TEL-TRU

TEL-TRU MANUFACTURING COMPANY

THERMOWELLS

World-Class Thermometers | *Since 1916*

www.teltru.com

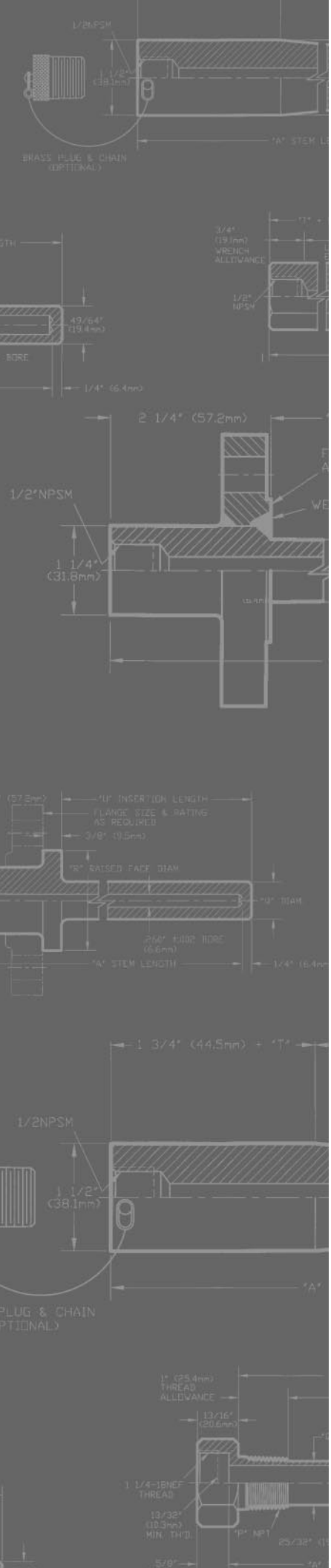

TABLE OF CONTENTS

MATERIAL
The Longevity Factor

Corrosion Resistance:

- Recommended materials for various services are given in the material selection guide in this catalog.
- A high mirror polish may be given to all stainless and monel wells to provide maximum corrosion resistance.

Strength:

The standard materials listed for each well series will cover most requirements. A stock of special materials is carried at all times to ensure fast delivery on wells to be made of special grades of:

- Stainless steel
- Chrome-molybdenum steel
- Naval brass
- Hastelloy B or C
- Nickel
- Titanium

Consult the pressure-temperature ratings given for each well type (see http://www.teltru.com). For example, a stainless steel well may be required for high pressure water service where otherwise a brass well would be satisfactory from a corrosion standpoint.

CONNECTION
The Installation Factor

Standard thermowell connections shown in this catalog are threaded, flanged (A.S.A. and Van Stone), and socket weld types with standard bore sizes.

Threaded Wells:

- Made in readily welded or brazed materials.
- Important for installations requiring seal welding or brazing.
- The pipe thread provides the mechanical strength, the weld merely seals.

Flanged Wells:
(other than Van Stone type)

- Consists of a bar stock well which is solidly welded to a top quality flange.
- Standard construction uses a primary "J" groove weld and a bevel groove secondary weld.
- Both welds are machined to produce a clean fillet.
- This double welded construction eliminates possibility of crevice corrosion since no open joints are exposed from either inside or outside the installation.

Socket Weld Wells:

- Simple to install - merely welded into place.
- These wells fit A.S.A. standard socket weld couplings or flanges. The resulting installation is clean and tight.

INSERTION LENGTH
The Accuracy Factor

- The insertion length is the distance from the end of the well to the underside of the thread, or other connection means, (also known as "U" dimension).
- For best accuracy, this length should be long enough to permit the entire temperature sensitive part of the thermometer bulb to project into the medium being measured.
- Contact the manufacturer of the element for minimum sensitive bulb length.
- Be sure that dead length, i.e., that length required to pass thru walls, pipe fittings, etc., is taken into account when choosing the necessary well insertion length.

BORE SIZE
The Interchange-ability Factor

- Almost any installation uses several types of temperature measuring instruments.
- The selection of a standard bore diameter can produce extreme flexibility within the plant
- The same well can accommodate either thermocouples, resistance thermometers, Bimetal thermometers, or test thermometers.

The bore size of wells shown in this catalog cover the most commonly used temperature sensing elements as follows:

.260 Diameter Bore:

- Bimetal Thermometers (1/4" Stem)
- Thermocouples - (#20 Gauge)
- Liquid-in-glass Test Thermometers (unarmored)
- Other elements having .252 maximum diameter

.385 Diameter Bore:

- Bimetal Thermometers (3/8" Stem)
- Gas Actuated Thermometers (3/8" Bulb)
- Thermocouples - (#14 Gauge)
- Liquid-in-glass Test Thermometers (armored)
- Other elements having .377 maximum diameter

TAPERED OR STRAIGHT SHANK
The Velocity Rating Factor

- Tapered shank wells provide greater stiffness for the same sensitivity.
- The higher strength to weight ratio gives these wells higher natural frequency than for equivalent length straight shank wells, thus permitting operation at higher fluid velocity.
- Refer to "Velocity Ratings of Wells".

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See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

VELOCITY RATINGS OF THERMOWELLS

Well failures, in most cases, are not due to the effect of pressure and temperature. The calculations necessary to provide adequate strength, under given conditions, are familiar enough to permit proper choice of wall thickness and material.

Less familiar, and more dangerous, are the vibrational effects to which wells are subjected.

- Fluid, flowing by the well, forms a turbulent wake (called the Von Karman Trail) which has a definite frequency based on the diameter of the well and the velocity of the fluid.
- It is important that the well have sufficient stiffness so that the wake frequency will never equal the natural frequency of the well itself.
- If the natural frequency of the well were to coincide with the wake frequency, the well would vibrate to destruction and break off in the piping.

A recommended maximum velocity rating can be found on the Tel-Tru Web site (www.teltru.com) for every standard well length and material cataloged.

It should be pointed out that the values given are extremely conservative, and intended primarily as a guide. Wells are also safe if the resonant frequency is well below the wake frequency or if the fluid velocity is constantly fluctuating through the critical velocity point.

Nevertheless, if the installation is not hampered by the use of a sufficiently stiff well, we recommend the values given not be exceeded.

If you have operating conditions requiring special well designs, values can be calculated upon request for specific applications.

STANDARD MANUFACTURING TOLERANCES

THERMOWELLS MEET OR EXCEED SAMA SPECIFICATIONS:

LENGTHS:

- ± 1/16" on lengths 12" or less
- ± 1/8" on lengths 12" or over

Wells 30" overall length and longer:

- Solid bored type will be drilled thru end, plugged, and heliarc welded
- Built-up design must be specified beyond 42-1/4" overall length

OD TOLERANCES:

- Fractional: ± .015
- Decimal: ± .005 on .000 place
  ± .01 on .00 place

BORE ID:

- + .005
- - .003

END THICKNESS:

- Gun Drill Bottom
- 1/4" to bottom ± 1/16"
- 3/16" min. end thickness

CONCENTRICITY OF BORE TO OD

- ± 10% of min. wall thickness

WETTED SURFACES FINISH:

- Standard finish 60-100 Ra
- 16-32 Ra available
- 4-10 Ra mirror polish available

RADIUS UNDER THREADS AND FLANGES:

- 1/8" is standard, ±1/16"
- 1/16" on Van Stone type

MALE THREADS: (NPT)

- ± 1 turn on thread gage

FEMALE THREADS:

- 1/2" NPSM standard
- 1/2" NPT available upon request
- Go gage to 5/8" depth of thread
- No go gage 2 turns max

END OF WELLS:

- Break corners
- No Burrs

LAGGING EXT.

