TRERICE

PRODUCT CATALOG

Manufacturer of

Pressure Gauges

Temperature Instrumentation

Regulators & Control Valves

Quality, Product and Service... Trerice... since 1923

Pressure Gauges

The Trerice Line of Pressure Gauges has been developed to satisfy the various pressure measurement demands of the Process, Industrial and Commercial markets. Our gauges feature the accuracies, wetted parts, connections, and case options (materials, sizes and configurations) required by these markets. Our pressure gauge line is supported by an extensive line of diaphragm protection seals and a complete selection of pressure gauge accessories. Trerice covers the world of Pressure measurement.

Temperature Instrumentation

The Trerice Line of Thermometers is the most comprehensive within today's marketplace. Our Liquid-in-Glass Industrial Thermometer is the industry's single most specified thermometer. The addition of our all-new Light Powered-Digital Thermometer takes Trerice into the next generation of temperature instrumentation. Our family of Bimetallic Thermometers is unsurpassed for quality and selection. We offer remote and direct mounted versions of our Filled System Dial Thermometers to satisfy the varying applications of industrial and commercial temperature measurement. Our family of specialized electronic temperature sensors includes Thermocouples and RTDs. Trerice also offers a complete selection of thermowells, suitable for any thermometer or temperature sensor. These are the reasons Trerice and Temperature have long been synonymous in the field of quality measurement.

Regulators & Control Valves

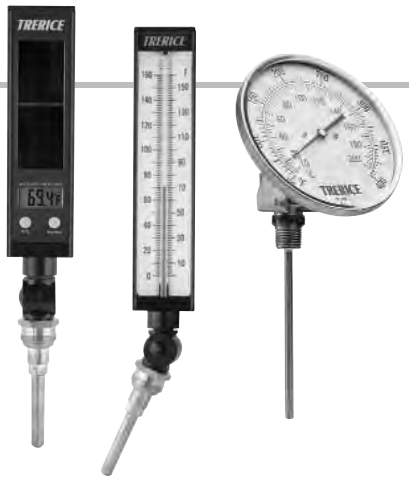
The Trerice Line of Control Products will satisfy the requirements of most flow-based temperature and pressure control applications. Our "Self-Op" Temperature Regulator features a fully self-contained actuator, requiring no external power. The Trerice globe-type control and regulating valve bodies are available in bronze, steel, stainless steel, and cast iron constructions. Trerice offers a wide range of controllers including electronic PID and electric contact controllers. Our control valves are available with pneumatic or electric actuators, and are designed to meet the complex requirements of accurate flow-control. Trerice is the source for products to satisfy the demands of today's flow-based temperature and pressure Control applications.

TRERICE

12950 W. Eight Mile Road • Oak Park • MI 48237-3288

Tel:1.888.TRERICE • Fax: 1.248.399.7246

Website:www.TRERICE.com
E-mail.info@trerice.com



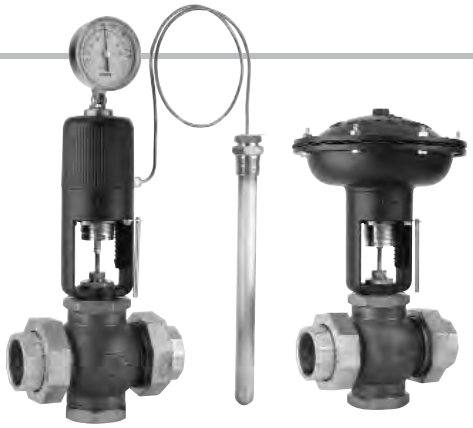


Table of Contents

PRESSURE GAUGES

PRESSURE GAUGES

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Table of Contents

Specialty Gauges

Products designed to meet the needs of specialized industrial markets; including low-pressure gas, sanitary and remote reading applications.

Pressure Gauge Options & Accessories

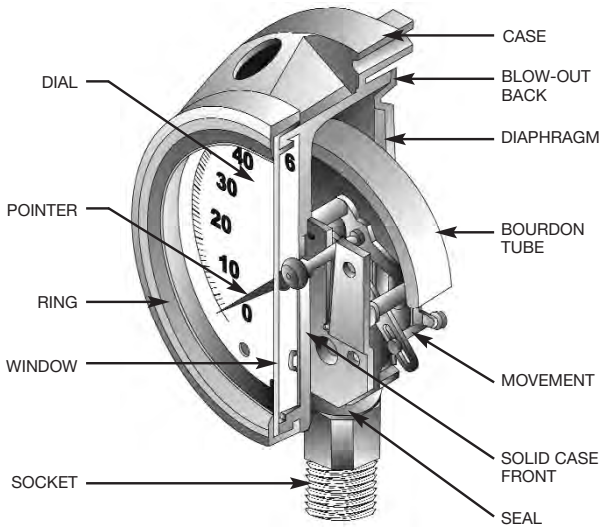
Enhancements to customize and optimize pressure gauge performance, along with the necessary accessories to complete any installation.

Diaphragm Seals

Protective devices that isolate a pressure sensing instrument from the process fluid being monitored. Especially useful when measuring corrosive or viscous pressure mediums.

Pressure Gauges

DESIGN & OPERATION



Description

A pressure gauge is a mechanical instrument designed to measure the internal pressure and/or vacuum of a vessel or system. Trerice Pressure Gauges are offered in a variety of styles, sizes, and wetted part materials to meet the demands of standard and special applications.

Principles of Operation

Most Trerice Pressure Gauges are constructed with a bourdon tube sensing element. When the sensing element is subjected to pressure, it flexes and the resulting motion is transmitted as a measurement through a mechanical movement to the dial face pointer.

Selecting a Pressure Gauge

Case

Cases are available in a wide variety of materials and configurations. The combination of material and configuration is generally determined by the demands of the application, as well as the preferences of the gauge specifier. The more demanding the environment, the more rugged the case construction (i.e., polypropylene or stainless steel for industrial applications vs. aluminum or steel for construction or commercial applications). Gauge mounting or retrofitting needs may affect case selection (i.e., a gauge to be panel mounted will require either a front flange or u-clamp style case). For safety considerations, a “solid-front” case style may be required. Each application will have a unique set of requirements which will help guide the specifier in selecting the appropriate case style.

All Trerice Pressure Gauges should be carefully selected to meet the demands of the particular application. The information contained in this catalog is only offered as a guide to assist in making the proper selection.

Improper application may cause failure of the gauge, resulting in possible personal injury or property damage. For correct use and application of all pressure gauges, please refer to Pressure Gauge Standard ASME B40.100. This document may be obtained from the American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990.

Wetted Parts and Pressure Medium

Under normal operating conditions, only the tube and socket assembly (Wetted Parts) of a pressure gauge will come into contact with the fluid being measured (Pressure Medium). The selection of the assembly will be determined by the composition of the medium. Air, gas, steam, water and other noncorrosive media are usually satisfied by a bronze or brass bourdon tube and brass socket assembly. Stainless steel or Monel wetted parts are used when the medium contains corrosive elements or when high operating pressures or temperatures will be encountered. A diaphragm seal is recommended for highly corrosive media or that which may solidify or deposit solids within the tube and socket assembly of the gauge. (See the Diaphragm Seal section of this catalog.)

Connection and Mounting

The socket connection provides an entrance port for the process medium as well as a means to mount the gauge to a pipeline or vessel. Male connections can be provided with NPT, BSPT, or other thread styles, in sizes from 1/8" through 1/2". A high-pressure, 9/16" LHT connection is also available. The mounting location indicates where the connection protrudes from the case. Trerice Pressure Gauges are available with three standard mounting locations: lower male (LM), lower back male (LBM), and center back male (CBM). Other connection locations may be available on some models.

Window and Ring

The window provides a means for viewing the measurement, as well as protection of the dial face and pointer of the instrument, and is normally held in place by a ring, which is screwed or snapped to the case of the gauge. Plastic, clear glass and laminated glass are common window materials. Ring styles include threaded, bayonet, friction, crimped and hinged, depending upon the case type.

Pointer

There are essentially three types of pointers available on Trerice Pressure Gauges: a micro-adjustable pointer (providing high quality and accuracy); a friction-type pointer (providing adjustability and durability); and a plain, non-adjustable pointer (providing economic reliability).

Accuracy

The accuracy of a pressure gauge is expressed as a percentage (plus or minus) of the maximum scale range. Please refer to Pressure Gauge Standard ASME B40.100.

Measurement Range and Dial

The maximum operating pressure of the application should not exceed 75% of the measurement range selected. Therefore, the specified range should be twice the normal operating point of the gauge to avoid damage to the gauge internal. A wide variety of measurement ranges is available, from 30" Hg vacuum through 20,000 psi pressure. Ranges are indelibly presented in black figures and markings upon a white dial face.

During system start-up or shut-down, system pressures can greatly exceed intended conditions. Pressure gauges should be protected by appropriate isolation devices such as, but not limited to, needle valves, gauge cocks, etc.

Environmental Conditions

Pressure gauge selection will be influenced by the environmental conditions under which the gauge is expected to perform. Condensation or waterproofing concerns can be addressed through the use of hermetically sealed or weatherproofed gauges. Case construction should be considered when selecting a gauge to be used in conditions of extreme or sustained heat or cold, or where the atmospheric environment may contain corrosive elements.

Pressure gauges provide an excellent and reliable means of measuring and indicating process conditions, however they are passive devices. They are not substitutes for active safety devices. For start-up or test situations on closed loop systems, a safety relief device must be used.

Liquid Filling

Liquid filling (glycerin, silicone or other fills) can prolong the life of a pressure gauge by minimizing wear on the gauge internal resulting from vibration or oscillation. Liquid filling also acts as a permanent lubricant to the moving parts of the instrument.

450 Series

Solid Front • Field Liquid Fillable • Turret Case

PROCESS GAUGES

450B shown

- 4 1/2" Dial Size
- ±0.5% Accuracy
- Solid Front/Blow-Out Back
- Field Liquid Fillable

The Trerice **450 Series** Process Gauge is designed for the petrochemical and industrial process industries. This solid front, blow-out back gauge is noted for its fiberglass reinforced polypropylene turret case and screwed ring; its sturdy interior design; and its field liquid-fill capability (no kit required). The 450 Series can withstand the most rugged industrial applications, while maintaining precise accuracy. Wetted parts are bronze tube/brass socket, stainless steel, or Monel.

- Optional features available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models		Wetted Parts
450B **450LFB**	(dry) (liquid-filled)	Bronze tube, brass socket
450SS **450LFSS**	(dry) (liquid-filled)	316 stainless steel* tube and socket
450M **450LFM**	(dry) (liquid-filled)	Monel tube and socket (meets NACE MR 01.75)

Dial Size	4 1/2"
Fill	Glycerine. Other fills available. See Options & Accessories
Movement	Stainless steel
Connection	Lower male or lower back male, 1/4 or 1/2 NPT
Case	Fiberglass reinforced polypropylene, turret, solid front with blow-out back
Ring	Threaded fiberglass reinforced polypropylene
Window	Acrylic
Pointer	Micro adjustable, black finished
Dial Face	Aluminum, white background with black graduations and markings
Additional Features	Overload and underload stops
Accuracy	±0.5% Full Scale, ASME B40.100 Grade 2A
Maximum Temperature	450B, 450SS, 450M: **250°F** (**121°C**) 450LFB, 450LFSS, 450LFM: **150°F** (**65°C**)
Approximate Shipping Weight	450B, 450SS, 450M: 2.2 lbs [1.00 kg] 450LFB, 450LFSS, 450LFM: 3.1 lbs [1.41 kg]

* Ranges over 10,000 PSI have Ni-Span-C tube.

HOW TO ORDER

Sample Order Number: **450LFB 45 02 L D 110**

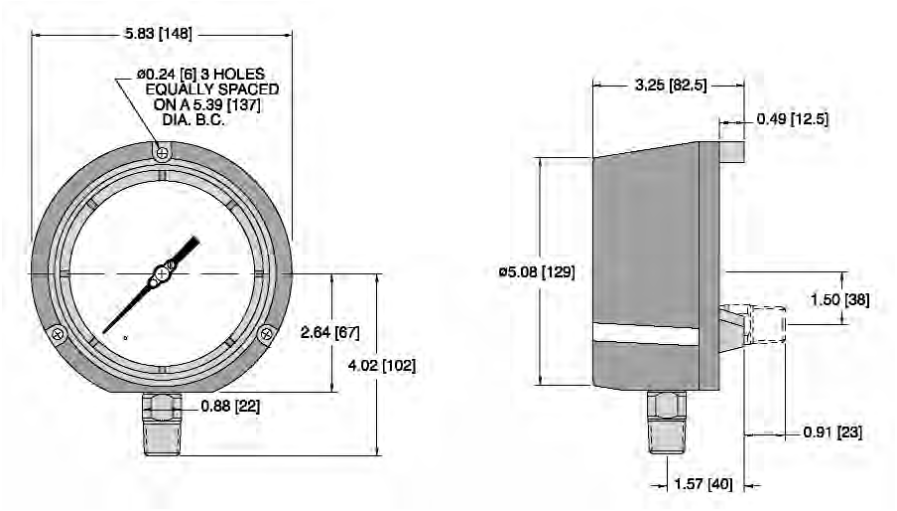
Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
450B **450LFB** **450SS** **450LFSS** **450M** **450LFM**	**45** 4 1/2"	**02** 1/4 NPT **04** 1/2 NPT	**L** Lower **B** Back	**A** psi **B** kPa **C** kg/cm² **D** psi/kPa **E** psi & kg/cm²	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

450 Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Solid Front • Field Liquid Fillable • Turret Case



Standard Ranges

psi Ranges (A)				kPa Ranges (B)				kg/cm² Ranges (C)			
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.2	010	-100 to 0 kPa	10	1	010	76 cm Hg to 0	10	0.5
020	30" Hg to 15 psi	5/5	0.5/0.2	020	-100 to 100 kPa	20	2	020	76 cm Hg to 1 kg/cm²	20/0.2	1/.02
030	30" Hg to 30 psi	10/5	1/0.5	030	-100 to 200 kPa	50	2	030	76 cm Hg to 2 kg/cm²	20/0.5	2/.02
040	30" Hg to 60 psi	10/10	1/1	040	-100 to 400 kPa	50	5	040	76 cm Hg to 4 kg/cm²	25/0.5	5/.05
050	30" Hg to 100 psi	30/10	2/1	050	-100 to 600 kPa	100	5	050	76 cm Hg to 7 kg/cm²	76/1	5/0.1
060	30" Hg to 150 psi	30/20	5/2	060	-100 to 1000 kPa	100	10	060	76 cm Hg to 10 kg/cm²	76/1	15/0.1
070	30" Hg to 300 psi	30/50	5/2	070	-100 to 2000 kPa	200	20	070	76 cm Hg to 21 kg/cm²	76/2	19/0.2
080	0 to 15 psi	3	0.1	080	0 to 100 kPa	10	1	080	0 to 1 kg/cm²	0.1	0.01
090	0 to 30 psi	5	0.2	090	0 to 200 kPa	20	2	090	0 to 2 kg/cm²	0.2	0.02
100	0 to 60 psi	10	0.5	100	0 to 400 kPa	50	5	100	0 to 4.2 kg/cm²	0.5	0.05
110	0 to 100 psi	10	1	110	0 to 700 kPa	100	5	110	0 to 7 kg/cm²	1	0.05
120	0 to 160 psi	20	1	120	0 to 1200 kPa	200	10	120	0 to 11 kg/cm²	1	0.1
130	0 to 200 psi	20	2	130	0 to 1500 kPa	300	10	130	0 to 14 kg/cm²	2	0.1
140	0 to 300 psi	50	2	140	0 to 2000 kPa	200	20	140	0 to 21 kg/cm²	3	0.2
150	0 to 400 psi	50	5	150	0 to 3000 kPa	300	20	150	0 to 28 kg/cm²	4	0.2
160	0 to 600 psi	50	5	160	0 to 4000 kPa	500	50	160	0 to 42 kg/cm²	6	0.5
180	0 to 1000 psi	100	10	180	0 to 7000 kPa	1000	50	180	0 to 70 kg/cm²	10	0.5
Ranges over 1000 psi are not available on 450B and 450LFB.											
190	0 to 1500 psi	300	10	190	0 to 10,000 kPa	1000	100	190	0 to 100 kg/cm²	10	1
200	0 to 2000 psi	200	20	200	0 to 14,000 kPa	2000	100	200	0 to 140 kg/cm²	20	1
210	0 to 3000 psi	300	20	210	0 to 20,000 kPa	2000	200	210	0 to 210 kg/cm²	30	2
220	0 to 5000 psi	500	50	220	0 to 35,000 kPa	5000	250	220	0 to 350 kg/cm²	50	2
230	0 to 10,000 psi	1000	100	230	0 to 60,000 kPa	10,000	500	230	0 to 700 kg/cm²	100	10
Ranges over 10,000 psi are only available on 450SS and 450LFSS, and have Ni-Span-C tubes.											
240	0 to 15,000 psi	2000	100	240	0 to 100,000 kPa	20,000	1000	240	0 to 1000 kg/cm²	100	10
250	0 to 20,000 psi	2000	200	250	0 to 140,000 kPa	20,000	1000	250	0 to 1400 kg/cm²	200	20

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) or **E** (psi & kg/cm²) followed by the equivalent **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

750 Series

Solid Front • Field Liquid Fillable • Stainless Steel Case

PROCESS GAUGES

750SS shown

- 4" Dial Size
- ±1.0% Accuracy
- Stainless Steel Case
- Solid Front/Blow-Out Back
- Field Liquid Fillable

The Trerice **750 Series** Process Gauge is designed for the varying needs of the world's process industries. This solid front/blow-out back gauge features a stainless steel case and ring. Its sturdy interior design and field liquid-fill capability (no kit required) provide the durability, accuracy and safety required for industrial process applications. Wetted parts are stainless steel or Monel.

- Optional features available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models		Wetted Parts
750SS	(dry)	316 stainless steel tube and socket
750LFSS	(liquid-filled)	
750M	(dry)	Monel tube and socket (meets NACE MR 01.75)
750LFM	(liquid-filled)	

Dial Size	4"
Fill	Glycerine. Other fills available. See Options & Accessories.
Movement	Stainless steel
Connection	Lower male, 1/4 or 1/2 NPT
Case	304 stainless steel, satin finished, stem-mounted flangeless, solid front with blow-out back
Ring	Bayonet type, 304 stainless steel
Window	Laminated safety glass
Pointer	Plain, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±1.0% Full Scale, ASME B40.100 Grade 1A
Maximum Temperature	750SS, 750M: **250°F** (**121°C**) 750LFSS, 750LFM: **150°F** (**65°C**)
Approximate Shipping Weight	750SS, 750M: 1.3 lbs [0.59 kg] 750LFSS, 750LFM: 1.8 lbs [0.82 kg]

HOW TO ORDER

Sample Order Number: **750SS 40 04 L D 120**

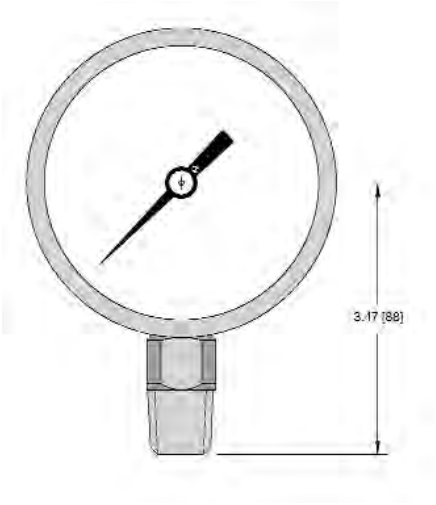
Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
750SS **750LFSS** **750M** **750LFM**	**40** 4"	**02** 1/4 NPT **04** 1/2 NPT	**L** Lower	**A** psi **D** psi/kPa	See Standard Ranges

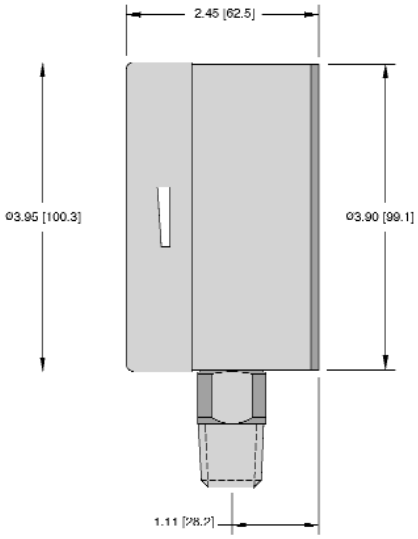
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

750 Series

Solid Front • Field Liquid Fillable • Stainless Steel Case

All dimensions are nominal.
Dimensions in [ ] are in millimeters





Standard Ranges

psi Ranges (A)			
Range Code	**Specific Range (psi)**	**Figure Intervals**	**Minor Divisions**
010	30" Hg to 0	5	0.5
020	30" Hg to 15 psi	10/5	0.5/0.5
030	30" Hg to 30 psi	10/5	1/1
040	30" Hg to 60 psi	10/10	2/1
050	30" Hg to 100 psi	30/20	2/2
060	30" Hg to 150 psi	30/20	5/2
070	30" Hg to 300 psi	30/50	5/5
080	0 to 15 psi	3	0.2
090	0 to 30 psi	5	0.5
100	0 to 60 psi	10	1
110	0 to 100 psi	10	2
120	0 to 160 psi	20	2
130	0 to 200 psi	20	2
140	0 to 300 psi	50	5
150	0 to 400 psi	50	5
160	0 to 600 psi	100	10
180	0 to 1000 psi	100	20
190	0 to 1500 psi	300	20
200	0 to 2000 psi	200	20
210	0 to 3000 psi	500	50
220	0 to 5000 psi	1000	100
230	0 to 10,000 psi	2000	200
Ranges over 10,000 psi are ONLY available on 750SS or 750LFSS.			
240	0 to 15,000 psi	2000	200
250	0 to 20,000 psi	2000	200

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

500X Series

Dial Sizes thru 12" • Cast Aluminum Case

INDUSTRIAL GAUGES

500XB shown

- 4½", 6", 8½", 12" Dial Sizes
- ±0.5% Accuracy
- Cast Aluminum Case

The Trerice **500X Series** Industrial Gauge is designed to withstand the most demanding applications of a variety of industries. This pressure gauge has a back flanged, cast aluminum case and stainless steel ring. Wetted parts are either bronze tube with brass socket or stainless steel tube and socket.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models	Wetted Parts
500XB	Bronze tube, brass socket
500XSS	316 stainless steel tube and socket *
Dial Sizes	4½", 6", 8½", 12"
Movement	Stainless steel
Connection	Lower male or lower back male, ¼ or ½ NPT
Case	Cast aluminum, black finished, surface mounted back flanged
Ring	4½", 6", 8½" Dial Size: Friction type, 304 stainless steel 12" Dial Size: Friction type, steel, black finished
Window	Clear glass
Pointer	4½", 6", 8½" Dial Size: Micro adjustable, black finished, 12" Dial Size: Plain, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±0.5% Full Scale, ASME B40.100 Grade 2A
Maximum Temperature	**250°F (121°C)**
Approximate Shipping Weight	4½" Dial Size: 2.0 lbs [0.91 kg] 6" Dial Size: 2.8 lbs [1.27 kg] 8½" Dial Size: 5.8 lbs [2.63 kg] 12" Dial Size: 14.6 lbs [6.62 kg]

* Ni-Span C tube and 316 stainless steel socket furnished above 10,000 psi.

HOW TO ORDER

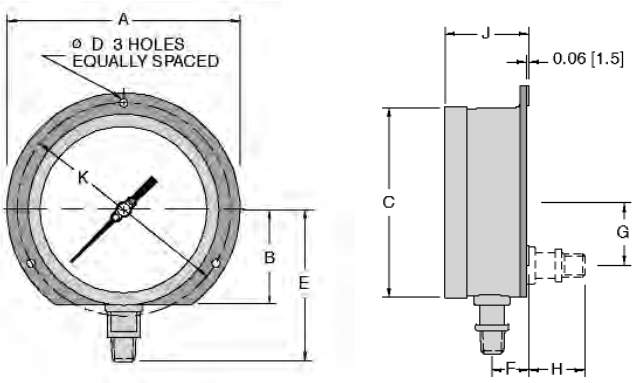
Sample Order Number: **500XB 45 02 L A 110**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
500XB **500XSS**	**45** 4½" **60** 6" **85** 8½" **12** 12"	**02** ¼ NPT **04** ½ NPT	**L** Lower **B** Back	**A** psi **B** kPa **C** kg/cm² **D** psi/kPa **E** psi & kg/cm²	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

500X Series

Dial Sizes thru 12" • Cast Aluminum Case



All dimensions are nominal. Dimensions in [ ] are in millimeters.

Dial Size	A	B	C	D	E	F	G	H	J	K
4½"	5.88 [149.7]	2.39 [60.7]	4.79 [121.7]	0.22 [5.6]	3.83 [97.2]	0.94 [23.8]	1.63 [41.3]	1.41 [35.7]	2.06 [52.4]	5.38 [136.5]
6"	7.62 [193.6]	3.14 [79.8]	6.29 [159.8]	0.28 [7.1]	4.70 [119.5]	0.93 [23.8]	1.63 [41.3]	1.41 [35.7]	2.09 [53]	7.00 [177.8]
8½"	10.25 [260.4]	4.38 [111.1]	8.80 [223.4]	0.28 [7.1]	5.81 [147.5]	0.97 [24.6]	1.63 [41.3]	1.41 [35.7]	2.24 [56.8]	9.63 [244.5]
12"	14.25 [362]	N/A	12.66 [321.5]	0.28 [7.1]	7.90 [200.7]	1.02 [25.9]	1.63 [41.3]	1.19 [30.2]	2.53 [64.3]	13.50 [343]

Standard Ranges

psi Ranges (A)				kPa Ranges (B)				kg/cm² Ranges (C)			
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.2	010	–100 to 0 kPa	10	1	010	76 cm Hg to 0	10	0.5
020	30" Hg to 15 psi	5/5	0.5/0.2	020	–100 to 100 kPa	20	2	020	76 cm Hg to 1 kg/cm²	20/0.2	1/.02
030	30" Hg to 30 psi	10/5	1/0.5	030	–100 to 200 kPa	50	2	030	76 cm Hg to 2 kg/cm²	20/0.5	2/.02
040	30" Hg to 60 psi	10/10	1/1	040	–100 to 400 kPa	50	5	040	76 cm Hg to 4 kg/cm²	25/0.5	5/.05
050	30" Hg to 100 psi	30/10	2/1	050	–100 to 700 kPa	100	5	050	76 cm Hg to 7 kg/cm²	76/1	5/0.1
060	30" Hg to 150 psi	30/20	5/2	060	–100 to 1000 kPa	100	10	060	76 cm Hg to 10 kg/cm²	76/1	15/0.1
070	30" Hg to 300 psi	30/50	5/2	070	–100 to 2000 kPa	200	20	070	76 cm Hg to 21 kg/cm²	76/2	19/0.2
080	0 to 15 psi	3	0.1	080	0 to 100 kPa	10	1	080	0 to 1 kg/cm²	0.1	0.01
090	0 to 30 psi	5	0.2	090	0 to 200 kPa	20	2	090	0 to 2 kg/cm²	0.2	0.02
100	0 to 60 psi	10	0.5	100	0 to 400 kPa	50	5	100	0 to 4.2 kg/cm²	0.5	0.5
110	0 to 100 psi	10	1	110	0 to 700 kPa	100	5	110	0 to 7 kg/cm²	1	0.5
120	0 to 160 psi	20	1	120	0 to 1200 kPa	200	10	120	0 to 11 kg/cm²	1	0.1
130	0 to 200 psi	20	2	130	0 to 1500 kPa	300	10	130	0 to 14 kg/cm²	2	0.1
140	0 to 300 psi	50	2	140	0 to 2000 kPa	200	20	140	0 to 21 kg/cm²	3	0.2
150	0 to 400 psi	50	5	150	0 to 3000 kPa	300	20	150	0 to 28 kg/cm²	4	0.2
160	0 to 600 psi	50	5	160	0 to 4000 kPa	500	50	160	0 to 42 kg/cm²	6	0.5
180	0 to 1000 psi	100	10	180	0 to 7000 kPa	1000	50	180	0 to 70 kg/cm²	10	0.5
Ranges over 1000 psi are not available on 500XB.											
190	0 to 1500 psi	300	10	190	0 to 10,000 kPa	1000	100	190	0 to 100 kg/cm²	10	1
200	0 to 2000 psi	200	20	200	0 to 14,000 kPa	2000	100	200	0 to 140 kg/cm²	20	1
210	0 to 3000 psi	300	20	210	0 to 20,000 kPa	2000	200	210	0 to 210 kg/cm²	30	2
220	0 to 5000 psi	500	50	220	0 to 35,000 kPa	5000	250	220	0 to 350 kg/cm²	50	2
230	0 to 10,000 psi	1000	100	230	0 to 60,000 kPa	10,000	500	230	0 to 700 kg/cm²	100	10
240	0 to 15,000 psi	2000	100	240	0 to 100,000 kPa	20,000	1000	240	0 to 1000 kg/cm²	100	10
250	0 to 20,000 psi	2000	200	250	0 to 140,000 kPa	20,000	1000	250	0 to 1400 kg/cm²	200	20

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) or **E** (psi & kg/cm²) followed by the equivalent **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

600CB

Cast Aluminum Case

600CB shown

- 3½" & 4½" Dial Sizes
- ±1.0% Accuracy
- Cast Aluminum Case
- Adjustable Pointer

The **600CB** Trerice Contractor Gauge is among the most frequently specified HVACR gauges within the construction industry. This gauge offers high reliability at a moderate price. The 600CB is furnished with a cast aluminum case and an adjustable pointer.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model
600CB

Dial Sizes	3½", 4½"
Wetted Parts	3½" Dial Size: Bronze tube, brass socket 4½" Dial Size: Brass tube & socket
Movement	Brass
Connection	Lower male, ¼ NPT
Case	Cast aluminum, black finished, stem-mounted flangeless
Ring	3½" Dial Size: Friction type, steel, black finished 4½" Dial Size: Friction type, 304 stainless steel
Window	Clear glass
Pointer	Adjustable, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±1.0% Full Scale, ASME B40.100 Grade 1A
Maximum Temperature	**250°F (121°C)**
Approximate Shipping Weight	3½" Dial Size: 0.7 lbs [0.32 kg] 4½" Dial Size: 1.1 lbs [0.50 kg]

HOW TO ORDER

Sample Order Number: **600CB 35 02 L A 090**

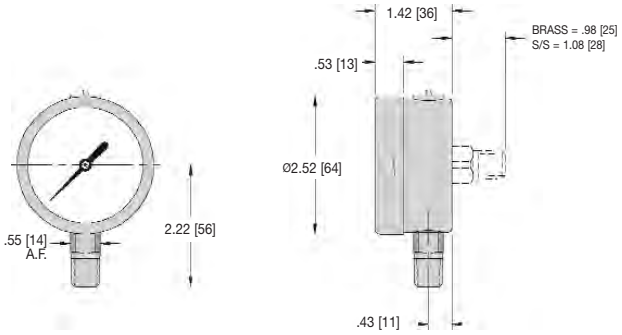
Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
600CB	**35** 3½" **45** 4½"	**02** ¼ NPT	**L** Lower	**A** psi **B** kPa **C** kg/cm² **D** psi/kPa **E** psi & kg/cm²	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

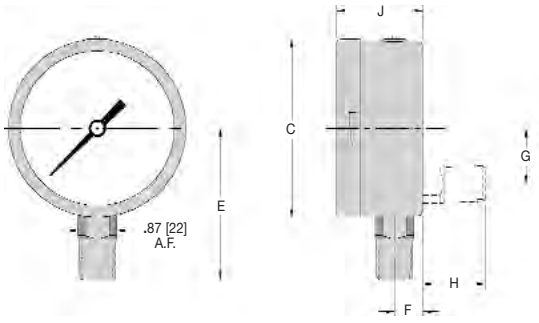
All dimensions are nominal. Dimensions in [ ] are in millimeters.

Dial Size	Material	C	E	F	G	H	J
4"	Brass	3.98 [101]	3.39 [86]	0.94 [24]	1.04 [27]	1.44 [37]	2.24 [57]
	SS	3.98 [101]	3.39 [86]	0.94 [24]	1.36 [35]	1.38 [35]	2.24 [57]
6"	Brass	6.34 [161]	4.57 [116]	0.69 [18]	1.04 [27]	1.44 [37]	1.97 [50]
	SS	6.34 [161]	4.57 [116]	0.69 [18]	1.36 [35]	1.38 [35]	1.97 [50]

2½"



4" & 6"



Standard Ranges

psi Ranges (A) All Sizes			
Range Code	**Specific Range (psi)**	**Figure Intervals**	**Minor Divisions**
010	30" Hg to 0	5	0.5
020	30" Hg to 15 psi	10/5	0.5/0.5
030	30" Hg to 30 psi	10/5	1/1
040	30" Hg to 60 psi	10/10	2/1
050	30" Hg to 100 psi	30/20	2/2
060	30" Hg to 150 psi	30/20	5/2
070	30" Hg to 300 psi	30/50	5/5
080	0 to 15 psi	3	0.2
090	0 to 30 psi	5	0.5
100	0 to 60 psi	10	1
110	0 to 100 psi	10	1
120	0 to 160 psi	20	2
130	0 to 200 psi	20	2
140	0 to 300 psi	50	5
150	0 to 400 psi	50	5
160	0 to 600 psi	100	10
	Ranges over 600 psi are not available in 700B or 700LFB in 4" or 6" Dial Sizes.		
180	0 to 1000 psi	100	20
190	0 to 1500 psi	300	20
200	0 to 2000 psi	200	20
210	0 to 3000 psi	500	50
220	0 to 5000 psi	1000	100
230	0 to 10,000 psi	2000	200
	Ranges over 10,000 psi are ONLY available in 700SS or 700LFSS in 4" or 6" Dial Sizes.		
240	0 to 15,000 psi	2000	200
250	0 to 20,000 psi	2000	200

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

600CB

Cast Aluminum Case

COMMERCIAL• CONTRACTOR GAUGES

600CB shown

- 3½" & 4½" Dial Sizes
- ±1.0% Accuracy
- Cast Aluminum Case
- Adjustable Pointer

The **600CB** Trerice Contractor Gauge is among the most frequently specified HVACR gauges within the construction industry. This gauge offers high reliability at a moderate price. The 600CB is furnished with a cast aluminum case and an adjustable pointer.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model
600CB

Dial Sizes	3½", 4½"
Wetted Parts	3½" Dial Size: Bronze tube, brass socket 4½" Dial Size: Brass tube & socket
Movement	Brass
Connection	Lower male, ¼ NPT
Case	Cast aluminum, black finished, stem-mounted flangeless
Ring	3½" Dial Size: Friction type, steel, black finished 4½" Dial Size: Friction type, 304 stainless steel
Window	Clear glass
Pointer	Adjustable, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±1.0% Full Scale, ASME B40.100 Grade 1A
Maximum Temperature	**250°F (121°C)**
Approximate Shipping Weight	3½" Dial Size: 0.7 lbs [0.32 kg] 4½" Dial Size: 1.1 lbs [0.50 kg]

HOW TO ORDER

Sample Order Number: **600CB 35 02 L A 090**

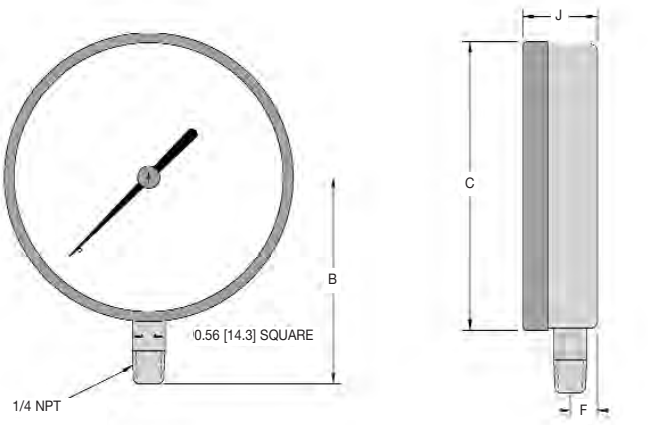
Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
600CB	**35** 3½" **45** 4½"	**02** ¼ NPT	**L** Lower	**A** psi **B** kPa **C** kg/cm² **D** psi/kPa **E** psi & kg/cm²	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

600CB

Cast Aluminum Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Dial Size	B	C	F	J
3½"	3.06 [77.8]	3.88 [98.6]	0.44 [11.2]	1.22 [31]
4½"	3.54 [89.9]	4.96 [126]	0.47 [11.9]	1.28 [32.5]

Standard Ranges

psi Ranges (A)				kPa Ranges (B)				kg/cm² Ranges (C)			
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.2	010	–100 to 0 kPa	10	1	010	76 cm Hg to 0	10	0.5
020	30" Hg to 15 psi	5/5	0.5/0.2	020	–100 to 100 kPa	20	2	020	76 cm Hg to 1 kg/cm²	20/0.2	1/.02
030	30" Hg to 30 psi	10/5	1/0.5	030	–100 to 200 kPa	50	2	030	76 cm Hg to 2 kg/cm²	20/0.5	2/.02
040	30" Hg to 60 psi	10/10	1/1	040	–100 to 400 kPa	50	5	040	76 cm Hg to 4 kg/cm²	25/0.5	5/.05
050	30" Hg to 100 psi	30/10	2/1	050	–100 to 700 kPa	100	5	050	76 cm Hg to 7 kg/cm²	76/1	5/0.1
060	30" Hg to 150 psi	30/20	5/2	060	–100 to 1000 kPa	100	10	060	76 cm Hg to 10 kg/cm²	76/1	15/0.1
070	30" Hg to 300 psi	30/50	5/2	070	–100 to 2000 kPa	200	20	070	76 cm Hg to 21 kg/cm²	76/2	19/0.2
080	0 to 15 psi	3	0.1	080	0 to 100 kPa	10	1	080	0 to 1 kg/cm²	0.1	0.01
090	0 to 30 psi	5	0.2	090	0 to 200 kPa	20	2	090	0 to 2 kg/cm²	0.2	0.02
100	0 to 60 psi	10	0.5	100	0 to 400 kPa	50	5	100	0 to 4.2 kg/cm²	0.5	0.5
110	0 to 100 psi	10	1	110	0 to 700 kPa	100	5	110	0 to 7 kg/cm²	1	0.5
120	0 to 160 psi	20	1	120	0 to 1200 kPa	200	10	120	0 to 11 kg/cm²	1	0.1
130	0 to 200 psi	20	2	130	0 to 1500 kPa	300	10	130	0 to 14 kg/cm²	2	0.1
140	0 to 300 psi	50	2	140	0 to 2000 kPa	200	20	140	0 to 21 kg/cm²	3	0.2
150	0 to 400 psi	50	5	150	0 to 3000 kPa	300	20	150	0 to 28 kg/cm²	4	0.2
160	0 to 600 psi	50	5	160	0 to 4000 kPa	500	50	160	0 to 42 kg/cm²	6	0.5
180	0 to 1000 psi	100	10	180	0 to 7000 kPa	1000	50	180	0 to 70 kg/cm²	10	0.5

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) or **E** (psi & kg/cm²) followed by the equivalent **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

610CB

Glass Filled Nylon Case

COMMERCIAL • CONTRACTOR GAUGES

610CB shown

- 4½" Dial Size
- ±1.0% Accuracy
- Back Flanged, Glass Filled Nylon Case
- Adjustable Pointer

The **610CB Trerice** Contractor Gauge is designed to service the pressure measurement requirements of the construction and transportation industries. The 610CB is furnished with a corrosion resistant plastic case and an adjustable pointer. Wetted parts are a bronze tube with brass socket.

- Optional features available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model	**610CB**
Dial Size	4½"
Wetted Parts	Bronze tube, brass socket
Movement	Brass
Connection	Lower male, ¼ NPT
Case	Glass filled nylon, surface mounted back flanged
Ring	Friction type, 304 stainless steel
Window	Clear glass
Pointer	Adjustable, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±1.0% Full Scale, ASME B40.100 Grade 1A
Maximum Temperature	**250°F (121°C)**
Approximate Shipping Weight	0.9 lbs [0.41 kg]

HOW TO ORDER

Sample Order Number: **610CB 45 02 L A 110**

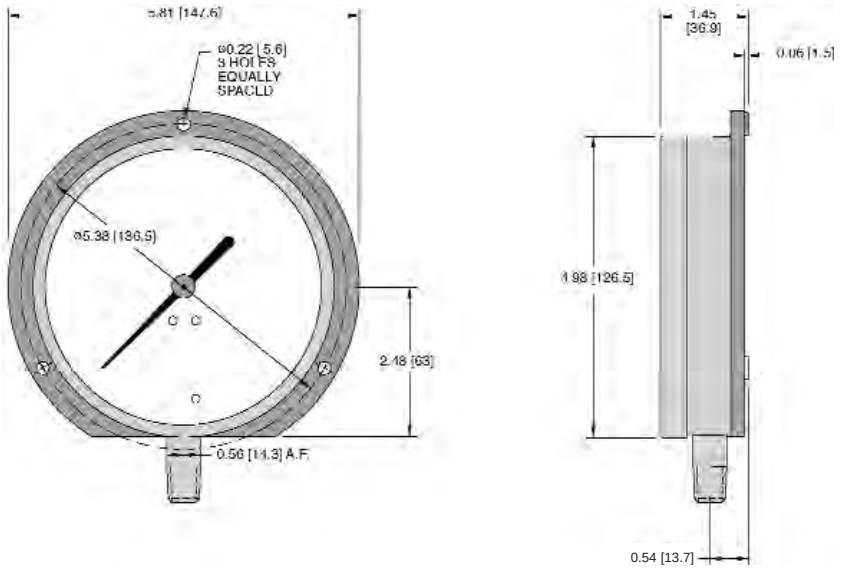
Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
610CB	**45** 4½"	**02** ¼ NPT	**L** Lower	**A** psi **B** kPa **C** kg/cm² **D** psi/kPa **E** psi & kg/cm²	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

610CB

Glass Filled Nylon Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

psi Ranges (A)				kPa Ranges (B)				kg/cm² Ranges (C)			
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.2	010	–100 to 0 kPa	10	1	010	76 cm Hg to 0	10	0.5
020	30" Hg to 15 psi	5/5	0.5/0.2	020	–100 to 100 kPa	20	2	020	76 cm Hg to 1 kg/cm²	20/0.2	1/.02
030	30" Hg to 30 psi	10/5	1/0.5	030	–100 to 200 kPa	50	2	030	76 cm Hg to 2 kg/cm²	20/0.5	2/.02
040	30" Hg to 60 psi	10/10	1/1	040	–100 to 400 kPa	50	5	040	76 cm Hg to 4 kg/cm²	25/0.5	5/.05
050	30" Hg to 100 psi	30/10	2/1	050	–100 to 700 kPa	100	5	050	76 cm Hg to 7 kg/cm²	76/1	5/0.1
060	30" Hg to 150 psi	30/20	5/2	060	–100 to 1000 kPa	100	10	060	76 cm Hg to 10 kg/cm²	76/1	15/0.1
070	30" Hg to 300 psi	30/50	5/2	070	–100 to 2000 kPa	200	20	070	76 cm Hg to 21 kg/cm²	76/2	19/0.2
080	0 to 15 psi	3	0.1	080	0 to 100 kPa	10	1	080	0 to 1 kg/cm²	0.1	0.01
090	0 to 30 psi	5	0.2	090	0 to 200 kPa	20	2	090	0 to 2 kg/cm²	0.2	0.02
100	0 to 60 psi	10	0.5	100	0 to 400 kPa	50	5	100	0 to 4.2 kg/cm²	0.5	0.5
110	0 to 100 psi	10	1	110	0 to 700 kPa	100	5	110	0 to 7 kg/cm²	1	0.5
120	0 to 160 psi	20	1	120	0 to 1200 kPa	200	10	120	0 to 11 kg/cm²	1	0.1
130	0 to 200 psi	20	2	130	0 to 1500 kPa	300	10	130	0 to 14 kg/cm²	2	0.1
140	0 to 300 psi	50	2	140	0 to 2000 kPa	200	20	140	0 to 21 kg/cm²	3	0.2
150	0 to 400 psi	50	5	150	0 to 3000 kPa	300	20	150	0 to 28 kg/cm²	4	0.2
160	0 to 600 psi	50	5	160	0 to 4000 kPa	500	50	160	0 to 42 kg/cm²	6	0.5
180	0 to 1000 psi	100	10	180	0 to 7000 kPa	1000	50	180	0 to 70 kg/cm²	10	0.5

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) or **E** (psi & kg/cm²) followed by the equivalent **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

690 Series

Multiple Stainless Steel Case Styles

COMMERCIAL• CONTRACTOR GAUGES

690B shown

- 3½" Dial Size
- ±1.0% Accuracy
- Polished Stainless Steel Case
- Multiple Case Styles

Trerice **690 Series** Commercial Gauges are offered in a polished stainless steel case to provide the durability and styling required in OEM and other applications. This gauge is available in a variety of case styles. Wetted parts are a bronze tube with brass socket.

- Optional features available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

HOW TO ORDER

Sample Order Number: **690B 35 02 L D 110**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
690B 691B 692B 693B 694B 696B	**35** 3½"	**02** ¼ NPT	**L** Lower * **B** Back **	**D** psi/kPa **A** psi **B** kPa	See Standard Ranges

** For Models 690B & 692B only*
*** For Models 691B, 693B, 694B & 696B only*

Specifications

Models	Case Styles
690B	**Flangeless,** stem mounted with bottom outlet
691B	**Flangeless,** stem mounted with back outlet
692B	**Surface Mounted,** back flanged with bottom outlet
693B	**Flush Mounted,** front flanged with back outlet
694B	**Flush Mounted,** u-clamp with back outlet
696B	**Surface Mounted,** back flanged with back outlet

Dial Size 3½"

Wetted Parts Bronze tube, brass socket

Movement Brass

Connection **690B, 692B**: Lower male, ¼ NPT
691B, 693B, 694B, 696B: Center back male, ¼ NPT

Window Acrylic, snap-in

Pointer Adjustable, black finish

Dial Face Aluminum, white background with black graduations and markings

Accuracy ±1.0% Full Scale, ASME B40.100 Grade 1A

Maximum Temperature **150°F (65°C)**

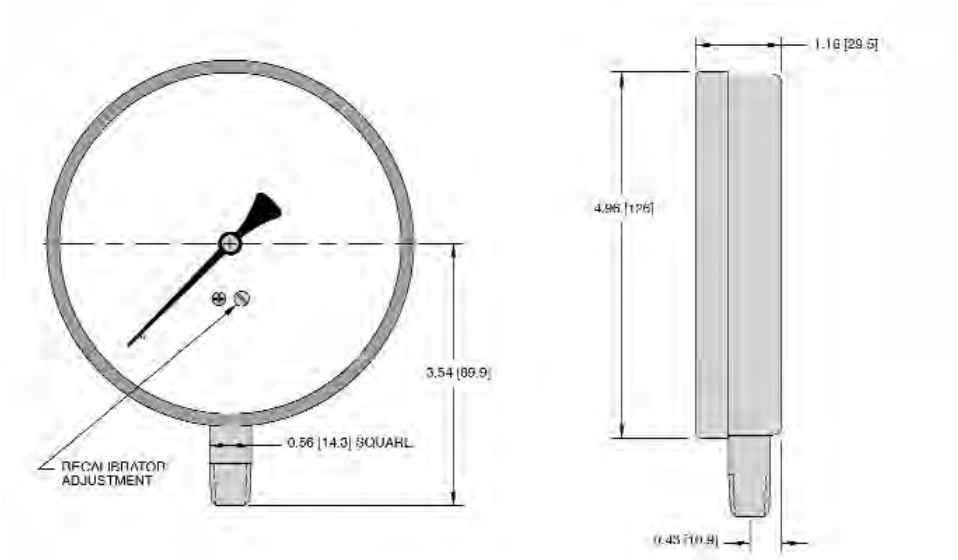
Approximate Shipping Weight
690B, 691B, 692B, 696B: 0.6 lbs [0.27 kg]
693B: 0.8 lbs [0.36 kg]
694B: 0.9 lbs [0.41 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

620B

Stainless Steel Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

psi Ranges (A)				psi/kPa Ranges (D)					
						psi		kPa	
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.2	010	30" Hg to 0 / –100 to 0 kPa	5	0.2	10	1
020	30" Hg to 15 psi	5/5	0.5/0.2	020	30" Hg to 15 psi / –100 to 100 kPa	5/5	0.5/0.2	20	2
030	30" Hg to 30 psi	10/5	1/0.5	030	30" Hg to 30 psi / –100 to 200 kPa	10/5	1/0.5	50	5
040	30" Hg to 60 psi	10/10	1/1	040	30" Hg to 60 psi / –100 to 400 kPa	10/10	1/1	50	5
050	30" Hg to 100 psi	30/10	2/1	050	30" Hg to 100 psi / –100 to 700 kPa	30/10	2/1	100	5
060	30" Hg to 150 psi	30/20	5/2	060	30" Hg to 150 psi / –100 to 1000 kPa	30/20	5/2	100	10
070	30" Hg to 300 psi	30/50	5/2	070	30" Hg to 300 psi / –100 to 2000 kPa	30/50	5/2	200	20
080	0 to 15 psi	3	0.1	080	0 to 15 psi / 0 to 100 kPa	3	0.1	10	1
090	0 to 30 psi	5	0.2	090	0 to 30 psi / 0 to 200 kPa	5	0.2	20	2
100	0 to 60 psi	10	0.5	100	0 to 60 psi / 0 to 400 kPa	10	0.5	50	5
110	0 to 100 psi	10	1	110	0 to 100 psi / 0 to 700 kPa	10	1	100	5
120	0 to 160 psi	20	1	120	0 to 160 psi / 0 to 1100 kPa	20	1	200	10
130	0 to 200 psi	20	2	130	0 to 200 psi / 0 to 1400 kPa	20	2	300	10
140	0 to 300 psi	50	2	140	0 to 300 psi / 0 to 2000 kPa	50	2	200	20
150	0 to 400 psi	50	5	150	0 to 400 psi / 0 to 2800 kPa	50	5	300	50
160	0 to 600 psi	50	5	160	0 to 600 psi / 0 to 4000 kPa	50	5	500	50

690 Series

Multiple Stainless Steel Case Styles

COMMERCIAL• CONTRACTOR GAUGES

690B shown

- 3½" Dial Size
- ±1.0% Accuracy
- Polished Stainless Steel Case
- Multiple Case Styles

Trerice **690 Series** Commercial Gauges are offered in a polished stainless steel case to provide the durability and styling required in OEM and other applications. This gauge is available in a variety of case styles. Wetted parts are a bronze tube with brass socket.

- Optional features available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models		Case Styles
690B		**Flangeless,** stem mounted with bottom outlet
691B		**Flangeless,** stem mounted with back outlet
692B		**Surface Mounted,** back flanged with bottom outlet
693B		**Flush Mounted,** front flanged with bottom outlet
694B		**Flush Mounted,** u-clamp with back outlet
696B		**Surface Mounted,** back flanged with back outlet

Dial Size 3½"

Wetted Parts
Bronze tube, brass socket

Movement Brass

Connection
690B, 692B:
Lower male, ¼ NPT
691B, 693B, 694B, 696B:
Center back male, ¼ NPT

Window Acrylic, snap-in

Pointer Adjustable, black finish

Dial Face Aluminum, white background with black graduations and markings

Accuracy ±1.0% Full Scale, ASME B40.100 Grade 1A

Maximum Temperature
150°F (65°C)

Approximate Shipping Weight
690B, 691B, 692B, 696B:
0.6 lbs [0.27 kg]
693B:
0.8 lbs [0.36 kg]
694B:
0.9 lbs [0.41 kg]

HOW TO ORDER

Sample Order Number: **690B 35 02 L D 110**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
690B 691B 692B 693B 694B 696B	**35** 3½"	**02** ¼ NPT	**L** Lower * **B** Back **	**D** psi/kPa **A** psi **B** kPa	See Standard Ranges

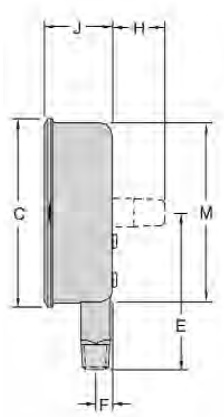
** For Models 690B & 692B only*
*** For Models 691B, 693B, 694B & 696B only*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

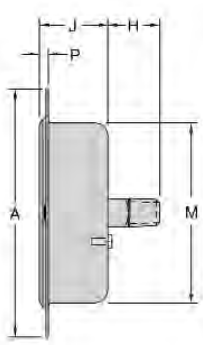
690 Series

Multiple Stainless Steel Case Styles

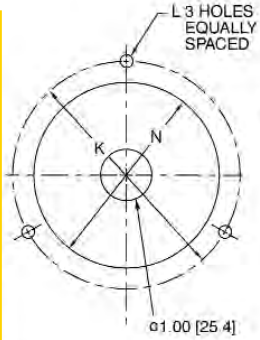
All dimensions are nominal. Dimensions in [ ] are in millimeters.



690B / 691B

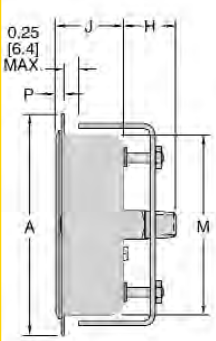


693B

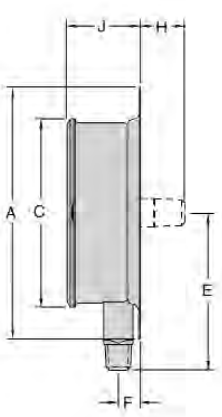


Drilling Dimensions for

692B / 693B / 696B



694B



692B / 696B

Model	A	C	E	F	H	J	K	L	M	N	P
690B	N/A	3.67 [93.2]	3.06 [77.8]	0.32 [8.2]	N/A	1.33 [33.8]	N/A	N/A	3.51 [89.2]	N/A	0.17 [4.3]
691B	N/A	3.67 [93.2]	N/A	N/A	1.01 [25.8]	1.33 [33.8]	N/A	N/A	3.51 [89.2]	N/A	0.17 [4.3]
692B	4.91 [124.7]	3.67 [93.2]	3.06 [77.8]	0.43 [11]	0.90 [23.0]	1.44 [36.6]	4.50 [114.3]	0.25 [6.4]	N/A	N/A	N/A
693B	4.84 [122.9]	N/A	N/A	N/A	1.01 [25.8]	1.33 [33.8]	4.44 [112.8]	0.25 [6.4]	3.51 [89.2]	3.62 [92]	0.17 [4.3]
694B	4.31 [109.5]	N/A	N/A	N/A	1.01 [25.8]	1.33 [33.8]	N/A	N/A	3.51 [89.2]	3.62 [92]	0.17 [4.3]
696B	4.91 [124.7]	3.67 [93.2]	N/A	N/A	0.90 [23]	1.44 [36.6]	4.50 [114.3]	0.25 [6.4]	N/A	N/A	N/A

Standard Ranges

psi/kPa Ranges (D)		psi (A)		kPa (B)	
Range Code	Specific Range (psi)	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
010	30" Hg to 0 / –100 to 0 kPa	5	0.2	10	1
020	30" Hg to 15 psi / –100 to 100 kPa	5/5	0.5/0.2	20	2
030	30" Hg to 30 psi / –100 to 200 kPa	10/5	1/0.5	50	2
040	30" Hg to 60 psi / –100 to 400 kPa	10/10	1/1	50	5
050	30" Hg to 100 psi / –100 to 700 kPa	30/10	2/1	100	5
060	30" Hg to 150 psi / –100 to 1000 kPa	30/20	5/2	100	10
070	30" Hg to 300 psi / –100 to 2000 kPa	30/50	5/2	100	20
080	0 to 15 psi / 0 to 100 kPa	3	0.1	10	1
090	0 to 30 psi / 0 to 200 kPa	5	0.2	20	2
100	0 to 60 psi / 0 to 400 kPa	10	0.5	50	5
110	0 to 100 psi / 0 to 700 kPa	10	1	100	5
120	0 to 160 psi / 0 to 1100 kPa	20	1	100	10
130	0 to 200 psi / 0 to 1400 kPa	20	2	200	10
140	0 to 300 psi / 0 to 2000 kPa	50	2	200	20
150	0 to 400 psi / 0 to 2800 kPa	50	5	400	20
160	0 to 600 psi / 0 to 4000 kPa	50	5	500	50
180	0 to 1000 psi / 0 to 7000 kPa	100	10	1000	50

Other pressure ranges are also available including: Altitude, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.

D80 Series

Dry or Liquid Filled • Stainless Steel Case

UTILITY GAUGES

D82LFB shown

- 1½", 2", 2½", 4" Dial Sizes
- ±1.6% Accuracy
- Stainless Steel Case
- Glycerine Fill Standard

The Trerice **D80 Series** Utility Gauge is designed for rugged performance requirements at an economical cost. This liquid filled gauge is furnished with a stainless steel case and crimped ring. Wetted parts are either bronze tube with brass socket or stainless steel.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models		Wetted Parts
D82B **D82LFB**	(dry) (liquid filled)	Bronze tube, brass socket
D83SS **D83LFSS**	(dry) (liquid filled)	316 Stainless steel tube & socket

Dial Sizes 1½", 2", 2½", 4"

Fill Glycerine, other fills available
See Optional Features Section

Movement **D82**: Brass
D83: 316 Stainless steel

Connection Lower male or center back male, Lower back male on 4" D83

Case 304 stainless steel, stem-mounted flangeless

Ring Crimped 304 stainless steel

Window Acrylic

Pointer Plain, black finished

Dial Face Aluminum, white background with black graduations and markings

Additional Features
Restrictor screw standard on D83LFSS and D83SS

Accuracy ±1.6% Full Scale

Maximum Temperature
150°F (**65°C**)

Approximate Shipping Weight
1½" Dial Size:
0.4 lbs [0.18 kg]
2" Dial Size:
0.4 lbs [0.18 kg]
2½" Dial Size:
0.5 lbs [0.23 kg]
4" Dial Size:
1.0 lbs [0.45 kg]

HOW TO ORDER

Sample Order Number: **D82LFB 25 02 L A 110**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
D82LFB	**15** 1½	**01** ⅛ NPT*	**L** Lower	**A** psi	See Standard Ranges
D83LFSS	**20** 2"	**02** ¼ NPT**	**B** Back	**D** psi/kPa	
D82B	**25** 2½"				
D83SS	**40** 4"				

* ⅛ NPT connection size not available with 4" dial size.

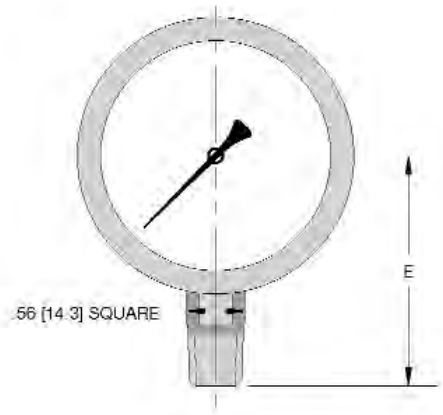
** ¼ NPT connection size not available with 1½" dial size.

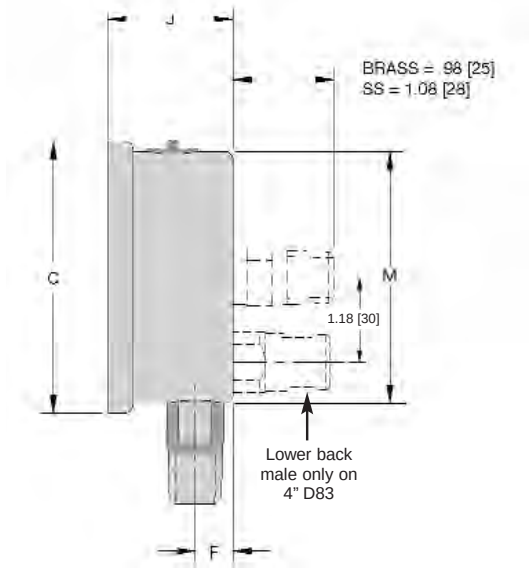
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

D80 Series

Dry or Liquid Filled • Stainless Steel Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.





Standard Ranges

psi Ranges (A)		D82		D83	
Range Code	**Specific Range (psi)**	**Figure Intervals**	**Minor Divisions**	**Figure Intervals**	**Minor Divisions**
010	30" Hg to 0	5	0.5	5	0.5
020	30" Hg to 15 psi	10/5	1/0.5	10/5	1/0.5
030	30" Hg to 30 psi	10/10	2/1	10/5	2/1
040	30" Hg to 60 psi	10/10	2/2	10/10	2/1
050	30" Hg to 100 psi	30/20	2/2	30/20	5/2
060	30" Hg to 150 psi	30/30	10/5	30/30	10/5
070	30" Hg to 300 psi	30/50	10/5	30/50	10/5
080	0 to 15 psi	3	0.2	3	0.2
090	0 to 30 psi	5	0.5	5	0.5
100	0 to 60 psi	10	1	10	1
110	0 to 100 psi	20	2	10	2
120	0 to 160 psi	20	2	20	2
130	0 to 200 psi	20	2	20	2
140	0 to 300 psi	50	5	50	5
150	0 to 400 psi	50	5	50	5
160	0 to 600 psi	100	10	100	10
180	0 to 1000 psi	100	25	100	20
190	0 to 1500 psi	300	20	300	25
200	0 to 2000 psi	200	20	200	25
210	0 to 3000 psi	500	50	500	50
220	0 to 5000 psi	1000	100	1000	100
230	0 to 10000 psi	N/A	N/A	N/A	N/A
240	0 to 15000 psi	N/A	N/A	N/A	N/A

*For dual scale ranges specify the appropriate Units of Measure: **D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code***

Dial Size	C	E	F	J	M
1½" D82	1.85 [47]	1.50 [38]	0.32 [8]	1.06 [27]	1.61 [41]
1½" D83	1.85 [47]	1.50 [38]	0.32 [8]	1.06 [27]	1.61 [41]
2" D82	2.28 [58]	1.89 [48]	0.39 [10]	1.14 [29]	2.05 [52]
2" D83	2.28 [58]	2.05 [52]	0.35 [9]	1.18 [30]	2.05 [52]
2½" D82	2.68 [68]	2.24 [57]	0.39 [10]	1.18 [30]	2.44 [62]
2½" D83	2.68 [68]	2.32 [59]	0.51 [13]	1.38 [35]	2.44 [62]
4" D82	4.29 [109]	3.07 [78]	0.47 [12]	1.42 [36]	3.90 [99]
4" D83	4.29 [109]	3.94 [100]	0.75 [19]	1.93 [49]	3.94 [100]

800B

Dry • Black Finished Steel Case

UTILITY GAUGES

800B shown

- **1½", 2", 2½", 4" Dial Sizes**
- **±1.6% Accuracy**
- **Drawn Steel Case**

The Trerice **800B** Utility Gauge is designed for general pressure indication requirements. This gauge provides reliable service at an economical cost. Wetted parts are bronze tube and brass socket.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model	**800B**
Dial Sizes	1½", 2", 2½", 4"
Wetted Parts	Bronze tube, brass socket
Movement	Brass
Connection	1½" Dial Size: Lower male or center back male, ⅛ NPT 2", 2½" Dial Size: Lower male or center back male, ⅛ or ¼ NPT 4" Dial Size: Lower male or center back male, ¼ NPT
Case	Drawn steel, black finished, stem-mounted flangeless
Window	Acrylic
Pointer	Plain, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	±1.6% Full Scale
Maximum Temperature	**180°F (82°C)**
Approximate Shipping Weight	1½" Dial Size: 0.2 lbs [0.09 kg] 2" Dial Size: 0.3 lbs [0.14 kg] 2½" Dial Size: 0.3 lbs [0.14 kg] 4" Dial Size: 0.6 lbs [0.27 kg]

HOW TO ORDER

Sample Order Number: **800B 15 01 B D 110**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
800B	**15** 1½"* **20** 2" **25** 2½" **40** 4"	**01** ⅛ NPT **02** ¼ NPT	**L** Lower **B** Back	**A** psi **D** psi/kPa	See Standard Ranges

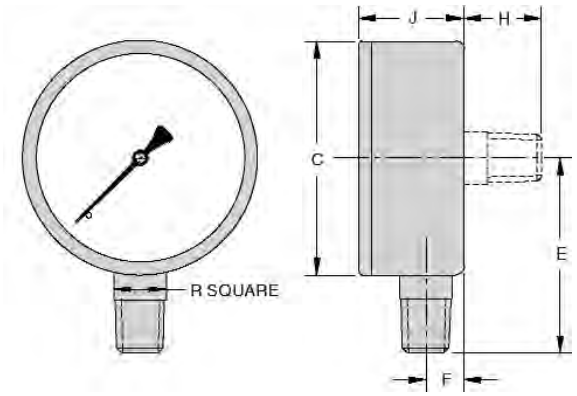
* 1½" dial size available only with ⅛ NPT connection.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

800B

Dry • Black Finished Steel Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Dial Size	C	E	F	H	J	R
1½" Lower	1.57 [40]	1.54 [39]	0.35 [9]	0.71 [18]	1.02 [26]	0.43 [11]
1½" Back	1.57 [40]	1.54 [39]	0.35 [9]	0.71 [18]	1.14 [29]	0.43 [11]
2"	1.97 [50]	1.93 [49]	0.39 [10]	0.83 [21]	1.14 [29]	0.55 [14]
2½"	2.48 [63]	2.20 [56]	0.39 [10]	0.83 [21]	1.14 [29]	0.55 [14]
4"	3.94 [100]	2.87 [73]	0.39 [10]	N/A	1.14 [29]	0.55 [14]

Standard Ranges

psi Ranges (A)				psi/kPa Ranges (D)					
						psi		kPa	
Range Code	Specific Range	Figure Intervals	Minor Divisions	Range Code	Specific Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.5	010	30" Hg to 0 / –100 to 0 kPa	5	0.5	10	2
020	30" Hg to 15 psi	10/5	1/0.5	020	30" Hg to 15 psi / –100 to 100 kPa	10/3	2/0.5	10	5
030	30" Hg to 30 psi	10/5	2/1	030	30" Hg to 30 psi / –100 to 200 kPa	10/5	2/1	50	10
040	30" Hg to 60 psi	10/10	5/2	040	30" Hg to 60 psi / –100 to 400 kPa	10/10	5/2	5	20
050	30" Hg to 100 psi	30/20	5/2	050	30" Hg to 100 psi / –100 to 700 kPa	30/20	5/2	5	20
060	30" Hg to 150 psi	30/30	5/5	060	30" Hg to 150 psi / –100 to 1000 kPa	30/30	5/5	5	50
070	30" Hg to 300 psi	30/30	10/10	070	30" Hg to 300 psi / –100 to 2000 kPa	30/50	5/10	10	50
080	0 to 15 psi	3	0.5	080	0 to 15 psi / 0 to 100 kPa	3	0.5	10	2
090	0 to 30 psi	5	0.5	090	0 to 30 psi / 0 to 200 kPa	5	0.5	20	2
100	0 to 60 psi	10	1	100	0 to 60 psi / 0 to 400 kPa	10	1	50	5
110	0 to 100 psi	10	2	110	0 to 100 psi / 0 to 700 kPa	10	2	100	20
120	0 to 160 psi	20	2	120	0 to 160 psi / 0 to 1100 kPa	20	2	100	20
130	0 to 200 psi	20	2	130	0 to 200 psi / 0 to 1400 kPa	20	2	200	20
140	0 to 300 psi	50	5	140	0 to 300 psi / 0 to 2000 kPa	50	5	200	20
150	0 to 400 psi	50	5	150	0 to 400 psi / 0 to 2800 kPa	50	10	400	40
160	0 to 600 psi	100	10	160	0 to 600 psi / 0 to 4000 kPa	100	20	1000	100
180	0 to 1000 psi	100	20	180	0 to 1000 psi / 0 to 7000 kPa	100	20	1000	200
190	0 to 1500 psi	300	20	190	0 to 1500 psi / 0 to 10,000 kPa	300	20	2000	200
200	0 to 2000 psi	200	20	200	0 to 2000 psi / 0 to 14,000 kPa	200	50	2000	500
210	0 to 3000 psi	500	50	210	0 to 3000 psi / 0 to 20,000 kPa	500	100	5000	500
220	0 to 5000 psi	1000	100	220	0 to 5000 psi / 0 to 35,000 kPa	1000	100	5000	1000

800LFB

Liquid Filled • Plastic Case

800LFB shown

- 2", 2½", 3½" Dial Sizes
- ±1.6% Accuracy (2", 2½")
- ±1.0% Accuracy (3½")
- Liquid Filled

The Trerice **800LFB** Utility Gauge is designed to meet the needs of general industrial applications. The gauge features a rugged, plastic, liquid filled case to withstand minor vibration and pulsation conditions. Wetted parts are bronze tube with brass socket.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model	
800LFB	(liquid filled)
Dial Sizes	2", 2½", 3½"
Wetted Parts	Bronze tube, brass socket
Fill	Glycerine, other fills available See Optional Features Section
Movement	Brass
Connection	Lower male or center back male ⅛ or ¼ NPT
Case	2", 2½" Dial Size: ABS plastic, stem-mounted flangeless 3½" Dial Size: Nylon, stem-mounted flangeless
Ring	Crimped aluminum, black finished
Window	Styrene-acrylonitrile
Pointer	Plain, black finish
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	2", 2½" Dial Size: ±1.6% Full Scale 3½" Dial Size: ±1.0% Full Scale, ASME B40.100 Grade 1A
Maximum Temperature	**150°F (65°C)**
Approximate Shipping Weight	2" Dial Size: 0.4 lbs [0.18 kg] 2½" Dial Size: 0.5 lbs [0.23 kg] 3½" Dial Size: 1.0 lbs [0.45 kg]

HOW TO ORDER

Sample Order Number: **800LFB 25 02 L A 110**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
800LFB	**20** 2" **25** 2½" **35** 3½"	**01** ⅛ NPT* **02** ¼ NPT	**L** Lower **B** Back	**A** psi **D** psi/kPa	See Standard Ranges

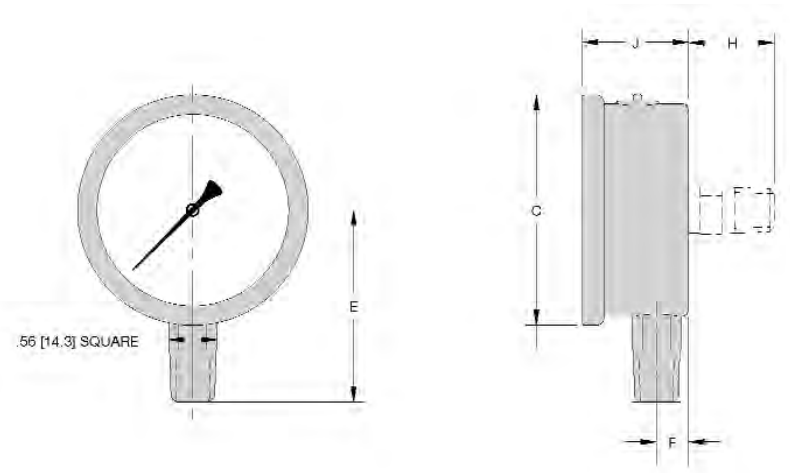
* ⅛ NPT connection size not available with 3½" dial size.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

800LFB

Liquid Filled • Plastic Case

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Dial Size	C	E	F	H	J
2"	2.09 [53.1]	1.91 [48.5]	0.48 [12.2]	0.98 [24.9]	1.24 [31.2]
2½"	2.67 [67.8]	2.19 [55.5]	0.39 [10.0]	0.99 [25.1]	1.26 [32.5]
3½"	4.23 [107]	2.87 [73.0]	0.48 [12.2]	1.06 [27]	1.41 [36.0]

Standard Ranges

psi Ranges (A)

Range Code	Specific Range	2 & 2½" Dial Size Figure Intervals	2 & 2½" Dial Size Minor Divisions	3½" Dial Size Figure Intervals	3½" Dial Size Minor Divisions
010	30" Hg to 0	5	1	5	0.5
020	30" Hg to 15 psi	10/3	2/0.5	10/5	0.5/0.5
030	30" Hg to 30 psi	10/5	2/1	10/5	1/1
040	30" Hg to 60 psi	10/10	5/2	10/10	2/1
050	30" Hg to 100 psi	30/10	5/2	30/20	2/2
060	30" Hg to 150 psi	30/30	5/5	30/20	5/2
070	30" Hg to 300 psi	30/30	5/10	30/50	5/5
080	0 to 15 psi	3	0.5	3	0.2
090	0 to 30 psi	5	1	5	0.5
100	0 to 60 psi	10	2	10	1
110	0 to 100 psi	10	2	10	2
120	0 to 160 psi	20	2	20	2
130	0 to 200 psi	20	4	20	2
140	0 to 300 psi	50	10	50	5
150	0 to 400 psi	50	10	50	5
160	0 to 600 psi	100	20	100	10
180	0 to 1000 psi	100	20	100	20
190	0 to 1500 psi	300	50	300	20
200	0 to 2000 psi	200	40	200	20
210	0 to 3000 psi	500	100	500	50
220	0 to 5000 psi	500	100	1000	100

*For dual scale ranges specify the appropriate Units of Measure: **D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code***

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

760B

Low Pressure Gauge • Black Finished Steel Case

SPECIALTY GAUGES

760B shown

- 2½", 4" Dial Sizes
- ±1.6% Accuracy
- Drawn Steel Case

The Trerice **760B** Low Pressure Gauge is designed to accurately measure extreme low pressure conditions. This pressure gauge employs a diaphragm capsule sensing element to measure the low pressure. Case material is drawn steel with brass wetted parts.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model
760B

Dial Sizes 2½", 4"

Wetted Parts
316L stainless steel diaphragm capsule, brass socket

Movement Brass

Connection 2½" Dial Size: Lower male or center back male, ¼ NPT

4" Dial Size: Lower male or center back male, ¼ or ½ NPT

Case Drawn steel, black finished, stem-mounted flangeless

Window Polycarbonate, snap-in

Pointer Plain, black finished

Dial Face Aluminum, white background with black graduations and markings

Accuracy ±1.6% Full Scale

Maximum Temperature
140°F (**65°C**)

Approximate Shipping Weight
2½" Dial Size:
0.3 lbs [0.14 kg]

4" Dial Size:
0.89 lbs [0.36 kg]

HOW TO ORDER

Sample Order Number: **760B 25 02 L T 660**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
760B	**25** 2½" **40** 4"	**02** ¼ NPT **04** ½ NPT*	**L** Lower **B** Back	**T** Pressure **W** Vacuum	See Standard Ranges

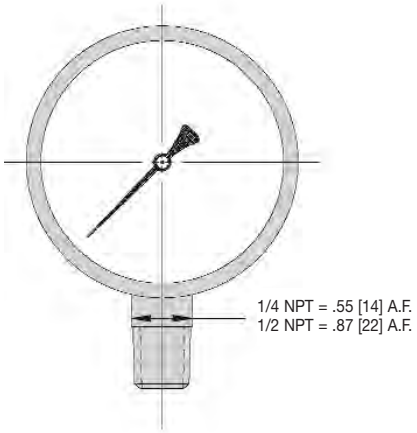
* ½ NPT connection size available only with 4" dial size.

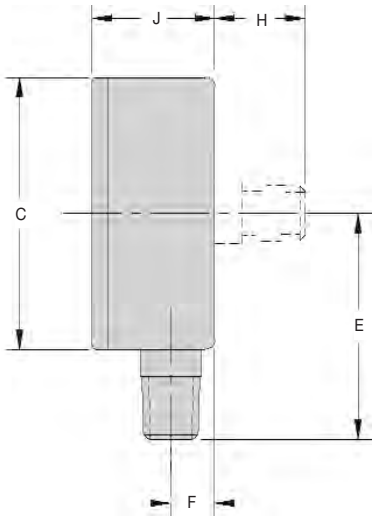
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

760B

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Low Pressure Gauge • Black Finished Steel Case





Dial Size	C	E	F	H	J
2½"	2.44 [62]	2.20 [56]	0.37 [9.5]	0.98 [25]	1.34 [34]
4"	3.90 [99]	3.23 [82]	0.61 [16]	0.98 [25]	1.22 [44]
4" (½ NPT)	3.90 [99]	3.43 [87]	0.61 [16]	1.38 [35]	1.22 [44]

Standard Ranges*

Pressure (T)			
Range Code	Specific Range	Figure Intervals	Minor Divisions
645	0/10 in. H_2O	1	0.1
650	0/15 in. H_2O	5	0.2
660	0/30 in. H_2O	5	0.5
670	0/60 in. H_2O	10	1
680	0/100 in. H_2O	10	1
690	0/160 in. H_2O	20	2
700	0/200 in. H_2O	20	2
720	0/300 in. H_2O	50	5
652	0/10 oz./in.^{2}	1	0.1
655	0/15 oz./in.^{2}	5	0.2
662	0/20 oz./in.^{2} & 0/34 in. H_2O	5	1
667	0/30 oz./in.^{2}	5	0.5
675	0/60 oz./in.^{2}	10	1
695	0/100 oz./in.^{2}	10	1
725	0/160 oz./in.^{2}	20	2
750	0/250 oz./in.^{2}	50	5
675	0/3 psi	0.5	0.05
685	0/5 psi	1	0.1
715	0/10 psi	1	0.1

Standard Ranges*

Vacuum (W)			
Range Code	Specific Range	Figure Intervals	Minor Divisions
580	15/0 in. H_2O	5	0.2
600	30/0 in. H_2O	5	0.5
610	60/0 in. H_2O	10	1
620	100/0 in. H_2O	10	1
635	200/0 in. H_2O	20	2
595	15/0 oz./in.^{2}	5	0.2
605	30/0 oz./in.^{2}	5	0.5
620	60/0 oz./in.^{2}	10	1
633	100/0 oz./in.^{2}	10	1

* Compound ranges are also available. Please consult factory.

766SS

Low Pressure Gauge • Stainless Steel Case

SPECIALTY GAUGES

766SS shown

- **2½", 4", 6" Dial Sizes**
- **±1.6% Accuracy (2½", 4")**
- **±2.0% Accuracy (6")**
- **Stainless Steel Case**

The Trerice **766SS Series** Low Pressure Gauge is designed to accurately measure extreme low pressure conditions. This pressure gauge employs a diaphragm capsule sensing element to measure the low pressure. Case material and wetted parts are stainless steel.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Model
766SS

Dial Sizes	2½", 4", 6"
Wetted Parts	316L stainless steel diaphragm capsule, 316 stainless steel socket
Movement	316 Stainless Steel
Connection	Lower male or center back male, ¼ or ½ NPT
Case	304 stainless steel, satin finished, stem-mounted flangeless
Ring	Bayonet type, 304 stainless steel
Window	Clear glass
Pointer	Plain, black finished
Dial Face	Aluminum, white background with black graduations and markings
Accuracy	2½" Dial Size: ±1.6% Full Scale 4" Dial Size: ±1.6% Full Scale 6" Dial Size: ±2.0% Full Scale
Maximum Temperature	**212°F** (**100°C**)
Approximate Shipping Weight	2½" Dial Size: 0.3 lbs [0.14 kg] 4" Dial Size: 1.4 lbs [0.64 kg] 6" Dial Size: 1.9 lbs [0.86 kg]

HOW TO ORDER

Sample Order Number: **766SS 40 02 L W 600**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
766SS	**25** 2½" **40** 4" **60** 6"	**02** ¼ NPT **04** ½ NPT*	**L** Lower **B** Back	**T** Pressure **W** Vacuum	See Standard Ranges

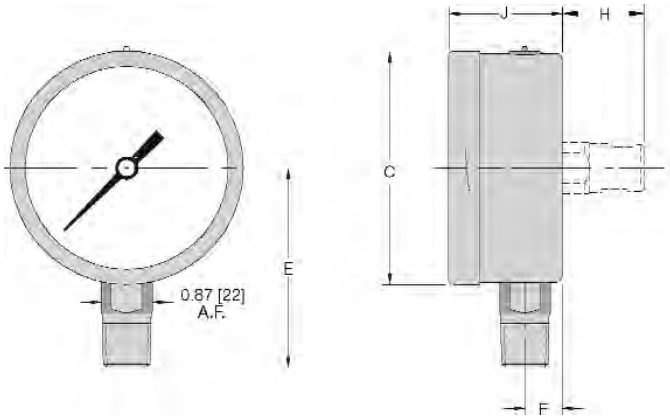
* Not available with 2½" dial size.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

766SS

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Low Pressure Gauge • Stainless Steel Case



Dial Size	C	E	F	H	J
2½"	2.48 [63]	2.09 [53]	0.43 [11]	1.06 [27]	1.46 [37]
4"	3.98 [101]	3.43 [87]	0.63 [16]	1.38 [35]	1.93 [49]
6"	6.34 [161]	4.76 [121]	0.69 [18]	1.38 [35]	1.97 [50]

Standard Ranges*

Pressure (T)

Range Code	Specific Range	Figure Intervals	Minor Divisions
645	0/10 in. H_2O	1	0.1
650	0/15 in. H_2O	5	0.2
660	0/30 in. H_2O	5	0.5
670	0/60 in. H_2O	10	1
680	0/100 in. H_2O	10	1
690	0/160 in. H_2O	20	2
700	0/200 in. H_2O	20	2
720	0/300 in. H_2O	50	5
652	0/10 oz./in.^{2}	1	0.1
655	0/15 oz./in.^{2}	5	0.2
662	0/20 oz./in.^{2} & 0/34 in.H_2O	5	1
667	0/30 oz./in.^{2}	5	0.5
675	0/60 oz./in.^{2}	10	1
695	0/100 oz./in.^{2}	10	1
725	0/160 oz./in.^{2}	20	2
750	0/250 oz./in.^{2}	50	5
675	0/3 psi	0.5	0.05
685	0/5 psi	1	0.1
715	0/10 psi	1	0.1

Standard Ranges*

Vacuum (W)

Range Code	Specific Range	Figure Intervals	Minor Divisions
580	15/0 in. H_2O	5	0.2
600	30/0 in. H_2O	5	0.5
610	60/0 in. H_2O	10	1
620	100/0 in. H_2O	10	1
635	200/0 in. H_2O	20	2
595	15/0 oz./in.^{2}	5	0.2
605	30/0 oz./in.^{2}	5	0.5
620	60/0 oz./in.^{2}	10	1
633	100/0 oz./in.^{2}	10	1

* Compound ranges are also available. Please consult factory.

700TA Series

Sanitary Gauge with Integrated Diaphragm Seal

SPECIALTY GAUGES

700TA shown

- **2½", 4" Dial Sizes**
- **Stainless Steel Case**
- **Liquid Fillable**
- **1½", 2" Tri-clamp Type Connections**

The Trerice **700TA Series** Sanitary Gauge is 3A approved and especially suited for use in the dairy and food processing industries. This field liquid fillable (no kit required) gauge has a stainless steel case, ring, and process housing. All wetted parts are stainless steel.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- Please refer to 3A Standard 37-01, 3A Standard for Liquid Pressure and Level Sensing Devices
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models

700TA (dry)
700TALF (liquid filled)

Dial Sizes 2½", 4"

Wetted Parts 316 stainless steel diaphragm

Fill Glycerine, other fills available. See Options & Accessories.

