)

### Sheath Length

Differs for each size connection for optimum tip contact with fluid stream.

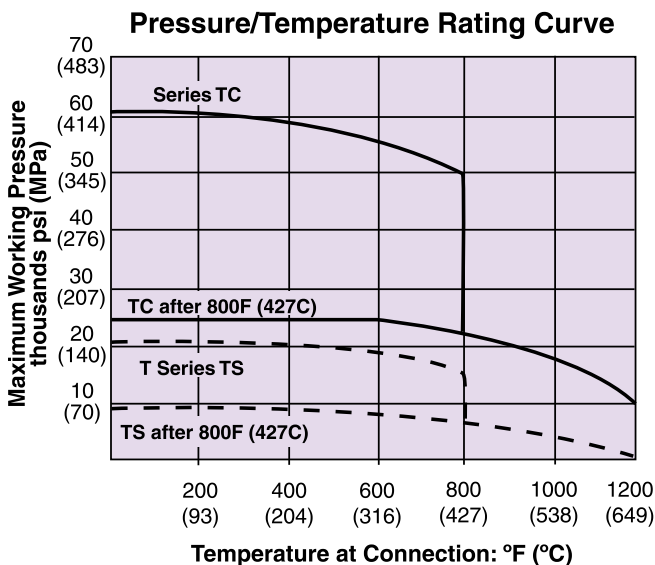
### Materials

Bodies high strength stainless steel. 316 sheath brazed into body with gold-nickel alloy brazing material. An aluminum terminal housing is threaded into the body for ready access to terminals. An o-ring seal provides moisture protection.

### Ordering Information

To order thermocouples for use in standard Autoclave tees or crosses, use order numbers listed in table (**fittings not included as standard**). For custom length sheaths, to extend through a vessel wall or cover, calculate sheath length as follows:

1. Add vessel wall or cover thickness to the distance the sheath will extend into vessel.
2. When using a basic 1/4" Autoclave connection, subtract dimension "M" for proper sheath length to order.
3. For all other connection sizes, add dimension "N" to measurement obtained in step 1.
4. Order a custom length sheath by adding desired length in inches as suffix to order number.



Standard collar and gland are cold worked 316 SS for use up to 1200°F (649°C). When cold worked 316 SS collar and gland are used, the physical properties are permanently altered after use above 800°F (427°C).

CAUTION: While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling, and age of the O-ring. FREQUENT INSPECTION SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.

CAUTION: See appropriate pressure section in reference to proper selection of tubing.

# Accessories - Sheath-type Thermocouples

Catalog Number	Fits Connection Type	Tubing Size Inches (mm)	Element Type	Dimensions - inches (mm)				Fitting Pattern
				L	M	N	H	

## Series TS 20,000 psi (1379 bar)

TSJ4	SF250CX	1/4	iron constantan	0.28	0.95		5.78	See Figure 1
TSK4		(3.18)	chromel-alumel	(7.11)	(24.13)		(146.81)	
TSJ6	SF375CX	3/8	iron constantan	1.19		0.19	6.67	See Figure 2
TSK6		(9.52)	chromel-alumel	(30.23)		(4.83)	(166.88)	
TSJ9	SF562CX	9/16	iron constantan	1.19		0.13	6.50	
TSK9		(14.28)	chromel-alumel	(30.23)		(3.30)	(165.10)	
TSJ12	SF750CX	3/4	iron constantan	2.00		0.50	6.88	
TSK12		(19.05)	chromel-alumel	(50.80)		(12.70)	(174.75)	
TSJ16	SF1000CX	1	iron constantan	2.62		0.57	6.94	
TSK16		(25.4)	chromel-alumel	(66.55)		(14.48)	(176.28)	

## Series TC 60,000 psi (4137 bar)

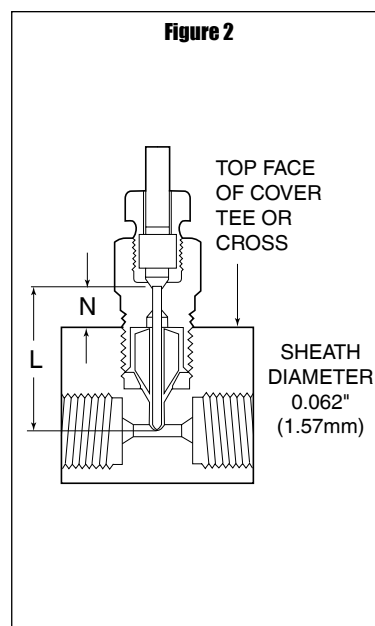
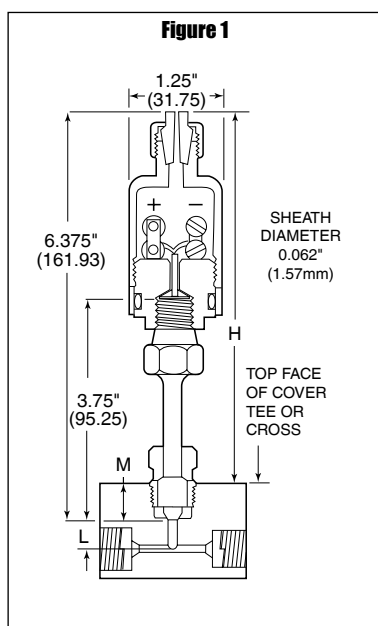
TCJ4	F250C	1/4 (3.18)	iron constantan	0.38 (9.65)	0.50 (12.70)		5.88 (149.35)	See Figure 1
TCK4			chromel-alumel					
TCJ6	F375C	3/8 (9.52)	iron constantan	1.38 (35.05)		0.32 (8.13)	6.69 (169.93)	See Figure 2
TCK6			chromel-alumel					
TCJ9	F562C	9/16 (14.28)	iron constantan	1.62 (41.15)		0.25 (6.35)	6.62 (168.15)	
TCK9			chromel-alumel					

Note: All thermocouples are furnished complete with connection components unless otherwise specified.

All dimensions for reference only and subject to change.  
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Basic assembly includes 1/4" connection with adapters for other O.D. tube sizes.

Maximum pressure rating is based on the lowest rating of any component.  
Actual working pressure may be determined by tubing pressure rating, if lower.



Note: The tee shown in both figures are for reference only. Tee is not included.

## Accessories - Thermowells

### Pressures to 20,000 psi (1379 bar)

Thermowells are used to provide isolation between a temperature sensor and the environment, such as liquid or gas. Thermowells protect the sensor from pressure, corrosion, abrasion or vibration caused by the process medium. Thermowells allow the temperature sensor to be removed and replaced without compromising either the ambient region or the process.