- On Screwed Wells
- Left as Hex stock (not turned)
- Exception: When Hex is not available in special materials

STAMPING:

- Stamped onto Hex or round facing open end of well
- Material code identification
- Tag numbers

FLANGED WELLS

- Made in accordance with ANSI B16.5
- Raised Face is serrated 125 Ra
- Smooth Face must be specified on order if needed

FRONT " J "

- Groove welds are 1/4" wide by 1/4" deep
- Welds are machined, leaving 1/8" radius
- Rear welds are 1/8" wide by 1/8" deep "V"
- Welds are machined, leaving 1/4 radius
- Full penetration welds are available upon request and must be specified

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Corrodent	Temp. °F.	Conc. %	Recom. Material
Acetic Acid	212	All	Monel
Acetic Anhydride	300		Nickel
Acetone	212	All	304 SS
Acetylene	400		304 SS
Alcohols	212	All	304 SS
Alum. (Potassium or Sodium)	300	All	Hast. C
Aluminum Chloride	212	All	Hast. B
Aluminum Sulfate	212	All	316 SS
Ammonia, Dry	212	All	304/316 SS
Ammonium Chloride	300	50%	Monel
Ammonium Hydroxide (Ammonia, Aqua)	212	All	304/316 SS
Ammonium Nitrate	300	All	304 SS
Ammonium Sulfate	212	All	316 SS
Amyl Acetate	300	All	304 SS
Aniline	25		Monel
Asphalt	250		304 SS
Atmosphere (Industrial and Marine)			304 SS
Barium Compounds	See Calcium		
Beer	70		304 SS
Benzene (Benzol)	212		Steel
Benzoic Acid	212	All	316 SS
Bleaching Powder	70	15%	Monel
Borax	212	All	Brass
Bordeaux Mixture	200		304 SS
Boric Acid	400	All	316 SS
Bromine	125	Dry	Monel
Butane	400	All	Steel
Butyl Alcohol	See Alcohols		
Butyric Acid	212		Hast. C
Calcium Bisulphite	75	All	Hast. C
Calcium Chloride	212	All	Hast. C
Calcium Hydroxide	300	20%	Hast. C
Calcium Hypochlorite	See Bleaching Powder		
Carbolic Acid	See Phenol		
Carbon Dioxide, Dry	800	All	Brass
Carbonated Beverages	212		304 SS
Carbonated Water	212	All	304 SS
Carbon Disulphide	200		304 SS
Carbon Tetrachloride	125	All	Monel
Chlorine, Dry	100		Monel
Chlorine, Moist	100	All	Monel
Chloracetic Acid	212	All	Monel
Chloroform, Dry	212		Monel
Chromic Acid	300	All	Hast. C
Cider	300	All	304 SS
Citric Acid	212	All	Hast. C
Copper (10) Chloride	212	All	Hast. C
Copper (10) Nitrite	300	All	316 SS
Copper (10) Sulfate	300	All	316 SS
Copper Plating Solution (Acid)	75		304 SS
Copper Plating Solution (Cyanide)	180		304 SS
Corn Oil	200		304 SS
Creosote	200	All	304 SS
Crude Oil	300		Monel
Ethanol	See Alcohols		
Ethyl Acetate	See Lacquer Thinner		
Ethyl Chloride, Dry	500		Steel
Ethylene Glycol (Uninhibited)	212	All	304 SS
Ethylene Oxide	75		Steel
Fatty Acids	500	All	316 SS
Ferric Chloride	75	All	Hast. C
Ferric Sulfate	300	All	304 SS
Fluorine, Anhydrous	100		304.SS
Formaldehyde	212	40%	316 SS
Formic Acid	300	All	316 SS
Freon	300		Steel
Furfural	450		316 SS
Gasoline	300		Steel
Glucose	300		304 SS
Glue pH 6-8	300	All	304 SS
Glycerine	212	All	Brass
Hydrobromic Acid	212	All	Hast. C
Hyrdrochloric Acid (37-38%)	225	All	Hast. B
Hydrocyanic Acid	212	All	304 SS
Hydrofluogilicic Acid	212	40%	Monel
Hydrofluoric Acid	212	60%	Monel
Hydrogen Chloride Dry	500		304 SS
Hydrogen Fluoride Dry	175		Steel
Hydrogen Peroxide	125	10-100%	304 SS
Kerosene	300	All	Steel
Lacquers & Thinners	300	All	304 SS
Lactic Acid	300	All	316 SS
Lime	212	All	316 SS
Linseed Oil	75		Steel
Magnesium Chloride	212	50%	Nickel
Magnesium Hydroxide (or Oxide)	75	All	304 SS
Magnesium Sulfate	212	40%	304 SS
Mercuric Chloride	75	10%	Hast. C
Mercury	700	100%	Steel
Methyl Chloride, Dry	75		Steel
Methylene Chloride	212	All	304 SS
Milk, fresh or sour	180		304 SS
Molasses	See Glucose		
Natural Gas	70		304 SS
Nitric Acid	75	All	304 SS
Nitric Acid	300	All	316 SS
Oxygen	75	All	Steel
Oleic Acid	See Fatty Acids		
Oxalic Acid	212	All	Monel
Palmitic Acid	See Fatty Acids		
Phenol	212	All	316 SS
Phosphoric Acid	212	All	316 SS
Photographic Bleaching	100	All	304 SS
Potassium Compounds	See Sodium Compound		
Propane	300		Steel
Rosin	700	100%	316 SS
Sea Water	75		Monel
Soap & Detergents	212	All	304 SS
Sodium Bicarbonate	212	20%	316 SS
Sodium Bisulphate	212	20%	304 SS
Sodium Bisulphite	212	20%	304 SS
Sodium Carbinate	212	40%	316 SS
Sodium Chloride	300	30%	Monel
Sodium Chromate	212	All	316 SS
Salt or Brine	See Sodium Chloride		
Sodium Cyanide	212	All	304 SS
Sodium Hydroxide	212	30%	316 SS
Sodium Hypochlorite	75	10%	Hast. C
Sodium Nitrate	212	40%	304 SS
Sodium Nitrite	75	20%	316 SS
Sodium Phosphate	212	10%	Steel
Sodium Silicate	212	10%	Steel
Sodium Sulfate	212	30%	304 SS
Sodium Sulfide	212	30%	316 SS
Sodium Sulfite	212	10%	316 SS
Sodium Thiosulfate	212	All	304 SS
Steam			304 SS
Stearic Acid	See Fatty Acids		
Sugar Solution	See Glucose		
Sulphur	500		304 SS
Sulphur Chloride	75	Dry	316 SS
Sulphur Dioxide	500	Dry	316 SS
Sulphur Trioxide	500	Dry	316 SS
Sulfuric Acid	212	10%	316 SS
Sulfuric Acid	212	10-90%	Hast. B
Sulfuric Acid	212	90-100%	Hast. B
Sulfuric Acid Fuming	175		Carp. 20
Sulfurous Acid	75	20%	316 SS
Tannic Acid	75	40%	Hast. B
Titanium Tetrachloride	75	All	316 SS
Toluene	75		Steel
Trichloracetic Acid	75	All	Hast. B
Trichlorethylene	300	Dry	Monel
Turpentine	75		316 SS
Varnish	150		Steel
Zinc Chloride	212	All	Hast. B
Zinc Sulfate	212	All	316 SS

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See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

STANDARD THREADED THERMOWELLS FOR 1/4" DIAMETER ELEMENTS

APPLICATION:
Standard length, 1/4" stem diameter, bimetal thermometers; #20 gauge thermocouple elements; unarmored liquid-in-glass test thermometers; other temperature sensing elements having 0.252" maximum diameter.

Standard thermowell is stepped to 1/2" OD except 2-1/2" insertion. Please specify if straight shank is required.

PROCESS CONNECTION SIZE:
1/2", 3/4", and 1" NPT are standard. Other thread sizes available upon request.

MATERIALS:
Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel. Other special materials available upon request.