Movement Stainless steel

Connection 2½" Dial Size: Lower or center back Tri-clamp, 1½" or 2"
4" Dial Size: Lower or lower back, Tri-clamp, 1½" or 2"

Case 304 stainless steel, stem mounted flangeless

Ring Crimped 304 stainless steel, highly polished

Window Safety glass

Pointer Plain black finished

Dial Face Aluminum, white background with black graduations and markings

Accuracy ±1.6% Full Scale

Maximum Temperature
250°F (121°C)

Approximate Shipping Weight

700TA 2½" Dial Size, 1½" Tri-clamp, 1.4 lbs [0.64 kg]

700TA 2½" Dial Size, 2" Tri-clamp, 1.9 lbs [0.86 kg]

700TALF 2½" Dial Size, 1½" Tri-clamp, 1.9 lbs [0.86 kg]

700TALF 2½" Dial Size, 2" Tri-clamp, 2.6 lbs [1.18 kg]

700TA 4" Dial Size, 1½" Tri-clamp, 2.6 lbs [1.18 kg]

700TA 4" Dial Size, 2" Tri-clamp, 3.3 lbs [1.50 kg]

700TALF 4" Dial Size, 1½" Tri-clamp, 3.3 lbs [1.50 kg]

700TALF 4" Dial Size, 2" Tri-clamp, 4.0 lbs [1.81 kg]

HOW TO ORDER

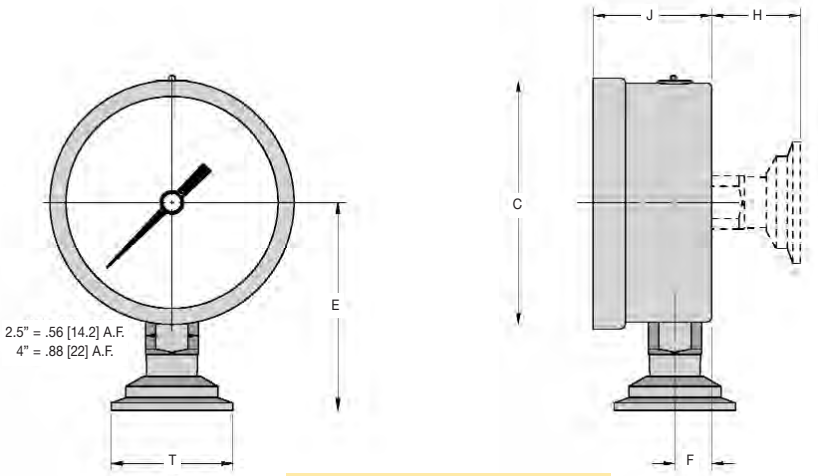
Sample Order Number: **700TA 40 15T L A 130**

Model	Dial Size	Connection Size	Connection Location	Units of Measure	Range Code
700TA **700TALF**	**25** 2½" **40** 4"	**15T** 1½" Tri-Clamp **20T** 2" Tri-Clamp	**L** Lower **B** Back	**A** psi **D** psi/kPa	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Sanitary Gauge with Integrated Diaphragm Seal



Clamps, gaskets and ferrules are not supplied by Trerice.

Dial Size	Tri-Clamp Size	C	E	F	H	J	T
2½" [63]	1½"	2.68 [68]	2.64 [67]	0.37 [9.5]	1.52 [38.5]	1.20 [30.5]	1.98 [50.5]
	2"	2.68 [68]	2.64 [67]	0.37 [9.5]	1.52 [38.5]	1.20 [30.5]	2.51 [64.0]
4" [100]	1½"	4.18 [106.2]	3.35 [85]	0.46 [11.8]	1.52 [38.5]	1.32 [33.5]	1.98 [50.5]
	2"	4.18 [106.2]	3.35 [85]	0.46 [11.8]	1.52 [38.5]	1.32 [33.5]	2.51 [64.0]

Standard Ranges

psi Ranges (A)			
Range Code	Specific Range	Figure Intervals	Minor Divisions
010	30" Hg to 0	5	0.5
020	30" Hg to 15 psi	10/5	10/0.5
030	30" Hg to 30 psi	10/10	2/1
040	30" Hg to 60 psi	30/20	2/2
050	30" Hg to 100 psi	30/20	5/2
060	30" Hg to 150 psi	30/20	10/2
070	30" Hg to 300 psi	30/30	5/10
080	0 to 15 psi	3	0.2
090	0 to 30 psi	5	0.5

psi Ranges (A)		
Range Code	Specific Range	Figure Intervals
100	0 to 60 psi	10
110	0 to 100 psi	20
120	0 to 160 psi	20
130	0 to 200 psi	50
140	0 to 300 psi	50
150	0 to 400 psi	100
160	0 to 600 psi	100
180	0 to 1000 psi	200

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

700Plus Series

Industrial Transmitter Gauge

SPECIALTY GAUGES

703SS shown

- 4" Dial Size
- ±1.0% Accuracy
- Stainless Steel Case
- Liquid Fillable

The Trerice **700Plus Series** Transmitter Gauge is designed to provide both local and remote pressure readings through the integration of an independent pressure transmitter to the pressure gauge. This gauge has a stainless steel case and ring, and is field liquid fillable (no kit required). Wetted parts include a stainless steel tube and socket with a ceramic transmitter.

- Optional features and case style variations available: Please consult the Options & Accessories Section for details.
- For correct use and application of all pressure gauges, please refer to: Pressure Gauge Standard ASME B40.100.

Specifications

Models
703SS (dry)
703LFSS (liquid filled)

Dial Size 4"

Wetted Parts
Transmitter: Ceramic
Gauge: 316L stainless steel tube & socket

Fill Mineral Oil

Movement Stainless Steel

Process Connection
Lower male or lower back male, 1/4 or 1/2 NPT

Case 304 Stainless steel, stem mounted flangeless

Ring Bayonet type, 304 stainless steel

Window Clear glass

Pointer Micro adjustable knife edge, black finished

Dial Face Aluminum, white background with black graduations and markings

Electrical Connection
Wiring cable

Supply Voltage
12 to 28 Vdc @ 6mA
(15 to 28 Vdc with 0 to 10 Vdc Output Signal)

Output Signal
4 to 20 mA
(load resistance maximum Ω) = $\frac{V_{supply} - 12}{0.02}$

Accuracy Transmitter: ±0.3% Full Scale Max.
Gauge: ±1.0% Full Scale, ASME B40.100 Grade 1A

Maximum Temperature
212°F (100°C)

Approximate Shipping Weight
2.0 lbs [0.91 kg]

HOW TO ORDER

Sample Order Number: **703SS 40 02 L 2 A 110**

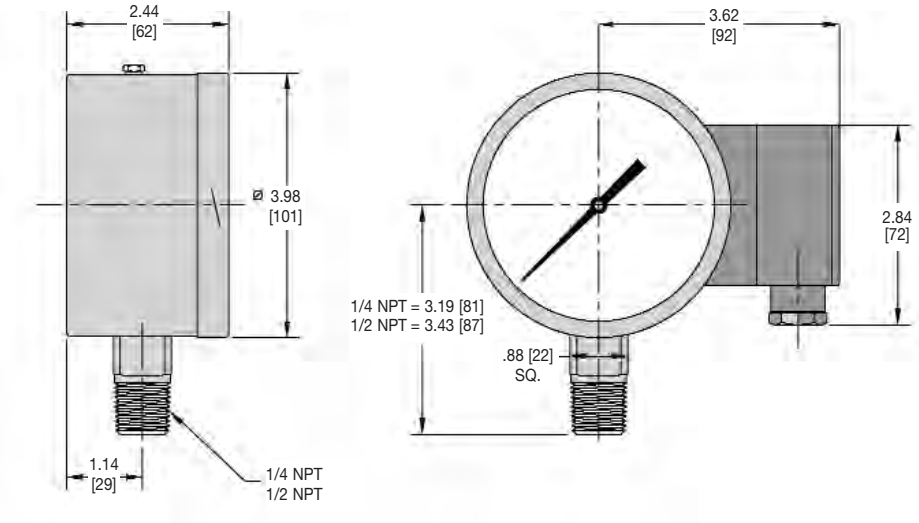
Model	Dial Size	Connection Size	Connection Location	Output Signal	Units of Measure	Range Code
703SS **703LFSS**	**40** 4"	**02** 1/4 NPT **04** 1/2 NPT	**L** Lower	**3** 4 to 20 mA	**A** psi **D** psi/kPa	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

700Plus Series

Industrial Transmitter Gauge

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

psi Ranges (A)			
Range Code	**Specific Range**	**Figure Intervals**	**Minor Divisions**
010	30" Hg to 0	5	0.5
020	30" Hg to 15 psi	10/5	0.5/0.5
030	30" Hg to 30 psi	10/5	1/1
040	30" Hg to 60 psi	10/10	2/1
050	30" Hg to 100 psi	30/20	2/2
060	30" Hg to 150 psi	30/20	5/2
070	30" Hg to 300 psi	30/50	5/5
080	0 to 15 psi	3	0.2
090	0 to 30 psi	5	0.5
100	0 to 60 psi	10	1
110	0 to100 psi	10	2

psi Ranges (A)			
Range Code	**Specific Range**	**Figure Intervals**	**Minor Divisions**
120	0 to 160 psi	20	2
130	0 to 200 psi	20	2
140	0 to 300 psi	50	5
150	0 to 400 psi	50	5
160	0 to 600 psi	100	10
180	0 to 1000 psi	100	20
190	0 to 1500 psi	300	20
200	0 to 2000 psi	200	20
210	0 to 3000 psi	500	50
220	0 to 5000 psi	1000	100
230	0 to 10,000 psi	2000	200

*For dual scale ranges, specify the appropriate **Units of Measure: D** (psi/kPa) followed by the corresponding **A** (psi) **Range Code**. Other pressure ranges are also available including: Altitude, Ammonia, Refrigerant and Receiver. Consult Special Application Ranges section or factory for availability.*

Special Application Ranges

The H.O. Trerice Co. offers a broad spectrum of pressure gauges to satisfy the specialized applications of today's industry. The following Special Application Ranges can be specified on almost all Trerice Pressure Gauges. Please consult Availability Table on page 38.

Liquid Level Ranges (Altitude)

A Liquid Level range is calibrated to measure feet or meters of H_2O (water). Gauges with this type of range are usually specified with either an optional red set hand (not available on 8½" or 12" Dial Sizes) or an index pointer (not available on liquid filled gauges). See Options & Accessories section for complete availability. Dual scale ranges with ft H_2O and corresponding psi scales are available.

Standard Liquid Level Ranges

psi & Feet of Water Ranges (H)

		psi		ft H_2O	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
010	30" Hg to 0 / –34 to 0 ft H_2O	5	0.5	5	0.5
020	30" Hg to 15 psi / –34 to 34 ft H_2O	10/5	0.5/0.2	5/5	0.5/0.5
030	30" Hg to 30 psi / –34 to 70 ft H_2O	10/5	0.5/0.5	10/10	1/1
040	30" Hg to 60 psi / –34 to 140 ft H_2O	10/10	1/1	10/20	2/2
050	30" Hg to 100 psi / –34 to 230 ft H_2O	30/20	2/1	30/20	2/2
060	30" Hg to 150 psi / –34 to 350 ft H_2O	30/30	5/2	34/50	2/2
070	30" Hg to 300 psi / –34 to 700 ft H_2O	30/20	5/2	34/50	10/5
080	0 to 15 psi / 0 to 35 ft H_2O	3	0.1	5	0.2
090	0 to 30 psi / 0 to 70 ft H_2O	5	0.2	10	0.5
100	0 to 60 psi / 0 to 140 ft H_2O	10	0.5	20	1
110	0 to 100 psi / 0 to 230 ft H_2O	10	1	20	2
120	0 to 160 psi / 0 to 370 ft H_2O	20	2	40	5
130	0 to 200 psi / 0 to 460 ft H_2O	20	2	60	4
140	0 to 300 psi / 0 to 700 ft H_2O	50	2	100	5

Feet of Water Ranges (J)

Range Code	Range	Figure Intervals	Minor Divisions
080	0 to 34 ft H_2O	5	0.2
090	0 to 70 ft H_2O	10	0.5
095	0 to 100 ft H_2O	10	1
100	0 to 140 ft H_2O	20	1
110	0 to 230 ft H_2O	20	2
120	0 to 370 ft H_2O	50	5
130	0 to 460 ft H_2O	50	5

Meters of Water Ranges (K)

Range Code	Range	Figure Intervals	Minor Divisions
080	0 to 10 m H_2O	1	0.1
090	0 to 20 m H_2O	2	0.2
095	0 to 30 m H_2O	5	0.2
100	0 to 40 m H_2O	5	0.5
110	0 to 70 m H_2O	10	0.5
120	0 to 120 m H_2O	10	1

Other ranges available, consult factory.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Special Application Ranges

Ammonia Ranges

An Ammonia Range is calibrated to measure vacuum and pressure (vac/psi) along with the corresponding ammonia temperatures (°F of ammonia). Pressure gauges with this range type require stainless steel wetted parts.

Standard Ammonia Ranges (P)

		psi		°F	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
310	30" Hg to 150 psi / °F Ammonia	30	2	10	2
320	30" Hg to 300 psi / °F Ammonia	50	2	10	2

Other ranges available, consult factory.

Refrigerant Ranges

A Refrigerant Range is calibrated to measure vacuum and pressure (vac/psi) along with the corresponding refrigerant temperatures (°F of R).

Standard Refrigerant Ranges (R)

		psi		°F	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
310	30" Hg to 150 psi / °F R12/R22	25	1	10	2
320	30" Hg to 150 psi / °F R123	30	2	20	5
330	30" Hg to 150 psi / °F R134A	30	2	10	2
340	30" Hg to 300 psi / °F R12/R22	50	2	10	2
350	30" Hg to 300 psi / °F R123	50	2	20	5
360	30" Hg to 300 psi / °F R134A	50	2	20	2

Other ranges available, consult factory.

Receiver Ranges

A Receiver Range is calibrated to translate the output signal from a 3 to 15 psi pneumatic transmitter into a specified measurement (i.e., temperature, pressure, square root, percent, etc.). Pressure gauges ordered with a receiver range are furnished with a 3 to 15 psi bourdon tube measuring element. **Care should be taken to ensure the maximum pressure never exceeds 15 psi.**

Standard Receiver Ranges (S)

Range Code	Range	Figure Intervals	Minor Divisions
060	0 to 10 linear	1	0.1
110	0 to 10 sq. rt.	1*	0.1*
370	0 to 100 linear	10	1
440	0 to 100 sq. rt.	10**	1**
420	0 to 100%	10	1

**Non linear scale, stated interval and division at 3.*
***Non linear scale, stated interval and division at 30.*
Other ranges available, consult factory.

Special Application Ranges

Availability

The following table indicates the special application range availability of Trerice Pressure Gauges.

Model	Liquid Level (Altitude)	Ammonia	Refrigerant	Receiver
450B, 450LFB	✓	N/A	✓	✓
450M, 450LFM	✓	N/A	✓	✓
450SS, 450LFSS	✓	✓	✓	✓
500XB	✓	N/A	✓	✓
500XSS	✓	✓	✓	✓
600CB	✓	N/A	✓	✓
610CB	✓	N/A	✓	✓
620B	N/A	N/A	N/A	N/A
690 Series	✓	N/A	✓	✓
700B, 700LFB	✓	N/A	✓	✓
700M, 700LFM	✓	N/A	✓	✓
700Plus	✓	✓	N/A	N/A
700SS, 700LFSS	✓	✓	✓	✓
700TA, 700TALF*	✓	✓	✓	N/A
750M, 750LFM	✓	N/A	✓	✓
750SS, 750LFSS	✓	✓	✓	✓
760B*	N/A	N/A	N/A	N/A
766SS*	N/A	N/A	N/A	N/A
800B	✓	N/A	✓	N/A
800LFB*	✓	N/A	✓	N/A
D82LFB*	✓	N/A	✓	✓
D83LFSS*	✓	✓	✓	✓

**Red set hand or index pointer not available with these models.*

Specialty Gauge Models

Listed below are Specialty Gauge Models that were previously available. In response to demand, we can now make available a wide number of ranges to customize most Trerice Pressure Gauges to suit specific measurement applications. Please order using the current model and specify the range required.

Previous Model	Current Model and Range
435SS	450SS with Ammonia Range
515XB	500XB with Liquid Level Range and Red Set Hand
535XSS	500XSS with Ammonia Range
545XB	500XB with Refrigerant Range
580B	500XB with Receiver Range
615B	500XB with Liquid Level Range and Red Set Hand
615CB	600CB with Liquid Level Range and Red Set Hand
635SS	500XSS with Ammonia Range
645B	500XB with Refrigerant Range
680B	500XB with Receiver Range
775SS	700SS with Ammonia Range

HOW TO ORDER

Sample Order Number: **500XB 45 02L H 110**

Specify the Units of Measure and Range Code as required.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Notes

Optional Case Styles

500X Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

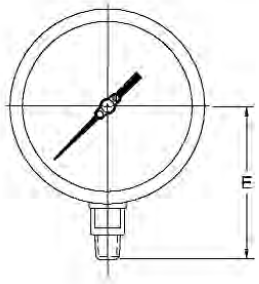
How to Order: Specify the Optional Case Code at the end of the Instrument Ordering Code.

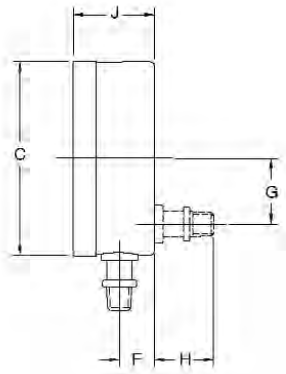
Sample Order Number: **500XB 45 02 L A 110 - FSL**

Optional Case Styles for 500X	Dial Size			
	4 1/2"	6"	8 1/2"	12"
Flangeless, Black Finished, Cast Aluminum Case, Lower Connection	FSL	FSL	N/A	N/A
Flangeless, Black Finished, Cast Aluminum Case, Back Connection	FSB	FSB	N/A	N/A
Panel Mounted, Hinged Ring Case Back Connection	HRB	HRB	N/A	HRB
Panel Mounted, Hinged Ring Case Lower Connection	HRL	HRL	N/A	HRL

N/A = Not available. Please order using the code listed.

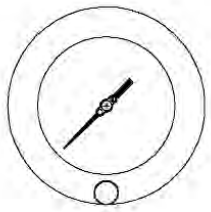
Flangeless

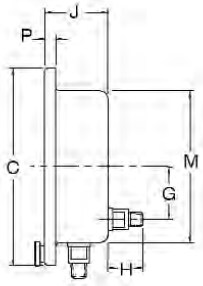


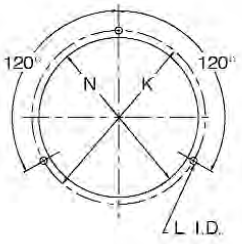


Dial Size	C	E	F	G	H	J
4 1/2"	4.79 [121.7]	3.83 [97.2]	.94 [23.8]	1.63 [41.3]	1.46 [37.1]	2.00 [50.8]
6"	6.29 [159.8]	4.70 [119.5]	.94 [23.8]	1.63 [41.3]	1.46 [37.1]	2.03 [51.6]

Hinged Ring







Dial Size	C	G	H	J	K	L	M	N	P
4 1/2"	6.10 [155]	1.62 [41]	1.59 [40]	1.97 [50]	5.38 [136]	0.22 [5]	4.78 [121]	4.94 [125]	0.34 [8]
6"	7.69 [195]	1.62 [41]	1.59 [40]	1.97 [50]	7.00 [177]	0.28 [7]	6.22 [158]	6.44 [163]	0.34 [8]
12"	14.75 [375]	1.62 [41]	1.38 [35]	2.50 [63.5]	13.50 [342]	0.28 [7]	12.50 [317]	12.81 [325]	0.73 [18.5]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

600C

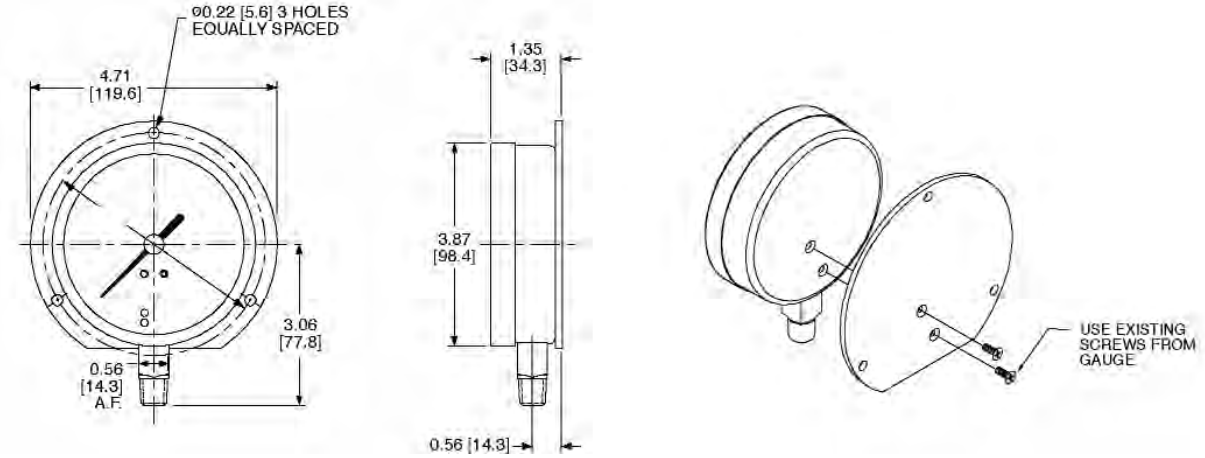
All dimensions are nominal. Dimensions in [ ] are in millimeters.

Kit Only. Not Factory installed.

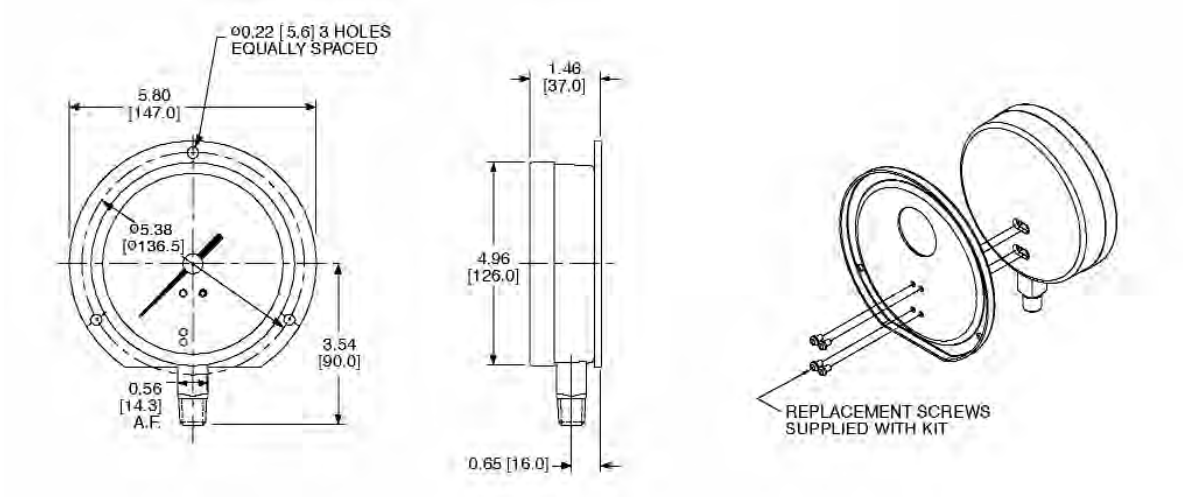
	Dial Size	
Optional Case Style – 600C	**3 1/2"**	**4 1/2"**
Surface Mounted Back Flange Kit	115-0222	198-0016

Please order using the code listed.

3 1/2" Includes back flange. Use existing screws from gauge.



4 1/2" Includes back flange and replacement screws.



Optional Case Styles

700 Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

OPTIONS & ACCESSORIES

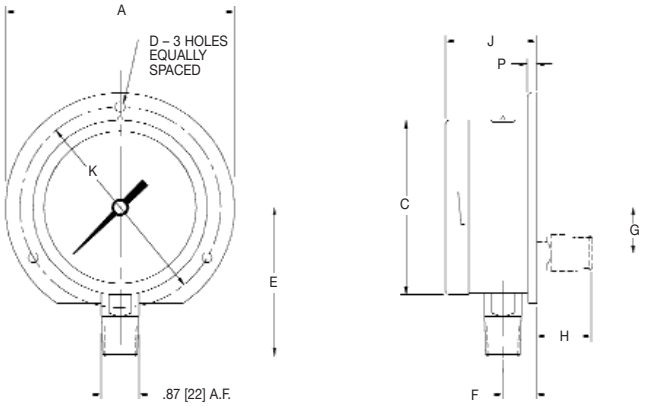
How to Order: Specify the Optional Case Code at the end of the Instrument Ordering Code.

Sample Order Number: **700SS 40 04 B D 220 - FMB**

Case Style – 700 Series	DIAL SIZE 2 1/2"	4"	6"
Surface Mounted Case with Back Flange, Lower Connection	N/A	SML	SML
Surface Mounted Case with Back Flange, Back Connection	SMB	SMB	SMB
Flush Mounted Case with Front Flange, Back Connection	FMB	FMB	FMB
Flush Mounted Case with Front Flange, Lower Connection	N/A	FML	FML
Panel Mounted Case with U-Clamp, Back Connection	UCB	UCB	UCB

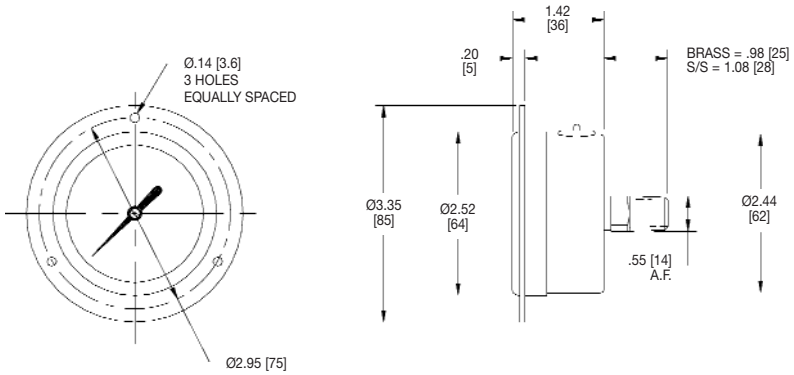
N/A = Not available. Please order using the code listed.

2 1/2", 4" & 6" Surface Mount



Dial Size	Material	A	C	D	E	F	G	H	J	K	P
2 1/2" [63]	Brass	3.35 [85]	2.52 [64]	0.14 [3.6]	2.22 [56.5]	0.57 [14.5]	0 [0]	0.98 [25]	1.56 [39.5]	2.95 [75]	0.22 [5.5]
	SS	3.35 [85]	2.52 [64]	0.14 [3.6]	2.22 [56.5]	0.57 [14.5]	0 [0]	0.98 [25]	1.56 [39.5]	2.95 [75]	0.22 [5.5]
4" [100]	Brass	5.20 [132]	3.98 [101]	0.19 [5]	3.39 [86]	0.75 [19]	1.04 [27]	1.32 [34]	2.07 [53]	4.57 [116]	0.22 [5.5]
	SS	5.20 [132]	3.98 [101]	0.19 [5]	3.39 [86]	0.75 [19]	1.36 [35]	1.26 [32]	2.07 [53]	4.57 [116]	0.22 [5.5]
6" [150]	Brass	7.72 [196]	6.34 [161]	0.23 [6]	4.57 [116]	0.81 [21]	1.04 [27]	1.32 [34]	2.09 [53]	7.01 [178]	0.24 [6]
	SS	7.72 [196]	6.34 [161]	0.23 [6]	4.57 [116]	0.81 [21]	1.36 [35]	1.26 [32]	2.09 [53]	7.01 [178]	0.24 [6]

2 1/2" Front Flange



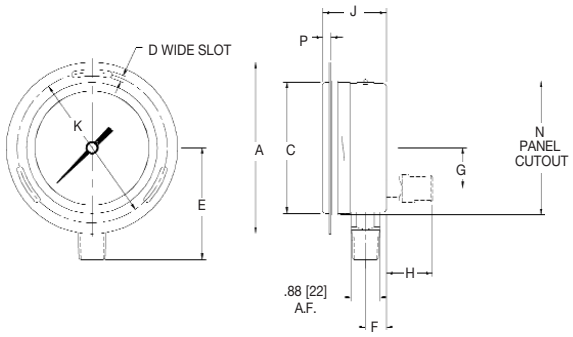
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

700 Series

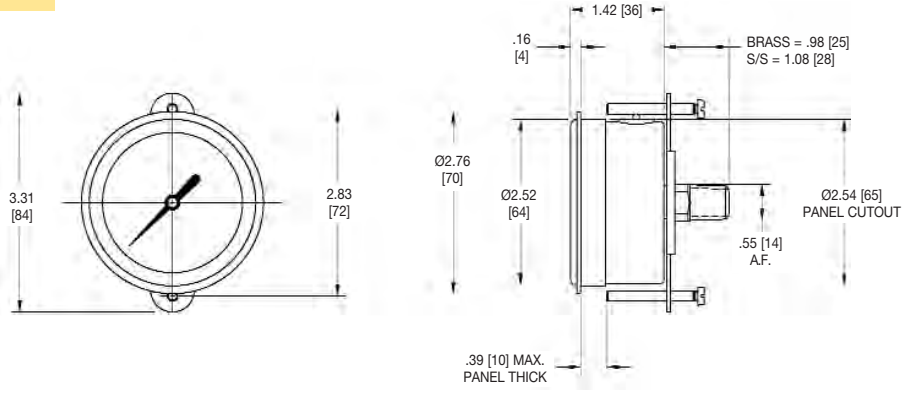
All dimensions are nominal. Dimensions in [ ] are in millimeters.

4" & 6" Front Flange

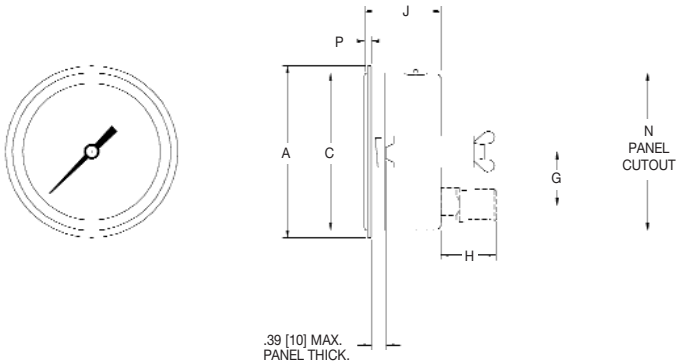


Dial Size	Material	A	C	D	E	F	G	H	J	K	N	P
4" [100]	Brass	5.20 [132]	3.98 [101]	0.19 [5]	3.39 [86]	0.63 [16]	1.04 [27]	1.44 [37]	1.93 [49]	4.57 [116]	4.13 [105]	0.24 [6]
	SS	5.20 [132]	3.98 [101]	0.19 [5]	3.39 [86]	0.63 [16]	1.36 [35]	1.38 [35]	1.93 [49]	4.57 [116]	4.13 [105]	0.24 [6]
6" [150]	Brass	7.72 [196]	6.34 [161]	0.23 [6]	4.57 [116]	0.69 [18]	1.04 [27]	1.44 [37]	1.97 [50]	7.01 [178]	6.50 [165]	0.24 [6]
	SS	7.72 [196]	6.34 [161]	0.23 [6]	4.57 [116]	0.69 [18]	1.36 [35]	1.38 [35]	1.97 [50]	7.01 [178]	6.50 [165]	0.24 [6]

2½" U-Clamp



4" & 6" U-Clamp



Dial Size	Material	A	C	G	H	J	N	P
4" [100]	Brass	4.33 [110]	3.98 [101]	1.04 [27]	1.44 [37]	1.93 [49]	4.02 [102]	0.18 [5]
	SS	4.33 [110]	3.98 [101]	1.36 [35]	1.38 [35]	1.93 [49]	4.02 [102]	0.18 [5]
6" [150]	Brass	6.69 [170]	6.34 [161]	1.04 [27]	1.44 [37]	1.97 [50]	6.39 [162]	0.24 [6]
	SS	6.69 [170]	6.34 [161]	1.36 [35]	1.38 [35]	1.97 [50]	6.39 [162]	0.24 [6]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

760B & 766SS

All dimensions are nominal. Dimensions in [ ] are in millimeters.

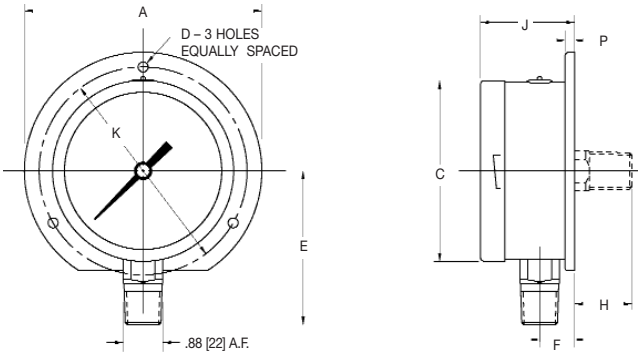
How to Order: Specify the Optional Case Code at the end of the Instrument Ordering Code.

Sample Order Number: ***766SS 60 02 L M 660 - SML***

Optional Case Styles for 760B & 766SS	760B 2 1/2"	760B 4"	766SS 4"	766SS 6"
Surface Mounted Case with Back Flange, Lower Connection	N/A	N/A	SML	SML
Surface Mounted Case with Back Flange, Back Connection	N/A	N/A	SMB	SMB
Flush Mounted Case with Front Flange, Back Connection	FMB	FMB	FMB	FMB
Flush Mounted Case with Front Flange, Lower Connection	N/A	N/A	FML	FML
Panel Mounted Case with U-Clamp, Back Connection	UCB*	N/A	UCB	UCB

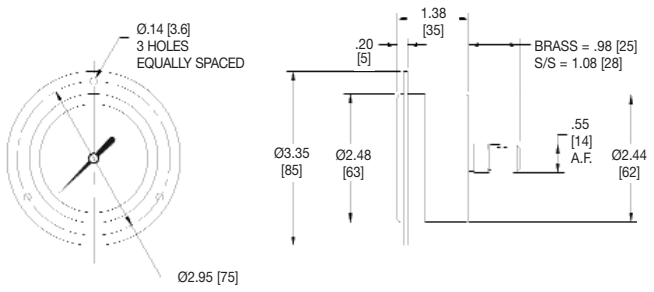
N/A = Not available. Please order using the code listed.
**Supplied with stainless steel case.*

766SS
4" & 6" Surface Mount



Dial Size	A	C	D	E	F	H	J	K	P
4" [100]	5.20 [132]	3.98 [101]	.19 [5]	3.43 [87]	.75 [19]	1.26 [32]	2.07 [53]	4.57 [116]	.22 [5.5]
6" [150]	7.72 [196]	6.34 [161]	.23 [6]	4.84 [123]	.81 [21]	1.26 [32]	2.09 [53]	7.01 [178]	.22 [5.5]

760B
2 1/2" Front Flange



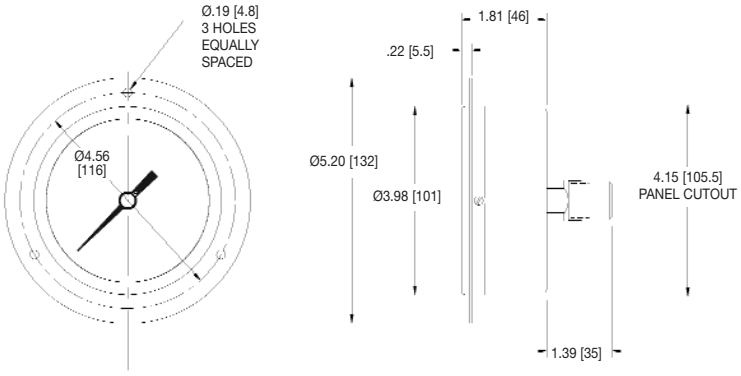
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

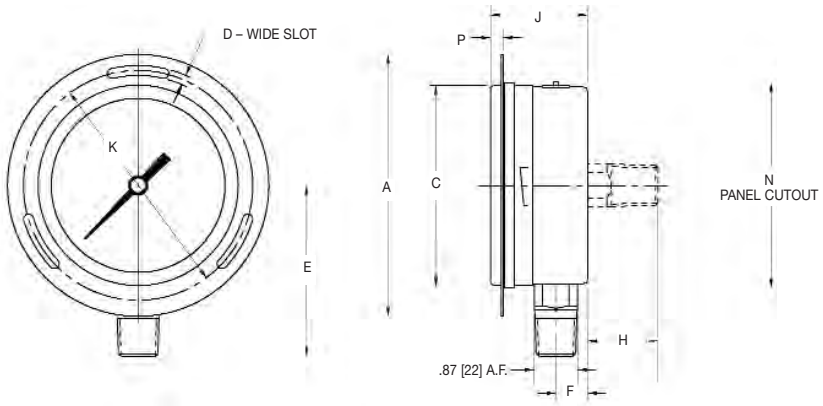
760B & 766SS

All dimensions are nominal. Dimensions in [ ] are in millimeters.

760B
4" Front Flange

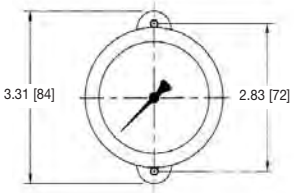


766SS
4" & 6" Front Flange

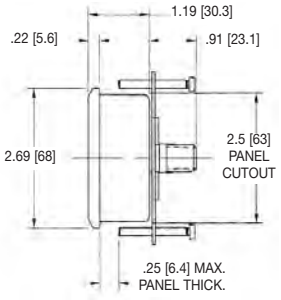


Dial Size	Material	A	C	D	E	F	H	J	K	N	P
4" [100]	Brass	5.20 [132]	3.98 [101]	.19 [5]	3.43 [87]	0.63 [16]	1.38 [35]	1.93 [49]	4.57 [116]	4.13 [105]	0.24 [6]
	SS	5.20 [132]	3.98 [101]	.19 [5]	3.43 [87]	0.63 [16]	1.38 [35]	1.93 [49]	4.57 [116]	4.13 [105]	0.24 [6]
6" [150]	Brass	7.72 [196]	6.34 [161]	.23 [6]	4.76 [121]	0.69 [18]	1.38 [35]	1.97 [50]	7.01 [178]	6.50 [165]	0.24 [6]
	SS	7.72 [196]	6.34 [161]	.23 [6]	4.84 [123]	0.69 [18]	1.38 [35]	1.97 [50]	7.01 [178]	6.50 [165]	0.24 [6]

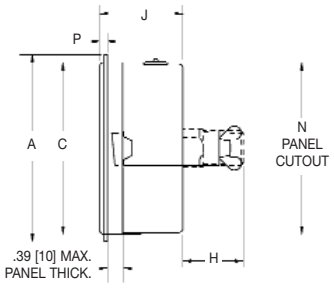
760B & 766SS
2½" U-Clamp*



* Supplied with Stainless Steel Case



766SS
4" & 6" U-Clamp



Dial Size	Material	A	C	H	J	N	P
4" [100]	Brass	4.33 [110]	3.98 [101]	1.44 [37]	1.93 [49]	4.02 [102]	0.18 [5]
	SS	4.33 [110]	3.98 [101]	1.38 [35]	1.93 [49]	4.02 [102]	0.18 [5]
6" [150]	Brass	6.69 [170]	6.34 [161]	1.44 [37]	1.97 [50]	6.39 [162]	0.24 [6]
	SS	6.69 [170]	6.34 [161]	1.38 [35]	1.97 [50]	6.39 [162]	0.24 [6]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

D80 Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

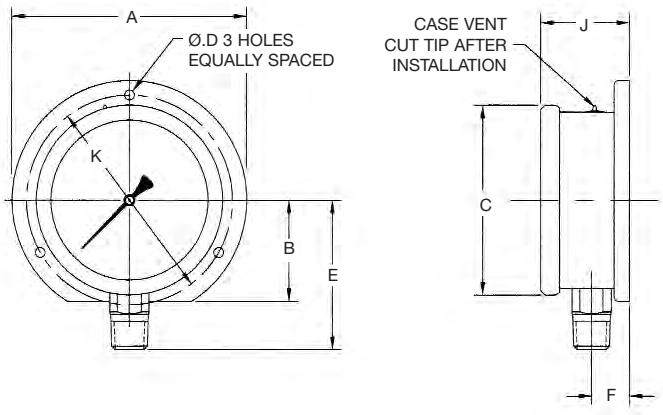
How to Order: Specify the Optional Case Code at the end of the Instrument Ordering Code.

Sample Order Number: ***D82LFB 25 02 L A 160 - SML***

	Dial Size		
Case Style – D80 Series	**2"**	**2 1/2"**	**4"**
Surface Mounted, Back Flange Case for Lower Connection	N/A	SML	SML
* Panel Mounted, Front Flange Kit for Back Connection	198-0028	198-0025	198-0027
* Panel Mounted, Front Ring Kit for Back Connection	N/A	198-0024	N/A
* Panel Mounted, U-Clamp Kit for Back Connection	198-0031	198-0026	198-0029

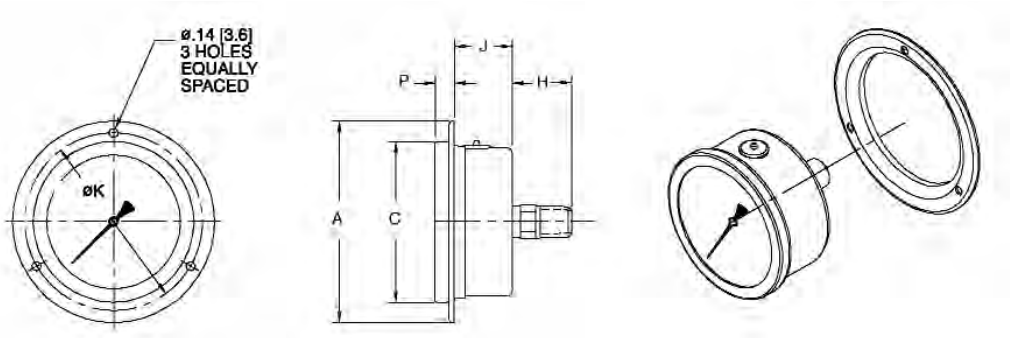
*** Kit Only. Not Factory installed.**

2 1/2" & 4" Surface Mount



Dial Size	A	B	C	D	E	F	J	K
2 1/2"	3.35 [85]	1.43 [36.3]	2.68 [68]	0.14 [3.6]	2.23 [56.6]	0.52 [13.2]	1.38 [35.1]	2.95 [75]
4"	5.20 [132]	2.19 [55.6]	4.18 [106]	0.19 [4.8]	3.07 [78]	0.62 [15.7]	1.47 [37.3]	4.57 [116]

2", 2 1/2" & 4" Front Flange



Dial Size	A	C	H	J	K	P
2"	3.03 [77]	2.09 [53]	0.99 [25]	0.94 [24]	2.65 [65]	0.32 [8]
2 1/2"	3.35 [85]	2.67 [68]	0.99 [25]	0.82 [21]	2.95 [75]	0.32 [8]
4"	5.20 [132]	4.17 [106]	0.99 [25]	0.91 [23]	4.56 [116]	0.42 [10]

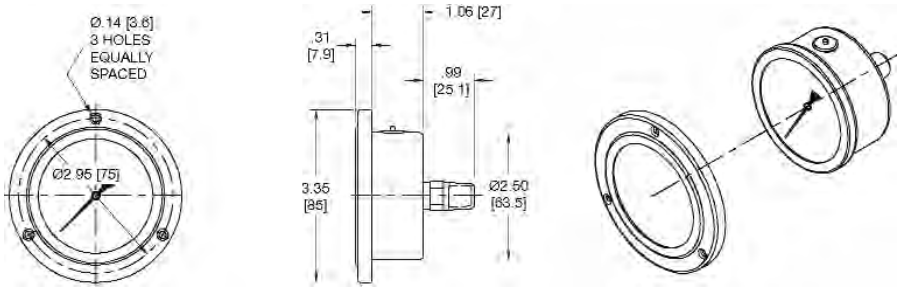
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

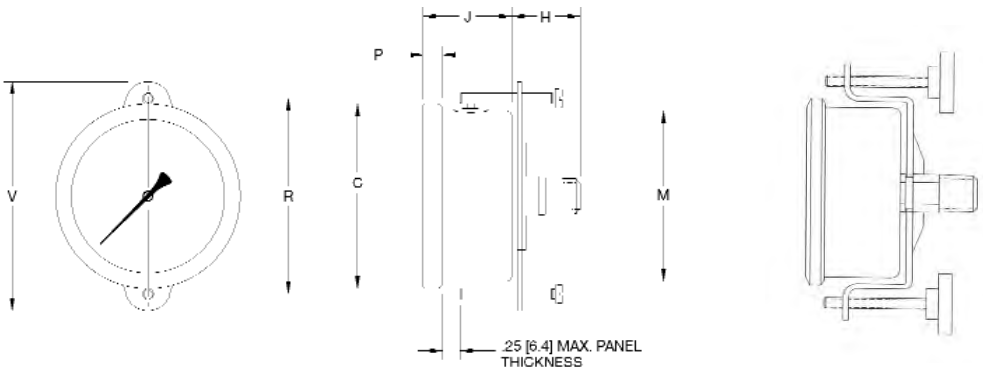
D80 Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

2 1/2" Front Ring



2", 2 1/2" & 4" U-Clamp



Dial Size	C	H	J	M	P	R	V
2"	2.09 [53]	.99 [25]	1.10 [28]	1.91 [48.5]	.18 [4.5]	2.28 [58]	2.76 [70]
2 1/2"	2.68 [68]	.99 [25]	1.20 [30.5]	2.44 [62]	.28 [7]	2.83 [72]	3.31 [84]
4"	4.17 [106]	.99 [25]	1.32 [33.5]	3.88 [98.6]	.28 [7]	4.33 [110]	4.80 [122]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles
800 Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

OPTIONS & ACCESSORIES

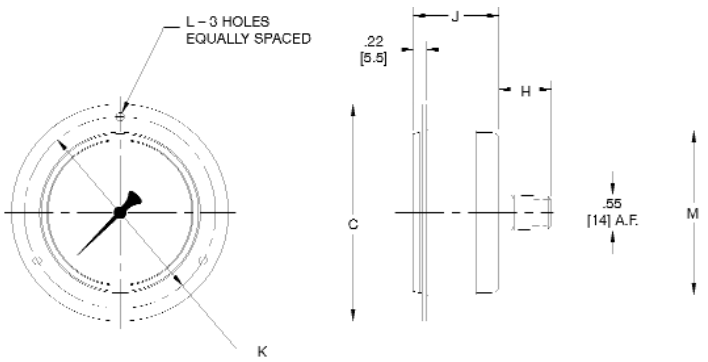
How to Order: Specify the Optional Case Code at the end of the Instrument Ordering Code.

Sample Order Number: ***800B 15 01 B D 140 - UCB***

	Dial Size			
Case Styles – 800 Series	**1 1/2"**	**2"**	**2 1/2"**	**4"**
Panel Mounted Case with Front Flange, Back Connection	FMB	FMB	FMB	FMB
Panel Mounted Case with U-Clamp, Back Connection	UCB	UCB	UCB	N/A

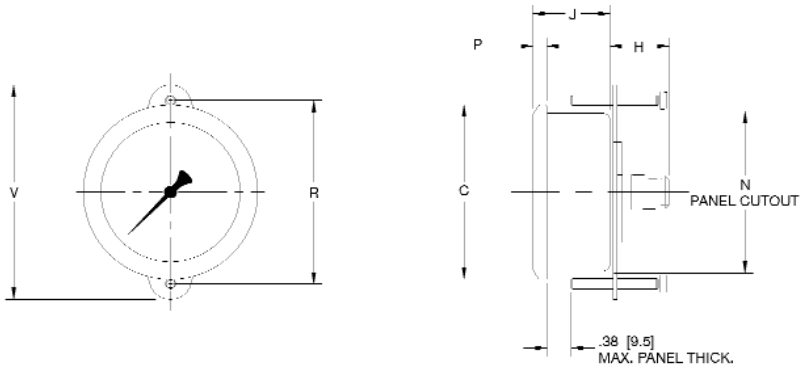
Please order using the code listed.

Front Flange



Dial Size	C	H	J	K	L	M
1 1/2"	2.40 [61]	0.73 [18.5]	0.98 [25]	1.97 [50]	.14 [3.5]	1.61 [41]
2"	2.80 [71]	0.83 [21]	1.02 [26]	2.36 [60]	.14 [3.5]	1.97 [50]
2 1/2"	3.35 [85]	0.83 [21]	1.06 [27]	2.95 [75]	.14 [3.5]	2.52 [64]
4"	5.20 [132]	0.98 [25]	1.26 [32]	4.57 [116]	.19 [4.8]	3.96 [100.5]

1 1/2", 2", 2 1/2" U-Clamp



Dial Size	C	H	J	N	P	R	V
1 1/2"	1.73 [44]	1.08 [27.5]	1.12 [28.5]	1.57 [40]	0.24 [6]	1.97 [50]	2.44 [62]
2"	2.13 [54]	1.02 [26]	1.18 [30]	1.97 [50]	0.22 [5.5]	2.28 [58]	2.76 [70]
2 1/2"	2.68 [68]	1.02 [26]	1.18 [30]	2.48 [63]	0.22 [5.5]	2.83 [72]	3.31 [84]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Optional Case Styles

800LF Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.

How to Order: Specify the Optional Case Code at the end of the Instrument Ordering Code.

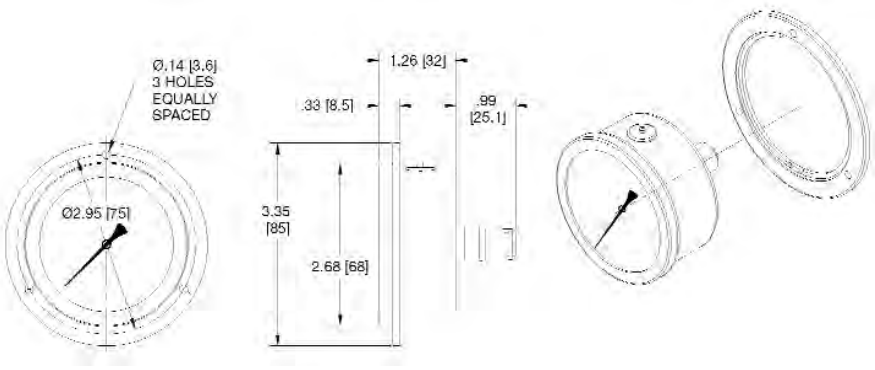
Sample Order Number: **800LFB 35 02 B A 030 - UCB**

	Dial Size	
Case Styles – 800LF Series	**2 1/2"**	**3 1/2"**
* Panel Mounted, Front Flange Kit for Back Connection	198-0020	N/A
* Surface Mounted, Back Flange Kit for Lower Connection	198-0022	N/A
* Panel Mounted, Front Ring Kit for Back Connection	198-0021	N/A
* Panel Mounted, U-Clamp Kit for Back Connection	198-0026	N/A
Panel Mounted Case with U-Clamp, Back Connection	N/A	UCB

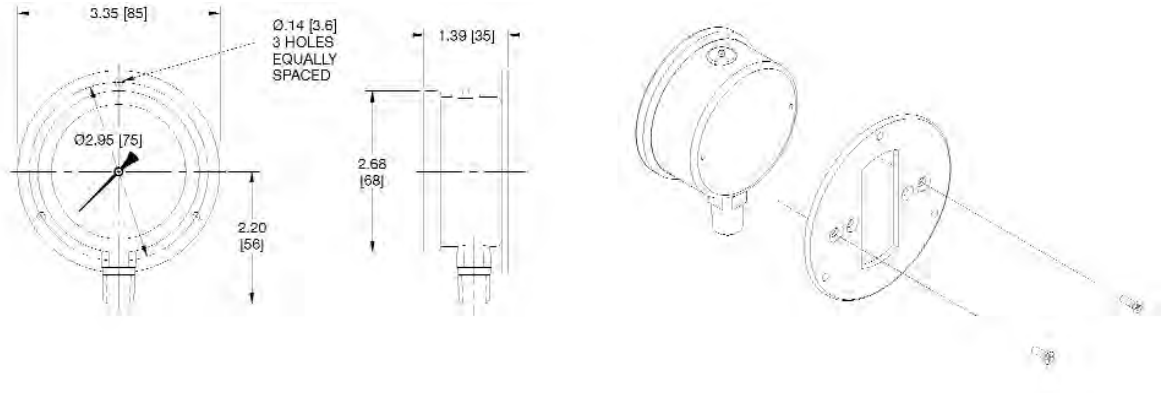
*** Kit Only. Not Factory installed.**

Please order using the code listed.

2 1/2" Front Flange



2 1/2" Back Flange

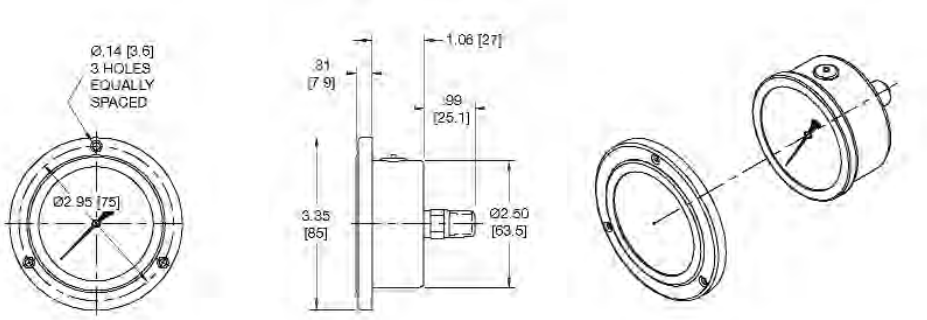


Optional Case Styles

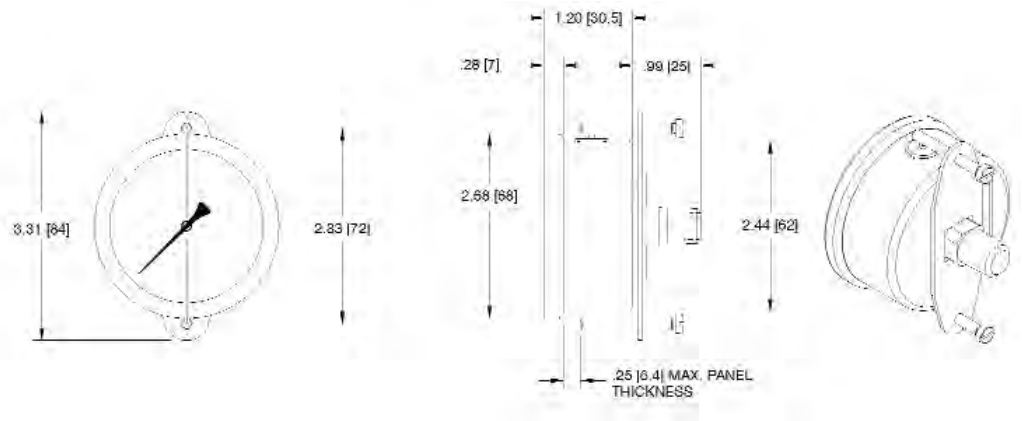
800LF Series (continued)

All dimensions are nominal. Dimensions in [ ] are in millimeters.

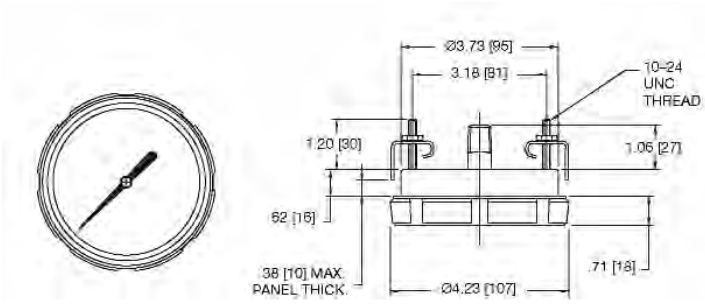
2 1/2" Front Ring



2 1/2" U-Clamp



3 1/2" U-Clamp



12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Windows (PLW/SGW)

Trerice offers a complete line of window options, including: plastic (acrylic) and laminated safety glass. Please consult the Option Application Table for window availability. Replacement windows are sold separately; please consult the price sheet for item numbers.

Red Set Hand (RSH)

Attached at the center of the dial face, a red set hand can be adjusted to indicate a desired predetermined reference point. The set point is adjusted by removing the ring and window of the gauge (dry gauge only). When used on a liquid filled gauge, please specify the set point when ordering. Please consult the Option Application Table for set hand availability.

Maximum Registering Pointers (MAX)

Maximum registering pointers can be furnished on most dry 3½"dial size and larger pressure gauges having a pressure range of 60 psi or greater. The pointer is designed to indicate the maximum or minimum pressure attained by the process being measured since the pointer was last reset. The pointer assembly is installed to an acrylic window, with an external knob for manually resetting the pointer. Please consult the Option Application Table for maximum registering pointer availability.

Electric Contacts

Electric contact assemblies can be supplied on most 4", 4½" and 6" pressure gauges. These units are well suited for making the electrical contact required to activate alarms, signals, or other electrical devices. Each unit is provided with an external adjustment key, making it easy to adjust and providing for tamper-resistant operation. The contacts have adjustable magnets to eliminate pointer bounce caused by vibration, and have pass/repass capability, allowing the pointer to move past the set point while maintaining contact. For applications that require a liquid-filled gauge, a special inductive type contact is required. Please consult factory for additional information.

Electric Contact Configurations

Optional Feature Code	Contact Style	Contact Action
EC1	Single High	Single contact: Makes on clockwise rotation
EC2	Single Low	Single contact: Breaks on clockwise rotation
EC3	High-Low	Double contact: High contact makes on clockwise rotation Low contact breaks on clockwise rotation
EC4	Double High	Double contact: 1st makes on clockwise rotation 2nd makes on clockwise rotation

Please consult the Option Application Table for electric contact availability.

Recommended Load Limits

Volts	Resistive	Inductive
110 Vac	0.25 A	0.13 A
24 Vdc	0.40 A	0.25 A

Optional Features

PRESSURE GAUGES

Weatherproofed Cases (WPC)

Trerice pressure gauges may be sealed for outdoor use, or for use in applications where sprays and washes will come in contact with the gauge. Trerice Series 450, 700, 750 and all liquid-filled gauges are hermetically sealed and are inherently weatherproof. The weather-proofing option is available for most other pressure gauges.

Pressure Relief Plugs (PRP)

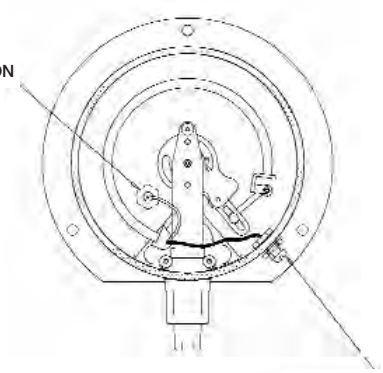
This feature is designed to release non-instantaneously developed internal case pressure at 3 to 5 psi, and can be supplied on most 3½" and larger pressure gauges. Please consult the Option Application Table for pressure relief plug availability.

Silicone Dampened Movements (SDM)

The application of a highly viscous silicone oil to the gear, sector, and all bearing points of the movement will help reduce the effects of vibration and pulsation to which the gauge may be subjected. This feature will extend the life of the gauge by reducing wear on the movement, and is available on most Trerice Pressure Gauges. Please consult the Option Application Table for silicone dampened movement availability.

Capillary Tube Bleeders (CTB)

The No. 421 Capillary Bleeder has been designed as an accessory for the 500X Series Pressure Gauge. This feature makes it possible to completely eliminate air or other pressure media that may be trapped in the bourdon tube of a gauge. After installation, the bleeder must be opened to allow the entrapped air or medium to be purged from the bourdon tube. After purging, the bleeder can be closed, permitting proper action of the gauge. When used on a 500XB gauge, the bleeder assembly is manufactured from brass, and has a maximum pressure of 1000 psi. When used on a 500XSS gauge, the bleeder assembly is manufactured from 347 stainless steel, and has a maximum pressure of 5000 psi. Please consult the Option Application Table for capillary bleeder availability.



12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Snubber Screws and Restrictors

A snubber screw or restrictor may be installed in the gauge socket to reduce shock to the gauge and prevent wear on the movement, and should be installed where sudden pressure surges or oscillations are expected. Snubber screws reduce the pulsation by forcing the pressure medium through a porous metal core, while restrictors use a small orifice for pulsation reduction. Trerice also offers externally installed pressure snubbers. Please consult the Accessories section for details.

Snubber Screws and Restrictors

Optional Feature Code	Item No.	Service	Construction
SS2	**D368**	Air & other gases	316 stainless steel body & core, 1/4-20 UNC thread
SS4	**D369**	Vapor & low viscosity fluids under 30 SSU	316 stainless steel body & core, 1/4-20 UNC thread
SS6	**D370**	Water and oils 30 SSU to 250 SSU	316 stainless steel body & core, 1/4-20 UNC thread
SS8	**D371**	Heavy oils and viscous fluids 250 SSU to 500 SSU	316 stainless steel body, 1/4-20 UNC thread Core omitted, 0.040 orifice
RES	**104-0005.3**	Air, gases & fluids	Brass, push-in
RSS	Optional feature only. Not sold separately.	Air, gases & fluids	316L stainless steel, screw-in

Please consult the Option Application Table for snubber screw and restrictor availability.

Alternate Fill Fluids (SLF & HLF)

By minimizing wear on the gauge internals resulting from vibration or oscillation, liquid filling can prolong the life of a pressure gauge. Liquid filling also acts a permanent lubricant to the moving parts of the instrument. Trerice provides glycerine as the standard fill material. Silicone **(SLF)** and halocarbon **(HLF)** are available as alternate fills. Please consult factory for availability.

Recalibration and Certification

The factory is equipped to recalibrate and/or certify pressure gauges having ±0.5% Full Scale ASME B40.100 Grade 2A or lesser accuracy in ranges from 30" Hg vacuum to 20,000 psi pressure. Price is determined by range, gauge accuracy and number of points certified; please consult factory.

Optional Features

OPTION AVAILABILITY TABLE

Optional Feature Codes

	PLW	SGW	RSH	MAX	EC-X	WPC	PRP	SDM	CTB	SS-X	RES	RSS
	Plastic Window (Acrylic)	Laminated Safety Glass Window	Red Set Hand[1]	Maximum Registering Pointer[2]	Electric Contact[3]	Weather-Proofed Case	Pressure Relief Plug	Silicone Dampened Movement	Capillary Tube Bleeder	Snubber Screw	Push-in Restrictor	Restrictor Screw
450 Series (Dry)	S	O	O	O	O	S	N/A	O	N/A	O	N/A	N/A
450 Series Liquid Filled	S	O	O	N/A	O	S	N/A	N/A	N/A	O	N/A	N/A
500X Series	O	O	O	O	O	O	O	O	O	O	N/A	N/A
600 Series	O	N/A	O	N/A	N/A	O	O	O	N/A	N/A	O	N/A
690 Series	S	N/A	O	O	N/A	O	O	O	N/A	N/A	O	N/A
700 Series	O	S	N/A	O	O	S	S	O	N/A	N/A	N/A	O
750 Series	O	S	N/A	O	N/A	S	S	N/A	N/A	N/A	N/A	O

1 *Red set hand is not available with $1^1/_2$", 2", $8^1/_2$", or 12" dial size. Set hand per $2^1/_2$", dial size is an adhesive decal, applied directly to inside surface window.*

2 *Maximum registering pointer not available on liquid filled gauges or $2^1/_2$", dial sizes.*

3 *Electric contact only available with 4", $4^1/_2$", or 6" dial sizes. Consult factory for liquid filled gauge applications.*

S – Standard Product Feature **O** – Optional Feature at Additional Charge N/A – Not Available

How to Order

Specify the Optional Feature Ordering Code at the end of the Instrument Ordering Code.

Sample Order Number: **600CB 45 02 L A 110 PLW**

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Impulse Dampeners

870 Series Pressure Impulse Dampeners are designed to improve readability and prevent wear on delicate gauge mechanisms by slowing rapid pressure changes and reducing shock and chattering. An impulse dampener should be installed on a gauge in any application where pressure spikes and/or pulsations may be present. Trerice Impulse Dampeners are engineered for field serviceability (cleaning and parts replacement) and are constructed from brass or stainless steel for use on a variety of pressure media.

870 Series Impulse Dampeners

Item No.	Body & Insert Material	Connection Size (NPT)	Maximum Pressure (psig)	Service	Approximate Shipping Weight
870-1	Brass	1/4	1000	Air, water, steam and gases	0.5 lbs [0.23 kg]
870-2	Brass	1/4	1000	Gasoline and light oils	0.5 lbs [0.23 kg]
870-3	Brass	1/4	1000	Lubricating and heavy oils	0.5 lbs [0.23 kg]
870-7	303SS	1/4	5000	Includes 3 pistons for various viscosities	0.5 lbs [0.23 kg]
870-10	303SS	1/2	10,000	Includes 3 pistons for various viscosities	0.8 lbs [0.36 kg]
870-13	316SS	1/4	5000	Includes 3 pistons for various viscosities	0.5 lbs [0.23 kg]
870-16	316SS	1/2	10,000	Includes 3 pistons for various viscosities	0.8 lbs [0.36 kg]

Pressure Snubbers

872 Series Pressure Snubbers are designed to improve readability and prevent wear on delicate gauge mechanisms by slowing rapid pressure changes and reducing shock and chattering. A pressure snubber should be installed on a gauge in any application where pressure spikes and/or pulsations may be present. If a single snubber does not correct the oscillation, it is recommended to place an additional snubber in line with the first. Trerice Pressure Snubbers reduce the pulsation by forcing the pressure medium through a porous metal core and are constructed from brass or 303 stainless steel for use on a variety of pressure media.

872 Series Pressure Snubbers

Item No.	Body & Insert Material	Connection Size (NPT)	Maximum Pressure (psig)	Service	Approximate Shipping Weight
872-1	Brass	1/4	1000	Air and gases	0.1 lbs [0.05 kg]
872-2	Brass	1/4	1000	Water, steam, gasoline and light oils	0.1 lbs [0.05 kg]
872-3	Brass	1/4	1000	Lubricating and heavy oils	0.1 lbs [0.05 kg]
872-4	303SS	1/4	2000	Air and gases	0.3 lbs [0.14 kg]
872-5	303SS	1/4	2000	Water, steam, gasoline and light oils	0.3 lbs [0.14 kg]
872-6	303SS	1/4	2000	Lubricating and heavy oils	0.3 lbs [0.14 kg]
872-7	Brass	1/2	5000	Air and gases	0.1 lbs [0.05 kg]
872-8	Brass	1/2	5000	Water, steam, gasoline and light oils	0.1 lbs [0.05 kg]
872-9	Brass	1/2	5000	Lubricating and heavy oils	0.1 lbs [0.05 kg]
872-10	303SS	1/2	10,000	Air and gases	0.3 lbs [0.14 kg]
872-11	303SS	1/2	10,000	Water, steam, gasoline and light oils	0.3 lbs [0.14 kg]
872-12	303SS	1/2	10,000	Lubricating and heavy oils	0.3 lbs [0.14 kg]

Test Plugs & Accessories

The **Trerice Test Plug** provides a convenient access port for determining the pressure and/or temperature of process media contained in a pipe line or vessel. The test plug is designed for use in chilled or hot water systems and is permanently installed in the system at the desired test location. A test thermometer or pressure gauge with test adapter can be inserted through the plug to determine the conditions within the system. When the probe is withdrawn, the inner valve plug closes to seal the system. The test plug includes a removable cap to protect the inner valve plug and provide a secondary seal.

Nordel, otherwise known as EPDM, provides excellent service in hot or cold water. **Nordel should not be used with hydrocarbon solvents, hydrocarbon oils, chlorinated hydro carbons or turpentine.**

Neoprene, a synthetic rubber, provides excellent service in ammonia, high aniline point petroleum oils and silicate ester lubricants. **Neoprene should not be used with silicone greases, silicone oils or di-ester based lubricants.**

Test plugs are designed for initial startup and testing, not continuous or frequent use. If continuous or frequent use is desired or expected, a test well should be installed for temperature applications and a needle valve installed for pressure applications.

Tests should be made as quickly as possible because the inner plug resealing time is dependent upon the length of time the probe remains inserted, as well as the temperature and pressure of the system. The test plug may take longer to reseal at lower temperatures or pressures. The probe used for testing should never exceed a diameter of 0.156" (4 mm). The pressure gauge used for testing should always have a range of twice the system pressure.

Test Plugs

Test Plug Item No.	Test Plug with Retainer Item No.	Connection Size (NPT)	Body & Cap	Core	Max Pres. (psig)	Max Temp.	Approximate Shipping Weight
D3741	D3764	1/4	Brass	Nordel	1000	350°F	0.1 lbs [0.05 kg]
D3743	D3763	1/4	Brass	Neoprene	1000	200°F	0.1 lbs [0.05 kg]
D3758	D3766	1/4	316SS	Nordel	1000	350°F	0.1 lbs [0.05 kg]
D3757	D3765	1/4	316SS	Neoprene	1000	200°F	0.1 lbs [0.05 kg]
D3742	D3770	1/2	Brass	Nordel	1000	350°F	0.2 lbs [0.09 kg]
D3744	D3769	1/2	Brass	Neoprene	1000	200°F	0.2 lbs [0.09 kg]
D3762	D3772	1/2	316SS	Nordel	1000	350°F	0.2 lbs [0.09 kg]
D3761	D3771	1/2	316SS	Neoprene	1000	200°F	0.2 lbs [0.09 kg]

Accessories

Item No.	Description	Approx. Shipping Weight
D3747	Gauge Adapter, 1/8" diameter	0.1 lbs [0.05 kg]
D3749	2" Brass Extension, 1/4 NPT	0.1 lbs [0.05 kg]
D3753	2" Brass Extension, 1/2 NPT	0.2 lbs [0.09 kg]

Test Kits

Item No.	Pressure Range (psi)	Approximate Shipping Weight
D3750	0 to 100	1.4 lbs [0.64 kg]
D3751	0 to 200	1.4 lbs [0.64 kg]
D3752	0 to 300	1.4 lbs [0.64 kg]
D3748	0 to 600	1.4 lbs [0.64 kg]

Each test kit contains:
(1) 700B Pressure Gauge,
(1) B82105P03F&C Thermometer,
(1) B82105P05F&C Thermometer,
(1) D3747 Gauge Adapter,
(1) Carrying Case

Test Kit Replacement Items

Item No.	Description	Approximate Shipping Weight
700B2502LA110	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 100 psi	0.4 lbs [0.18 kg]
700B2502LA130	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 200 psi	0.4 lbs [0.18 kg]
700B2502LA140	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 300 psi	0.4 lbs [0.18 kg]
700B2502LA160	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 600 psi	0.4 lbs [0.18 kg]
B82105P03	B82105 Bimetal Thermometer, 1 3/4" dial size, 5" stem, 25° to 125°F & C	0.4 lbs [0.18 kg]
B82105P05	B82105 Bimetal Thermometer, 1 3/4" dial size, 5" stem, 20° to 240°F & C	0.4 lbs [0.18 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Ball Valves

866 Ball Valve is a single entry flow valve, incorporating a Teflon seat to shut off the flow of process media to the pressure instrument, thereby allowing the instrument to be isolated from the pressure media or removed from service. The Trerice 866 Ball Valve is constructed from brass, for use on air, water, oil and other noncorrosive process media. **It is recommended to place a needle valve, ball valve or gauge cock in line before every pressure gauge installation.**

866 Ball Valve

Item No.	Type	Connection Size	Body	Seat	Ball	Handle	Maximum Pressure (psig)	Maximum Temperature	Approximate Shipping Weight
866	FXF	1/4 NPT	Brass	Teflon	Plated brass	Lever	500 psig	180°F	0.1 lbs [0.05 kg]

Gauge Cocks

865/880 Series Quarter Turn Gauge Cocks provide an economical way to shut off the flow of air to the pressure instrument, thereby allowing the instrument to be isolated from the pressure media or removed from service. Trerice Gauge Cocks are constructed from brass and are intended for use on air lines where leakage is not of concern. **It is recommended to place a needle valve, ball valve or gauge cock in line before every pressure gauge installation.**

In applications where process media leakage may result in possible personal injury or property damage, gauge cocks should not be specified as they contain no packing gland and leakage may result. For tight shut-off and prevention of leakage, use of a Trerice Ball Valve or Needle Valve is required.

865

865MFG

865-1

880

865/880 Series Gauge Cocks

Item No.	Type	Connection Size	Body	Plug	Maximum Pressure (psig)	Maximum Temperature	Approximate Shipping Weight
865	FXF	1/4 NPT	Brass	Brass	200	500°F	0.1 lbs [0.05 kg]
865MFG	MXF	1/4 NPT	Brass	Brass	200	500°F	0.1 lbs [0.05 kg]
865-1	FXF	1/4 NPT	Brass	Brass	300	500°F	0.3 lbs [0.14 kg]
880	MXF	1/4 Union	Brass	Brass	150	500°F	0.5 lbs [0.23 kg]

Pointer Jack

The **D329 Pointer Jack** is required for removing the pointer of a pressure gauge without causing damage to the dial face, pointer, pointer shaft or movement of the gauge.

Approximate Shipping Weight

0.1 lbs [0.05 kg]

Test Plugs & Accessories

The **Trerice Test Plug** provides a convenient access port for determining the pressure and/or temperature of process media contained in a pipe line or vessel. The test plug is designed for use in chilled or hot water systems and is permanently installed in the system at the desired test location. A test thermometer or pressure gauge with test adapter can be inserted through the plug to determine the conditions within the system. When the probe is withdrawn, the inner valve plug closes to seal the system. The test plug includes a removable cap to protect the inner valve plug and provide a secondary seal.

Nordel, otherwise known as EPDM, provides excellent service in hot or cold water. **Nordel should not be used with hydrocarbon solvents, hydrocarbon oils, chlorinated hydro carbons or turpentine.**

Neoprene, a synthetic rubber, provides excellent service in ammonia, high aniline point petroleum oils and silicate ester lubricants. **Neoprene should not be used with silicone greases, silicone oils or di-ester based lubricants.**

Test plugs are designed for initial startup and testing, not continuous or frequent use. If continuous or frequent use is desired or expected, a test well should be installed for temperature applications and a needle valve installed for pressure applications.

Tests should be made as quickly as possible because the inner plug resealing time is dependent upon the length of time the probe remains inserted, as well as the temperature and pressure of the system. The test plug may take longer to reseal at lower temperatures or pressures. The probe used for testing should never exceed a diameter of 0.156" (4 mm). The pressure gauge used for testing should always have a range of twice the system pressure.

Test Plugs

Test Plug Item No.	Test Plug with Retainer Item No.	Connection Size (NPT)	Body & Cap	Core	Max Pres. (psig)	Max Temp.	Approximate Shipping Weight
D3741	D3764	1/4	Brass	Nordel	1000	350°F	0.1 lbs [0.05 kg]
D3743	D3763	1/4	Brass	Neoprene	1000	200°F	0.1 lbs [0.05 kg]
D3758	D3766	1/4	316SS	Nordel	1000	350°F	0.1 lbs [0.05 kg]
D3757	D3765	1/4	316SS	Neoprene	1000	200°F	0.1 lbs [0.05 kg]
D3760	D3768	3/8	Brass	Nordel	1000	350°F	0.1 lbs [0.05 kg]
D3759	D3767	3/8	Brass	Neoprene	1000	200°F	0.1 lbs [0.05 kg]
D3742	D3770	1/2	Brass	Nordel	1000	350°F	0.2 lbs [0.09 kg]
D3744	D3769	1/2	Brass	Neoprene	1000	200°F	0.2 lbs [0.09 kg]
D3762	D3772	1/2	316SS	Nordel	1000	350°F	0.2 lbs [0.09 kg]
D3761	D3771	1/2	316SS	Neoprene	1000	200°F	0.2 lbs [0.09 kg]

Accessories

Item No.	Description	Approx. Shipping Weight
D3747	Gauge Adapter, 1/8" diameter	0.1 lbs [0.05 kg]
D3749	2" Brass Extension, 1/4 NPT	0.1 lbs [0.05 kg]
D3753	2" Brass Extension, 1/2 NPT	0.2 lbs [0.09 kg]

Test Kits

Item No.	Pressure Range (psi)	Approximate Shipping Weight
D3750	0 to 100	1.4 lbs [0.64 kg]
D3751	0 to 200	1.4 lbs [0.64 kg]
D3752	0 to 300	1.4 lbs [0.64 kg]
D3748	0 to 600	1.4 lbs [0.64 kg]

Each test kit contains:
(1) 700B Pressure Gauge,
(1) B82105P03F&C Thermometer,
(1) B82105P05F&C Thermometer,
(1) D3747 Gauge Adapter,
(1) Carrying Case

Test Kit Replacement Items

Item No.	Description	Approximate Shipping Weight
700B2502LA110	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 100 psi	0.4 lbs [0.18 kg]
700B2502LA130	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 200 psi	0.4 lbs [0.18 kg]
700B2502LA140	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 300 psi	0.4 lbs [0.18 kg]
700B2502LA160	700B Pressure Gauge, 2 1/2", 1/4 NPT, lower connection, 0 to 600 psi	0.4 lbs [0.18 kg]
B82105P03	B82105 Bimetal Thermometer, 1 3/4" dial size, 5" stem, 25° to 125°F & C	0.4 lbs [0.18 kg]
B82105P05	B82105 Bimetal Thermometer, 1 3/4" dial size, 5" stem, 20° to 240°F & C	0.4 lbs [0.18 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

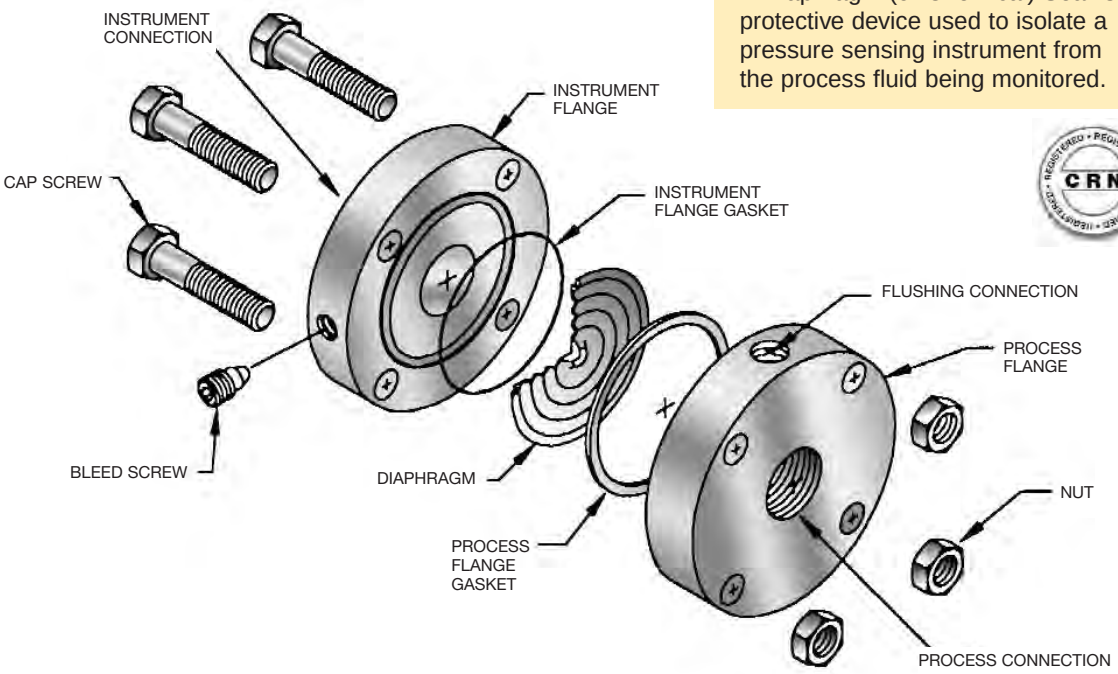
Notes

Diaphragm Seals

DESIGN & OPERATION

Description

A Diaphragm (or Chemical) Seal is a protective device used to isolate a pressure sensing instrument from the process fluid being monitored.



Principles of Operation

A Diaphragm Seal is a device consisting of a diaphragm clamped between two suitable housings that are properly gasketed to prevent leakage of liquid or gas. The diaphragm (a dividing membrane or thin partition) acts as a barrier to isolate and protect the sensing element of a pressure instrument from potentially destructive process media. Without such a barrier, the process media might clog or corrode the pressure instrument, causing failure or inaccurate response. The sensing element of the pressure instrument, as well as the space above the diaphragm of the seal, is evacuated and then filled with an incompressible liquid. When force (process media) is applied to the diaphragm seal, the internal diaphragm will flex and the displaced liquid fill will then transmit the force to the sensing element of the pressure instrument, resulting in a pressure measurement.

Features

Continuous Seal Operation

Trerice Diaphragm Seals (except Mini Seals and Sanitary Seals) are designed for continuous seal operation. A diaphragm stop plate, located within the instrument housing, enables the diaphragm to assist in containing the process media should the pressure instrument be damaged or removed. This allows the process to continue to operate until it can be shut down to repair or replace the instrument or seal. This safety feature is especially important where the process media is corrosive or harmful.

Various Diaphragm SIzes

Trerice Diaphragm Seals are available in a variety of diaphragm sizes: Mini (Series 2), Compact (Series 3), Sanitary (Series 4), Standard (Series 5) and Large (Series 6). Mini and Compact diaphragm sizes are designed to provide economical protection for pressure gauges (Contractor/Commercial/Utility) with a dial face size of 4½" or smaller. Sanitary Diaphragm Seals are designed for use with Tri-Clamp process connections. Standard and Large diaphragm sizes are the most versatile, with a variety of available materials and connections. The Large diaphragm size has twice the diaphragm surface area of the Standard diaphragm size and is therefore more sensitive and better suited for low pressure applications.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Fill Port

Trerice Diaphragm Seals are furnished standard with a fill port in the side of the instrument housing. This port provides access to the fill area above the diaphragm. An adapter fitting can be connected so that the assembly can be evacuated and completely filled with liquid without entrapping air, thereby maintaining the integrity of the system. A bleed screw is inserted after filling to plug the port and provide a means to bleed excess fill during the instrument calibration process.

Clean-out Design

Most Trerice Diaphragm Seals are of the Clean-out design, utilizing a snap-in or welded style diaphragm, with an o-ring gasket between the diaphragm and instrument housing. This allows the bolts to be removed and the housings separated to permit inspection, cleaning or installation of the process housing without loss of the liquid fill fluid in the instrument housing.

Note: Should the bolts of a Non Clean-out design diaphragm seal (Styles 05, 10 and 11) be loosened or removed, loss of the liquid fill will result.

Flushing Connection

Most Trerice Diaphragm Seals can be ordered with a 1/4 NPT Flushing Connection (located in the side of the process housing), which enables periodic back flushing of solids from the system.

Selecting A Diaphragm Seal

In choosing the appropriate diaphragm seal, it is essential to have an understanding of the pressure instrument to be isolated, the process medium, and any temperature or pressure considerations. The process housing (or adapter ring), diaphragm, and process housing gasket are “wetted” parts which come in contact with the process medium, making proper material selection critical. The instrument housing, instrument housing gasket, nuts and bolts, and liquid fill fluid do not come into contact with the process medium and therefore are “non-wetted” parts. External environmental considerations, such as atmospheric conditions or extreme temperatures, may influence material and design selection.

All Trerice Diaphragm Seals should be carefully selected to meet the demands of the particular application. The information contained in this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper diaphragm seal, as well as the liquid fill fluid, is the sole responsibility of the user. Improper application may cause failure of the seal, resulting in possible personal injury or property damage. For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2. This document may be obtained from the American Society of Mechanical Engineers (ASME), United Engineering Center, 345 East 42nd Street, New York, NY 10017.

Process Housing or Adapter Ring

Generally, the material chosen is identical to that used in the piping system. Many different metal alloys, as well as nonmetallic materials, are available. A unique, patented Teflon-lined process housing is offered for use with Teflon-lined piping systems. The Teflon-lined steel housing can safely withstand high pressures and temperatures without leakage. Diaphragm seals supplied with nonmetallic process housings are furnished with a steel pressure plate under the fasteners, which spreads the bolting pressure over a large area and prevents the nuts or bolts from imbedding themselves into the process housing.