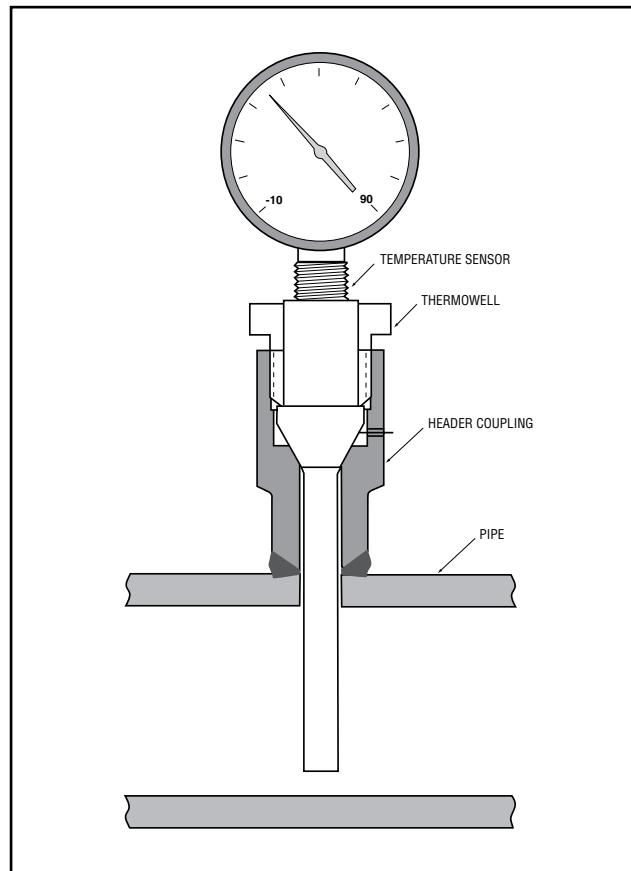
Autoclave manufactures thermowells from solid bar stock to accommodate applications in the petrochemical, chemical, refining, power and other process industries for many years.

Autoclave manufactures 316SS thermowells capable of connecting to a 1" (SF1000CX) Autoclave female medium pressure connection.

Care must be taken in determining the material used for the thermowell as well as other factors. Autoclave offers design assistance that includes pressure, temperature and vibration effect of the fluids. This vibration can cause well stem failure. Standard and special thermowell materials available:

- 316 Stainless Steel
- Hastelloy
- Inconel
- Connection gland included

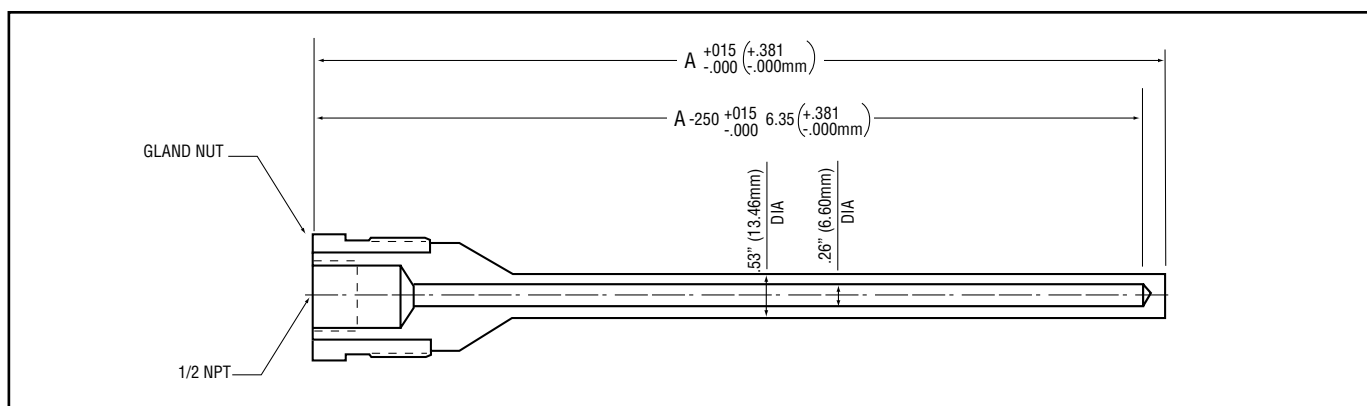
To order Autoclave thermowell assemblies, please refer to our order guide to assist in determining your needs. Contact your local representative or the factory for technical assistance and application suggestions



**Typical Thermowell Assembly**

## Ordering Information

Catalog Number	Dimension "A" in (mm)	Pressure Rating PSI (bar)
TW02.75	2.75 (70.68)	20,000 (1379)
TW03.12	3.12 (79.25)	20,000 (1379)
TW03.86	3.86 (98.04)	20,000 (1379)
TW04.25	4.25 (107.95)	20,000 (1379)
TW04.50	4.50 (114.30)	20,000 (1379)
TW05.50	5.50 (139.70)	20,000 (1379)
TW05.75	5.75 (146.05)	20,000 (1379)
TW06.25	6.25 (158.75)	20,000 (1379)
TW07.00	7.00 (177.80)	20,000 (1379)
TW07.50	7.50 (190.50)	20,000 (1379)
TW010.00	10.00 (254.00)	20,000 (1379)
TW012.00	12.00 (304.80)	20,000 (1379)



## Accessories - Universal Safety Heads

### Pressures to 110,000 psi (7584 bar)

**Safety Heads/Rupture Discs** - Safety Heads and Rupture Discs offer an economical and dependable relief port to guard against system over-pressure.

Autoclave Engineers offers universal safety heads in three series compatible in orifice size and maximum pressure rating with Autoclave Low Pressure, Medium Pressure and High Pressure valves, fittings and tubing.

**Autoclave Low Pressure Series SS:** Autoclave SpeedBite Ermeto-type tube connection, maximum rupture pressures to 15,000 psi (1034 bar).

**Autoclave Medium Pressure Series CSX:** Autoclave Medium-Pressure coned-and-threaded tube connection, maximum rupture pressures to 20,000 psi (1379 bar).

**Autoclave High Pressure Series CS:** Autoclave High Pressure coned-and-threaded tube connection, maximum rupture pressure to 110,000 psi (7584 bar).

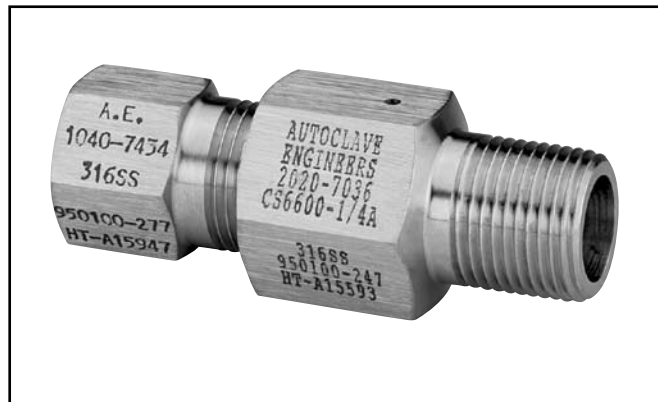
The 3/16F style features a 3/16" blow-out diameter and a flat seat which can be ordered in pressure range from 200 to 27,000 psi (13.8 to 1862 bar).