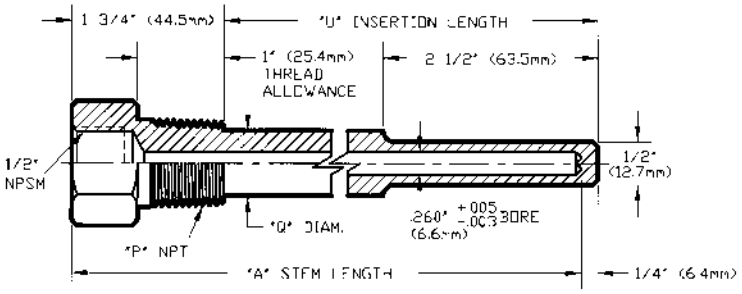
CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

Note: On wells with 1/2" NPT process connection, the 1" thread allowance and 3/4" wrench allowance dimensions are reversed to accommodate the 1/2" NPSM female thread.

TO ORDER PLEASE SPECIFY:

- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

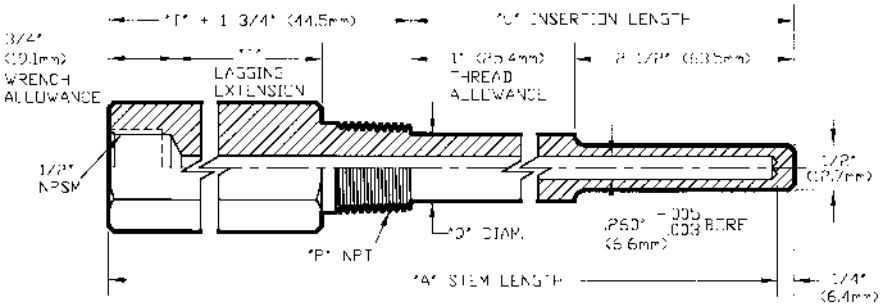
Model 260TW - General Use



.260" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	SHANK DIAMETER Q
260TW	4ý 6ý 9ý 12ý 15ý 18ý 24ý	1/2ý	2-1/2ý 4-1/2ý 7-1/2ý 10-1/2ý 13-1/2ý 16-1/2ý 22-1/2ý	N/A 5/8ý
260TW	4ý 6ý 9ý 12ý 15ý 18ý 24ý	3/4ý	2-1/2ý 4-1/2ý 7-1/2ý 10-1/2ý 13-1/2ý 16-1/2ý 22-1/2ý	N/A 3/4ý
260TW	4ý 6ý 9ý 12ý 15ý 18ý 24ý	1ý	2-1/2ý 4-1/2ý 7-1/2ý 10-1/2ý 13-1/2ý 16-1/2ý 22-1/2ý	N/A 7/8ý

Model 260TWE - General Use with Lagging Extension



.260" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	LAGGING EXTENSION T	SHANK DIAMETER Q
260TWE	6" 9" 12" 15" 18" 24"	1/2"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 19-1/2"	2" 3" 3" 3" 3" 3"	N/A 5/8"
260TWE	6" 9" 12" 15" 18" 24"	3/4"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 19-1/2"	2" 3" 3" 3" 3" 3"	N/A 3/4"
260TWE	6" 9" 12" 15" 18" 24"	1"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 19-1/2"	2" 3" 3" 3" 3" 3"	N/A 7/8"

Note: Additional lagging extensions available upon request.

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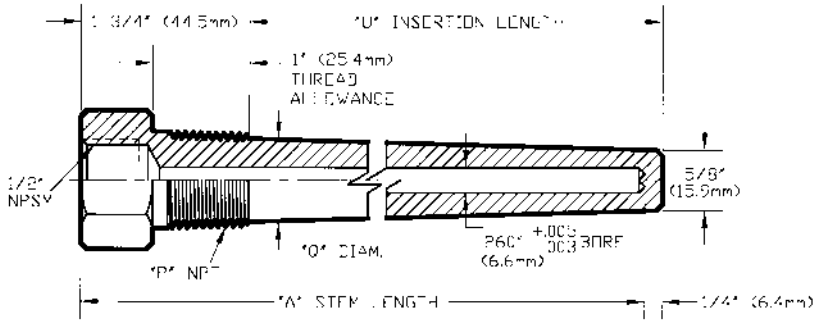
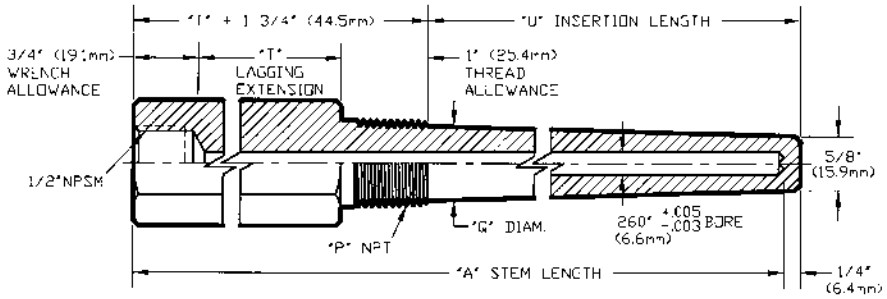
Model 260TWH - Heavy Duty



.260" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	SHANK DIAMETER Q
260TWH	4" 6" 9" 12" 15" 18" 24"	3/4"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	7/8"
260TWH	4" 6" 9" 12" 15" 18" 24"	1"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	1-1/16"

Model 260TWHE - Heavy Duty with Lagging Extension



.260" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	LAGGING EXTENSION T	SHANK DIAMETER Q
260TWHE	6" 9" 12" 15" 18" 24"	3/4"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 19-1/2"	2" 3" 3" 3" 3" 3"	7/8"
260TWHE	6" 9" 12" 15" 18" 24"	1"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 19-1/2"	2" 3" 3" 3" 3" 3"	1-1/16"

Note: Additional lagging extensions available upon request.

APPLICATION:

Standard length, 1/4" stem diameter, bimetal thermometers; #20 gauge thermocouple elements; unarmored liquid-in-glass test thermometers; other temperature sensing elements having 0.252" maximum diameter.

PROCESS CONNECTION SIZE:

3/4" and 1" NPT are standard. Other thread sizes available upon request.

MATERIALS:

Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel. Other special materials available upon request.

CAP & CHAIN:

Available upon request for keeping thermowell bore clean when not in use. (Not shown)

TO ORDER PLEASE SPECIFY:

- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

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APPLICATION:
Standard length, 3/8" stem diameter, bimetal thermometers; #14 gauge thermocouple elements; unarmored liquid-in-glass test thermometers; other temperature sensing elements having 0.377" maximum diameter.

PROCESS CONNECTION SIZE:
3/4" and 1" NPT are standard. Other thread sizes available upon request.

MATERIALS:
Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel. Other special materials available upon request.

CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

TO ORDER PLEASE SPECIFY:

- Model
- Material
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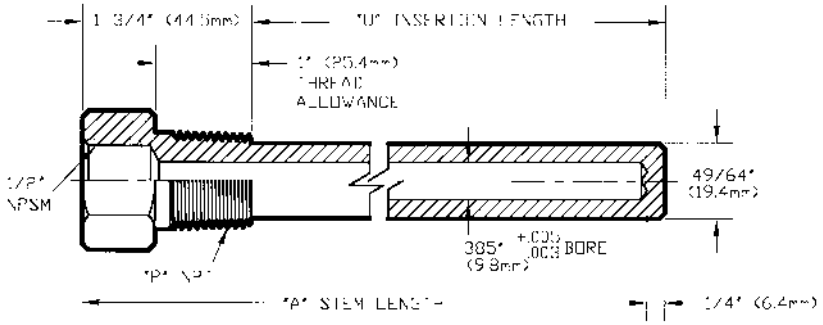
- "U" - Insertion Length and "A" - Stem Length
- Options as required

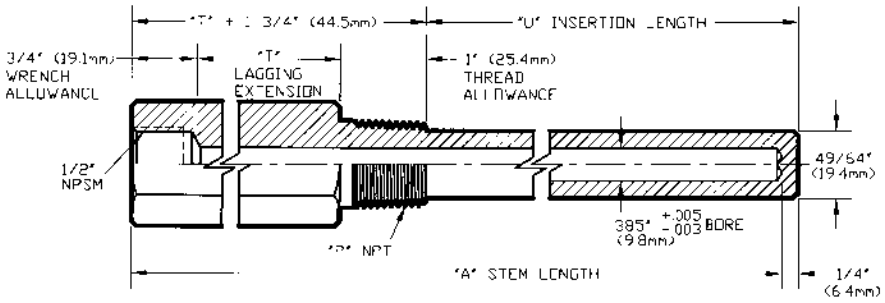
Model 385TW - General Use



.385" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	SHANK DIAMETER Q
385TW	4" 6" 9" 12" 15" 18" 24"	3/4"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	49/64"
385TW	4" 6" 9" 12" 15" 18" 24"	1"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	49/64"