Diaphragm Seals

DESIGN & OPERATION

Diaphragm

Both welded and removable metal diaphragms are available, as are Teflon and Viton diaphragm materials. Trerice metal diaphragms have both radial and spoke corrugations, resulting in an extremely flexible diaphragm. This flexibility increases the diaphragm's ability to displace fill fluid into the pressure instrument, providing excellent accuracy at low pressures. Trerice Teflon diaphragms provide greater sensitivity than metal diaphragms and are compatible with many caustic process media. Trerice Viton diaphragms are extremely pliable and offer optimum sensitivity at low pressures.

- **Type W (Welded Metal)**
  - Diaphragm is welded at its outer edge directly to the instrument housing.
  - Ensures no leakage of the fill fluid.
  - Best choice for high temperature applications.
  - Economically priced.
  - Diaphragm and instrument housing must be replaced as a complete assembly.
  - Clean-out design.
- **Type M (Removable Metal)**
  - Diaphragm is replaceable if worn or damaged.
  - Can be rebuilt many times to "like new" condition.
  - Very cost effective.
  - Available in Clean-out or Non Clean-out design.
- **Type T (Teflon)**
  - Offers excellent compatibility with most process media.
  - Greater sensitivity than metal diaphragms.
  - Best choice for abrasive fluid applications.
  - Available in Clean-out or Non Clean-out design.
- **Type V (Viton)**
  - Compatible with most process media.
  - Most sensitive diaphragm material available.
  - Ideal for low pressure applications.
  - Available in Clean-out or Non Clean-out design.

For Viton diaphragm applications that also require pulsation damping, a .040 orifice should be specified. Standard porous stones are not recommended. Please consult factory.

Process Housing Gasket

Process housing gaskets are installed in all seals (except Mini Seals and Sanitary Seals). They seat into a recessed area of the process housing, eliminating the possibility of causing damage to the gasket by overtightening the bolts. The process housing gasket is self-energized (utilizing process pressure to seat the gasket), reducing the possibility of leakage. Process housing gaskets are normally made of Teflon for applications up to 500°F, but can be supplied in Grafoil for temperature requirements up to 800°F. Consult factory for availability.

Instrument Housing

The instrument housing is isolated from the process media by the diaphragm and is normally furnished in nickel plated, carbon steel. For severe environmental conditions, a 316 stainless steel housing with stainless steel nuts and bolts is also available. For other material requirements, consult factory.

Instrument Housing Gasket

Viton instrument housing gaskets are used in Type M (Removable Metal) and Type T (Teflon) seals, and have a 500°F temperature limit. No instrument housing gasket is required on Type V (Viton) seals as the diaphragm provides a "self-gasketed" seal.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Nuts and Bolts

Bolts are normally hexagonal head, heat treated alloy steel, while nuts are hexagonal type stainless steel. Stainless steel bolts are furnished with stainless steel instrument housings and are also available with standard nickel plated, carbon steel instrument housings. Special materials are also available; consult factory. (Mini Seals and Sanitary Seals are of welded construction and, therefore, nuts and bolts are not required for assembly.)

Liquid Fill Fluids

The liquid fill fluid transmits the process pressure acting upon the diaphragm to the sensing element of the pressure instrument. Because fill fluids may freeze at low temperatures, vaporize at high temperatures, or react chemically with process media or other materials, caution must be exercised when selecting the liquid fill fluid. Please consult the table below for liquid fill temperature limits. Other fill fluids may be available; consult factory.

Liquid Fill Fluid Temperature Limits

Standard Instrument Oil	10°F to 300°F
Glycerine	0°F to 210°F
High Temperature Silicone	– 60°F to 500°F
Halocarbon	– 50°F to 500°F

Fill Fluid Pressure Limits

Standard Instrument Oil	Vacuum/Pressure
Glycerine	Pressure Only
Silicone	Vacuum/Pressure
Halocarbon	Vacuum/Pressure

Temperature and Pressure Limitations

Temperature and Operating Range Limitations

Diaphragm Size	Diaphragm Type	Maximum Temperature*	Minimum Pressure Gauge Range	Maximum Readable Vacuum (30" Hg to 0 Range)
Series 6	M, W	500°F	0 to 30 psi	24" Hg
	T	500°F	0 to 30 psi	26" Hg
Series 5	M, W	500°F	0 to 60 psi	21" Hg
	T	500°F	0 to 60 psi	23" Hg
	V	350°F	0 to 5 psi	29" Hg
Series 4	W472	500°F	Range Dependent**	Not Recommended
Series 3	W305	500°F	0 to 100 psi	Not Recommended
Series 2	W205	500°F	0 to 100 psi	Not Recommended

** Choice of fill fluids may affect maximum temperature. Please refer to Liquid Fill Fluid Temperature Limits above.*
*** See Sanitary Gauge product data page for minimum operating pressures.*

Maximum Working Pressure

Style	Maximum Pressure
Pipe-Mounted	2500 psi @ 100°F (5000 psi @ 100°F – optionally available – consult factory)
Flanged	ASA flange pressure rating
In-Line Flow-Thru	600 psi @ 100°F**
Saddle-Welded	600 psi @ 100°F**
Drop-In Welded	600 psi @ 100°F**
Mini Diaphragm	2000 psi @ 100°F
Compact Diaphragm	1000 psi @ 100°F
Sanitary	1000 psi @ 100°F

*** Should not exceed pressure rating of pipe being used.*

Seals with a polypropylene, PVC or Teflon process housing have a maximum working pressure of 300 psi at a maximum temperature of 140°F.

For applications other than those listed, please consult factory. The above temperature, pressure, and vacuum limits apply only when diaphragm seals are properly mounted, installed, operated and maintained.

The accuracy of a pressure instrument may be affected when mounted to a diaphragm seal, especially in ranges of 100 psi or below. Please consult factory for further information.

Threaded–NPT

Diaphragm Seals

M511 shown

- Clean-out or Non Clean-out Design
- Flushing Connection Available
- Threaded Process Connection

The Trerice **Threaded NPT Diaphragm Seal** is offered in both Clean-out and Non Clean-out designs, with female threaded connections of 1/4 NPT through 1 NPT. The Non Clean-out design can be furnished with diaphragm materials of Teflon (T), Viton (V), or Removable Metal (M), while the Clean-out design is available with all diaphragm choices, including Welded Metal (W).

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Available Diaphragm Types*	Diaphragm Size	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
510	M, T, V	Standard	Threaded	No	No
511	M, T, V	Standard	Threaded	No	Yes
515	M, T, V, W	Standard	Threaded	Yes	No
516	M, T, V, W	Standard	Threaded	Yes	Yes
610	M, T	Large	Threaded	No	No
611	M, T	Large	Threaded	No	Yes
615	M, T, W	Large	Threaded	Yes	No
616	M, T, W	Large	Threaded	Yes	Yes

**M = Removable Metal, T = Teflon, V = Viton, W = Welded Metal*

Note: Due to the variety of available diaphragm seal configurations and materials, it is not possible to list each weight in this catalog. Please consult factory.

HOW TO ORDER

Sample Order Number: **M 5 10 04 S S CC**

Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing & Bolt Material
M Metal **T** Teflon **V** Viton** **W** Welded†	**5** Standard **6** Large	**10** Non Clean-out, Non-Flushing **11** Non Clean-out, Flushing **15** Clean-out, Non-Flushing **16** Clean-out, Flushing	See Connection Sizes	See Diaphragm Materials	See Process Housing Materials	**CC** Carbon Steel **SS** 316 Stainless Steel

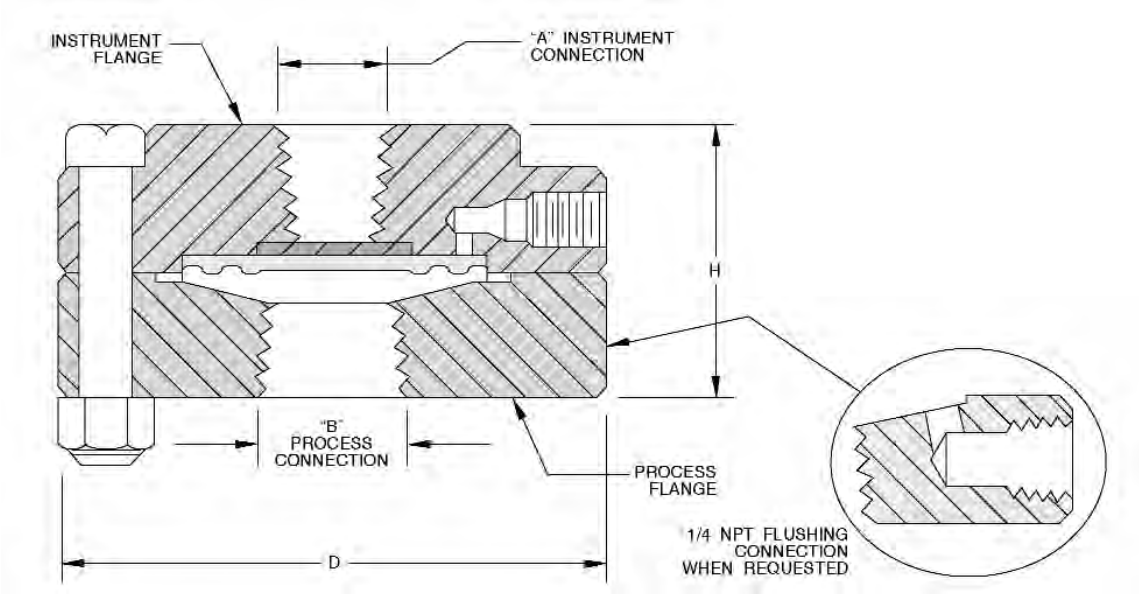
**See Sizes and Materials Table

***Diaphragm Type V available only with Diaphragm Size 5.*
†Diaphragm Type W available only with Styles 15 and 16.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Threaded–NPT
Diaphragm Seals

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Diaphragm Type and Size	A	B	H	D
M, T, W 5 Series	1/4, 1/2 NPT as specified	1/4, 1/2, 3/4, 1 NPT as specified	1.63 [41]	3.25 [83]
V 5 Series	1/4, 1/2 NPT as specified	1/4, 1/2, 3/4, 1 NPT as specified	1.88 [48]	3.25 [83]
M, T, W 6 Series	1/4, 1/2 NPT as specified	1/4, 1/2, 3/4, 1 NPT as specified	1.63 [41]	4.00 [102]

Sizes and Materials

Connection Sizes			Diaphragm Materials		Process Housing Materials	
Code	Instrument Connection (NPT)	Process Connection (NPT)	Code	Material	Code	Material
01	1/4	1/4	D	Carpenter 20	C	Steel
02	1/2	1/4	F	304 Stainless Steel*	D	Carpenter 20
03	1/4	1/2	G	Hastelloy B	F	304 Stainless Steel
04	1/2	1/2	H	Hastelloy C-276	G	Hastelloy B
05	1/4	3/4	M	Monel	H	Hastelloy C-276
06	1/2	3/4	N	Nickel	M	Monel
07	1/4	1	S	316 Stainless Steel	N	Nickel
08	1/2	1	T	Teflon	P	Polypropylene
			U	Tantalum	S	316 Stainless Steel
			V	Viton**	T	Teflon
					Z	PVC

** 304 Stainless Steel diaphragm not available with Diaphragm Size 6.*
***Viton Diaphragm available only with Diaphragm Size 5.*

Flange-Mounted
Diaphragm Seals

M530 shown

- Clean-out Design
- Flushing Connection Available
- ANSI Raised Face Flanged Process Connection

The **Trerice Flange-Mounted Diaphragm Seal** is furnished with a Clean-out design in ANSI Raised Face Flange (RFF) sizes of 1/2" through 3". Process housing flanges mate with the piping flange, which is supplied by the user. Available diaphragm choices include: Teflon (T), Viton (V), Removable Metal (M) and Welded Metal (W).

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Available Diaphragm Types*	Diaphragm Size	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
525	M, T, V, W	Standard	1/2" ANSI RFF	Yes	No
526	M, T, V, W	Standard	1/2" ANSI RFF	Yes	Yes
530	M, T, V, W	Standard	1" to 3" ANSI RFF	Yes	No
531	M, T, V, W	Standard	1" to 3" ANSI RFF	Yes	Yes
625	M, T, W	Large	1/2" and 1" ANSI RFF	Yes	No
626	M, T, W	Large	1/2" and 1" ANSI RFF	Yes	Yes
630	M, T, W	Large	1 1/2" to 3" ANSI RFF	Yes	No
631	M, T, W	Large	1 1/2" to 3" ANSI RFF	Yes	Yes

**M = Removable Metal, T = Teflon, V = Viton, W = Welded Metal*

Note: Due to the variety of available diaphragm seal configurations and materials, it is not possible to list each weight in this catalog. Please consult factory.

HOW TO ORDER

Sample Order Number: **M 5 25 04 S S CC**

Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing & Bolt Material
M Metal **T** Teflon **V** Viton** **W** Welded	**5** Standard **6** Large	**25** Small Flange, Non-Flushing **26** Small Flange, Flushing **30** Large Flange, Non-Flushing **31** Large Flange, Flushing	See Connection Sizes	See Diaphragm Materials	See Process Housing Materials	**CC** Carbon Steel **SS** 316 Stainless Steel

***Diaphragm Type V available only with Diaphragm Size 5.*

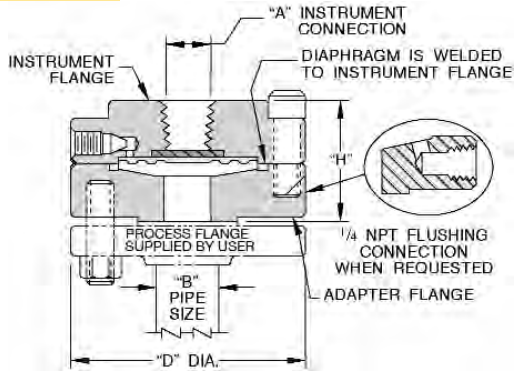
See Sizes and Materials Table

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Flange-Mounted
Diaphragm Seals

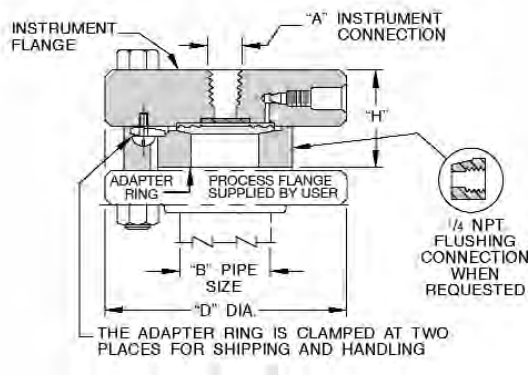
All dimensions are nominal. Dimensions in [ ] are in millimeters.

Styles 25 & 26



Diaphragm Type and Size	A	B	Flange Rating	H	D
M, T, V, W 5 Series	1/4, 1/2 NPT as specified	1/2	150#	1.69 [43]	3.25 [83]
			300#	1.69 [43]	3.50 [89]
M, T, W 6 Series	1/4, 1/2 NPT as specified	1/2	150#	1.69 [43]	4.00 [102]
			300#	1.69 [43]	4.00 [102]
		1	150#	1.69 [43]	4.00 [102]
			300#	1.81 [46]	4.50 [114]

Styles 30 & 31



Diaphragm Type and Size	A	B	Flange Rating	H	D
M, T, V, W All Series	1/4, 1/2 NPT as specified	1	150#	1.69 [43]	4.25 [108]
			300#	1.69 [43]	4.75 [121]
		1 1/2	150#	1.63 [41]	5.00 [127]
			300#	1.63 [41]	6.00 [152]
		2	150#	1.63 [41]	6.00 [152]
			300#	1.63 [41]	6.50 [165]
		3	150#	1.63 [41]	7.50 [191]
			300#	1.81 [46]	8.00 [203]

Sizes and Materials

Connection Sizes			Diaphragm Materials		Process Housing Materials	
Code	Instrument Connection (NPT)	Process Connection	Code	Material	Code	Material
The following are available only on Styles 25 and 26.			D	Carpenter 20	C	Steel
01	1/4	1/2" 150# RFF	F	304 Stainless Steel[1]	D	Carpenter 20
02	1/2	1/2" 150# RFF	G	Hastelloy B	F	304 Stainless Steel
03	1/4	1/2" 300# RFF	H	Hastelloy C-276	G	Hastelloy B
04	1/2	1/2" 300# RFF	M	Monel	H	Hastelloy C-276
The following are available only on Styles 530, 531, 625 and 626.			N	Nickel	L	Teflon-lined[3]
21	1/4	1" 150# RFF	S	316 Stainless Steel	M	Monel
22	1/2	1" 150# RFF	T	Teflon	N	Nickel
23	1/4	1" 300# RFF	U	Tantalum	P	Polypropylene[4]
24	1/2	1" 300# RFF	V	Viton[2]	S	316 Stainless Steel
The following are available only on Styles 30 and 31.					T	Teflon[4]
41	1/4	1 1/2" 150# RFF			Z	PVC[4]
42	1/2	1 1/2" 150# RFF				
43	1/4	1 1/2" 300# RFF				
44	1/2	1 1/2" 300# RFF				
51	1/4	2" 150# RFF				
52	1/2	2" 150# RFF				
53	1/4	2" 300# RFF				
54	1/2	2" 300# RFF				
61	1/4	3" 150# RFF				
62	1/2	3" 150# RFF				
63	1/4	3" 300# RFF				
64	1/2	3" 300# RFF				

[1] *304 Stainless Steel diaphragm not available with Diaphragm Size 6.*
[2] *Viton Diaphragm available only with Diaphragm Size 5.*
[3] *Teflon-lined Process Housing available only with Style 30.*
[4] *Polypropylene, PVC and Teflon Process Housings available only with Styles 30 and 31.*

In-Line Threaded
Diaphragm Seals

M535 shown

- **Clean-out Design**
- **Threaded or Socket-Welded Process Connection**

The Trerice **In-Line Threaded Diaphragm Seal** is furnished with a Clean-out design in threaded or socket-welded pipe connections of 1/4" through 1". Since the diaphragm seal is installed "in line" to the system piping, the process media will flow through the seal, eliminating the "dead-end" area found on threaded or flanged seals. Available diaphragm choices include: Teflon (T), Viton (V), Removable Metal (M) and Welded Metal (W).

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Available Diaphragm Types*	Diaphragm Size	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
535	M, T, V, W	Standard	Threaded	Yes	No
540	M, T, V, W	Standard	Socket-Welded	Yes	No
635	M, T, W	Large	Threaded	Yes	No
640	M, T, W	Large	Socket-Welded	Yes	No

**M = Removable Metal, T = Teflon, V = Viton, W = Welded Metal*

Note: Due to the variety of available diaphragm seal configurations and materials, it is not possible to list each weight in this catalog. Please consult factory.

HOW TO ORDER

Sample Order Number: **T 5 35 06 T T CC**

Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing & Bolt Material
M Metal **T** Teflon **V** Viton** **W** Welded	**5** Standard **6** Large	**35** Threaded **40** Socket-Welded	See Connection Sizes	See Diaphragm Materials	See Process Housing Materials	**CC** Carbon Steel **SS** 316 Stainless Steel

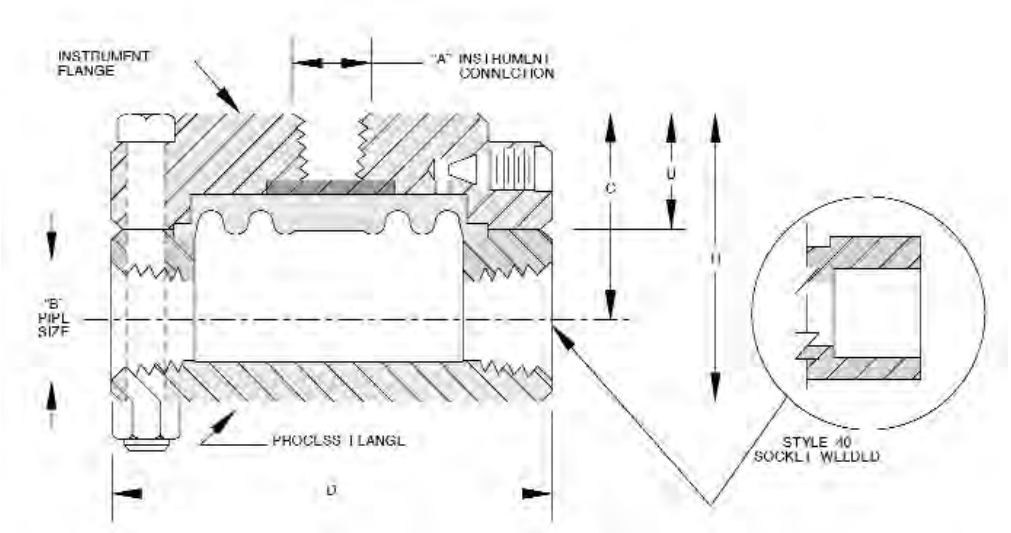
***Diaphragm Type V available only with Diaphragm Size 5.*

See Sizes and Materials Table

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

In-Line Threaded
Diaphragm Seals

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Diaphragm Type and Size	A	B	H	U	C	D
M, T, W 5 Series	1/4, 1/2 NPT as specified	1/4 NPT	1.63 [41]	0.88 [22]	1.24 [32]	3.25 [83]
		1/2 NPT	2.13 [54]	0.88 [22]	1.50 [38]	3.25 [83]
		3/4 NPT	2.38 [60]	0.88 [22]	1.63 [41]	3.25 [83]
		1 NPT	2.63 [67]	0.88 [22]	1.75 [44]	3.25 [83]
V 5 Series	1/4, 1/2 NPT as specified	1/4 NPT	1.63 [41]	1.00 [25]	1.24 [32]	3.25 [83]
		1/2 NPT	2.13 [54]	1.00 [25]	1.50 [38]	3.25 [83]
		3/4 NPT	2.38 [60]	1.00 [25]	1.63 [41]	3.25 [83]
		1 NPT	2.63 [67]	1.00 [25]	1.75 [44]	3.25 [83]
M, T, W 6 Series	1/4, 1/2 NPT as specified	1/4 NPT	1.63 [41]	0.88 [22]	1.24 [32]	4.00 [102]
		1/2 NPT	2.13 [54]	0.88 [22]	1.50 [38]	4.00 [102]
		3/4 NPT	2.38 [60]	0.88 [22]	1.63 [41]	4.00 [102]
		1 NPT	2.63 [67]	0.88 [22]	1.75 [44]	4.00 [102]

Sizes and Materials

Connection Sizes			Diaphragm Materials		Process Housing Materials	
Code	Instrument Connection (NPT)	Process Connection	Code	Material	Code	Material
01	1/4	1/4" NPT/SW	D	Carpenter 20	C	Steel
02	1/2	1/4" NPT/SW	F	304 Stainless Steel*	D	Carpenter 20
03	1/4	1/2" NPT/SW	G	Hastelloy B	F	304 Stainless Steel
04	1/2	1/2" NPT/SW	H	Hastelloy C-276	G	Hastelloy B
05	1/4	3/4" NPT/SW	M	Monel	H	Hastelloy C-276
06	1/2	3/4" NPT/SW	N	Nickel	M	Monel
07	1/4	1" NPT/SW	S	316 Stainless Steel	N	Nickel
08	1/2	1" NPT/SW	T	Teflon	P	Polypropylene
			U	Tantalum	S	316 Stainless Steel
			V	Viton**	T	Teflon
					Z	PVC

** 304 Stainless Steel diaphragm not available with Diaphragm Size 6.*
*** Viton Diaphragm available only with Diaphragm Size 5.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Saddle-Welded
Diaphragm Seals

M545 shown

- **Clean-out Design**
- **Saddle-Welded Process Connection**

The Trerice **Saddle-Welded Diaphragm Seal** is furnished with a Clean-out design, for use on pipe sizes of 1" through 8". The diaphragm seal is installed by welding the process housing directly onto the pipe. Available diaphragm choices include: Teflon (T), Viton (V), Removable Metal (M) and Welded Metal (W).

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Available Diaphragm Types*	Diaphragm Size	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
545	M, T, V, W	Standard	Welded	Yes	No
645	M, T, W	Large	Welded	Yes	No

**M = Removable Metal, T = Teflon, V = Viton, W = Welded Metal*

Note: Due to the variety of available diaphragm seal configurations and materials, it is not possible to list each weight in this catalog. Please consult factory.

HOW TO ORDER

Sample Order Number: **W 5 45 05 S S CC**

Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing & Bolt Material
M Metal **T** Teflon **V** Viton** **W** Welded	**5** Standard **6** Large	**45** Saddle-Welded	See Connection Sizes	See Diaphragm Materials	See Process Housing Materials	**CC** Carbon Steel **SS** 316 Stainless Steel

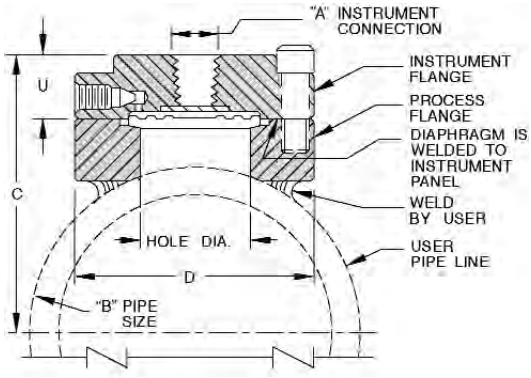
***Diaphragm Type V available only with Diaphragm Size 5.*

See Sizes and Materials Table

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Saddle-Welded
Diaphragm Seals

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Diaphragm Type and Size	A	B	U	C	D	Hole Diameter
M, T, W 5 Series	1/4, 1/2 NPT as specified	1	0.88 [22]	2.13 [55]	3.50 [89]	1.00 [25]
		1 1/2	0.88 [22]	2.38 [60]	3.50 [89]	1.50 [38]
		2	0.88 [22]	2.63 [67]	3.50 [89]	1.50 [38]
		3	0.88 [22]	3.25 [83]	3.50 [89]	1.50 [38]
		4	0.88 [22]	3.81 [97]	3.50 [89]	1.50 [38]
		6	0.88 [22]	4.94 [125]	3.50 [89]	1.50 [38]
		8	0.88 [22]	5.94 [151]	3.50 [89]	1.50 [38]
V 5 Series	1/4, 1/2 NPT as specified	1	1.00 [25]	2.13 [55]	3.50 [89]	1.00 [25]
		1 1/2	1.00 [25]	2.38 [60]	3.50 [89]	1.50 [38]
		2	1.00 [25]	2.63 [67]	3.50 [89]	1.50 [38]
		3	1.00 [25]	3.25 [83]	3.50 [89]	1.50 [38]
		6	1.00 [25]	4.94 [125]	3.50 [89]	1.50 [38]
		8	1.00 [25]	5.94 [151]	3.50 [89]	1.50 [38]
M, T, W 6 Series	1/4, 1/2 NPT as specified	1	0.88 [22]	2.13 [55]	4.25 [108]	1.00 [25]
		1 1/2	0.88 [22]	2.38 [60]	4.25 [108]	1.50 [38]
		2	0.88 [22]	2.63 [67]	4.25 [108]	1.50 [38]
		3	0.88 [22]	3.25 [83]	4.25 [108]	1.50 [38]
		4	0.88 [22]	3.81 [97]	4.25 [108]	1.50 [38]
		6	0.88 [22]	4.94 [125]	4.25 [108]	1.50 [38]
		8	0.88 [22]	5.94 [151]	4.25 [108]	1.50 [38]

Sizes and Materials

Connection Sizes			Diaphragm Materials		Process Housing Materials	
Code	Instrument Connection (NPT)	Process Connection	Code	Material	Code	Material
01	1/4	1" Pipe	D	Carpenter 20	C	Steel
02	1/2	1" Pipe	F	304 Stainless Steel*	D	Carpenter 20
05	1/4	1 1/2" Pipe	G	Hastelloy B	F	304 Stainless Steel
06	1/2	1 1/2" Pipe	H	Hastelloy C-276	G	Hastelloy B
07	1/4	2" Pipe	M	Monel	H	Hastelloy C-276
08	1/2	2" Pipe	N	Nickel	M	Monel
09	1/4	3" Pipe	S	316 Stainless Steel	N	Nickel
10	1/2	3" Pipe	T	Teflon	S	316 Stainless Steel
11	1/4	4" Pipe	U	Tantalum		
12	1/2	4" Pipe	V	Viton**		
13	1/4	6" Pipe				
14	1/2	6" Pipe				
15	1/4	8" Pipe				
16	1/2	8" Pipe				

* *304 Stainless Steel diaphragm not available with Diaphragm Size 6.*
** *Viton Diaphragm available only with Diaphragm Size 5.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Drop-In Welded

Diaphragm Seals

M565 shown

- Clean-out Design
- Welded Process Connection

The Trerice **Drop-In Welded Diaphragm Seal** is furnished with a Clean-out design for use on piping 4" or larger in diameter. The diaphragm seal is installed by welding the process housing directly into the pipe. Available diaphragm choices include: Teflon (T), Viton (V), Removable Metal (M) and Welded Metal (W).

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper }application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Available Diaphragm Types*	Diaphragm Size	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
565	M, T, V, W	Standard	Threaded	Yes	No

**M = Removable Metal, T = Teflon, V = Viton, W = Welded Metal*

Note: Due to the variety of available diaphragm seal configurations and materials, it is not possible to list each weight in this catalog. Please consult factory.

HOW TO ORDER

Sample Order Number: **M 5 65 11 S S CC**

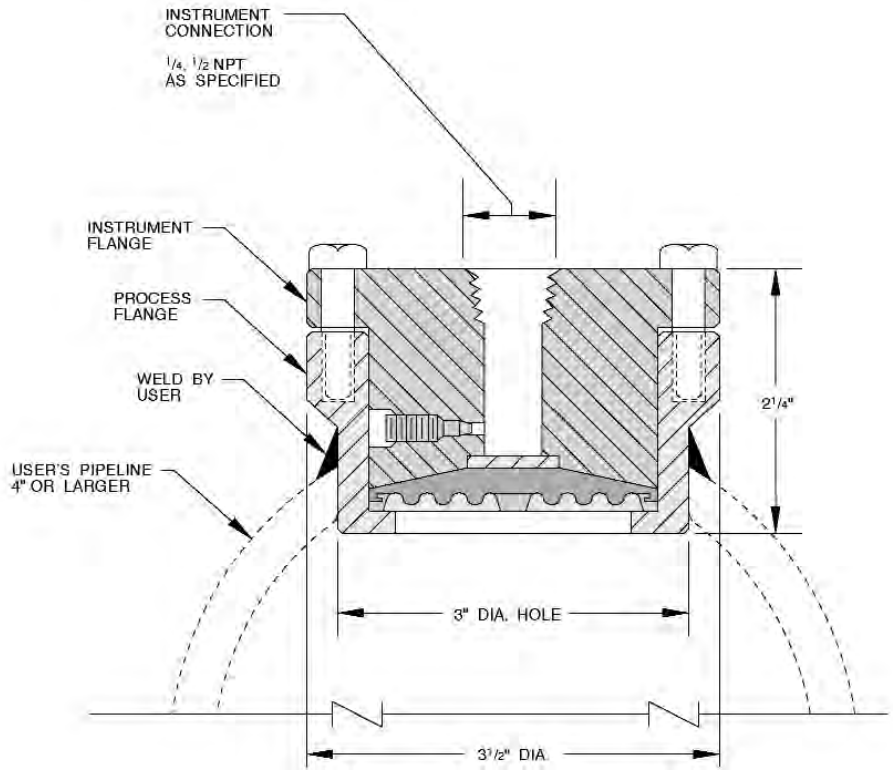
Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing & Bolt Material
M Metal **T** Teflon **V** Viton **W** Welded	**5** Standard	**65** Drop-In Welded	See Connection Sizes	See Diaphragm Materials	See Process Housing Materials	**CC** Carbon Steel **SS** 316 Stainless Steel

See Sizes and Materials Table

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Drop-In Welded
Diaphragm Seals

All dimensions are nominal.



Sizes and Materials

Connection Sizes			Diaphragm Materials		Process Housing Materials	
Code	Instrument Connection (NPT)	Process Connection	Code	Material	Code	Material
11	1/4	3" Process Housing	D	Carpenter 20	C	Steel
12	1/2	3" Process Housing	F	304 Stainless Steel	D	Carpenter 20
			G	Hastelloy B	F	304 Stainless Steel
			H	Hastelloy C-276	G	Hastelloy B
			M	Monel	H	Hastelloy C-276
			N	Nickel	M	Monel
			S	316 Stainless Steel	N	Nickel
			T	Teflon	S	316 Stainless Steel
			U	Tantalum		
			V	Viton		

Mini & Compact
Diaphragm Seals

W205 shown

Trerice **Mini & Compact Diaphragm Seals** provide an economical way to isolate and protect pressure instruments from corrosion and clogging.

Style 205 Diaphragm Seals are designed for use with pressure ranges of 100 psi or greater and can be mounted to pressure gauges of 3½" dial size or smaller.

Style 305 Diaphragm Seals are designed for use with pressure ranges of 60 psi or greater and can be mounted to pressure gauges of 4½" dial size or smaller.

Style 306 Diaphragm Seals include all features found on the 305 with the addition of a 1/4 NPT flushing connection.

- **All-Welded Design No Gaskets or Bolts**
- **1/4 NPT or 1/2 NPT Process Connections**
- **316L Stainless Steel Construction**

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Diaphragm Type	Diaphragm Size	Minimum Pressure Range	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
205	Welded Metal	Mini	0 to 100 psi when mounted to 3½" gauge	Threaded	No	No
305	Welded Metal	Compact	0 to 60 psi when mounted to 4½" gauge	Threaded	No	No
306	Welded Metal	Compact	0 to 60 psi when mounted to 4½" gauge	Threaded	No	Yes

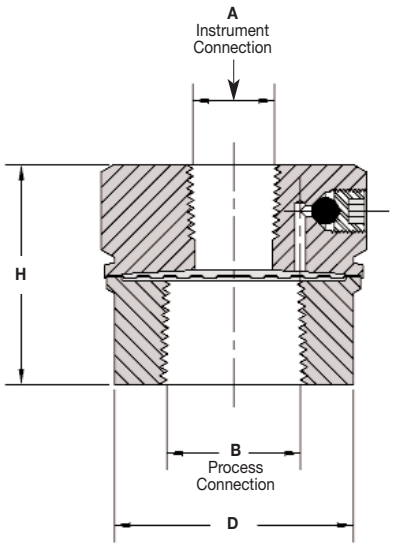
HOW TO ORDER

Sample Order Number: **W 2 05 01 S S S**

Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing Material
W Welded	**2** Mini **3** Compact	**05** Non Clean-out, Welded Body **06** Flushing, Welded Body	See Connection Sizes Table	**S** 316 SS	**S** 316 SS	**S** 316 SS

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Style	A	B	H	D
205	1/4 NPT	1/4, 1/2 NPT as specified	1.24 [31]	1.35 [34]
305	1/4, 1/2 NPT as specified	1/4, 1/2 NPT as specified	1.75 [44]	2.25 [57]
306	1/4, 1/2 NPT as specified	1/4, 1/2 NPT as specified	1.50 [38]	1.89 [48]

Sizes

Connection Sizes

Code	Instrument Connection (NPT)	Process Connection (NPT)
01	1/4	1/4
02*	1/2	1/4
03	1/4	1/2
04*	1/2	1/2

* Not available on style 205.

Sanitary

Diaphragm Seals

W472 shown

- External Tri-Clamp
- Clean-out Design
- All Welded Design

The Trerice **Sanitary Diaphragm Seal** is intended for use in the food and pharmaceutical industries, or in any application where a thorough cleaning of the wetted surface is required. Ease of maintenance is ensured as surfaces that contact the process media are virtually free of crevices. The all welded construction and external Tri-Clamp connection allow for easy removal and cleaning.

Selection of the proper diaphragm seal is the sole responsibility of the user. Temperature and pressure limitations must be considered. Please refer to the Diaphragm Seal Design & Operation Section of this catalog. Improper application may cause failure of the seal, resulting in possible personal injury or property damage.

For correct use and application of all diaphragm seals, please refer to Diaphragm Seal Standard ASME B40.2.

SPECIFICATIONS

Style	Available Diaphragm Types*	Diaphragm Size	Process Connection	Clean-out Design	1/4 NPT Flushing Connection
472	Type W	Sanitary	Tri-Clamp	Yes	No

** W = Welded Metal*

Note: Due to the variety of available diaphragm seal configurations and materials, it is not possible to list each weight in this catalog. Please consult factory.

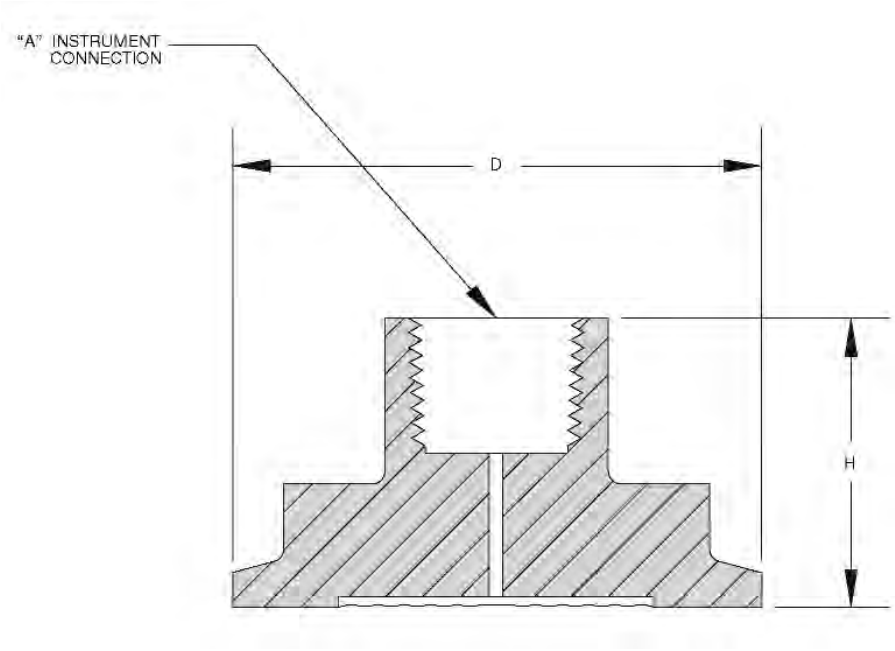
HOW TO ORDER

Sample Order Number: **W 4 72 09 S S S**

Diaphragm Type	Diaphragm Size	Style	Connection Size	Diaphragm Material	Process Housing Material	Instrument Housing Material
W Welded	**4** Sanitary	**72** Tri-Clamp	See Connection Sizes on Sizes Table	**S** 316 Stainless Steel	**S** 316 Stainless Steel	**S** 316 Stainless Steel

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Tri-Clamp Size	A	H	D
1 1/2"	1/4, 1/2 NPT as specified	1.81 [46]	2.00 [50]
2"	1/4, 1/2 NPT as specified	1.38 [35]	2.50 [64]

Sizes

Connection Sizes

Code	Instrument Connection (NPT)	Process Connection
07	1/4	1 1/2" Tri-Clamp
08	1/2	1 1/2" Tri-Clamp
09	1/4	2" Tri-Clamp
10	1/2	2" Tri-Clamp

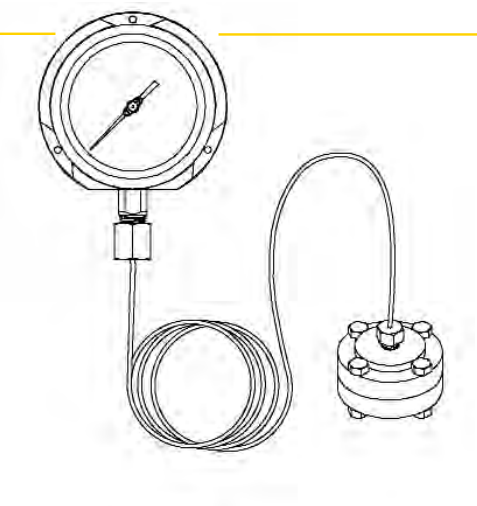
Clamps, gaskets and ferrules are not supplied by Trerice.

Options & Accessories

Diaphragm Seals

Capillary Tubing

Capillary tubing assemblies are used to remote mount a pressure sensing instrument away from the process area. This is typically done to facilitate monitoring or isolate the pressure instrument from conditions of extreme vibration or temperature. Standard tubing is 1/8" O.D. 304 stainless steel (316 stainless steel optional), with silver soldered 303 stainless steel fittings. A 302 stainless steel armored covering is also available. Please consult the table below for the standard configurations.



Connection Fitting Size			304 Stainless Steel Capillary	304 Stainless Steel Capillary with 302 Stainless Steel Armor
1/4 NPT Male	x	1/4 NPT Male	DT5560 -- ☐☐	DT5580 -- ☐☐
1/4 NPT Male	x	1/4 NPT Female	DT5561 -- ☐☐	DT5581 -- ☐☐
1/4 NPT Male	x	1/2 NPT Male	DT5562 -- ☐☐	DT5582 -- ☐☐
1/4 NPT Male	x	1/2 NPT Female	DT5563 -- ☐☐	DT5583 -- ☐☐
1/4 NPT Female	x	1/4 NPT Female	DT5564 -- ☐☐	DT5584 -- ☐☐
1/4 NPT Female	x	1/2 NPT Male	DT5565 -- ☐☐	DT5585 -- ☐☐
1/4 NPT Female	x	1/2 NPT Female	DT5566 -- ☐☐	DT5586 -- ☐☐
1/2 NPT Male	x	1/2 NPT Male	DT5567 -- ☐☐	DT5587 -- ☐☐
1/2 NPT Male	x	1/2 NPT Female	DT5568 -- ☐☐	DT5588 -- ☐☐
1/2 NPT Female	x	1/2 NPT Female	DT5569 -- ☐☐	DT5589 -- ☐☐

Please specify capillary length in feet.

Example: DT5561-15

Fittings and Bushings

A variety of fittings are available for mounting virtually any pressure instrument to a diaphragm seal. Bushings are also available to reduce or increase instrument or process connection sizes. Consult factory for availability.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Diaphragms

Replacement diaphragms are available for all seals (except Type W, Mini and Sanitary seals). Please specify the item number from the table below.

Material	Series 5 Clean-out	Series 5 Non Clean-out	Series 6 Clean-out	Series 6 Non Clean-out
Carpenter 20	DM5403-D	DM5401-D	DM6403-D	DM6401-D
304 Stainless Steel	DM5403-F	DM5401-F	DM6403-F	DM6401-F
Hastelloy B	DM5403-G	DM5401-G	DM6403-G	DM6401-G
Hastelloy C-276	DM5403-H	DM5401-H	DM6403-H	DM6401-H
Monel	DM5403-M	DM5401-M	DM6403-M	DM6401-M
Nickel	DM5403-N	DM5401-N	DM6403-N	DM6401-N
316 Stainless Steel	DM5403-S	DM5401-S	DM6403-S	DM6401-S
Teflon	DM5403-T	DM5404-T	DM6403-T	DM6404-T
Tantalum	DM5403-U	DM5401-U	DM6403-U	DM6401-U
Viton	DM5403-V	DM5403-V	N/A	N/A

N/A = Not Available

Gaskets

Trerice recommends replacing the diaphragm gasket and/or instrument housing gasket any time the diaphragm is replaced. The process housing gasket should be replaced if it shows wear or damage. Please see the table below for gasket ordering information.

Instrument Housing and Diaphragm Gaskets (Viton)

Material	Series 5 Clean-out	Series 5 Non Clean-out	Series 6 Clean-out	Series 6 Non Clean-out
Type M	T5410	M5406	T6410	M6406
Type T	T5411 & M5406	T5411 & M5406	T5410 & M5406	T5410 & M5406

Process Housing Gaskets (Teflon)

Material	Series 5 Clean-out	Series 5 Non Clean-out	Series 6 Clean-out	Series 6 Non Clean-out
Type M	T5407	T5411	T6407	T6411
Type T	T5407	T5407	T6407	T6407
Type W	T5407	N/A	T6407	N/A

N/A = Not Available

Table of Contents

TEMPERATURE INSTRUMENTATION

Industrial Thermometers

Trerice Industrial Thermometers are either of the liquid-in-glass or light-powered digital type.

Dial Thermometers

Direct or Remote mounted thermometers suited for a variety of temperature measuring requirements

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Table of Contents

TEMPERATURE INSTRUMENTATION

Bimetal Thermometers

Direct Mounted thermometers with all stainless steel construction and hermetically sealed cases are designed for use in demanding industrial applications.

Electronic Temperature Sensors

Sensors providing an Electronic Signal to a Controller or Indicating Device.

Thermowells

Provide leak-tight protection for applications where the process media may be corrosive or contained under pressure.

Industrial Thermometers

DESIGN & OPERATION

Light-Powered Digital

Liquid-in-Glass

Description

A thermometer is an instrument designed to measure and indicate the temperature of a specific application or condition. An Industrial Thermometer, commonly known as a "Liquid-In-Glass" or Light-Powered Digital Thermometer, is installed at the point of measurement and is usually read from that location.

Principles of Operation

Liquid-in-Glass

This thermometer is comprised of a liquid-filled sealed glass tube and bulb, which is affixed to the front of a metal temperature scale, and extends into a metal bulb chamber (stem). Flaked graphite is used within the bulb chamber to transfer the measured temperature to the glass bulb. Temperature changes cause the thermo-active fill to expand or contract within the tube. This activity is instantly visible in the tube against the calibrated markings of the temperature scale. For purposes of readability, the tube is formed with a lens front to create a magnified indicating column.

Light-Powered Digital

This thermometer is comprised of a thermistor wire that extends into the stem. Flaked graphite is used to transfer the measured temperature to the thermistor. Temperature change causes a change in the output of the thermistor; this output is translated through a pre-programmed algorithm in the microprocessor resulting in a digital display of the temperature.

All Trerice Industrial Thermometers should be carefully selected to meet the demands of the particular application. The information contained in this catalog is offered only as a guide to assist in making the proper selection. Improper applications may cause failure of the instrument, resulting in possible personal injury or property damage. For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Selecting an Industrial Thermometer (Liquid in-glass only)

Case

The case is durable, die cast aluminum with dark blue epoxy powder coating (Hydro-Therm is furnished with Valox Case), and is available in scale sizes from 5½" through 12". Cases are available in adjustable angle, rigid straight, and rigid 90° and 45° angle configurations. The adjustable angle case can be moved to any viewing position for enhanced readability.

Stem

The stem is the sensitive portion of the instrument that is inserted into the process. Stems can be provided in aluminum, brass, or stainless steel. Aluminum and brass stems include a brass coupling nut, while the stainless steel stem includes a stainless steel coupling nut.

Aluminum stems must always be installed in a thermowell. Brass and stainless steel stems may be installed using a union connection bushing in place of a thermowell. Trerice however, recommends the use of a thermowell to facilitate the removal of the thermometer.

Window

Windows are supplied in clear acrylic (ranges through 300°F), or double-strength glass (standard on ranges above 300°F).For direct sunlight applications, an ultraviolet protective plastic window is available. This window helps prevent sunlight induced deterioration of thermoactive fills.

Accuracy

The accuracy of an industrial thermometer is expressed as a variance (plus or minus) in scale divisions. All Trerice Industrial Thermometers are accurate to within one scale division of the temperature range.

Extreme ambient conditions above 120° F or below 30° F) may more than double the allowable accuracy tolerance of spirit filled thermometers. This effect increases on thermometers operating at the high end of their scale, and decreases on thermometers operating at the low end of their scale. Please consult factory for further information.

Range and Scale

A wide variety of ranges are available in Fahrenheit, Celsius, or dual scale; in temperatures from -40°F (-40°C) through 500°F (260°C). Ranges are indelibly presented in black figures and markings upon an aluminum scale in lengths from 5½" to 12". Space constraints, as well as measurement readability, should be considered when selecting a scale size.

Thermoactive Fills

Trerice Industrial Thermometers are available with either of the following fill types:

- **Spirit** – A blue-colored, organic, spirit fill is standard. This proprietary fill is available for use with temperatures of 500°F and below and can be supplied in alternate colors (consult factory).
- **Mercury** – Blue appearing mercury fill is only available for retort type thermometers as mercury fill is specifically required.

Thermowells

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process. Thermowells are available in various lengths, connections, sizes, and materials. Please consult the Thermowell Section of this catalog.

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the stem before installation into a thermowell. 1 oz. tube: Item No. 107-0001

SX9 Solar Therm

Light-Powered Digital Thermometer

SX91403 shown

- **Light Powered No Batteries Required**
- **7" Case Size**
- **Large LCD °F/°C Switchable Display**
- **Min/Max Feature**
- **1% or 1°F Accuracy**
- **Cast Aluminum Case**
- **Adjustable-Angle Stem**

The Trerice **SX9 "Solar Therm"** is ideally suited for replacement of existing mercury-in-glass thermometers in environmentally conscious applications. It features a rugged cast aluminum case, easy to read LCD display and an adjustable-angle stem that is fully interchangeable with industrial liquid-in-glass thermometers. Also available is a bimetal type stem for applications where a digital thermometer is preferred over existing analog bimetals. The "**Solar Therm**" requires no external power and needs only 10 lux of illumination to operate. The unique Min/Max feature provides instant recall of minimum and maximum temperatures over a given period and is easily reset.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 152)

Specifications

Model	Scale Size
SX9	7" Adjustable Angle
Case	Cast Aluminum, Blue epoxy finish
Stem	Industrial, Bimetal or Air-Duct
Connection	Industrial: 1 1/4-18 UNEF-2A coupling nut Bimetal: 304 Stainless steel 1/4" diameter Air-Duct: Reversible mounting flange with 3 bolt holes
Sensor	Glass passivated thermistor
Range	-40 to 300° F (-40° to 150° C)
Display	9/16" LCD digits switchable between F/C. Push button min/max readings with reset
Accuracy	1% or 1° F, whichever is greater
Resolution	1/10°
Update Interval	10 seconds
Lux Rating	10 Lux (one foot candle)
Ambient Operating Temperature	0 to 140° F (-20° to 60° C)
Ambient Temperature Error	None
Humidity	Maximum: 95 RH, non condensing
Approximate Shipping Weight	1.5 lbs [0.68 kg]

HOW TO ORDER

Sample Order Number: **SX9 1 403 05**

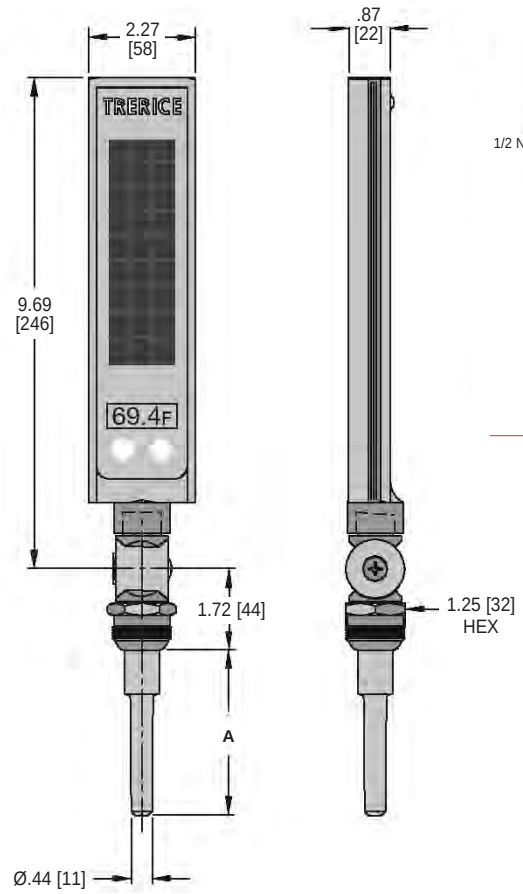
Model	Stem (Style & Material)	Stem (Length)	Specific Range
SX9 7" Adjustable	**1** Industrial (Aluminum)	**403** 3 1/2" (standard) **406** 6" (standard)	**05** -40° to 300° F/C
	5 Bimetal (304 SS)	**604** 4" Bimetal **606** 6" Bimetal	
	9 Air-Duct (Aluminum)*	**006** 6" Air-Duct **012** 12" Air-Duct	

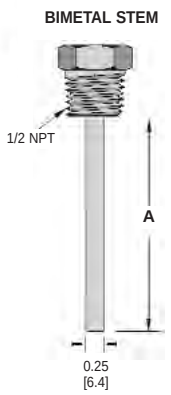
* Not for use with Thermowell

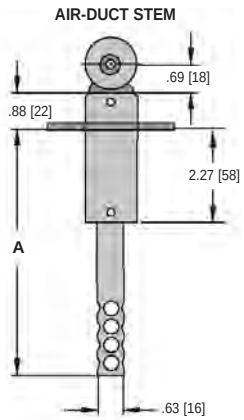
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

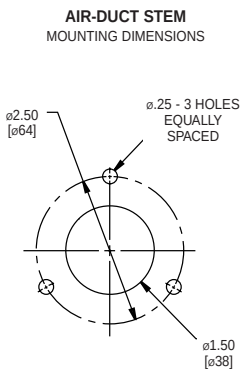
SX9 Solar Therm

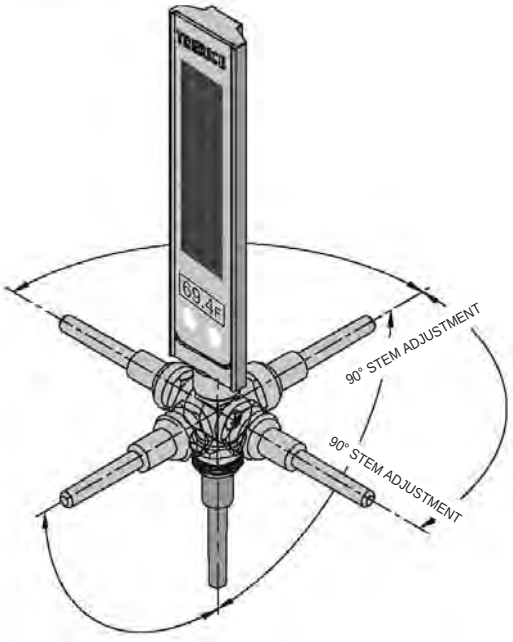
All dimensions are nominal.
Dimensions in [ ] are in millimeters.











(A) Stem Length	Dimension	
3 1/2" Industrial	3.50	[88.9]
6" Industrial	6.00	[152.4]
4" Bimetal	4.00	[101.6]
6" Bimetal	6.00	[152.4]
6" Air-Duct	6.00	[152.4]
12" Air-Duct	12.00	[304.8]

Thermowells for SX9 Solar-Therm

for INDUSTRIAL STYLE Stems				for BIMETAL STYLE Stems			
Model	Stem Length	Insertion Length	Material	Model	Stem Length	Insertion Length	Model
3-4F2	3 1/2"	2 1/2"	Brass	76-4G2	4"	2 1/2"	Brass
3-4FA2	3 1/2"	1.7" with 1" lagging extension	Brass	76-4GA2	4"	2" with 1" lagging extension	Brass
3-4J2	6"	5"	Brass	76-4J2	6"	4 1/2"	Brass
3-4JD2	6"	2 1/2" with 2 1/2" lagging extension	Brass	76-4JC2	6"	2 1/2" with 2" lagging extension	Brass

Adjustable Angle

7" • 9" • 12" Scale Sizes

INDUSTRIAL THERMOMETERS

BX91403 shown

- 7", 9", 12" Scale
- ± 1 Scale Division Accuracy
- Cast Aluminum Case
- Adjustable Angle Stem

Recognized globally as the Trerice **"BX" Industrial Thermometer**, this is an instrument of extreme accuracy and rugged dependability. Available in scale sizes of 7" (AX9), 9" (BX9), & 12" (CX9), with a durable cast aluminum case, this universally adjustable, liquid-in-glass thermometer is the most widely specified instrument of its kind.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 152)

Specifications

Models	Scale Sizes
AX9	7"
BX9	9"
CX9	12"

Adjustable Angle

Fill Type	Spirit: Blue colored, organic
Case	Cast Aluminum, blue epoxy finish
Stem	Aluminum, brass, 304 stainless steel or air-duct style available
Connection	Standard: 1¼-18 UNEF-2A coupling nut Air-Duct: Reversible mounting flange with 3 bolt holes
Window	Acrylic on ranges to 300° F Glass on ranges over 300° F
Tube	Lens front, magnifying type
Scale	Aluminum, white background with black graduations and markings
Top Plate	ABS
Accuracy	±1 scale division
Approximate Shipping Weight	AX9: 1.5 lbs [0.68 kg] BX9: 1.6 lbs [0.73 kg] CX9: 2.0 lbs [0.91 kg]

HOW TO ORDER

Sample Order Number: **BX9 1 403 07**

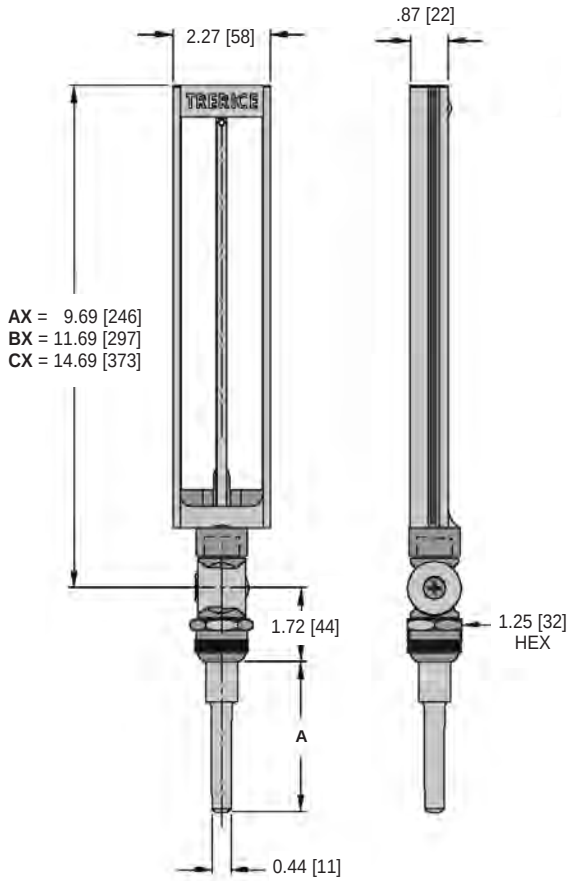
Model	Stem (Material)	Stem (Length)	Specific Range
AX9 7" Adjustable	**1** Aluminum (standard)	**403** 3½"	See Standard Ranges
BX9 9" Adjustable	**2** Brass	**406** 6"	
CX9 12" Adjustable	**3** 304 SS	**408** 8"	
		512 12"	
	9 Air-Duct (Aluminum)*	**006** 6" Air-Duct	
		012 12" Air-Duct	

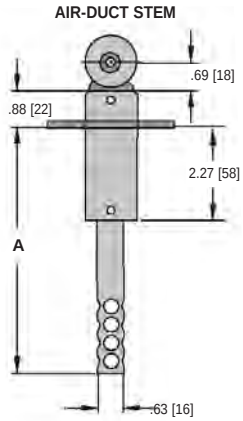
* Not for use with Thermowells

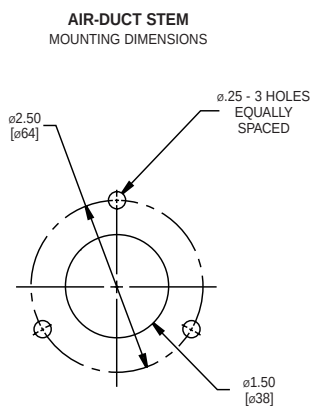
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

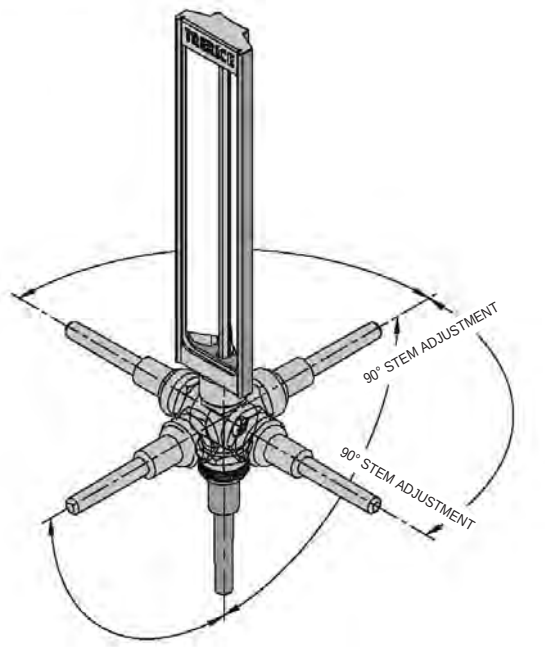
Adjustable Angle

All dimensions are nominal.
Dimensions in [ ] are in millimeters.









(A) Stem Length	Dimension
3 1/2"	3.50 [88.9]
6"	6.00 [152.4]
8"	8.00 [203.2]
12"	12.00 [304.8]

Standard Ranges

Fahrenheit Scale		Celsius Scale		Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–40° to 110°F	17	–40° to 40°C	41	–40° to 110°F & –40° to 40°C	10°	2°	5°	1°
02	0° to 100°F	24	–18° to 38°C	42	0° to 100°F & –18° to 38°C	5°	1°	5°	0.5°
03	30° to 130°F	25	0° to 55°C	43	30° to 130°F & 0° to 55°C	5°	1°	5°	1°
04	0° to 160°F	26	–18° to 70°C	44	0° to 160°F & –18° to 70°C	10°	2°	5°	1°
06	30° to 180°F	27	0° to 83°C	46	30° to 180°F & 0° to 83°C	10°	2°	5°	1°
07	30° to 240°F	19	0° to 115°C	47	30° to 240°F & 0° to 115°C	10°	2°	5°	1°
08	30° to 300°F	20	0° to 150°C	48	30° to 300°F & 0° to 150°C	10°	2°	10°	2°
09	50° to 400°F	28	10° to 205°C	49	50° to 400°F & 10° to 205°C	25°	5°	10°	2°
15	50° to 500°F	31	10° to 260°C	55	50° to 500°F & 10° to 260°C	25°	5°	10°	2°

Dual scale figure intervals may differ

Rigid Stem

7" • 9" • 12" Scale Sizes

BX12408 shown

- 7", 9", 12" Scale
- ± 1 Scale Division Accuracy
- Cast Aluminum Case
- Rigid Straight or Rigid 90° Angle Case

The **Rigid Stem Industrial Thermometer** is offered for applications where a nonadjustable case is preferred. The durable cast aluminum case is available in rigid straight or rigid 90° angle forms. This thermometer features accuracy, responsiveness and durability.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 152)

Specifications

Models	Scale Sizes	
AX1	7"	Rigid Straight
BX1	9"	
CX1	12"	
AX2	7"	Rigid 90° Angle
BX2	9"	
CX2	12"	

Fill Type	Spirit: Blue colored, organic
Case	Cast Aluminum, blue epoxy finish
Stem	Aluminum, brass, 304 stainless steel
Connection	1¼-18 UNEF-2A coupling nut
Window	Acrylic on ranges to 300° F Glass on ranges over 300° F
Tube	Lens front, magnifying type
Scale	Aluminum, white background with black graduations and markings
Top Plate	ABS
Accuracy	±1 scale division

Approximate Shipping Weight

AX1: 1.2 lbs [0.55 kg]
BX1: 1.4 lbs [0.64 kg]
CX1: 1.8 lbs [0.82 kg]
AX2: 1.0 lbs [0.45 kg]
BX2: 1.3 lbs [0.59 kg]
CX2: 1.7 lbs [0.77 kg]

HOW TO ORDER

Sample Order Number: **CX1 2 406 15**

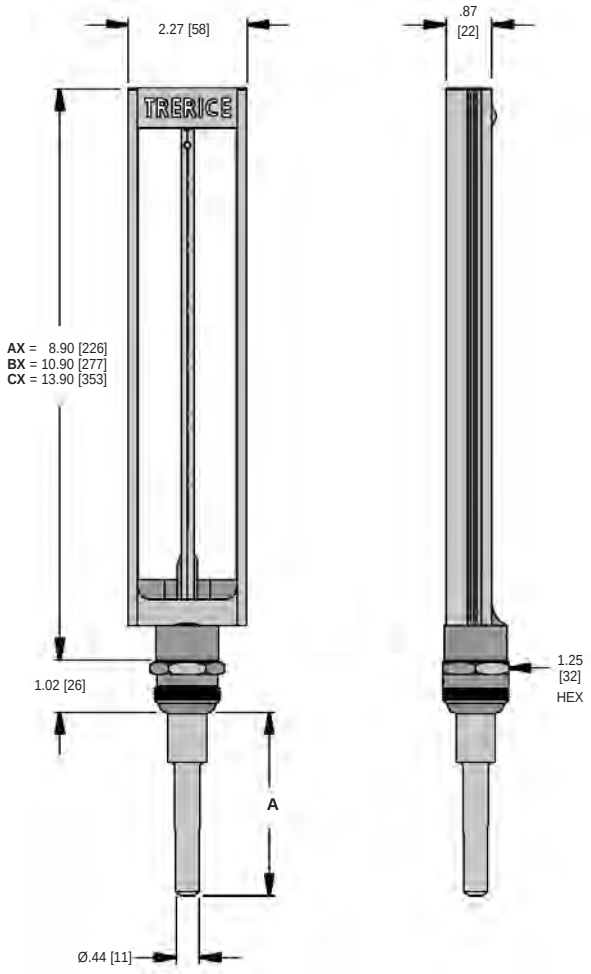
Model	Stem (Material)	Stem (Length)	Specific Range
AX1 7" **BX1** 9" **CX1** 12" — Rigid Straight **AX2** 7" **BX2** 9" **CX2** 12" — Rigid 90° Angle	**1** Aluminum **2** Brass **3** 304 SS	**403** 3½" **406** 6" **408** 8" **512** 12"	See Standard Ranges

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

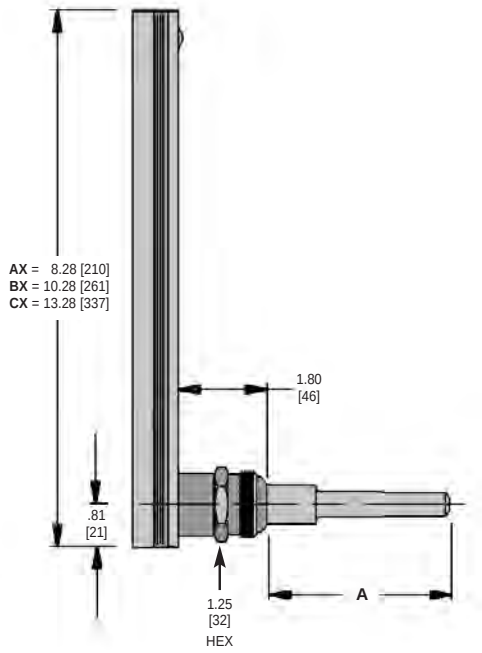
Rigid Stem

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

Rigid-Straight



Rigid-90° Angle



(A) Stem Length	Dimension	
3 1/2"	3.50	[88.9]
6"	6.00	[152.4]
8"	8.00	[203.2]
12"	12.00	[304.8]

Standard Ranges

Fahrenheit Scale		Celsius Scale		Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–40° to 110°F	17	–40° to 40°C	41	–40° to 110°F & –40° to 40°C	10°	2°	5°	1°
02	0° to 100°F	24	–18° to 38°C	42	0° to 100°F & –18° to 38°C	5°	1°	5°	0.5°
03	30° to 130°F	25	0° to 55°C	43	30° to 130°F & 0° to 55°C	5°	1°	5°	1°
04	0° to 160°F	26	–18° to 70°C	44	0° to 160°F & –18° to 70°C	10°	2°	5°	1°
06	30° to 180°F	27	0° to 83°C	46	30° to 180°F & 0° to 83°C	10°	2°	5°	1°
07	30° to 240°F	19	0° to 115°C	47	30° to 240°F & 0° to 115°C	10°	2°	5°	1°
08	30° to 300°F	20	0° to 150°C	48	30° to 300°F & 0° to 150°C	10°	2°	10°	2°
09	50° to 400°F	28	10° to 205°C	49	50° to 400°F & 10° to 205°C	25°	5°	10°	2°
15	50° to 500°F	31	10° to 260°C	55	50° to 500°F & 10° to 260°C	25°	5°	10°	2°

Dual scale figure intervals may differ

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

BX Plus

Industrial Thermometer with Integrated RTD

INDUSTRIAL THERMOMETERS

MODEL BX9240307RTC

- 9" Scale
- ±1 Scale Division Accuracy
- Local Indication/Remote Data Acquisition
- 100Ω or 1000Ω RTD Sensors available

The Trerice **BX-Plus** has all the standard features of the original BX Series Industrial Thermometer, but with a "Plus". The "Plus" being an internally mounted 100Ω or 1000Ω RTD, allowing for remote temperature monitoring, while simultaneously providing local indication. This patented* dual sensor design eliminates the need for additional instrumentation or connections when designing a system to include both mechanical and electronic temperature sensing.

*U.S. Pat. Nos. 5,664,885 and 5,769,542.

- Optional features available: Please consult the Options & Accessories Section for details.
- These instruments are specifically designed for use with Trerice Digital Indicators (refer to the Electronic Temperature Sensor Section) and Electronic Controllers (refer to the Control Section).

Specifications

Models	Scale Size	
BX9	**9"**	Adjustable Angle
BX1	**9"**	Rigid Straight
BX2	**9"**	Rigid 90° Angle

Fill Type — Spirit: Blue colored, organic

Case — Cast Aluminum, blue epoxy finish

Stem — Aluminum, Brass, or 304 Stainless Steel

Process Connection — 1¼-18 UNEF-2A coupling nut

Electrical Connection — Molded cordset with coupling nut and six meter cable

Window — Acrylic on ranges to 300° F; Glass on ranges over 300° F

Tube — Lens front, magnifying type

Scale — Aluminum, white background with black graduations and markings

Top Plate — Stainless Steel

Sensor — International grade thin film platinum, 3-wire, 100Ω or 1000Ω RTD
α = 0.00385Ω/Ω/°C

Accuracy — Thermometer: ±1 scale division
RTD: ±3°C or 0.6% of temperature

Approximate Shipping Weight
BX9: 1.9 lbs [0.86 kg]
BX1: 1.7 lbs [0.77 kg]
BX2: 1.6 lbs [0.73 kg]

HOW TO ORDER

Sample Order Number: **BX9 1 403 07 RTC**

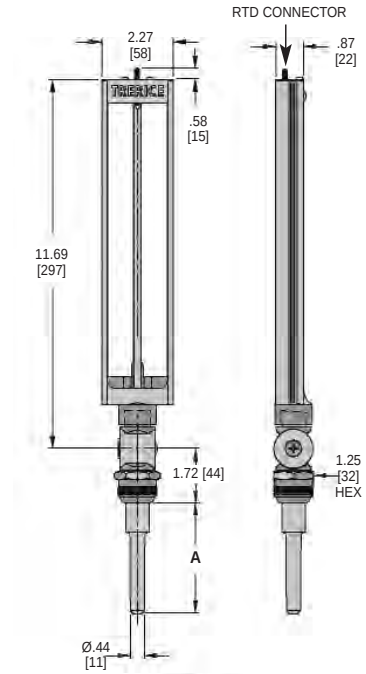
Model	Stem Material	Stem (Length)	Specific Range	Sensor Type
BX9 9" Adjustable **BX1** 9" Straight **BX2** 9" 90° Angle	**1** Aluminum (standard) **2** Brass **3** 304 SS	**403** 3½" **406** 6" **408** 8" **512** 12"	See Standard Ranges	**RTC** 100Ω RTD **RTM** 1000Ω RTD

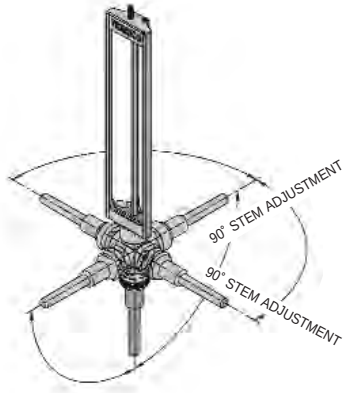
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

BX Plus

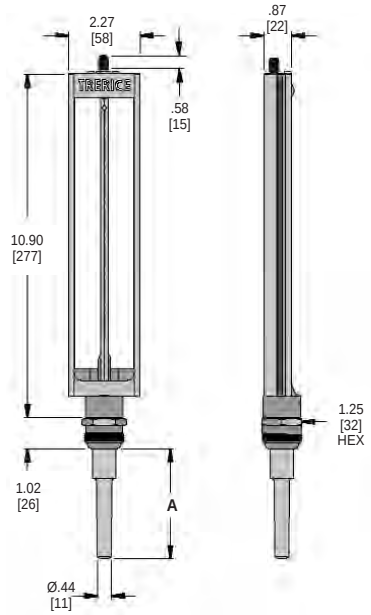
All dimensions are nominal.
Dimensions in [ ] are in millimeters.

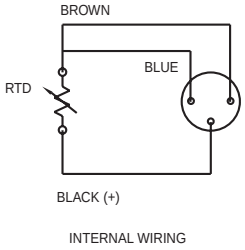
Adjustable-Angle





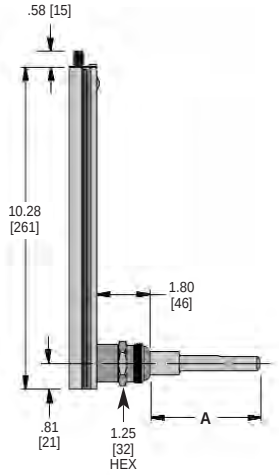
Rigid-Straight





INTERNAL WIRING

Rigid-90° Angle



(A) Stem Length	Dimension
3 1/2"	3.50 [88.9]
6"	6.00 [152.4]
8"	8.00 [203.2]
12"	12.00 [304.8]

Standard Ranges

Fahrenheit Scale		Celsius Scale		Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–40° to 110°F	17	–40° to 40°C	41	–40° to 110°F & –40° to 40°C	10°	2°	5°	1°
02	0° to 100°F	24	–18° to 38°C	42	0° to 100°F & –18° to 38°C	5°	1°	5°	0.5°
03	30° to 130°F	25	0° to 55°C	43	30° to 130°F & 0° to 55°C	5°	1°	5°	1°
04	0° to 160°F	26	–18° to 70°C	44	0° to 160°F & –18° to 70°C	10°	2°	5°	1°
06	30° to 180°F	27	0° to 83°C	46	30° to 180°F & 0° to 83°C	10°	2°	5°	1°
07	30° to 240°F	19	0° to 115°C	47	30° to 240°F & 0° to 115°C	10°	2°	5°	1°
08	30° to 300°F	20	0° to 150°C	48	30° to 300°F & 0° to 150°C	10°	2°	10°	2°
09	50° to 400°F	28	10° to 205°C	49	50° to 400°F & 10° to 205°C	25°	5°	10°	2°
15	50° to 500°F	31	10° to 260°C	55	50° to 500°F & 10° to 260°C	25°	5°	10°	2°

Dual scale figure intervals may differ

Retort

for Food Processing

INDUSTRIAL THERMOMETERS

BX13403R21 shown

- 9" Scale Size
- ± 1 Scale Division Accuracy
- Cast Aluminum Case
- Rigid Straight Case
  Rigid 45° Angle Case
  Rigid 90° Angle Case

The Trerice **Retort** Industrial Thermometer is the instrument of choice within the food processing and canning industries. The scale is configured to indicate the temperature and corresponding pressure of steam. This thermometer is furnished with a rigid, stainless steel stem, in straight or angle forms, and features a 9" scale and rugged cast aluminum case.

- Optional features available: Please consult Options & Accessories Section for details.
- This thermometer includes a one-piece stainless steel stem and is designed to be directly installed using a union connection bushing (page 99); therefore, use of a thermowell is not required.

Specifications

Models	Scale Size	
BX1	9"	Rigid Straight
BX2	9"	Rigid 90° Angle
BX5	9"	Rigid 45° Angle

Fill Type	Mercury: Blue appearing
Case	Cast Aluminum, blue epoxy finish
Stem	One-piece, 304 stainless steel
Process Connection	1¼-18 UNEF-2A coupling nut (A union connection bushing is required for installation; please consult page 99 of the Options and Accessories section.)
Window	Acrylic on ranges to 300° F Glass on ranges over 300° F
Tube	Lens Front, blue appearing mercury
Scale	Aluminum, white background with black graduations and markings
Top Plate	ABS
Accuracy	±1 scale division
Approximate Shipping Weight	BX1: 1.4 lbs [0.64 kg] BX2: 1.3 lbs [0.59 kg] BX5: 1.4 lbs [0.64 kg]

HOW TO ORDER

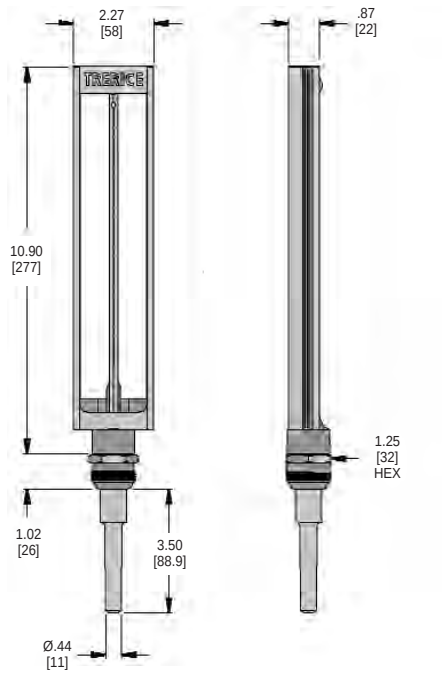
Sample Order Number: **BX1 3 403 R21**

Model	Stem (Material)	Stem (Length)	Specific Range
BX1 Straight **BX2** 90° Angle **BX5** 45° Angle	**3** 304 SS	**403** 3½"	See Standard Ranges

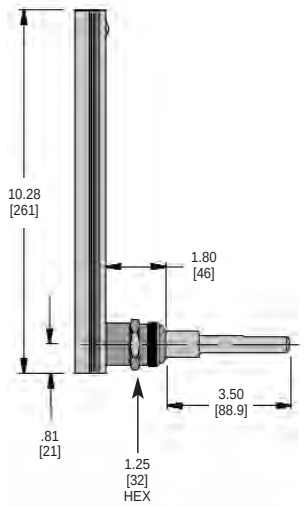
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

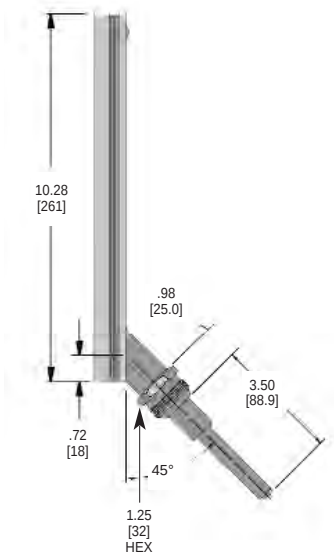
Rigid-Straight



Rigid-90° Angle



Rigid-45° Angle



Standard Ranges

Fahrenheit & psi Scale		Fahrenheit		psi	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
R21	170° to 270°F & 0 to 25 psi	10°F	1°F	5 psi	1 psi
R22	200° to 400°F & 0 to 220 psi	20°F	2°F	Progressive*	
Fahrenheit & Celsius Scale		**Fahrenheit**		**Celsius**	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
R24	170° to 270°F & 80° to 130°C	10°F	1°F	5°C	1°C
R23	200° to 400°F & 95° to 205°C	20°F	2°F	105°C	1°C
Celsius & kg/cm² Scale		**Celsius**		**kg/cm²**	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
R45	80° to 135°C & 0 to 2.1 kg/cm²	5°C	0.5°C	0.5 kg/cm²	0.1 kg/cm²

*Progressive scale: 0-40 (10 psi intervals); 40-120 psi (20 psi intervals), 120 to 180 psi (30 psi intervals), 180 to 220 psi (40 psi interval).

Hydro-Therm

INDUSTRIAL THERMOMETERS

HT30 shown

HT31 shown

- **5½" Scale Size**
- **± 2% Accuracy**
- **Valox Case**
- **1/2 NPT Brass Thermowell included**

The **NEW Trerice Hydro-Therm** is the ideal instrument for both hot and chilled water hydronic applications. The blue, organic "spirit" fill is easily read without the the environmental concerns of mercury. The sturdy Valox case is available in rigid straight or rigid 90˚ angle configurations. The 2" stem makes this the perfect instrument for smaller pipeline and other such applications. The 1/2 NPT brass thermowell is included.

Specifications

Models	Scale Size
HT30	5½" Rigid Straight
HT31	5½" Rigid 90˚ Angle

Fill Type	Spirit: Blue colored, organic
Case	Valox
Stem	Brass
Connection	½ NPT brass thermowell (included)
Window	Acrylic
Tube	Lens front, magnifying type
Scale	Aluminum, white background with black graduations and markings
Top Plate	ABS
Accuracy	±2%

Approximate Shipping Weight
0.5 lbs [0.23 kg]

HOW TO ORDER

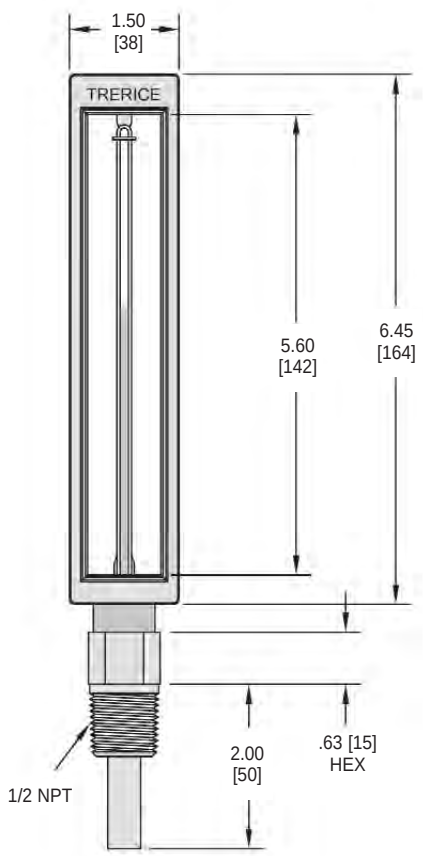
Sample Order Number: **HT30 47**

Model		Specific Range	
HT30	Straight	41	-40˚ to 110˚ F/C
HT31	90˚Angle	47	30˚ to 240˚ F/C

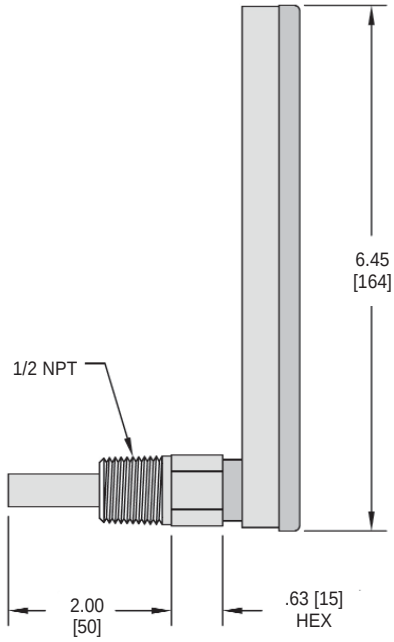
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

HT30



HT31



Note: Shown with included thermowell.

Standard Ranges

Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
41	-40° to 110°F & -40° to 40°C	20°	2°	10°	1°
47	30° to 240°F & 0° to 120°C	20°	2°	20°	2°

Econo-Therm

INDUSTRIAL THERMOMETERS

4352 shown

- 5½" Scale Size
- ± 1 Scale Division Accuracy
- Cast Aluminum Case
- Rigid Straight or Rigid 90°Angle Case

The Trerice **Econo Thermometer** provides accuracy and durability at an economical price. This liquid-in-glass thermometer has a durable cast aluminum case and a polycarbonate frame front and window. Rigid straight and rigid 90° angle cases are available.