The 1/4A style features a 1/4" blow-out diameter and an angular seat which can be ordered in pressures from 900 to 60,000 psi (62 to 4137 bar).

The 1/4F style features a 1/4" blow-out diameter and a flat seat which is used for pressure above 60,000 psi (4137 bar).

The 1/2F style features a 1/2" blow-out diameter and a flat seat which can be ordered in pressures from 500 to 10,000 psi (35 to 690 bar).

**ASME Safety Head** - Autoclave now has an ASME Section VIII Div. 3 safety head assembly rated to 115,000 psi (7929 bar). Contact the factory or your local sales representative for details and ordering information.



### Materials and Features

- Non-rotating double-cone plug design avoids galling and scoring of safety head or connection during installation. Reduces likelihood of leakage.
- Interchangeable hold-down rings permit use of several different sizes and types of rupture discs in a single safety head. Accommodates discs with rupture pressures as low as 90 psi (6.2 bar) and ranging to 60,000 psi (4137 bar) and above.
- Installs in any standard Autoclave coupling, elbow, cross or tee.
- Cold-worked Type 316 SS body hold down gland and plug, all series.
- Hold down rings are corrosion resistant stainless steel.

*Consult Local Sales Representative for safety head assemblies rated above 60,000 psi (4137 bar).*



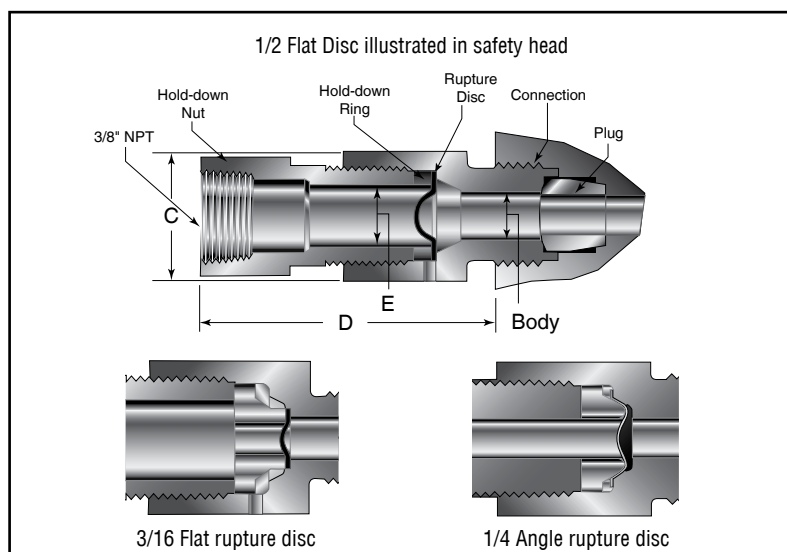
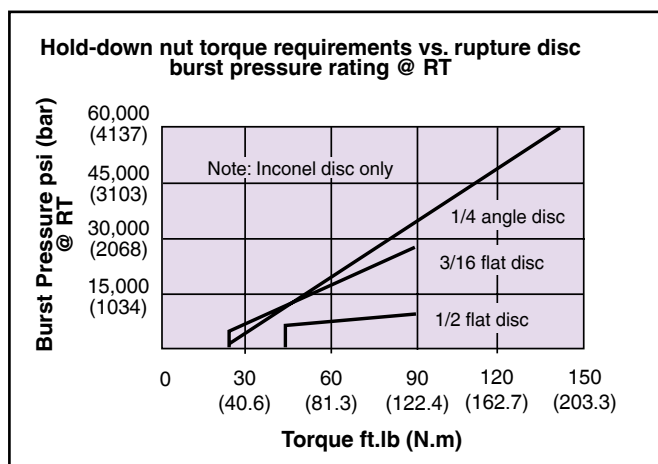
## Ordering Information

To order an Autoclave Universal Safety Head, use the catalog order number from table. ADD THE SIZE OF THE RUPTURE DISC YOU WANT AS A SUFFIX TO THE CATALOG NUMBER; SUCH AS CS6600-1/4A. Then order desired rupture discs from rupture disc section. (This is important since the disc size determines which hold-down ring will be furnished with the safety head.) Note: Plug is included.

### Hold-down nut torque values

Torque@ Minimum Pressure		Torque@ Maximum Pressure		Rupture Disc inches	Hold-down Ring Part Number
Ft. lb. (N.m)	psi (bar)	Ft. lb. (N.m)	psi (bar)		
20 (27.1)	5,000 (345)	90 (122.0)	26,500 (1827)	3/16 Flat*	112A-0439
40 (54.2)	4,000 (276)	90 (122.0)	10,000 (690)	1/2 Flat	1050-7434
20 (27.1)	4,000 (276)	140 (189.8)	60,000 (4137)	1/4 Angle	108A-0439

3/16 flat seat disc cannot be used with safety head assemblies SS6600, SS8600, 40CS9600 and CSX9600. Torque values for intermediate pressures may be linearly interpolated. Use minimum torque value for pressures lower than those shown.



Catalog Number Without Disc	Body Part Number	Plug Part Number	Hold-down Gland Part Number	Fits Connection Type	Fitting Pressure Rating psi (bar)	Body Torque Ft.lb. (N.m)	Plug Orifice inches (mm)	Body Orifice inches (mm)	Rupture Disc Size inches (mm)			Dimensions inches (mm)	
									3/16F Port E*	1/4A Port E*	1/2F Port E*	C	D

### Low-Pressure

SS2600	2010-7035	101A-0434	3/16 & 1/2 Flat 1040-7434	W125	15,000 (1034.2)	15 (20.3)	0.094 (2.39)	0.125 (3.15)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)
SS4600	2020-7035	102A-0434		SW250	15,000 (1034.2)	15 (20.3)	0.125 (3.18)	0.250 (6.35)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)
SS6600	2030-7035	103A-0434		SW375	15,000 (1034.2)	15 (20.3)	0.250 (6.35)	0.375 (9.53)	NA	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)
SS8600	2040-7035	104A-0434	1/4 Angle 1030-0241	SW500	10,000 (690.0)	20 (22.1)	0.375 (9.53)	0.375 (9.53)	NA	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)