Model 385TWE - General Use with Lagging Extension



.385" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	LAGGING EXTENSION T	SHANK DIAMETER Q
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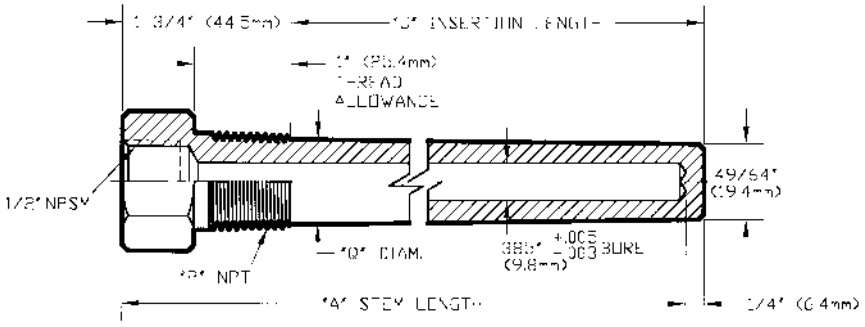
Model 385TWH - Heavy Duty



.385" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	SHANK DIAMETER Q
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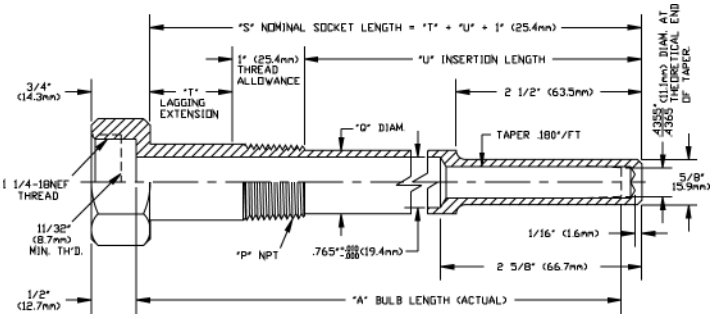
Model 385TWHE - Heavy Duty with Lagging Extension



.385" Bore

MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	LAGGING EXTENSION T	SHANK DIAMETER Q
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APPLICATION:

Standard length, 3/8" stem diameter, bimetal thermometers; #14 gauge thermocouple elements; unarmored liquid-in-glass test thermometers; other temperature sensing elements having 0.377" maximum diameter.

PROCESS CONNECTION SIZE:

3/4" and 1" NPT are standard. Other thread sizes available upon request.

MATERIALS:

Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel. Other special materials available upon request.

CAP & CHAIN:

Available upon request for keeping thermowell bore clean when not in use. (Not shown)

TO ORDER PLEASE SPECIFY

- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

LIMITED SPACE THERMOWELLS FOR 1/4" DIAMETER ELEMENTS

APPLICATION:
Used where short insertion length is necessary such as in short legs of tees, etc. This thermowell also fits the 2-1/2" stem length of a bimetal thermometer with a 1/4" stem diameter.

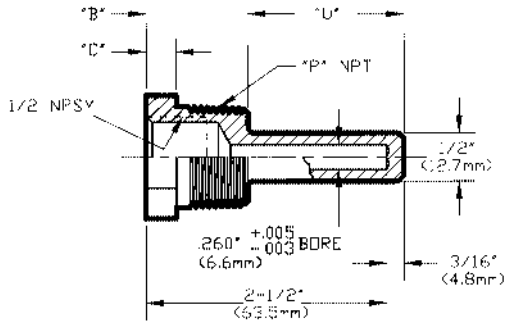
PROCESS CONNECTION SIZE:
1/2", 3/4" and 1" NPT are standard. Other thread sizes available upon request.

MATERIALS:
Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel.

CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

Note: On wells with 1/2" process connection, the "U" dimension becomes 1" to accommodate the 1/2" NPSM female thread.

Model 260TWA - Limited Space



MODEL	STEM LENGTH A	PROCESS CONNECTION P	INSERTION LENGTH U	B	C
260TWA	2-1/2"	1/2" 3/4" 1"	1" 1-5/8" 1-5/8"	1-11/16" 1-1/16" 1-1/16"	15/16" 5/16" 5/16"

GENERAL PURPOSE TEST THERMOWELLS FOR 3/8" DIAMETER ELEMENTS

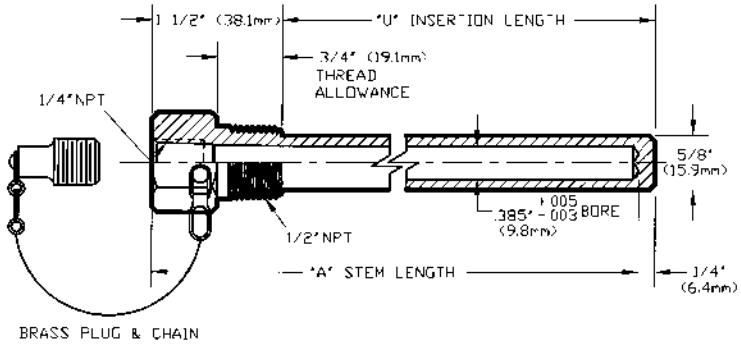
APPLICATION:
For bimetal thermometers, armored liquid-in-glass test thermometers; #14 gauge test thermocouples.

PROCESS CONNECTION SIZE:
1/2" NPT external thread is standard. Other thread sizes available upon request.

MATERIALS:
Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel.

CAP & CHAIN:
Brass captive plug and chain is furnished on all thermowells as standard. Other materials available.

Model 385TWT - TEST



DIMENSIONS – SERIES 385A

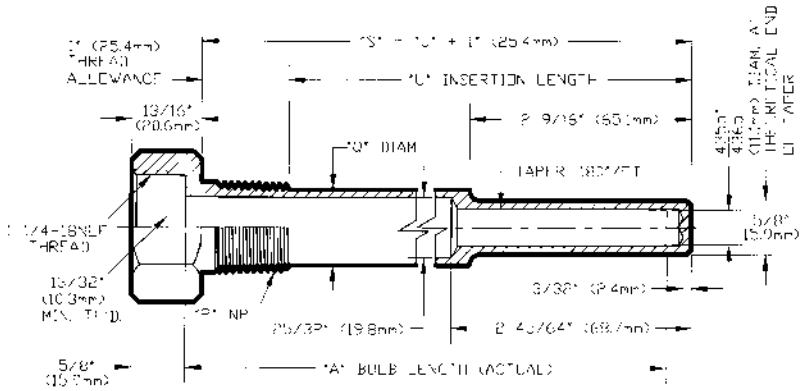
MODEL	INSERTION LENGTH U	STEM LENGTH A
385TWT	2"	3-1/4"
385TWT	4"	5-1/4"
385TWT	6"	7-1/4"
385TWT	8"	9-1/4"
385TWT	10"	11-1/4"
385TWT	12"	13-1/4"

TO ORDER PLEASE SPECIFY:

- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

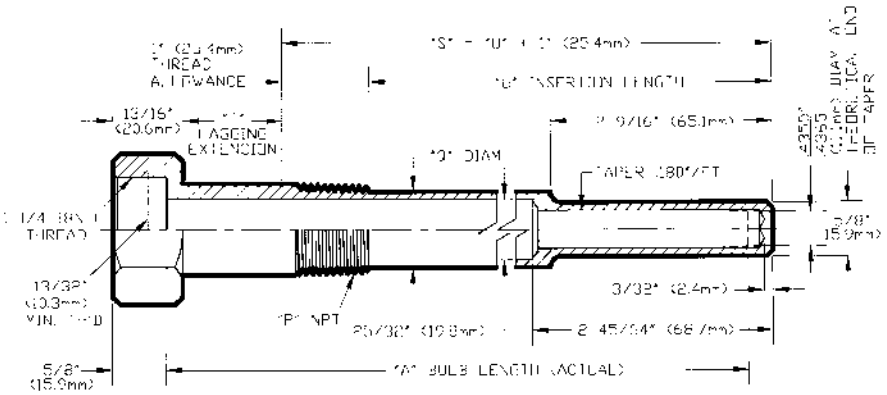
TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