- Optional features available: Please consult the Options & Accessories Section for details.
- Trerice Econo Thermometers (air-duct stem excluded) have no external mounting hardware, and as such, require the use of a thermowell, which is attached to the stem via a set screw. The thermowell must be ordered separately – please refer to page 153 of the Thermowell Section.

Specifications

Models	Scale Size	
4350	5½"	Rigid Straight
4352	5½"	Rigid 90° Angle

Fill Type	Spirit: Blue colored, organic
Case	Cast aluminum, blue epoxy finish
Stem	Aluminum, brass or air-duct style
Connection	Use of thermowell required (must be ordered separately) Air-duct stem has mounting flange with 3 bolt holes
Window	Polycarbonate frame front
Tube	Lens front, magnifying type
Scale	Aluminum, white background with black graduations and markings
Accuracy	±1 scale division
Approximate Shipping Weight	0.5 lbs [0.23 kg]

HOW TO ORDER

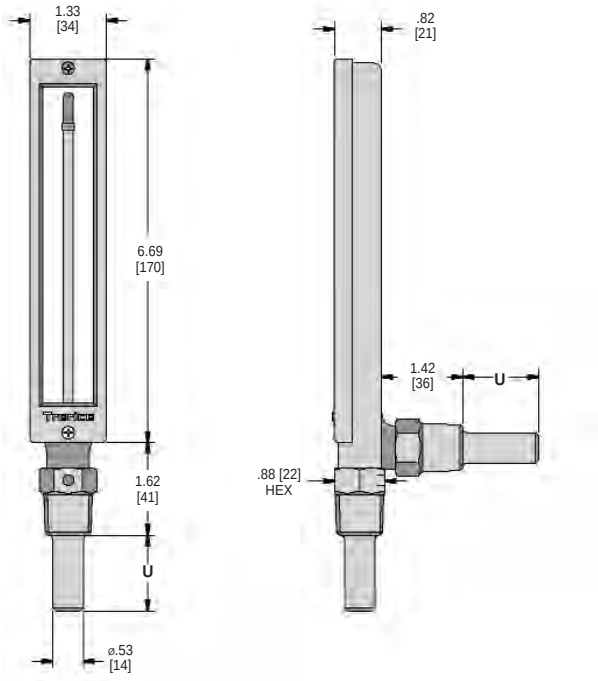
Sample Order Number: **4350 1 02 07**

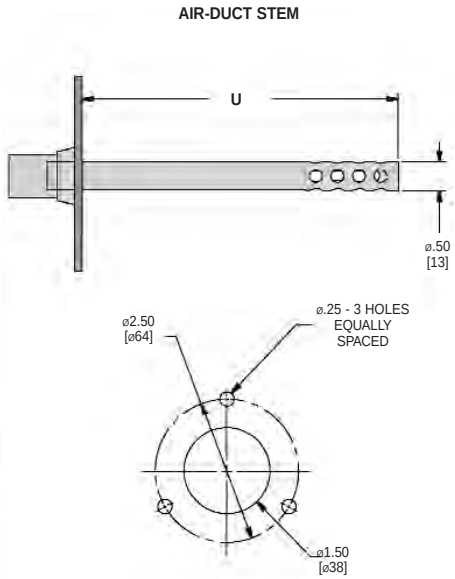
Model	Stem (Material)	Stem (Length)	Specific Range
4350 Straight **4352** 90° Angle	**1** Aluminum* **2** Brass **9** Air-Duct **	**02** 2" (Aluminum Stem only) **04** 4" (Brass Stem only) **06** 6" ┐ **12** 12" ┘ (Air-Duct Stem)	See Standard Ranges

*Use of thermowell required (must be ordered separately-refer to page 153).
**Model 4352 only

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal.
Dimensions in [ ] are in millimeters.





AIR-DUCT STEM
MOUNTING DIMENSIONS

Note: Shown with required thermowell (must be ordered separately. Refer to page 153.)

U Length	Dimension	
2" (Aluminum)	1.31	[33.3]
4" (Brass)	3.25	[82.6]
6" (Air-Duct)	6.00	[152.4]
12" (Air-Duct)	12.00	[304.8]

Standard Ranges

Fahrenheit Scale		Celsius Scale		Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–40° to 110°F	17	–40° to 40°C	41	–40° to 110°F & –40° to 40°C	20°	2°	10°	1°
03	30° to 130°F	25	0° to 55°C	43	30° to 130°F & 0° to 55°C	10°	1°	5°	1°
06	30° to 180°F	27	0° to 83°C	46	30° to 180°F & 0° to 83°C	20°	2°	10°	1°
07	30° to 240°F	19	0° to 115°C	47	30° to 240°F & 0° to 115°C	20°	2°	10°	1°
08	30° to 300°F	20	0° to 150°C	48	30° to 300°F & 0° to 150°C	30°	5°	10°	2°
09	50° to 400°F	28	10° to 205°C	49	50° to 400°F & 10° to 205°C	50°	5°	20°	2°
13	200° to 500°F	32	93° to 260°C	53	200° to 500°F & 93° to 260°C	25°	5°	10°	2°

Dual scale figure intervals may differ.

Stem Materials

Most Trerice Industrial Thermometers are furnished standard with an aluminum stem. Brass and 304 stainless steel stems are optionally available. An air-duct stem, provided with a 3" O.D. reversible aluminum flange (mounted using three sheet metal screws) and perforated aluminum guard, will deliver maximum sensitivity in air ducts. Air-duct stems are available on Adjustable Angle Industrial Thermometers and Econo Thermometers. Please consult the "How to Order" section of the appropriate product data page.

Integrated RTD "Plus" Option (RTC/RTM)

Most Trerice Industrial Thermometers can be ordered with a "Plus." The "Plus" being an internally mounted 100Ω or 1000Ω RTD, allowing for remote temperature monitoring, while simultaneously providing local indication. This patented* dual sensor design eliminates the need for additional instrumentation when designing a system to include both mechanical and electronic temperature sensing. Please order using option codes **RTC** (100Ω RTD) or **RTM** (1000Ω RTD).

**U.S. Pat. Nos. 5,664,885 and 5,769,542.*

Specifications

Sensor Temperature	Accuracy	Electrical Connection	Maximum
International grade thin film platinum, 3-wire 100Ω or 1000Ω RTD α = 0.00385Ω/Ω/°C	±0.3°C or 0.6% of temperature	Molded cordset with coupling nut and six meter cable	500°F (260°C)

Cases (BPC/CPC)

Industrial Thermometers can be provided with brass or chrome plated cases in 9" (BX) scale size. Please order using option codes **BPC** (brass plated case) or **CPC** (chrome plated case).

Windows (GLW/UVW)

Windows are furnished in acrylic or double strength glass. For direct sunlight applications, an ultra-violet protective plastic window is available. This window helps prevent sunlight induced deterioration of thermoactive fill. Please consult the table below for available window options.

Window Material	Temperature Range	
	Up to 300°F (150°C)	Over 300°F (150°C)
Acrylic	Standard	N/A
Double Strength Glass	GLW	Standard
UV Protective Plastic	UVW	N/A

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Weatherproofed Cases (WPC)

Trerice Industrial and Econo Thermometers may be sealed for outdoor use, or for use in applications where sprays and washes may come in contact with the thermometer. Please order using option code **WPC** (weatherproofed case).

Union Connection Bushings

Trerice Industrial Thermometers with brass or 304 stainless steel stems may be installed using a union connection bushing in place of a thermowell. Please consult the table below for bushing item numbers.

Thermometers with an aluminum stem must always be installed in a thermowell to protect the thermometer stem.

Union Connection Bushings

Material	Connection	Without Extension Neck	With 2 1/2" Extension Neck
Brass	3/4 NPT	703-05D6	082-0013
Brass	1 NPT	703-06D6	082-0096
304 Stainless Steel	3/4 NPT	703-05D6.2	082-0013.2
304 Stainless Steel	1 NPT	703-06D6.2	082-0096.2

How to Order

Specify the Optional Feature Code at the end of the Instrument Ordering Code.

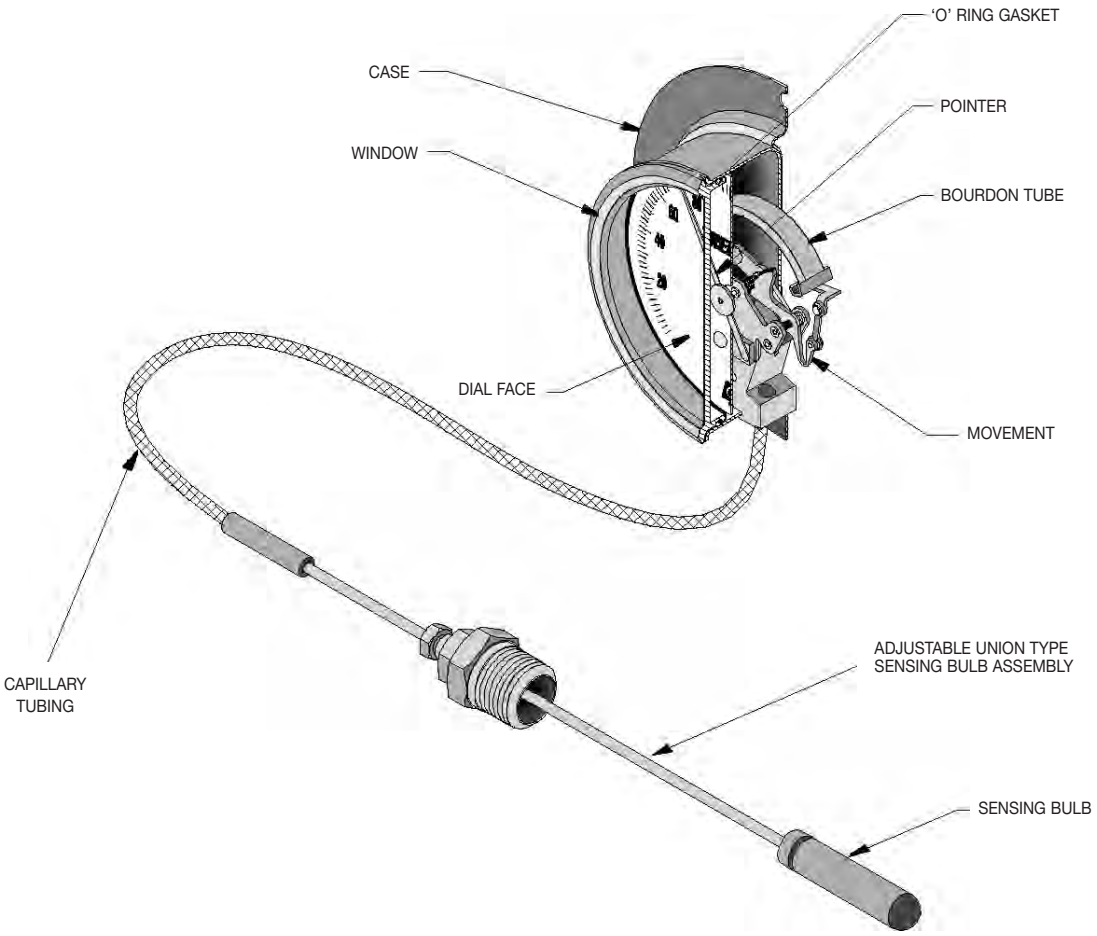
Sample Order Number: **BX1 1 403 07** **WPC**

Dial Thermometers

DESIGN & OPERATION

Description

A thermometer is an instrument designed to measure and indicate the temperature of a specific application or condition. A Dial Thermometer (filled system thermometer) can either be read at the point of measurement or from a remote location using a desired length of capillary tubing.



Principles of Operation

Trerice Dial Thermometers operate using a filled thermal system. This system consists of capillary tubing and a sensing bulb, which are filled with an expandable chemical compound. The fill is contained within the sealed thermal system, and is affected (expands or contracts) by temperature changes at the sensing bulb. As temperature increases, expanding fill travels via the capillary tube system to the bourdon tube within the instrument's case. The expansion causes the bourdon tube to flex and the resulting motion is transmitted as a temperature measurement through a mechanical movement to the pointer and dialface.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Selecting a Dial Thermometer

All Trerice Filled System Dial Thermometers should be carefully selected to meet the demands of the particular application. The information contained in this catalog is offered only as a guide to assist in making the proper selection. Improper application may cause failure of the instrument, resulting in possible personal injury or property damage. For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

Thermal System Actuation

Trerice Dial Thermometers are available with either Vapor or Liquid actuation fills.

Vapor Actuation

Trerice Vapor Actuated Dial Thermometers are the industry standard and are noted for their economical cost and excellent speed of response. The physical principles of vapor actuation require that the dialface be printed with a nonlinear, progressively graduated temperature scale. These instruments are available for direct mounting, or for remote mounting with capillary lengths up to 100 feet. Sensing bulb length is dependent upon the capillary length selected (a longer capillary length will require a longer sensing bulb length). Vapor Dial Thermometers are available in temperature ranges up to 450°F (232°C). **Note: Erratic performance may be encountered if the measured process temperature rapidly crosses ambient temperature.**

CAUTION: Vapor Dial Thermometers should be installed with the case, capillary tubing, and sensing bulb located at a similar elevation to avoid measurement inaccuracies. If the sensing bulb must be installed at a different elevation than the case, please advise the factory when ordering so that the instrument can be calibrated accordingly.

Liquid Actuation

Trerice Liquid Actuated Dial Thermometers have a good response time and are furnished with a temperature scale of linear graduation. These instruments are available for direct mounting, or for remote mounting with capillary lengths up to 20 feet. Sensing bulb length is consistent and not affected by capillary length or temperature range. Liquid Dial Thermometers are available in temperature ranges up to 300°F (150°C), and are ideally suited for measuring process temperatures which routinely cross ambient. However, care should be taken to insure against the exposure of the capillary to temperatures above or below the factory calibration temperature of 75°F (24°C).

CAUTION: Temperature indication error will be introduced whenever the capillary tubing is exposed to ambient temperatures above or below 75°F. The following formula MUST be considered when specifying liquid actuation:

Where: **S = thermometer range span in °F**
L = capillary length in feet
T = capillary temperature variation from 75°F

Error = 0.000082 x S x L x T

Example: **S = 210 (30 to 240°F)**
L = 20
T = 10 (85°F)

Error = 0.000082 x 210 x 20 x 10 = 3.4°

Vapor and Liquid Actuated Dial Faces

The physical principles of vapor actuation require that the dialface for vapor dial thermometers be printed with a non-linear progressively graduated temperature scale. Liquid actuated dial thermometers are furnished with linear dialfaces. Please see the Thermal System Selection section of our online catalog for sample vapor and liquid actuated dialfaces.

Dial Thermometers

DESIGN & OPERATION

Thermal System Actuation Comparison

Consideration	Vapor Actuation	Liquid Actuation
Price	Economical	Premium
Response Time	Excellent	Good
Dialface	Non-linear	Linear
Maximum Temperature Range	450°F (232°C)	300°F (149°C)
Cross Ambient Applications	Not recommended	Recommended
Available Thermal Systems	All (except averaging)	All
Bulb Size	Dependent on capillary length	Consistent
Maximum Capillary Length	100 feet	20 feet
Accuracy	±1 scale division	±1 scale division

Case

Cases are made from stainless steel or cast aluminum, in sizes from 3½" through 8½". Trerice Dial Thermometers can be directly mounted, or remotely mounted using capillary tubing, so that the measurement can be read from a convenient viewing location. Direct mounted thermometers are available with adjustable angle or universal angle connections, while remote mounted thermometers can be ordered for almost any surface or panel mounting requirement.

Window and Ring

The window is normally held in place by a ring or snapped directly to the case of the thermometer. Plastic and clear glass are typical window materials. Ring styles include threaded, friction and hinged, depending upon the case type chosen.

Accuracy

The accuracy of a dial thermometer is expressed as a variance (plus or minus) in scale divisions. All Trerice Dial Thermometers are accurate to within one scale division of the measured range. Ambient temperature conditions and elevation variances may affect measurement accuracy.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Measurement Range and Dial

Trerice Dial Thermometers are available in Fahrenheit, Celsius, and Dual Scale temperature ranges from -40°F (-40°C) through 450° (-230°C). Ranges are indelibly presented in black figures and markings upon a white finished aluminum dialface. The physical principles of vapor actuation require the dialface to have a non-linear, progressively graduated temperature scale; therefore, the temperature range should be selected so that the intended measuring point falls within the upper two-thirds of the range scale. Liquid Actuated Dial Thermometers have temperature scales of linear graduation, thus, the intended measuring point should fall within the middle third of the range scale.

Thermal System

- **Bulb** – Trerice Dial Thermometers are furnished with copper, brass or stainless steel sensing bulbs, depending upon the system actuation and the requirements of the application. A fixed union connection is standard, with an adjustable union connection optionally available. The fixed union connection is furnished with a standard sensing bulb length of 1 3/4" to 5 5/8", depending upon the actuation and capillary length. The adjustable union connection may be adjusted over a 24-inch length prior to initial insertion. This allows the sensing bulb to be installed at any desired insertion length (U-length). Plain and Teflon covered bulbs are available for open tank applications. Other bulb styles, including averaging and air-sensing, can be furnished on some models. Please see the Dial Thermometer Sensing Bulb Section for complete bulb specifications.
- **Capillary** – Trerice Dial Thermometers can be specified with various capillary materials and special covers to meet the requirements of any application.

Thermowells

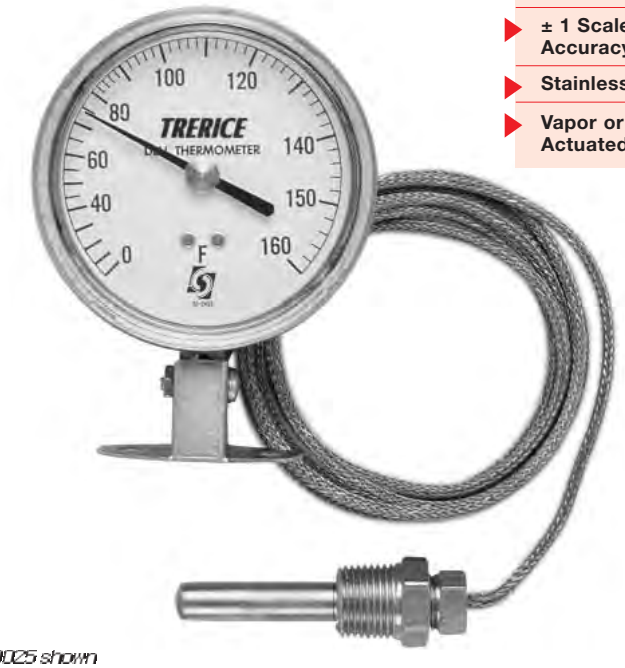
For applications where the process media may be corrosive or contained under pressure, the use of a Trerice Thermowell is required to prevent damage to the thermometer and facilitate its removal from the process. Thermowells are available in various lengths, connections, sizes, and materials. Please consult page 154 of the Thermowell Section.

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the bulb before installation into a thermowell. 1 oz. tube: Item No. 107-0001

Remote Mounted Dial Thermometer

3 1/2" Stainless Steel Case

DIAL THERMOMETERS



V80025 shown

- 3 1/2" Dial Size
- ± 1 Scale Division Accuracy
- Stainless Steel Case
- Vapor or Liquid Actuated

The Trerice **Remote Mounted Dial Thermometer** is used extensively in the building and construction industry and is the preferred temperature instrument for OEMs worldwide. The stainless steel case is available in many styles for panel and surface mounting. This instrument has a 3 1/2" dial size and is available with either vapor or liquid actuation.

- Optional features available: Please consult the Optional Features Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 154)

Specifications

Models	Dial Size	Case Styles
80025	3 1/2"	**Adjustable Angle**, with mounting bracket
80035	3 1/2"	**Surface Mounted**, back flanged, with bottom outlet
80036	3 1/2"	**Surface Mounted**, back flanged with back outlet
80040	3 1/2"	**Flush Mounted**, front flanged, with back outlet
80041	3 1/2"	**Flush Mounted**, u-clamp with back outlet

Movement Brass

Case Material Stainless Steel

Window Acrylic, snap-in with Nitrile O-ring seal

Pointer Adjustable, black finish

Dialface Aluminum, white background with black graduations and markings

Accuracy ±1 scale division

Approximate Shipping Weight 1.3 lbs [0.59 kg]

HOW TO ORDER

Sample Order Number: **V 80035 110 B01 05**

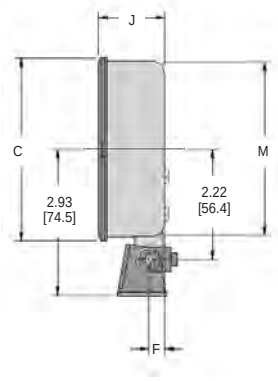
Actuation	Model	Range Code	Thermal System	Capillary Length*
V Vapor **L** Liquid	**80025** **80035** **80036** **80040** **80041**	See Standard Ranges	See Thermal Selection (pages 112-113)	**05** 5 Feet **10** 10 Feet **15** 15 Feet **20** 20 Feet

* Other Capillary lengths available: Specify in feet. Vapor: 100 Feet Max
Liquid: 20 Feet Max

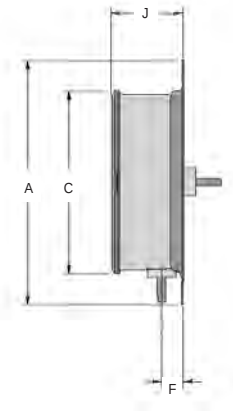
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

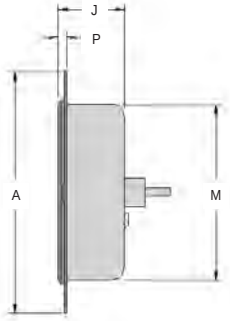
80025 Adjustable Angle with mounting bracket



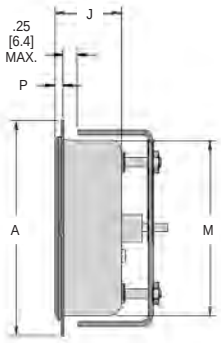
80035 & 80036 Surface Mounted back flanged



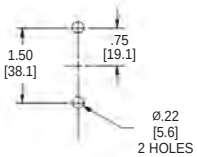
80040 Flush Mounted front flanged



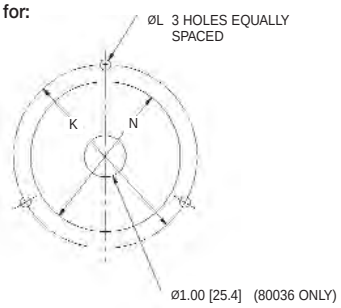
80041 Flush Mounted U-clamp



Mounting Dimensions for 80025



Drilling Dimensions for:
80035
80036
80040
80041



Model	A	C	F	J	K	L	M	N	P
80025	N/A	3.67 [93.2]	0.32 [8.2]	1.33 [33.9]	N/A	N/A	3.51 [89.2]	N/A	N/A
80035	4.91 [124.7]	3.67 [93.2]	0.43 [11.0]	1.44 [36.6]	4.50 [114.3]	0.25 [6.4]	N/A	N/A	N/A
80036	4.91 [124.7]	3.67 [93.2]	N/A	1.44 [36.6]	4.50 [114.3]	0.25 [6.4]	N/A	N/A	N/A
80040	4.84 [122.9]	N/A	N/A	1.33 [33.6]	4.44 [112.8]	0.25 [6.4]	3.51 [89.2]	3.62 [92.0]	0.17 [4.3]
80041	4.31 [109.5]	N/A	N/A	1.33 [33.8]	N/A	N/A	3.51 [89.2]	3.62 [92.0]	0.17 [4.3]

Standard Ranges (Dual Scale includes both Fahrenheit & Celsius)

Vapor Actuated

Fahrenheit Scale Range Code	Fahrenheit Scale Range	Celsius Scale Range Code	Celsius Scale Range	Dual Scale Range Code
030	-40° to 150°F	430	-40° to 65°C	230
040	-20° to 100°F	440	-30° to 40°C	240
050	0° to 100°F	450	-20° to 40°C	250
065	0° to 160°F	465	-20° to 70°C	265
100	30° to 180°F	500	0° to 85°C	300
110	30° to 240°F	510	0° to 115°C	310
120	30° to 300°F	520	0° to 150°C	320
145	100° to 350°F	545	40° to 180°C	345
160	200° to 450°F	560	90° to 230°C	360

Liquid Actuated

Fahrenheit Scale Range Code	Fahrenheit Scale Range	Celsius Scale Range Code	Celsius Scale Range	Dual Scale Range Code
020	-40° to 120°F	420	-40° to 50°C	220
050	0° to 100°F	450	-20° to 40°C	250
060	0° to 160°F	460	-20° to 70°C	260
100	30° to 180°F	495	0° to 80°C	300
110	30° to 240°F	510	0° to 115°C	310
130	50° to 300°F	530	10° to 150°C	330

Remote Mounted Dial Thermometer

4 1/2" • 6" • 8 1/2" Cast Aluminum Case

DIAL THERMOMETERS

V80341 shown

- 4 1/2", 6", 8 1/2" Dial Sizes
- ± 1 Scale Division Accuracy
- Cast Aluminum Case
- Vapor or Liquid Actuated

This Trerice **Remote-Mounted Dial Thermometer** is furnished with a rugged cast aluminum case in 4 1/2", 6" and 8 1/2" dial sizes. This instrument is designed for a wide variety of industrial applications, and is available with vapor or liquid actuation.

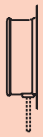
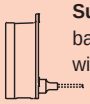
- Optional features available: Please consult the Optional Features Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 154)

Specifications

Models	Dial Sizes	Case Styles
80341 80361 80381	4 1/2" 6" 8 1/2"	 **Surface Mounted**, back flanged, with bottom outlet
80342 80362 80382	4 1/2" 6" 8 1/2"	 **Surface Mounted**, back flanged, with back outlet
80345 80365	4 1/2" 6"	 **Flush Mounted**, hinged ring, with back outlet

Movement Brass

Case Material Cast Aluminum, black finish

Window Clear glass

Ring Friction type, 304 stainless steel (hinged type, black finished aluminum; 80345, 80365 only)

Pointer Adjustable, black finish

Dialface Aluminum, white background with black graduations and markings

Accuracy ±1 scale division

Approximate Shipping Weight

4 1/2" Dial: 2.4 lbs [1.09 kg]
6" Dial: 3.0 lbs [1.36 kg]
8 1/2" Dial: 4.0 lbs [1.82 kg]

HOW TO ORDER

Sample Order Number: **V 80341 050 B02 20**

Actuation	Model	Range Code	Thermal System	Capillary Length*
V Vapor **L** Liquid	**80341** 4 1/2" **80361** 6" **80381** 8 1/2" **80342** 4 1/2" **80362** 6" **80382** 8 1/2" **80345** 4 1/2" **80365** 6"	See Standard Ranges	See Thermal System Selection (pages 112-113)	**05** 5 Feet **10** 10 Feet **15** 15 Feet **20** 20 Feet

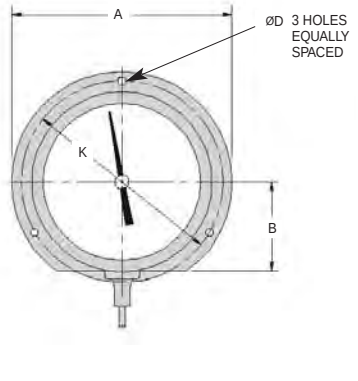
* Other Capillary lengths available: Specify in feet. Vapor: 100 Feet Max
Liquid: 20 Feet Max

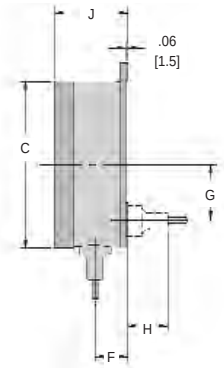
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.

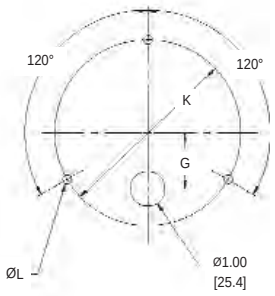
Surface Mount Back Flange Case

Models 80341, 80361, 80381 (bottom outlet), Models 80342, 80362, 80382 (back outlet)





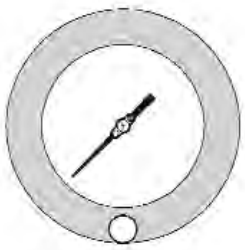
MOUNTING DIMENSIONS

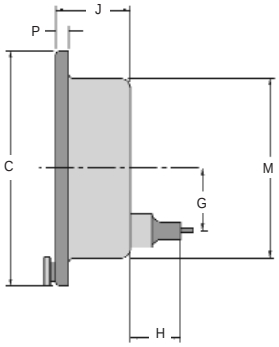


Dial Size	A	B	C	D	F	G	H	J	K	L
4 ½"	5.88 [149.7]	2.39 [60.7]	4.79 [121.7]	0.22 [5.6]	0.94 [23.8]	1.63 [41.3]	1.41 [35.7]	2.06 [52.4]	5.38 [136.5]	0.25 [6.4]
6"	7.62 [193.6]	3.14 [79.8]	6.29 [159.8]	0.28 [7.1]	0.94 [23.8]	1.63 [41.3]	1.41 [35.7]	2.09 [53.0]	7.00 [177.8]	0.31 [7.9]
8 ½"	10.25 [260.4]	4.38 [111.1]	8.80 [223.4]	0.28 [7.1]	0.97 [24.6]	1.63 [41.3]	1.41 [35.7]	2.24 [56.8]	9.63 [244.5]	0.31 [7.9]

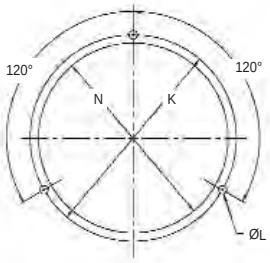
Flush Mount Hinged Ring Case

Models 80345 & 80365





PANEL CUTOUT



Dial Size	C	G	H	J	K	L	M	N	P
4½"	6.10 [155.0]	1.62 [41.1]	1.31 [33.4]	1.97 [50.0]	5.38 [136.7]	0.22 [5.6]	4.78 [121.4]	4.94 [125.5]	0.34 [8.6]
6"	7.69 [195.3]	1.62 [41.1]	1.31 [33.4]	1.97 [50.0]	7.00 [177.8]	0.28 [7.1]	6.22 [158.0]	6.44 [163.5]	0.34 [8.6]

Standard Ranges (Dual Scale includes both Fahrenheit & Celsius)

Vapor Actuated

Fahrenheit Scale		Celsius Scale		Dual Scale
Range Code	Range	Range Code	Range	Range Code
030	-40° to 150°F	430	-40° to 65°C	230
040	-20° to 100°F	440	-30° to 40°C	240
050	0° to 100°F	450	-20° to 40°C	250
065	0° to 160°F	465	-20° to 70°C	265
100	30° to 180°F	500	0° to 85°C	300
110	30° to 240°F	510	0° to 115°C	310
120	30° to 300°F	520	0° to 150°C	320
145	100° to 350°F	545	40° to 180°C	345
160	200° to 450°F	560	90° to 230°C	360

Liquid Actuated

Fahrenheit Scale		Celsius Scale		Dual Scale
Range Code	Range	Range Code	Range	Range Code
020	-40° to 120°F	420	-40° to 50°C	220
050	0° to 100°F	450	-20° to 40°C	250
060	0° to 160°F	460	-20° to 70°C	260
100	30° to 180°F	495	0° to 80°C	300
110	30° to 240°F	510	0° to 115°C	310
130	50° to 300°F	530	10° to 150°C	330

Direct Mounted Dial Thermometer

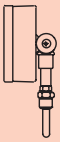
4 1/2" & 6" Cast Aluminum Case • Universal Angle

V80742 shown

- 4 1/2", 6" Dial Sizes
- ± 1 Scale Division Accuracy
- Cast Aluminum Case
- Vapor or Liquid Actuated

Specifications

Models	Dial Sizes	Case Style
80742	4 1/2"	Universal Angle
80762	6"	



Movement	Brass
Case Material	Cast Aluminum, black finish
Window	Clear glass
Ring	Friction type, stainless steel
Pointer	Adjustable, black finish
Dialface	Aluminum, white background with black graduations and markings
Accuracy	±1 scale division
Approximate Shipping Weight	80742: 2.0 lbs [0.91 kg] 80762: 2.4 lbs [1.09 kg]

The Trerice **Universal Angle Dial Thermometer** is available in 4 1/2" and 6" dial sizes with a rugged cast aluminum case. After the sensing bulb has been installed, the case may be adjusted 180° front to back, and rotated 360° for maximum readability. This instrument is available with vapor or liquid actuation.

- Optional features available: Please consult the Optional Features Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 154)

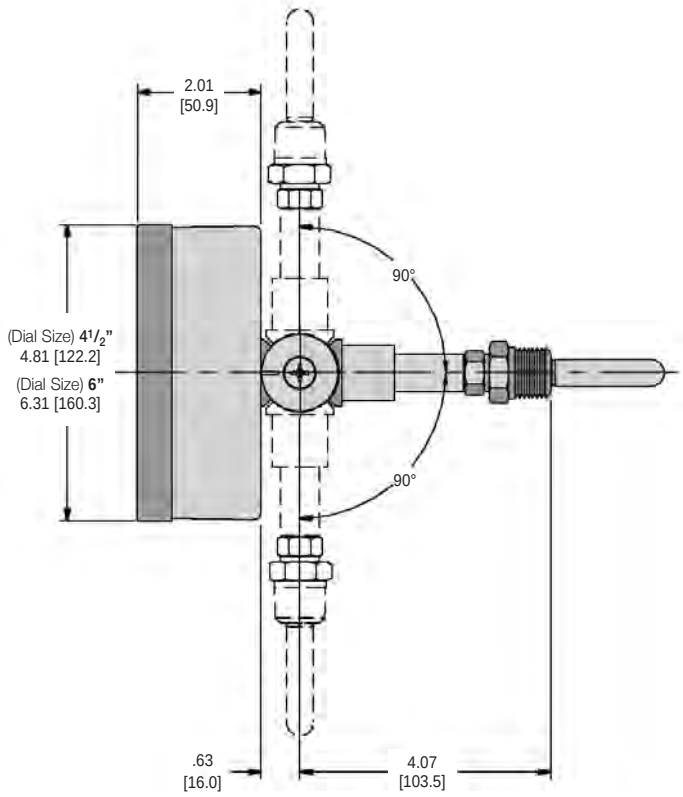
HOW TO ORDER

Sample Order Number: **L 80742 110 B35**

Actuation	Model	Range Code	Thermal System
V Vapor **L** Liquid	**80742** **80762**	See Standard Ranges	See Thermal System Selection (pages 112-113)

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges (Dual Scale includes both Fahrenheit & Celsius)

Vapor Actuated

Fahrenheit Scale		Celsius Scale		Dual Scale
Range Code	Range	Range Code	Range	Range Code
030	-40° to 150°F	430	-40° to 65°C	230
040	-20° to 100°F	440	-30° to 40°C	240
050	0° to 100°F	450	-20° to 40°C	250
065	0° to 160°F	465	-20° to 70°C	265
100	30° to 180°F	500	0° to 85°C	300
110	30° to 240°F	510	0° to 115°C	310
120	30° to 300°F	520	0° to 150°C	320
145	100° to 350°F	545	40° to 180°C	345
160	200° to 450°F	560	90° to 230°C	360

Liquid Actuated

Fahrenheit Scale		Celsius Scale		Dual Scale
Range Code	Range	Range Code	Range	Range Code
020	-40° to 120°F	420	-40° to 50°C	220
050	0° to 100°F	450	-20° to 40°C	250
060	0° to 160°F	460	-20° to 70°C	260
100	30° to 180°F	495	0° to 80°C	300
110	30° to 240°F	510	0° to 115°C	310
130	50° to 300°F	530	10° to 150°C	330

Direct Mounted Dial Thermometer

3½" Stainless Steel Case & 4½" Cast Aluminum Case • Adjustable Angle

DIAL THERMOMETERS

V80445 shown

- 3½", 4½" Dial Sizes
- ± 1 Scale Division Accuracy
- Stainless Steel or Cast Aluminum Case
- Vapor or Liquid Actuated

The Trerice **Adjustable Angle Dial Thermometer** is intended for use within the construction and HVAC industries. Once the sensing bulb has been installed, the angle of the dial-face may be adjusted forward and backward to provide maximum readability. This instrument is available in 3½" and 4½" dial sizes with a flangeless, stainless steel or cast aluminum case.

- Optional features available: Please consult the Optional Features Section for details.

Thermowell

- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

(Refer to page 154)

Specifications

Models	Dial Sizes		Case Styles
80030	3½"		Adjustable Angle
80445 (Vapor Only)	4½"		Adjustable Angle

Movement Brass

Case Material
80030: Stainless steel
80445: Cast aluminum, black finish

Window
80030: Acrylic, snap-in with Nitrile O-ring seal
80445: Clear glass

Ring
80030: None
80445: Friction-type, stainless steel

Pointer Adjustable, black finish

Dialface Aluminum, white background with black graduations and markings

Accuracy ±1 scale division

Approximate Shipping Weight
80030: 1.3 lbs [0.59 kg]
80445: 1.4 lbs [0.64 kg]

HOW TO ORDER

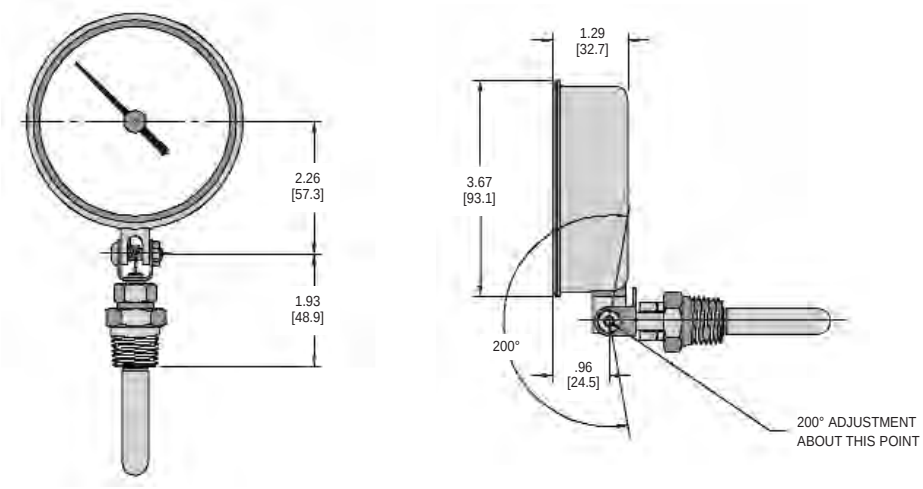
Sample Order Number: **V 80445 110 B31**

Actuation	Model	Specific Range	Thermal System
V Vapor **L** Liquid	**80030** **80445** (vapor only)	See Standard Ranges	See Thermal System Selection (pages 112-113)

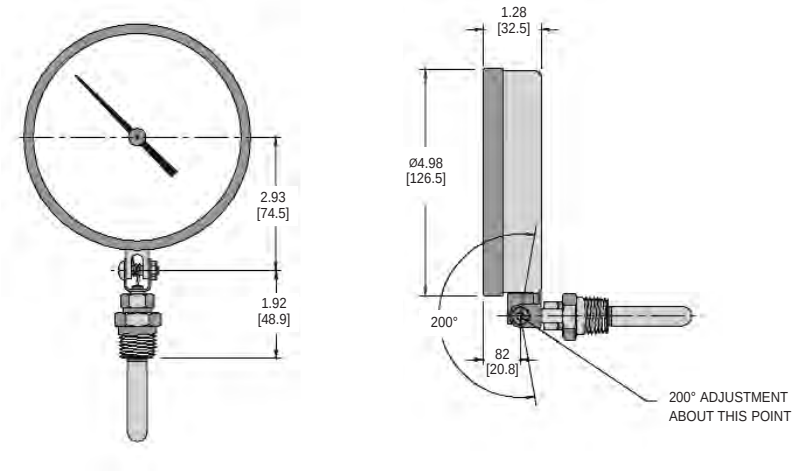
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.

80030



80445



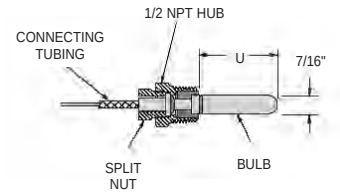
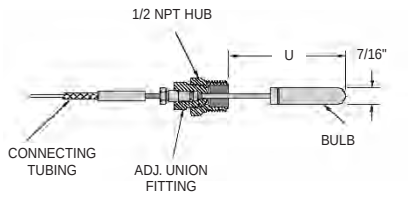
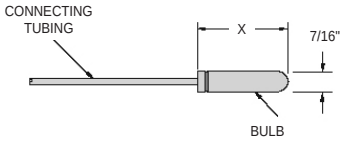
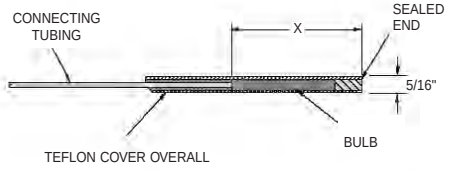
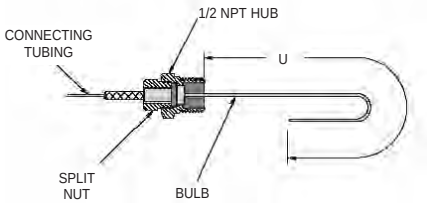
Standard Ranges (Dual Scale includes both Fahrenheit & Celsius)

Vapor Actuated				
Fahrenheit Scale		Celsius Scale		Dual Scale
Range Code	Range	Range Code	Range	Range Code
030	-40° to 150°F	430	-40° to 65°C	230
040	-20° to 100°F	440	-30° to 40°C	240
050	0° to 100°F	450	-20° to 40°C	250
065	0° to 160°F	465	-20° to 70°C	265
100	30° to 180°F	500	0° to 85°C	300
110	30° to 240°F	510	0° to 115°C	310
120	30° to 300°F	520	0° to 150°C	320
145	100° to 350°F	545	40° to 180°C	345
160	200° to 450°F	560	90° to 230°C	360

Liquid Actuated				
Fahrenheit Scale		Celsius Scale		Dual Scale
Range Code	Range	Range Code	Range	Range Code
020	-40° to 120°F	420	-40° to 50°C	220
050	0° to 100°F	450	-20° to 40°C	250
060	0° to 160°F	460	-20° to 70°C	260
100	30° to 180°F	495	0° to 80°C	300
110	30° to 240°F	510	0° to 115°C	310
130	50° to 300°F	530	10° to 150°C	330

Thermal System Selection

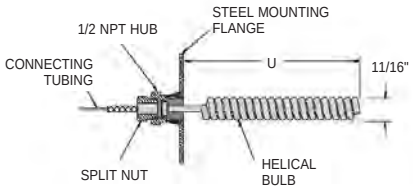
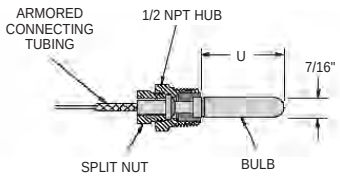
Remote Mounted Dial Thermometers

Bulb & Capillary Style	Order Code	Connection Style & Material	Bulb Material	Capillary Tubing Material	Minimum Bulb Insertion Length for Capillary Length (in feet) shown			
					Vapor Actuated up to 10	Vapor Actuated 15-50	Vapor Actuated over 50	Liquid Act. All Lengths
Union Connection 	B01	Brass, 1/2 NPT	Vapor: Copper Liquid: Brass	Copper with Bronze Braided Armour	2"	3 3/4"	5 5/8"	2"
	B10	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel	2"	3 3/4"	5 5/8"	2"
Adjustable Union Connection 	B02	Brass, 1/2 NPT	Vapor: Copper Liquid: Brass	Copper with Bronze Braided Armor	1 3/4"	3 1/2"	5 1/4"	1 3/4"
					Adjustable up to 24"			
	B04	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel	1 3/4"	3 1/2"	5 1/4"	1 3/4"
					Adjustable up to 24"			
Plain Bulb 	B05	None	Vapor: Copper Liquid: Brass	Copper with Bronze Braided Armor	2"	3 3/4"	5 5/8"	2"
	B06	None	Stainless Steel	Stainless Steel	2"	3 3/4"	5 5/8"	2"
Teflon Covered Bulb 	B08	None	Vapor: Copper Liquid: Brass with Teflon Cover	Bronze Braided Armor with Teflon Cover	15"	15"	15"	2 3/4"
	B07	None	Stainless Steel with Teflon Cover	Stainless Steel with Teflon Cover	15"	15"	15"	2 3/4"
Averaging Bulb 	B11*	Brass, 1/2 NPT	Copper	Copper with Bronze Braided Armor	N/A	N/A	N/A	Approx. 8 Feet
	B12*	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel	N/A	N/A	N/A	Approx. 8 Feet

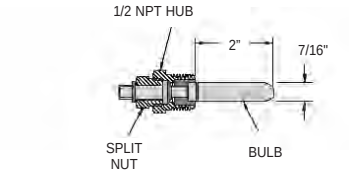
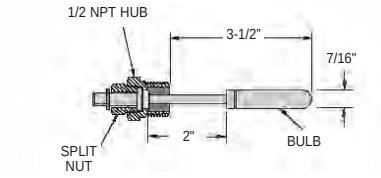
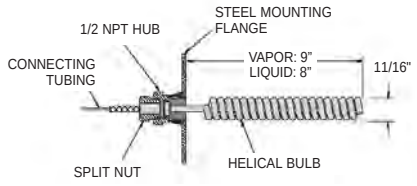
* B11 and B12 Averaging Bulbs are not available with vapor actuation.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Remote Mounted Dial Thermometers (cont'd)

Bulb & Capillary Style	Order Code	Connection Style & Material	Bulb Material	Capillary Tubing Material	Minimum Bulb Insertion Length for Capillary Length (in feet) shown			
					Vapor Actuated up to 10	Vapor Actuated 15-50	Vapor Actuated over 50	Liquid Act. All Lengths
Air Sensitive Bulb 	B13	Steel Mounting Flange, Brass Fittings	Copper	Copper with Bronze Braided Armor	9"	9"	11"	8"
Union Connection with Spiral Armour 	B15	Brass, 1/2 NPT	Vapor: Copper Liquid: Brass	Copper with Bronze Braid & SS Spiral Armor	2"	3 3/4"	5 5/8"	2"
	B16	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel with SS Spiral Armor	2"	3 3/4"	5 5/8"	2"

Direct Mounted Dial Thermometers

Bulb Style	Order Code	Connection Material	Bulb Material	Minimum Bulb Insertion Length Vapor Actuated	Minimum Bulb Insertion Length Liquid Act.
Union Connection 	B31	Brass, 1/2 NPT	Vapor: Copper Liquid: Brass	2"	2"
	B32	Stainless Steel, 1/2 NPT	Stainless Steel	2"	2"
Union Connection with Bendable Extension 	B33	Brass, 1/2 NPT	Vapor: Copper Liquid: Brass	3 1/2"	3 1/2"
	B34	Stainless Steel, 1/2 NPT	Stainless Steel	3 1/2"	3 1/2"
Air Sensitive Bulb 	B35	Steel Mounting Flange, Brass Fittings	Copper	9"	8"

Temperature Ranges

Dial Thermometers

Trerice offers a variety of temperature ranges to satisfy virtually any application. The following tables list the standard available ranges with figure intervals and minor divisions for Vapor or Liquid actuated dial thermometers.

Vapor actuated dial thermometers have a progressive scale. Maximum readability and stated intervals are in the upper two thirds of the scale. Liquid actuated dial thermometers have a linear scale. Figure intervals are equal throughout the range. Fahrenheit is primary (outside) scale on dual scale ranges.

Vapor Actuated Ranges with Major and Minor Divisions

Fahrenheit Scale		Celsius Scale		Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
030	-40° to 150°F	430	-40° to 65°C	230	-40° to 150°F & -40° to 65°C	20°	2°	10°	1°
040	-20° to 100°F	440	-30° to 40°C	240	-20° to 100°F & -30° to 40°C	10°	2°	5°	1°
050	0° to 100°F	450	-20° to 40°C	250	0° to 100°F & -20° to 40°C	10°	1°	10°	1°
065	0° to 160°F	465	-20° to 70°C	265	0° to 160°F & -20° to 70°C	20°	2°	10°	1°
100	30° to 180°F	500	0° to 85°C	300	30° to 180°F & 0° to 85°C	20°	2°	10°	1°
110	30° to 240°F	510	0° to 115°C	310	30° to 240°F & 0° to 115°C	20°	2°	10°	1°
120	30° to 300°F	520	0° to 150°C	320	30° to 300°F & 0° to 150°C	20°	2°	10°	1°
145	100° to 350°F	545	40° to 180°C	345	100° to 350°F & 40° to 180°C	30°	2°	10°	1°
160	200° to 450°F	560	90° to 230°C	360	200° to 450°F & 90° to 230°C	30°	2°	10°	2°

Vapor actuated dial thermometers have a progressive scale. Maximum readability and stated intervals are in the upper two thirds of the scale.

Liquid Actuated Ranges with Major and Minor Divisions

Fahrenheit Scale		Celsius Scale		Dual Scale		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Division
020	-40° to 120°F	420	-40° to 50°C	220	-40° to 120°F & -40° to 50°C	20°	2°	10°	1°
050	0° to 100°F	450	-20° to 40°C	250	0° to 100°F & -20° to 40°C	10°	1°	10°	0.5°
060	0° to 160°F	460	-20° to 70°C	260	0° to 160°F & -20° to 70°C	20°	2°	10°	1°
100	30° to 180°F	495	0° to 80°C	300	30° to 180°F & 0° to 85°C	20°	2°	10°	1°
110	30° to 240°F	510	0° to 115°C	310	30° to 240°F & 0° to 115°C	20°	2°	10°	1°
130	50° to 300°F	530	10° to 150°C	330	50° to 300°F & 10° to 150°C	50°	5°	20°	2°

Liquid actuated dial thermometers have a linear scale. Figure intervals are equal throughout the range.

Vapor and Liquid Actuated Dial Faces

The physical principles of vapor actuation require that the dialface for vapor dial thermometers be printed with a non-linear progressively graduated temperature scale. Liquid actuated dial thermometers are furnished with linear dialfaces. Please see the Thermal System Selection section of our online catalog for sample vapor and liquid actuated dialfaces.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Windows (PLW/GLW/SGW)

Trerice offers a complete set of window options, including: plastic (acrylic PLW), glass (GLW), and laminated safety glass (SGW). Please consult the Option Availability Table for window availability. Replacement windows are sold separately, please consult the price sheet for item numbers.

Set Hand (RSH)

Attached at the center of the dialface, a red set hand can be adjusted to indicate a desired pre-determined reference point. The set point is adjusted by removing the ring and window of the thermometer. Please consult the Option Availability Table for set hand availability. A second red set hand may be available on some models – please consult factory.

Maximum Registering Pointer (MAX)

A maximum registering pointer can be furnished on most Trerice Dial Thermometers. This pointer is designed to indicate the maximum or minimum temperature attained by the process being measured since the pointer was last reset. The pointer assembly is installed to an acrylic window, with an external knob for manually resetting the pointer. Please consult the Option Availability Table for maximum registering pointer availability.

Electric Contacts

Electric contact assemblies can be supplied on most 4½" & 6" dial thermometers. These units are well suited for making the electrical contact required to activate alarms, signals, or other electrical devices. Each unit is provided with an external adjustment key, making it easy to adjust and providing for tamper resistant operation. The contacts have adjustable magnets to eliminate bounce caused by vibration, and have pass/repass capability, allowing the pointer to move past the set point while maintaining contact.

Electric Contact Configurations

Optional Feature Code	Contact Style	Contact Action
EC1	Single High	**Single contact:** Makes on clockwise rotation
EC2	Single Low	**Single contact:** Breaks on clockwise rotation
EC3	High-Low	**Double contact:** High contact makes on clockwise rotation Low contact breaks on clockwise rotation
EC4	Double High	**Double contact:** 1st makes on clockwise rotation 2nd makes on clockwise rotation

Please consult the Option Availability Table for electric contact availability.

Recommended Load Limits

Volts	Resistive	Inductive
110 Vac	0.25 A	0.13 A
24 Vdc	0.40 A	0.25 A

Options & Accessories (cont'd)

Dial Thermometers

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Weatherproofed Cases (WPC)

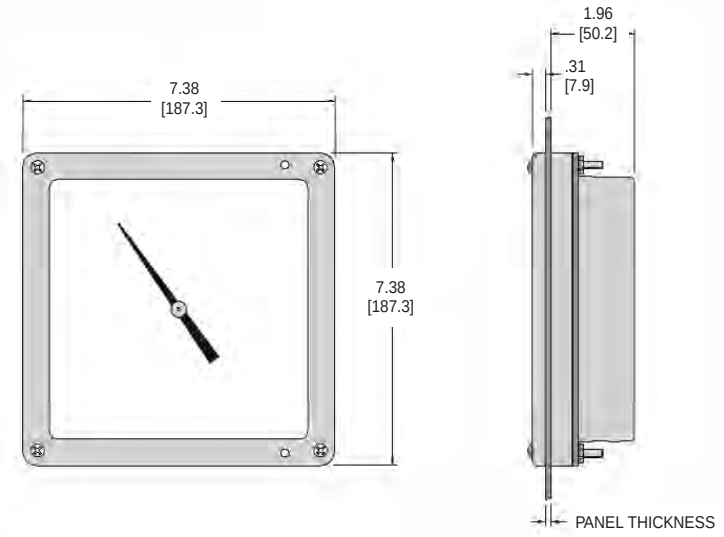
Trerice Dial Thermometers may be sealed (NEMA 3) for outdoor use, or for use in applications where sprays and washes may come in contact with the thermometer. Please consult the Option Availability Table for weatherproofed case availability.

Silicone Dampened Movements (SDM)

The application of highly viscous silicone to the gear, sector, and all bearing points of the movement will help reduce the effects of vibration to which the thermometer may be subjected. This feature will extend the life of the instrument by reducing wear on the movement, and is available on most Trerice Filled System Dial Thermometers. Please consult the Option Availability Table for silicone dampened movement availability.

7 3/8" Square Case

This 7 3/8" square front, back outlet case (Model 80373) is constructed from black finished cast aluminum. A black steel bezel ring is included for panel mounting the thermometer. Please consult the Option Availability Table for square case availability, and order as model V80373 or L80373.



Micro Switches (MSS/MSD)

Single (MSS) or double (MSD) Micro Switches, designed to operate low current alarms and warning lights, are available on 6" and 7 3/8" Trerice Vapor Dial Thermometers. The switches are factory-set to close and operate a circuit when the temperature reaches a predetermined point. Red set hands are provided to indicate the temperature at which the switches have been set to operate. Although Micro Switches are designed for applications where the alarm temperature remains at the factory set point, they may be field adjusted if required. When ordering, please provide the set point(s) required.

Recommended Load Limits

Volts	Resistive	Inductive
250 VAC	10 A	10 A
125 VDC	0.4 A	0.3 A

3/4 NPT Hub (SHB/SHS)

A 3/4 NPT union connection hub is available in brass (SHB) or 316 stainless steel (SHS). This hub may be installed by the factory or ordered as a separate unit. When ordering separately, please use the item numbers listed in table.

Material	Item Number
Brass	082-0015
316 Stainless Steel	082-0015.2

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Options & Accessories

Option Availability Table

The following table indicates optional features that are available for Trerice Dial Thermometers.

Optional Feature Code	PLW	SGW	GLW	RSH	MAX	EC–X	WPC	SDM	MS–X	SH–X
	Plastic Window (acrylic)	Laminated Safety Glass Window	Glass Window	Red Set Hand	Maximum Registering Pointer	Electric Contact	Weatherproofed Case	Silicone Dampened Movement	Micro Switch Single or Double	3/4 NPT Hub Brass or SS
Model										
80025	S	N/A	O	O	O	N/A	N/A	O	N/A	O
80030	S	N/A	O	O	O	N/A	N/A	O	N/A	O
80035	S	N/A	O	O	O	N/A	N/A	O	N/A	O
80036	S	N/A	O	O	O	N/A	O	O	N/A	O
80040	S	N/A	O	O	O	N/A	O	O	N/A	O
80041	S	N/A	O	O	O	N/A	O	O	N/A	O
80341	O	O	S	O	O	O	O	O	N/A	O
80342	O	O	S	O	O	O	O	O	N/A	O
80345	O	O	S	O	O	O	O	O	N/A	O
80361	O	O	S	O	O	O	O	O	O*	O
80362	O	O	S	O	O	O	O	O	O*	O
80365	O	O	S	O	O	O	O	O	O*	O
80381	O	O	S	O	O	N/A	O	O	N/A	O
80382	O	O	S	O	O	N/A	O	O	N/A	O
80445	O	N/A	S	O	N/A	N/A	N/A	O	N/A	O
80742	O	O	S	O	O	O	O	O	N/A	O
80762	O	O	S	O	O	O	O	O	O	O
80373	N/A	N/A	S	O	O	N/A	O	O	O	O

S - Standard Product Feature *O - Optional Feature at Additional Charge* *N/A - Not Available*

** 6" Vapor Dial Thermometers only.*

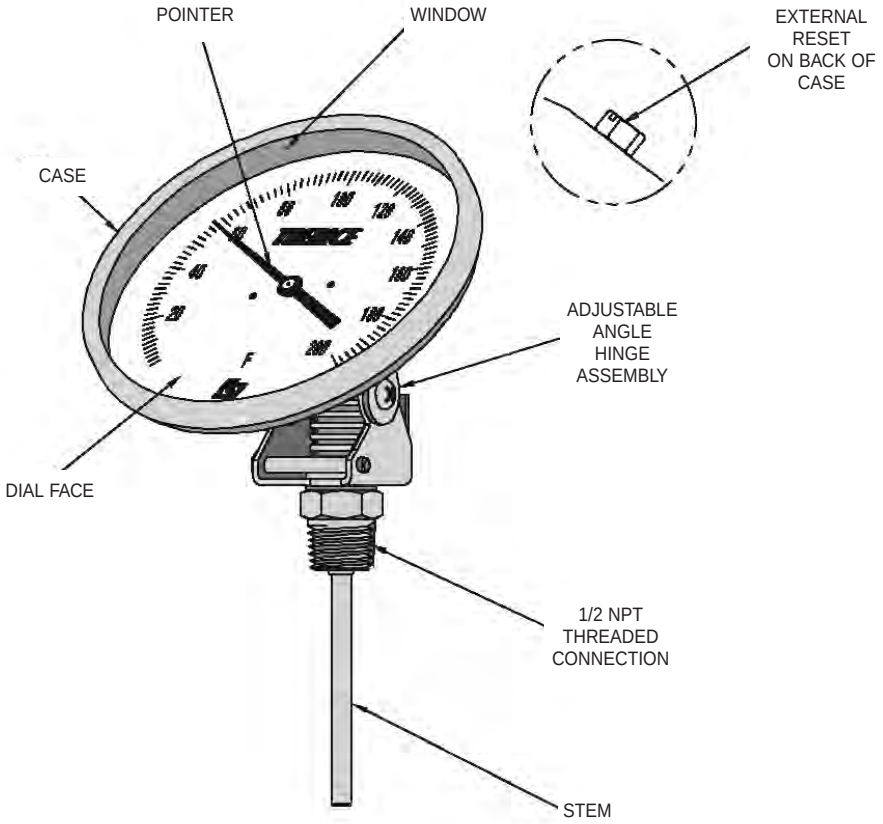
How to Order

Specify the Optional Feature Code (from the table above) at the end of the Instrument Ordering Code.

Sample Order Number: V 80341 110 B01 05 EC1

Bimetal Thermometers

DESIGN & OPERATION



Description

A thermometer is an instrument designed to measure and indicate the temperature of a specific application or condition. A bimetallic dial thermometer, commonly known as a bimetal thermometer, is installed at the point of measurement and is usually read from that location.

Principles of Operation

The Trerice Bimetal Thermometer employs a bimetallic sensing element which reacts consistently to temperature change, producing an accurately calibrated temperature measurement. The sensing element consists of two dissimilar metals welded together (in the form of a coil), and encased in a stainless steel stem. The coil is silicone dampened (ranges up to 300°F) to protect against vibration, and connected to a dial pointer on the instrument face. When the stem is exposed to temperature change, the coil expands or contracts, and the corresponding reaction is transmitted to the pointer, thereby indicating the temperature of the process.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Selecting a Bimetal Thermometer

All Trerice Bimetal Thermometers should be carefully selected to meet the demands of the particular application. The information contained in this catalog is offered only as a guide to assist in making the proper selection. Improper application may cause failure of the instrument, resulting in possible personal injury or property damage. For correct use and application of all bimetal thermometers, please refer to Bimetallic Actuated Thermometer Standard ASME B40.3. This document may be obtained from the American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990.

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process.

Case

The Trerice Bimetal Thermometer is available in an adjustable angle, rear or lower connected case. The hermetically sealed case is made from highly polished, type 300 stainless steel in sizes from 1" through 5".

Window and Ring

Double strength glass and plastic are standard window materials. The window is held in place by a ring, which is crimped around the case of the instrument.

Accuracy

The accuracy of a bimetal thermometer is expressed as a percentage (plus or minus) of the maximum scale range. Trerice Bimetal Thermometers are accurate to ±1.0% Full Scale, ASME B40.3 Grade A (except pocket type: ±5.0% Full Scale, ASME B40.3 Grade 3).

Measurement Range and Dial

A wide variety of measurement ranges are available in Dual Scales (Fahrenheit and Celsius) from -100° through 1000°F. Single scale Fahrenheit or Celsius is available on special order. Ranges are indelibly presented in black (°F) and blue (°C) graduations with black markings upon a white painted dialface. Fahrenheit is the primary (outside) scale on dual scale ranges.

Ranges up to 250°F (120°C) are provided with overrange protection of 100% of range span. Ranges over 250°F (120°C) are provided with overrange protection of 50% of range span.

External Reset

Most Trerice Bimetal Thermometers are equipped with an external reset. This feature allows the instrument to be calibrated at any specific point within the measuring range.

Stem and Connection

Trerice Bimetal Thermometers are furnished with a 0.250" or 0.125" O.D. stainless steel stem in lengths from 2½" though 72". Connection styles are either threaded (¼ or ½ NPT) or plain (non-threaded).

Environmental Conditions

The Trerice Bimetal Thermometer is hermetically sealed. The case should not be exposed to sustained temperatures in excess of 200°F (93°C). For applications where vibration may be present, the thermometer case can be silicone filled to protect the internals of the instrument.

The thermometer should not be operated continuously above 800°F (425°C), as damage to the instrument may result.

Thermowells

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the thermometer and facilitate its removal from the process. Thermowells are available in various lengths, connections, sizes, and materials. Please consult the Thermowell Section of this catalog.

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the stem before installation into a thermowell. 1 oz. tube: Item No. 107-0001

Adjustable Angle

BIMETAL THERMOMETERS

B836B shown

- 3", 5" Dial Size
- ± 1.0% Full Scale Accuracy
- Stainless Steel Case & Stem
- External Reset

The Trerice **Adjustable Angle Bimetal Thermometer** can be configured to the most desirable viewing angle. This instrument has a hermetically sealed, stainless steel case designed to withstand the rigors of industrial environments, while producing an accurate, responsive measurement.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For corrosive or pressure applications, use of a thermowell is recommended to prevent damage to the thermometer and facilitate its removal from the process (refer to pages 155-161).

For correct use and application of all Bimetallic thermometers, please refer to the Bimetallic Actuated Thermometer Standard ASME B40.3.

Specifications

Models	Dial Sizes
B836	3"
B856	5"

Case	300 stainless steel, hermetically sealed
Stem	300 stainless steel 1/4" diameter
Coil	Bimetallic, silicone dampened on ranges to 300°F (148°C), above 300°F not dampened
Connection	Adjustable angle, 1/2 NPT
Window	Double strength glass
Pointer	Balanced, black finish
Dial Face	Aluminum, white background with black and blue graduations and markings
External Reset	Yes
Accuracy	±1.0 % Full Scale ASME B40.3 Grade A

Approximate Shipping Weight

B836: 1.1 lbs [0.5 kg]
B856: 1.5 lbs [0.68 kg]

HOW TO ORDER

Sample Order Number: **B856 06 05**

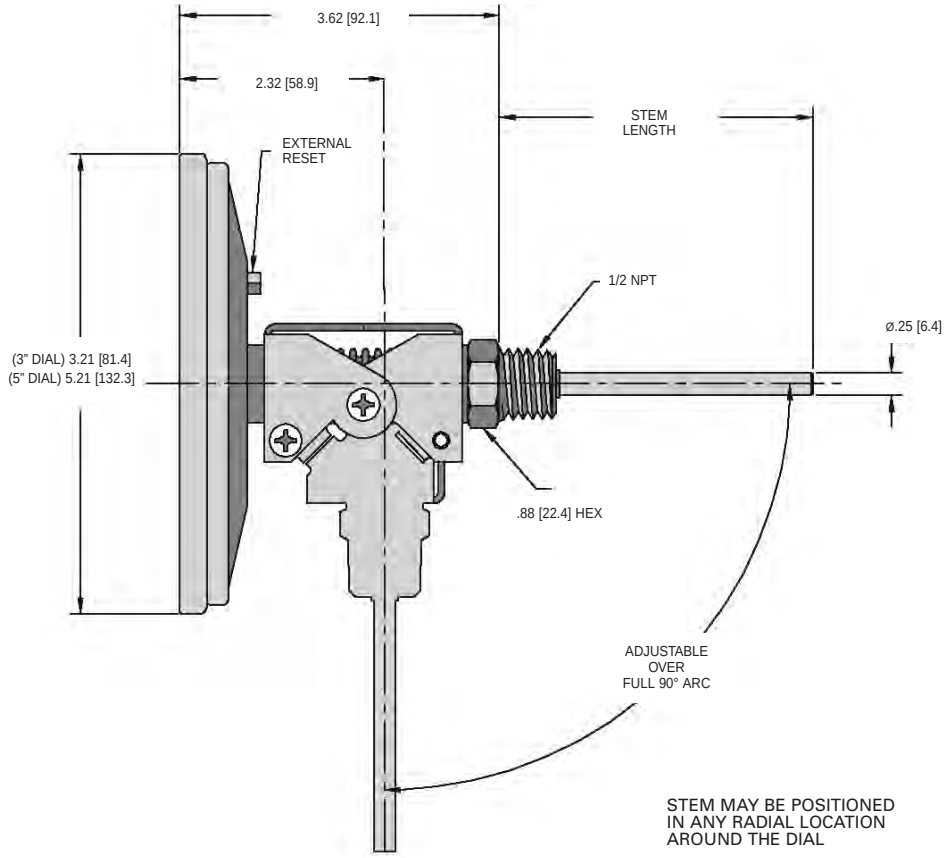
Model	Stem (Length)	Range Code
B836 **B856**	**02** 2 1/2" Stem **04** 4" Stem **06** 6" Stem **09** 9" Stem **12** 12" Stem **15** 15" Stem **18** 18" Stem **24** 24" Stem	See Standard Ranges

Other lengths available: Specify in inches (72" maximum)

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Adjustable Angle

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

Dual Scale (Fahrenheit & Celsius Range)		Fahrenheit only Range		Celsius only Range		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01*†	-100° to 100°F & –75° to 40°C	01F*†	-100° to 100°F	01C*†	-75° to 40°C	20°	2°	10°	1°
02	-40° to 160°F & –40° to 70°C	02F	-40° to 160°F	02C	-40° to 70°C	20°	2°	10°	1°
12*†	0° to 100°F & -20° to 40°C	12F*†	0° to 100°F	12C*†	-20° to 40°C	10°	1°	10°	1°
03*†	25° to 125°F & –5° to 50°C	03F*†	25° to 125°F	03C*†	-5° to 50°C	10°	1°	5°	1/2°
04	0° to 200°F & –20° to 95°C	04F	0° to 200°F	04C	-20° to 95°C	20°	2°	10°	1°
05	20° to 240°F & –10° to 115°C	05F	20° to 240°F	05C	-10° to 115°C	20°	2°	10°	1°
27	0° to 250°F & –20° to 120°C	27F	0° to 250°F	27C	-20° to 120°C	50°	2°	20°	2°
06	50° to 300°F & 10° to 150°C	06F	50° to 300°F	06C	10° to 150°C	50°	2°	20°	2°
07	50° to 400°F & 10° to 200°C	07F	50° to 400°F	07C	10° to 200°C	50°	5°	50°	2°
08	50° to 500°F & 10° to 260°C	08F	50° to 500°F	08C	10° to 260°C	50°	5°	50°	2°
09*	150° to 750°F & 50° to 400°C	09F*	150° to 750°F	09C*	50° to 400°C	100°	10°	50°	5°
10*	200° to 1000°F & 100° to 550°C	10F*	200° to 1000°F	10C*	100° to 550°C	100°	10°	100°	5°

* Minimum stem length for these ranges is 4".
† Minimum insertion length for these ranges is 3".

Bottom Connect

BIMETAL THERMOMETERS

B8540-4 shown

- 3", 5" Dial Size
- ± 1.0% Full Scale Accuracy
- Stainless Steel Case & Steel
- External Reset

The Trerice **Bottom Connection Bimetal Thermometer** has been designed to meet the needs of standard industrial applications and installations. This instrument features a stainless steel, hermetically sealed case, providing weather tight protection.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For corrosive or pressure applications, use of a thermowell is recommended to prevent damage to the thermometer and facilitate its removal from the process (refer to pages 155-161).

For correct use and application of all Bimetallic thermometers, please refer to the Bimetallic Actuated Thermometer Standard ASME B40.3.

Specifications

Models	Dial Sizes
B834	3"
B854	5"

Case	300 stainless steel, hermetically sealed
Stem	300 stainless steel, 1/4" diameter
Coil	Bimetallic, silicone dampened on ranges to 300°F (148°C), above 300°F not dampened
Connection	Bottom, 1/2 NPT
Window	Double strength glass
Pointer	Balanced, black finished
Dial Face	Aluminum, white background with black and blue graduations and markings
External Reset	Yes
Accuracy	±1.0 % Full Scale ASME B40.3 Grade A

Approximate Shipping Weight

B834: 0.8 lbs [0.36 kg]
B854: 1.6 lbs [0.72 kg]

HOW TO ORDER

Sample Order Number: **B834 04 04**

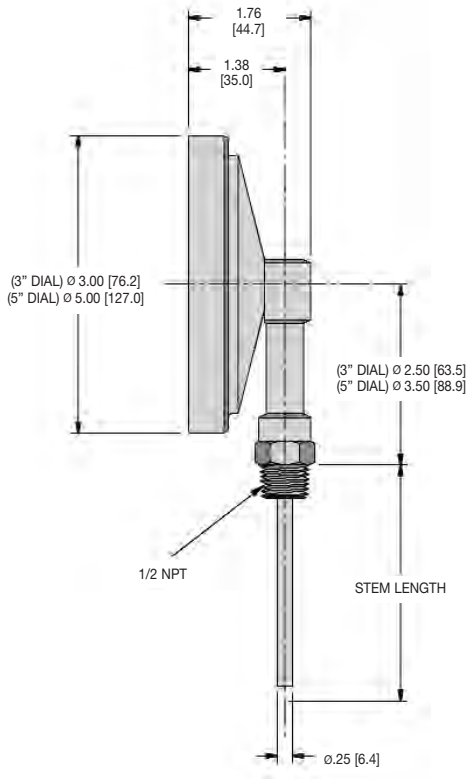
Model	Stem Length	Range Code
B834 **B854**	**02** 2 1/2" Stem **04** 4" Stem **06** 6" Stem **09** 9" Stem **12** 12" Stem **15** 15" Stem **18** 18" Stem **24** 24" Stem	See Standard Ranges

Other lengths available: Specify in inches (72" maximum)

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Bottom Connect

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

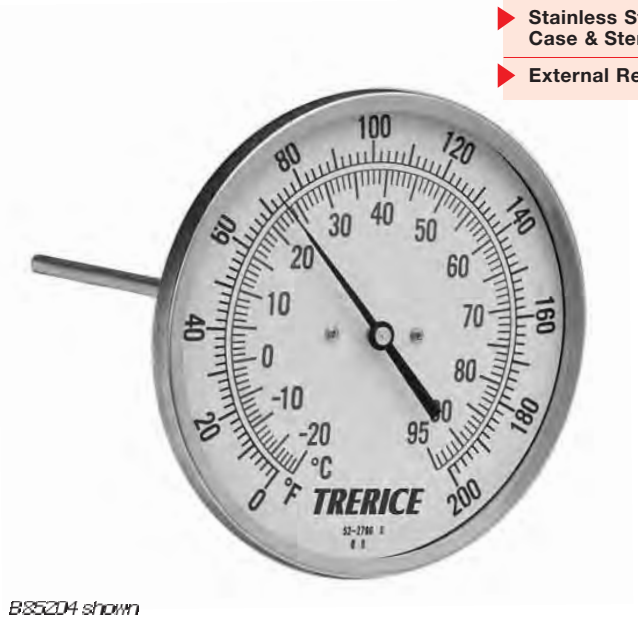
Dual Scale (Fahrenheit & Celsius Range)		Fahrenheit only Range		Celsius only Range		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01*†	-100° to 100°F & -75° to 40°C	01F*†	-100° to 100°F	01C*†	-75° to 40°C	20°	2°	10°	1°
02	-40° to 160°F & -40° to 70°C	02F	-40° to 160°F	02C	-40° to 70°C	20°	2°	10°	1°
03*†	25° to 125°F & -5° to 50°C	03F*†	25° to 125°F	03C*†	-5° to 50°C	10°	1°	5°	1/2°
04	0° to 200°F & -20° to 95°C	04F	0° to 200°F	04C	-20° to 95°C	20°	2°	10°	1°
05	20° to 240°F & -10° to 115°C	05F	20° to 240°F	05C	-10° to 115°C	20°	2°	10°	1°
27	0° to 250°F & -20° to 120°C	27F	0° to 250°F	27C	–20° to 120°C	50°	2°	20°	2°
06	50° to 300°F & 10° to 150°C	06F	50° to 300°F	06C	10° to 150°C	50°	2°	20°	2°
07	50° to 400°F & 10° to 200°C	07F	50° to 400°F	07C	10° to 200°C	50°	5°	50°	2°
08	50° to 500°F & 10° to 260°C	08F	50° to 500°F	08C	10° to 260°C	50°	5°	50°	2°
09*	150° to 750°F & 50° to 400°C	09F*	150° to 750°F	09C*	50° to 400°C	100°	10°	50°	5°
10*	200° to 1000°F & 100° to 550°C	10F*	200° to 1000°F	10C*	100° to 550°C	100°	10°	100°	5°

* Minimum stem length for these ranges is 4".
† Minimum insertion length for these ranges is 3".

Rear Connect

BIMETAL THERMOMETERS

- 3", 5" Dial Sizes
- ± 1.0% Full Scale Accuracy
- Stainless Steel Case & Stem
- External Reset



B852D4 shown

The Trerice **Rear Connect Bimetal Thermometer** has been designed to meet the needs of standard industrial applications and installations. This instrument features a stainless steel, hermetically sealed case, providing weather tight protection.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For corrosive or pressure applications, use of a thermowell is recommended to prevent damage to the thermometer and facilitate its removal from the process (refer to pages 155-161).

For correct use and application of all Bimetallic thermometers, please refer to the Bimetallic Actuated Thermometer Standard ASME B40.3.

Specifications

Models	Dial Sizes
B832	3"
B852	5"

Case	300 stainless steel, hermetically sealed
Stem	300 stainless steel, 1/4" diameter
Coil	Bimetallic, silicone dampened ranges to 300°F (148°F), above 300°F not dampened
Connection	Rear, 1/2 NPT
Window	Double strength glass
Pointer	Balanced, black finished
Dial Face	Aluminum, white background with black and blue graduations and markings
External Reset	Yes
Accuracy	±1.0 % Full Scale ASME B40.3 Grade A

Approximate Shipping Weight

B832: 0.7 lbs [0.31 kg]
B852: 1.2 lbs [0.54 kg]

HOW TO ORDER

Sample Order Number: **B832 02 06**

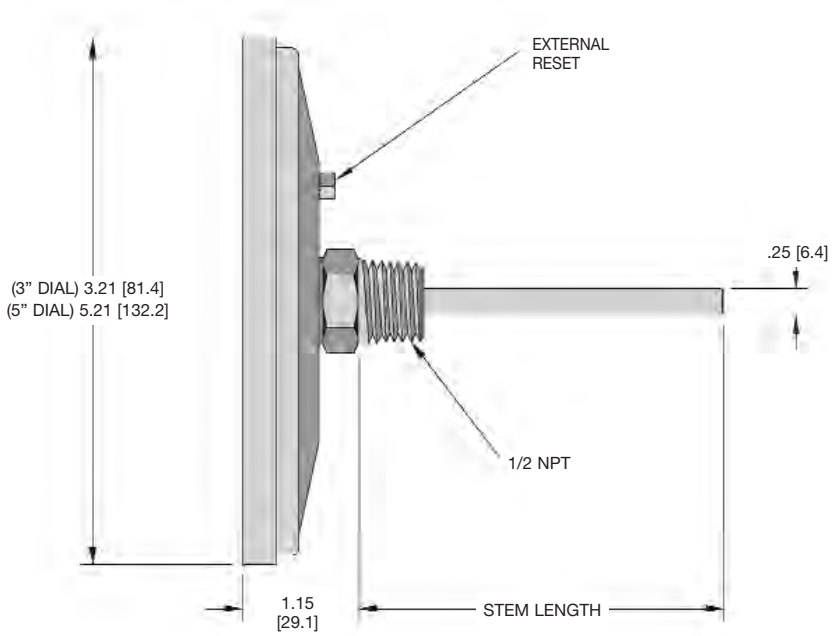
Model	Stem Length	Range Code
B832 B852	**02** 2 1/2" Stem **04** 4" Stem **06** 6" Stem **09** 9" Stem **12** 12" Stem **15** 15" Stem **18** 18" Stem **24** 24" Stem	See Standard Ranges

Other lengths available: Specify in inches (72" maximum)

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Rear Connect

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

Dual Scale (Fahrenheit & Celsius Range)		Fahrenheit only Range		Celsius only Range		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–100° to 100°F & –75° to 40°C	01F	–100° to 100°F	01C	–75° to 40°C	20°	2°	10°	1°
02	–40° to 160°F & –40° to 70°C	02F	–40° to 160°F	02C	–40° to 70°C	20°	2°	10°	1°
12*†	0° to 100°F & –20° to 40°C	12F*†	0° to 100°F	12C*†	-20° to 40°C	10°	1°	10°	1°
03	25° to 125°F & –5° to 50°C	03F	25° to 125°F	03C	–5° to 50°C	10°	1°	5°	1/2°
04	0° to 200°F & –20° to 95°C	04F	0° to 200°F	04C	–20° to 95°C	20°	2°	10°	1°
05	20° to 240°F & –10° to 115°C	05F	20° to 240°F	05C	–10° to 115°C	20°	2°	10°	1°
27	0° to 250°F & –20° to 120°C	27F	0° to 250°F	27C	–20° to 120°C	50°	2°	20°	2°
06	50° to 300°F & 10° to 150°C	06F	50° to 300°F	06C	10° to 150°C	50°	2°	20°	2°
07	50° to 400°F & 10° to 200°C	07F	50° to 400°F	07C	10° to 200°C	50°	5°	50°	2°
08	50° to 500°F & 10° to 260°C	08F	50° to 500°F	08C	10° to 260°C	50°	5°	50°	2°
09*	150° to 750°F & 50° to 400°C	09F*	150° to 750°F	09C*	50° to 400°C	100°	10°	50°	5°
10*	200° to 1000°F & 100° to 550°C	10F*	200° to 1000°F	10C*	100° to 550°C	100°	10°	100°	5°

* Minimum stem length for these ranges is 4".
† Minimum stem length for these ranges is 3".

Rear Connect X-Series

BIMETAL THERMOMETERS

- 3" Dial Size
- ± 1.0% Full Scale Accuracy
- Stainless Steel Case & Stem
- Hermetically Sealed Design

Perfect for OEM Applications

B831X04 shown

The Trerice **X-Series OEM Bimetal Thermometer** is designed to meet the demands of the OEM and industrial marketplace, but at an economical price. It features a hermetically sealed case with a narrow, space saving profile. This instrument does not include an external reset, ensuring tamperproof operation throughout the life of the unit.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For corrosive or pressure applications, use of a thermowell is recommended to prevent damage to the thermometer and facilitate its removal from the process (refer to pages 155-161).

For correct use and application of all Bimetallic thermometers, please refer to the Bimetallic Actuated Thermometer Standard ASME B40.3.

Specifications

Model	Dial Size
B831X	3"
Case	300 stainless steel, hermetically sealed
Stem	300 stainless steel 1/4" diameter
Coil	Bimetallic, silicone dampened ranges to 300°F (148°F), above 300°F not dampened
Connection	Rear 1/2 NPT
Window	Polycarbonate
Pointer	Balanced, black finished
Dial Face	Aluminum, white background with black and blue graduations and markings
External Reset	No
Accuracy	±1.0 % Full Scale ASME B40.3 Grade A
Approximate Shipping Weight	
	B831X: 0.5 lbs [0.22 kg]

HOW TO ORDER

Sample Order Number: **B831X 04 05**

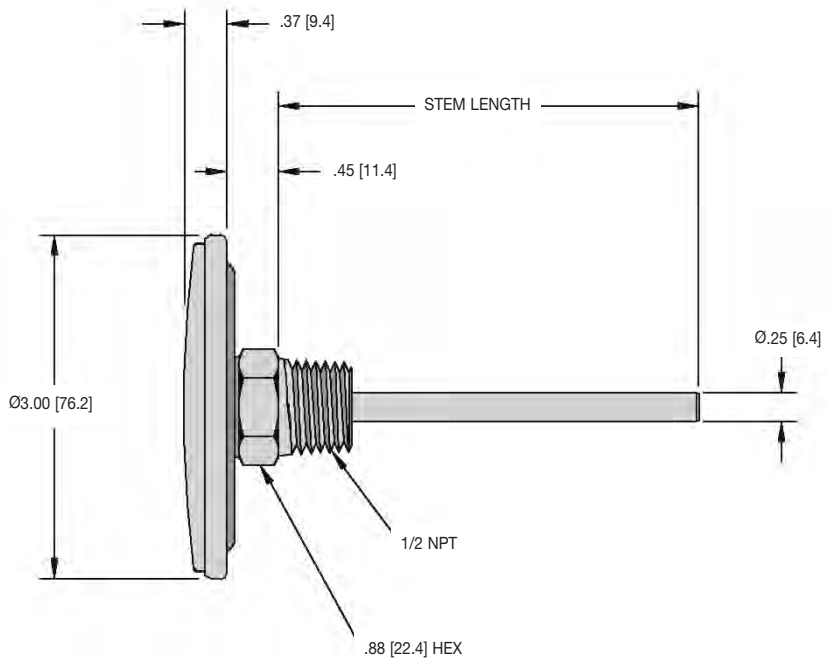
Model	Stem Length		Range Code
B831X	**02**	2½" Stem	See Standard Ranges
	04	4" Stem	
	06	6" Stem	
	09	9" Stem	
	12	12" Stem	
	15	15" Stem	
	18	18" Stem	
	24	24" Stem	

Other lengths available: Specify in inches (72" maximum)

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Rear Connect X-Series

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Standard Ranges

Dual Scale (Fahrenheit & Celsius Range)		Fahrenheit Only Range		Celsius Only Range		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–100° to 100°F & –75° to 40°C	01F	–100° to 100°F	01C	–75° to 40°C	20°	2°	10°	1°
02	–40° to 160°F & –40° to 70°C	02F	–40° to 160°F	02C	–40° to 70°C	20°	2°	10°	1°
12*†	0° to 100°F & –20° to 40°C	12F*†	0° to 100°F	12C*†	–20° to 40°C	10°	1°	10°	1°
03	25° to 125°F & –5° to 50°C	03F	25° to 125°F	03C	–5° to 50°C	10°	1°	5°	1/2°
04	0° to 200°F & –20° to 95°C	04F	0° to 200°F	04C	–20° to 95°C	20°	2°	10°	1°
05	20° to 240°F & –10° to 115°C	05F	20° to 240°F	05C	–10° to 115°C	20°	2°	10°	1°
27	0° to 250°F & –20° to 120°C	27F	0° to 250°F	27C	–20° to 120°C	50°	2°	20°	2°
06	50° to 300°F & 10° to 150°C	06F	50° to 300°F	06C	10° to 150°C	50°	2°	20°	2°
07	50° to 400°F & 10° to 200°C	07F	50° to 400°F	07C	10° to 200°C	50°	5°	50°	2°
08	50° to 500°F & 10° to 260°C	08F	50° to 500°F	08C	10° to 260°C	50°	5°	50°	2°

* Minimum stem length for these ranges is 4".
† Minimum insertion length for these ranges is 3".