Port E\* - Minimum disc blow-out diameter of hold down ring

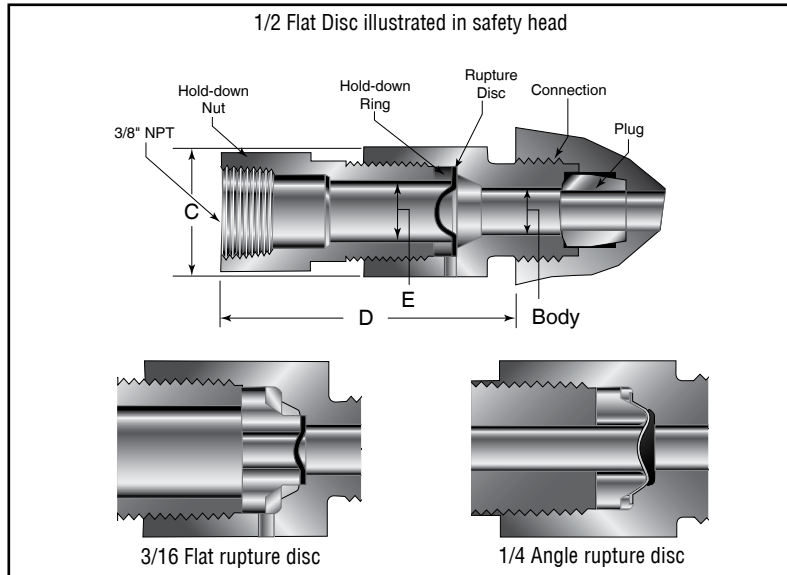
Note: Interchangeable hold-down rings permit use of several different sizes and types of rupture disc in a single safety head.

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

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For prompt service, Autoclave stocks select products. Consult your local representative.

All general terms and conditions of sale, including limitations of our liability, apply to all products and services sold.



Catalog Number Without Disc	Body Part Number	Plug Part Number	Hold-down Gland Part Number	Fits Connection Type	Fitting Pressure Rating psi (bar)	Body Torque Ft.lb. (N.m)	Plug Orifice inches (mm)	Body Orifice inches (mm)	Rupture Disc Size inches (mm)			Dimensions inches (mm)	
									3/16F Port E*	1/4A Port E*	1/2F Port E*	C	D

### Medium-Pressure

CSX4600	101A-1731	2010-7823	3/16 & 1/2 Flat 1040-7434	SF250CX	20,000 (1378.9)	15 (20.3)	0.094 (2.39)	0.141 (3.58)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.19 (55.63)
CSX6600	102A-1731	2010-7844		SF375CX	20,000 (1378.9)	20 (27.1)	0.171 (4.34)	0.250 (6.35)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.19 (55.63)
CSX9600	101A-0438	102A-0438	1/4 Angle 1030-0241	SF562CX	20,000 (1378.9)	30 (40.6)	0.312 (7.92)	0.375 (9.53)	NA	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.19 (55.63)

### High-Pressure

CS4600	2010-7036	1030-4877	3/16 & 1/2 Flat 1040-7434	F250C	60,000 (4136.8)	20 (2.8)	0.082 (2.08)	0.125 (3.18)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.25 (57.15)
CS6600	2020-7036	1030-6096		F375C	60,000 (4136.8)	40 (5.5)	0.125 (3.18)	0.219 (5.56)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.25 (57.15)
CS9600	2030-7036	1030-6097		F562C	60,000 (4136.8)	80 (11.1)	0.188 (4.78)	0.281 (7.13)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.19 (30.23)	2.25 (57.15)
40CS9600	2030-7036	101C-7192	1/4 Angle 1030-0241	F562C40	40,000 (2757.9)	80 (11.1)	0.250 (6.35)	0.281 (7.13)	NA	0.25 (6.35)	0.50 (12.7)	1.19 (30.23)	2.25 (57.15)

Port E\* - Minimum disc blow-out diameter of hold down ring

Note: Interchangeable hold-down rings permit use of several different sizes and types of rupture disc in a single safety head.

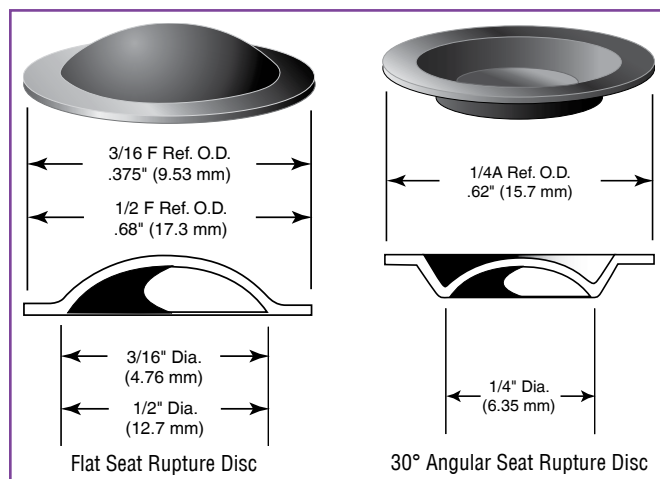
Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

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# Accessories - Prebulged Rupture Discs

## Ordering Information

- Specify quantity, disc size, type, material and temperature.
- Indicate desired rupture rating which should be at least 110% of operating pressure. Manufacturing tolerances are +6% to -3% of nominal rating and will burst at  $\pm 5\%$  of furnished rating. Discs are rated at 72°F (22°C).
- Optional burst tolerance ratings are available upon request. 1/4% and 0% options provide a much closer burst to the stated burst pressure. 0% burst discs have a 0% manufacturing tolerance and a  $\pm 2.5\%$  burst tolerance.
- Minimum order of 6 discs required for materials other than Inconel.
- See next page for standard part numbers.