Model GW - Glass Industrial



EXT. TH'D P	MODEL	NOM. SOCKET LENGTH S	BULB LENGTH A	INSERT. LENGTH U	SHANK DIA. Q
3/4" NPT	GW0012	3-1/2"	3-5/8"	2-9/16"	—
	GW0022	6"	6-1/8"	5-1/16"	7/8"
	GW0032	8"	8-1/8"	7-1/16"	7/8"
	GW0052	9"	9-1/8"	8-1/16"	7/8"
	GW0042	12"	12-1/8"	11-1/16"	7/8"
1" NPT	GW0013	3-1/2"	3-5/8"	2-9/16"	—
	GW0023	6"	6-1/8"	5-1/16"	1"
	GW0033	8"	8-1/8"	7-1/16"	1"
	GW0053	9"	9-1/8"	8-1/16"	1"
	GW0043	12"	12-1/8"	11-1/16"	1"

Model GWE - Glass Industrial with Lagging Extension



EXT. TH'D P	MODEL	NOM. SOCKET LENGTH S	LAGGING EXT LENGTH T	BULB LENGTH A	INSERT. LENGTH U	SHANK DIA. Q
3/4" NPT	GWE022	6"	2-1/2"	6-1/8"	2-9/16"	—
	GWE032	8"	3"	8-1/8"	4-1/16"	7/8"
	GWE052	9"	3"	9-1/8"	5-1/16"	7/8"
	GWE042	12"	3"	12-1/8"	8-1/16"	7/8"
1" NPT	GWE023	6"	2-1/2"	6-1/8"	2-9/16"	—
	GWE033	8"	3"	8-1/8"	4-1/16"	1"
	GWE053	9"	3"	9-1/8"	5-1/16"	7/8"
	GWE043	12"	3"	12-1/8"	8-1/16"	1"

APPLICATION:

Fits liquid-in-glass thermometers made to SAMA standards. Tapered bore is made 0.008" oversize to eliminate possibility of thermometer bulb expanding into the thermowell thus preventing removal. Also meets Federal GG-T-321C standards.

PROCESS CONNECTION SIZE:

3/4" and 1" NPT are standard. Other thread sizes available upon request.

MATERIALS:

Brass (ASTM B-16); Carbon Steel (C-1018); 304SS; 316SS; Monel. Other materials are available upon request.

ADDITIONAL DESIGNS:

Other designs of thermowells to fit this class of thermometer are available including socket weld, heavy duty, and flanged types.

CAP & CHAIN:

Available upon request for keeping thermowell bore clean when not in use. (Not shown)

TO ORDER PLEASE SPECIFY:

- Model
- Material
- Process Connection
- "U" - Insertion Length
- "S" Nominal Socket Length
- Options as required

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

FLANGE SIZES:
1" and 1-1/2" flanges in all facings and pressure ratings are standard. Other sizes are available on application. Machined to meet ANSI B-16.5. Traceable to mill test reports.

MATERIALS:
Carbon Steel (C-1018); 304SS; 316SS; Monel. Other special materials available upon request.

WELDING:
Primary weld is "J" groove type; secondary weld is 45° bevel groove. Welding is performed by certified welders using inert gas shielded arc.

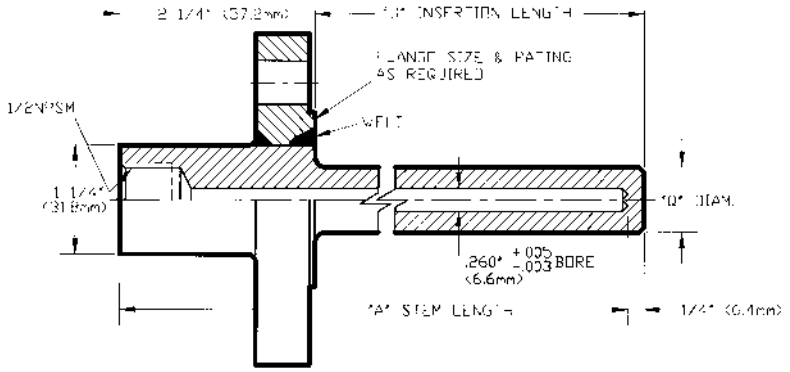
CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

LAGGING EXTENSION:
Specify model TWFE. Add lagging extension length to 2-1/4" head dimension.

TO ORDER PLEASE SPECIFY:
- Model
- Material - Thermowell
  Material - Flange (if different)
- Flange Size
- Pressure Rating
- Flange Type - Raised Face, Flat Face, or Ring Type Joint
- "U" - Insertion Length and "A" - Stem Length
- Options as required

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

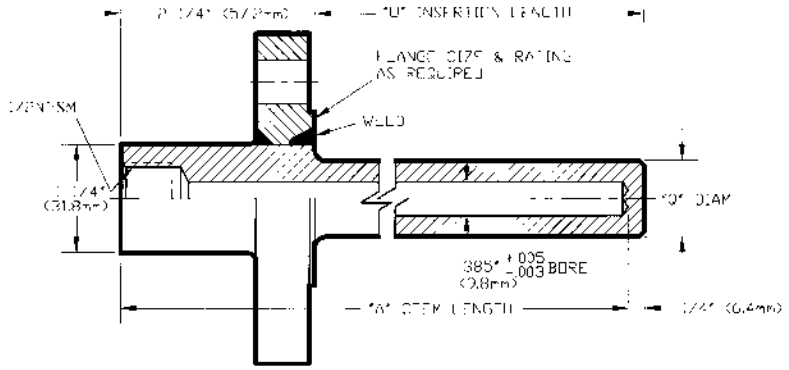
Model 260TWF - Flanged



.260" Bore

MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	BORE DIAMETER B
260TWF	4"	2"	3/4"	.260"
260TWF	6"	4"		
260TWF	9"	7"		
260TWF	12"	10"		
260TWF	15"	13"		
260TWF	18"	16"		
260TWF	24"	22"		

Model 385TWF - Flanged



.385" Bore

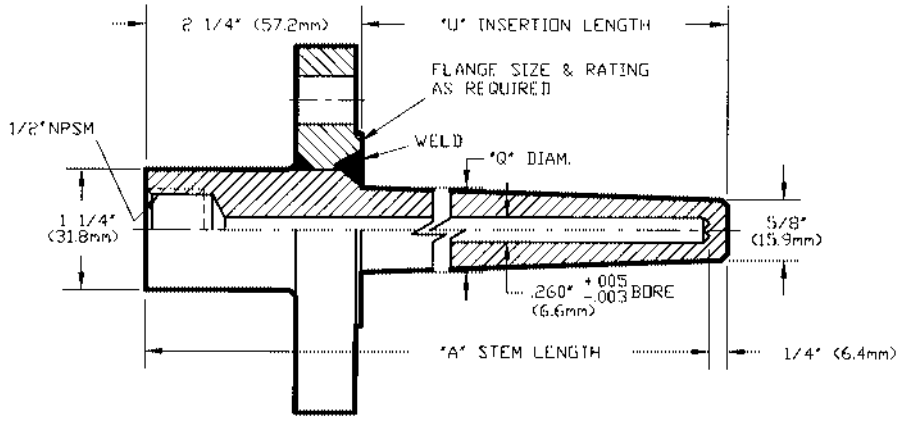
MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	BORE DIAMETER B
385TWF	4"	2"	7/8"	.385"
385TWF	6"	4"		
385TWF	9"	7"		
385TWF	12"	10"		
385TWF	15"	13"		
385TWF	18"	16"		
385TWF	24"	22"		

Flange Configurations Available

NOMINAL PIPE SIZE	PRESSURE RATING	FLANGE TYPE
1"	150#	Raised Face
1-1/2"	300#	Flat Face
2"	600#	Ring Joint
	900#	
	1500#	
	2500#	

Other flange sizes available.