Rear Connect Compact Style

BIMETAL THERMOMETERS

- 2" Dial Size
- ± 1.0% Full Scale Accuracy
- Stainless Steel Case & Stem
- Hermetically Sealed Design

Designed for minimum space applications, this compact, low-cost thermometer maintains the accuracy, responsiveness, and durability for which the Trerice Line of Bimetal Thermometers is known. The stainless steel case is hermetically sealed.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For corrosive or pressure applications, use of a thermowell is recommended to prevent damage to the thermometer and facilitate its removal from the process (refer to pages 155-161).

For correct use and application of all Bimetallic thermometers, please refer to the Bimetallic Actuated Thermometer Standard ASME B40.3.

Specifications

Models	Dial Size
B822Y	2" (Threaded)
B822YP	2" (Plain)

Case	300 stainless steel, hermetically sealed
Stem	**B822Y:** 300 stainless steel 1/4" diameter **B822YP:** 300 stainless steel 9/64" diameter
Coil	Bimetallic, silicone dampened on ranges to 300°F (148°C), above 300°F not dampened
Connection	**B822Y:** Rear, 1/4 NPT **B822YP:** Rear, unthreaded
Window	Glass
Pointer	Balanced, black finished
Dial Face	Aluminum, silver background with black graduations and markings
External Reset	Yes
Accuracy	±1.0 % Full Scale ASME B40.3 Grade A
Approximate Shipping Weight	0.4 lbs [0.18 kg]

HOW TO ORDER

Sample Order Number: **B822Y 04 05**

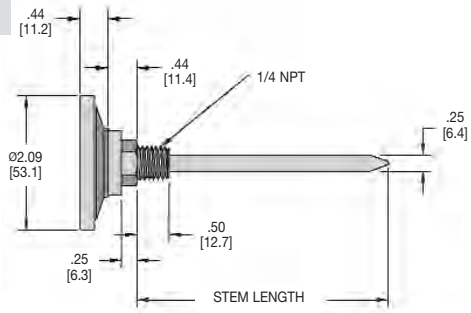
Model	Stem Length	Range Code
B822Y **B822YP**	**02** 2 1/2" **04** 4" Stem **06** 6" Stem	Stem See Standard Ranges

Other stem lengths and ranges available. Please consult factory.

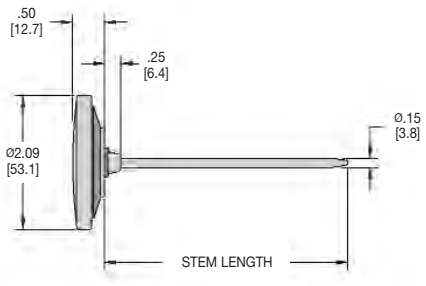
Standard Ranges

Dual Scale (Fahrenheit & Celsius Range)		Fahrenheit		Celsius	
Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
02	–40° to 160°F & –40° to 70°C	20°	2°	10°	1°
03	25° to 125°F & –5° to 50°C	10°	1°	5°	1/2°
27	0° to 250°F & –20° to 120°C	50°	2°	20°	2°
05	20° to 240°F & –10° to 115°C	20°	2°	10°	1°
08	50° to 500°F & 10° to 260°C	50°	5°	20°	2°

B822Y



B822YP



All dimensions are nominal. Dimensions in [ ] are in millimeters.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Pocket Bimetal

Specifications

Model	Dial Size
B811	1"
Case	300 stainless steel, hermetically sealed
Stem	300 stainless steel, 9/64" diameter
Coil	Bimetallic
Connection	Rear, unthreaded
Window	Acrylic
Pointer	Black finished
Dial Face	White background with black graduations and markings
External Reset	Yes
Accuracy	±5.0 % Full Scale ASME B40.3 Grade C
Approximate Shipping Weight	0.1 lbs [0.05 kg]

B811105 shown

- **1" Dial Size**
- **± 5.0% Full Scale Accuracy**
- **Stainless Steel Case & Stem**
- **Plastic Stem Protector with Pocket Clip**

The Trerice **Pocket Bimetal Thermometer** is designed to deliver temperature indications for general and informal testing purposes. This thermometer has a hermetically sealed stainless steel case with a plain connection and comes complete with a plastic stem protector with pocket clip.

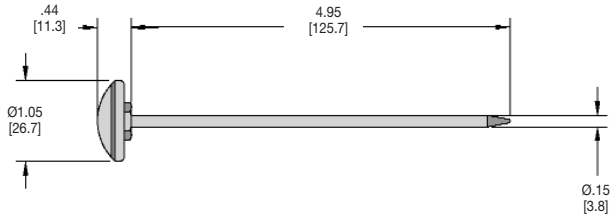
For correct use and application of all bimetallic thermometers, please refer to Bimetallic Actuated Thermometer Standard ASME B40.3.

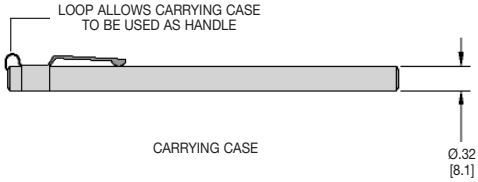
HOW TO ORDER

Sample Order Number: **B811 05 13**

Model	Stem Length	Range Code
B811	**05** 5" Stem	**11** -20° to 120°F (20° Figure intervals / 2° Minor Divisions) **13** 0° to 220°F (20° Figure intervals / 2° Minor Divisions) **15** 50° to 500°F (50° Figure intervals / 5° Minor Divisions) **18** 0° to 120°C (10° Figure intervals / 1° Minor Divisions) **20** 0° to 250°C (50° Figure intervals / 2° Minor Divisions)

All dimensions are nominal. Dimensions in [ ] are in millimeters





Bimetal Plus

Integrated Thermocouple or RTD

BIMETAL THERMOMETERS

MODEL B856D6

- 3", 5" Dial Sizes
- ± 1.0% Full Scale Accuracy
- Local Indication/ Remote Data Acquisition
- Thermocouple or RTD Sensors available

The Trerice **Bimetal Plus** has all the standard features of the Trerice Bimetal Thermometer, but with a "Plus." The "Plus" being an internally mounted thermocouple or RTD. This allows for remote temperature monitoring while still providing local indication. This dual sensor design eliminates the need for additional instrumentation or connections when designing a system to include both mechanical and electronic temperature sensing.

- Optional features available: Please consult the Options & Accessories Section for details.

Thermowell

- For corrosive or pressure applications, use of a thermowell is recommended to prevent damage to the thermometer and facilitate its removal from the process (refer to pages 155-161).

For correct use and application of all Bimetallic thermometers, please refer to the Bimetallic Actuated Thermometer Standard ASME B40.3.

HOW TO ORDER

Sample Order Number: **B856 06 05 TCJ**

Model	Stem Length*	Range Code	Sensor Type
B836	**04** 4" Stem	See Standard Ranges	**TCE** Type E Thermocouple
B856	**06** 6" Stem		**TCJ** Type J Thermocouple
B832	**09** 9" Stem		**TCK** Type K Thermocouple
B852	**12** 12" Stem		**TCT** Type T Thermocouple
	15 15" Stem		**RTC** 100Ω RTD
	18 18" Stem		
	24 24" Stem		

Other lengths available: Specify in inches (48" maximum).
* Minimum insertion length is $3^1/_2$".

Specifications

Models	Dial Sizes/Stem Styles
B836	**3"** Adjustable Angle
B856	**5"** Adjustable Angle
B832	**3"** Rear Connection
B852	**5"** Rear Connection

Case	300 stainless steel, hermetically sealed
Stem	300 stainless steel, $^1/_4$" diameter
Coil	Bimetallic, silicone dampened on ranges to 300°F (148°C), above 300°F not dampened
Process Connection	Adjustable or rear, $^1/_2$ NPT
Electrical Connection	T/C: Miniature plug RTD: Plug with molded cordset
Window	Double strength glass
Pointer	Balanced, black finished
Dial Face	Aluminum, white background with black and blue graduations and markings
External Reset	Yes
Accuracy	±1.0 % Full Scale ASME B40.3 Grade A

Approximate Shipping Weight

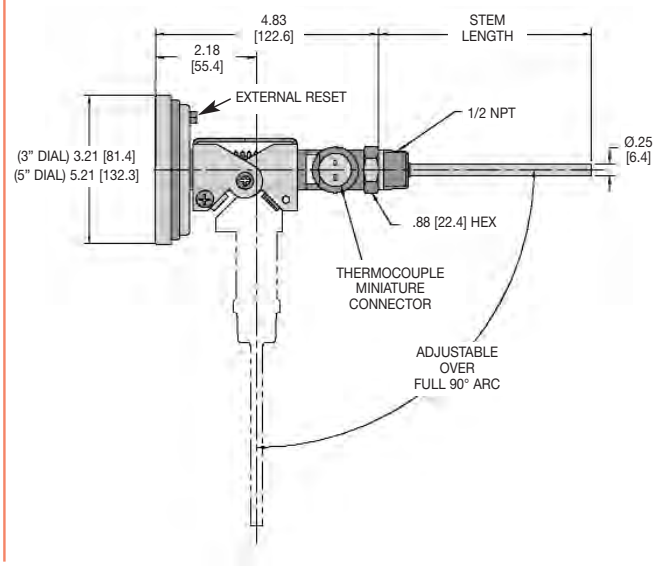
B832: 0.9 lbs [0.41 kg]
B852: 1.4 lbs [0.64 kg]
B836: 1.3 lbs [0.29 kg]
B856: 1.7 lbs [0.77 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

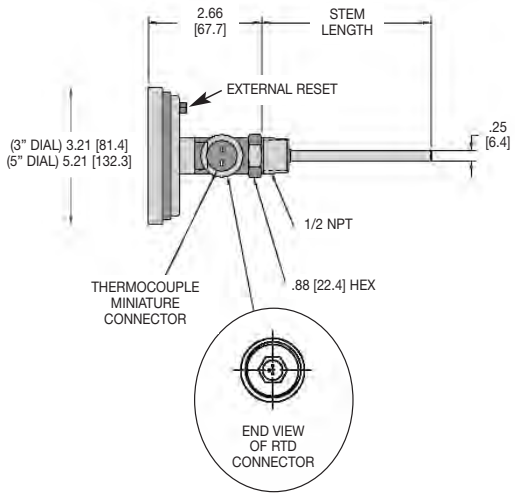
Bimetal Plus

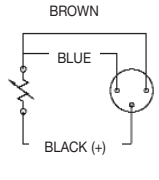
All dimensions are nominal. Dimensions in [ ] are in millimeters

Adjustable Angle

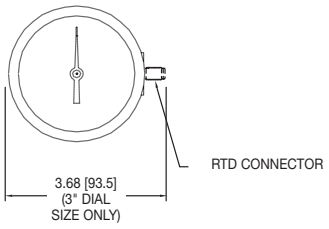


Rear Connection





INTERNAL RTD WIRING



Standard Ranges*

Dual Scale (Fahrenheit & Celsius Range)		Fahrenheit Only Range		Celsius Scale Only Range		Fahrenheit		Celsius	
Range Code	Range	Range Code	Range	Range Code	Range	Figure Intervals	Minor Divisions	Figure Intervals	Minor Divisions
01	–100 to 100°F & –75° to 40°C	01F	–100° to 100°F	01C	75° to 40°C	20°	2°	10°	1°
02	–40° to 160°F & –40° to 70°C	02F	–40° to 160°F	02C	–40° to 70°C	20°	2°	10°	1°
12	0° to 100°F & –20° to 40°C	12F	0° to 100°F	12C	-20° to 40°C	10°	1°	10°	1°
03	25° to 125°F & –5° to 50°C	03F	25° to 125°F	03C	–5° to 50°C	10°	1°	5°	1/2°
04	0° to 200°F & –20° to 95°C	04F	0° to 200°F	04C	–20° to 95°C	20°	2°	10°	1°
05	20° to 240°F & –10° to 115°C	05F	20° to 240°F	05C	–10° to 115°C	20°	2°	10°	1°
27	0° to 250°F & –20° to 120°C	27F	0° to 250°F	27C	–20° to 120°C	50°	2°	20°	2°
06	50° to 300°F & 10° to 150°C	06F	50° to 300°F	06C	10° to 150°C	50°	2°	20°	2°
08	50° to 500°F & 10° to 260°C	08F	50° to 500°F	08C	10° to 260°C	50°	2°	50°	2°

* Minimum insertion length for all ranges is $3^1/_2$".

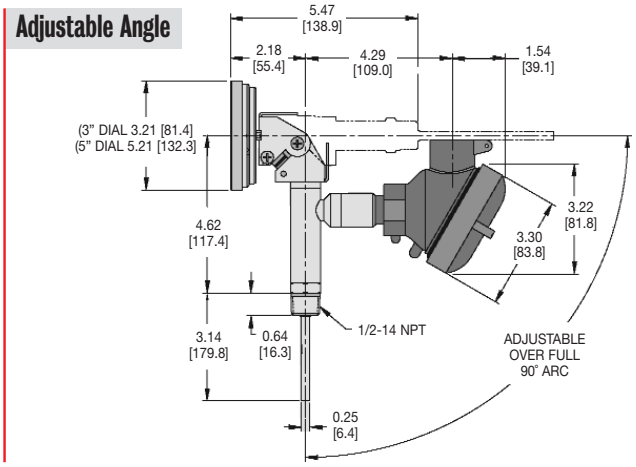
Bimetal Plus

Options & Accessories

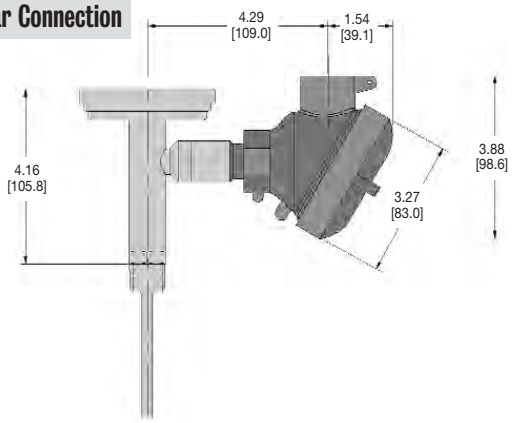
Connection Head with Terminal Block or Transmitter

The connection head is designed to provide a weatherproof, yet accessible conduit connection, and is used to house a terminal connection block or Trerice TRT30 Temperature Transmitter. The head is available with a screw cover (cast aluminum or stainless steel) or a flip cover (polypropylene), and includes a ¾ NPT conduit connection.

Adjustable Angle

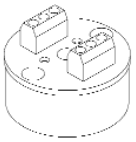


Rear Connection

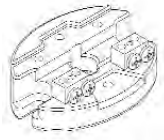


The terminal block provides an electrical hook-up point within the connection head, allowing for quick and easy attachment of extension wiring. The Terminal Block is available with either a 2-wire (thermocouple) or 3-wire (RTD) connection. The Trerice TRT30 Series Temperature Transmitter will convert a thermocouple or output signal to a 2-wire 4-20 mA signal, thus eliminating electrical interference and allowing the signal to be transmitted over long distances. These units are specifically designed for installation into the connection head.

Transmitter



Terminal Block



Specifications

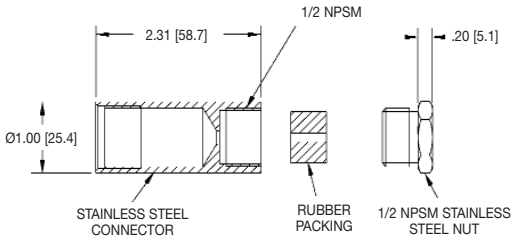
Model	Input	Accuracy	Adjustment Range	Maximum Output Load	Output Signal
TRT30	Type J, K or T Thermocouple or 100Ω Platinum RTD	±0.1% of input span	±35% for both zero and span	Thermocouple: R max=(V supply-12V)/20 mA RTD: R max=(V supply-10V)/20 mA	4-20 mA

Ordering Codes

	Terminal Block		Transmitter	
Connection Head	**Thermocouple**	**RTD**	**Thermocouple**	**RTD**
Aluminum screw cover	**ABT**	**ABR**	**ATT**	**ATR**
Polypropylene flip cover	**PBT**	**PBR**	**PTT**	**PTR**
Stainless steel screw cover	**SBT**	**SBR**	**STT**	**STR**

Weatherproofed Conduit Connection (WCC)

The conduit connection allows the Trerice Bimetal Plus Thermometer to be mounted directly to conduit piping, or used in applications where sprays and washes may come in contact with the electrical connection. This option consists of a stainless steel conduit connection tube, a packing grommet and a stainless steel connection fitting. Note: The Bimetal Plus with RTD Sensor does not require this option for weatherproof protection, as the RTD connection and cable are sealed for outdoor use. Please order using Option Code **WCC** (weatherproofed conduit connection).



How to Order

Specify the Optional Feature Code at the end of the Instrument Ordering Code. Sample Order Number: **B856 06 05 TJC WCC**

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Windows (PLW/SGW)

Plastic (Acrylic) Windows are optionally available with ranges up to 500°F (260°C) on 3" and 5" dial size bimetal thermometers. Laminated Safety Glass Windows are available on 3" and 5" dial size bimetal thermometers (except B831X Series). Please order using Option Code **PLW** (plastic window) or **SGW** (safety glass window).

Maximum Registering Pointer (MAX)

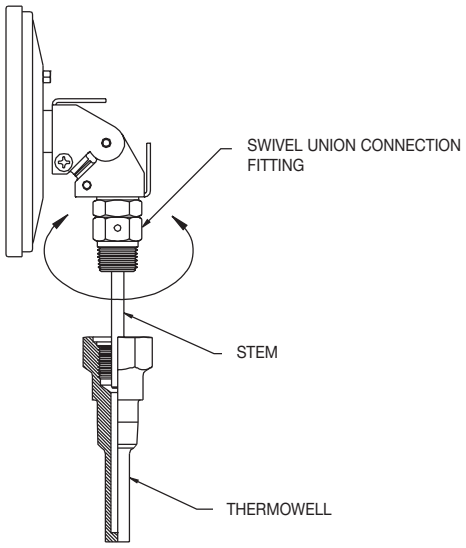
Maximum Registering Pointers can be furnished on the B832 Series Bimetal Thermometers (except Range Codes 03, 03C, 03F). This pointer is designed to indicate the maximum or minimum temperature attained by the process being measured since the pointer was last reset. The pointer assembly is installed to a plexiglass window, with an external knob for manually resetting the pointer. Please order using Option Code **MAX** (maximum registering pointer).

Silicone Liquid Fill (SLF)

Trerice Bimetal Thermometers (except B831X and B81105 Series) with temperature ranges up to 500°F (260°C) can be silicone liquid filled to reduce pointer oscillation resulting from application vibration. This feature also acts as a permanent lubricant to the moving parts of the instrument. Please order using Option Code **SLF** (silicone liquid fill).

Swivel Union Connection (SWV)

Trerice Series B832, B836, B852 and B856 Bimetal Thermometers are available with an optional swivel union connection. This feature allows the thermometer to be rotated to the desired reading position before being tightened into the process connection. Thermometers with the swivel connection must be installed with a thermowell. Please order using Option Code **SWV** (swivel union connection).



Options & Accessories

Bimetal Thermometers

Silicone Free Construction (SFC)

For applications where silicone is not permitted within the process (i.e., paint systems), Trerice Bimetal Thermometers (except B831X and B81105) can be manufactured to be silicone free. Bimetal Thermometers (except B831X and B81105) with ranges above 300°F are supplied standard as "silicone free." Please order using Option Code **SFC** (silicone free construction).

Flanges and Hubs

Trerice offers a variety of instrument mounting accessories. Please consult the table below for mounting flange and adapter hub item numbers.

Mounting Flanges and Adapter Hubs

Description	Material	Instrument Connection	Mounting Connection	Item Number
Mounting Flange	Zinc plated steel	1/2 NPT	2 3/8" bolt circle, 3 3/8" O.D.	**065-0015**
Swivel Flange	Zinc plated steel with brass hub	1/2 NPT	2 5/16" slotted bolt circle 3" O.D.	**065-0032A**
Adapter Hub	Brass	1/2 NPT Female	3/4 NPT Male	**024-0039**
Adapter Hub	Stainless steel	1/2 NPT Female	3/4 NPT Male	**024-0063**

Identification Tags

Trerice Identification Tags are available in a variety of materials. Please consult the table below for tag item numbers.

Tag Material	Maximum No. of Characters	Item Number
Aluminum	80	**152-0015.2A**
Paper	90	**152-0016A**
Stainless steel	80	**152-0015A**
Stainless steel foil	25	**152-0018**

How to Order

Specify the Optional Feature Code at the end of the Instrument Ordering Code.

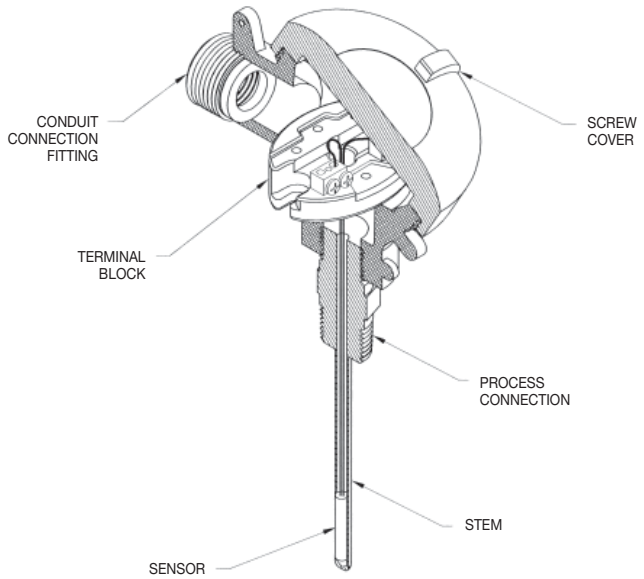
Sample Order Number: ***B856 06 05*** ***SLF***

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Notes

Electronic Temperature Sensors

DESIGN & OPERATION



Description

A temperature sensor is a device, typically a thermocouple or RTD, that provides for temperature measurement through an electrical signal. A thermocouple (T/C) is made from two dissimilar metals that generate electrical voltage in direct proportion to changes in temperature. An RTD (Resistance Temperature Detector) is a variable resistor that will change its electrical resistance in direct proportion to changes in temperature in a precise, repeatable and nearly linear manner.

Principles of Operation

Thermocouples

A thermocouple is made from two dissimilar metal wires. The wires are are joined together at one end to form a measuring (hot) junction. The other end, known as the reference (cold) junction, is connected across an electronic measurement device (controller or digital indicator). A thermocouple will generate a measurement signal not in response to actual temperature, but in response to a difference in temperature between the measuring and reference junctions. A small ambient temperature sensor is built into the electronic measuring device near the point where the reference junction is attached. The ambient temperature is then added to the thermocouple differential temperature by the measuring device in order to determine and display the actual measured temperature.

Only two wires are necessary to connect a thermocouple to an electrical circuit; however, these connecting wires must be made from the same metals as the thermocouple itself. Adding wire made from other materials (such as common copper wire) will create new measuring junctions that will result in incorrect readings.

RTDs

To greater or lesser degrees, all electrical conducting materials have some amount of resistance to the flow of electricity. When a known electric voltage is applied across a conductor, the resistance varies based on the temperature of the conductor. This resistance can be measured and will correspond to a specific temperature. While various elements are affected by temperature in different ways, platinum is commonly used in an RTD due to its purity, linearity and stability over a wide range of temperatures. An electronic readout device, such as a controller or digital indicator designed to measure resistance, is required for use with RTD sensors.

Only two standard copper wires are necessary to connect an RTD to an electrical circuit, however, these connecting wires are also subject to small changes in resistance based on surrounding temperature. For this reason an “extra” third hookup wire is built into most RTDs as a compensation wire to allow the controller or display unit to correct for these variations.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Selecting an Electronic Temperature Sensor

All Trerice Thermocouples and RTDs should be carefully selected to meet the demands of the particular application. The information contained in this catalog is only offered as a guide to assist in making the proper selection. Improper application may cause failure of the sensor, resulting in possible personal injury or property damage.

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the stem before installation into a thermowell. 1 oz. tube: Item No. 107-0001

Style

Trerice Temperature Sensors are available in a variety of styles. The weather proofed screw cover style provides an electrical conduit connection and can be used to house a transmitter (optional). For open system sensing, a non-threaded style is offered. This design is provided with integrated leadwire and can be Teflon covered to protect the stem and leadwire against corrosive environments. A standard plug with a mating jack may also be furnished.

Stem (Sheath)

All Trerice Thermocouples and RTDs are furnished with a 316 stainless steel stem, with the internal wiring packed in powdered ceramic. The screw head cover style is available in two stem types: welded and spring loaded. The welded stem is suitable for use in liquid applications. The spring loaded stem is designed to bottom out inside a thermowell, providing maximum heat sensitivity. Spring loaded stems are not pressure tight and may allow process media to escape; therefore, they must always be installed in a thermowell.

Insertion (U) Length

The insertion (U) length of a thermocouple or RTD represents its depth into the process vessel or thermowell. Trerice Thermocouples and RTDs are available in standard U-lengths from 2" to 24". Other lengths are available upon special order; please consult factory.

Measuring (Hot) Junction

Trerice Thermocouples are available in Type J and Type K, and use ceramic insulation to provide an ungrounded measuring junction. Other thermocouple types may be available, please consult factory.

Trerice RTDs are a platinum, 3-wire design, and are furnished with either 100Ω or 1000Ω resistance at 32°F (0°C), and a temperature coefficient of 0.00385 Ω/Ω/°C.

Connection (Termination)

Trerice Thermocouples are provided with terminal block (screw cover head), mating jack, or integrated leadwire connections. The terminal block connection has no leadwire, therefore extension wire must be attached and routed to the electronic measuring device. Thermocouple extension wire must be identical to the thermocouple type, otherwise multiple measuring junctions will be made, causing inaccurate temperature readings.

Trerice RTDs are provided with a terminal block (screw cover head) or integrated leadwire connection. The terminal block connection has no leadwire, therefore extension wire must be attached and routed to the indicator or controller.

Electronic Temperature Sensor

Connection Head Type • RTD or Thermocouple Element

TJDZDHUWA shown

- **Thermocouple or RTD**
- **Cast Aluminum, Polypropylene or Stainless Steel Head**
- **Weather Proof**
- **Welded or Spring Loaded Stem**

Specifications

Models	Sensor Type
TJD	Type J T/C
TKD	Type K T/C
TDD	100Ω RTD
TMD	1000Ω RTD
Hot Junction:	T/C: Ungrounded RTD: Platinum, 3-wire
Stem	316 stainless steel 1/4" diameter
Insulation	Ceramic
Head	Cast aluminum, polypropylene or stainless steel
Process Connection	1/2 NPT welded or spring loaded
Conduit Connection	3/4 NPT female
Approximate Shipping Weight	1.1 lbs [0.50 kg]

The Trerice **Connection Head** is available with both Type J and Type K Thermocouples, as well as RTD sensors. The weatherproofed head provides a conduit connection and is available in cast aluminum (screw cover), polypropylene (flip cover) and stainless steel (screw cover). The stem is either welded directly to the 1/2 NPT threaded connection, or is spring loaded to provide maximum sensitivity. The spring loaded stem must always be installed in a thermowell.

- Extension wire and transmitter accessories are also available. Please consult the Temperature Sensor Accessories Section for details.
- For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the sensor and facilitate its removal from the process. To prevent leakage of the process media, spring loaded sensors must always be installed in a thermowell. (Refer to pages 155-161)

HOW TO ORDER

Sample Order Number: **TJD Z 04 U W A**

Model	Stem Style	Stem Length	Hot Junction	Connection	Head Material
TJD Type J T/C **TKD** Type K T/C **TDD** 100Ω RTD **TMD** 1000Ω RTD	**Z** 316SS, 1/4 O.D.	**02** 2 1/2" Stem **04** 4" Stem **06** 6" Stem **09** 9" Stem **12** 12" Stem	**U** Ungrounded (T/C) **D** 3 Wire (RTD)	**S** Spring Loaded, 1/2 NPT **W** Welded, 1/2 NPT	**A** Aluminum **P** Polypropylene **S** Stainless Steel

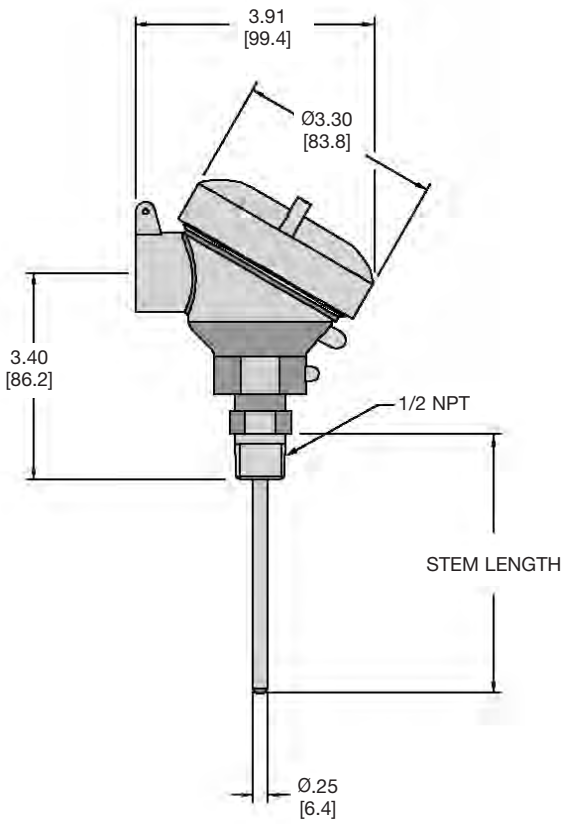
Other stem lengths available: Specify in inches (24" maximum).

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Electronic Temperature Sensor

Connection Head Type

All dimensions are nominal.
Dimensions in [ ] are in millimeters.



Sensor Specifications

Thermocouple

Type	Color Code	Positive Lead	Negative Lead	Temperature Range
J	Black	Iron* (Fe) [white]	Constantan (Cu-Ni) [red]	32° to 1382°F (0° to 750°C)
K	Yellow	Nickel-Chromium (Ni-Cr) [yellow]	Nickel-Aluminum* (Ni-Al) [red]	32° to 2282°F (0° to 1250°C)

**magnetic lead*

RTD

Type	Material	Resistance	Temperature Coefficient	Temperature Range
D	Platinum (Pt)	100Ω	α = 0.00385 Ω/Ω/°C	-50° to 700°F (-45° to 370°C)
M	Platinum (Pt)	1000Ω	α = 0.00385 Ω/Ω/°C	-50° to 700°F (-45° to 370°C)

Electronic Temperature Sensor

Integral Leadwire • RTD or Thermocouple Element

TJDZ06UR12D shown

- **Thermocouple or RTD**
- **Self-Contained Design**
- **Plain or Teflon Covered Stem**

Specifications

Models	Sensor Type
TJD	Type J T/C
TKD	Type K T/C
TDD	100Ω RTD
TMD	1000Ω RTD

Hot Junction:	T/C: Ungrounded RTD: Platinum, 3-wire
Stem	316 stainless steel 1/4" diameter
Insulation	Ceramic
Termination	Integral leadwire with spring relief or Teflon sheath (450°F / 230°C maximum)
Leadwire Jacketing	T/C: Fiberglass RTD: Teflon

Approximate Shipping Weight

0.5 lbs [0.23 kg]

Trerice **Integral Leadwire Sensors** are available with an RTD, or a Type J or K Thermocouple. The stem transition includes a spring relief to prevent damage to the leadwire. A Teflon covered sensor and leadwire is offered for use with open tanks or corrosive process media (the Teflon covered sensor does not include a spring relief).

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the sensor and facilitate its removal from the process. (Refer to pages 155-161)

HOW TO ORDER

Sample Order Number: **TDD Z 06 D T 024**

Model	Stem Style	Stem Length	Hot Junction	Connection Style	Leadwire Length
TJD Type J T/C **TKD** Type K T/C **TDD** 100Ω RTD **TMD** 1000Ω RTD	**Z** 316SS, 1/4 O.D.	**02** 2½" Stem **04** 4" Stem **06** 6" Stem **09** 9" Stem **12** 12" Stem	**U** Ungrounded (T/C) **D** 3 Wire (RTD)	**R** Integral Leadwire with Relief Spring **T** Integral Leadwire with Teflon Sheath	Specify Length in inches (i.e., 10 feet=120)

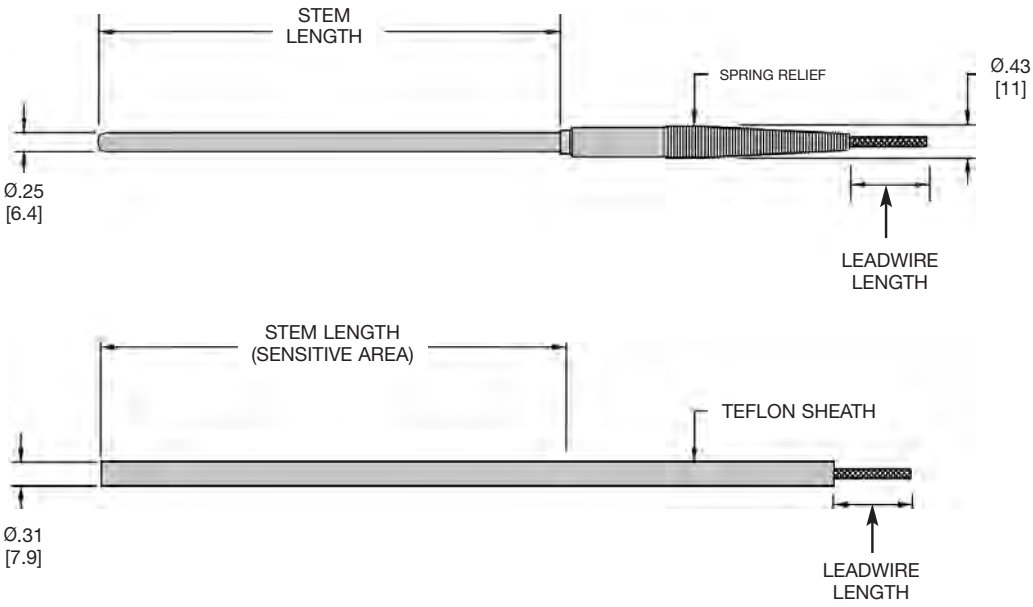
Other stem lengths available: Specify in inches (24" maximum).

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Electronic Temperature Sensor

Integral Leadwire

All dimensions are nominal.
Dimensions in [ ] are in millimeters.



Sensor Specifications

Thermocouple

Type	Color Code	Positive Lead	Negative Lead	Temperature Range
J	Black	Iron* (Fe) [white]	Constantan (Cu-Ni) [red]	32° to 1382°F (0° to 750°C)
K	Yellow	Nickel-Chromium (Ni-Cr) [yellow]	Nickel-Aluminum* (Ni-Al) [red]	32° to 2282°F (0° to 1250°C)

** Magnetic lead*

RTD

Type	Material	Resistance	Temperature Coefficient	Temperature Range
D	Platinum (Pt)	100Ω	α = 0.00385 Ω/Ω/°C	-50° to 700°F (-45° to 370°C)
M	Platinum (Pt)	1000Ω	α = 0.00385 Ω/Ω/°C	-50° to 700°F (-45° to 370°C)

Note: Teflon covered sensors are limited to 450°F (232°C).

Digital Temperature Indicator TRD20

Microprocessor Based

- **96 mm x 48 mm (1/8 DIN)**
- **RTD, Thermocouple, Current & Voltage Inputs Available**
- **Analog Output or Interface Available**
- **Optional Alarm**

DISCONTINUED

The Trerice **TRD20 Digital Indicator** is a superb choice when remote digital indication is required. The 4 times per second sampling cycle provides accurate, reliable monitoring and the large LED display provides easy readability from a distance. The TRD20 can be used with any Trerice RTD, Thermocouple or Transmitter and can be ordered with an RS-485, RS-422A or RS-232C Communications Interface. Size is 96 mm x 48 mm (1/8 DIN).

Specifications

Model
TRD20

Display 4 digit, 14.3 mm red LED
Sampling Cycle: 4x/second

Input Thermocouple: Type J, Type K
RTD: Platinum, 100Ω, 3-wire
Current: 4-20 mA, 0-20 mA switchable
Voltage: 0-10 mVDC, 0-50 mVDC, 0-100 mVDC switchable; 0-1VDC, 0-5VDC, 0-10VDC switchable

Power Requirements
Supply Voltage:
100-240 VAC/50/60 Hz,
24 VAC/50/60 Hz, 24 VDC

Consumption:
100-240 VAC: Approximately 6-8 VA
24 VAC: Approximately 8 VA
24 VDC: Approximately 8 W

A/D Conversion
Microprocessor

Accuracy ±0.25% + 1 digit of measuring range

Ambient Temperature
Maximum: 122°F (50°C)
Minimum: 14°F (-10°C)

Humidity Maximum: 90% RH

Approximate Shipping Weight
0.7 lbs [0.31 kg]

HOW TO ORDER

Sample Order Number: **TRD20 2 90 00 04 00**

Model	Input	Power Supply	Alarms	Analog Output/Interface	Sensor DC Power Supply*
TRD20	**1** Thermocouple **2** RTD **3** mVDC **4** mA **5** VDC	**90** 100-240 VAC 50/60 Hz **10** 24 VAC 50/60 Hz **02** 24 VDC	**00** None **10** 2 point individual setting	**00** None **03** 0 to 10 mVDC **04** 4 to 20 mA **06** 0 to 10 VDC **15** RS-485 **16** RS-422A **17** RS-232C	**00** None **24** 24 VDC 50 mA

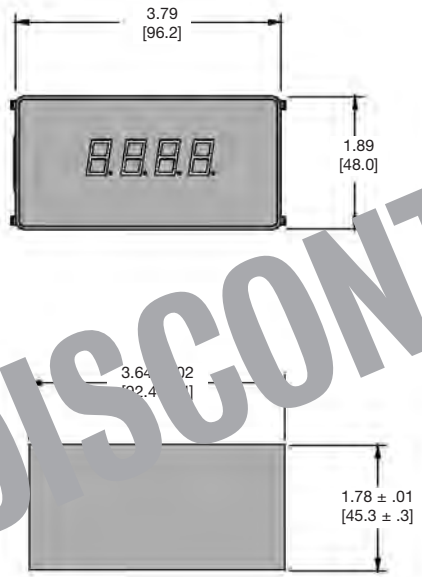
*N/A with 24 VAC or 24 VDC power supply

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

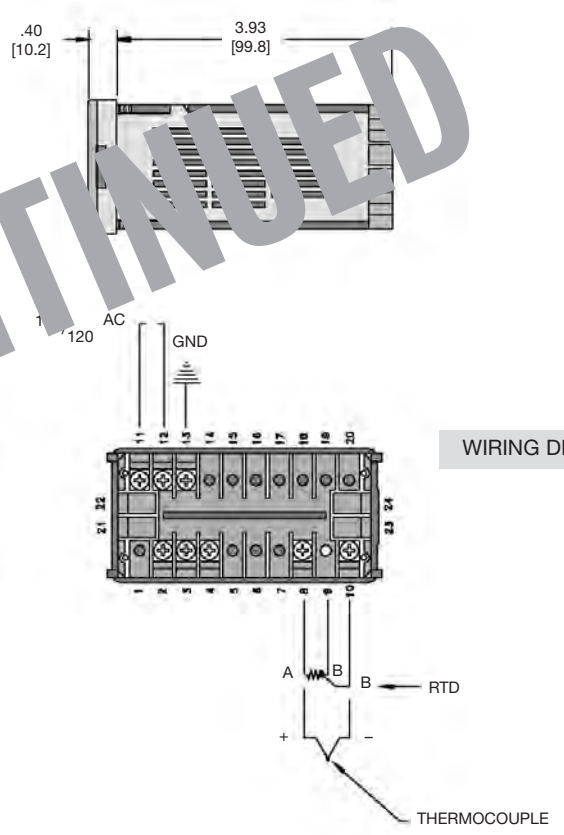
Digital Temperature Indicator TRD20

Microprocessor Based

All dimensions are nominal.
Dimensions in [ ] are in millimeters.



PANEL CUTOUT DIMENSIONS



WIRING DIAGRAM

Programmable Inputs and Ranges

Input		Range			
Code	**Type**	**Code**	**Fahrenheit**	**Code**	**Celsius**
1J	Type J Thermocouple	**A71**	-148° to 1112°F	**A26**	-100° to 600°C
1K	Type K Thermocouple	**A79**	-328° to 2192°F	**A74**	-200° to 1200°C
		A72	-148° to 1472°F	**A27**	-100° to 800°C
2F	100 Ω RTD	**A78**	-328° to 1112°F	**A31**	-199.9° to 600.0°C
		A61	32.0° to 212.0°F	**A02**	0.00° to 99.99°C
32	0 to 10 mV				
34	0 to 50 mV				
36	0 to 100 mV				
41	0 to 20 mA	Scaling Range: -1999 to 9999			
42	4 to 20 mA	Span: 100 to 10,000			
62	0 to 1 V				
64	0 to 5 V				
66	0 to 10 V				

Input and Range Codes are not required for ordering, but are used for field programming.

Digital Temperature Indicator TRD16

- **96 mm x 48 mm (1/8 DIN)**
- **Multi-inputs and Multi-Ranges**
- **Large 20mm Red LED Display**
- **2 Times per Second Sampling Code**

The Trerice **TRD16 Digital Indicator** is a superb choice when remote digital indication is required. The 2 times per second sampling cycle provides accurate, reliable monitoring, and the large LED display provides easy readability. The TRD16 can be used with any Trerice RTD or Thermocouple. Size is 96 mm x 48 mm (1/8 DIN).

The TRD16 Digital Indicator is specifically designed to interface with the TRS16 Selector Switch by means of an included snap bracket.

Specifications

Model
TRD16

Display 4 digit, 20 mm red LED
Sampling Cycle: 2x/second

Input **Multi** (switchable between)
Thermocouple: B, R, S, K, E, J, T, N;
or RTD: Platinum, 100Ω, 3-wire
Voltage (mV, V): 0-10 mVDC, 0-5 VDC, 0-10 VDC, 1-5 VDC
Current: 4-20 mA

Power Requirements
Supply Voltage:
100-240 VAC/50/60 Hz,
24 VAC/VDC (option)

Consumption:
11 VA (AC) Max
7 W (DC) Max

Accuracy ±0.3% + 1 digit of measuring range

Ambient Temperature
Maximum: 122°F (50°C)
Minimum: 14°F (-10°C)

Humidity Maximum: 90% RH
Non-condensing

Approximate Shipping Weight
0.6 lbs [0.27 kg]

HOW TO ORDER

Sample Order Number: **TRD16 8 90 0 4 0**

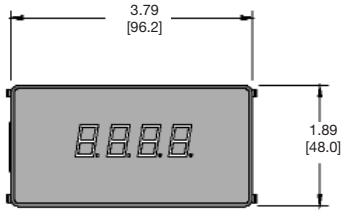
Model	Input	Power Supply	Alarm	Analog Output	Communication Function
TRD16	**8** Multi (T/C, RTD mV, V) **4** mA	**90** 100-240 VAC 50/60 Hz **08** 24 VAC or 24 VDC 50/60 Hz	**0** None **1** High/Low	**0** None **3** 0 to 10 mVDC **4** 4 to 20 mA **6** 0 to 10 VDC	**0** None **5** RS485 **7** RS232C

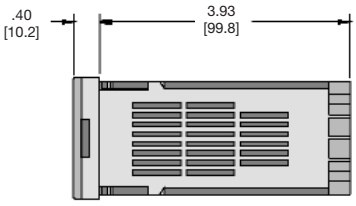
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

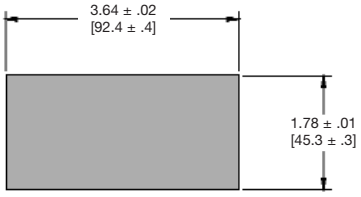
Digital Temperature Indicator TRD20

Microprocessor Based

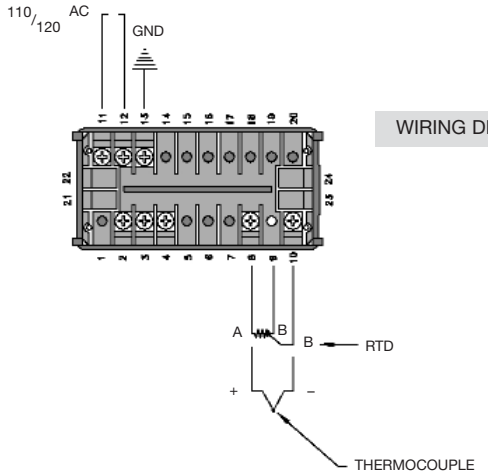
All dimensions are nominal.
Dimensions in [ ] are in millimeters.







PANEL CUTOUT DIMENSIONS



WIRING DIAGRAM

Programmable Inputs and Ranges

Input		Range			
Code	**Type**	**Code**	**Fahrenheit**	**Code**	**Celsius**
1J	Type J Thermocouple	**A71**	-148° to 1112°F	**A26**	-100° to 600°C
1K	Type K Thermocouple	**A79**	-328° to 2192°F	**A74**	-200° to 1200°C
		A72	-148° to 1472°F	**A27**	-100° to 800°C
2F	100 Ω RTD	**A78**	-328° to 1112°F	**A31**	-199.9° to 600.0°C
		A61	32.0° to 212.0°F	**A02**	0.00° to 99.99°C
32	0 to 10 mV				
34	0 to 50 mV				
36	0 to 100 mV				
41	0 to 20 mA	Scaling Range: -1999 to 9999			
42	4 to 20 mA	Span: 100 to 10,000			
62	0 to 1 V				
64	0 to 5 V				
66	0 to 10 V				

Input and Range Codes are not required for ordering, but are used for field programming.

Digital Temperature Indicator TRD16

- **96 mm x 48 mm (1/8 DIN)**
- **Multi-inputs and Multi-Ranges**
- **Large 20mm Red LED Display**
- **2 Times per Second Sampling Code**

The Trerice **TRD16 Digital Indicator** is a superb choice when remote digital indication is required. The 2 times per second sampling cycle provides accurate, reliable monitoring, and the large LED display provides easy readability. The TRD16 can be used with any Trerice RTD or Thermocouple. Size is 96 mm x 48 mm (1/8 DIN).

The TRD16 Digital Indicator is specifically designed to interface with the TRS16 Selector Switch by means of an included snap bracket.

Specifications

Model
TRD16

Display 4 digit, 20 mm red LED
Sampling Cycle: 2x/second

Input **Multi** (switchable between)
Thermocouple: B, R, S, K, E, J, T, N;
or RTD: Platinum, 100Ω, 3-wire
Voltage (mV, V): 0-10 mVDC, 0-5 VDC, 0-10 VDC, 1-5 VDC
Current: 4-20 mA

Power Requirements
Supply Voltage:
100-240 VAC/50/60 Hz,
24 VAC/VDC (option)
Consumption:
11 VA (AC) Max
7 W (DC) Max

Accuracy ±0.3% + 1 digit of measuring range

Ambient Temperature
Maximum: 122°F (50°C)
Minimum: 14°F (-10°C)

Humidity Maximum: 90% RH
Non-condensing

Approximate Shipping Weight
0.6 lbs [0.27 kg]

HOW TO ORDER

Sample Order Number: **TRD16 8 90 0 4 0**

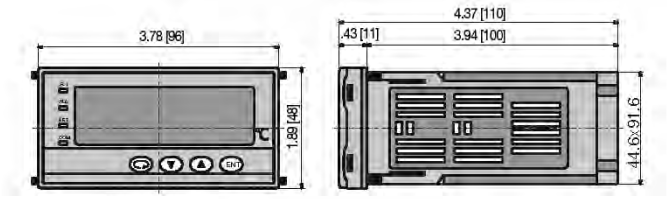
Model	Input	Power Supply	Alarm	Analog Output	Communication Function
TRD16	**8** Multi (T/C, RTD mV, V) **4** mA	**90** 100-240 VAC 50/60 Hz **08** 24 VAC or 24 VDC 50/60 Hz	**0** None **1** High/Low	**0** None **3** 0 to 10 mVDC **4** 4 to 20 mA **6** 0 to 10 VDC	**0** None **5** RS485 **7** RS232C

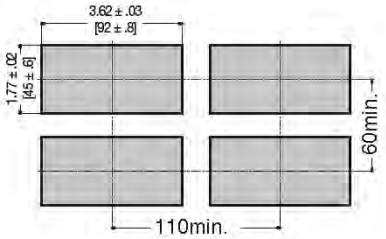
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Digital Temperature Indicator TRD16

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

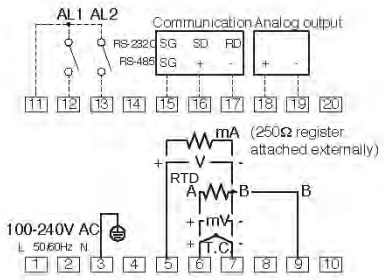
EXTERNAL DIMENSIONS





PANEL CUTOUT DIMENSIONS

TERMINAL ARRANGEMENT



Programmable Inputs and Ranges

Thermocouple Input

Code	Type	Range (°C)	Range (°F)
01	B	0 ~1800	0 ~ 3300
02	R	0 ~1700	0 ~ 3100
03	S	0 ~1700	0 ~ 3100
04	K	-199.9 ~ 800.0	-300 ~ 1500
05	K	0 ~1200	0 ~ 2200
06	E	0 ~ 700	0 ~ 1300
07	J	0 ~ 600	0 ~ 1100
08	T	-199.9 ~ 300.0	-300 ~ 600
09	N	0 ~1300	0 ~ 2300
10	*1 U	-199.9 ~ 300.0	-300 ~ 600
11	*1 L	0 ~ 600	0 ~ 1100
12	*2 WRe5-26	0 ~ 2300	0 ~ 4200
RTD Input			
31	Pt100Ω	-200 ~ 600	-300 ~ 1100
32	Pt100Ω	-100.0 ~ 100.0	-150.0 ~ 200.0

Voltage Input

Code	Type	Range (°C)	Range (°F)
71	0~10mV	Initial value: 0.0~100.0	Thermocouple B, R, S, K, E, J, T, N: JIS/ANSI/IEC
81	0~ 5V	Scaling setting range: -1999~9999	*1 Thermocouple U, L: DIN 43710
82	1~ 5V	Span: 10~5000 counts	*2 Thermocouple WRe5-26: Made of Hoskins
83	0~10V		
Current Input			
95	4~20mA*		

*Uses supplied shunt resistor.

Input and Range Codes are not required for ordering, but are used for field programming.

WARNING: The TRD16 Indicator is designed for the control of temperature, humidity and other physical values of general industrial equipment. (It is not to be used for any purpose which regulates the prevention of serious effects on human life or safety.)

CAUTION: If the possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be made before the instrument is put into use so as to prevent the occurrence of trouble.

Indicator Selector Switch TRS16

- **96 mm x 48 mm (1/8 DIN)**
- **Two Wire Type Switching Circuit**
- **Six-Point Switching**
- **Push Button Operation**

The Trerice **TRS16 Selector Switch** is the ideal accompaniment for the Trerice TRD16 Digital Indicator. The TRS16 allows economical measurement of multiple individual processes (using the same thermocouple type) while requiring only one digital indicator. The push buttons indicate which process measurement is currently displayed on the indicator. Size is 96 mm x 48 mm (1/8 DIN).

The TRS16 Selector Switch is specifically designed to interface with the TRD16 Digital Indicator by means of an included snap bracket.

Specifications

Model
TRS16

Input Thermocouple

Switching Method
Push-button switching

Switching Points
Six (all switching points must use identical sensors)

Switching Circuits
Two wire type

Contact Rating
Voltage: 30 V maximum, AC/DC
Current: 100 mA maximum
Resistance: 300 mΩ (0.3 ohm) maximum/circuit

Ambient Temperature
Maximum: 122°F (50°C)
Minimum: 14°F (-10°C)

Humidity Maximum: 90% RH Non-Condensing

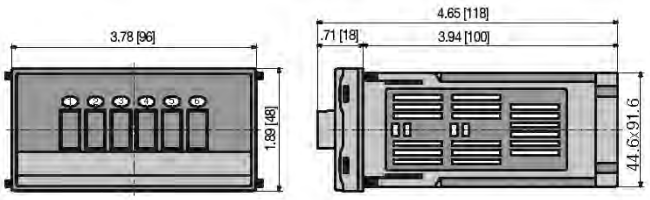
Approximate Shipping Weight
0.7 lbs [0.32 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

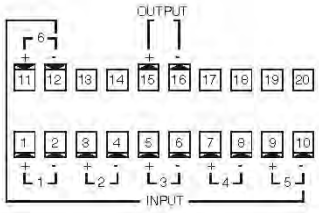
Indicator Selector Switch TRS16

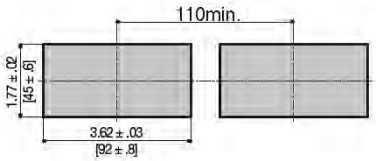
All dimensions are nominal.
Dimensions in [ ] are in millimeters.

EXTERNAL DIMENSIONS

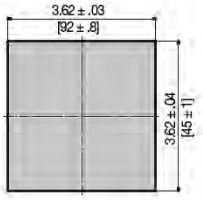


TERMINAL ARRANGEMENT



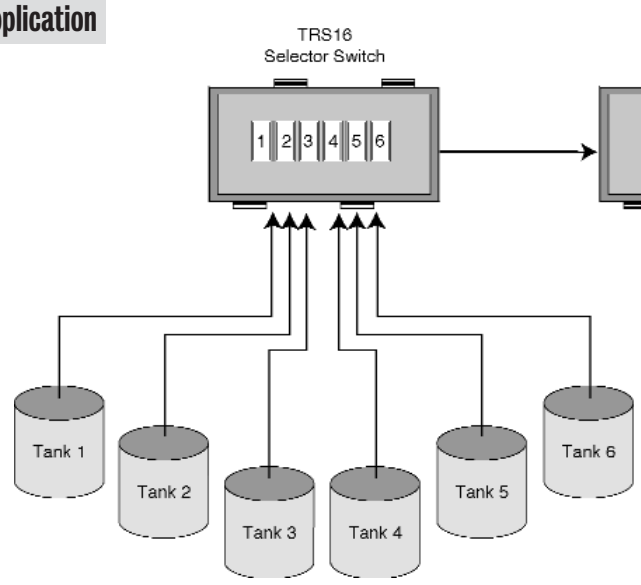


PANEL CUTOUT DIMENSIONS



WIRING DIAGRAM

Typical Application



Up to six sensors (two leads each) may share a common display.

WARNING: The TRD16 Indicator is designed for the control of temperature, humidity and other physical values of general industrial equipment. (It is not to be used for any purpose which regulates the prevention of serious effects on human life or safety.)

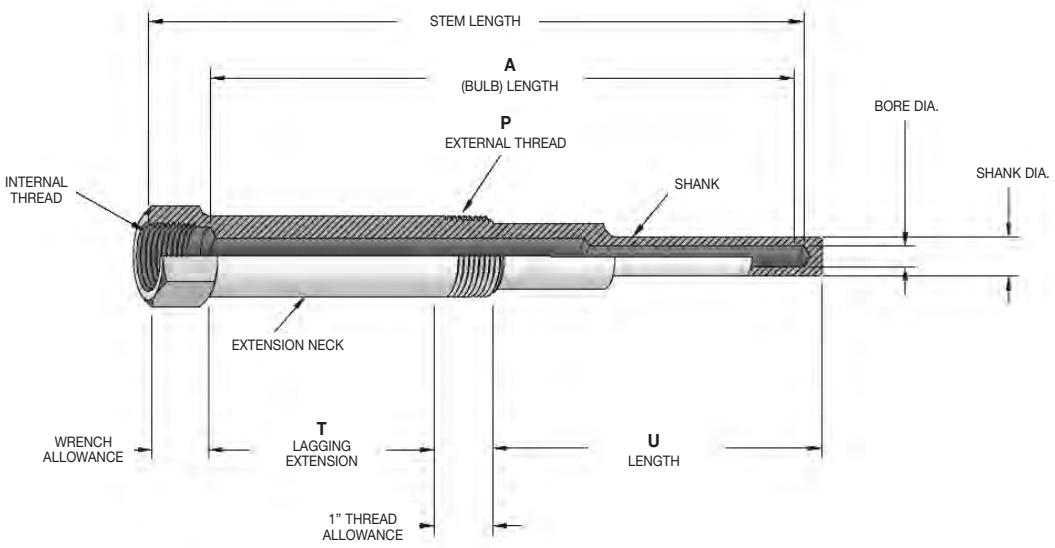
CAUTION: If the possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be made before the instrument is put into use so as to prevent the occurrence of trouble.

Thermowells

DESIGN & OPERATION

Description

A thermowell is a pressure tight receptacle designed to accept a temperature sensing element and provide a means to insert that element into a vessel or pipe.



Principles of Operation

A thermowell acts as a barrier between a process medium and the sensing element of a temperature measuring device. It protects against corrosive process media, media contained under pressure, or media flowing at a high velocity. A thermowell also allows the sensing element to be removed from the application while maintaining a closed system.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Selecting a Thermowell

Temperature Instrumentation and Control Products, including: Thermometers, Thermocouples, RTDs, and Temperature Controllers.

All Trerice Thermowells should be carefully selected to meet the demands of the particular application. The information contained in this catalog is only offered as a guide to assist in making the proper selection. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the instrument before installation into a thermowell. 1 oz. tube: Item No. 107-0001

Connection

Trerice Thermowells are available in a variety of process connection styles. Threaded connections in 1/2, 3/4 and 1 NPT are the most widely specified. Socket weld, weld-in, raised face flanged, Van Stone flanged, and sanitary (Tri-Clamp) connection styles are also available.

All Trerice Bimetal Thermowells are provided with a 1/2 NPSM instrument connection to allow for pressure relief within the thermowell.

U-Length

The U-length (insertion length) of a thermowell indicates its insertion depth into a process vessel or piping system and is measured from the tip of the thermowell to the underside of the threads. The U-length must equal or exceed the length of the sensitive portion of the temperature instrument's stem or bulb. Trerice Thermowells are available in U-lengths from 2" to 72".

Material

The material chosen must be compatible with the process medium to which it is exposed. In applications of high pressure or velocity, the material may be chosen for its strength or durability. Trerice offers thermowells in a variety of materials, including: brass, carbon steel, stainless steel, Monel, Carpenter 20, Hastelloy B or C, Inconel 600, Incoloy 800, Nickel and Titanium. Other alloys or compounds may also be available, please consult factory.

Threaded, welded and Van Stone flanged thermowells are made from forgings or bar stock. Raised face flanged and sanitary thermowells are of a two-piece welded construction.

Bore

The bore of each Trerice Thermowell is designed to fit the sensing element of a specific Trerice Temperature Instrument.

Shank

Trerice Thermowells are available in stepped, tapered, and straight shank configurations. Stepped shank thermowells are normally used on standard duty applications. Tapered shank thermowells are designed for use on heavy duty applications. Straight shank thermowells are designed for use with instruments that have wide stem diameters or short stem lengths.

Lagging Extension

Lagging extension thermowells are used on applications where insulation covers the vessel or piping system. The extension length (T-length) is the measurement between the instrument connection and process connection of the thermowell.

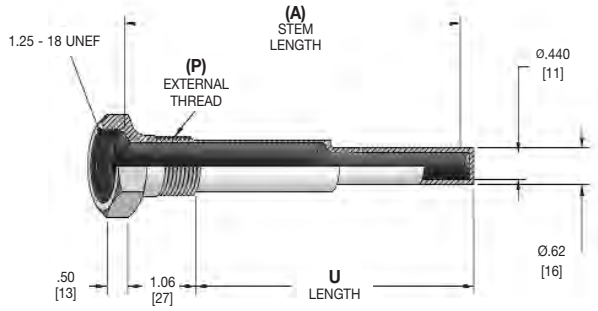
Thermowells

for **Industrial** Thermometers

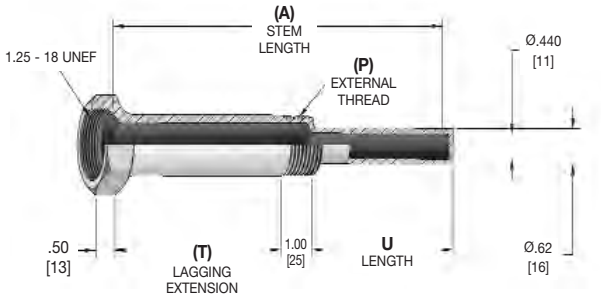
All dimensions are nominal. Dimensions in [ ] are in millimeters.

- SX9 Solar
- AX9, BX9, CX9 Adjustable Angle
- AX, BX, CX Rigid Stem
- BX Plus

Standard



with Lagging Extension



Lengths

	Standard	with Lagging Extension	
(A) Stem Length	U Length	(T)	U Length
3½"	2.50 [64]	1.00 [25]	1.70 [43]
6"	5.00 [127]	2.50 [64]	2.50 [64]
8"	7.00 [178]	2.50 [64]	4.50 [114]
12"	10.50 [267]	3.00 [76]	7.50 [191]

Pressure Rating (psi)

	Operating Temperature			
Material	70°F	200°F	400°F	600°F
Carbon Steel	610	550	430	350
304 Stainless Steel	630	570	460	380
316 Stainless Steel	650	600	570	500
Monel	540	480	440	400
Brass	300 psi @ 150°F,		250 @ 350°F	

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

HOW TO ORDER

Sample Order Number: **3-4 F 2**

Thermowell Style	(P) External Thread	(A) Stem Length	(T) Lagging Extension	Material
3- Industrial	**3** ½ NPT*	**F** 3½" Stem**	**A** 1" Extension (3½" Stem only)	**2** Brass
	4 ¾ NPT	**J** 6" Stem	**D** 2½" Extension (6" and longer Stem only)†	**3** Steel
	5 1 NPT	**L** 8" Stem	Omit if None	**4** Monel
		R 12" Stem††		**5** 304SS
				6 316SS

* Only available with 3½" stem and 1" extension.
** 3½" stem Straight Shank.
† 3" extension on 12" stem.
†† 12" stem requires 1 NPT external thread.

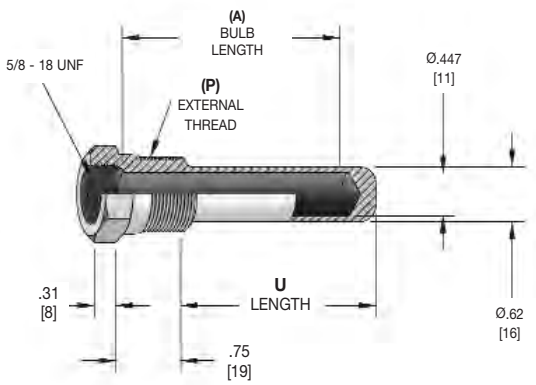
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Thermowells

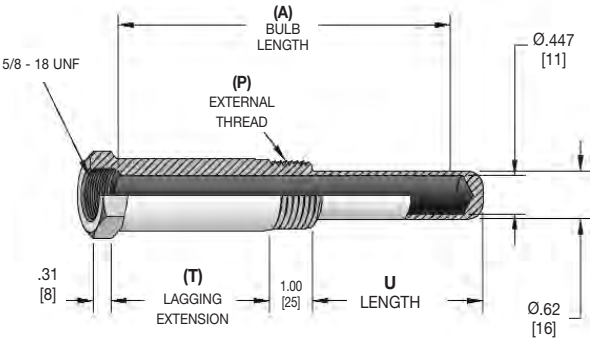
for Dial Thermometers

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

Standard



with Lagging Extension



Lengths

	Standard	with Lagging Extension	
(A) Bulb Length	U Length	(T)	U Length
2"	2.13 [54]	–	–
4"	3.88 [99]	2.00 [51]	2.13 [54]
6"	5.75 [146]	2.00 [51]	3.88 [99]
8"	7.75 [197]	2.00 [51]	5.75 [146]
12"	11.75 [299]	3.00 [76]	7.50 [191]
18"	17.75 [451]	3.00 [76]	15.75 [400]
24"	23.75 [603]	3.00 [76]	21.75 [552]

Pressure Rating (psi) per ASME Boiler Code, Section VIII, Part UG28

	Operating Temperature			
Material	70°F	200°F	400°F	600°F
Carbon Steel	2500	2240	2020	1640
304 Stainless Steel	2780	2280	2100	1700
316 Stainless Steel	2770	2660	2500	2300
Brass	1330 psi @ 150°F,		1280 @ 350°F	

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

HOW TO ORDER

Sample Order Number: **7-3 G 2**

Thermowell Style	(P) External Thread	(A) Bulb Length**	(T) Lagging Extension	Material
7- Dial	**3** 1/2 NPT	**D** 2" Bulb	**C** 2" Extension (4" and longer Bulb only)	**2** Brass
	4 3/4 NPT	**G** 4" Bulb	**E** 3" Extension (12" and longer Bulb only)	**3** Steel
		J 6" Bulb	Omit if None	**5** 304SS
		L 8" Bulb		**6** 316SS
		R 12" Bulb*		
		Wa 18" Bulb*		
		Wk 24" Bulb*		

Not available with 1/2 NPT external thread.

**Dial Thermowells with Bulb Lengths over 6" are typically for use with Adjustable Union or Bendable Extension Connections.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

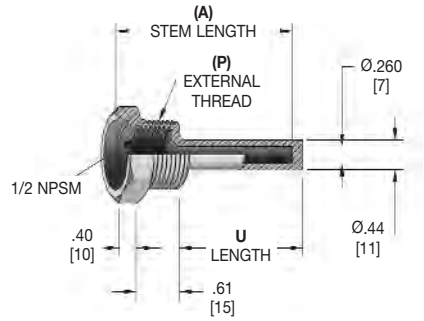
Thermowells

for Bimetal Thermometers & Temperature Sensors

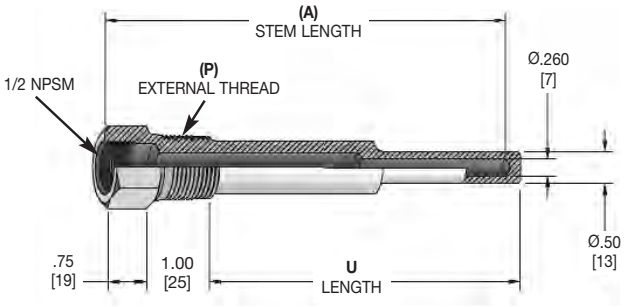
Threaded-Stepped Shank

All dimensions are nominal.
Dimensions in [ ] are in millimeters

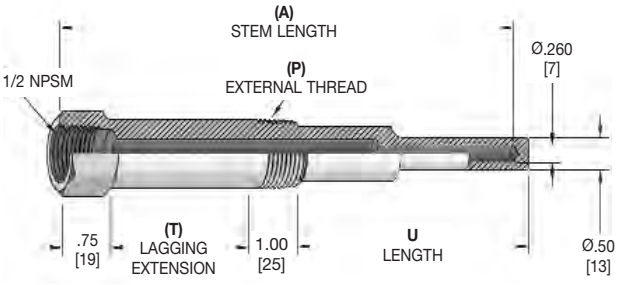
Standard (2½" – 6")



Standard (9 – 24")



with Lagging Extension



Lengths

	Standard	with Lagging Extension	
(A) Stem Length	U Length	(T)	U Length
2½"	1.75 [44]	–	–
4"	2.50 [64]	0.60 [15]	1.90 [48]
6"	4.50 [114]	2.00 [51]	2.50 [64]
9"	7.50 [191]	3.00 [76]	4.50 [114]
12"	10.50 [267]	3.00 [76]	7.50 [191]
15"	13.50 [343]	3.00 [76]	10.50 [267]
18"	16.50 [419]	3.00 [76]	13.50 [343]
24"	22.50 [572]	3.00 [76]	19.50 [495]

Pressure Rating (psi)

	Operating Temperature					
Material	70°F	200°F	400°F	600°F	800°F	1000°F
Carbon steel	5000	5000	4800	4600	3500	-
304 stainless steel	6550	6000	4860	4140	3510	3130
316 stainless steel	6540	6400	6000	5270	5180	4660
Monel	5530	4990	4660	4450	4450	-
Brass	3170 psi @ 150°F, 2930 @ 350°F					

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **76-4 J 6**

Thermowell Style	(P) External Thread	(A) Stem Length	(T) Lagging Extension	Material
76- Bimetal/Sensor Stepped shank*	**3** ½ NPT**	**D** 2½" Stem	**A** 1" Extension (4" Stem only)	**2** Brass
	4 ¾ NPT	**G** 4" Stem	**C** 2" Extension (6" Stem only)	**3** Steel
	5 1 NPT**	**J** 6" Stem	**E** 3" Extension (9" and longer Stem only)	**4** Monel
		M 9" Stem	Omit if None	**5** 304SS
		R 12" Stem		**6** 316SS
		V 15" Stem		
		Wa 18" Stem		
		Wk 24" Stem		

** 2½" - 6" stem straight shank.*
*** Not available with 2½" stem length.*

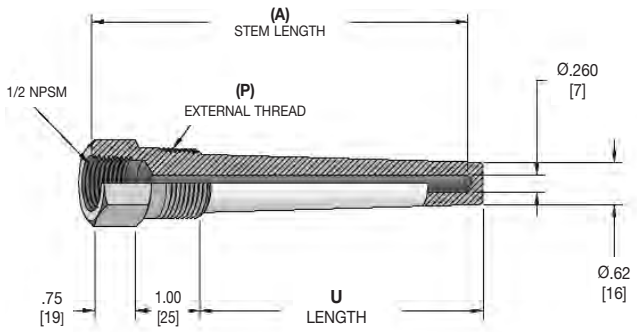
Thermowells

for **Bimetal Thermometers** & **Temperature Sensors**

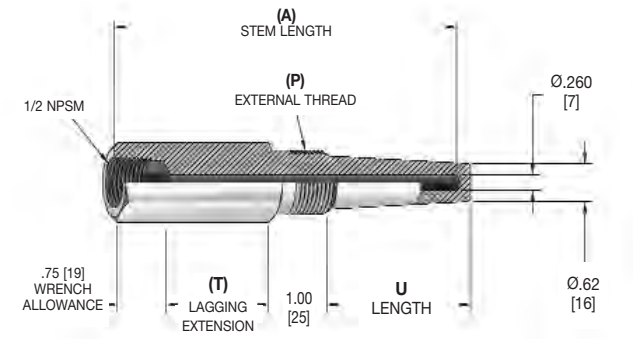
Heavy Duty • Tapered Shank for High Pressure Applications

Standard

All dimensions are nominal.
Dimensions in [ ] are in millimeters



with Lagging Extension



Lengths

	Standard	with Lagging Extension	
(A) Stem Length	U Length	(T)	U Length
4"	2.50 [64]	1.00 [25]	1.50 [38]
6"	4.50 [114]	2.00 [51]	2.50 [64]
9"	7.50 [191]	3.00 [76]	4.50 [114]
12"	10.50 [267]	3.00 [76]	7.50 [191]
15"	13.50 [343]	3.00 [76]	10.50 [267]
18"	16.50 [419]	3.00 [76]	13.50 [343]
24"	22.50 [572]	3.00 [76]	19.50 [495]

Pressure Rating (psi)

	Operating Temperature					
Material	70°F	200°F	400°F	600°F	800°F	1000°F
Brass	5950	5750	5450	5250	4000	-
Carbon steel	7800	7050	6300	5360	4350	4100
304 stainless steel	7800	7800	7250	7100	6000	5800
316 stainless steel	7170	6670	6040	5770	5770	-
Brass	4140 psi @ 150°F, 3790 @ 350°F					

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **90-4 G 4**

Thermowell Style	(P) External Thread	(A) Stem Length	(T) Lagging Extension	Material
90- Bimetal/Sensor Tapered Shank	**4** 3/4 NPT **5** 1 NPT	**G** 4" Stem **J** 6" Stem **M** 9" Stem **R** 12" Stem **V** 15" Stem **Wa** 18" Stem **Wk** 24" Stem	**C** 2" Extension (6" Stem only) **E** 3" Extension (9" and longer Stem only) Omit if None	**2** Brass **3** Steel **4** Monel **5** 304SS **6** 316SS

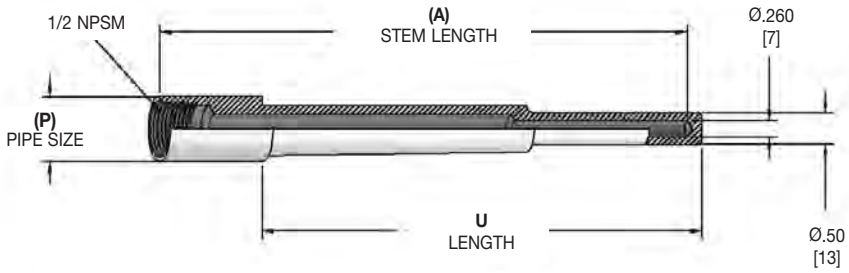
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

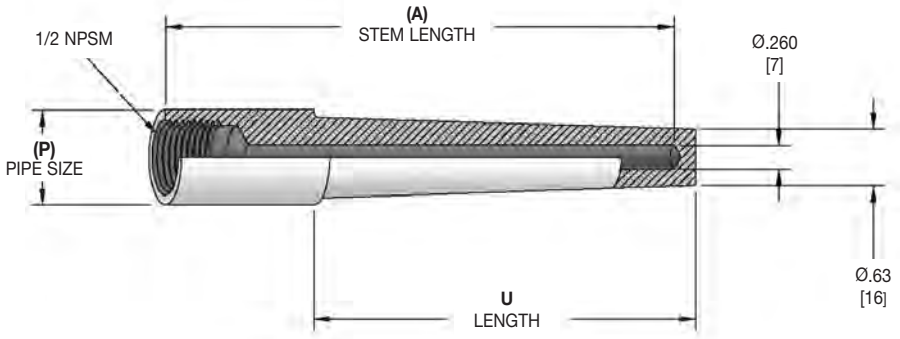
for Bimetal Thermometers & Temperature Sensors

Socket-Weld Style • Stepped or Heavy Duty Tapered Shank

Stepped Shank



Tapered Shank



Lengths

(A) Stem Length	U Length
4"	2.50 [64]
6"	4.50 [114]
9"	7.50 [191]
12"	10.50 [267]
15"	13.50 [343]
18"	16.50 [419]
24"	22.50 [572]

Other Dimensions

Nominal Pipe Size	Actual (P) Diameter
3/4"	1.050 [23.67]
1"	1.315 [33.40]

Pressure Rating (psi)

		Operating Temperature					
	Material	70°F	200°F	400°F	600°F	800°F	1000°F
Stepped Shank	Carbon Steel	5200	5000	4800	4600	3500	-
	304 Stainless Steel	6550	6000	4860	4140	3510	3130
	316 Stainless Steel	6540	6400	6000	5270	5180	4660
Tapered Shank	Carbon Steel	5950	5750	5450	5250	4000	-
	304 Stainless Steel	7800	7050	6300	5360	4350	4100
	316 Stainless Steel	7800	7800	7250	7100	6700	5800

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **90-S5 M 6**

Thermowell Style	(P) Nominal Pipe Size	(A) Stem Length	Material
76- Bimetal/Sensor Stepped Shank	**S4** 3/4"	**G** 4" Stem	**3** Steel
	S5 1"	**J** 6" Stem	**5** 304SS
		M 9" Stem	**6** 316SS
90- Bimetal/Sensor Tapered Shank		**R** 12" Stem	
		V 15" Stem	
		Wa 18" Stem	
		Wk 24" Stem	

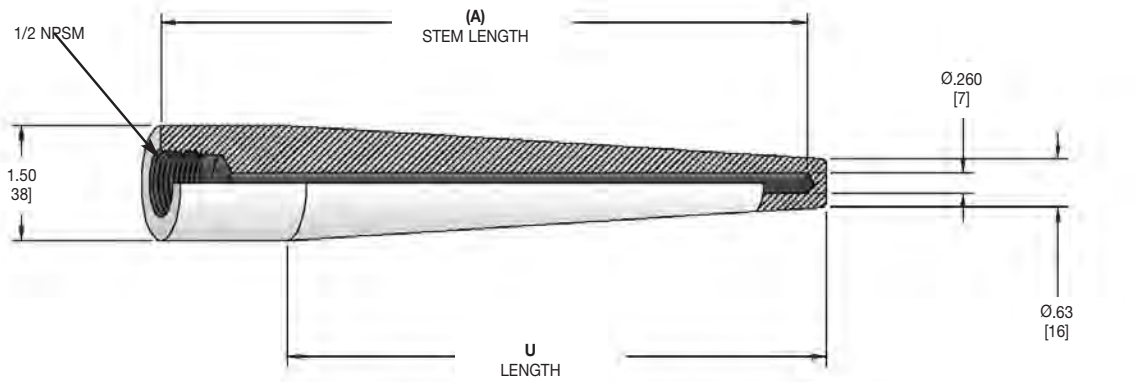
Thermowells

for Bimetal Thermometers & Temperature Sensors

Weld-In Style

Tapered Shank

All dimensions are nominal. Dimensions in [ ] are in millimeters



Lengths

(A) Stem Length	U Length
4"	2.50 [64]
6"	4.50 [114]
9"	7.50 [191]
12"	10.50 [267]
15"	13.50 [343]
18"	16.50 [419]
24"	22.50 [572]

Pressure Rating (psi) *

	Operating Temperature					
Material	70°F	200°F	400°F	600°F	800°F	1000°F
Carbon steel	5950	5750	5450	5250	4000	-
304 stainless steel	7800	7050	6300	5360	4350	4100
316 stainless steel	7800	7800	7250	7100	6700	5800

* Thermowell Pressure ratings for CRN differ from those shown above. Please see CRN under Approvals in Technical Specifications of our website.

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **90-W7 V 6**

Thermowell Style	Connection	(A) Stem Length	Material
90- Bimetal/Sensor Tapered Shank	**W7** 1½"	**G** 4" Stem **J** 6" Stem **M** 9" Stem **R** 12" Stem **V** 15" Stem **Wa** 18" Stem **Wk** 24" Stem	**3** Steel **5** 304SS **6** 316SS

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

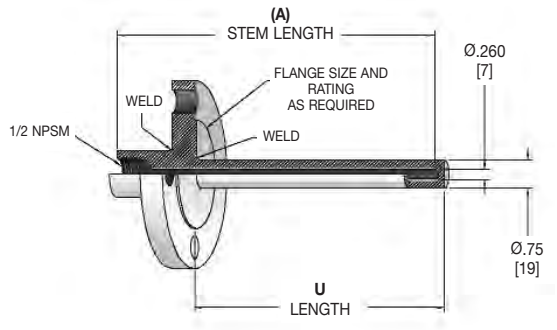
Thermowells

for Bimetal Thermometers & Temperature Sensors

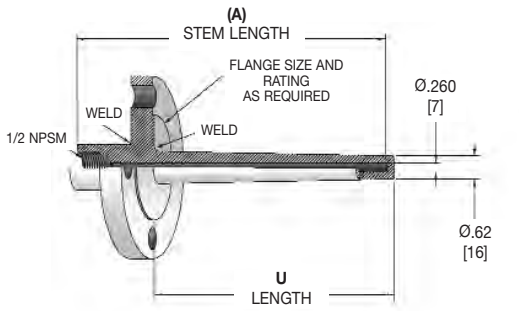
Flanged Style • Straight or Heavy Duty Tapered Shank

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

Straight Shank



Tapered Shank



Pressure Rating
Maximum pressure and temperature ratings are limited by the choice of flange. Please see ANSI/ASME B16.5-2003 for more information.

Lengths

(A) Stem Length	U Length
4"	2.00 [51]
6"	4.00 [102]
9"	7.00 [178]
12"	10.00 [254]
15"	13.00 [330]
18"	16.00 [406]
24"	22.00 [559]

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **78-81 J 6**

Thermowell Type	Flange Size and Rating			(A) Stem Length		Material	
78- Bimetal/Sensor Straight Shank	**51**	1"	150# RFF	**G**	4" Stem	**3**	Steel
	71	1 1/2"		**J**	6" Stem	**4**	Monel
	81	2"		**M**	9" Stem	**5**	304SS
90- Bimetal/Sensor Tapered Shank	**181**	3"		**R**	12" Stem	**6**	316SS
				V	15" Stem		
	53	1"		**Wa**	18" Stem		
	73	1 1/2"	300# RFF	**Wk**	24" Stem		
	83	2"					
	183	3"					
	56	1"					
	76	1 1/2"	600# RFF				
	86	2"					
	186	3"					

Other Flange Sizes and Ratings available; consult factory.

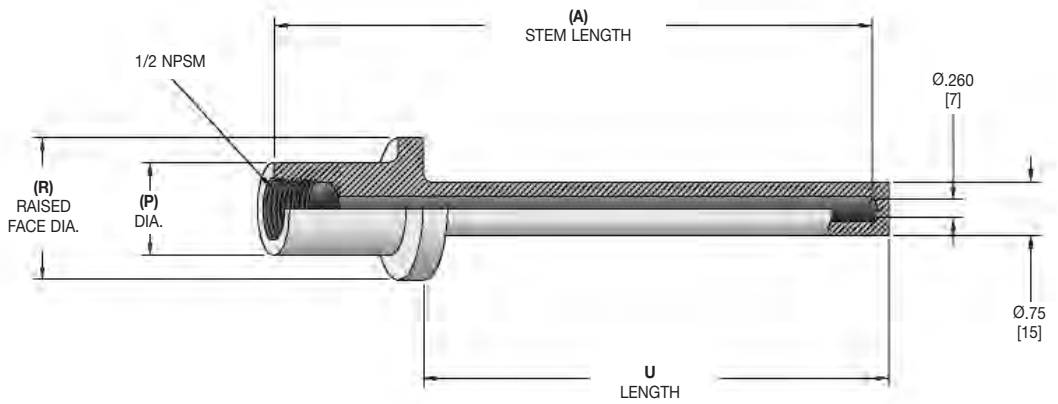
Thermowells

for Bimetal Thermometers & Temperature Sensors

Van Stone Style

All dimensions are nominal. Dimensions in [ ] are in millimeters..

Straight Shank



Thermowell does not include backing flange; when required, a carbon steel backing flange can be supplied. Consult factory.

Lengths

(A) Stem Length	U Length
4"	2.00 [51]
6"	4.00 [102]
9"	7.00 [178]
12"	10.00 [254]
15"	13.00 [330]
18"	16.00 [406]
24"	22.00 [559]

Other Dimensions

Nominal Pipe Size	Actual (P) Diameter	Raised Face (R) Diameter
1"	1.32 [33]	2.00 [51]
1 1/2"	1.90 [48]	2.88 [73]

Pressure Rating

Maximum pressure and temperature ratings are limited by the choice of flange. Please see ANSI/ASME B16.5-2003 for more information.