Disc Material	Disc Size Seat Type	Rupture Pressures Standard Available Range $\pm 5\%$	Maximum Temperature Rating
	Inches	psi (bar)	°F (°C)
Aluminum	3/16 flat	220 to 1,750 (15.2 to 120.7)	250 (121)
	1/4 angle	160 to 2,000 (11.0 to 137.9)	250 (121)
	1/2 flat	90 to 1,000 (6.2 to 68.9)	250 (121)
Silver	3/16 flat	500 to 4,500 (34.5 to 310.3)	250 (121)
	1/4 angle	360 to 6,000 (24.8 to 413.7)	250 (121)
	1/2 flat	190 to 1,700 (13.1 to 117.2)	250 (121)
Hastelloy C	3/16 flat	3,000 to 65,000 (206.8 to 4481.5)	1,000 (538)
	1/4 angle	2,500 to 70,000 (172.4 to 4826.3)	1,000 (538)
	1/2 flat	1,300 to 11,500 (89.6 to 792.9)	1,000 (538)
Nickel	3/16 flat	770 to 20,000 (53.1 to 1378.9)	750 (399)
	1/4 angle	550 to 35,000 (37.9 to 2413.1)	750 (399)
	1/2 flat	300 to 7,500 (20.7 to 517.1)	750 (399)
Monel	3/16 flat	960 to 20,000 (66.2 to 1378.9)	800 (427)
	1/4 angle	690 to 40,000 (47.6 to 2757.9)	800 (427)
	1/2 flat	375 to 7,500 (25.9 to 517.1)	800 (427)
Inconel 600 (Standard)	3/16 flat	1,250 to 20,000 (86.2 to 1378.9)	900 (482)
	1/4 angle	900 to 75,000 (62.1 to 5171.0)	900 (482)
	1/2 flat	500 to 10,000 (34.5 to 690.0)	900 (482)
Type 316 Stainless Steel	3/16 flat	1,750 to 20,000 (120.7 to 1378.9)	900 (482)
	1/4 angle	1,250 to 60,000 (86.2 to 4136.8)	900 (482)
	1/2 flat	700 to 10,000 (48.3 to 690.0)	900 (482)

Teflon coating available on one or both sides to increase minimum rupture rating.

CAUTION: High pressure-to-rupture ratios, severe pressure or temperature cycling, corrosion and metal fatigue affect disc life and rupture pressure. Frequent disc replacement may be desirable to avoid premature rupture. Rupture disc manufacturers recommended a 140 to 170 percent margin on disc ratings for extended disc life.

All dimensions for reference only and subject to change.

For prompt service, Autoclave stocks select products. Consult your local representative.

## Rupture Disc Stock Part List - 3/16 Flat Disc

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7003	3/16F DISC	Inconel	1940-2120	134-146
P-7674	3/16F DISC	Inconel	2231-2438	154-168
P-7005	3/16F DISC	Inconel	2910-3180	201-219
P-7007	3/16F DISC	Inconel	3201-3498	221-241
P-7009	3/16F DISC	Inconel	3880-4240	268-292
P-7011	3/16F DISC	Inconel	4365-4700	301-324
P-7013	3/16F DISC	Inconel	4850-5300	334-365
P-7015	3/16F DISC	Inconel	5141-5618	355-387
P-7017	3/16F DISC	Inconel	5335-5830	368-402
P-7018	3/16F DISC	Inconel	5626-6148	388-424
P-7019	3/16F DISC	Inconel	5723-6254	395-431
P-7020	3/16F DISC	Inconel	5820-6360	401-439
P-7021	3/16F DISC	Inconel	6014-6572	415-453
P-7022	3/16F DISC	Inconel	6111-6678	421-460
P-7024	3/16F DISC	Inconel	6305-6890	435-475
P-7026	3/16F DISC	Inconel	6790-7420	468-512
P-7028	3/16F DISC	Inconel	7275-7950	502-548
P-7030	3/16F DISC	Inconel	7760-8480	535-585
P-7032	3/16F DISC	Inconel	8245-9010	568-621
P-7034	3/16F DISC	Inconel	8730-9540	602-658
P-7040	3/16F DISC	Inconel	10185-11130	702-767
P-7044	3/16F DISC	Inconel	11155-12190	769-840
P-7046	3/16F DISC	Inconel	11640-12720	803-877
P-7048	3/16F DISC	Inconel	12125-13250	836-914
P-7050	3/16F DISC	Inconel	12610-13780	869-950
P-7052	3/16F DISC	Inconel	13095-14310	903-987
P-7054	3/16F DISC	Inconel	13580-14840	936-1023
P-7056	3/16F DISC	Inconel	14065-15370	970-1060
P-7058	3/16F DISC	Inconel	14550-15900	1003-1096
P-7060	3/16F DISC	Inconel	15035-16430	1037-1133
P-7062	3/16F DISC	Inconel	15520-16960	1070-1169
P-7064	3/16F DISC	Inconel	16005-17490	1103-1206
P-7068	3/16F DISC	Inconel	16975-18550	1170-1279
P-7072	3/16F DISC	Inconel	17945-19610	1237-1352
P-7074	3/16F DISC	Inconel	18430-20140	1271-1389
P-7080	3/16F DISC	Inconel	19885-21730	1371-1498
P-7082	3/16F DISC	Inconel	20370-22260	1404-1535
P-7084	3/16F DISC	Inconel	20885-22790	1440-1571
P-7086	3/16F DISC	Inconel	21340-23320	1471-1608
P-7088	3/16F DISC	Inconel	21825-23850	1505-1644
P-7094	3/16F DISC	Inconel	23280-25440	1605-1754
P-7096	3/16F DISC	Inconel	24250-26500	1672-1827
P-7098	3/16F DISC	Inconel	24735-27030	1705-1864

## Rupture Disc Stock Part List - 1/4 Angle Disc

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7301	1/4A DISC	Inconel	970-1060	67-73
P-7303	1/4A DISC	Inconel	1164-1272	80-88
P-7305	1/4A DISC	Inconel	1445-1590	100-110
P-7307	1/4A DISC	Inconel	1697-1855	117-128
P-7309	1/4A DISC	Inconel	1940-2120	134-146
P-7311	1/4A DISC	Inconel	2425-2650	167-183
P-7313	1/4A DISC	Inconel	2910-3180	201-219
P-7315	1/4A DISC	Inconel	3395-3710	234-256
P-7317	1/4A DISC	Inconel	3880-4240	268-292
P-7319	1/4A DISC	Inconel	4365-4770	301-329
P-7321	1/4A DISC	Inconel	4850-5300	334-365
P-7323	1/4A DISC	Inconel	5335-5830	368-402
P-7325	1/4A DISC	Inconel	5820-6360	401-438
P-7327	1/4A DISC	Inconel	6305-6890	435-475
P-7329	1/4A DISC	Inconel	6790-7420	468-512
P-7331	1/4A DISC	Inconel	7275-7950	502-548
P-7333	1/4A DISC	Inconel	7760-8480	535-585
P-7335	1/4A DISC	Inconel	8245-9010	568-621
P-7337	1/4A DISC	Inconel	8730-9540	602-658
P-7339	1/4A DISC	Inconel	9215-10070	635-694
P-7341	1/4A DISC	Inconel	9700-10600	669-731
P-7343	1/4A DISC	Inconel	10185-11130	702-767
P-7345	1/4A DISC	Inconel	10670-11660	736-804
P-7347	1/4A DISC	Inconel	11155-12190	769-841
P-7349	1/4A DISC	Inconel	11640-12720	803-877
P-7351	1/4A DISC	Inconel	12125-13250	836-914
P-7353	1/4A DISC	Inconel	12610-13780	869-950
P-7355	1/4A DISC	Inconel	13095-14310	903-987
P-7357	1/4A DISC	Inconel	13580-14840	936-1023
P-7361	1/4A DISC	Inconel	14550-15900	1003-1096
P-7363	1/4A DISC	Inconel	15035-16430	1037-1133
P-7365	1/4A DISC	Inconel	15520-16960	1070-1169
P-7367	1/4A DISC	Inconel	16005-17490	1103-1206
P-7369	1/4A DISC	Inconel	16490-18020	1137-1242
P-7371	1/4A DISC	Inconel	16975-18550	1170-1279
P-7373	1/4A DISC	Inconel	17460-19080	1204-1315
P-7375	1/4A DISC	Inconel	17945-19610	1237-1352
P-7377	1/4A DISC	Inconel	18915-20670	1304-1425
P-7379	1/4A DISC	Inconel	19400-21200	1338-1462
P-7381	1/4A DISC	Inconel	19885-21730	1371-1498
P-7382	1/4A DISC	Inconel	21000-22000	1448-1517
P-7383	1/4A DISC	Inconel	21825-23850	1505-1644
P-7385	1/4A DISC	Inconel	24250-26500	1672-1827