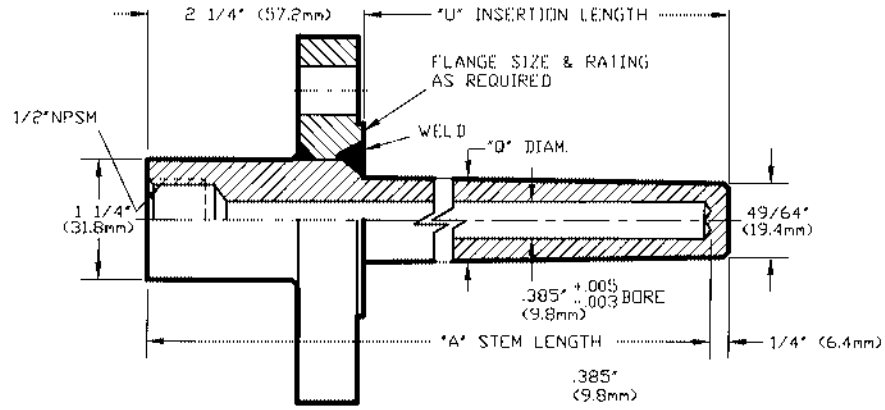
Model 260TWFH - Heavy Duty Flanged



.260" Bore

MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	BORE DIAMETER B
260TWFH	4"	2"		
260TWFH	6"	4"		
260TWFH	9"	7"		
260TWFH	12"	10"	7/8"	.260"
260TWFH	15"	13"		
260TWFH	18"	16"		
260TWFH	24"	22"		

Model 385TWFH - Heavy Duty Flanged



.385" Bore

MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	BORE DIAMETER B
385TWFH	4"	2"		
385TWFH	6"	4"		
385TWFH	9"	7"		
385TWFH	12"	10"	7/8"	.385"
385TWFH	15"	13"		
385TWFH	18"	16"		
385TWFH	24"	22"		

FLANGE SIZES:
1" and 1-1/2" flanges in all facings and pressure ratings are standard. Other sizes are available on application. Machined to meet ANSI B-16.5. Traceable to mill test reports.

MATERIALS:
Carbon Steel (C-1018); 304SS; 316SS; Monel. Other special materials available upon request.

WELDING:
Primary weld is "J" groove type; secondary weld is 45° bevel groove. Welding is performed by certified welders using inert gas shielded arc.

CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

LAGGING EXTENSION:
Specify model TWFHE. Add lagging extension length to 2-1/4" head dimension.

TO ORDER PLEASE SPECIFY:
- Model
- Material - Thermowell
- Material - Flange (if different)
- Flange Size
- Pressure Rating
- Flange Type - Raised Face, Flat Face, or Ring Type Joint
- "U" - Insertion Length and "A" - Stem Length
- Options as required

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

PROCESS CONNECTION SIZE:
3/4" or 1" nominal pipe size welding shoulder fits ASA welding fittings, flanges, etc. Thermowells for larger pipe size fittings are available upon request.

MATERIALS:
Carbon Steel (C-1018); 304SS; 316SS. Other materials available upon request.

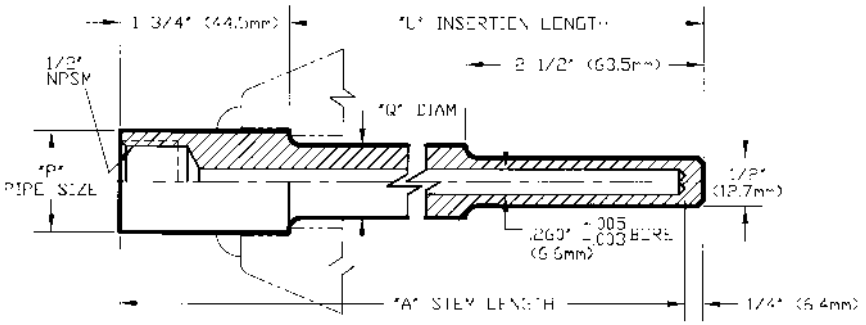
CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

TO ORDER PLEASE SPECIFY:

- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

Note: Tapered socket wells are available upon request. Specify as TWWH.

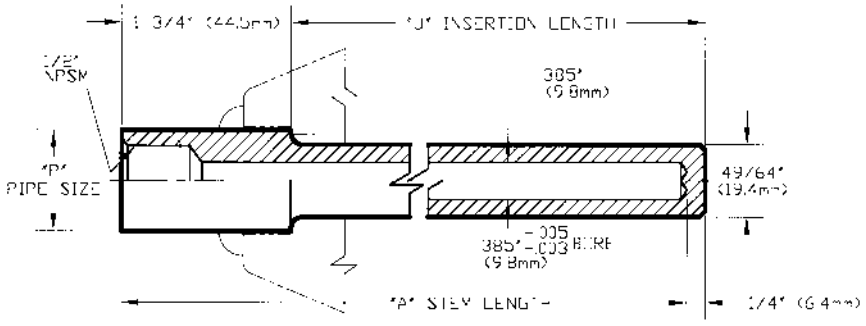
Model 260TWW - Socket Weld



.260" Bore

MODEL	STEM LENGTH A	INSERT. LENGTH U	PIPE SIZE P	SHANK DIAMETER Q
3/4" - 260TWW	4" 6" 9" 12" 15" 18" 24"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	1.050"	— 3/4"
1" - 260TWW	4" 6" 9" 12" 15" 18" 24"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	1.315"	— 7/8"

Model 385TWW - Socket Weld

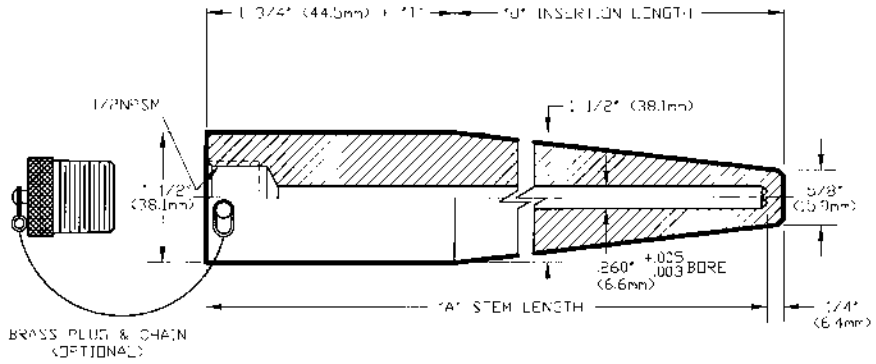


.385" Bore

MODEL	STEM LENGTH A	INSERT. LENGTH U	PIPE SIZE P	SHANK DIAMETER Q
3/4" - 385TWW	4" 6" 9" 12" 15" 18" 24"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	1.050"	49/64"
1" - 385TWW	.4" 6" 9" 12" 15" 18" 24"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"	1.315"	49/64"

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

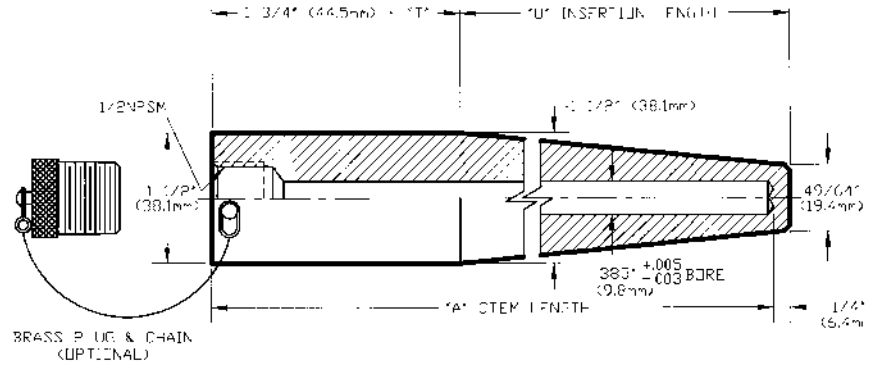
Model 260TWI - Weld-In



.260" Bore

MODEL	DIAMETER	STEM LENGTH A	INSERTION LENGTH U
260TWI	1-1/2"	4" 6" 9" 12" 15" 18" 24"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"

Model 385TWI - Weld-In



.385" Bore

MODEL	DIAMETER	STEM LENGTH A	INSERTION LENGTH U
385TWI	1-1/2"	4" 6" 9" 12" 15" 18" 24"	2-1/2" 4-1/2" 7-1/2" 10-1/2" 13-1/2" 16-1/2" 22-1/2"

APPLICATION:
For welding directly into piping.