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

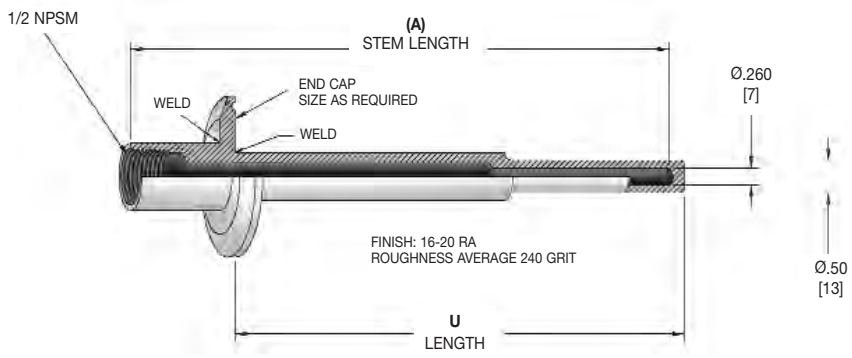
Sample Order Number: **78-V7 R 6**

Thermowell Style	(P) Nominal Pipe Size	(A) Stem Length	Material
78- Bimetal/Sensor Straight Shank	**V5** 1"	**G** 4" Stem	**3** Steel
	V7 1 1/2"	**J** 6" Stem	**4** Monel
		M 9" Stem	**5** 304SS
		R 12" Stem	**6** 316SS
		V 15" Stem	
		Wa 18" Stem	
		Wk 24" Stem	

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

Stepped



Lengths

(A) Stem Length	U Length
4"	2.50 [64]
6"	4.50 [114]
9"	7.50 [191]
12"	10.50 [267]
15"	13.50 [343]
18"	16.50 [419]
24"	22.50 [572]

Designed to meet 3A Dairy Certification requirements.

Pressure ratings are dependent upon the clamps, gaskets and ferrules used, which are not supplied by Trerice.

Alternative materials and accessories are also available. Please consult the Options and Accessories Section for details.

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers and Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **76-T8 M 6**

Thermowell Type	End Cap Size	(A) Stem Length	Material
76- Bimetal/Sensor Stepped Shank	**T7** 1½"	**G** 4" Stem	**5** 304SS
	T8 2"	**J** 6" Stem	**6** 316SS
	T18 3"	**M** 9" Stem	
		R 12" Stem	
		V 15" Stem	
		Wa 18" Stem	
		Wk 24" Stem	

Thermowells

Options & Accessories

Alternative Materials

Trerice offers a variety of alternative thermowell materials to ensure compatibility with special service applications. Please order using the material code listed in the table below. Other alloys or compounds may also be available, please consult factory.

Code	Material
7	Carpenter 20
8	Hastelloy B
9	Hastelloy C
10	Inconel 600
11	Incoloy 800
12	Nickel
13	Titanium

Protective Caps for Test Wells

A cap and lanyard is available to keep the thermowell bore clean when used in non permanent instrument installations. Please order using the item numbers listed in the table below.

Thermowell	Cap Material			
Style	Aluminum	Brass	Steel	Stainless Steel
Industrial	N/A	**026-0032A**	N/A	N/A
Econo	N/A	N/A	**116-0193A**	N/A
Dial	**026-0001A**	N/A	N/A	N/A
Bimetal or Sensor	N/A	**026-0034A**	N/A	**026-0034.1A**

Thermowell Conversion Kits

A Thermowell Conversion Kit permits the installation of a Trerice Bimetal Thermometer into an existing Industrial Thermometer thermowell. The kit includes an aluminum stem spacer, a brass (400°F max.) or stainless steel (750°F max.) ½" NPT x 1¼-18 bushing, and a tube of heat transfer paste. Maximum operating temperature 750°F.

Description	Item Number
Thermowell Adapter Kit; Industrial to Bimetal	**001-0099A (400°F max.)**
High Temperature Thermowell Adapter Kit; Industrial to Bimetal	**001-0099AH (750°F max.)**

Industrial Thermowell	Bimetal Thermometer
(A) Length	Stem Length Required
3½"	4" Stem
6"	7" Stem (special order length)
8"	9" Stem

Heat Transfer Paste

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the instrument before installation into a thermowell.

Description	Item Number
1 oz. Tube	**107-0001**

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Notes

Table of Contents

REGULATORS & CONTROL VALVES

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Table of Contents

REGULATORS & CONTROL VALVES

Controller Accessories

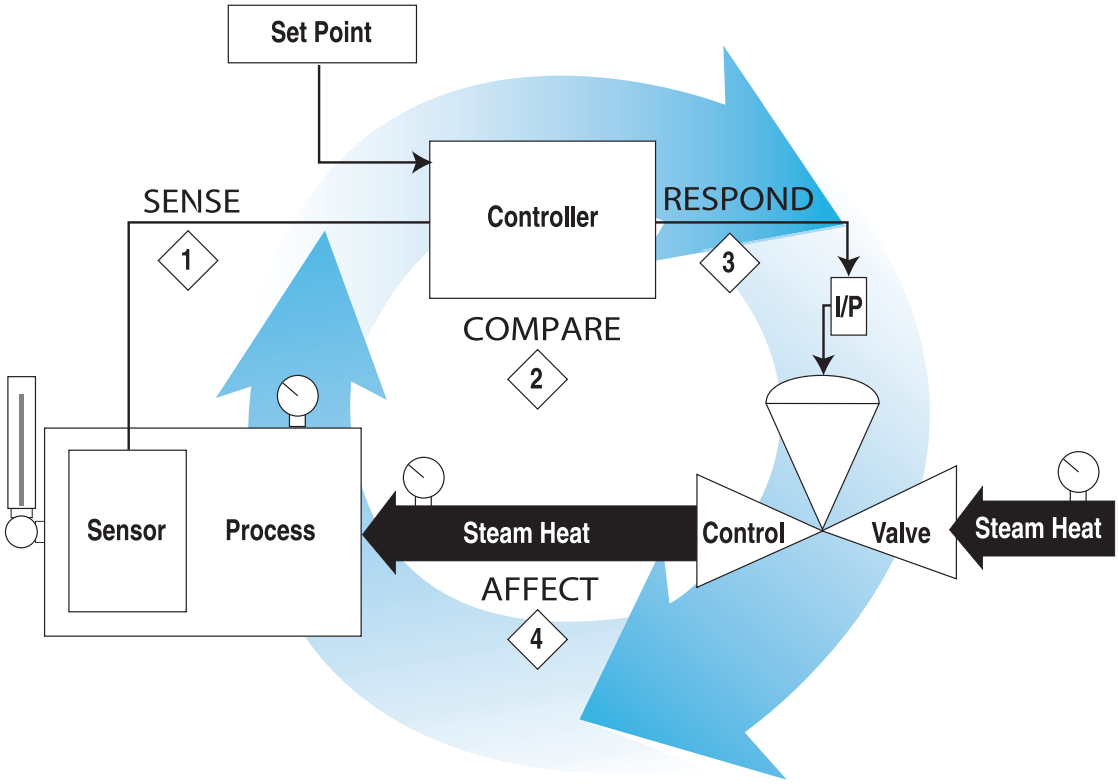
Products required for the design and installation of a complete control loop.

Control Valves

Pneumatic and Electric operated valves, available in a variety of body materials including Bronze, Cast Iron and Stainless steel. Control valves are the final element of a control loop.

Control Loop

Understanding a Control Loop



Control Loop

A control loop is a process management system designed to maintain a process variable at a desired set point. Each step in the loop works in conjunction with the others to manage the system. Once the set point has been established, the control loop operates using a four-step process.

1. **Sense**
   Measure the current condition of the process using a sensor, which can be an electronic (thermocouple, RTD or transmitter) or a mechanical device (thermal system).
2. **Compare**
   Evaluate the measurement of the current condition against the set point using an electronic or electric contact controller.
3. **Respond**
   React to any error that may exist by generating a corrective pneumatic or electric control signal.
4. **Affect**
   Actuate a final control element (valve, heater or other device) that will produce a change in the process variable.

The loop continually cycles through the steps, affecting the process variable in order to maintain the desired set point. Trerice is unique in its ability to provide all of the necessary components to create a complete control loop.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Control Loop

The following list are components required to create a basic control loop.
All products can be found within this catalog.

Electro-Pneumatic Control Loop (PID)

Temperature		Pressure
• Thermocouple or RTD Temperature Sensor • Thermowell	Sense	• 700Plus Series Industrial Transmitter Gauge
• TR890 Series Electronic Controller • No. TA901 I/P Transducer • No. TA987 Air Filter/Regulator	Compare-Respond	• TR890 Series Electronic Controller • No. TA901 I/P Transducer • No. TA987 Air Filter/Regulator
• 910 or 940 Series Control Valve • 1100 Series Pipeline Strainer	Affect	• 910 or 940 Series Control Valve • 1100 Series Pipeline Strainer

Electric Control Loop (PID)

Temperature		Pressure
• Thermocouple or RTD Temperature Sensor • Thermowell	Sense	• 700Plus Series Industrial Transmitter Gauge
• TR890 Series Electronic Controller	Compare-Respond	• TR890 Series Electronic Controller
• 940E Series Control Valve • 1100 Series Pipeline Strainer	Affect	• 940E Series Control Valve • 1100 Series Pipeline Strainer

Electric Control Loop (On/Off)

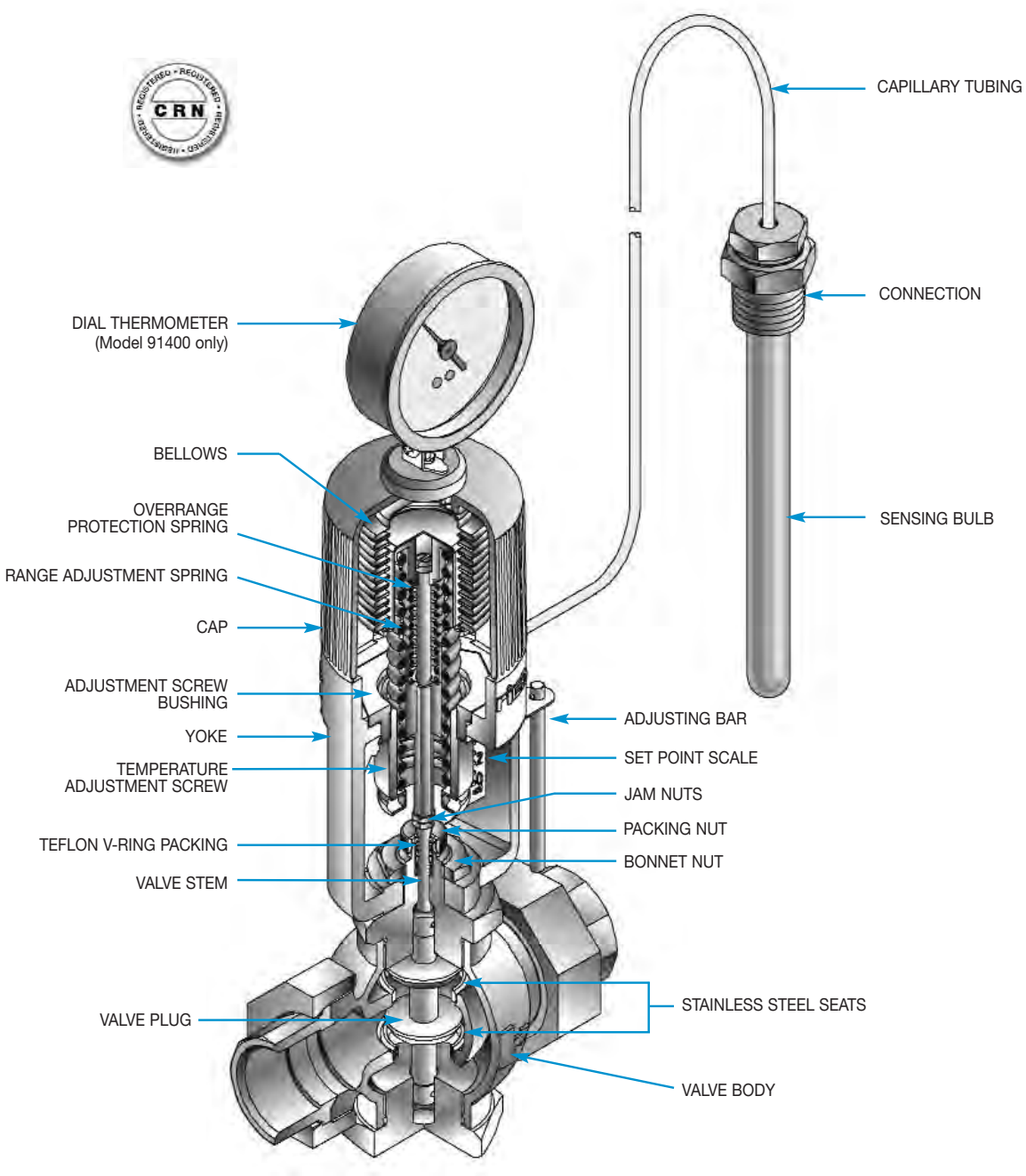
Temperature	
• L84000 Series Electric Contact Controller • Thermowell	Sense-Compare-Respond
• 960 Series Solenoid Valve • 1100 Series Pipeline Strainer	Affect

Self-Operating Regulation Loop (Proportional)

Temperature		Pressure
• 91000 Series Temperature Regulator • Thermowell • 1100 Series Pipeline Strainer	Sense-Compare-Respond-Affect	• 921 Series Pressure Regulator • 1100 Series Pipeline Strainer

Temperature Regulators

DESIGN & OPERATION



Housing Assembly

The housing consists of a cap and yoke constructed from precision die cast aluminum. This assembly ensures permanent alignment with the valve body, while protecting the bellows assembly. The yoke includes a set point scale used to reference the setting of the temperature adjustment screw. The entire housing is finished in a corrosion resistant, baked blue epoxy.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Description

The Self-Operating Temperature Regulator is a mechanically operated device designed to regulate system temperature by modulating the flow of a heating or cooling fluid in response to temperature changes.

Principles of Operation

The Trerice "Self-Op" Temperature Regulator is a fully self-contained unit, requiring no external power source (i.e., compressed air or electricity). Regulation takes place when the sensing element (bulb) of the thermal system is exposed to changes in temperature. The thermal system is charged with a predetermined amount of vapor fill, which, when heated, will cause a bellows within the unit's actuator housing to expand. As the bellows expands, it compresses a return spring while simultaneously moving the valve stem downward to stroke the valve. When the process temperature decreases (or in the event of thermal system failure), the return spring will move the valve stem upward to the "out" position. The choice of valve action (stem In-To-Close or stem In-To-Open) will determine its system failure position.

Selecting a Temperature Regulator

The Trerice "Self-Op" Temperature Regulator is recommended for controlling the flow on relatively stable systems, where small valve stroke modulations will correct temperature drift. Where sudden or large load changes, or rapid temperature changes occur, a pneumatically or electrically powered Trerice Control Valve should be specified. Please consult the Control Valve Section of this catalog.

Trerice "Self-Op" Temperature Regulators are NOT intended for use in applications where the media comes in direct contact with the skin or body, such as showers, baths, lavatories or wash fountains.

Trerice "Self-Op" Temperature Regulators should be carefully selected to meet the demands of the particular application. The information contained within this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper temperature regulator is the sole responsibility of the user. Improper application may cause failure, resulting in possible personal injury or property damage.

Actuator

The actuator consists of the following assemblies: housing, bellows and spring return, and thermal system. Three actuator models are available:

- **Model 91000** is non-indicating and direct acting.
- **Model 91400** is equipped with an integral dial thermometer to indicate sensing bulb temperature and is direct acting.
- **Model 91600** (Fail-Safe) is non-indicating and direct acting. It is specifically designed to cause the valve to move to the cooler position in case of thermal system failure.

Actuator: Direct Acting

Direct Acting actuators are designed to move the valve stem to the "in" position as the control signal (temperature) increases.

Temperature Regulators

DESIGN & OPERATION

Bellows and Spring Return Assembly

The accordion type bellows is corrosion resistant to provide accurate response for the life of the regulator. An adjusting bar is provided to turn the brass temperature adjustment screw, which compresses or expands the range adjustment spring, thereby setting the control point of the unit.

Thermal System Assembly

The thermal system (sensing bulb and capillary tubing) is available in copper (for best heat transfer) or 316 stainless steel (for corrosive applications), and can be ordered with a variety of protective coverings, including Teflon or stainless steel spiral armor. Capillary tubing lengths can be specified from 8 to 52 feet.

Integral Dial Thermometer

The integral dial thermometer (Model 91400 only) displays the temperature at the sensing bulb. This allows for easy adjustment of the temperature set point, as well as for continuous monitoring of the application, without the installation of an additional thermometer. The thermometer has a 3½" dialface and can be rotated and tilted for maximum readability.

Temperature Range

Nominal ranges from 20°F (-10°C) through 440°F (225°C) are available. The nominal range defines the entire temperature range of the unit. The service conditions and the choice of valve style and action will determine the actual operating range (recommended working span) of the unit. The nominal range should be selected so the set point falls within the recommended working span for the specified valve style and action. Models 91000 and 91400 include an overrange protection spring, which allows the sensing bulb to be heated 100°F above the upper limit of the unit's nominal range for system cleaning or temporary situations.

Sensing Bulb Installation:

Care must be taken to ensure that entire length of the sensing bulb is immersed into the medium at the sensing location. Partial immersion will result in faulty control. When the sensing bulb is installed into a pipeline, constant flow must be continued through the line in order to maintain an active thermal signal to the bulb. Should a closed valve cause stoppage of flow to the bulb, a reduced bypass flow must be installed to maintain thermal signal.

The sensing bulb is designed to be installed in either a horizontal position or a vertical position with the tip down. If the tip must be installed upwards, please specify when when ordering, as a special bulb construction is required.

Accuracy

The Trerice "Self-Op" Temperature Regulator is a "set-and-forget" regulating device. Once the proper control point setting has been achieved, the unit requires virtually no adjustments and very little maintenance. Control point accuracy is dependent upon the sensing bulb location, load change size and speed, and valve size. The sensing bulb must be installed in an area within the process that is most representative of overall process conditions. Care should be taken not to locate the bulb in close proximity to the valve, as the regulator might respond to temperature changes before the process has had time to reach the control point. Where sudden or large load changes occur, a pneumatically or electrically powered Trerice Control Valve should be specified. Please consult the Control Valve Section of this catalog.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Accuracy (continued)

Valve sizing also plays a major part in regulator performance. A valve that is too small will not be able to provide the desired capacity during peak load conditions, while a valve that is too large may overshoot the control point and operate with the valve plug too close to the seat, resulting in undue wear of the plug and seat. As part of a well-designed system, a properly sized valve (operating in the 60-90% open position) can control to within 2° to 5°F.

Valve

Trerice "Self-Op" Temperature Regulators are available with a wide variety of globe valves in various styles, materials, connections and sizes.

Temperature Regulators are not considered shut-off valves. A pressure surge may force a single seated valve plug open. The Trerice Temperature Regulator is a balanced equilibrium system at the set point and provides no power to tightly seat the valve plug. A separate power driven or hand actuated valve is required to ensure tight shut-off when necessary.

Style

Trerice Regulator Valves are offered in single seated, double seated and three-way designs.

- **Single Seated Valves** are designed for applications where tighter shut off is required. However, this design is unbalanced and limited in the pressure that it will shut-off against. The leakage rate is approximately 0.1% of the maximum capacity.
- **Double Seated Valves** are nearly pressure balanced and, therefore, are able to close the valve plug against higher operating pressures. However, since temperature fluctuations may cause expansion and contraction across the seats, tight shut-off is not always possible. The leakage rate is approximately 0.5% of the maximum capacity. Double seated valves have a faster flow response and greater capacity than single seated valves, and are recommended when tight shut-off is not required.
- **3-Way Valves** are used for mixing two flows together, or for diverting a flow to or around a device (bypass). In order to produce consistent flow quantity for stable operation, the pressure drop across both flow paths (inlet to outlet) must be nearly equal.

  3-Way Valves are of the Sleeve Type (common port on the bottom). This type is most commonly used for diverting applications, however due to its design it can also be used for mixing applications. The Sleeve Type design is constructed with an O-ring around the sleeve. This O-ring is suitable for water or glycol type service, up to a maximum of 300˚F. A higher temperature O-ring for use with other fluids, such as oil, or for temperatures up to 410˚F is available. Consult factory.

Trerice 3-Way Valve are not designed for use in steam applications.

Trerice "Self-Op" Temperature Regulators are NOT intended for use in applications where the media comes in direct contact with the skin or body, such as showers, baths, lavatories or wash fountains.

Temperature Regulators

DESIGN & OPERATION

Action

Trerice Single and Double Seated Valves are available as stem In-To-Close (Normally Open) for heating applications, or stem In-To-Open (Normally Closed) for cooling applications. The action of bronze bodied valves is field reversible. Trerice 3-Way Valves can be plumbed for either mixing or diverting service.

Temperature Regulator Valve Action

Application	Stem Action	Normal (Fail*) Position
Heating	In-To-Close	Normally Open
Cooling	In-To-Open	Normally Closed

**91000 and 91400 only. 91600 is designed to fail in the cooler position.*

Body Material and Connection

Trerice “Self-Op” Temperature Regulators are available with bronze, cast-iron, cast steel and stainless steel valve bodies. Union, flanged and threaded connection styles are available.

Trim

Valve trim is composed of the stem and plug assembly, and the seats within the ports. Trerice single and double seated bronze bodied valves employ a stainless steel, tapered plug for enhanced modulation, as well as permanently brazed-in stainless steel seats for smooth performance throughout the life of the valve. The valve plug is both top and bottom guided to ensure positive seating alignment. Trerice 3-Way valves use a stainless steel sleeve and brass seating surface to change flow direction within the body.

Packing

Trerice valves feature a self-energizing Teflon V-Ring packing, which reduces leakage around the valve stem. V-Ring packing is spring loaded to maintain proper compression and does not require manual adjustment.

Size

The proper sizing of a regulating valve is one of the most important factors in its selection. A valve that is too small will not be able to provide the desired capacity during peak load conditions, while a valve that is too large may overshoot the control point and operate with the valve plug too close to the seat, resulting in undue wear of the plug and seat. The valve coefficient (C_V) is mathematically determined through an evaluation of the system service conditions (operating pressures and flow). From this evaluation, a valve body with the appropriate port size can be selected. Port sizes from 1/8" through 6" and connection sizes from 1/2" through 6" are available. Please consult the Valve Selection Section of this catalog.

Valve Coefficient (C_V)

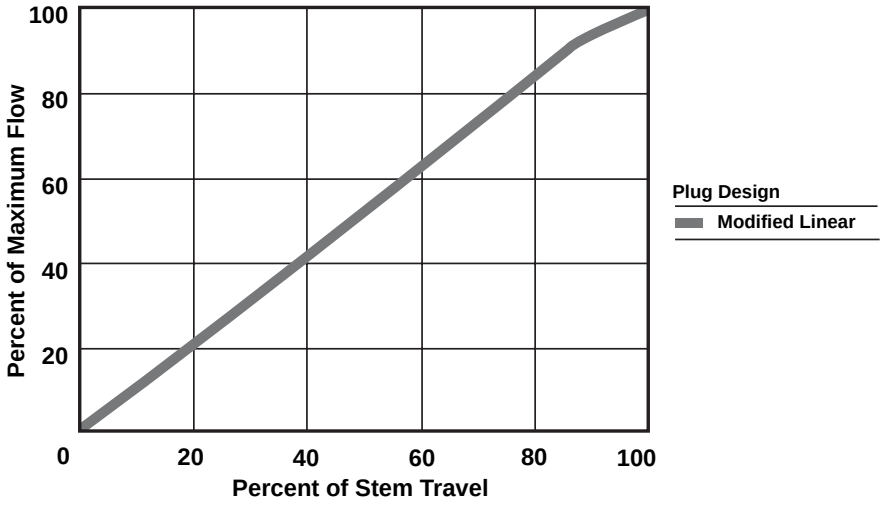
The rated valve coefficient is used to describe the relative flow capacity of the valve based on standard test conditions. Please refer to the Valve Selection Section for detailed information.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Temperature Regulator Valve Availability

			Size										
Body Material	**Connection**	**Style**	**½"**	**¾"**	**1"**	**1¼"**	**1½"**	**2"**	**2½"**	**3"**	**4"**	**5"**	**6"**
Bronze	Iron Unions	Single	✓*	✓	✓	✓	✓	✓					
		Double		✓	✓	✓	✓	✓					
		3-Way	✓	✓	✓	✓	✓	✓					
Cast-Iron	Class 125 Flanged	Double							✓	✓	✓	✓	✓
		3-Way							✓	✓	✓		
Cast-Steel	Threaded	Single		✓*	✓*								
Stainless Steel	Threaded	Single	✓*	✓	✓		✓	✓					
		3-Way	✓	✓	✓		✓	✓					

**Reduced port sizes are available.*



Thermowell

For applications in which the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the sensing bulb. A thermowell will also facilitate the removal of the sensing bulb and thermal system from the operating process. Thermowells are available in a variety of connection styles, materials and lengths.

To ensure minimum response time, Trerice Heat Transfer Paste should be applied to the sensing portion of the bulb before installation.

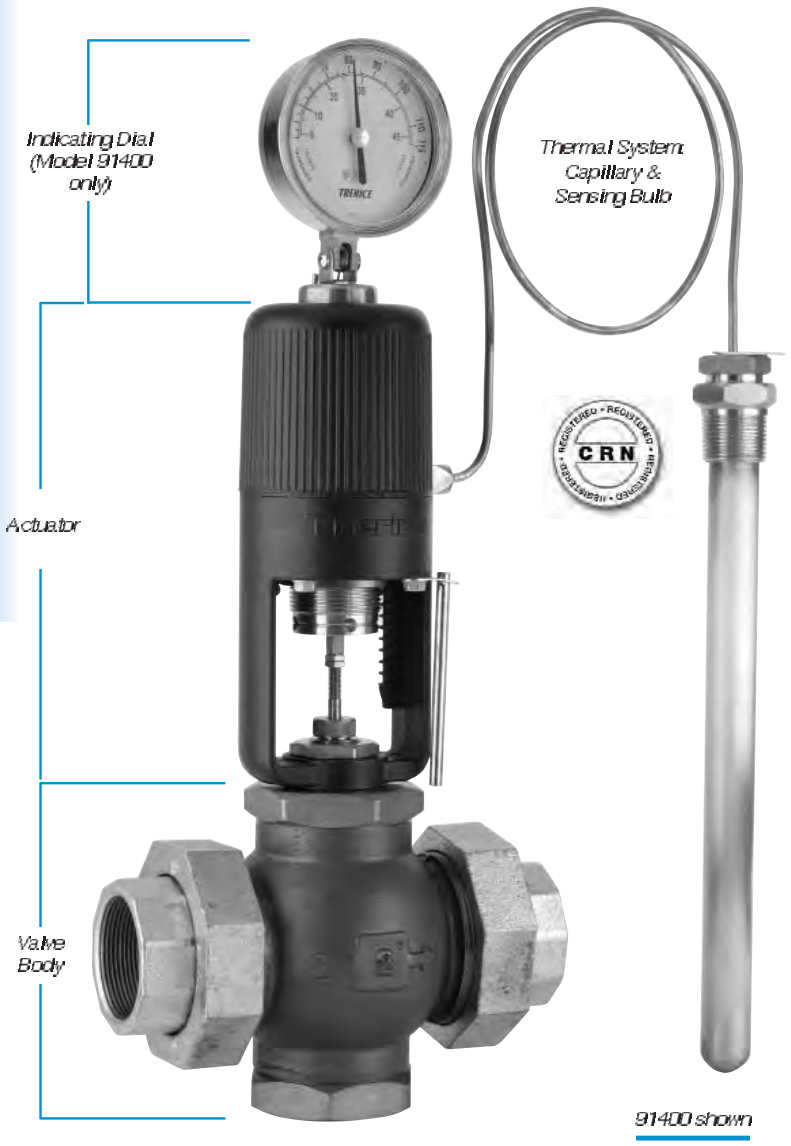
1 oz. tube: Item No. 107-0001

Pipeline Strainer

A Trerice Series 1100 Pipeline Strainer should always be installed upstream of a Trerice Regulator. This Y-Type strainer employs a stainless steel screen to remove debris from the line, which will prevent jamming of the valve and extend its life. See “Pressure Regulator Section.”

91000 Series Temperature Regulator

The "Self-Op" (Self-Operated Temperature Regulator)



- Self-Operating Design
- Indicating, Non Indicating or Safety Models Available
- Heavy Duty Die Cast Aluminum Housing
- ½" thru 6" Valve Sizes
- Fully Enclosed Bellows
- Internal Overrange protection

The **91000 Series** (Models 91000, 91400 & 91600) Self-Operating Temperature Regulator is the preferred choice of original equipment manufacturers, mechanical contractors and specifying engineers. These regulators require no external power source and are ideal for regulating the temperature of tanks, process streams and various types of industrial equipment. The Actutator is noted for its rugged die-cast aluminum housing, fully enclosed bellows assembly and internal over range protection.

Valve bodies for the **91000** are offered in single-seated, double-seated and 3-way designs and are available in Bronze, Cast-Iron, Cast-Steel and Stainless Steel construction.

The Model **91000** (without indicating dial) features a lower profile and should be specified where space constraints may be an issue.

The Model **91400** (with indicating dial) will allow the operator to verify the process temperature and to aid in temperature adjustment.

The Model **91600** Fail-Safe Actuator is designed to cause the valve to fail in the safe control position (open in a cooling application, closed in a heating application) should accidental damage to the thermal system occur, resulting in loss of the pressure charge.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the regulator bulb and facilitate its removal from the process. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

HOW TO ORDER

Sample Order Number: **91400 R06 08 B01 W01 - A26**

Models	Range	Capillary Length	Thermal System	Thermowell*	Valve Body Selection
91000 Non-Indicating **91400** Indicating Dial **91600** Fail Safe	Refer to Standard Ranges (page 176)	**08** 8 Feet **12** 12 Feet **16** 16 Feet **20** 20 Feet	Refer to Thermal System Selection Chart (pages 178-179)	**W01 -** Brass **W02 -** Steel **W04 -** 316SS *(Omit if not required)*	For 91000/91400 Models (refer to pages 180-187) For 91600 Models (refer to page 188) *(Omit this selection if purchasing Actuator only)*

* Thermowell sized to fit bulb as specified.

Other Capillary Lengths available: Specify in 4 Foot increments (52' maximum)

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

91000 Series
Temperature Regulator

Specifications

Actuator Models

91000	(Non-Indicating)
91400	(Indicating Dial)
91600	(Fail-Safe)

Power Requirements
Fully self-contained – no external power required

Dial Thermometer
3½" dial, stainless steel case, swivel and angle adjustment (Model 91400 only)

Housing — Die cast aluminum, epoxy powder coated blue finish

Set Point Scale — Integral to housing

Bellows — High pressure brass, corrosion resistant, tin plated finish

Adjustment Screw
Brass

Adjustment Screw Bushing
Lubricant impregnated sintered bronze

Range Adjustment Spring
Cadmium Plated

Overrange Protection
Upper range limit +100°F for temporary situations (not available for Model 91600)

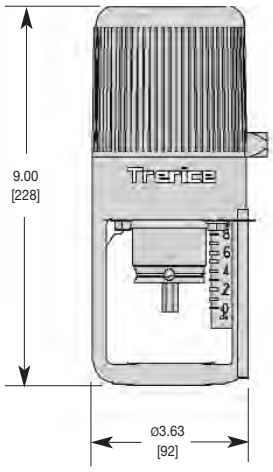
Approximate Shipping Weight

Actuator
91000: 6.0 lbs [2.70 kg]
91400: 6.6 lbs [2.97 kg]
91600: 9.5 lbs [4.32 kg]

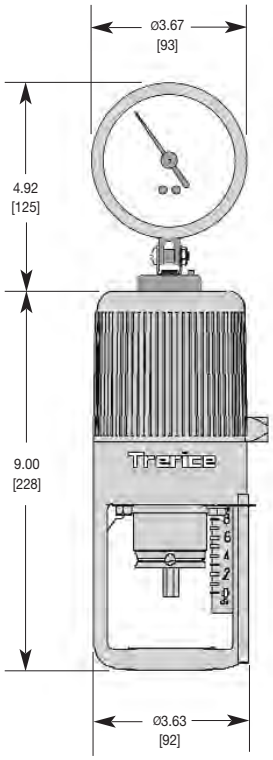
Valve
See Valve Selection tables

All dimensions are nominal. Dimensions in [ ] are in millimeters.

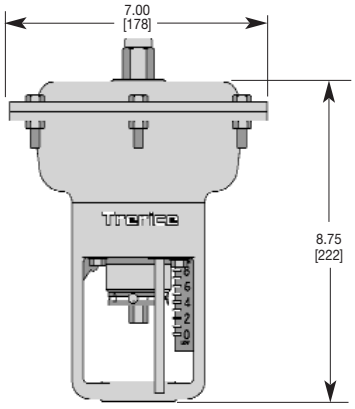
91000
Non-Indicating Actuator



91400
Indicating Actuator



91600
Fail-Safe Actuator



Temperature Ranges

The "Self-Op" Temperature Regulator (91000, 91400, & 91600 Models)

Standard Ranges

91000 & 91400 Actuators

Range Code	Nominal Range	Recommended Working Span: Single Seat, In-To-Close Valves; Double Seat, In-To-Close Valves; Double Seat, In-To-Open Valves; All 3-Way Valves	Recommended Working Span: Single Seat In-To-Open Valves	Dial Thermometer Range (Model 91400 only)
R01*	20° to 70°F & -10° to 20°C	40° to 65°F & 5° to 20°C	N/A	30° to 115°F & C
R02*	40° to 90°F & 5° to 30°C	65° to 85°F & 20° to 30°C	N/A	50° to 140°F & C
R03	30° to 115°F & 0° to 45°C	85° to 110°F & 30° to 45°C	50° to 80°F & 10° to 25°C	30° to 115°F & C
R04	50° to 140°F & 10° to 60°C	110° to 135°F & 45° to 60°C	80° to 105°F & 25° to 45°C	50° to 140°F & C
R05	75° to 165°F & 25° to 70°C	135° to 160°F & 60° to 70°C	105° to 130°F & 40° to 50°C	75° to 165°F & C
R06	105° to 195°F & 40° to 90°C	160° to 190°F & 70° to 90°C	130° to 155°F & 50° to 65°C	105° to 195°F & C
R07	125° to 215°F & 55° to 100°C	190° to 210°F & 90° to 100°C	155° to 180°F & 65° to 80°C	125° to 215°F & C
R09	155° to 250°F & 70° to 120°C	210° to 245°F & 100° to 120°C	180° to 215°F & 80° to 100°C	155° to 250°F & C
R10	200° to 280°F & 95° to 135°C	245° to 275°F & 120° to 135°C	215° to 245°F & 100° to 120°C	200° to 280°F & C
R11	225° to 315°F & 110° to 155°C	275° to 310°F & 135° to 155°C	245° to 280°F & 120° to 140°C	225° to 315°F & C
R12	255° to 370°F & 125° to 185°C	305° to 365°F & 155° to 185°C	275° to 335°F & 135° to 165°C	255° to 370°F & C
R13	295° to 420°F & 145° to 215°C	365° to 415°F & 185° to 215°C	335° to 385°F & 165° to 195°C	295° to 420°F & C
R14	310° to 440°F & 155° to 225°C	415° to 435°F & 215° to 225°C	385° to 405°F & 195° to 205°C	310° to 440°F & C

**Not recommended for single seated valves.*

The recommended working span typically falls within the upper third of the nominal range. Single Seat In-To-Close, all Double Seat, and all 3-Way valves have a recommended working span in this part of the nominal range. However, due to differing thrust requirements, Single Seat In-To-Open valves have a recommended working span in the middle one-third of the nominal range.

Standard Ranges

91600 Fail-Safe Actuators

Range Code	Nominal Range and Recommended Working Span
R81	40° to 65°F & 5° to 20°C
R82	55° to 80°F & 15° to 25°C
R83	65° to 90°F & 20° to 30°C
R84	80° to 110°F & 25° to 40°C
R85	90° to 115°F & 30° to 45°C
R86	110° to 140°F & 40° to 60°C
R89	140° to 175°F & 60° to 80°C
R90	170° to 195°F & 80° to 90°C
R91	190° to 210°F & 85° to 100°C
R92	205° to 225°F & 95° to 105°C
R93	215° to 250°F & 100° to 120°C
R94	230° to 265°F & 110° to 130°C
R95	245° to 280°F & 120° to 135°C
R96	270° to 300°F & 135° to 150°C

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Thermowells

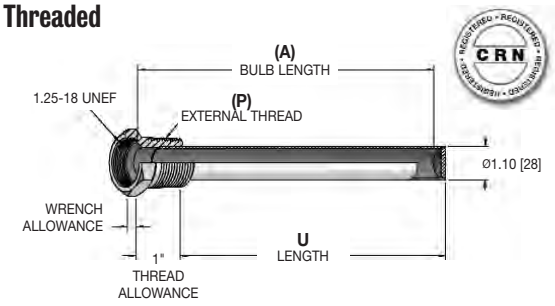
for **Temperature Regulator** (91000, 91400, & 91600 Models)

If Thermowells are to be purchased as a separate item, or if a Special Thermowell is required, please refer to this page. If a complete Temperature Regulator is purchased, the proper Thermowell to match the sensing bulb ordered will be supplied. Please note sensing bulb size is affected by capillary length. Indicate W01 for Brass, W02 for Steel or W04 for 316SS.

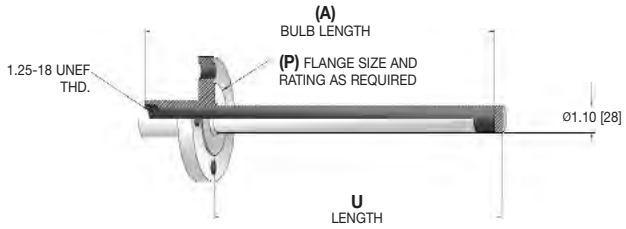
Thermowell to fit Standard Bulb

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Threaded



Flanged



Pressure Rating (psi)

	Operating Temperature		
Material	70°F	300°F	500°F
Carbon Steel	850	850	680
316 Stainless Steel	850	780	730
Brass	480 psi @ 150°F, 400 @ 350°F		

Lengths

(A) BULB LENGTH	U Length
13"	12.25 [311]
16"	15.25 [387]
20"	19.25 [489]
24"	23.25 [591]

Maximum pressure and temperature ratings are limited by the choice of flange. Please see ANSI/ASME B16.5-2003 for more information.

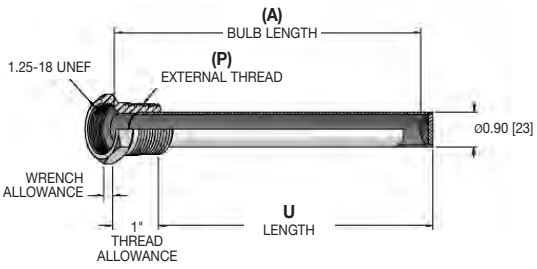
HOW TO ORDER

Sample Order Number: **53-6S6**

Thermowell Style	(P) External Connection	(A) Bulb Length	Material
53 - Temperature Regulator	**6** 1¼ NPT	**S** 13" Bulb	**2** Brass (500 psi max.)
	71 1½" 150# RFF *	**Se** 16" Bulb	**3** Steel (500 psi max.)
	81 2" 150# RFF *	**We** 20" Bulb	**6** 316SS (1000 psi max.)
	181 3" 150# RFF *	**Wk** 24" Bulb	

* Not available in Brass.
Other connections and lengths may be available, consult factory.

Thermowell to fit Special "Small" Bulb



Lengths

(A) Bulb Length	Thermowell U Length
9"	8.25 [210]
12"	11.25 [286]

Pressure Rating (psi)

	Operating Temperature		
Material	70°F	300°F	500°F
Carbon Steel	850	850	680
316 Stainless Steel	850	780	730
Brass	480 psi @ 150°F, 400 @ 350°F		

HOW TO ORDER

Sample Order Number: **53-5M2**

Thermowell Style	(P) External Thread	(A) Bulb Length	Material
53 - Temperature Regulator	**5** 1 NPT	**M** 9" Bulb	**2** Brass (500 psi max.)
		R 12" Bulb	**3** Steel (500 psi max.)
			6 316SS (1000 psi max.)

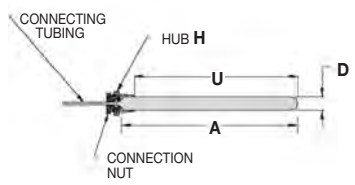
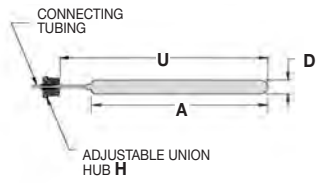
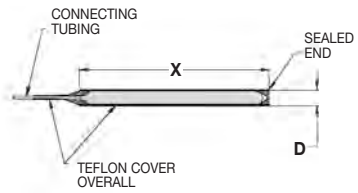
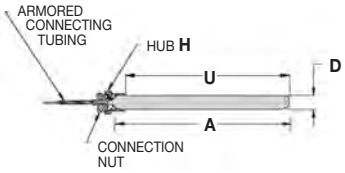
Selection of the proper thermowell is the sole responsibility of the user. Pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Thermal System Selection

Temperature Regulator (91000, 91400, & 91600 Models)

TEMPERATURE REGULATORS

Bulb and Capillary Style	Order Code	Connection Style & Material	Bulb Material	Capillary Tubing Material
Union Connection 	B01	Brass Union Hub	Copper	Copper
	B10	Stainless Steel Union Hub	Stainless Steel	Stainless Steel
Adjustable Union Connection 	B02	Brass Union Hub	Copper	Copper
		Adjustable over entire capillary length		
	B04	Stainless Steel Union Hub	Stainless Steel	Stainless Steel
		Adjustable over entire capillary length		
Plain Bulb 	B05	None	Copper	Copper
	B06	None	Stainless Steel	Stainless Steel
Teflon Covered Bulb 	B08	None	Copper with Teflon Covering	Copper with Teflon Covering
			450°F (232°C) Maximum Temperature	
	B07	None	Stainless Steel with Teflon Covering	Stainless Steel with Teflon Covering
			450°F (232°C) Maximum Temperature	
Union Connection with Spiral Armor 	B15	Brass Union Hub	Copper	Copper with Stainless Steel Spiral Armor
	B16	Stainless Steel Union Hub	Stainless Steel	Stainless Steel with Stainless Steel Spiral Armor

Bulb Pressure Limits: Copper = 250 psi, Stainless Steel = 500 psi

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Bulb Dimensions & Minimum Insertion Lengths

Standard Bulb

Special "Small" Bulb

	Dim.	91000 / 91400 Capillary Length 8 to 16 Feet	20 Feet	24 to 36 Feet	40 to 52 Feet	91600 Capillary Length 8 Feet*	91000 / 91400 Order Code	All	91600 All
	A	13"	16"	20"	24"	16"	**SB01**	9"	12"
	U	12.25"	15.25"	19.25"	23.25"	15.25"		8.25"	11.25"
	D	1"	1"	1"	1"	1"		3/4"	3/4"
	H	1 NPT	1 NPT	1 NPT	1 NPT	1 NPT		3/4 NPT	3/4 NPT
	A	13"	16"	20"	24"	16"	**SB10**	9"	12"
	U	12.25"	15.25"	19.25"	23.25"	15.25"		8.25"	11.25"
	D	1"	1"	1"	1"	1"		3/4"	3/4"
	H	1 NPT	1 NPT	1 NPT	1 NPT	1 NPT		3/4 NPT	3/4 NPT
	A	13"	16"	20"	24"	16"			
	U	12.25"	15.25"	19.25"	23.25"	15.25"			
	D	1"	1"	1"	1"	1"			
	H	1 NPT	1 NPT	1 NPT	1 NPT	1 NPT			
	A	13"	16"	20"	24"	16"			
	U	12.25"	15.25"	19.25"	23.25"	15.25"			
	D	1"	1"	1"	1"	1"			
	H	1 NPT	1 NPT	1 NPT	1 NPT	1 NPT			
	X	13"	16"	20"	24"	16"			
	D	1"	1"	1"	1"	1"			
	X	13"	16"	20"	24"	16"			
	D	1"	1"	1"	1"	1"			
	X	15"	18"	22"	26"	18"			
	D	1.16"	1.16"	1.16"	1.16"	1.16"			
	X	15"	18"	22"	26"	18"			
	D	1.16"	1.16"	1.16"	1.16"	1.16"			
	A	13"	16"	20"	24"	16"	**SB15**	9"	12"
	U	12.25"	15.25"	19.25"	23.25"	15.25"		8.25"	11.25"
	D	1"	1"	1"	1"	1"		3/4"	3/4"
	H	1 NPT	1 NPT	1 NPT	1 NPT	1 NPT		3/4 NPT	3/4 NPT
	A	13"	16"	20"	24"	16"	**SB16**	9"	12"
	U	12.25"	15.25"	19.25"	23.25"	15.25"		8.25"	11.25"
	D	1"	1"	1"	1"	1"		3/4"	3/4"
	H	1 NPT	1 NPT	1 NPT	1 NPT	1 NPT		3/4 NPT	3/4 NPT

Note: This bulb is available for applications where space considerations exist, and may only be used when the temperature of the actuator housing will always remain lower than that of the sensing bulb. If the temperature of the actuator housing rises above the sensing bulb temperature, the unit will not operate properly. The temperature of the actuator housing is dependent upon both the surrounding environment and the temperature of the flow medium and may easily reach 150°F on steam service.

This bulb is only available on union connected thermal systems.

Always use the Standard Bulb unless special requirements exist and full details of the application are known, consult factory.

**On Model 91600, Minimum Insertion Length increases by 1" for each additional 4 ft. capillary increment.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

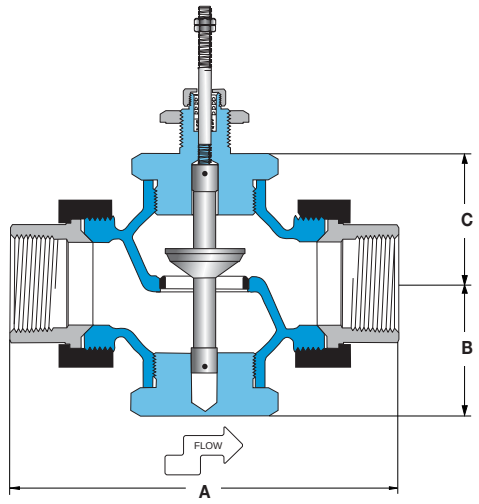
Valve Body Selection
(for 91000 & 91400 Temperature Regulators)

BRONZE

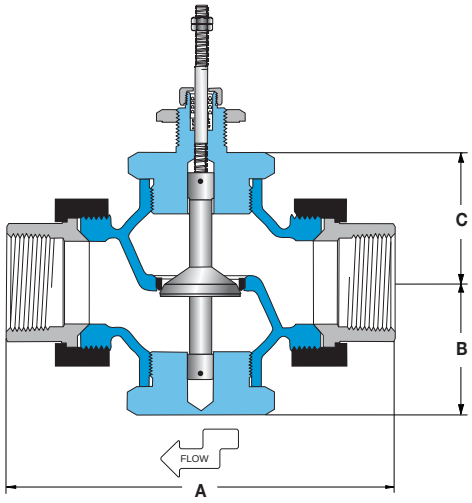
Single Seat • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-To-Close for Heating



Stem In-To-Open for Cooling



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Modified linear	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

Valve Body Selection

Valve Body Number		Size		Capacity C_v	Maximum Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
In-To-Close Heating	In-To-Open Cooling	Connection (NPT)	Nominal Port			A	B	C	
A02	A03	1/2	1/8"	0.17	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A05	A06	1/2	3/16"	0.35	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A08	A09	1/2	1/4"	0.7	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A11	A12	1/2	3/8"	1.4	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A14	A15	1/2	1/2"	2.8	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A19	A22	3/4	3/4"	5.6	140	5.6 [142]	2.3 [58]	2.3 [58]	4.9 lbs [2.21 kg]
A26	A30	1	1"	8.4	80	6.0 [152]	2.3 [58]	2.3 [58]	6.0 lbs [2.70 kg]
A36	A41	1 1/4	1 1/4"	15	50	7.2 [183]	2.6 [66]	2.6 [66]	9.7 lbs [4.37 kg]
A47	A52	1 1/2	1 1/2"	21	35	7.7 [196]	2.6 [66]	2.6 [66]	10.8 lbs [4.86 kg]
A58	A63	2	2"	33	20	8.6 [218]	3.1 [79]	3.1 [79]	16.3 lbs [7.34 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

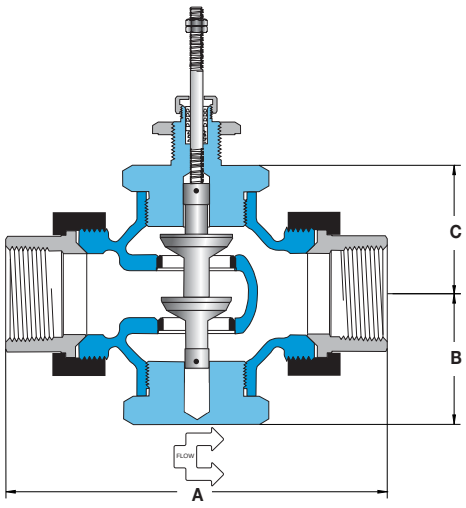
BRONZE

Valve Body Selection (for 91000 & 91400 Temperature Regulators)

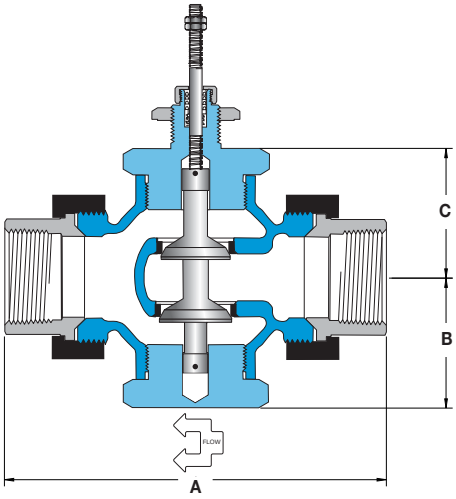
All dimensions are nominal. Dimensions in [ ] are in millimeters.

Double Seat • 3/4" – 2"

Stem In-To-Close for Heating



Stem In-To-Open for Cooling



Specifications

Body Material	Trim	Material	Trim Style Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Modified linear	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

Valve Body Selection

Valve Body Number		Size		Capacity C_V	Maximum Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
In-To-Close Heating	In-To-Open Cooling	Connection (NPT)	Nominal Port			A	B	C	
A21	A24	3/4	3/4"	8	250	5.6 [142]	2.3 [58]	2.3 [58]	5.0 lbs [2.25 kg]
A29	A33	1	1"	12	250	6.0 [152]	2.3 [58]	2.3 [58]	6.1 lbs [2.75 kg]
A39	A44	1 1/4	1 1/4"	21	250	7.2 [183]	2.6 [66]	2.6 [66]	10.1 lbs [4.55 kg]
A50	A55	1 1/2	1 1/2"	30	250	7.7 [196]	2.6 [66]	2.6 [66]	11.1 lbs [5.00 kg]
A61	A66	2	2"	47	250	8.6 [218]	3.1 [79]	3.1 [79]	17.0 lbs [7.65 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

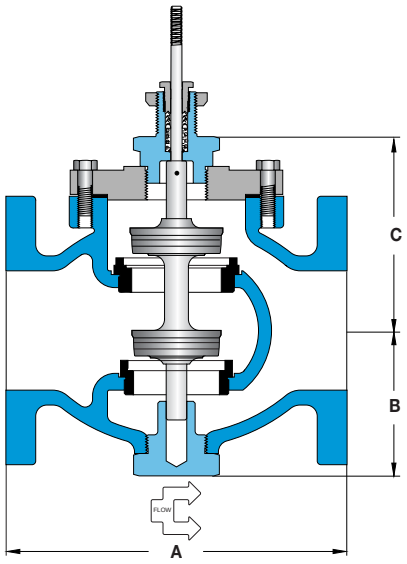
Valve Body Selection
(for 91000 & 91400 Temperature Regulators)

CAST IRON

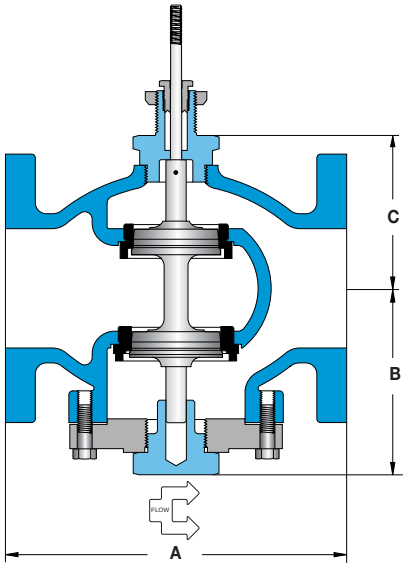
Double Seat • 2½" – 6"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-To-Close for Heating



Stem In-To-Open for Cooling



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Modified linear	Class 125 flanged	125 PSI @ 350°F (149°C)

Valve Body Selection

Valve Body Number		Size		Capacity C_V	Maximum Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
In-To-Close Heating	In-To-Open Cooling	Connection	Nominal Port			A	B	C	
B73	B74	2½"	2½"	69	65	7.8 [198]	4.8 [122]	5.4 [137]	45 lbs [20 kg]
B78	B79	3"	3"	90	50	9.0 [229]	5.0 [127]	5.6 [142]	70 lbs [32 kg]
B83	B84	4"	4"	196	40	11.4 [290]	6.3 [160]	6.5 [165]	100 lbs [45 kg]
B88	B89	5"	5"	248	30	12.0 [305]	6.9 [175]	7.3 [185]	155 lbs [70 kg]
B93	B94	6"	6"	340	25	14.1 [358]	7.5 [191]	8.0 [203]	180 lbs [82 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

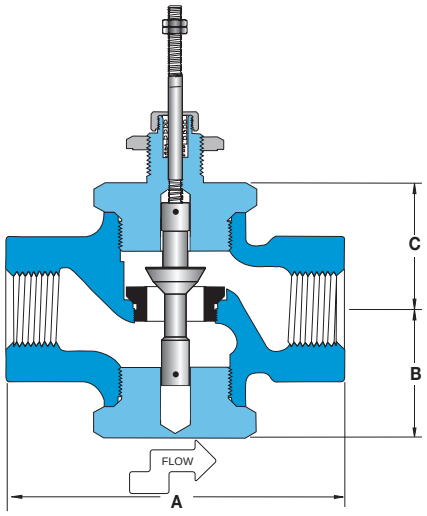
CAST STEEL (for 91000 & 91400 Temperature Regulators)

Valve Body Selection

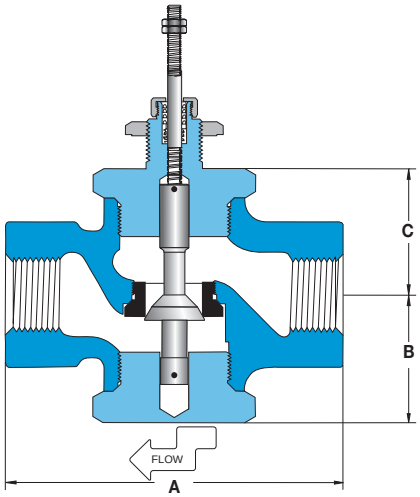
Single Seat • 3/4" – 1"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-To-Close for Heating



Stem In-To-Open for Cooling



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-Steel	Stainless steel	Modified linear	Threaded	250 PSI @ 410°F (210°C)

Valve Body Selection

Valve Body Number		Size		Capacity	Maximum Close-Off Pressure	Dimensions			Approximate
In-To-Close Heating	In-To-Open Cooling	Connection (NPT)	Nominal Port	C_V	(psid)	A	B	C	Shipping Wt.
C01	—	3/4	1/8"	0.17	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C02	—	3/4	3/16"	0.35	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C03	—	3/4	1/4"	0.7	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C04	—	3/4	3/8"	1.4	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C05	C15	3/4	1/2"	2.8	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C06	C16	3/4	3/4"	5.6	140	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C51	—	1	1/8"	0.17	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C52	—	1	3/16"	0.35	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C53	—	1	1/4"	0.7	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C54	—	1	3/8"	1.4	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C55	C65	1	1/2"	2.8	250	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C56	C66	1	3/4"	5.6	140	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C57	C67	1	1"	8.4	80	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]

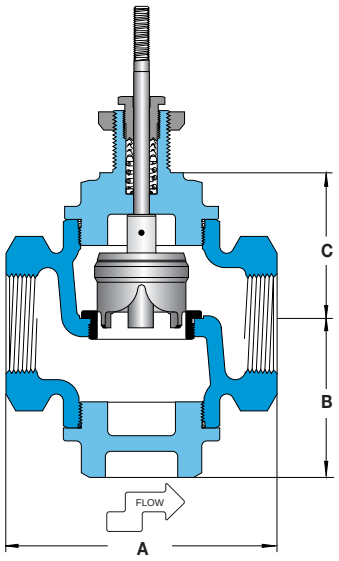
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection (for 91000 & 91400 Temperature Regulators) STAINLESS STEEL

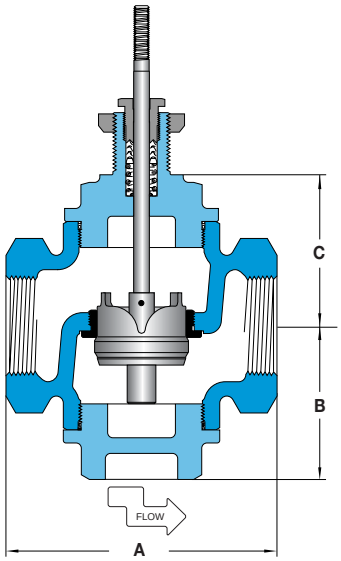
Single Seat • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-To-Close for Heating



Stem In-To-Open for Cooling



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
316 stainless steel	Stainless steel	Modified linear	Threaded	250 PSI @ 410°F (210°C)

Valve Body Selection

Valve Body Number		Size		Capacity C_v	Maximum Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
In-To-Close Heating	In-To-Open Cooling	Connection (NPT)	Nominal Port			A	B	C	
D02	D03	1/2	1/8"	0.34	250	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D05	D06	1/2	3/16"	0.76	250	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D08	D09	1/2	1/4"	1.5	250	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D11	D12	1/2	3/8"	3.4	250	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D14	D15	1/2	1/2"	6.0	250	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D19	D22	3/4	3/4"	8.6	140	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D26	D30	1	1"	14	60	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D47	D52	1 1/2	1 1/2"	27	25	6.1 [155]	3.5 [89]	4.0 [102]	15.5 lbs [7.05 kg]
D58	D63	2	2"	33	15	6.5 [165]	3.9 [99]	4.2 [107]	19.0 lbs [8.64 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

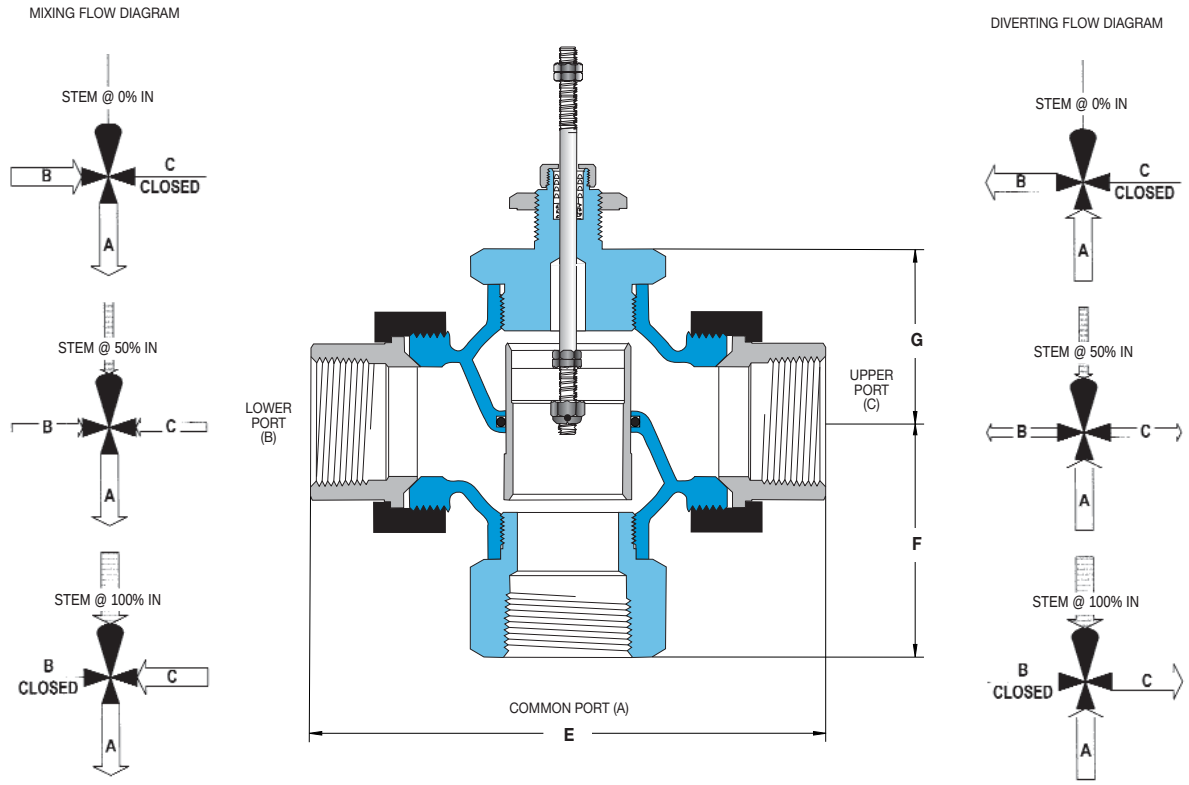
BRONZE

Valve Body Selection (for 91000 & 91400 Temperature Regulators)

3-WAY • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

for Mixing or Diverting



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Bronze	Modified linear	Threaded, malleable iron union ends	250 PSI @ 300°F (149°C)

Valve Body Selection

Valve Body Number	Size		Capacity C_V	Maximum Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
	Connection (NPT)	Nominal Port			E	F	G	
A18	1/2	1/2"	2.8	250	4.8 [122]	1.8 [46]	1.8 [46]	2.9 lbs [1.31 kg]
A25	3/4	3/4"	5.6	250	5.6 [142]	2.3 [58]	2.3 [58]	4.7 lbs [2.12 kg]
A34	1	1"	8.4	250	6.0 [152]	2.3 [58]	2.3 [58]	5.7 lbs [2.57 kg]
A45	1 1/4	1 1/4"	15	250	7.2 [183]	2.8 [71]	2.6 [66]	9.5 lbs [4.28 kg]
A56	1 1/2	1 1/2"	21	250	7.7 [196]	3.5 [89]	2.6 [66]	11.1 lbs [5.00 kg]
A67	2	2"	33	250	8.6 [218]	4.1 [104]	3.1 [79]	16.7 lbs [7.55 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

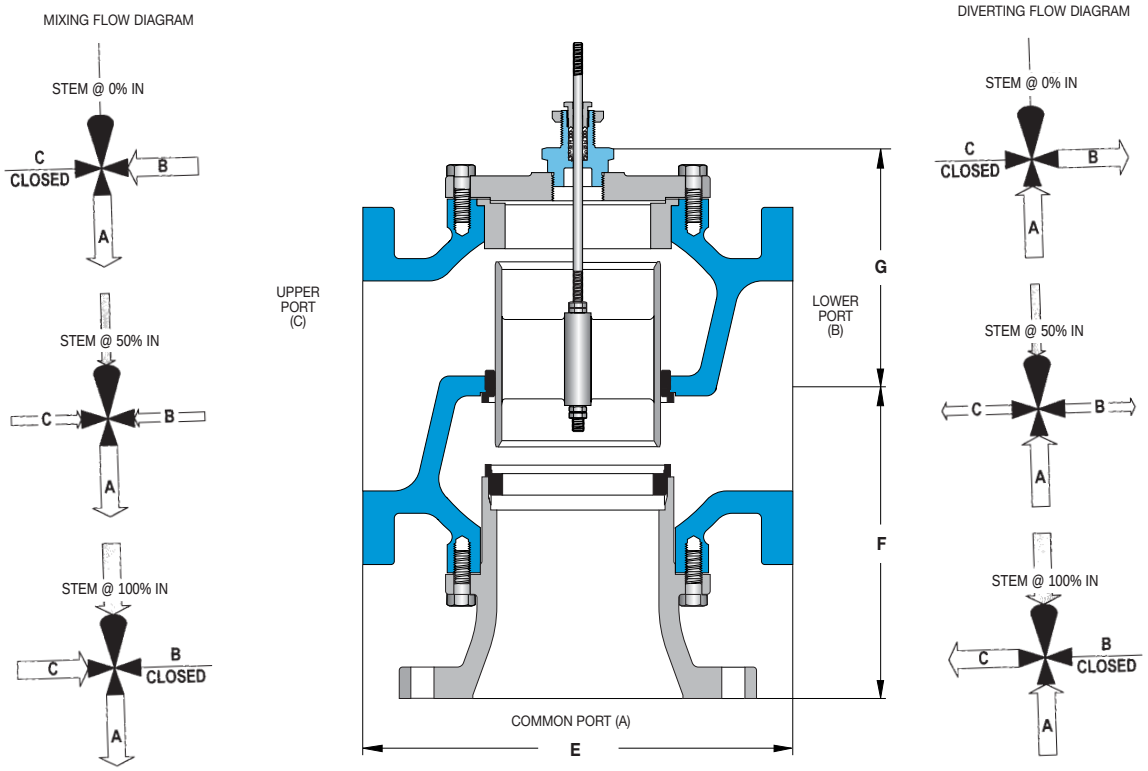
Valve Body Selection
(for 91000 & 91400 Temperature Regulators)

CAST IRON

3-WAY • 2½" – 4"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

for Mixing or Diverting



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-Iron	Bronze	Modified linear	Class 125 flanged	125 PSI @ 300°F (149°C)

Valve Body Selection

Valve Body Number	Size		Capacity	Maximum Close-Off Pressure	Dimensions			Approximate Shipping Wt.
	Connection	Nominal Port	C_v	(psid)	E	F	G	
B75	2½"	2½"	68	125	9.0 [229]	7.1 [180]	5.2 [132]	62 lbs [28 kg]
B80	3"	3"	85	125	10.0 [254]	8.0 [203]	6.0 [152]	80 lbs [36 kg]
B85	4"	4"	160	125	13.0 [330]	10.0 [254]	6.9 [175]	140 lbs [64 kg]

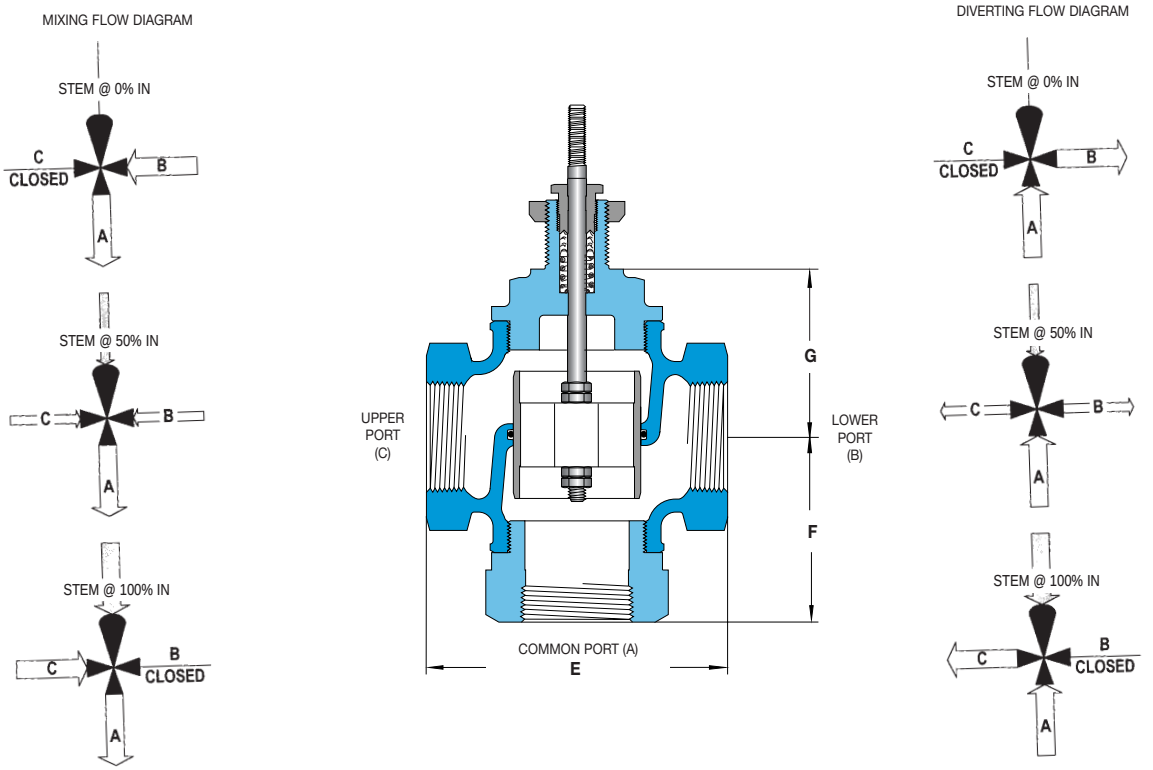
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

STAINLESS STEEL (for 91000 & 91400 Temperature Regulators)

All dimensions are nominal. Dimensions in [ ] are in millimeters.

3-WAY • 1/2" – 2"

for Mixing or Diverting



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
316 stainless steel	Stainless steel	Modified linear	Threaded	250 PSI @ 300°F (149°C)

Valve Body Selection

Valve Body Number	Size		Capacity C_v	Maximum Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
	Connection (NPT)	Nominal Port			E	F	G	
D18	1/2	1/2"	6	300	4.9 [124]	2.9 [74]	3.4 [86]	7.5 lbs [3.41 kg]
D25	3/4	3/4"	8	300	4.9 [124]	2.9 [74]	3.4 [86]	7.5 lbs [3.41 kg]
D34	1	1"	11	300	4.9 [124]	2.9 [74]	3.4 [86]	7.5 lbs [3.18 kg]
D56	1 1/2	1 1/2"	20	200	6.1 [155]	3.4 [86]	4.0 [102]	15.0 lbs [6.82 kg]
D67	2	2"	30	100	6.5 [165]	3.8 [97]	4.2 [107]	18.5 lbs [8.41 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

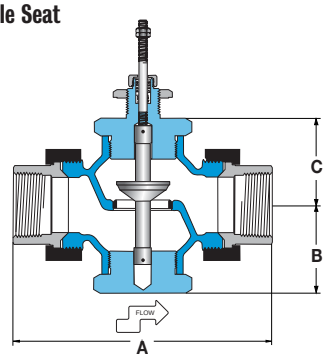
Valve Body Selection
(for 91600 Fail Safe Temperature Regulators)

BRONZE

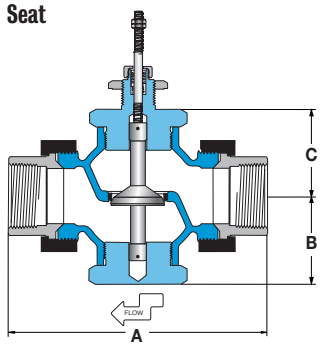
Double Seat • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

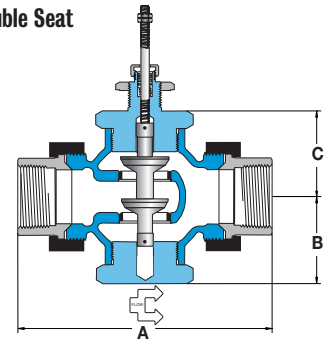
Stem In-to-Close for Heating
Single Seat



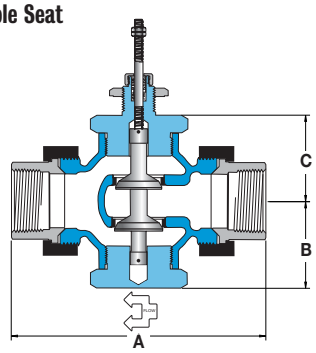
Stem In-to-Open for Cooling
Single Seat



Stem In-to-Close for Heating
Double Seat



Stem In-to-Open for Cooling
Double Seat



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Modified linear	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

Valve Body Selection

Valve Body Number		Size		No. of Seats	Effective** C_v	Max. Close-Off Pressure (psid)	Dimensions			Approximate Shipping Wt.
In-To-Close Heating	In-To-Open Cooling	Connection (NPT)	Nominal Port				A	B	C	
A02	A03	1/2 *	1/8"	1	0.12	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A05	A06	1/2 *	3/16"	1	0.25	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A08	A09	1/2 *	1/4"	1	0.5	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A11	A12	1/2 *	3/8"	1	1.0	150	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A14	A15	1/2 *	1/2"	1	2.0	100	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A21	A24	3/4	3/4"	2	5.6	250	5.6 [142]	2.3 [58]	2.3 [58]	5.0 lbs [2.25 kg]
A29	A33	1	1"	2	8.4	200	6.0 [152]	2.3 [58]	2.3 [58]	6.1 lbs [2.75 kg]
A39	A44	1 1/4	1 1/4"	2	15	175	7.2 [183]	2.6 [66]	2.6 [66]	10.1 lbs [4.55 kg]
A50	A55	1 1/2	1 1/2"	2	21	150	7.7 [196]	2.6 [66]	2.6 [66]	11.1 lbs [5.00 kg]
A61	A66	2	2"	2	33	100	7.6 [218]	3.1 [79]	3.1 [79]	17.0 lbs [7.65 kg]

** 1/2" Single Seat, **The 91600 Safety Actuator has a reduced valve stroke, resulting in a reduced effective Cv as shown.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Notes

91000XT Series Tank Thermostat

for Oil Field Heaters, Treaters & Separators

91000XT shown

- Self-Operating Design
- Heavy Duty Die Cast Aluminum Housing
- 3/4 & 1 NPT Valve Sizes
- Soft Seated Valve for Tight Shut-Off
- Fully Enclosed Bellows

The **91000XT Tank Thermostat** is specifically designed to control the temperature of heaters, treaters and separators within the petroleum industry. It is entirely self-contained, requires no external power source, and is the most widely preferred unit of its kind. When installed in a treater, the normally open valve will automatically close off the flow of gas as temperature increases, thereby regulating temperature within the treater. The Trerice 91000XT is ruggedly constructed with a heavy duty, die cast aluminum actuator housing and fully enclosed bellows assembly. Its single seated, cast-iron valve body is fitted with a stainless steel plug assembly and soft seating Viton o-ring to provide tight shut-off.

Warning: This valve may only be installed in outdoor applications. The Teflon v-ring packing will allow fugitive emissions to escape. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the sensing bulb and facilitate its removal from the process.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

Specifications

Model
91000XT

Power Requirements
Fully self-contained – no external power required

Housing
Die cast aluminum, epoxy powder coated blue finish

Set Point Scale
Integral to housing

Bellows
High pressure brass, corrosion resistant, tin plated finish

Adjustment Screw
Brass

Adjustment Screw Bushing
Lubricant impregnated sintered bronze

Range Adjustment Spring
Cadmium plated

Overrange Protection
Upper range limit +100°F for temporary situations

Thermal System
Bulb: Copper, .80" x 8", with 3/4 NPT union connection for thermowell
Capillary: Copper, available in 10' or 20' lengths

Thermowell Steel, 1 NPT connection

Valve
Single seat, normally open
Body: Cast-iron
Trim: Stainless steel plug assembly with soft seating Viton o-ring, iron seat
Port Size: 1/2"
Connection: 3/4 NPT or 1 NPT threaded ends

Approximate Shipping Weight
10.3 lbs [4.68 kg]

HOW TO ORDER

Sample Order Number: **91000XT X01 10 W02-X75**

Model	Range	Capillary Length	Thermowell	Valve Size
91000XT	See Standard Ranges	**10** 10 Feet **20** 20 Feet	**W02** Steel Thermowell *(Omit if not required)*	**X75** 3/4 NPT **X10** 1 NPT

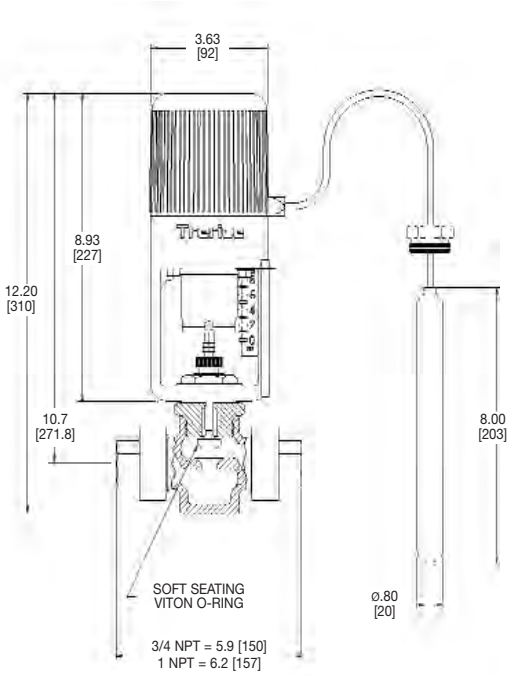
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

91000XT Series
Tank Thermostat

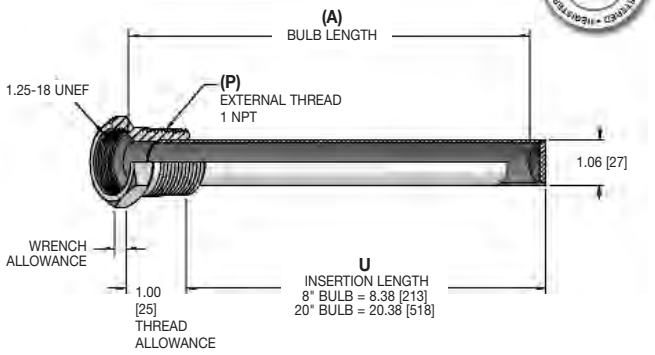
All dimensions are nominal. Dimensions in [ ] are in millimeters.

TEMPERATURE REGULATORS

Thermostat



Thermowell



Pressure Rating (psi)

	Operating Temperature		
Material	70°F	300°F	500°F
Carbon Steel	780	780	600

HOW TO ORDER

Thermowell Style	(P) External Thread	Bulb Length	Material
53 Tank Thermostat	**5** 1 NPT	**L** 8" Bulb **We** 20" Bulb*	**3** Steel

** For ranges X07 and X08 only.*

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

If Thermowells are to be purchased as a separate item, or if a Special Thermowell is required, please refer to this page.
If a complete Temperature Regulator is purchased, the proper Thermowell to match the sensing bulb ordered will be supplied.

Standard Ranges

Range Code	Nominal Range	Recommended Working Span	Bulb Length (A)
X13	85° to 115°F & 30° to 45°C	85° to 115°F & 30° to 45°C	8"
X11	80° to 140°F & 25° to 60°C	110° to 140°F & 45° to 60°C	8"
X15	130° to 160°F & 50° to 70°C	130° to 160°F & 50° to 70°C	8"
X01	110° to 190°F & 45° to 90°C	160° to 190°F & 70° to 90°C	8"
X03	125° to 215°F & 55° to 100°C	180° to 210°F & 80° to 100°C	8"
X12	200° to 280°F & 95° to 135°C	250° to 280°F & 120° to 140°C	8"
X10	225° to 315°F & 110° to 155°C	280° to 310°F & 135° to 155°C	8"
X16	310° to 365°F & 155° to 185°C	310° to 365°F & 155° to 185°C	8"
X14	295° to 420°F & 145° to 215°C	360° to 420°F & 180° to 215°C	8"
X08*	45° to 115°F & 10° to 45°C	85° to 115°F & 30° to 45°C	20"
X07*	65° to 140°F & 20° to 60°C	110° to 140°F & 45° to 60°C	20"

**Except for Range Codes X07 and X08, the actuator housing and capillary tubing must always be exposed to a temperature lower than the required control point for proper thermostat operation.*

Valve Capacities

Gas (Specific Gravity = 0.6)																		
Inlet Pressure (PSIG)	5			10			20			30			40			50		
Outlet Pressure (PSIG)	4	2	0	8	5	0	15	10	5	25	20	10	30	20	15	40	30	25
Capacity (scfh)	970	1585	1935	1450	2140	2700	2685	3480	3870	3100	4120	5030	4650	6000	6200	5320	6870	7250

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Pressure Regulators

DESIGN & OPERATION

One-Piece Design

Two-Piece Design

Description

A Pressure Regulator is a mechanical device designed to regulate system flow pressure in response to upstream or downstream pressure changes.

Principles of Operation

Trerice Pressure Regulators are available in two basic configurations: a one-piece design with an integrated actuation system, or a two-piece design comprised of individual components (actuator and globe valve), which are factory assembled into a complete regulator.

One-Piece Pressure Regulators (Series 988, 1002) have an internal diaphragm that is attached to a valve plug. The diaphragm is balanced between the downward force of an adjustment spring and the upward force of the reduced downstream pressure within the regulator. As the downstream pressure decreases, the adjustment spring pushes down on the diaphragm, which in turn opens the valve. Conversely, as downstream pressure increases, the diaphragm is forced upward, overcoming the force of the spring and closing the valve.

Two-Piece Pressure Regulators (921 Series) employ a user-supplied pressure line connecting the actuator to the point of regulation within the pipeline or process. The process pressure will depress a diaphragm within the actuator housing and the subsequent movement of the diaphragm will push an attached valve stem to the “in” position. Choice of a stem In-To-Close or stem In-To-Open globe valve will determine if the assembled pressure regulator is for reducing downstream pressure (ITC or normally open) or relieving upstream pressure (ITO or normally closed). This unit features spring-opposed actuation: when the controlled pressure decreases, the adjustment spring will push the diaphragm upward, which will in turn move the valve stem back to the “out” position.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Selecting a Pressure Regulator

- **Trerice 921 Series Pressure Regulators** provide a quick response to large system load changes, while maintaining precise flow regulation. The 921 Series is capable of both downstream pressure reduction and back pressure relief. Valve sizes from 1/2" through 6" port are available.
- **Trerice 988 Series Pressure Regulators** are designed for steam service and recommended for saturated and superheated steam applications. Valve sizes from 1/2" through 2" port are available.
- **Trerice 1002 Series Pressure Regulators** are designed for high volume water service applications. Valve sizes from 1/2" through 2 1/2" port are available.

All Trerice Pressure Regulators should be carefully selected to meet the demands of the particular application. The information contained within this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper pressure regulator is the sole responsibility of the user. Improper application may cause failure, resulting in possible personal injury or property damage.

Trerice Pressure Regulators are NOT intended for use in applications where the media comes in direct contact with the skin or body, such as showers, baths, lavatories or wash fountains.

Pressure Range and Set Point

Each Trerice Pressure Regulator is designed to operate efficiently within a specified operating range. The regulator, when properly specified, will modulate pressure flow at the set point desired within the selected pressure range. The set point can be modified using the range adjustment screw provided on the unit.

Pressure Regulator Valve Availability

			Size											
Series	**Body Material**	**Connection**	**1/4"**	**3/8"**	**1/2"**	**3/4"**	**1"**	**1 1/4"**	**1 1/2"**	**2"**	**2 1/2"**	**3"**	**4"**	**5"**	**6"**
921	Bronze	Iron Unions			✓	✓	✓	✓	✓	✓					
	Cast-Iron	Class 125 Flanged									✓	✓	✓	✓	✓
988	Cast-Iron	Threaded			✓	✓	✓	✓	✓	✓					
1002	Bronze	Threaded			✓	✓	✓	✓	✓	✓					
	Cast-Iron	Threaded									✓				

**Reduced port sizes are available.*

Pressure Regulators

DESIGN & OPERATION

Valve

Trerice Two-Piece Pressure Regulators are available with a wide variety of globe valve designs, materials, connections and sizes.

Style

Trerice Pressure Regulator Valve Bodies are available in single seated and double seated designs.

- **Single Seated Valves** are an excellent choice when a higher degree of shut-off is required. However, this design is unbalanced and limited in the pressure that it will shut off against. The leakage rate is approximately 0.1% of the maximum capacity.