## Rupture Disc Stock Part List - 1/4 Angle Disc - con't

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7387	1/4A DISC	Inconel	25220-27560	1739-1900
P-7389	1/4A DISC	Inconel	26190-28620	1806-1973
P-7391	1/4A DISC	Inconel	27160-29680	1873-2046
P-7393	1/4A DISC	Inconel	29100-31800	2006-2192
P-7395	1/4A DISC	Inconel	30070-32860	2073-2266
P-7397	1/4A DISC	Inconel	31525-34450	2174-2375
P-7399	1/4A DISC	Inconel	33950-37100	2341-2558
P-7401	1/4A DISC	Inconel	36375-39750	2508-2741
P-7403	1/4A DISC	Inconel	38880-42400	2681-2923
P-7405	1/4A DISC	Inconel	41255-45050	2844-3106
P-7407	1/4A DISC	Inconel	43650-47700	3010-3289
P-7409	1/4A DISC	Inconel	48500-53000	3344-3654
P-7411	1/4A DISC	Inconel	53350-58300	3678-4020
P-7413	1/4A DISC	Inconel	58200-63600	4013-4385
P-7415	1/4A DISC	Inconel	62155-66000	4285-4550
P-7417	1/4A DISC	Inconel	65960-72080	4548-4970
P-7419	1/4A DISC	Inconel	68870-75260	4748-5189

## Rupture Disc Stock Part List - 1/2 Flat Disc

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7601	1/2F DISC	Inconel	485-530	33-37
P-7603	1/2F DISC	Inconel	679-742	47-51
P-7605	1/2F DISC	Inconel	727-795	50-55
P-7607	1/2F DISC	Inconel	873-954	60-73
P-7609	1/2F DISC	Inconel	970-1060	67-75
P-7610	1/2F DISC	Inconel	1006-1100	69-76
P-7611	1/2F DISC	Inconel	1164-1272	80-88
P-7613	1/2F DISC	Inconel	1213-1323	84-91
P-7615	1/2F DISC	Inconel	1358-1484	94-102
P-7617	1/2F DISC	Inconel	1455-1590	100-110
P-7619	1/2F DISC	Inconel	1552-1696	107-117
P-7621	1/2F DISC	Inconel	1697-1855	117-128
P-7623	1/2F DISC	Inconel	1746-1908	120-132
P-7625	1/2F DISC	Inconel	1940-2120	134-146
P-7627	1/2F DISC	Inconel	2183-2385	151-164
P-7629	1/2F DISC	Inconel	2271-2438	157-168
P-7631	1/2F DISC	Inconel	2425-2650	167-183
P-7633	1/2F DISC	Inconel	2619-2862	181-197
P-7635	1/2F DISC	Inconel	2716-2968	187-204
P-7637	1/2F DISC	Inconel	2910-3180	201-219
P-7639	1/2F DISC	Inconel	3104-3392	214-234
P-7641	1/2F DISC	Inconel	3395-3710	234-256
P-7643	1/2F DISC	Inconel	3589-3922	247-270
P-7645	1/2F DISC	Inconel	3637-3975	251-274
P-7647	1/2F DISC	Inconel	3880-4240	268-292
P-7649	1/2F DISC	Inconel	4365-4770	301-329
P-7651	1/2F DISC	Inconel	4462-4876	308-336
P-7653	1/2F DISC	Inconel	4850-5300	334-365
P-7655	1/2F DISC	Inconel	5335-5830	368-402
P-7657	1/2F DISC	Inconel	5626-6148	388-424
P-7659	1/2F DISC	Inconel	5820-6360	401-438
P-7661	1/2F DISC	Inconel	6305-6890	435-475
P-7663	1/2F DISC	Inconel	6790-7420	468-512
P-7665	1/2F DISC	Inconel	7275-7950	502-548
P-7667	1/2F DISC	Inconel	7760-8480	535-585
P-7669	1/2F DISC	Inconel	8245-9010	568-621
P-7671	1/2F DISC	Inconel	8730-9540	602-658
P-7673	1/2F DISC	Inconel	9700-10600	669-731



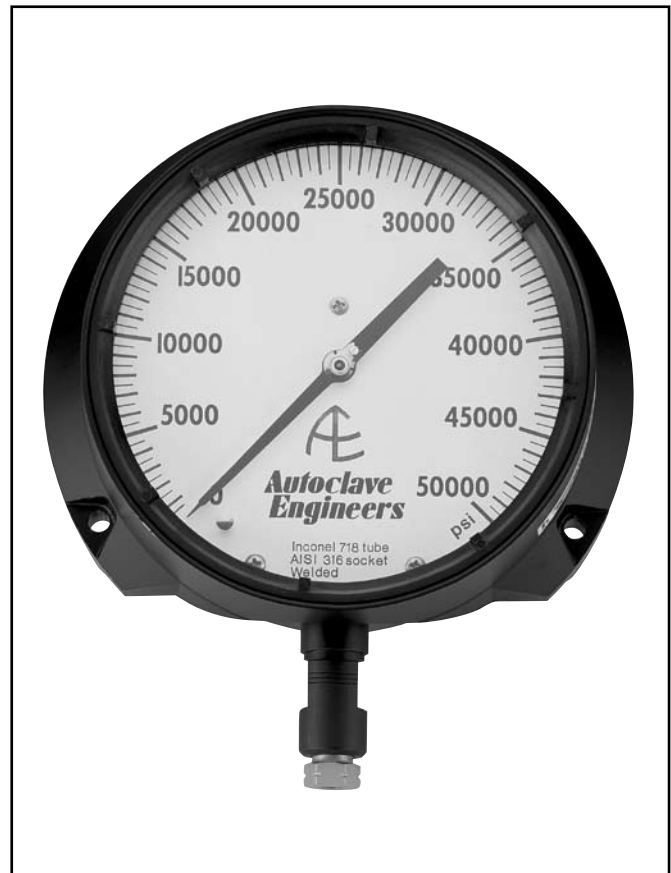
# Accessories - Instrument Quality Pressure Gauges

## Pressures to 80,000 psi (5116 bar)

**Gauges** - Pressure gauges are offered for use in low, medium and high pressure systems. Instrument quality gauges are available to pressure of 80,000 psi (5115.7 bar).