MATERIALS:
Carbon Steel (C-1018); 304SS; 316SS; Chrome Moly (F-11 or F-22 as specified). Other materials available upon request.

CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use.

LAGGING EXTENSION:
Specify by adding to "T" dimension to 1-3/4" head dimension.

TO ORDER PLEASE SPECIFY:
- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

PROCESS CONNECTION SIZE:
Standard thermowells fit 1" and 1-1/2" lap joint flanges. Other sizes available.

MATERIALS:
Carbon Steel (C-1018); 304SS; 316SS; Monel are standard. Other materials available.

BACKING FLANGE:
When desired a carbon steel lap joint flange can be supplied with Van Stone thermowells. When ordering please specify flange size and pressure rating.

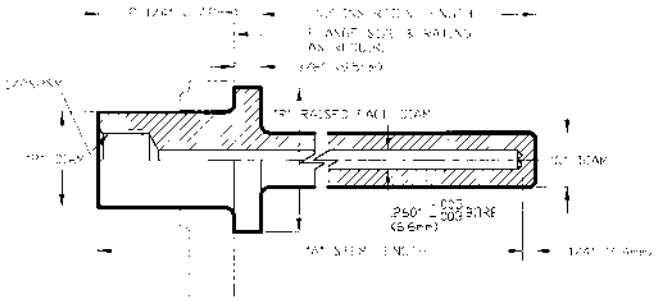
CAP & CHAIN:
Available upon request for keeping thermowell bore clean when not in use. (Not shown)

HEAVY DUTY:
Tapered designs are also available.

TO ORDER PLEASE SPECIFY:

- Model
- Material
- "U" - Insertion Length and "A" - Stem Length
- Options as required

Model 260TWV - Van Stone

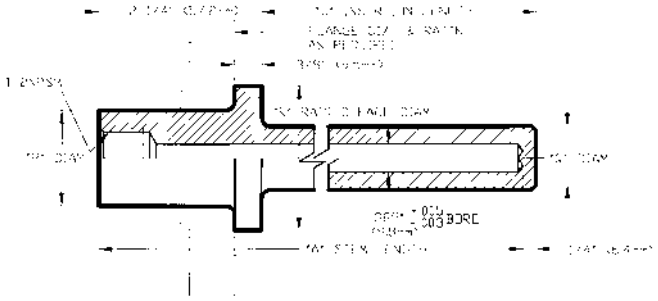


.260" Bore

MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	PIPE SIZE P	RAISED FACE DIMENSION R
1" - 260TWV	4"	2"	3/4"	1.315"	2"
1" - 260TWV	6"	4"			
1" - 260TWV	9"	7"			
1" - 260TWV	12"	10"			
1" - 260TWV	15"	13"			
1" - 260TWV	18"	16"			
1" - 260TWV	24"	22"			

MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	PIPE SIZE P	RAISED FACE DIMENSION R
1-1/2" - 260TWV	4"	2"	3/4"	1.900"	2-7/8"
1-1/2" - 260TWV	6"	4"			
1-1/2" - 260TWV	9"	7"			
1-1/2" - 260TWV	12"	10"			
1-1/2" - 260TWV	15"	13"			
1-1/2" - 260TWV	18"	16"			
1-1/2" - 260TWV	24"	22"			

Model 385TWV - Van Stone



.385" Bore

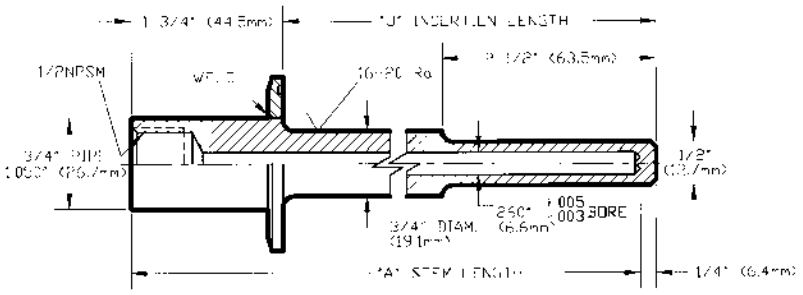
MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	PIPE SIZE P	RAISED FACE DIMENSION R
1" - 385TWV	4"	2"	7/8"	1.315"	2"
1" - 385TWV	6"	4"			
1" - 385TWV	9"	7"			
1" - 385TWV	12"	10"			
1" - 385TWV	15"	13"			
1" - 385TWV	18"	16"			
1" - 385TWV	24"	22"			

MODEL	STEM LENGTH A	INSERTION LENGTH U	SHANK DIAMETER Q	PIPE SIZE P	RAISED FACE DIMENSION R
1-1/2" - 385TWV	4"	2"	7/8"	1.900"	2-7/8"
1-1/2" - 385TWV	6"	4"			
1-1/2" - 385TWV	9"	7"			
1-1/2" - 385TWV	12"	10"			
1-1/2" - 385TWV	15"	13"			
1-1/2" - 385TWV	18"	16"			
1-1/2" - 385TWV	24"	22"			

TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

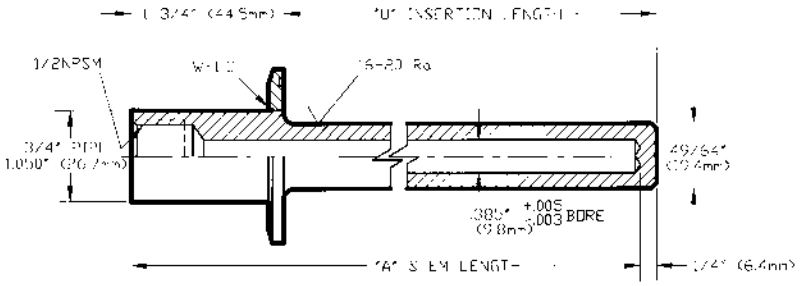
SANITARY THERMOWELLS FOR 1/4" AND 3/8" DIAMETER ELEMENTS

Model 260TWS - Sanitary



.260" Bore

Model 385TWS - Sanitary



.385" Bore

APPLICATION:
Dairy, food processing, pharmaceutical and other sanitary requirements.

PROCESS CONNECTION SIZE:
Available with 1" to 1-1/2", 2", 2-1/2", 3", and 4".
Tri-Clamp® end caps. Other designs available upon request.

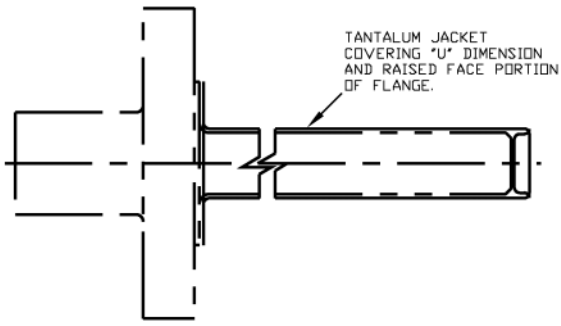
MATERIALS:
304SS or 316SS. Other materials are available upon request.

FINISH:
16-20 Ra polish standard. Special finishes available upon request.