- **Double Seated Valves** are nearly pressure balanced and, therefore, are able to close the valve plug against higher operating pressures. However, since temperature fluctuations may cause expansion and contraction across the seats, tight shut-off is not always possible. The leakage rate is approximately 0.5% of the maximum capacity. Double seated valves have a faster flow response and greater capacity than single seated valves, and are recommended when tight shut-off is not required.

The Trerice Pressure Regulator is a balanced equilibrium system at the set point and provides no power to tightly seat the valve plug. The valve is not considered a shut-off valve. Large pressure surges may force a single seated valve plug open. A power driven or hand actuated valve is required to ensure tight shut-off when necessary.

Action

Trerice 921 Series Pressure Regulators can be specified for use in either pressure reducing or back pressure relief applications. All other Trerice Pressure Regulators are designed for pressure reducing applications only.

Pressure Regulator Valve Action

Application	Stem Action	Normal (Fail) Position
Pressure Reducing	In-To-Close	Normally Open
Back Pressure Relief	In-To-Open	Normally Closed

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Body Material and Construction

Trerice Pressure Regulators are available with bronze or cast-iron valve bodies. Union and flanged connection styles are available.

Trim

Valve trim is composed of the stem and plug assembly, and the seats within the ports. Trerice single and double seated, bronze valve bodies employ a stainless steel, tapered plug for enhanced modulation, as well as permanently brazed-in stainless steel seats for smooth performance throughout the life of the valve. The valve plug is both top and bottom guided to ensure positive seating alignment.

Packing

Trerice valves feature a self-energizing Teflon V-Ring packing, which reduces leakage around the valve stem. V-Ring packing is spring loaded to maintain proper compression and **does not** require manual adjustment.

Size

The proper sizing of a regulating valve is one of the most important factors in its selection. A valve that is too small will not be able to provide the desired capacity during peak load conditions, while a valve that is too large may overshoot the control point and operate with the valve plug too close to the seat, resulting in undue wear of the plug and seat. The valve coefficient ($\mathbf{C_V}$) is mathematically determined through an evaluation of the system service conditions (operating pressures and flow). From this evaluation, a valve body with the appropriate port size can be selected. Port sizes from 1/4" through 6" and connection sizes from 1/2" through 6" are available. Please consult the Valve Selection Section of this catalog.

Pipeline Strainer

A Trerice Series 1100 Pipeline Strainer should always be installed upstream of a Trerice Regulator. This Y-Type strainer employs a stainless steel screen to remove debris from the line, which will prevent jamming of the valve and extend its life.

921 Series Pressure Regulator

Pressure Reducing or Back Pressure Relief Valve

PRESSURE REGULATORS

921 shown

- **Self-Contained Design**
- **Spring-loaded Diaphragm Actuated**
- **Cast Ductile Iron Housing & Yoke**
- **1/2" – 6" Valve Sizes**

The Trerice **921Series** Pressure Regulator is fully self-contained and requires no external power source. This regulator requires that a user- supplied pressure sensing line be connected from the controlled point to the diaphragm actuator. Pressure in this line acts upon the diaphragm to develop the necessary thrust to stroke the valve, thereby maintaining the system at the desired condition.

- For pressure reducing applications, the pressure sensing line is mounted downstream, and the valve closes as this sensed pressure increases.

Reduced outlet pressure not to be less than 10% of inlet pressure.

- For back pressure relief applications, the sensing line is mounted upstream, and the valve opens as the sensed pressure increases.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

Specifications

Actuator Models

921PRV (Pressure Reducing Valve)
921BPR (Back Pressure Relief)

Housing Cast ductile iron, black finish

Pressure Plate Cast iron

Diaphragm Material Nylon reinforced Neoprene

Regulated Pressures
2–100 psi

Maximum PRV Inlet Pressure
1/2" - 2": 200 psi
2 1/2" - 6": 125 psi*

Maximum BPR Set Pressure
100 psi

Pressure Connection
1/4 NPT

Adjustment Nut
Steel

Adjustment Screw
Brass

Adjustment Spring
Cadmium plated steel

Body Material
1/2"–2": Bronze
2 1/2"–6": Cast iron

Trim Material Stainless steel

Trim Style Quick-opening

Connection
1/2"-2": Threaded, malleable Iron union ends
2 1/2"–6": Class 125 Flanged

Pressure & Temperature Rating
1/2"-2": 250 psi @ 410° F (210° C)
2 1/2"–6": 125 psi @ 350° F (175° C)

HOW TO ORDER

Sample Order Number: **921PRV-A55-075060**

Model	Valve	Inlet Pressure	Outlet Pressure
921PRV- (Pressure Reducing Valve) **921BPR-** (Back Pressure Relief)	See Available Valves	Specify Upstream Pressure in psig (i.e., 75 psig = 075)	Specify Downstream Pressure in psig (i.e., 60 psig = 060) Omit if 921BPR

*200 psi inlet available with Class 250 flanged valve body. Consult Factory.

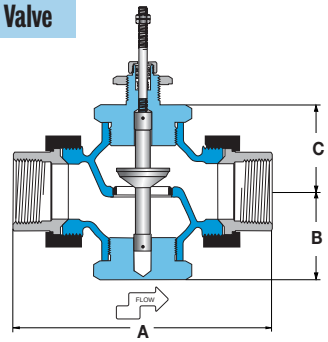
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

921 Series
Pressure Regulator

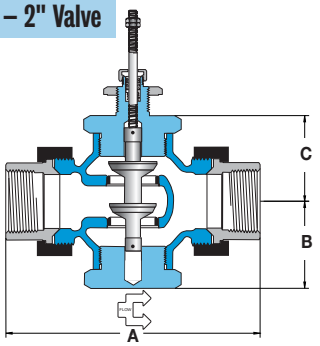
All dimensions are nominal. Dimensions in [ ] are in millimeters.

Pressure Reducing (PRV)

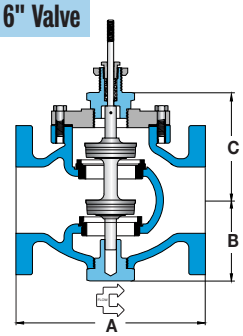
1/2" Valve



3/4" – 2" Valve

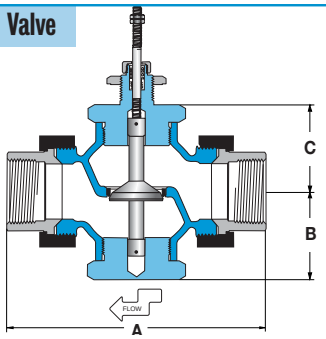


2 1/2" – 6" Valve

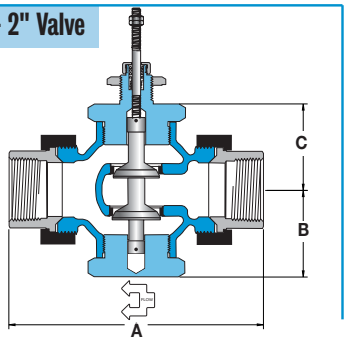


Back Pressure Relief (BPR)

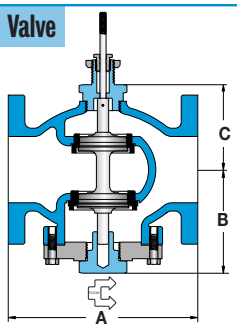
1/2" Valve

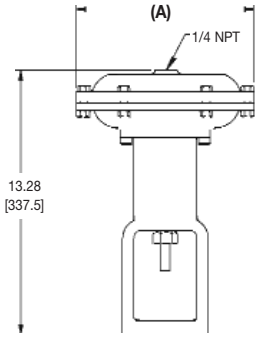


3/4" – 2" Valve



2 1/2" – 6" Valve





Actuator (A) Dimension	
A	6.1 [155]
B	7.0 [178]
C	8.1 [206]
D	9.0 [229]
E	11.0 [279]

Note: Actuator size and internal spring are determined by the inlet and outlet pressure requirements and will be specified by the factory at the time of order.

Valve Selection

(PRV) Pressure Reducing	(BPR) Back Pressure Relief	Size Connection	Nominal Port	Number of Seats	Capacity C_v*	Maximum** Inlet (psig)	Dimensions A	B	C	Approximate Shipping Wt.
A14	A15	1/2 NPT	1/2"	1	2.8	200	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A21	A24	3/4 NPT	3/4"	2	8	200	5.6 [142]	2.3 [58]	2.3 [58]	5.0 lbs [2.25 kg]
A29	A33	1 NPT	1"	2	12	200	6.0 [152]	2.3 [58]	2.3 [58]	6.1 lbs [2.75 kg]
A39	A44	1 1/4 NPT	1 1/4"	2	21	200	7.2 [183]	2.6 [66]	2.6 [66]	10.1 lbs [4.55 kg]
A50	A55	1 1/2 NPT	1 1/2"	2	30	200	7.7 [196]	2.6 [66]	2.6 [66]	11.1 lbs [5.00 kg]
A61	A66	2 NPT	2"	2	47	200	7.6 [218]	3.1 [79]	3.1 [79]	17.0 lbs [7.65 kg]
B73	B74	2 1/2"	2 1/2"	2	78	125	7.8 [198]	4.8 [122]	5.4 [137]	45 lbs [20 kg]
B78	B79	3"	3"	2	110	125	9.0 [229]	5.0 [127]	5.6 [142]	70 lbs [32 kg]
B83	B84	4"	4"	2	220	125	11.4 [290]	6.3 [160]	6.5 [165]	100 lbs [45 kg]
B88	B89	5"	5"	2	275	125	12.0 [305]	6.9 [175]	7.3 [185]	155 lbs [70 kg]
B93	B94	6"	6"	2	378	125	14.1 [358]	7.5 [191]	8.0 [203]	180 lbs [82 kg]

**The valve selected should have a C_v approximately two times that required by the service conditions. This will allow the valve to operate in approximately the 50% open position. ** Maximum BPR set pressure 100 psi.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

988 Series Pressure Regulator

for Steam Service

988 shown

- Cast-Iron Construction
- Stainless Steel Seat & Disc
- 1/2" – 2" Sizes
- Sensitivity Adjuster

Specifications

Model	
988	
Body	Cast-Iron
Diaphragm	Laminated bronze
Trim	Valve Disc: Stainless steel Seat: Stainless steel
Strainer	Stainless steel
Maximum Inlet Pressure	200 psi
Operating Temperature	Maximum: 387˚F (197˚C)

The Trerice **988 Series** Pressure Regulator, designed for steam service, provides a sensitive response to reduced pressure changes and delivers the fullest possible volume without an appreciable reduced pressure drop. The 988 includes a spring-loaded diaphragm that can be externally adjusted by the operator to provide a uniform outlet pressure. This regulator is intended for use in testing fixtures, autoclaves, steam tables, vulcanizers, sterilizers and other process applications. It features a "sensitivity adjuster," which can be used to eliminate any vibrating or chattering caused by critical flow requirements.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

HOW TO ORDER

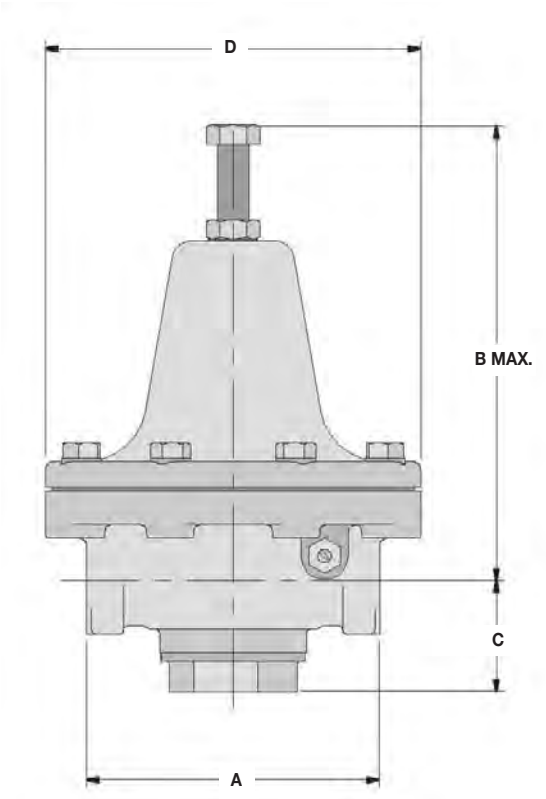
Sample Order Number: **988 O8 B**

Model	Connection Size (NPT)		Reduced Pressure Range	
988	**04**	1/2 NPT	**A** 3 to 15 psi	1/2 - 1 1/4 NPT Connection Size only.
	06	3/4 NPT	**B** 10 to 30 psi	
	08	1 NPT	**C** 30 to 140 psi	
	10	1 1/4 NPT		
	12	1 1/2 NPT	**D** 5 to 40 psi	1 1/2 & 2 NPT Connection Size only.
	16	2 NPT	**E** 30 to 100 psi	

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

988 Series
Pressure Regulator

All dimensions are nominal. Dimensions in [ ] are in millimeters



Size (NPT)	A	B	C	D	Approximate Shipping Weight
1/2	4.7 [119]	7.0 [178]	1.9 [48]	6.0 [152]	11 lbs [5.0 kg]
3/4	4.7 [119]	7.0 [178]	1.9 [48]	6.0 [152]	11 lbs [5.0 kg]
1	5.6 [142]	7.5 [191]	2.2 [56]	7.5 [191]	20 lbs [9.1 kg]
1 1/4	5.6 [142]	7.5 [191]	2.2 [56]	7.5 [191]	20 lbs [9.1 kg]
1 1/2	6.6 [168]	11.3 [287]	2.8 [71]	9.0 [229]	40 lbs [18 kg]
2	6.6 [168]	11.3 [287]	2.8 [71]	9.0 [229]	40 lbs [18 kg]

Steam in Pounds Per Hour (pph)

Inlet Pressure (psig)	Reduced Pressure (psig)	Valve Size (NPT) 1/2	3/4	1	1 1/4	1 1/2	2
10	5	27	94	133	146	208	240
20	10	40	142	200	220	312	360
30	20	48	168	237	261	370	428
40	30	54	191	270	297	420	486
	20	67	237	335	368	522	603
50	40	60	210	297	327	464	535
	30	76	270	381	420	595	686
60	50	65	230	324	356	505	583
	40	84	298	421	463	656	758
70	60	70	246	348	382	542	626
	50	92	325	458	504	714	825
80	70	74	262	370	407	577	667
	60	98	348	492	541	766	885
90	70	104	370	523	575	815	942
	50	129	458	646	711	1008	1164
100	80	110	392	554	610	864	998
	60	139	493	696	766	1085	1252
120	100	122	431	608	670	948	1095
	80	156	554	782	860	1219	1408
140	100	172	610	862	948	1342	1550
	80	194	686	968	1065	1509	1743
160	100	211	748	1056	1162	1645	1900
	90	218	772	1090	1198	1698	1961
180	100	244	862	1218	1340	1898	2192
200	100	270	955	1349	1484	2102	2428

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

1002 Series Pressure Regulator

for Water Service

PRESSURE REGULATORS

1002 shown

- Bronze or Cast-Iron Construction
- Stainless Steel Seat
- 1/2" – 2 1/2" Sizes

Specifications

Model		
1002		
Body	1/2" to 2":	Bronze
	2 1/2":	Cast-Iron
Diaphragm	Nitril	
Trim	Valve Disc:	Nitril
	Seat:	Stainless steel
Maximum Inlet Pressure	300 psi	
Operating Temperature	Maximum: 160° F (71°C)	

The Trerice **1002 Series** Pressure Regulator is a high capacity pressure reducing valve for water service. The 1002 has a broad seat opening and is capable of supplying large volumes at reduced pressures. This regulator is intended for use in a variety of commercial, institutional and industrial applications. It features a bronze or cast-iron body and a stainless steel seat.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

HOW TO ORDER

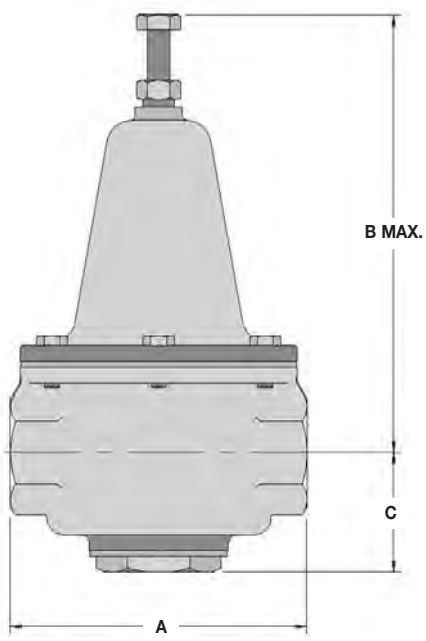
Sample Order Number: **1002 12 B**

Model	Connection Size (NPT)	Reduced Pressure Range
1002	**04** 1/2	**A** 10 to 35 psi
	06 3/4	**B** 25 to 75 psi
	08 1	**C** High Pressure Range
	10 1 1/4	*50 to 145 psi (1/2, 3/4, 1 NPT only)*
	12 1 1/2	*50 to 120 psi (1 1/4 NPT only)*
	16 2	*50 to 95 psi (1 1/2, 2, 2 1/2 NPT only)*
	20 2 1/2	

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

1002 Series
Pressure Regulator

All dimensions are nominal. Dimensions in [ ] are in millimeters



Size (NPT)	A	B	C	Approximate Shipping Weight
1/2	4.3 [109]	6.3 [160]	2.0 [51]	5.3 lbs [2.41 kg]
3/4	4.3 [109]	6.3 [160]	2.0 [51]	5.3 lbs [2.41 kg]
1	4.8 [122]	6.5 [165]	2.1 [53]	7.9 lbs [3.59 kg]
1 1/4	5.0 [127]	6.8 [173]	2.8 [71]	9.6 lbs [4.36 kg]
1 1/2	6.8 [173]	9.9 [251]	2.8 [71]	20 lbs [9.1 kg]
2	8.0 [203]	10.8 [274]	3.3 [84]	33 lbs [15 kg]
2 1/2	9.0 [229]	10.8 [274]	3.3 [84]	35 lbs [16 kg]

Valve Capacities

Water in Gallons per Minute (GPM)

Pressure Drop (psig)	Valve Size (NPT) 1/2	3/4	1	1 1/4	1 1/2	2	2 1/2
1	2	3	3	4	5	8	12
2	4	5	5	6	13	20	24
3	5	7	8	10	22	31	39
4	7	9	10	15	30	42	50
5	9	11	13	17	38	50	60
6	10	13	15	20	48	61	70
8	13	18	20	34	65	84	91
10	15	20	25	45	78	100	108
12	18	24	30	57	90	116	122
14	20	28	35	67	102	132	138
16	21	31	39	73	113	142	149
18	22	34	45	81	122	155	163
20	23	37	48	88	132	161	171

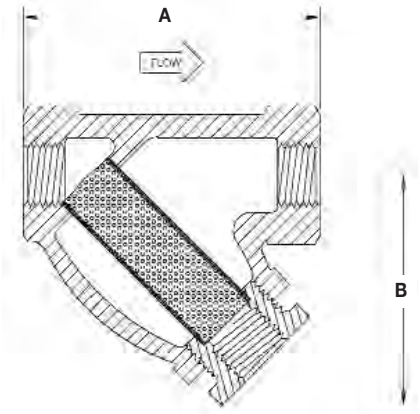
1100 Series Pipeline Strainer

1100 shown

- Cast-Iron Construction
- Stainless Steel Seat
- Y-Type Design
- 3/8" – 6" Sizes

The Trerice **1100 Series** Pipeline Strainer is designed to be installed upstream of regulators, valves, or other similar equipment. This Y-Type Strainer removes debris from the line, thereby providing protection and extending the life of the regulator or valve. The 1100 Series has a generously proportioned, cast-iron body and a 1/64" perforated, stainless steel screen. A blow-out valve should be installed so that the screen may be cleaned periodically.

All dimensions are nominal. Dimensions in [ ] are in millimeters.



Specifications

Model
1100

Body Cast-Iron

Connection 3/8" to 2": Threaded
2 1/2 to 6": Cast 125 Flanged

Screen Strainless Steel, 1/64" perforations

Cleanout Cover
Threaded Connection: Threaded
Flanged Connection: Bolted

Maximum Inlet Pressure & Temperature

Steam
Threaded:
250 psi @ 406° F (208° C)

Class 125 Flanged:
125 psi @ 450°F (232°C)

Water/Oil/Gas
Threaded:
400 psi @ 150°F (66°C)

Class 125 Flanged:
200 psi @ 100°F (38°C)

Item Number	Size	A	B	Approximate Shipping Wt.
1103	3/8 NPT	3.18 [81]	2.06 [52]	1.6 lbs [0.73 kg]
1104	1/2 NPT	3.18 [81]	2.06 [52]	1.6 lbs [0.73 kg]
1106	3/4 NPT	3.75 [95]	2.44 [61]	2.4 lbs [1.09 kg]
1108	1 NPT	4.00 [102]	2.63 [66]	3.0 lbs [1.36 kg]
1110	1 1/4 NPT	5.00 [127]	3.38 [85]	5.2 lbs [2.36 kg]
1112	1 1/2 NPT	5.75 [146]	3.88 [98]	8.0 lbs [3.64 kg]
1116	2 NPT	7.00 [177]	4.75 [121]	13 lbs [5.9 kg]
1120	2 1/2 Flange	10.00 [254]	6.50 [165]	28 lbs [12.7 kg]
1124	3 Flange	10.13 [257]	7.00 [178]	34 lbs [15.5 kg]
1132	4 Flange	12.13 [308]	8.25 [210]	60 lbs [27 kg]
1140	5 Flange	15.63 [397]	11.25 [286]	95 lbs [43 kg]
1148	6 Flange	18.50 [470]	13.50 [343]	133 lbs [60 kg]

HOW TO ORDER

Sample Order Number: **1103**

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Description

A controller is a comparative device that receives an input signal from a measured process variable, compares this value with that of a predetermined control point value (set point), and determines the appropriate amount of output signal required by the final control element to provide corrective action within a control loop. Trerice offers two different types of controllers:

- An Electronic PID Controller uses electrical signals and digital algorithms to perform its receptive, comparative and corrective functions.
- An Electric Contact Controller is a mechanical device designed to measure temperature and transmit a corrective electrical signal to the final control element by the activation of one or more electrical switches.

Principles of Operation (Electronic PID Controller)

An electronic sensor (thermocouple, RTD or transmitter) installed at the measurement location continuously sends an input signal to the controller. At set intervals the controller compares this signal to a predefined set point. If the input signal deviates from the set point, the controller sends a corrective output signal to the control element. This electric signal must be converted to a pneumatic signal when used with an air operated valve, such as a Trerice Series 910 or 940 Control Valve. The conversion can be made using a Trerice TA901 I/P Transducer, which converts a 4 to 20 mA electric signal to a 3 to 15 psi air signal.

Features (Electronic PID Controller)

An electronic controller is best suited for applications where large load changes are encountered and/or fast response changes are required. Trerice Electronic Controllers have full auto tuning and PID capabilities, and offer a host of available options, including user selectable inputs and ranges, outputs, setback functions, and alarms.

PID Control is a feature of most Trerice Electronic Controllers. PID combines the proportional, integral and derivative functions into a single unit.

- **Proportional (P)** — Proportional control reacts to the size of the deviation from set point when sending a corrective signal. The size of the corrective signal can be adjusted in relation to the size of the error by changing the width of the proportional band. A narrow proportional band will cause a large corrective action in relation to a given amount of error, while a wider proportional band will cause a smaller corrective action in relation to the same amount of error.
- **Integral (I)** — Integral control reacts to the length of time that the deviation from set point exists when sending a corrective signal. The longer the error exists, the greater the corrective signal.
- **Derivative (D)** — Derivative control reacts to the speed in which the deviation is changing. The corrective signal will be proportional to the rate of change within the process.

Auto-Tuning

Auto-tuning will automatically select the optimum values for **P**, **I** and **D**, thus eliminating the need for the user to calculate and program these values at system startup. This feature can be overridden when so desired. On some models, the control element can be manually operated.

Selecting an Electronic PID Controller

All Trerice Electronic Controllers are designed to control the temperature or pressure of general industrial equipment and should be carefully selected to meet the demands of the particular application. The information contained within this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper controller is the sole responsibility of the user. Improper application may cause process failure, resulting in possible personal injury or property damage.

Case Size

Case Size selection is determined by both available and designed space, and controller features.Trerice Electronic Controllers are available in the following panel sizes: 96 x 96 mm (¼ DIN), 72 x 72 mm, 48 x 96 mm (⅛ DIN), and 48 x 48 mm (1/16 DIN). The depth of the unit varies with the model selected.

Input

The Input is the measurement signal received by the controller from the sensor. A variety of input types are available, including thermocouple, RTD, voltage and current.

Control Output

The Control Output is the corrective signal transmitted from the controller to the control element. Various control output types are available, including contact, voltage, current and solid state relay driver.

Analog Output

The Analog Output is an optional secondary signal that transmits the measurement signal from the controller to a remote data acquisition device, such as a recorder, personal computer or display unit.

Alarms

Most models can be ordered with alarms, event outputs, or heater break alarms, which signal an external device to perform a specific task at a predetermined set point.

Setback Function

This feature, optionally available on some models, is designed to provide energy savings in applications where the process is idled at regular intervals through the connection of an external timer or switch.

Principles of Operation (Electric Contact Controller)

The Trerice Electric Contact Controller operates through a coordination of its thermal sensing system and temperature indicating arm with internal linkage, which activates a preset electrical switch upon contact. The thermal system, installed within the process application, senses change in the measured variable and relays this information (input signal) to the controller through an expansion or contraction of the system fill. The temperature indicating arm moves around the dialface in response to the change in process temperature until such time as the internal linkage touches the preset electric switch. This contact sends a corrective electrical signal, which activates or deactivates external On/Off devices, such as solenoid valves or electric heaters. The subsequent control of these devices will result in an increase or decrease of the application temperature, thereby returning the process to the desired condition.

All Trerice Electric Contact Controllers are designed to control the temperature of general industrial equipment and should be carefully selected to meet the demands of the particular application. The information contained within this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper controller is the sole responsibility of the user. Improper application may cause process failure, resulting in possible personal injury or property damage.

Selecting an Electric Contact Controller

Control Function

Trerice Electric Contact Controllers are designed specifically for On/Off control. Processes which are characterized by stable load conditions can be controlled using On/Off control with a solenoid valve, electric heater or other electrically operated device.

- **On/Off (I/0)** – On/Off control recognizes only that a deviation exists. Any deviation between the set point and measured process variable will produce a full corrective signal.

Switching Point and Temperature Range

Trerice Electric Contact Controllers can be ordered with up to four switches per unit. The switches can be adjusted to any point within the temperature range of the controller. Multiple switch units are particularly useful for operating an alarm or other safety device, in addition to the main control element. A switching point indicator (set via an external knob) and a temperature indicator are read against the range plate. Temperature ranges from -100°F through 700°F are available.

Actuation System

The Trerice Electric Contact Controller is supplied with a liquid thermal actuation system. This actuation is desirable when controlling within ambient and cross ambient conditions. It is also suitable for low temperature demands. It is furnished with a small sensing bulb and a linear scale. These controllers can be specified with various capillary and sensing bulb materials, coverings and connections, to meet the requirements of any application. Consult factory for capillary systems in excess of 20 feet in length.

Thermowell

For applications in which the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the sensing bulb. A thermowell will also facilitate the removal of the sensing bulb from the operating process. Thermowells are available in a variety of lengths, connections and materials.

CAUTION: Temperature indication error will be introduced whenever the capillary tubing is exposed to ambient temperatures above or below 75°F. The following formula MUST be considered when specifying liquid actuation:

Where: S = thermometer range span in °F
L = capillary length in feet
T = capillary temperature variation from 75°F

Error = 0.000018 x S x L x T

Example: S = 210 (30 to 240°F)
L = 20
T = 10 (85°F)

Error = 0.000018 x 210 x 20 x 10 = 3.4°

TR890 Series Electronic PID Controller

Features PID and Auto-Tuning

CONTROLLERS

TR893 shown

- Multiple Sizes
- ± 0.3% Accuracy
- Keyboard Programmable
- Reverse or Direct Acting
- Manual Output Override

The Trerice **TR890 Series** Electronic PID Controller is designed for use on applications where large load changes are expected, or the need for extreme accuracy and fast response time exists. With full auto-tune capabilities and a large selection of available inputs, the TR890 Series is ideally suited for use with a Trerice Control Valve.

Use of a Trerice No. TA987 Air Filter/Regulator is recommended for filtering and regulating the pressure of plant compressed air and delivering clean, dry air at the proper pressure to pneumatic control devices.

Approximate Shipping Weight
TR891: 0.4 lbs [0.17 kg]
TR892: 0.6 lbs [0.28 kg]
TR893: 0.7 lbs [0.33 kg]
TR894: 0.5 lbs [0.24 kg]

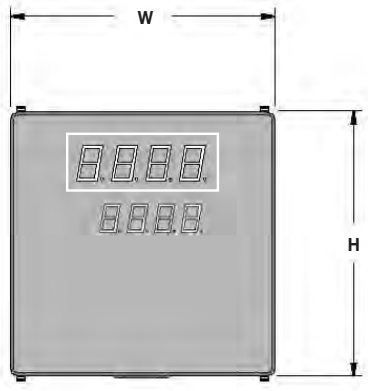
Specifications

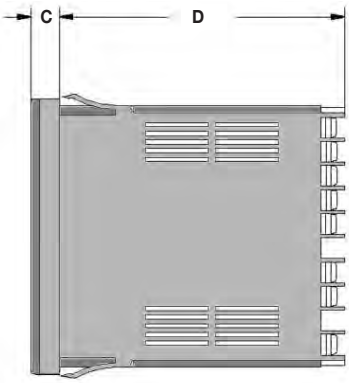
Models	**TR891:** 48 x 48 mm (1/16 DIN) **TR892:** 72 x 72 mm **TR893:** 96 x 96 mm (1/4 DIN) **TR894:** 96 x 48 mm (1/8 DIN)
Control	**Control Mode:** Auto-Tuning PID **Action:** Reverse acting (field switchable to direct acting)
Proportional Band	Off, 0.1-999.9% Full Scale Integral Time: Off, 1-6000 sec. Derivative Time: Off, 1-3600 sec.
Accuracy	± 0.3%
Display	Process Value: 4 Digit, 20 mm red LED Set Value: 4 digit, 10.2 mm green LED Sampling Cycle: 0.25 seconds
Inputs	**Multi** (switchable between) ▶ Thermocouple: B, R, S, K, E, J T, N, PL II, Wre5-26 {U,L (DIN 43710) ▶ RTD: Platinum 100Ω, 3 Wire ▶ mV: (scalable) -10-10, 0-10, 0-20, 0-50, 10-50, 0-100 mV DC **Current:** (scalable) 4-20, 0-20 mA **Voltage:** -1-1, 0-1, 0-2, 0-5, 1-5, 0-10 VDC
Control Output	**Current:** 4-20 mA (load Resistance: 600Ω maximum) **Contact:** Proportional cycle, 1-120 sec. (capacity: 240 VAC 2A resistive / 1.2A inductive) **SSR Drive Voltage:** Proportional cycle 1-120 sec. (output rating: 12±1.5 VDC / 30 mA maximum) **Voltage:** 0-10 VDC Load Current 2mA max
Power Requirements	**Supply Voltage:** 100-240 VAC, 50/60 Hz **or** 24V AC/DC 50/60 Hz **Consumption:** 100-240 VAC 15VA 24VDC 8W 24VAC 9VA
Data Storage	Nonvolatile EEPROM memory
Case Material	Polyphenylene Oxide (PPO)
Ambient Temp.	14°F (-10°C) to 122°F (50°C)
Humidity	Maximum: 90% RH, non condensing
Event Outputs	(Contact Capacity 240 VAC 1A/resistive load) Dual Event Outputs (High and/or Low Alarms) Single Event Output + Heater Break Alarm includes CT30A sensor Single Event Output + Heater Break Alarm includes CT50A sensor
Options:	Analog Output 0-10mV DC (output resistance 10Ω) Analog Output 4-20mA DC (load resistance 300Ω max) Analog Output 0-10V DC (load current 2mA max) Digital Input (switch) including: Setback Function setting range of -1999 - 5000, standby or DA/RA Selection Operated by either non-voltage contact or open collector input rated at approx. 5V DC/1mA max.

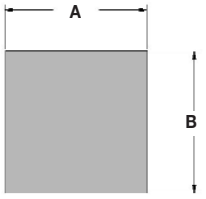
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

TR890 Series
Electronic PID Controller

All dimensions are nominal. Dimensions in [ ] are in millimeters.







PANEL CUTOUT DIMENSIONS

HOW TO ORDER

Sample Order Number: **TR893 8 A C 90 1 00**

Model	Input	Control Output	Power Supply	Event Output	Options
TR891	**8** Multi	**A** 4-20 mA	**90** 100-240 VAC 50/60 Hz	**0** None	**00** None
TR892	**4** mA	**C** On/Off Contact	**08** 24 VAC/VDC 50/60 Hz	**1** Dual Event (high and/or low)	**30** Analog Output (0-10 mVDC)
TR893	**6** VDC	**D** SSR Driver		**2** Single Event (high or low) and heater break CT30A	**40** Analog Output (4-20 mA)
TR894		**E** 0-10 VDC		**3** Single Event (high or low) and heater break CT50A	**60** Analog Output (0-10 VDC)
					08 Digital Input (switch)
					38 Digital Input (switch) with 0-10 mVDC* Analog Output
					48 Digital Input (switch) with 4-20 mA* Analog Output
					68 Digital Input (switch) with 0-10 VDC* Analog Output

Event Outputs 2 or 3 require Control Outputs C or D

**Not available with Model TR891*

Model	A	B	C	D	H	W
TR891	1.77 [45]	1.77 [45]	0.43 [11]	3.94 [100]	1.89 [48]	1.89 [48]
TR892	2.68 [68]	2.68 [68]	0.43 [11]	3.94 [100]	2.83 [72]	2.83 [72]
TR893	3.63 [92]	3.63 [92]	0.43 [11]	3.94 [100]	3.78 [96]	3.78 [96]
TR894	1.77 [45]	3.63 [92]	0.43 [11]	3.94 [100]	3.78 [96]	3.78 [96]

Programmable Ranges

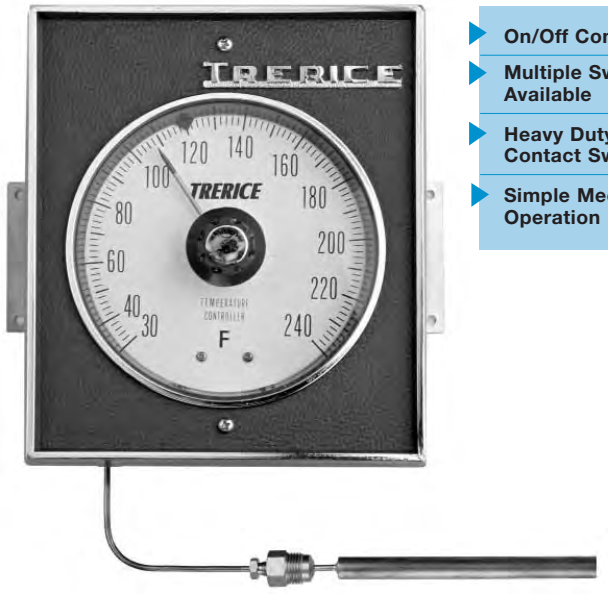
Thermocouple Inputs					RTD Inputs				Current & Voltage Inputs	
T/C Type	Range Code	Fahrenheit Range	Range Code	Celsius Range	Range Code	Fahrenheit Range	Range Code	Celsius Range	Range Code	Range (User-scalable Readout)
B*	**15**	0° to 3300°F	**01**	0° to 1800°C	**47**	-300° to 1100°F	**31**	-200° to 600°C	**71**	-10-10 mV
E	**21**	0° to 1300°F	**07**	0° to 700°C	**48**	-150.0° to 200.0°F	**32**	-100.0° to 100.0°C	**72**	0-10 mV
J	**22**	0° to 1100°F	**08**	0° to 600°C	**49**	-150° to 600°F	**33**	-100.0° to 300.0°C	**73**	0-20 mV
K	**18**	-150° to 750°F	**04**	-100.0° to 400.0°C	**50**	-50.0° to 120.0°F	**34**	-50.0° to 50.0°C	**74**	0-50 mV
K	**19**	0° to 1500°F	**05**	0° to 800°C	**51**	0.0° to 120.0°F	**35**	0.0° to 50.0°C	**75**	10-50 mV
K	**20**	0° to 2200°F	**06**	0° to 1200°C	**52**	0.0° to 200.0°F	**36**	0.0° to 100.0°C	**76**	0-100 mV
L	**28**	0° to 1100°F	**14**	0° to 600°C	**53**	0.0° to 400.0°F	**37**	0.0° to 200.0°C	**81**	-1-1 V
N	**24**	0° to 2300°F	**10**	0° to 1300°C	**54**	0° to 1000°F	**38**	0.0° to 500.0°C	**82**	0-1 V
PL II	**25**	0° to 2300°F	**11**	0° to 1300°C					**83**	0-2 V
R	**16**	0° to 3100°F	**02**	0° to 1700°C					**84**	0-5 V
S	**17**	0° to 3100°F	**03**	0° to 1700°C					**85**	1-5 V
T	**23**	-300° to 400°F	**09**	-199.9° to 200.0°C					**86**	0-10 V
U	**24**	-300° to 400°F	**13**	-199.9° to 200°C					**94**	0-20 mA
WRe5-26	**26**	0° to 4200°F	**12**	0° to 2300°C					**95**	4-20 mA

Range Codes are not required for ordering, but are used for field programming.
**750°F (400°C) falls below the accuracy range*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

L84000 Series Electric Contact Controller

CONTROLLERS



L84000 shown

- On/Off Control
- Multiple Switches Available
- Heavy Duty Contact Switches
- Simple Mechanical Operation

Specifications

Models

L84000 (1 switch)
L84100 (2 switch)
L84200 (3 switch)
L84300 (4 switch)

Control	On/Off, via electric contact switch
Dial Size	6"
Movement	Stainless Steel and Brass
Case	Blue ABS plastic, panel mounted
Cover	Blue ABS plastic, close cell rubber gasketed
Window	Acrylic
Pointer	Brass
Switch Ratings	L84000, L84100: 10 A @ 125/250 VAC, 0.25 A @ 120 VDC L84200, L84300: 5 A @ 250 VAC, 5 A res./3 A ind. @ 28 VDC
Dialface	Aluminum, white background with black graduations and markings
Accuracy	± One Scale Division
Approximate Shipping Weight	9.0 lbs [4.09 kg]

The Trerice **L84000 Series** Electric Contact Controller is designed for applications that require the opening and closing of electric solenoid valves, heaters, and other electrical devices. It is a rugged and versatile controller, capable of producing "On/Off" control over a wide range of temperatures from -100°F to 700°F. This controller includes a setting adjustment knob and one or more SPDT electric contact switches.

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the controller and facilitate its removal from the process. (Refer to page 212)

HOW TO ORDER

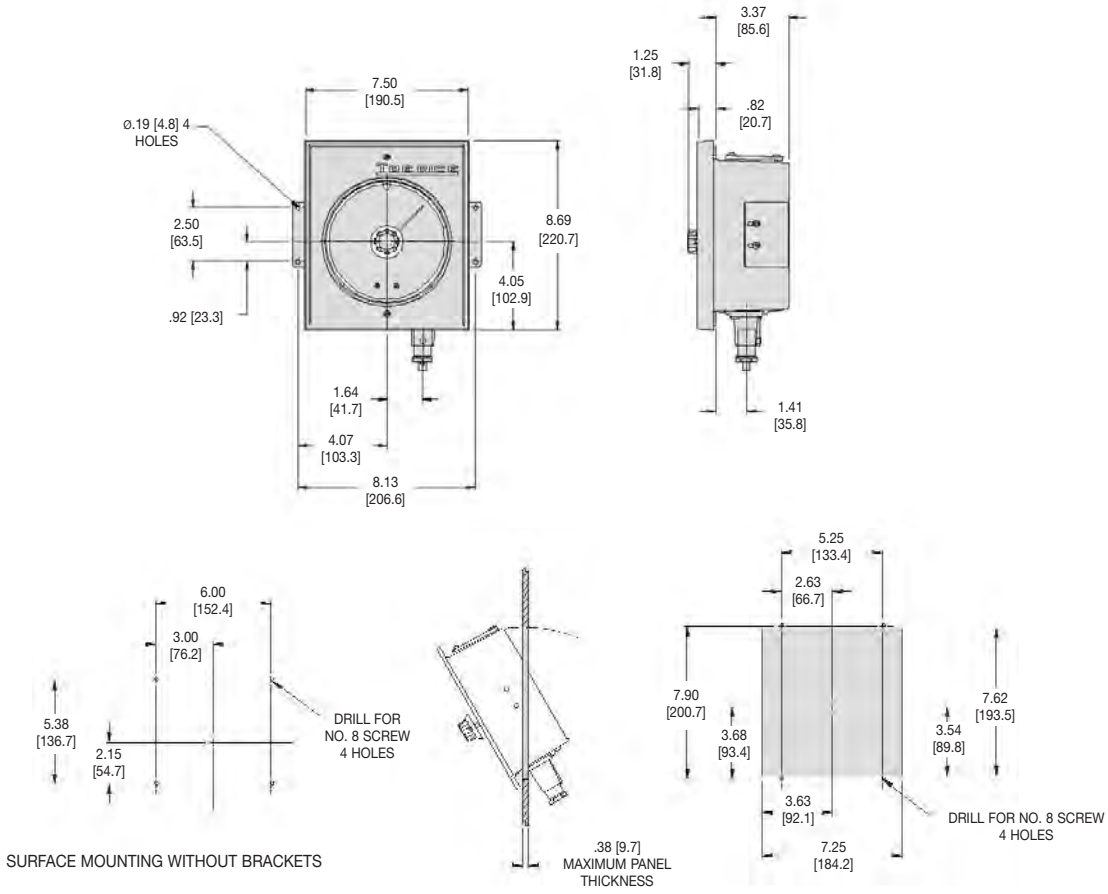
Sample Order Number: **L 84100 145 B10 10 W02**

Actuation	Model	Specific Range	Thermal System	Capillary Length	Thermowell
L Liquid	**84000** 1 Switch **84100** 2 Switch **84200** 3 Switch **84300** 4 Switch	Refer to Standard Ranges (page 209)	Refer to Thermal System Selection (pages 210-211)	**05** 5 Feet **10** 10 Feet **15** 15 Feet **20** 20 Feet 20 Feet Maximum	**W02** Brass **W05** 304 SS **W06** 316 SS — 1/2 NPT **W12** Brass **W15** 304 SS **W16** 316 SS — 3/4 NPT

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

L84000 Series
Electric Contact Controller

All dimensions are nominal. Dimensions in [ ] are in millimeters

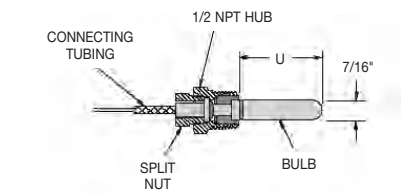
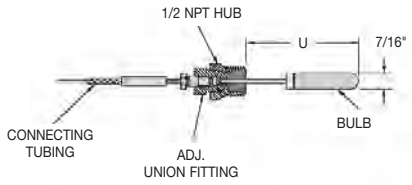
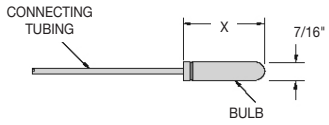
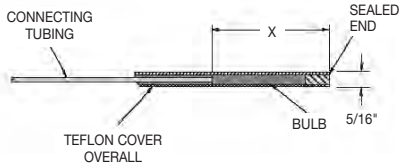


Standard Ranges

Fahrenheit Ranges		Celsius Ranges		Fahrenheit & Celsius Ranges	
Range Code	Range	Range Code	Range	Range Code	Range
105	-100° to 100°F	225	-70° to 40°C	325	-30° to 170°F & -35° to 75°C
125	-30° to 170°F	245	-35° to 75°C	345	50° to 350°F & 10° to 175°C
145	0° to 200°F	265	0° to 115°C	355	50° to 700°F & 10° to 370°C
165	30° to 240°F	295	10° to 175°C		
175	50° to 350°F	305	10° to 370°C		
195	50° to 700°F				
215	200° to 400°F				

Thermal System Selection

for L84000 Series Electronic Contact Controller

Bulb and Capillary Style	Order Code	Connection Style & Material	Bulb Material	Capillary Tubing Material
Union Connection 	**B01***	Brass, 1/2 NPT	Copper	Copper with Bronze Braided Armor
	B10	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel
	B15*	Brass, 1/2 NPT	Copper	Copper with Bronze Braid and Stainless Steel Spiral Armor
	B16	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel with Stainless Steel Spiral Armor
Adjustable Union Connection 	**B02***	Brass, 1/2 NPT	Copper	Copper with Bronze Braided Armor
	B04**	Stainless Steel, 1/2 NPT	Stainless Steel	Stainless Steel
Plain Bulb 	**B05***	None	Copper	Copper with Bronze Braided Armor
	B06	None	Stainless Steel	Stainless Steel
Teflon Covered Bulb 	**B08***	None	Copper with Teflon Covering	Copper with Teflon Covering
	B07*	None	Stainless Steel with Teflon Covering	Stainless Steel with Teflon Covering

**Not available with Temperature Ranges over 450°F (232°C).*
***Ranges over 450°F (232°C), one-time adjustment only.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Thermal System Selection

for L84000 Series Electronic Contact Controller

Minimum Bulb Insertion Length
(U/X)

Liquid Actuated

Temperature Range			
-100° to 100°F	-30° to 170°F 0° to 200°F 30° to 240°F 200° to 400°C	50° to 350°F	50° to 700°F
3 7/8" (Use 6" thermowell)	5 3/8"	3 7/8" (Use 6" thermowell)	N/A
3 7/8" (Use 6" thermowell)	5 3/8"	3 7/8" (Use 6" thermowell)	1 5/8"
3 7/8" (Use 6" thermowell)	5 3/8"	3 7/8" (Use 6" thermowell)	N/A
3 7/8" (Use 6" thermowell)	5 3/8"	3 7/8" (Use 6" thermowell)	1 5/8"
3 7/8" Adjustable up to 24"	5 3/8"	3 7/8"	N/A
3 7/8" Adjustable up to 24"	5 3/8"	3 7/8"	1 5/8"
4"	5 1/2"	4"	N/A
4"	5 1/2"	4"	1 11/16"
N/A	22"	15"	N/A
N/A	22"	15"	N/A

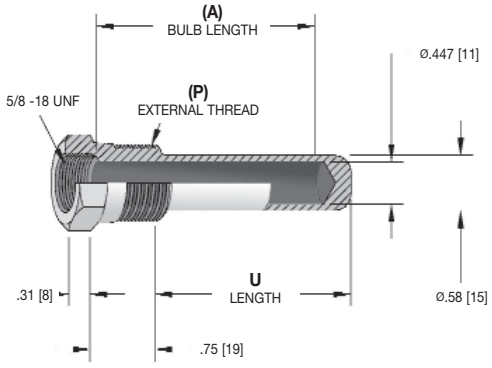
Thermowells

for L84000 Electric Contact Controllers

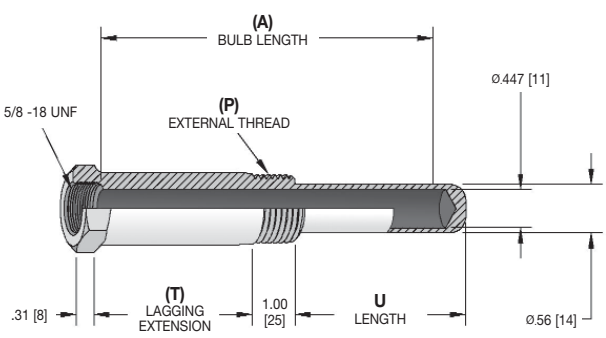
All dimensions are nominal. Dimensions in [ ] are in millimeters.

If Thermowells are to be purchased as a separate item, or if a Special Thermowell is required, please refer to this page. If a complete Electric Contact Controller is purchased, the proper Thermowell to match the sensing bulb ordered will be supplied. Please note sensing bulb size is affected by temperature range.
Indicate W02 for 1/2 NPT Brass, W05 for 1/2 NPT 304 SS or W06 for 1/2 NPT 316SS.
Indicate W12 for 3/4 NPT Brass, W15 for 3/4 NPT 304 SS or W16 for 3/4 NPT 316SS.

Standard



with Lagging Extension



Lengths

(A) Bulb Length	Standard U Length	Lagging (T) Lagging Extension	Lagging U Length
2"	2.13 [54]	—	—
4"	3.88 [99]	1.50 [38]	2.13 [54]
6"	5.75 [146]	1.50 [38]	3.88 [99]
8"	7.75 [197]	1.50 [38]	5.75 [146]
12"	11.75 [299]	1.50 [38]	7.50 [191]
18"	17.75 [451]	1.50 [38]	15.75 [400]
24"	23.75 [603]	1.50 [38]	21.75 [552]

Pressure Rating (psi) per ASME Boiler Code, Section VIII, Part UG28

	Operating Temperature			
Material	70°F	200°F	400°F	600°F
Carbon Steel	2500	2240	2020	1640
304 Stainless Steel	2780	2280	2100	1700
316 Stainless Steel	2770	2660	2500	2300
Brass	1330 psi @ 150°F,		1280 @ 350°F	

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

HOW TO ORDER

Sample Order Number: **7-3 G 2**

Thermowell Style	(P) External Thread	Bulb Length**	(T) Lagging Extension	Material
7- Controller	**3** 1/2 NPT **4** 3/4 NPT	**D** 2" Bulb **G** 4" Bulb **J** 6" Bulb **L** 8" Bulb **R** 12" Bulb* **Wa** 18" Bulb* **Wk** 24" Bulb*	**C** 1 1/2" Extension (4" and longer Stem only) Omit if None	**2** Brass **5** 304SS **6** 316SS

*Not available with 1/2 NPT external thread.

**Controller Thermowells with Bulb Lengths over 6" are typically for use with Adjustable Union or Bendable Extension Connections.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Notes

Solenoid Valve

960 Series

960WA44 shown

- 1/8" through 3" Valve Sizes
- 2-Way Single Seat or 3-Way
- Piston Pilot Operated
- Threaded Ends

The Trerice **960 Series Solenoid Valve** is particularly suited for use with electric contact controllers. This packless, self-contained valve is designed to operate on a minimum of current and can be used for air, steam, water, oil other liquids that are not corrosive to brass. The valve is opened and closed by a balancing piston and is controlled by a small pilot valve. The Series 960 should always be mounted to a horizontal pipeline with the coil in an upright position.

For optimal performance, the service conditions of the application must be considered when selecting a solenoid valve. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

How to Order

Please order using the Item Number listed.

Specifications

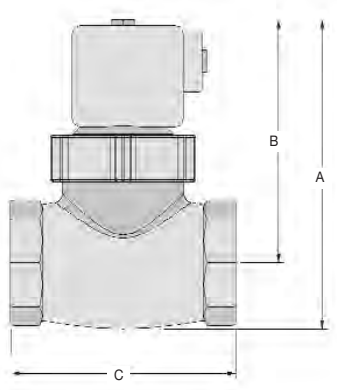
Model	Type	Coil	Service	Minimum Δ P	Maximum Temperature	Item Number	Pipe Size	C_V	Approximate Shipping Weight
960WB	General service, normally closed, bronze body, Viton seat screw	120 Vac/60 Hz, 3/8 - 2 NPT: NEMA 4X 2 1/2 - 3 NPT: NEMA 1	Water, air, oil (<400 SSU), 125 PSI max.	5 PSI	220°F (104°C)	**960WB44**	3/8 NPT	2.9	3.0 lbs [1.36 kg]
						960WB55	1/2 NPT	3.6	3.0 lbs [1.36 kg]
						960WB66	3/4 NPT	6.8	4.0 lbs [1.82 kg]
						960WB77	1 NPT	11.5	5.0 lbs [2.27 kg]
						960WB88	1 1/4 NPT	18	7.0 lbs [3.18 kg]
						960WB99	1 1/2 NPT	26	9.0 lbs [4.09 kg]
						960WB10	2 NPT	48	14 lbs [6.36 kg]
						960WB11	2 1/2 NPT	75	22 lbs [10.0 kg]
						960WB13	3 NPT	100	35 lbs [15.9 kg]
960SB	High temperature, normally closed, bronze body, Teflon seat screw	120 Vac/60 Hz, 3/8 - 2 NPT: NEMA 4X 2 1/2 - 3 NPT: NEMA 1	Steam, water, air, oil (<400 SSU), 125 PSI max.	5 PSI	356°F (180°C)	**960SB44**	3/8 NPT	2.9	3.0 lbs [1.36 kg]
						960SB55	1/2 NPT	3.6	3.0 lbs [1.36 kg]
						960SB66	3/4 NPT	6.8	4.0 lbs [1.82 kg]
						960SB77	1 NPT	11.5	5.0 lbs [2.27 kg]
						960SB88	1 1/4 NPT	18	7.0 lbs [3.18 kg]
						960SB99	1 1/2 NPT	26	9.0 lbs [4.09 kg]
						960SB10	2 NPT	48	14 lbs [6.36 kg]
						960SB11	2 1/2 NPT	75	22 lbs [10.0 kg]
						960SB13	3 NPT	100	35 lbs [15.9 kg]
960WA	General service, normally open, bronze body, Teflon seat screw	120 Vac/60 Hz, NEMA 1	Water, air, oil (<400 SSU), 300 PSI max.	10 PSI	300°F (149°C)	**960WA44**	3/8 NPT	2.9	4.0 lbs [1.82 kg]
						960WA55	1/2 NPT	3.6	4.0 lbs [1.82 kg]
						960WA66	3/4 NPT	6.8	5.0 lbs [2.27 kg]
						960WA77	1 NPT	11.5	6.0 lbs [2.73 kg]
						960WA88	1 1/4 NPT	18	8.0 lbs [3.64 kg]
						960WA99	1 1/2 NPT	26	10 lbs [4.55 kg]
						960WA10	2 NPT	48	15 lbs [6.82 kg]
						960WA11	2 1/2 NPT	75	22 lbs [10.0 kg]
						960WA13	3 NPT	100	35 lbs [15.9 kg]
960SA	High temperature, normally open, bronze body, Teflon seat screw	120 Vac/60 Hz, NEMA 1	Steam, water, air, oil (<400 SSU), 150 PSI max.	5 PSI	450°F (232°C)	**960SA44**	3/8 NPT	2.9	4.0 lbs [1.82 kg]
						960SA55	1/2 NPT	3.6	4.0 lbs [1.82 kg]
						960SA66	3/4 NPT	6.8	5.0 lbs [2.27 kg]
						960SA77	1 NPT	11.5	6.0 lbs [2.73 kg]
						960SA88	1 1/4 NPT	18	8.0 lbs [3.64 kg]
						960SA99	1 1/2 NPT	26	10 lbs [4.55 kg]
						960SA10	2 NPT	48	15 lbs [6.82 kg]
						960SA11	2 1/2 NPT	75	22 lbs [10.0 kg]
						960SA13	3 NPT	100	35 lbs [15.9 kg]
960WU	General service, 3-way, brass body	120 Vac/60 Hz, NEMA 1	Water, air, oil (<300 SSU), 50 PSI max.	N/A	180°F (82°C)	**960WU1Z**	1/8 NPT	.12	1.5 lbs [0.68 kg]
						960WU3Z	1/4 NPT	.12	2.0 lbs [0.91 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Solenoid Valve

960 Series

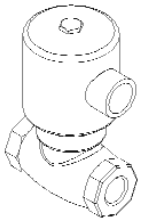
All dimensions are nominal. Dimensions in [ ] are in millimeters



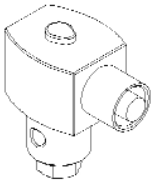
Item Number	Style	A in.	A mm	B in.	B mm	C in.	C mm
960WB44	S	5.12	130	4.25	108	2.75	70
960WB55	S	5.12	130	4.25	108	2.75	70
960WB66	S	5.50	140	4.50	114	3.25	83
960WB77	S	5.75	146	4.56	116	3.81	97
960WB88	S	6.50	165	5.06	129	4.25	108
960WB99	S	7.06	179	5.38	137	4.88	124
960WB10	S	8.00	203	5.88	149	5.88	149
960WB11	R	9.81	249	7.94	202	7.00	178
960WB13	R	10.88	276	8.06	205	8.25	210
960SB44	S	5.12	130	4.25	108	2.75	70
960SB55	S	5.12	130	4.25	108	2.75	70
960SB66	S	5.50	140	4.50	114	3.25	83
960SB77	S	5.75	146	4.56	116	3.81	97
960SB88	S	6.50	165	5.06	129	4.25	108
960SB99	S	7.06	179	5.38	137	4.88	124
960SB10	S	8.00	203	5.88	149	5.88	149
960SB11	R	9.81	249	7.94	202	7.00	178
960SB13	R	10.88	276	8.06	205	8.25	210
960WA44	R	7.44	189	6.56	167	2.75	70
960WA55	R	7.44	189	6.56	167	2.75	70
960WA66	R	7.88	200	6.88	175	3.25	83
960WA77	R	8.12	206	6.94	176	3.81	97
960WA88	R	8.69	221	7.31	186	4.25	108
960WA99	R	9.44	240	7.75	197	4.88	124
960WA10	R	10.56	268	8.44	214	5.88	149
960WA11	R	10.81	275	8.38	213	7.00	178
960WA13	R	11.56	294	8.56	217	8.25	210
960SA44	R	7.44	189	6.56	167	2.75	70
960SA55	R	7.44	189	6.56	167	2.75	70
960SA66	R	7.88	200	6.88	175	3.25	83
960SA77	R	8.12	206	6.94	176	3.81	97
960SA88	R	8.69	221	7.31	186	4.25	108
960SA99	R	9.44	240	7.75	197	4.88	124
960SA10	R	10.56	268	8.44	214	5.88	149
960SA11	R	10.81	275	8.38	213	7.00	178
960SA13	R	11.56	294	8.56	217	8.25	210
960WU1Z	T	3.16	80	2.19	56	1.19	30
960WU3Z	T	3.16	80	2.19	56	1.19	30

STYLE "S"

STYLE "R"



STYLE "T"



I/P Transducer

TA901 • Electropneumatic

TA901 shown

- 4 to 20 mA Input
- 3 to 15 PSI Output
- Intrinsically Safe
- Zero and Span Adjustments

The Trerice **TA901 Electropneumatic (I/P) Transducer** converts a milliamp current signal to a linearly proportional pneumatic output pressure. This transducer is designed for control applications that require a high degree of reliability and repeatability. The TA901 is used in the control operation of valve actuators and pneumatic valve positioners in the petrochemical, HVAC, energy management, textile, paper, and food and drug industries.

The TA901 I/P Transducer is tested and approved by Factory Mutual as Intrinsically Safe Class I, II and III, Division I, Groups C, D, E, F and G when installed in accordance with the Installation, Operation and Maintenance Instructions. It should be installed in a vertical position in a vibration-free area.

The Trerice TA987 Air Filter/Regulator is recommended for filtering and regulating the pressure of plant compressed air and delivering clean, dry air at the proper pressure to pneumatic control devices.

Specifications

Model
TA901

Input
4-20 mA

Output
1-17 psig Per ANSI/FCI 87-2 (can be calibrated to provide 1-9 psig or 9-17 psig)

Volume Booster
Built-in volume booster allows flow capacity up to 20 SCFM

Connections
Pneumatic: 1/4 NPT

Electric: 1/2 NPT

Air Requirements
Clean, oil-free, dry air filtered to 40 microns

Minimum Supply Pressure: 3 psig

Maximum Supply Pressure: 100 psig

Sensitivity: <±0.1% of span per psig

Air Consumption: 0.03 SCFH typical

Flow Rate: 4.5 SCFM at 25 psig supply

Relief Capacity: 2.0 SCFM at 5 PSIG above 20 psig setpoint

Mounting
Pipe, panel or bracket in a vibration-free area. Field adjustment will be required if mounted in a nonvertical position

Adjustment
Adjustable zero and span

Accuracy
Terminal Based Linearity: <±0.75% of span

Repeatability: <0.5% of span

Hysteresis: <1.0% of span

Response Time: <0.25 sec. @ 3-15 psig

Intrinsic Safety
Tested and approved by Factory Mutual as Intrinsically Safe Class I, II and III, Division I, Groups C, D, E, F and G when installed in accordance with Installation, Operation and Maintenance Instructions

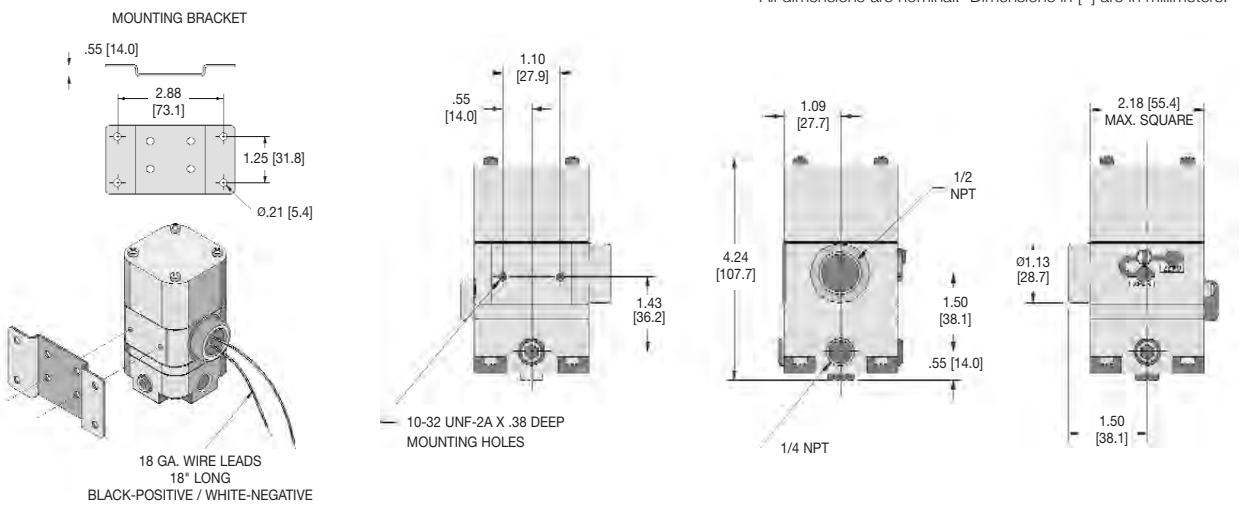
Ambient Temperature
-20°F (-30°C) to 140°F (60°C)

Approximate Shipping Weight
2.1 lbs [0.94 kg]

HOW TO ORDER

Please order using Item Number **TA901**

All dimensions are nominal. Dimensions in [ ] are in millimeters.



12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Air Filter/Regulator

TA987

- Cast Aluminum Housing
- Removable Nylon Mesh Filter
- Low Air Consumption
- Drip Well

The Trerice **TA987 Air Filter/Regulator** is recommended for filtering and regulating the pressure of plant compressed air to deliver clean, dry air at the proper pressure to pneumatic control devices. Supply air enters the inlet port, passes through the filtering element, and exits through the reducing valve to the outlet port. The filtering element removes particles as small as 40 microns. A drip well is provided for the accumulation of oil and water and a drain cock is included to allow purging of the unit. The filtering element is readily accessible for cleaning by removal of the drip well bowl.

The maximum allowable supply pressure to TA987 Air Filter/Regulator is 250 psig. Improper application may cause failure of the regulator, resulting in possible personal injury or property damage.

Specifications

Model
TA987

Air Requirements
Maximum Supply Pressure: 250 psig

Output Range: 0 to 30 psig, adjustable

Sensitivity: 0.036 psig

Air Consumption: <6 SCFH

Air Requirements (cont.)
Flow Rate: 20 SCFM at 100 psig supply/20 psig output

Relief Capacity: 0.1 SCFM at 5 psig above setpoint

Effect of Supply Pressure Variation: <0.2 psig for 25 psig

Filter
Removes particles 40 microns or greater

Port Size
1/4 NPT

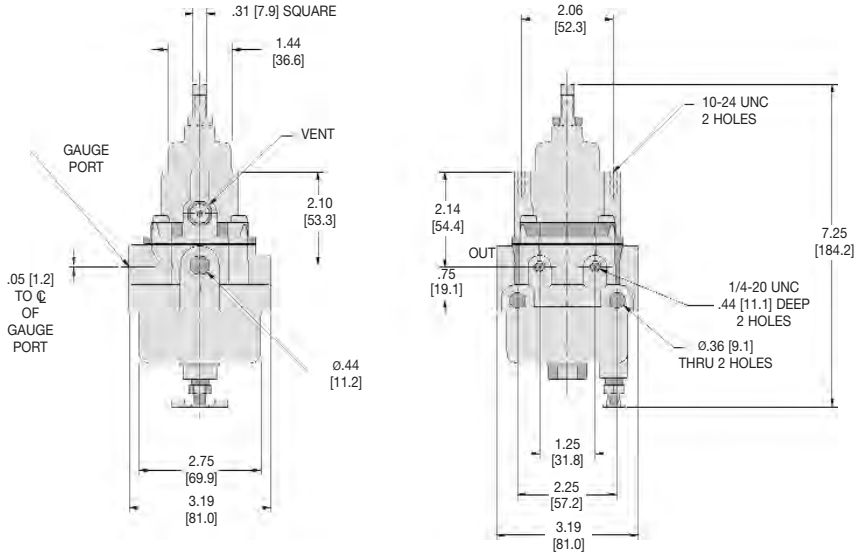
Housing
Cast aluminum

Mounting
Side, pipe, panel or through body

Ambient Temperature
-20°F (-30°C) to 160°F (71°C)

Approximate Shipping Weight
1.9 lbs [0.86 kg]

All dimensions are nominal. Dimensions in [ ] are in millimeters.



12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Solid State Relay

TA600 Series • AC Output

TA625 shown

- **UL Listed**
- **Arc Free Switching**
- **Opto-Isolated Input Circuits**
- **Compatible with DTL and TTL Logic**

The Trerice **TA600 Series** Solid State Relay has no moving parts, rendering it impervious to shock and vibration, and giving it a virtually infinite life.

HOW TO ORDER

Please order using Item Number **TA610**, **TA625** or **TA640**

Specifications

Models

TA610: 10 A output
TA625: 25 A output
TA640: 40 A output

Case Epoxy molded with aluminum baseplate

Connection Screw terminals

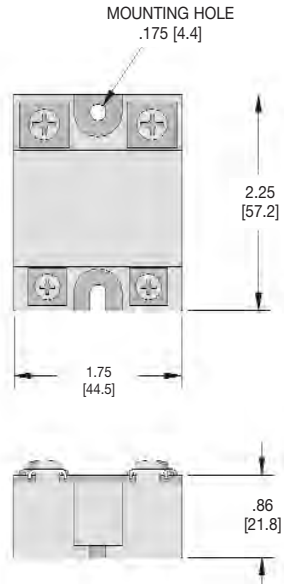
Input
Voltage: 3-32 VDC
Impedance: 1000Ω minimum
Must turn on: 3.0 VDC
Must turn off: 1.0 VDC
Isolation signal to load: 7000 VDC
Isolation signal to base: 2500 VDC
Capacitance signal to load: 15 pt

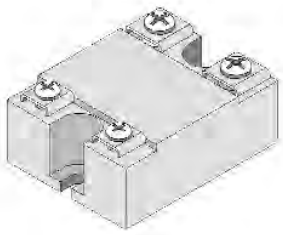
Output
Voltage: 20~300 Vrms
Typical turn-on voltage: 5 Vrms
Response time: 0.5 cycle max.
OFF state DV/DT: 200 V/m sec
OFF state leakage current: 15 mA
Max. non-repetitive single cycle surge current: 400 A
Cycle surge current: 400 A
IT for fusing (T=8.3 ms): 400 AS
Peak inverse voltage: 600 Vpk

Ambient Temperature
-20˚F (-30˚C) to 140˚F (60˚C)

Approximate Shipping Weight
0.2 lbs [0.09 kg]

All dimensions are nominal. Dimensions in [ ] are in millimeters.





12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Enclosure
TA302

- Polycarbonate Construction
- Aluminum Mounting Panel
- Termination Compartment
- NEMA 12 Protection

The Trerice **TA302 Enclosure** is ideal for mounting a Trerice Electronic Controller or Digital Indicator. The enclosure is constructed from rugged, impact-resistant polycarbonate and furnished with an anodized aluminum front mounting panel. It can accommodate all Trerice Electronic Control and Indicating devices.

Specifications

Model

TA302

Size 14.3" x 12.4" x 6.1" (363 x 316 x 156 mm)

Application
Fits all electronic controls and indicating devices

Mounting
Surface

Body and Cover
Polycarbonate enclosure body and transparent cover

Hinges
Polyamide, removable for left or right side mounting

Knockouts
2 x 0.85" and 2 x 1.09"

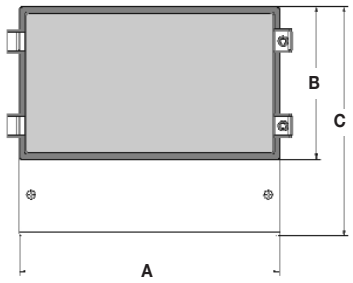
Front Panel
Anodized aluminum

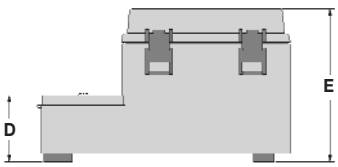
Protection
NEMA 12

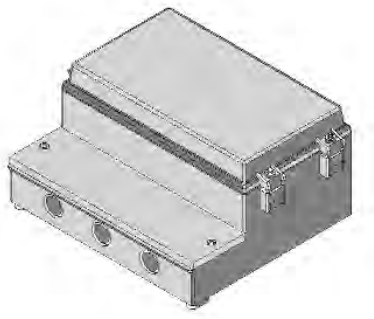
Ambient Temperature
175°F (80°C) maximum

Approximate Shipping Weight
5.5 lbs [2.50 kg]

All dimensions are nominal. Dimensions in [ ] are in millimeters.







A	B	C	D	E
14.3 [363]	9.2 [234]	12.4 [316]	3.0 [78]	6.1 [156]

Electronic Temperature Sensor

Connection Head Type • RTD or Thermocouple

CONTROLLER ACCESSORIES

TJDZD4UWA shown

- Thermocouple or RTD
- Cast Aluminum Polypropylene or Stainless Steel Head
- Weather Proof
- Welded or Spring Loaded Stem

The Trerice **Connection Head** is available with both Type J and Type K Thermocouples, as well as RTD sensors. The weather proof head provides a conduit connection and is available in cast aluminum (screw cover), polypropylene (flip cover) and stainless steel (screw cover). The stem is either welded directly to the 1/2 NPT threaded connection, or is spring-loaded to provide maximum sensitivity. The spring-loaded stem must always be installed in a thermowell.

Extension wire and transmitter accessories are also available. Please consult the Temperature Sensor Accessories Section for details.

For applications where the process media may be corrosive or contained under pressure, the use of a thermowell is required to prevent damage to the sensor and facilitate its removal from the process. To prevent leakage of the process media, spring loaded sensors must always be installed in a thermowell.

Specifications

Sensors	Description
TJD	Type J T/C
TKD	Type K T/C
TDD	100Ω RTD
TMD	1000Ω RTD

Hot Junction
T/C: Ungrounded
RTD: Platinum, 3-Wire

Stem 316 stainless steel, 1/4" diameter

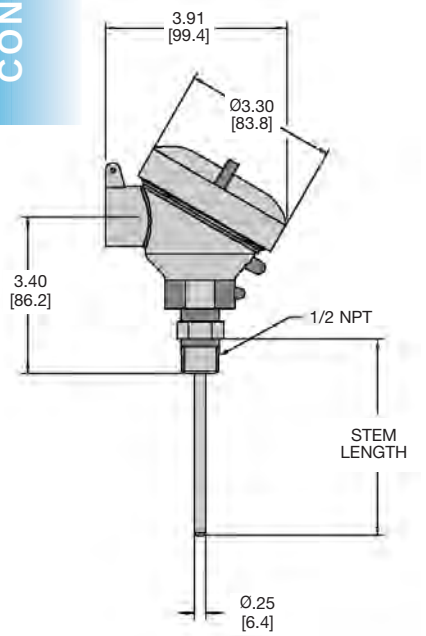
Insulation Ceramic

Head Cast aluminum, polypropylene, stainless steel

Process Connection 1/2 NPT welded or spring-loaded

Conduit Connection 3/4 NPT Female

Approximate Shipping Weight 1.1 lbs [0.50 kg]



All dimensions are nominal.
Dimensions in [ ] are in millimeters.

Sensor Specifications

Thermocouple

Type	Color Code	Positive Lead	Negative Lead	Temperature Range
J	Black	Iron* (Fe) [white]	Constantan (Cu-Ni) [red]	32° to 1382°F (0° to 750°C)
K	Yellow	Nickel-Chromium (Ni-Cr) [yellow]	Nickel-Aluminum* (Ni-Al) [red]	32° to 2282°F (0° to 1250°C)

**magnetic lead*

RTD

Type	Material	Resistance @ 0°C	Temperature Coefficient	Temperature Range
D	Platinum (Pt)	100Ω	a = 0.00385Ω/Ω/°C	-50° to 700°F (-45° to 400°C)
M	Platinum (Pt)	1000Ω	a = 0.00385Ω/Ω/°C	-50° to 700°F (-45° to 400°C)

HOW TO ORDER

Sample Order Number: **TJD Z 04 U W A**

Sensor	Stem Style	Stem Length	Hot Junction	Connection	Head Material
TJD Type J T/C **TKD** Type K T/C **TDD** 100Ω RTD **TMD** 1000Ω RTD	**Z** 316SS, 1/4 O.D.	**02** 2 1/2" Stem **04** 4" Stem **06** 6" Stem **09** 9" Stem **12** 12" Stem	**U** Ungrounded (T/C) **D** 3 Wire (RTD)	**S** Spring Loaded, 1/2 NPT **W** Welded, 1/2 NPT	**A** Aluminum **P** Polypropylene **S** Stainless Steel

Other Lengths: Specify in inches (24" maximum)
Other sensor styles available. Please consult the Trerice Temperature Section.

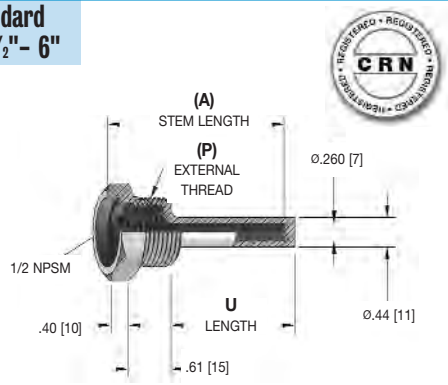
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Thermowells

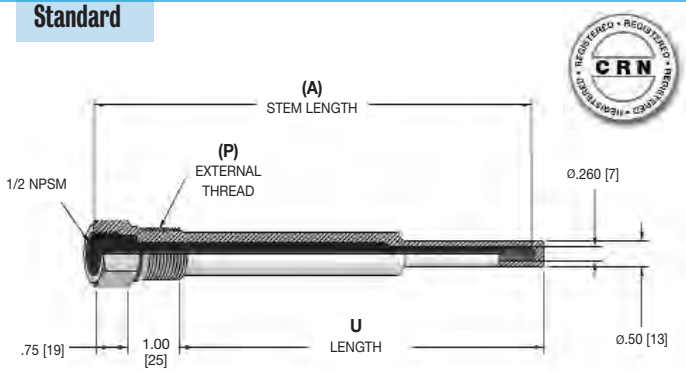
for RTD & Thermocouple Temperature Sensors

All dimensions are nominal.
Dimensions in [ ] are in millimeters.

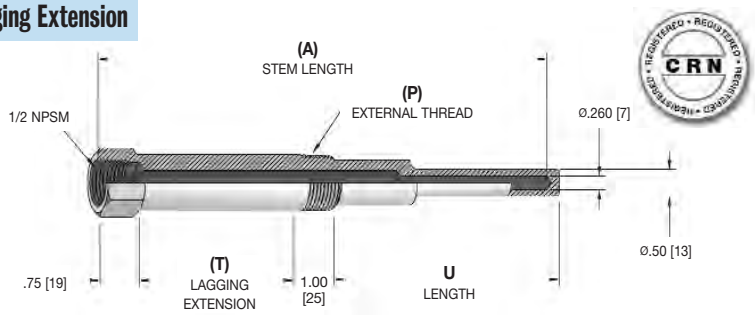
Standard 2½"- 6"



Standard



with Lagging Extension



Lengths

(A) Stem Length	Standard U Length	Lagging (T) Lagging Extension	Lagging U Length
2½"	1.75 [44]	—	—
4"	2.50 [64]	1.00 [25]	1.50 [38]
6"	4.50 [114]	2.00 [51]	2.50 [64]
9"	7.50 [191]	3.00 [76]	4.50 [114]
12"	10.50 [267]	3.00 [76]	7.50 [191]
15"	13.50 [343]	3.00 [76]	10.50 [267]
18"	16.50 [419]	3.00 [76]	13.50 [343]
24"	22.50 [572]	3.00 [76]	19.50 [495]

Pressure Rating (PSI)

	Operating Temperature					
Material	70°F	200°F	400°F	600°F	800°F	1000°F
Carbon steel	5000	5000	4800	4600	3500	-
304 stainless steel	6550	6000	4860	4140	3510	3130
316 stainless steel	6540	6400	6000	5270	5180	4660
Monel	5530	4990	4660	4450	4450	-
Brass	3170 psi @ 150°F, 2930 @ 350°F					

Selection of the proper thermowell is the sole responsibility of the user. Temperature and pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage. For correct use and application, please refer to the Thermowells For Thermometers And Electrical Temperature Sensors Standard ASME B40.9.

HOW TO ORDER

Sample Order Number: **76-4J6**

Thermowell Style	(P) External Thread	(A) Stem Length	(T) Lagging Extension	Material
76- Sensor, Stepped Shank (2½" - 6" Stem Straight Shank)	**3** ½ NPT* **4** ¾ NPT **5** 1 NPT*	**D** 2½" Stem **G** 4" Stem **J** 6" Stem **M** 9" Stem **R** 12" Stem **V** 15" Stem **Wa** 18" Stem **Wk** 24" Stem	**A** 1" Extension (4" Stem only) **C** 2" Extension (6" Stem only) **E** 3" Extension (9" and longer Stem only) Omit if None	**2** Brass **3** Steel **4** Monel **5** 304SS **6** 316SS

**Not available with 2½" Stem Length*

Other thermowell styles available. Please consult pages 155-161 of the Trerice Temperature Section.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Control Valves

DESIGN & OPERATION

Description

A control valve is a device capable of modulating flow at varying degrees between minimal flow and full capacity in response to a signal from an external control device. The control valve, often referred to as “the final control element,” is a critical part of any control loop, as it performs the physical work and is the element that directly affects the process.

Principles of Operation

A control valve is comprised of an actuator mounted to a valve. The valve modulates flow through movement of a valve plug in relation to the port(s) located within the valve body. The valve plug is attached to a valve stem, which, in turn, is connected to the actuator. The actuator, which can be pneumatically or electrically operated, directs the movement of the stem as dictated by the external control device.

Pneumatic/Diaphragm Actuated

Trerice Pneumatic Actuators are direct acting and utilize an air signal from an external control device to create a modulating control action. The force of the air signal is received into the actuator through a top port and distributed across the full area of the actuator’s diaphragm. The diaphragm presses down on the diaphragm plate and spring return assembly, which then moves the valve stem and plug assembly downward to stroke the valve. This actuator will move to a stem-out position in the event of air signal failure. The choice of valve action (stem-In-To-Close or stem-In-To-Open) will determine its signal failure position.

Electric Actuated

Trerice Electric Actuators are motor driven devices that utilize an electrical input signal to generate a motor shaft rotation. This rotation is, in turn, translated by the unit’s linkage into a linear motion, which drives the valve stem and plug assembly for flow modulation. In case of electric signal failure, these actuators can be specified to fail in the stem-out, stem-in, or last position.

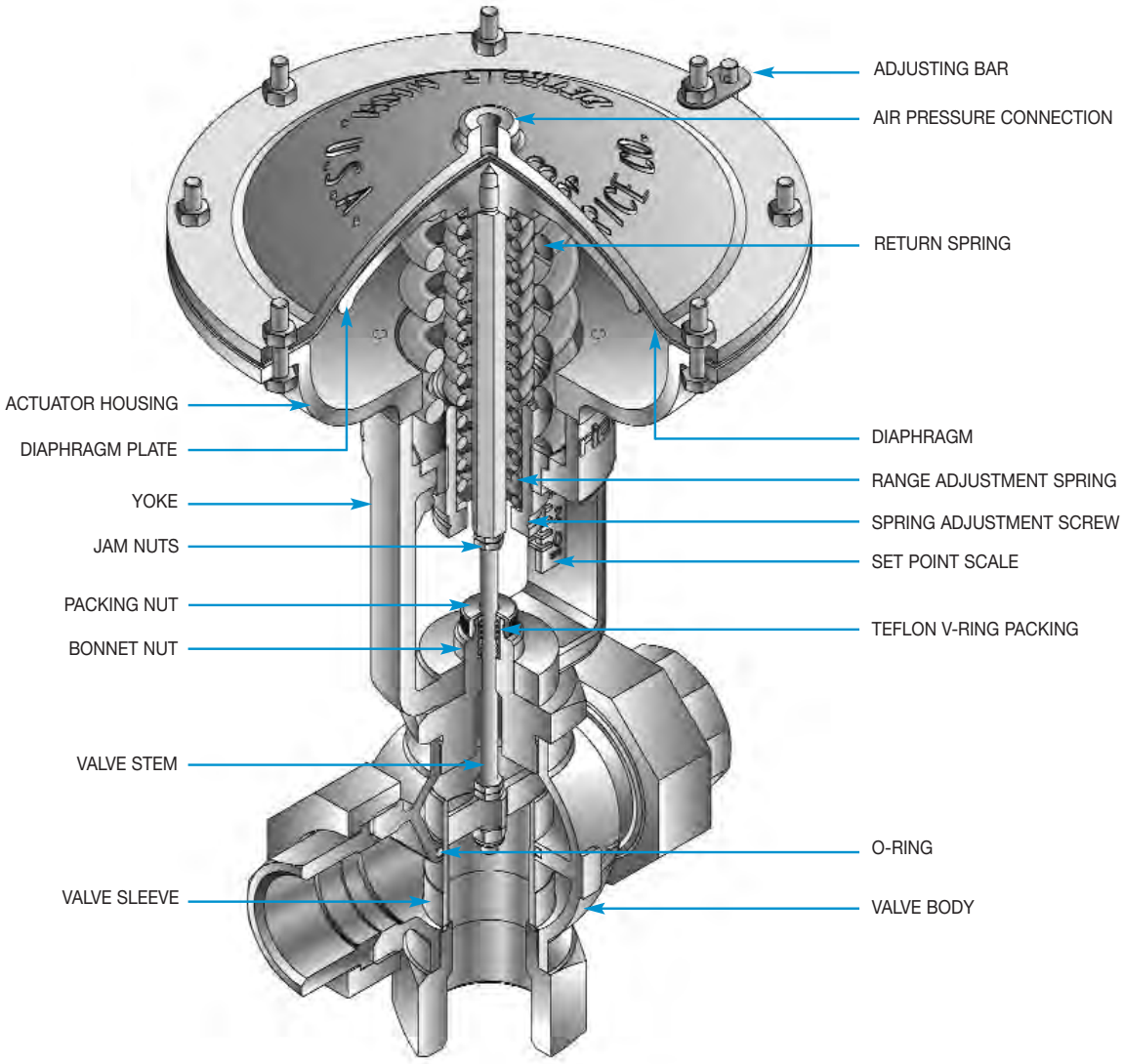
Selecting a Control Valve

Selection of a control valve is primarily dependent upon on the service conditions and load characteristics of the application.