### Materials and Features

- Accuracy within  $\pm 0.5\%$  of full scale range
- 1/4" F250C Autoclave high pressure connection
- Plastic dial cover/solid front aluminum alloy case
- Blow-out back panel for pressure relief in the event of Bourdon tube failure
- 316 Stainless steel Bourdon tubes\*\*
- Gauges available with bottom and back connections
- Precision stainless steel movement for accuracy and resistance to atmospheric corrosion
- Pointer zero adjustment located on front of gauge behind dial cover for convenience
- Gauges are commercially cleaned when shipped
- Gauges up to 20,000 psi (1379 bar) oxygen cleaned upon request
- Gauges glycerin filled upon request
- Gauges available with dual scale face plates



### Instrument quality gauges

- **Flush panel mounting** - Interchangeable dial cover retaining rings are stocked to permit flush panel mounting of any instrument quality gauge. These will be furnished at an additional charge when specified - add "PM" to order number. To order gauge panel mount kit separate:  
P-8589 4.5" Flush mount  
P-8560 6.0" Flush mount
- **Optional electrical contact face** - Available for all instrument quality gauges. With adjustable low and high electrical contacts, this option permits gauges to provide pressure control for automatic or remote operation, or for fail-safe set points.

\*\*Bourdon tube material for 0-30,000 psi (0-2068 bar) gauge is K Monel. Bourdon tube material for 0-50,000 psi (0-3447 bar) and 0-80,000 psi (0-5116 bar) gauge is Inconel 718.





Note: Gauge connections are 1/4" (F250C) coned-and-threaded connection. Furnished with collar and gland.

#### Bottom connection calibrated in psi only

Catalog Number	Pressure Range psi (bar)	Minor Interval Value psi (bar)	Dial Diameter inches (mm)
P-0499-CG	0-1,000 (0-69)	10 (.69)	4-1/2 (114.3)
P-0479-CG	0-1,500 (0-103)	10 (.69)	4-1/2 (114.3)
P-0480-CG	0-3,000 (0-207)	20 (1.38)	4-1/2 (114.3)
P-0481-CG	0-5,000 (0-345)	50 (3.44)	4-1/2 (114.3)
P-0482-CG	0-10,000 (0-690)	100 (6.89)	4-1/2 (114.3)
P-0483-CG	0-15,000 (0-1034)	100 (6.89)	4-1/2 (114.3)
P-0487-CG	0-20,000 (0-1379)	200 (13.79)	4-1/2 (114.3)
P-0488-CG**	0-30,000 (0-2068)	250 (17.24)	6 (152.4)
P-0489-CG**	0-50,000 (0-3447)	500 (34.47)	6 (152.4)
P-0490-CG**	0-80,000 (0-5116)	1,000 (68.94)	6 (152.4)

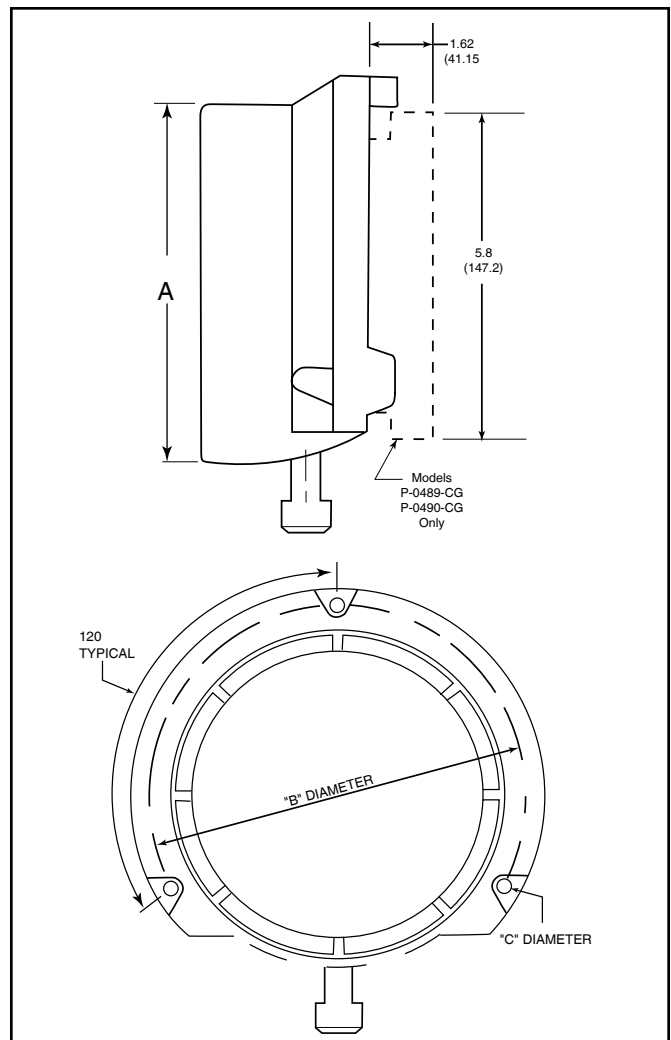
#### Back connection gauges calibrated in psi only

Catalog Number	Pressure Range psi (bar)	Minor Interval Value psi (bar)	Dial Diameter inches (mm)
P-0482B-CG	0-10,000 (0-690)	100 (6.89)	4-1/2 (114.3)
P-0483B-CG	0-15,000 (0-1034)	100 (6.89)	4-1/2 (114.3)
P-0487B-CG	0-20,000 (0-1379)	200 (13.79)	4-1/2 (114.3)
P-0488B-CG	0-30,000 (0-2068)	250 (17.24)	6 (152.4)
P-0489B-CG	0-50,000 (0-3447)	500 (34.47)	6 (152.4)

#### Optional Electrical Contact Face

Catalog Number	Fits Gauge Dial Diameter inches - (mm)
P-0713	4 1/2 (114.3)
P-0714	6 (152.4)

\*\* Bourdon tube material for 0-30,000 psi (0-2068 bar) gauge is K Monel. Bourdon tube material for 0-50,000 psi (0-3447 bar) and 0-80,000 psi (0-5116 bar) gauge is Inconel 718.