TO ORDER PLEASE SPECIFY:

- Model
- Material
- Process Connection
- "U" - Insertion Length and "A" - Stem Length
- Options as required

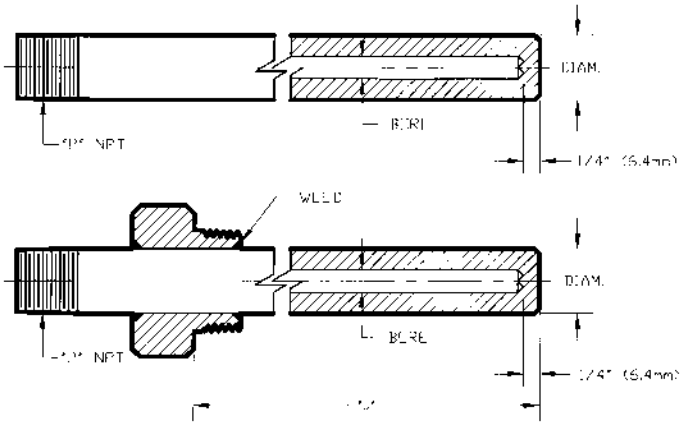
TANTALUM JACKETS



STANDARD THICKNESS OF JACKETS:
0.015" on "U" Dimension
0.015" on Raised Face and End Cap
0.030" thick jackets are available upon request. Jackets available with 1/2", 3/4", or 7/8" inside dimensions.

Titanium and zirconium jackets available.

PROTECTING TUBES



Available with various I.D.'s, O.D.'s, and materials to suit your application.

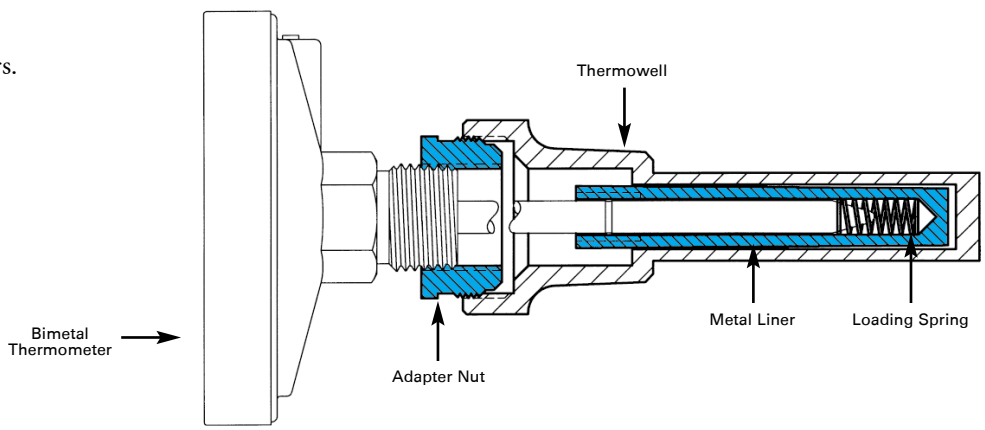
TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

THERMOWELL ADAPTER SET

APPLICATION:
The AS-86 Adapter Set was designed as a simple means of converting existing Industrial Glass Thermometer Wells for use with Bimetal Thermometers.

Note: Adapter set also available for use with Gas Actuated Thermometers.

Model AS-86



THERMOWELL OPTIONS

THREAD SIZES - INTERNAL
- 1/2" NPT
- 1/2" BSPP
- 1/4" NPT

THREAD SIZES - EXTERNAL
- BSPP
- BSPT

PROCEDURES
- Stamping Tag Numbers
- Special Lagging Length
- Full Penetration Welds
- Screwed and Back Welded Flanges

CAP AND CHAIN
- Brass
- 304 SS
- 316 SS

HEAT TREATING, ANNEALING AND CLEANING
- NACE Heat Treat
- Stress Relieving/Solution Annealing Process
- Passivate
- Oxygen Cleaning

FINISHING AND COATING
- Smooth Face on Flange 125 Ra
- Special Wetted Surface Finishes
- 16-32 Ra
- 4-10 Ra
- 3A Sanitary Approval Stamp
- Electropolished
- Teflon Coating
- Tantalum Jacket
- Titanium Jacket

TESTING AND DOCUMENTATION
- Dye Penetrant Test
- Hydrostatic Test 2 - 5 Minutes
- Hydrostatic Test 10 - 15 Minutes
- Ultrasonic Test - End Thickness
- Magnetic Particle Test
- X-ray Test
- Cross Check Chemical Analysis
- Cross Check Physical Analysis
- Certified Material Test Report (per ASTM)
- Murdock Stress Calculations
- Certified Dimensional Drawings

MATERIALS AVAILABLE
Most Typically Used:
- Carbon Steel C-1018
- Brass
- 304 SS
- 316 SS

Also Available:
- Aluminum
- Naval Brass
- Carbon Steel A-105
- Carpenter 20
- Duplex 2205
- Hastelloy B
- Hastelloy C
- Incoloy 800
- Inconel 600
- Kynar
- Monel
- Nickel
- Tantalum
- Teflon
- Titanium
- 304 SS ELC
- 309 SS
- 310 SS
- 316 SS ELC
- 321 SS
- 347 SS
- 446 SS

Other options and materials available upon request.

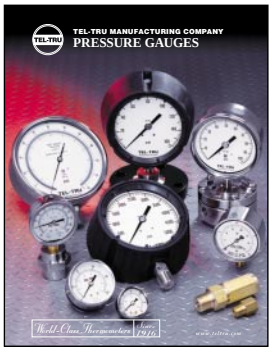
TEL-TRU MANUFACTURING CO.
800-232-5335 or 585-232-1440
See www.teltru.com for technical data on pressure and temperature ratings and maximum fluid velocity.

ADDITIONAL PRODUCTS AVAILABLE FROM TEL-TRU

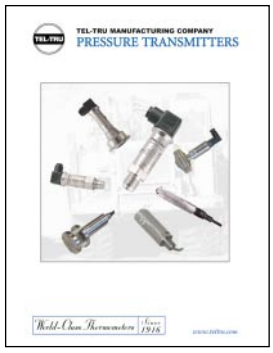
★ For Extensive Product Information or To Download Product Literature Visit www.teltru.com ★

Bimetal Thermometers
Catalog number BT1100

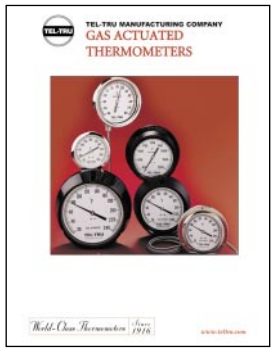
Digital Thermometers
Catalog number DT0903



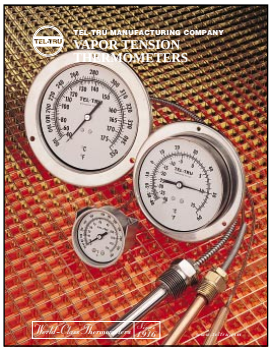
Pressure Gauges
Catalog number PG0802



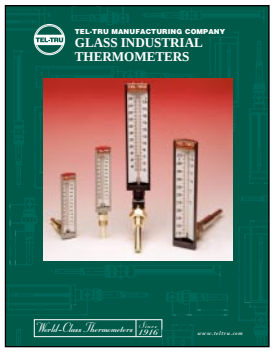
Pressure Transmitters
Catalog number PT1102



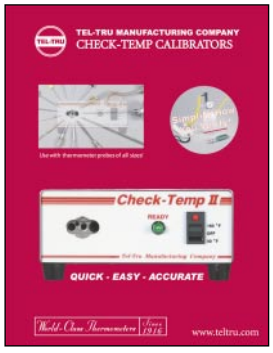
Gas Actuated Thermometers
Catalog number GA0203



Vapor Tension Thermometers
Catalog number 8549



Glass Industrial
Catalog number GI0702



Check-Temp Calibrators
Catalog number CTC401

Tel-Fast Non-Contact Thermometers
Catalog number TFSHT102

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