Gauge Size inches - (mm)	"A" cutout inches - (mm)	"B" inches - (mm)	"C" inches - (mm)
4-1/2" (114.3)	4.937 (125.39)	5.375 (136.52)	.281 (7.14)
6" (152.4)	6.437 (163.49)	7.0 (177.80)	.281 (7.14)

## Accessories - Gauge/Instrument Snubbers

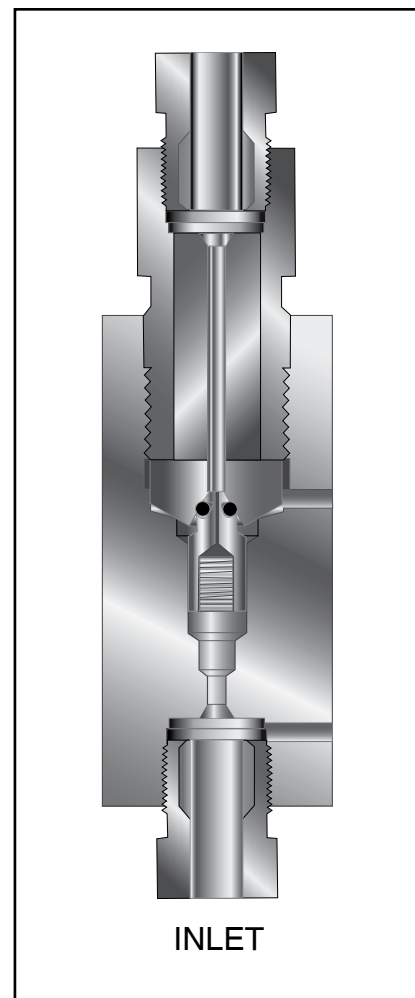
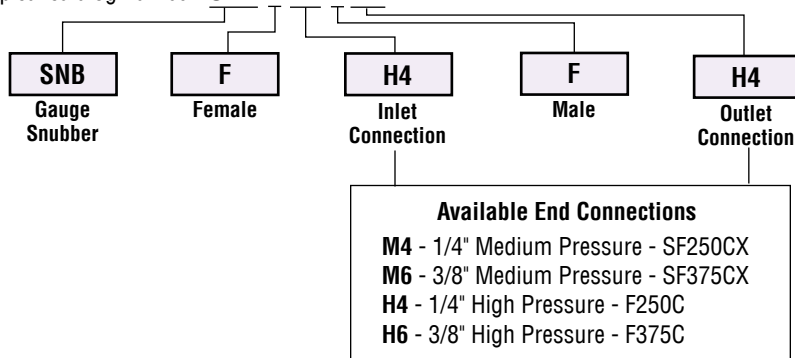
**Pressures to 60,000 psi (4137 bar)**

Autoclave Engineers Pressure Snubbers provide protection to gauges and instrumentation from pressure surges, pulsation and shock. The unique snubber design provides superior instrument protection while not compromising instrument accuracy or reaction time. This is accomplished by the use of existing technology from our excess flow check valve with additional design features.

When sudden flow is seen, the poppet will rise, blocking the pressure surge and a small bleed hole in the poppet will allow pressure to slowly equalize. When the pressure is equalized, the poppet will then drop back down allowing normal flow to the gauge. A filter is used to prevent the hole in the plug from becoming plugged. The snubber must be mounted in the vertical position as indicated on the unit.

Snubbers are offered in 316SS as standard, with either male, female or male/female connections in 1/4" and 3/8" sizes. Optional materials available upon request.

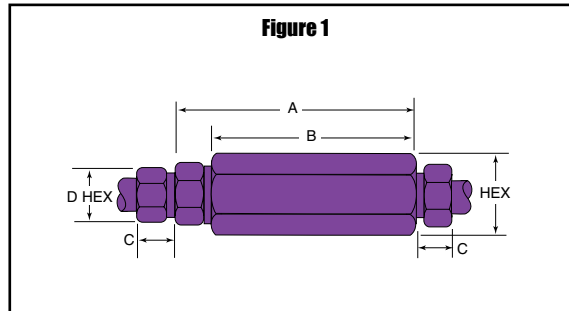
Typical catalog number: **SNB F H4 F H4**



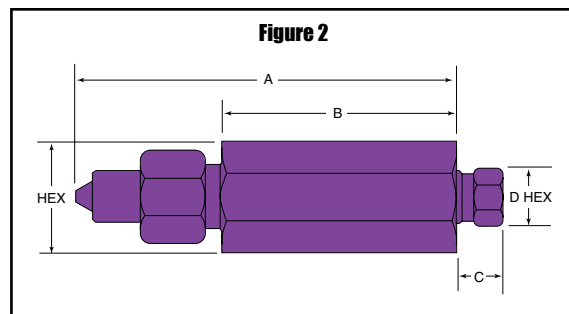
# Accessories - Gauge/Instrument Snubbers

Catalog Number	Pressure Rating psi (bar)	Dimensions – Inches (mm)					Fig
		A	B	C	D	Hex	
SNBFH4FH4	60,000 (4137)	3.36 (85.34)	2.50 (63.50)	0.50 (12.70)	0.63 (15.33)	1.19 (30.15)	1
SNBFH4MH4	60,000 (4137)	4.05 (102.87)	2.50 (63.50)	0.50 (12.70)	0.63 (15.33)	1.19 (30.15)	2
SNBFM4FM4	20,000 (4137)	2.82 (71.63)	2.38 (60.45)	0.38 (9.65)	0.50 (12.70)	0.81 (20.57)	1
SNBMH6MH4	60,000 (4137)	3.68 (93.47)	2.13 (54.10)	1.50 (38.10)	0.75 (19.05)	1.19 (30.15)	3

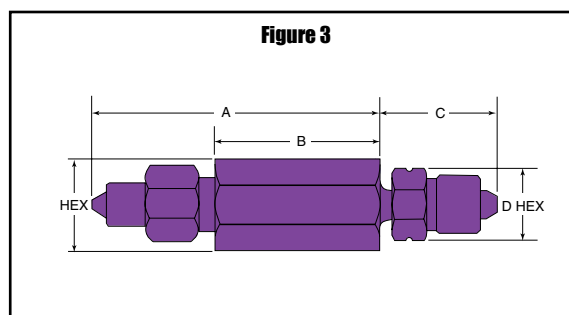
**Figure 1**



**Figure 2**



**Figure 3**



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**! WARNING !**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS  
DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND/OR PROPERTY DAMAGE.

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