Actuator

- **910 Series (Pneumatic)** – The Trerice 910 Series Control Valve is designed for accurate performance within light industrial, HVAC and commercial process applications. The 910 Series is characterized by its direct acting, compact pneumatic diaphragm actuator.
- **940 Series (Pneumatic)** – The Trerice 940 Series Control Valve is designed for high performance in industrial, demanding HVAC and commercial process applications. It is furnished with a direct acting, heavy duty pneumatic diaphragm actuator and can be equipped with a positioner for increased shut-off pressure capabilities.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com



- **940E Series (Electric)** – The Trerice 940E Series Control Valve is designed for high performance in industrial, demanding HVAC and commercial process applications. It features a direct acting electric motor and linkage actuator, which can be used where an air supply is not available.

Actuator: Direct Acting

Direct Acting actuators are designed to move the valve stem to the "in" position as the control signal (pneumatic pressure or electrical signal) increases.

All Trerice Control Valves should be carefully selected to meet the demands of the particular application. The information contained within this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper control valve is the sole responsibility of the user. Improper application may cause failure, resulting in possible personal injury or property damage.

Control Valves

DESIGN & OPERATION

Control Valve Comparison

Consideration	910	910T	910EP	940	940E
Actuation	Pneumatic	Pneumatic	Pneumatic	Pneumatic	Electric
Control Action	On/Off	Proportional	Proportional	Proportional	Proportional
Input Signal	15 psi	3-15 psi	3-15 psi	3-15 psi	4-20 mA / 0-10 VDC
Application	Standard Duty	Standard Duty	Standard Duty	Heavy Duty	Heavy Duty
Price	Economical	Moderate	Moderate	Premium	Premium
Response Time	Excellent	Excellent	Excellent	Excellent	Average
Available with Positioner	No	No	No	Yes	Not Required
Shut-Off Pressure*	≤ 250 psig	≤ 250 psig	≤ 250 psig	≤ 720 psig	≤ 400 psig
Valve Sizes	1/2" thru 4"	1/8" thru 4"	1/2" thru 2"	1/2" thru 8"	1/2" thru 8"
Valve Styles	Single Seat Double Seat	Double Seat** 3-Way	Single Seat	Single Seat Double Seat 3-Way	Single Seat Double Seat 3-Way
Valve Materials	Bronze Cast-Iron Cast-Steel Stainless Steel	Bronze Cast-Iron Stainless Steel	Bronze	Bronze Cast-Iron Stainless Steel	Bronze Cast-Iron Stainless Steel
Trim Styles	Modified Linear	Modified Linear	Equal Percentage	Equal Percentage Modified Linear	Equal Percentage Modified Linear

** Allowable pressure is dependent upon body material, connection and temperature of the process fluid. Please consult the Valve Pressure Ratings table.*

*** Single Seat - 1/2"*

Valve

Trerice Control Valves are available with a wide variety of valve bodies in various styles, materials, connections and sizes.

A control valve is not considered a shut-off valve. A pressure surge may force a single seated valve plug open. The Trerice Control Valve is a balanced equilibrium system and provides no power to tightly seat the valve plug. A separate power driven or hand actuated valve is required to ensure tight shut-off when necessary.

Style

Trerice Control Valve Bodies are available in single seated, double seated and 3-way designs.

- **Single Seated Valves** are an excellent choice when a higher degree of shut-off is required. However, this design is unbalanced and limited in the pressure that it will shut off against. The leakage rate is approximately 0.1% of the maximum capacity.
- **Double Seated Valves** are nearly pressure balanced and, therefore, are able to close the valve plug against higher operating pressures. However, since temperature fluctuations may cause expansion and contraction across the seats, tight shut-off is not always possible. The leakage rate is approximately 0.5% of the maximum capacity. Double seated valves have a faster flow response and greater capacity than single seated valves and are recommended when tight shut-off is not required.
- **3-Way Valves** are used for mixing two flows together, or for diverting a flow to or around a device (bypass). In order to produce consistent flow quantity for stable operation, the pressure drop across both flow paths (inlet to outlet) must be nearly equal.

  3-Way Valves for 910 Series are exclusively of the Sleeve Type. 3-Way Valves for 940 Series are available in two styles: Plug Type (common port on the side) and Sleeve Type (common port on the bottom). The Plug Type is exclusively for use on mixing applications. The Sleeve Type is most commonly used for diverting applications, however due to its design it can also be used for mixing applications. The Sleeve Type design is constructed with an O-ring around the sleeve. The O-ring is suitable for water or glycol type service, up to a maximum of 300°F. A higher temperature viton O-ring for use with other fluids, such as oil, or for temperatures up to 410°F is available. Consult factory.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Action

Trerice Single and Double Seated Valves are available as stem In-To-Close (Normally Open), or stem In-To-Open (Normally Closed) for various application requirements. The action of 910 Series, bronze-bodied valves is field reversible. Trerice 3-Way Valves can be specified for either mixing or diverting service.

Trerice Control Valves are NOT intended for use in applications where the media comes in direct contact with the skin or body, such as showers, baths, lavatories or wash fountains.

Control Valve Action

Stem Action	Normal (Fail*) Position
In-To-Close	Normally Open
In-To-Open	Normally Closed

** The electric motor actuator of the 940E Series can be specified to move the valve to stem in, stem out, or last position in case of electrical failure.*

Body Material and Connection

Trerice Control Valves are available with bronze, cast-iron, cast steel and stainless steel valve bodies. Union, flanged and threaded connection styles are available.

Valve Pressure Ratings (psig)

		Operating Temperature									
Body Material	Connection	100°F (38°C)	150°F (66°C)	175°F (80°C)	200°F (93°C)	225°F (108°C)	250°F (121°C)	275°F (135°C)	300°F (149°C)	350°F (176°C)	400°F (204°C)
Bronze	Iron Unions	250	250	250	250	250	250	250	250	250	250
Bronze	Threaded	400	400	392	385	375	365	350	335	300	—
Cast-Iron	Threaded	400	400	385	370	355	340	325	310	280	250
Cast-Iron	Class 125 Flanged	175	175	170	165	157	150	145	140	125	—
Cast-Iron	Class 250 Flanged	400	400	385	370	355	340	325	310	280	250
Cast-Steel	Threaded	250	250	250	250	250	250	250	250	250	250
Stainless Steel	Threaded	720	670	645	620	605	590	575	560	537	515

Trim

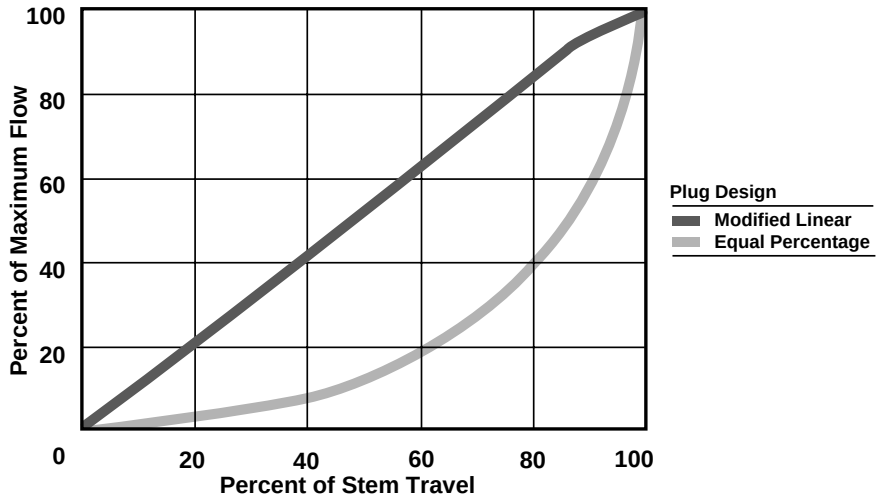
Valve trim is comprised of the stem and plug assembly, and the seats within the ports. 910 Series Control Valves employ either a quick-opening or equal percentage stainless steel valve plug and permanently brazed-in stainless steel seats for smooth performance throughout the life of the valve. The valve plug is both top and bottom guided to ensure positive seating alignment. Series 940 and 940E Two-Way Control Valves are furnished with an equal percentage plug design. A quick-opening plug design is ideally suited for use with an “On/Off” Controller, while an equal percentage design is typically used with a “Proportional” or “PID” Controller.

Trerice 3-Way Valves use a skirt-guided stainless steel sleeve and brass seating surface to change flow direction in a linear manner within the body.

Plug Design Availability

Series	Style	Plug Design	
		Modified Linear	Equal Percentage
910	2-Way	x	x
	3-Way	x	
940 / 940E	2-Way		x
	3-Way	x	

Inherent Flow Characteristics



Packing

Trerice valves feature a self-energizing Teflon V-Ring packing, which reduces leakage around the valve stem. V-Ring packing is spring loaded to maintain proper compression and **does not** require manual adjustment.

Size

The proper sizing of a control valve is one of the most important factors in its selection. A valve that is too small will not be able to provide the desired capacity during peak load conditions, while a valve that is too large may overshoot the control point and operate with the valve plug too close to the seat, resulting in undue wear of the plug and seat. The valve coefficient (C_v) is mathematically determined through an evaluation of the system operating pressures. From this factor, a valve body with the appropriate port size can be selected. Port Sizes from 1/8" through 8" and Connection Sizes from 1/2" through 8" are available. Please consult the Valve Selection Section of this catalog.

Valve Coefficient (Cv)

The rated valve coefficient is used to describe the relative flow capacity of the valve based on standard test conditions. Please refer to the Valve Selection Section for detailed information.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Control Valve Availability

910 Series			Size											
Body Material	**Connection**	**Style**	**½"**	**¾"**	**1"**	**1¼"**	**1½"**	**2"**	**2½"**	**3"**	**4"**	**5"**	**6"**	**8"**
Bronze	Iron Unions	Single	✓*	✓	✓	✓	✓	✓						
		Double		✓	✓	✓	✓	✓						
		3-Way	✓	✓	✓	✓	✓	✓						
Cast-Iron	Class 125 Flanged	Double							✓	✓	✓			
		3-Way							✓	✓	✓			
Cast-Steel	Threaded	Single		✓*	✓*									
Stainless Steel	Threaded	Single	✓	✓	✓		✓	✓						
		3-Way	✓	✓	✓		✓	✓						

940 / 940E Series			Size											
Body Material	**Connection**	**Style**	**½"**	**¾"**	**1"**	**1¼"**	**1½"**	**2"**	**2½"**	**3"**	**4"**	**5"**	**6"**	**8"**
Bronze	Threaded	Single	✓	✓	✓	✓	✓	✓						
		3-Way	✓	✓	✓		✓	✓						
Cast-Iron	Threaded	Double					✓	✓						
Cast-Iron	Class 125 Flanged	Single							✓	✓	✓	✓	✓**	✓**
		Double							✓	✓	✓	✓	✓	✓
		3-Way							✓	✓	✓	✓	✓	✓**
Cast-Iron	Class 125 Flanged	Single							✓	✓	✓	✓	✓	✓
		Double							✓	✓	✓	✓	✓	✓
		3-Way							✓	✓	✓	✓	✓	✓**
Stainless Steel	Threaded	Single	✓	✓	✓		✓	✓						
		3-Way	✓	✓	✓		✓	✓						

**Reduced port sizes are available.* ***Not available on 940E Series.*

Positioner

Trerice Valve Positioners (pneumatic and electropneumatic) are mechanical devices designed to provide enhanced control, stability, and shut-off capability in extreme flow applications. The positioner, which is mounted to the valve's yoke assembly and linked to the valve stem, receives a signal from an external control source, compares the control signal to the actual position of the valve plug, and then sends a corrected signal to the valve's actuator, thereby positioning the valve plug for optimum flow modulation.

Air Filter/Regulator

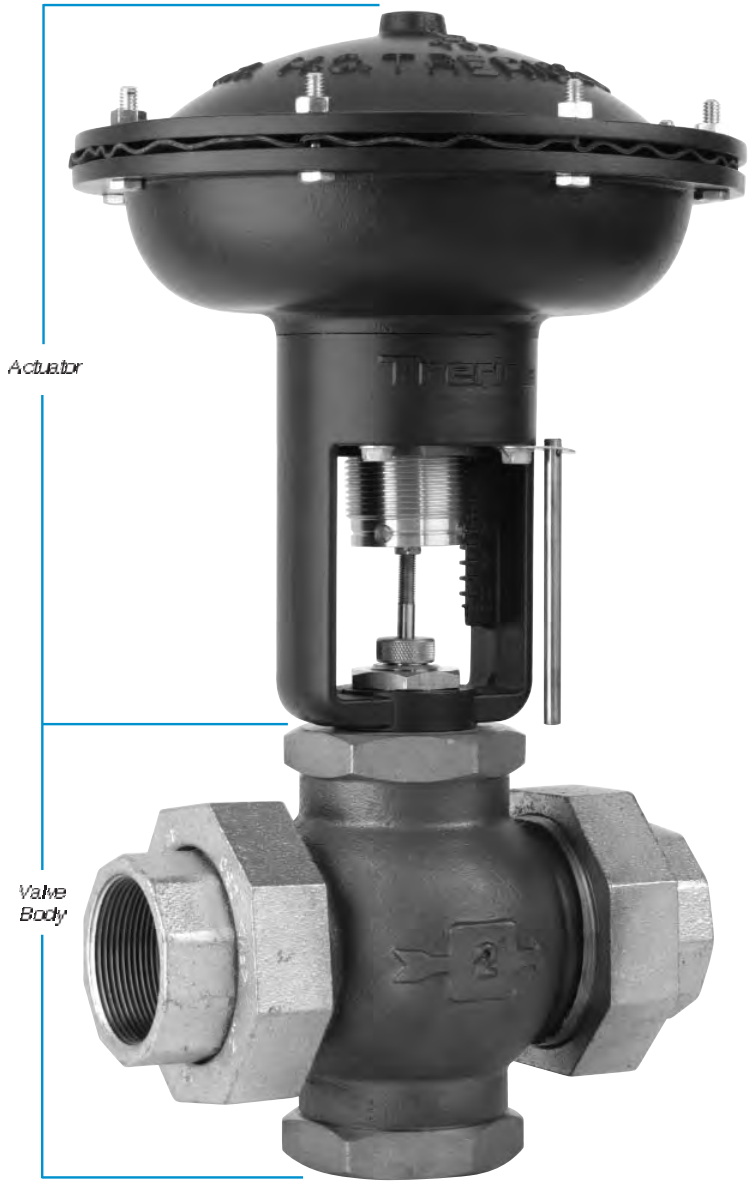
The Trerice No. TA987 Air Filter/Regulator is recommended for filtering and regulating the pressure of plant compressed air, while delivering clean, dry air at the proper pressure to pneumatic control devices.

Clean, filtered supply air is required by all pneumatic control systems and control devices.

Pipeline Strainer

A Trerice Series 1100 Pipeline Strainer should always be installed upstream of a Trerice Control Valve. This Y-Type strainer employs a stainless steel screen and will remove debris from the line, which will prevent jamming of the valve and extend its life.

910 Series Compact Control Valve



910B shown

- Diaphragm Actuated
- 7", 9", & 12" Actuator Sizes
- Heavy Duty Die CastHousing
- 1/2" – 6" Valve Sizes

The Trerice **910 Series Pneumatic Control Valve** offers high quality at an economical price, incorporating many features found only on more expensive units. Models are available to provide the proper flow response required by the application.

The **910A, 910B & 910C** are used for On/Off control applications, providing a quick-opening flow response when used with single or double seated valves.

The **910TB** is used for proportional or PID control applications, providing a throttling flow response when used with double seated or 3-way valves.

The **910EPA & 910EPC** is used for proportional or PID control applications, providing an equal percentage flow response when used with single seated valves.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Consult the Valve Selection tables for the capabilities of a particular valve/actuator assembly. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

910 Series
Compact Control Valve

Specifications

Actuator Model	Diaphragm Size	Control Action	Input Signal
910A	7"	On/Off	15 psi
910B	10"	On/Off	15 psi
910C	12"	On/Off	15 psi
910TB	10"	Throttling*	3-15 psi
910EPA	7"	Equal Percentage	3-15 psi
910EPC	12"	Equal Percentage	3-15 psi

**Includes 3-Way*

Housing
Die cast aluminum, epoxy powder coated blue finish

Setting Scale
Integral to housing

Adjustment Screw
Brass

Adjustment Screw Bushing
Lubricant impregnated sintered bronze

Range Adjustment Spring
Cadmium plated

Pressure Plate
Aluminum

Diaphragm
Nylon reinforced EDPM

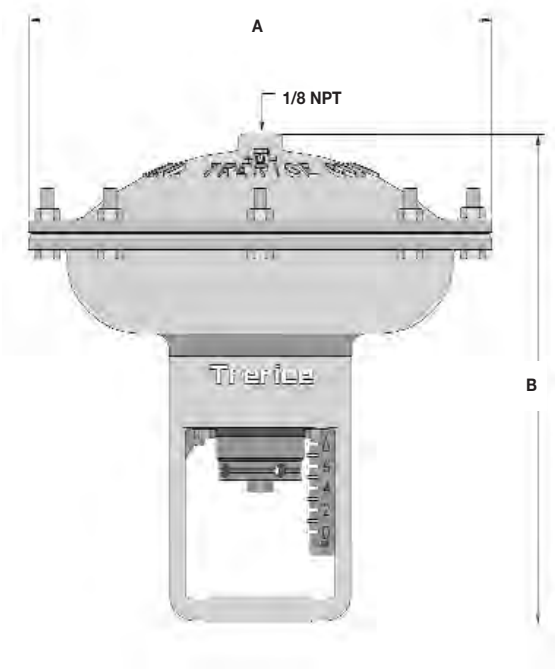
Air Pressure to Diaphragm
30 psig maximum

Air Pressure Connection
1/8 NPT Female

Operating Temperature
Ambient:
-40°F (-40°C) to 180°F (82°C)

Process Flow:
-40°F (-40°C) to 410°F (210°C)

All dimensions are nominal. Dimensions in [ ] are in millimeters



Actuator Number	A	B	Approx. Shipping Weight
910A	7.0 [178]	9.8 [249]	6.6 lbs [2.97 kg]
910B	9.3 [236]	9.8 [249]	8.5 lbs [3.83 kg]
910C	11.4 [290]	9.8 [249]	12.0 lbs [5.41 kg]
910TB	9.3 [236]	9.8 [249]	9.6 lbs [4.32 kg]
910EPA	7.0 [178]	9.8 [249]	7.6 lbs [3.42 kg]
910EPC	11.4 [290]	9.8 [249]	13.1 lbs [5.90 kg]

HOW TO ORDER

Sample Order Number: **910TB - A56**

Actuator Model	(Control Action)	Valve Body Number
910A 910B 910C	On/Off	Refer to pages 230–234
910TB	Throttling	Refer to pages 235–238
910EPA 910EPC	Equal Percentage	Refer to page 239

1. ***Determine** the Actuator Model (**910A, 910B, 910C, 910TB, 910EPA or 910EPC**) required. **Note:** Refer to the maximum close-off pressure columns in the Valve Body Selection tables to determine the Actuator size required by your application.*
2. ***Determine** the Valve Size, style and material required by the application. **Note:** Consult the Valve Selection Table to determine the required Valve Body Number.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 910A, 910B & 910C Control Valves)

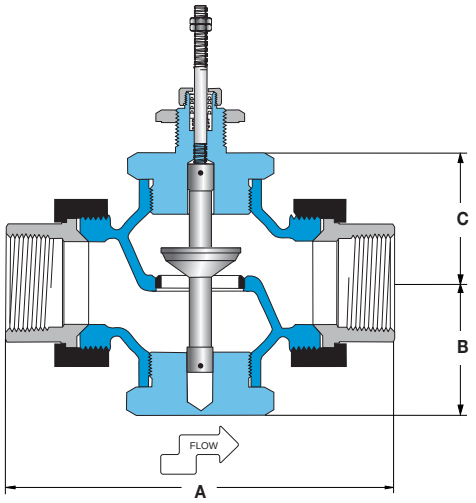
BRONZE

Single Seat • 1/2" – 2"

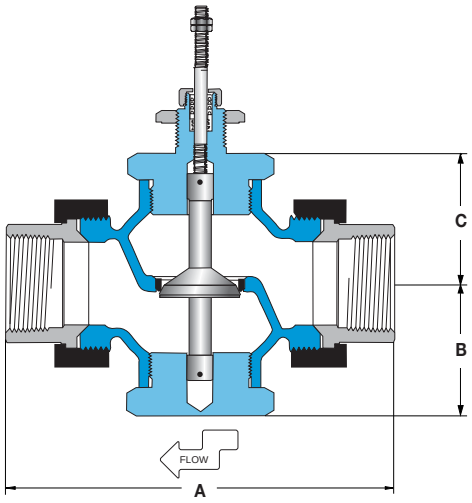
All dimensions are nominal. Dimensions in [ ] are in millimeters

CONTROL VALVES

Stem In-To-Close (normally open)



Stem In-To-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Modified linear	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
A14	1/2	1/2"	2.8	250	x	x	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A19	3/4	3/4"	5.6	250	x	x	5.6 [142]	2.3 [58]	2.3 [58]	4.9 lbs [2.21 kg]
A26	1	1"	8.4	200	250	x	6.0 [152]	2.3 [58]	2.3 [58]	6.0 lbs [2.70 kg]
A36	1 1/4	1 1/4"	15	100	250	x	7.2 [183]	2.6 [66]	2.6 [66]	9.7 lbs [4.37 kg]
A47	1 1/2	1 1/2"	21	50	150	250	7.7 [196]	2.6 [66]	2.6 [66]	10.8 lbs [4.86 kg]
A58	2	2"	33	25	50	250	8.6 [218]	3.1 [79]	3.1 [79]	16.3 lbs [7.34 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
A15	1/2	1/2"	2.8	250	x	x	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A22	3/4	3/4"	5.6	250	x	x	5.6 [142]	2.3 [58]	2.3 [58]	4.9 lbs [2.21 kg]
A30	1	1"	8.4	200	x	x	6.0 [152]	2.3 [58]	2.3 [58]	6.0 lbs [2.70 kg]
A41	1 1/4	1 1/4"	15	150	x	x	7.2 [183]	2.6 [66]	2.6 [66]	9.7 lbs [4.37 kg]
A52	1 1/2	1 1/2"	21	100	x	x	7.7 [196]	2.6 [66]	2.6 [66]	10.8 lbs [4.86 kg]
A63	2	2"	33	50	x	x	8.6 [218]	3.1 [79]	3.1 [79]	16.3 lbs [7.34 kg]

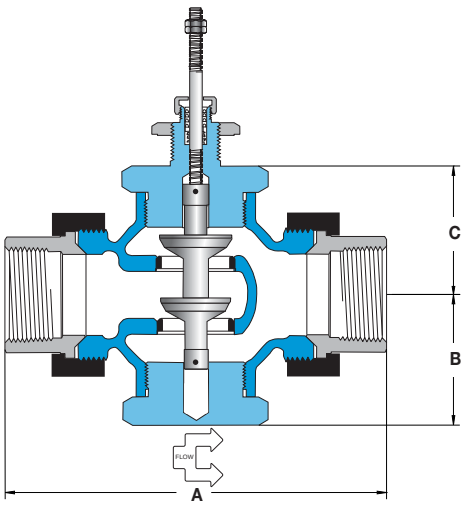
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

BRONZE

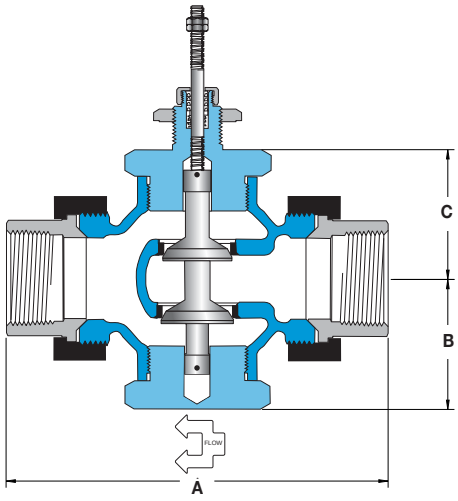
Valve Body Selection
(for 910A, 910B & 910C Control Valves)
Double Seat • 3/4" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters

Stem In-To-Close (normally open)



Stem In-To-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Modified linear	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
A21	3/4	3/4"	8	250	x	x	5.6 [142]	2.3 [58]	2.3 [58]	5.0 lbs [2.25 kg]
A29	1	1"	12	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	6.1 lbs [2.75 kg]
A39	1 1/4	1 1/4"	21	250	x	x	7.2 [183]	2.6 [66]	2.6 [66]	10.1 lbs [4.55 kg]
A50	1 1/2	1 1/2"	30	250	x	x	7.7 [196]	2.6 [66]	2.6 [66]	11.1 lbs [5.00 kg]
A61	2	2"	47	200	x	x	8.6 [218]	3.1 [79]	3.1 [79]	17.0 lbs [7.65 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
A24	3/4	3/4"	8	250	x	x	5.6 [142]	2.3 [58]	2.3 [58]	5.0 lbs [2.25 kg]
A33	1	1"	12	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	6.1 lbs [2.75 kg]
A44	1 1/4	1 1/4"	21	250	x	x	7.2 [183]	2.6 [66]	2.6 [66]	10.1 lbs [4.55 kg]
A55	1 1/2	1 1/2"	30	250	x	x	7.7 [196]	2.6 [66]	2.6 [66]	11.1 lbs [5.00 kg]
A66	2	2"	47	200	x	x	8.6 [218]	3.1 [79]	3.1 [79]	17.0 lbs [7.65 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 910A, 910B & 910C Control Valves)

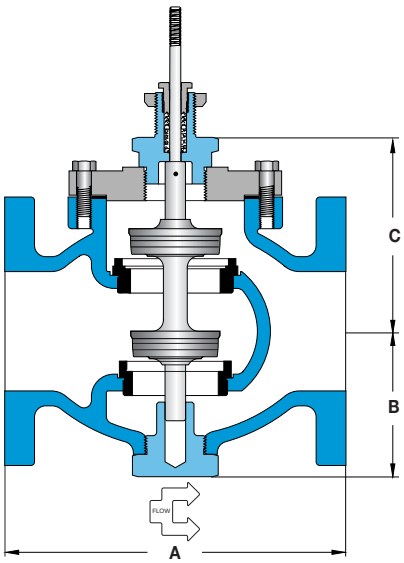
CAST IRON

Double Seat • 2½" – 4"

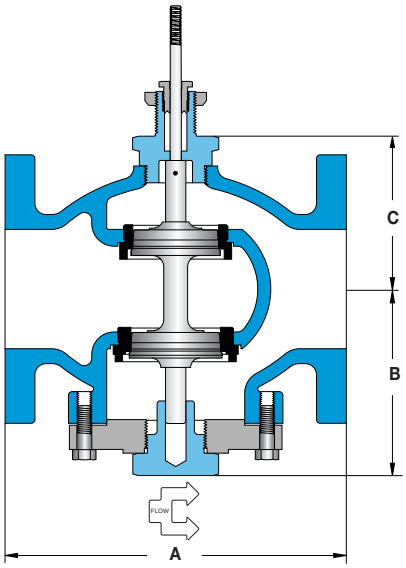
All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

Stem In-To-Close (normally open)



Stem In-To-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Modified linear	Class 125 flanged	125 PSI @ 350°F (176°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size			Actuator			Dimensions			Approximate
	Connection	Nominal Port	C_v	910A	910B	910C	A	B	C	Shipping Wt.
B73	2½"	2½"	69	125	x	x	7.8 [198]	4.8 [122]	5.4 [137]	45 lbs [20 kg]
B78	3"	3"	90	125	x	x	9.0 [229]	5.0 [127]	5.6 [142]	70 lbs [32 kg]
B83	4"	4"	196	125	x	x	11.4 [290]	6.3 [160]	6.5 [165]	100 lbs [45 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size			Actuator			Dimensions			Approximate
	Connection	Nominal Port	C_v	910A	910B	910C	A	B	C	Shipping Wt.
B74	2½"	2½"	69	125	x	x	7.8 [198]	4.8 [122]	5.4 [137]	45 lbs [20 kg]
B79	3"	3"	90	125	x	x	9.0 [229]	5.0 [127]	5.6 [142]	70 lbs [32 kg]
B84	4"	4"	196	125	x	x	11.4 [290]	6.3 [160]	6.5 [165]	100 lbs [45 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

CAST STEEL

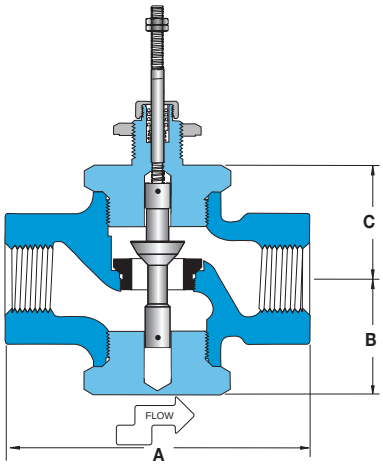
Valve Body Selection (for 910A, 910B & 910C Control Valves)

Single Seat • 1/2" – 1"

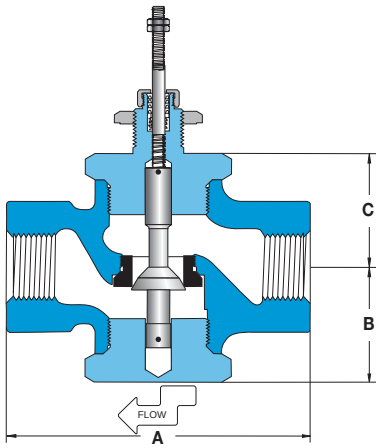
All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

Stem In-To-Close (normally open)



Stem In-To-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-steel	Stainless steel	Modified linear	Threaded	250 PSI @ 410°F (210°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
C05	3/4	1/2"	2.8	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C06	3/4	3/4"	5.6	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C55	1	1/2"	2.8	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C56	1	3/4"	5.6	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C57	1	1"	8.4	200	250	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
C15	3/4	1/2"	2.8	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C16	3/4	3/4"	5.6	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C65	1	1/2"	2.8	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C66	1	3/4"	5.6	250	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]
C67	1	1"	8.4	200	x	x	6.0 [152]	2.3 [58]	2.3 [58]	9.2 lbs [4.18 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

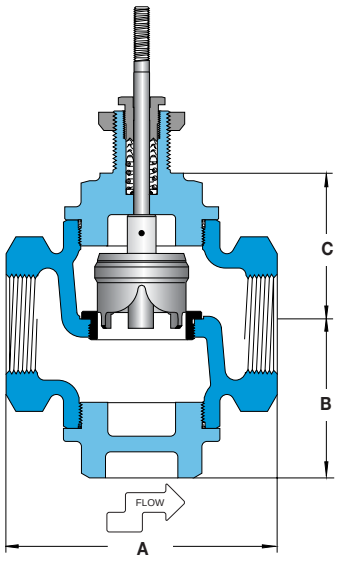
Valve Body Selection (for 910A, 910B & 910C Control Valves) STAINLESS STEEL

Single Seat • 1/2" – 2"

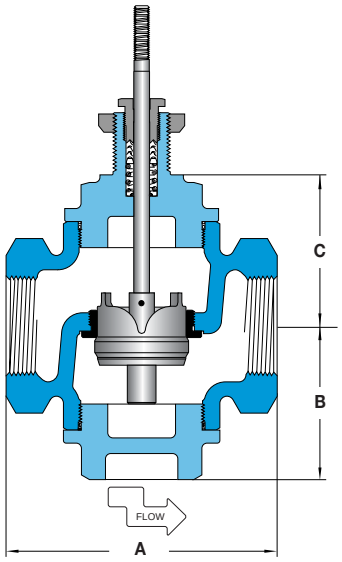
All dimensions are nominal. Dimensions in [ ] are in millimeters

CONTROL VALVES

Stem In-To-Close (normally open)



Stem In-To-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Stainless steel	Stainless steel	Modified linear	Threaded	250 PSI @ 410°F (210°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
D14	1/2	1/2"	6	250	x	x	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D19	3/4	3/4"	8.6	220	250	x	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D26	1	1"	14	140	250	x	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D47	1 1/2	1 1/2"	27	40	120	250	6.1 [155]	3.5 [89]	4.0 [102]	15.5 lbs [7.05 kg]
D58	2	2"	33	25	45	225	6.5 [165]	3.9 [99]	4.2 [107]	19.0 lbs [8.64 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)						
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910A	Actuator 910B	Actuator 910C	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
D15	1/2	1/2"	6	250	x	x	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D22	3/4	3/4"	8.6	250	x	x	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D30	1	1"	14	155	x	x	5.0 [127]	2.9 [74]	3.4 [86]	8.0 lbs [3.64 kg]
D52	1 1/2	1 1/2"	27	80	x	x	6.1 [155]	3.5 [89]	4.0 [102]	15.5 lbs [7.05 kg]
D63	2	2"	33	40	x	x	6.5 [165]	3.9 [99]	4.2 [107]	19.0 lbs [8.64 kg]

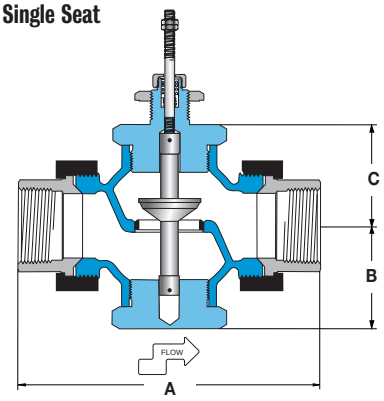
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 910TB Control Valve)

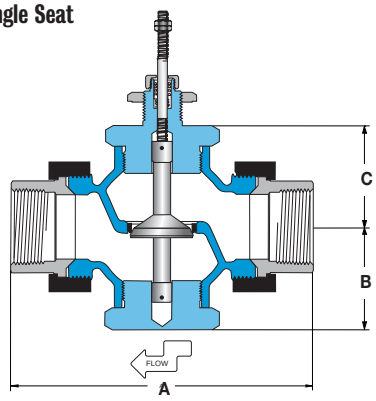
All dimensions are nominal. Dimensions in [ ] are in millimeters

Single or Double Seat • 1/2" – 2"

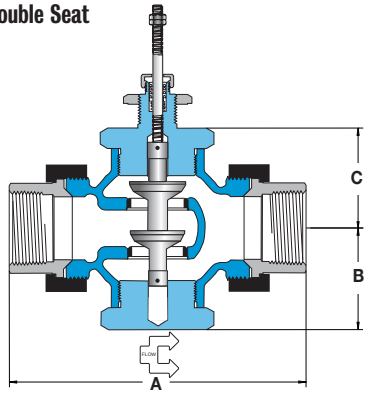
Stem In-to-Close (normally open)
Single Seat



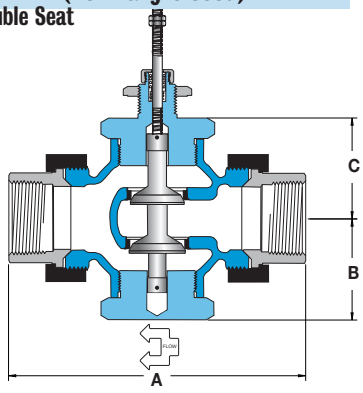
Stem In-to-Open (normally closed)
Single Seat



Stem In-to-Close (normally open)
Double Seat



Stem In-to-Open (normally closed)
Double Seat



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Modified linear	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

Valve Body Selection

Valve Body Number		Size				Maximum Close-Off Pressure (psid)	Dimensions			Approximate
ITC Normally Open	ITO Normally Closed	Connection (NPT)	Nominal Port	Number of Seats	C_v	Actuator 910TB	A	B	C	Shipping Wt.
A02	A03	1/2	1/8"	1	0.17	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A05	A06	1/2	3/16"	1	0.35	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A08	A09	1/2	1/4"	1	0.7	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A11	A12	1/2	3/8"	1	1.4	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A14	A15	1/2	1/2"	1	2.8	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
A21	A24	3/4	3/4"	2	8	250	5.6 [142]	2.3 [58]	2.3 [58]	5.0 lbs [2.25 kg]
A29	A33	1	1"	2	12	250	6.0 [152]	2.3 [58]	2.3 [58]	6.1 lbs [2.75 kg]
A39	A44	1 1/4	1 1/4"	2	21	250	7.2 [183]	2.6 [66]	2.6 [66]	10.1 lbs [4.55 kg]
A50	A55	1 1/2	1 1/2"	2	30	250	7.7 [196]	2.6 [66]	2.6 [66]	11.1 lbs [5.00 kg]
A61	A66	2	2"	2	47	250	8.6 [218]	3.1 [79]	3.1 [79]	17.0 lbs [7.65 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

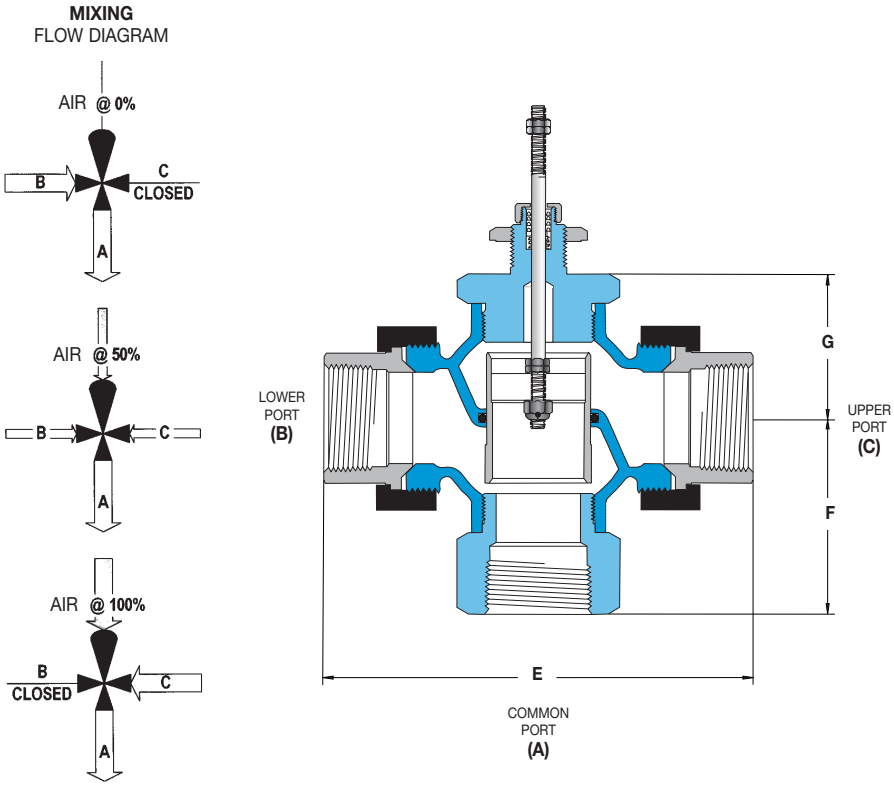
Valve Body Selection
(for 910TB Control Valve)

3-WAY • 1/2" – 2"

BRONZE

All dimensions are nominal. Dimensions in [ ] are in millimeters.

for Mixing or Diverting



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Bronze	Modified linear	Threaded, malleable iron union ends	250 PSI @ 300°F (149°C)

Valve Body Selection

Mixing or Diverting				Maximum Close-Off Pressure (psid)				
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910TB	Dimensions E	Dimensions F	Dimensions G	Approximate Shipping Wt.
A18	1/2	1/2"	2.8	250	4.8 [122]	1.8 [46]	1.8 [46]	2.9 lbs [1.31 kg]
A25	3/4	3/4"	5.6	250	5.6 [142]	2.3 [58]	2.3 [58]	4.7 lbs [2.12 kg]
A34	1	1"	8.4	250	6.0 [152]	2.3 [58]	2.3 [58]	5.7 lbs [2.57 kg]
A45	1 1/4	1 1/4"	15	250	7.2 [183]	2.8 [71]	2.6 [66]	9.5 lbs [4.28 kg]
A56	1 1/2	1 1/2"	21	250	7.7 [196]	3.5 [89]	2.6 [66]	11.1 lbs [5.00 kg]
A67	2	2"	33	250	8.6 [218]	4.1 [104]	3.1 [79]	16.7 lbs [7.55 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

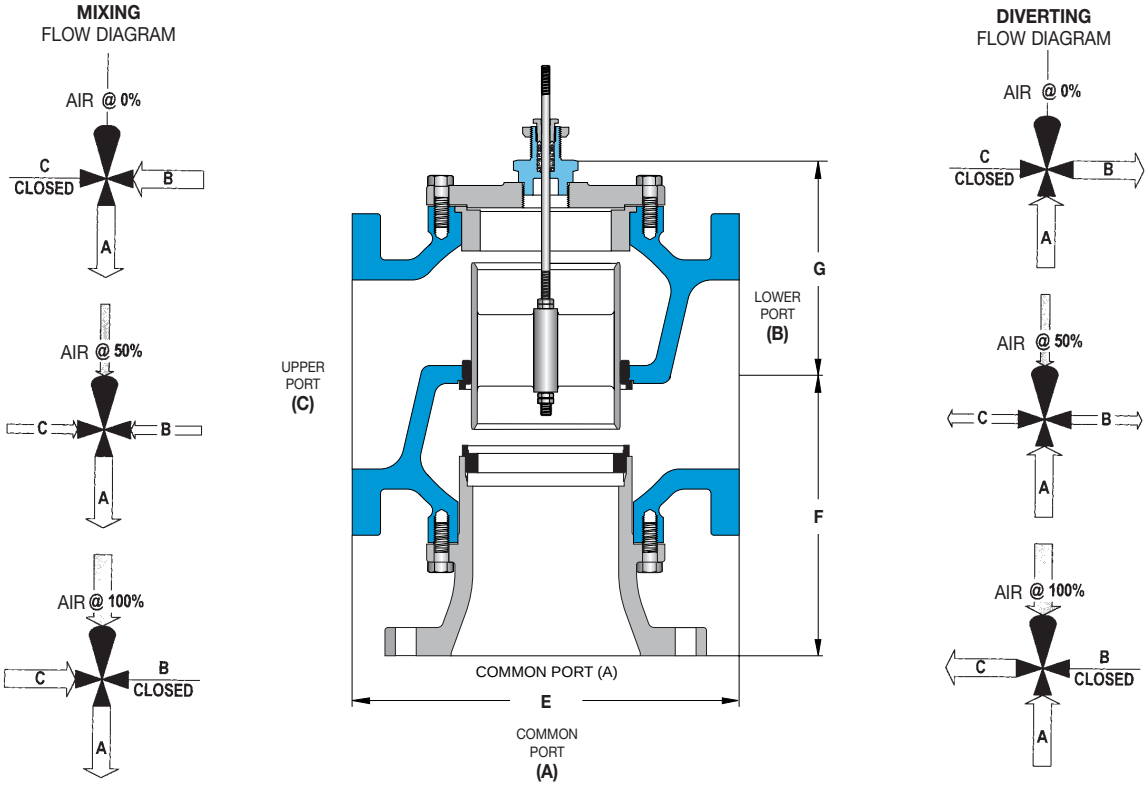
CAST IRON

Valve Body Selection (for 910TB Control Valve)

3-WAY • 2½" – 4"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

for Mixing or Diverting



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-Iron	Bronze	Modified linear	Class 125 flanged	125 PSI @ 300°F (149°C)

Valve Body Selection

Mixing or Diverting				Maximum Close-Off Pressure (psid)				
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910TB	Dimensions E	Dimensions F	Dimensions G	Approximate Shipping Wt.
B75	2½"	2½"	69	125	9.0 [229]	7.1 [180]	5.2 [132]	62 lbs [28 kg]
B80	3"	3"	90	125	10.0 [254]	8.0 [203]	6.0 [152]	80 lbs [36 kg]
B85	4"	4"	196	125	13.0 [330]	10.0 [254]	6.9 [175]	140 lbs [64 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

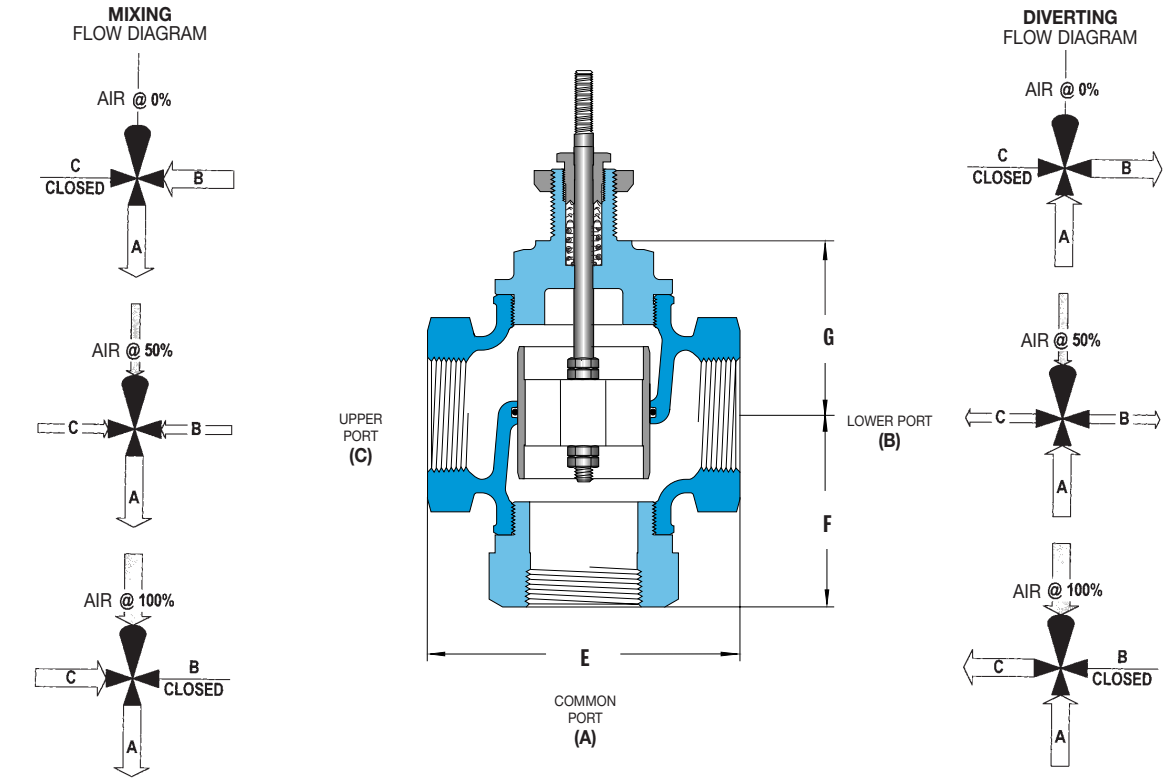
Valve Body Selection
(for 910TB Control Valve)
3-WAY • 1/2" – 2"

STAINLESS STEEL

All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

for Mixing or Diverting



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Stainless steel	Stainless steel	Modified linear	Threaded	250 PSI @ 300°F (149°C)

Valve Body Selection

Mixing or Diverting				Maximum Close-Off Pressure (psid)				
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910TB	Dimensions E	Dimensions F	Dimensions G	Approximate Shipping Wt.
D18	1/2	1/2"	6	250	5.0 [127]	2.9 [74]	3.4 [86]	7.5 lbs [3.41 kg]
D25	3/4	3/4"	8	250	5.0 [127]	2.9 [74]	3.4 [86]	7.5 lbs [3.41 kg]
D34	1	1"	10	250	5.0 [127]	2.9 [74]	3.4 [86]	7.5 lbs [3.41 kg]
D56	1 1/2	1 1/2"	20	250	6.1 [155]	3.4 [86]	4.0 [102]	15.0 lbs [6.82 kg]
D67	2	2"	40	250	6.5 [165]	3.8 [97]	4.2 [107]	18.5 lbs [8.41 kg]

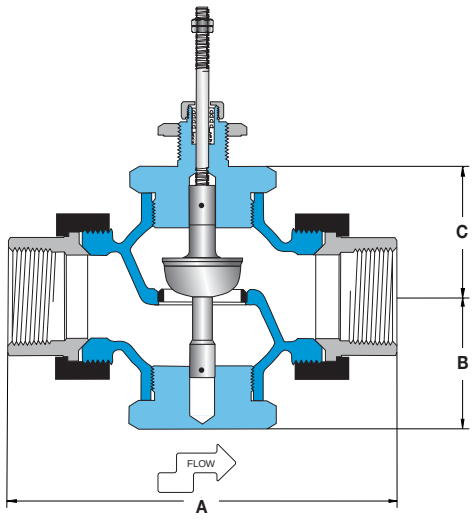
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

BRONZE

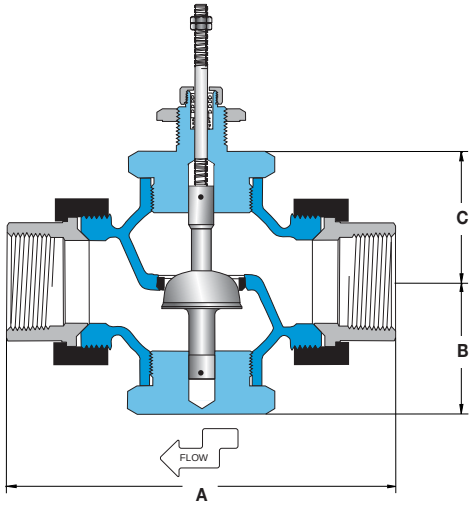
Valve Body Selection
(for 910EPA & 910EPC Control Valve)
Single Seat • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-To-Close (normally open)



Stem In-To-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection Pressure & Temperature Rating	
Bronze	Stainless steel	Equal percentage	Threaded, malleable iron union ends	250 PSI @ 410°F (210°C)

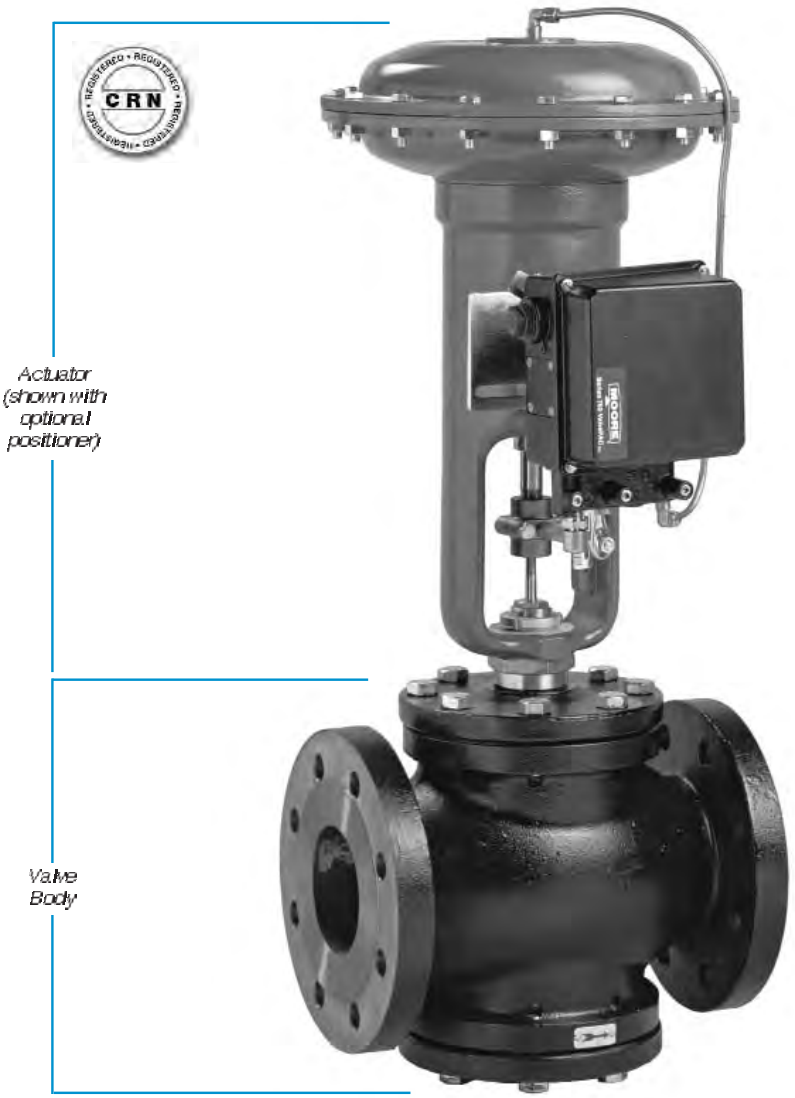
Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910EPA	Actuator 910EPC	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
E14	1/2	1/2"	2.8	x	250	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
E19	3/4	3/4"	5.6	x	250	5.6 [142]	2.3 [58]	2.3 [58]	4.9 lbs [2.21 kg]
E26	1	1"	8.4	x	200	6.0 [152]	2.3 [58]	2.3 [58]	6.0 lbs [2.70 kg]
E36	1 1/4	1 1/4"	15	x	150	7.2 [183]	2.6 [66]	2.6 [66]	9.7 lbs [4.37 kg]
E47	1 1/2	1 1/2"	21	x	100	7.7 [196]	2.6 [66]	2.6 [66]	10.8 lbs [4.86 kg]
E58	2	2"	33	x	50	8.6 [218]	3.1 [79]	3.1 [79]	16.3 lbs [7.34 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 910EPA	Actuator 910EPC	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
E15	1/2	1/2"	2.8	250	x	4.8 [122]	1.8 [46]	1.8 [46]	3.0 lbs [1.35 kg]
E22	3/4	3/4"	5.6	250	x	5.6 [142]	2.3 [58]	2.3 [58]	4.9 lbs [2.21 kg]
E30	1	1"	8.4	200	x	6.0 [152]	2.3 [58]	2.3 [58]	6.0 lbs [2.70 kg]
E41	1 1/4	1 1/4"	15	150	x	7.2 [183]	2.6 [66]	2.6 [66]	9.7 lbs [4.37 kg]
E52	1 1/2	1 1/2"	21	100	x	7.7 [196]	2.6 [66]	2.6 [66]	10.8 lbs [4.86 kg]
E63	2	2"	33	50	x	8.6 [218]	3.1 [79]	3.1 [79]	16.3 lbs [7.34 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

940 Series Heavy Duty Control Valve



940B shown

- Diaphragm Actuated
- 14" & 17" Actuator Sizes
- Heavy Duty Die Cast Housing and Yoke
- 1/2" – 8" Valve Sizes

The Trerice **940 Series** Pneumatic Control Valve offers extreme quality and maximum valve performance. The Series 940 is available in a variety of 2-way and 3-way valve styles for industrial, demanding HVAC and commercial process applications. The 940 Actuator can be furnished with a 14" or 17" diaphragm and includes a rugged, die cast aluminum diaphragm chamber.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Consult the Valve Selection tables for the capabilities of a particular valve/actuator assembly. A positioner may be required to maximize the shut-off capability of the valve. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

HOW TO ORDER

Sample Order Number: **940B-K84-760P**

Actuator Models	Valve Body Number	Positioner Model
940B 940C	Refer to pages 242–249	760P Pneumatic 760E Electropneumatic Omit if None

1. ***Determine*** *the valve size, style and material required by the application.*
2. ***Consult*** *the Valve Selection table to determine the required Valve Model.*
3. ***Refer*** *to the maximum close-off pressure columns to determine the Actuator (with or without positioner) needed to provide the close-off pressure required by your application.*
4. ***Specify*** *the Actuator Model.*
5. ***Specify*** *the Valve Body Number.*
6. ***Specify*** *the Positioner Model (if required).*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

940 Series
Heavy Duty Control Valve

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Valve & Actuator Specifications

Actuator Models	Diaphragm Size
940B	14"
940C	17"

Construction
Aluminum yoke and diaphragm chamber, acrylic enamel finish

Pressure Plate
Aluminum

Diaphragm Material
Nylon reinforced Buna-N

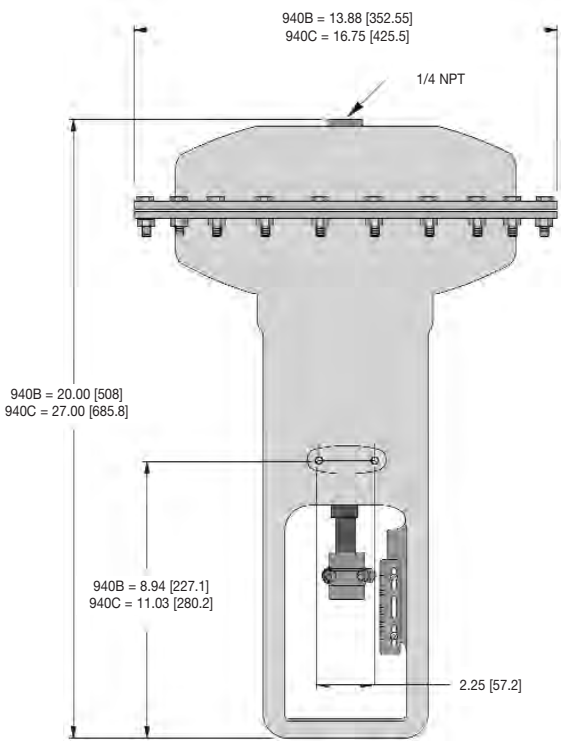
Input Signal
3-15 psi

Air Pressure to Diaphragm
30 psig maximum

Air Pressure Connection
1/4 NPT Female

Operating Temperature
Ambient:
-40°F (-40°C) to 180°F (82°C)
Process Flow:
-40°F (-40°C) to 410°F (210°C)

Approximate Shipping Weight
940B: 45 lbs [20 kg]
940C: 86 lbs [39 kg]



The Trerice TA987 Air Filter/Regulator is recommended for filtering and regulating the pressure of plant compressed air and delivering clean, dry air at the proper pressure to pneumatic control devices.

Positioner Specifications

Models
760P (Pneumatic)
760E (Electropneumatic)

Action
Direct

Input Signal Ranges
760P: 3 to 15 psig
760E: 4 to 20 mA

Air Requirements
Clean, oil-free, dry air
Maximum Supply Pressure: 30 psig
Air Consumption:
0.28 SCFH (760P),
0.38 SCFH (760E), typical
Flow Rate: 9.0 SCFM

Connections
Pneumatic: 1/4 NPT
Gauge: 1/8 NPT
Electrical: 3/4 NPT
Exhaust: 1/4 NPT

Enclosure
NEMA 4X, IP65

Ambient Temperature
-40°F (-40°C) to 185°F (85°C)

Weight
10 lbs [4.55 kg]

Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

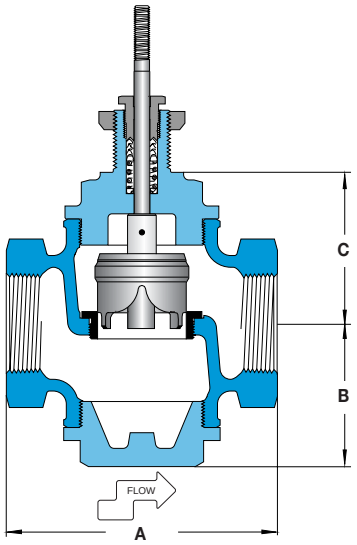
BRONZE

Single Seat • 1/2" – 2"

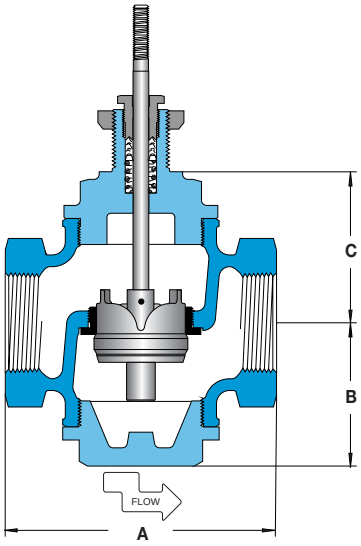
All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

Stem In-to-Close (normally open)



Stem In-to-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Equal percentage	Threaded	250 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 940B	Actuator 940B w/Positioner	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
J14	1/2	1/2"	4.9	400	400	4.9 [124]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
J19	3/4	3/4"	7.2	400	400	4.9 [124]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
J26	1	1"	10.0	291	400	4.9 [124]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
J36	1 1/4	1 1/4"	22.2	123	327	5.8 [147]	3.3 [84]	3.5 [89]	16 lbs [7.3 kg]
J47	1 1/2	1 1/2"	24	123	327	5.8 [147]	3.3 [84]	3.5 [89]	16 lbs [7.3 kg]
J58	2	2"	40	73	200	6.5 [165]	3.6 [91]	3.8 [97]	25 lbs [11.3 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 940B	Actuator 940B w/Positioner	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
J15	1/2	1/2"	4.9	245	400	4.9 [124]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
J22	3/4	3/4"	7.2	245	400	4.9 [124]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
J30	1	1"	10.0	140	400	4.9 [124]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
J41	1 1/4	1 1/4"	22.2	55	259	5.8 [147]	3.3 [84]	3.5 [89]	16 lbs [7.3 kg]
J52	1 1/2	1 1/2"	24	55	259	5.8 [147]	3.3 [84]	3.5 [89]	16 lbs [7.3 kg]
J63	2	2"	40	30	157	6.5 [165]	3.6 [91]	3.8 [97]	25 lbs [11.3 kg]

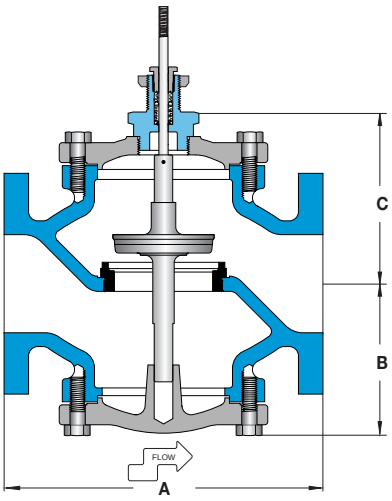
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

CAST IRON

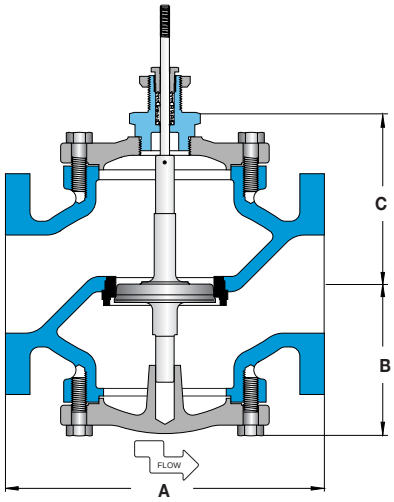
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)
Single Seat • 2½" – 8"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-to-Close (normally open)



Stem In-to-Open (normally closed)



	Class 125			Class 250		
Size	A	B	C	A	B	C
2½"	9.0 [229]	4.9 [124]	5.5 [140]	9.6 [244]	4.9 [124]	5.5 [140]
3"	10.0 [254]	5.5 [140]	6.9 [175]	10.8 [274]	5.5 [140]	6.9 [175]
4"	13.0 [330]	6.4 [163]	7.1 [180]	13.6 [345]	6.4 [163]	7.1 [180]
5"	15.8 [401]	5.8 [147]	7.8 [198]	16.6 [422]	5.8 [147]	7.8 [198]
6"	17.8 [452]	6.5 [165]	8.4 [213]	18.6 [472]	6.5 [165]	8.4 [213]
8"	16.3 [414]	8.1 [206]	8.6 [218]	16.3 [414]	8.1 [206]	8.6 [218]

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Equal percentage	Class 125 flanged Class 250 flanged	125 PSI @ 350°F (176°C) 250 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)				
Valve Body Number				Actuator				Approximate
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	940C	940C w/Positioner	Shipping Wt.
K71	L71	2½"	65	50	142	91	231	50 lbs [23 kg]
K76	L76	3"	90	33	96	61	158	95 lbs [43 kg]
K81	L81	4"	170	16	52	32	87	130 lbs [59 kg]
K86	L86	5"	280	9	31	19	54	150 lbs [68 kg]
K91	L91	6"	360	5	21	12	36	175 lbs [79 kg]
K96	L96	8"	450	x	x	11	35	300 lbs [136 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)				
Valve Body Number				Actuator				Approximate
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	940C	940C w/Positioner	Shipping Wt.
K72	L72	2½"	65	x	111	44	185	50 lbs [23 kg]
K77	L77	3"	90	x	75	28	126	95 lbs [43 kg]
K82	L82	4"	170	x	40	13	68	130 lbs [59 kg]
K87	L87	5"	280	x	24	7	42	150 lbs [68 kg]
K92	L92	6"	360	x	15	4	28	175 lbs [79 kg]
K97	L97	8"	450	x	x	3	27	300 lbs [136kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

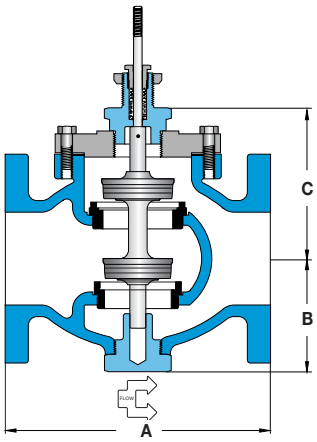
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

CAST IRON

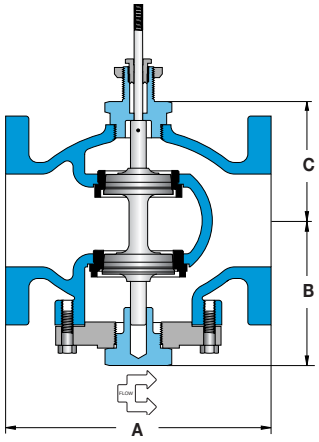
Double Seat • 1½" – 8"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-to-Close (normally open)



Stem In-to-Open (normally closed)



	125 PSI			250 PSI		
Size	A	B	C	A	B	C
1½"	x	x	x	7.4 [188]	3.8 [97]	4.5 [114]
2"	x	x	x	7.4 [188]	3.8 [97]	4.5 [114]
2½"	7.8 [198]	4.1 [105]	4.9 [124]	8.4 [213]	4.1 [105]	4.9 [124]
3"	9.0 [229]	4.4 [112]	5.1 [130]	9.8 [249]	4.4 [112]	5.1 [130]
4"	11.4 [290]	5.0 [127]	6.6 [168]	12.0 [305]	5.0 [127]	6.6 [168]
5"	12.0 [305]	6.8 [173]	7.6 [193]	12.9 [328]	6.8 [173]	7.6 [193]
6"	14.1 [358]	7.5 [191]	8.5 [216]	14.5 [368]	7.5 [191]	8.5 [216]
8"	16.3 [414]	8.8 [224]	9.6 [244]	16.3 [414]	8.8 [224]	9.6 [244]

Note: Drawing depicts flanged connections; 1½" & 2" valves have threaded connections.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Equal percentage	1½"-2": Threaded 2½"-8": Class 125 flanged 2½"-8": Class 250 flanged	250 PSI @ 400°F (204°C) 125 PSI @ 350°F (176°C) 250 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)		
Valve Body Number				Actuator		Approximate
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	Shipping Wt.
x	L50	1½"	30	400	400	20 lbs [9 kg]
x	L61	2"	42	400	400	20 lbs [9 kg]
K73	L73	2½"	70	400	400	45 lbs [20 kg]
K78	L78	3"	100	400	400	70 lbs [32 kg]
K83	L83	4"	200	400	400	100 lbs [45 kg]
K88	L88	5"	260	302	400	155 lbs [70 kg]
K93	L93	6"	350	233	400	180 lbs [82 kg]
K98	L98	8"	680	123	400	310 lbs [141 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)		
Valve Body Number				Actuator		Approximate
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	Shipping Wt.
x	L55	1½"	30	400	400	20 lbs [9 kg]
x	L66	2"	42	400	400	20 lbs [9 kg]
K74	L74	2½"	70	326	400	45 lbs [20 kg]
K79	L79	3"	100	243	400	70 lbs [32 kg]
K84	L84	4"	200	140	400	100 lbs [45 kg]
K89	L89	5"	260	87	400	155 lbs [70 kg]
K94	L94	6"	350	50	400	180 lbs [82 kg]
K99	L99	8"	680	x	386	310 lbs [141 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

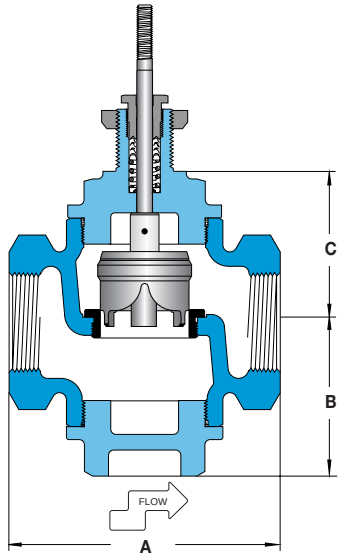
STAINLESS STEEL

Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

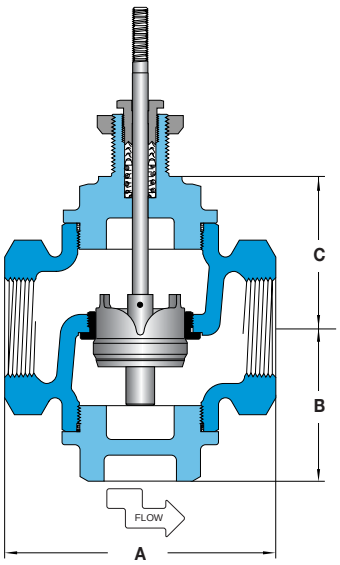
Single Seat • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-to-Close (normally open)



Stem In-to-Open (normally closed)



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Stainless steel	Stainless steel	Equal percentage	Threaded	515 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close (Normally Open)				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size			Actuator		Dimensions			Approximate
	Connection (NPT)	Nominal Port	C_v	940B	940B w/Positioner	A	B	C	Shipping Wt.
M14	1/2	1/2"	4.9	450	720	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M19	3/4	3/4"	7.2	450	720	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M26	1	1"	10.0	255	707	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M47	1 1/2	1 1/2"	24	100	304	6.1 [155]	3.5 [89]	3.5 [89]	16 lbs [7.3 kg]
M58	2	2"	40	54	181	6.5 [165]	3.9 [99]	3.8 [97]	25 lbs [11.3 kg]

In-To-Open (Normally Closed)				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size			Actuator		Dimensions			Approximate
	Connection (NPT)	Nominal Port	C_v	940B	940B w/Positioner	A	B	C	Shipping Wt.
M15	1/2	1/2"	4.9	200	720	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M22	3/4	3/4"	7.2	200	720	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M30	1	1"	10	105	557	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M52	1 1/2	1 1/2"	24	32	236	6.1 [155]	3.5 [89]	3.5 [89]	16 lbs [7.3 kg]
M63	2	2"	40	12	138	6.5 [165]	3.9 [99]	3.8 [97]	25 lbs [11.3 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

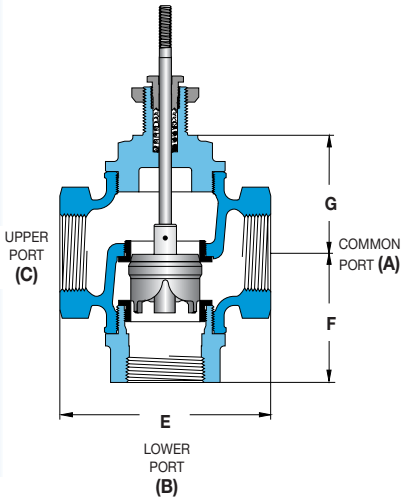
BRONZE

3-WAY • 1/2" – 2"

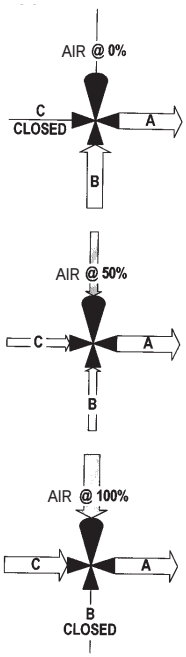
All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

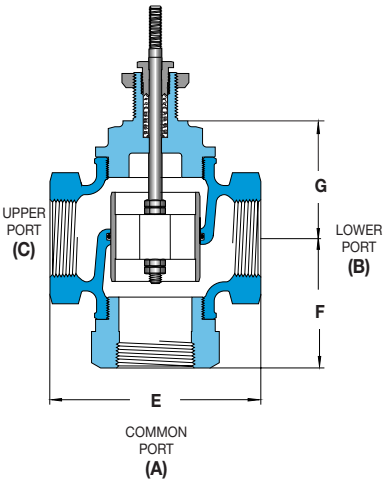
Mixing



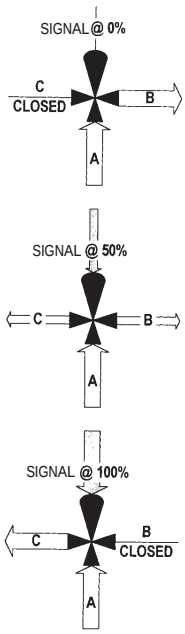
MIXING
FLOW DIAGRAM



Diverting



DIVERTING
FLOW DIAGRAM



Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Action	Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Mixing	Bronze	Stainless steel	Linear	Threaded	250 PSI @ 400°F (204°C)
Diverting	Bronze	Bronze	Linear	Threaded	250 PSI @ 300°F (149°C)

Valve Selection

Mixing				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 940B	Actuator 940B w/Positioner	Dimensions E	Dimensions F	Dimensions G	Approximate Shipping Wt.
N18	1/2	1/2"	6.3	140	291	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N25	3/4	3/4"	8.2	140	291	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N34	1	1"	10	140	291	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N56	1 1/2	1 1/2"	20	55	123	5.8 [147]	3.8 [97]	3.5 [89]	15.5 lbs [7.05 kg]
N67	2	2"	40	30	73	6.5 [165]	4.0 [102]	3.8 [97]	20.0 lbs [9.10 kg]

Diverting				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Actuator 940B	Actuator 940B w/Positioner	Dimensions E	Dimensions F	Dimensions G	Approximate Shipping Wt.
J34	1	1"	12	125	125	4.9 [124]	3.5 [89]	2.9 [74]	9.0 lbs [4.10 kg]
J56	1 1/2	1 1/2"	22	125	125	5.8 [147]	3.8 [97]	3.5 [89]	16.5 lbs [7.5 kg]
J67	2	2"	40	125	125	6.5 [165]	4.0 [102]	3.8 [97]	21.0 lbs [9.55 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

940E Series Electric Motor Control Valve

940E shown

- Fail Open or Closed
- Cast Aluminum or Iron Linkages
- 1/2" – 8" Valve Sizes

The Trerice **940E Series** Control Valve uses an AC power supply to stroke the valve via an actuator drive, electric motor, and valve linkage unit. The actuator drive causes the motor to drive the valve stem up or down in relation to an input signal (factory set at 4-20 mA, field switchable to 0-10 VDC) from a controller. Electric motors are available to accept a power supply of 24 or 120 VAC and can be specified for failure in an open, closed, or last position upon loss of power. Linkages are available in two sizes (30 and 52), the larger of which uses leverage to provide increased shut-off capabilities on smaller valves and is required for use on larger sized valves.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Consult the Valve Selection tables for the capabilities of a particular valve/actuator assembly. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

Specifications

Model
940E

Linkages
30, 52

Motor Case
Aluminum

Yoke
Linkage 30: Aluminum
Linkage 52: Cast-iron

Power Supply
24 VAC, 60 Hz, 2.5 A or
120 VAC, 60 Hz, 0.5 A

Input Signal
4-20 mA or
0-10 VDC

Fail Position
Stem-Out (open),
Stem-In (closed), or Last Position

No-Load Timing
Fail Stem-In or Stem-Out: 90 seconds
Fail Last Position: 120 seconds

Protection
NEMA 1 (indoor only)

Maximum Temperature
Ambient: 130°F (54°C)
Process Flow: 400°F (204°C)

Humidity
Maximum: 95% RH

Approximate Shipping Weight
Actuator:
Linkage 30: 15 lbs [6.8 kg]
Linkage 52: 30 lbs [13 kg]

Valve Body:
see Valve Selection tables

HOW TO ORDER

Sample Order Number: **940E-30-J36-27**

Model	Linkage Size	Valve Body Number	Power Supply	Fail Position
940E	30 52	Refer to pages 252-260	1 120 VAC, 60 Hz, 0.5 A 2 24 VAC, 60 Hz, 2.5 A	6 Stem-Out (open) 7 Stem-In (closed) 8 Last Position

1. ***Determine*** *the valve size, style and material required by the application.*
2. ***Consult*** *the Valve Selection table to determine the required Valve Body.*
3. ***Refer*** *to the maximum close-off pressure columns to determine the Linkage Size needed to provide the close-off pressure required by your application.*
4. ***Specify*** *the Model and Linkage Size.*
5. ***Specify*** *the Valve Body Number.*
6. ***Specify*** *the Power Supply and Fail Position codes.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

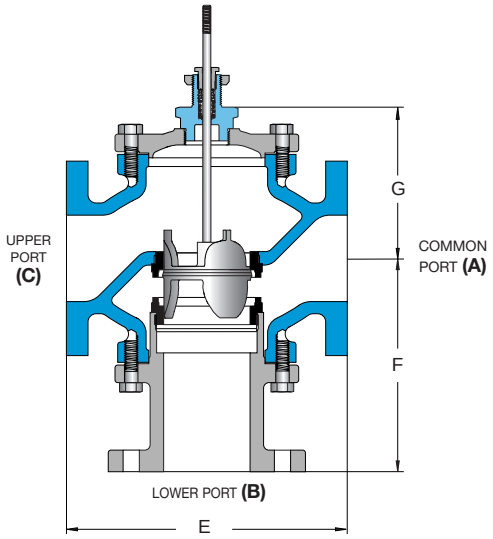
CAST IRON

3-WAY • 2½" – 8"

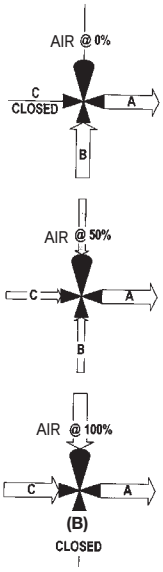
All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

Mixing



MIXING
FLOW DIAGRAM



Mixing	Class 125			Class 250		
Size	E	F	G	E	F	G
2½"	9.0 [229]	7.1 [180]	5.5 [140]	9.6 [244]	7.4 [188]	5.5 [140]
3"	10.0 [254]	8.0 [203]	6.1 [155]	10.8 [274]	8.4 [213]	6.1 [155]
4"	13.0 [330]	9.9 [251]	7.1 [180]	13.6 [345]	10.3 [262]	7.1 [180]
5"	15.8 [401]	9.3 [236]	6.0 [152]	16.6 [422]	10.4 [264]	6.0 [152]
6"	17.8 [452]	9.9 [251]	6.8 [173]	18.6 [472]	11.0 [279]	6.8 [173]
8"	16.3 [414]	11.9 [302]	8.6 [218]	16.3 [414]	12.4 [315]	8.6 [218]

Trerice 3-Way Valves are not designed for use in steam applications.

To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Linear	Class 125 flanged Class 250 flanged	125 PSI @ 350°F (176°C) 250 PSI @ 400°F (204°C)

Valve Body Selection

Mixing				Maximum Close-Off Pressure (psid)				
Valve Body Number				Actuator				
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	940C	940C w/Positioner	Approximate* Shipping Wt.
P75	Q75	2½"	65	20	111	44	185	62 lbs [30 kg]
P80	Q80	3"	85	11	75	28	126	80 lbs [36 kg]
P85	Q85	4"	190	4	40	13	68	140 lbs [64 kg]
P90	Q90	5"	240	x	24	7	42	157 lbs [71 kg]
P95	Q95	6"	347	x	6	x	12	203 lbs [92 kg]
P100	Q100	8"	450	x	x	x	11	324 lbs [148 kg]

* *Shipping weights shown are for Class 125 Valves. Consult factory for Class 250 valve weights.*

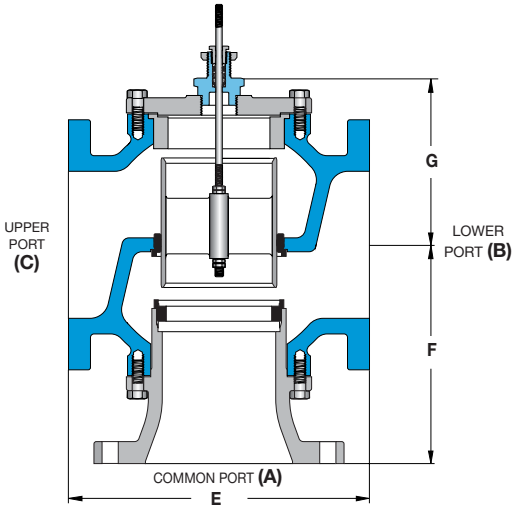
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

CAST IRON

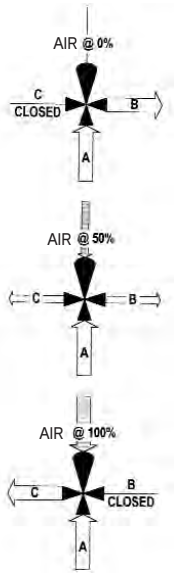
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)
3-WAY • 2½" – 8"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Diverting



DIVERTING
FLOW DIAGRAM



Diverting Size	Class 125 E	Class 125 F	Class 125 G	Class 250 E	Class 250 F	Class 250 G
2½"	9.0 [229]	7.1 [180]	5.5 [140]	9.6 [244]	7.4 [188]	5.5 [140]
3"	10.0 [254]	8.0 [203]	6.1 [155]	10.8 [274]	8.4 [213]	6.1 [155]
4"	13.0 [330]	9.9 [251]	7.1 [180]	13.6 [345]	10.3 [262]	7.1 [180]
5"	12.0 [305]	10.5 [267]	7.5 [191]	12.9 [328]	11.0 [279]	7.5 [191]
6"	14.1 [358]	11.1 [282]	7.9 [201]	14.5 [368]	11.5 [292]	7.9 [201]
8"	16.3 [414]	11.9 [302]	8.6 [218]	16.3 [414]	12.4 [315]	8.6 [218]

Trerice 3-Way Valves are not designed for use in steam applications.

To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Bronze	Linear	Class 125 flanged Class 250 flanged	125 PSI @ 300°F (149°C) 250 PSI @ 300°F (149°C)

Valve Body Selection

Diverting				Maximum Close-Off Pressure (psid)				
Valve Body Number				Actuator				
Class 125	Class 250	Size	Cv	940B	940B w/Positioner	940C	940C w/Positioner	Approximate* Shipping Wt.
K75	L75	2½"	68	x	125	x	x	62 lbs [30 kg]
K80	L80	3"	85	x	125	x	x	80 lbs [36 kg]
K85	L85	4"	160	x	125	x	x	140 lbs [64 kg]
K90	L90	5"	195	x	125	x	x	157 lbs [71 kg]
K95	L95	6"	270	x	x	x	125	203 lbs [92 kg]
K100	L100	8"	425	x	x	x	125	329 lbs [150 kg]

* *Shipping weights shown are for Class 125 Valves. Consult factory for Class 250 valve weights.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

940E Series Electric Motor Control Valve

940E shown

- Fail Open or Closed
- Cast Aluminum or Iron Linkages
- 1/2" – 8" Valve Sizes

The Trerice **940E Series** Control Valve uses an AC power supply to stroke the valve via an actuator drive, electric motor, and valve linkage unit. The actuator drive causes the motor to drive the valve stem up or down in relation to an input signal (factory set at 4-20 mA, field switchable to 0-10 VDC) from a controller. Electric motors are available to accept a power supply of 24 or 120 VAC and can be specified for failure in an open, closed, or last position upon loss of power. Linkages are available in two sizes (30 and 52), the larger of which uses leverage to provide increased shut-off capabilities on smaller valves and is required for use on larger sized valves.

For optimal performance, the service conditions (medium, flow, temperature, inlet and outlet pressures) of the application must be considered when selecting a valve. Please refer to the Valve Selection Section of this catalog. Consult the Valve Selection tables for the capabilities of a particular valve/actuator assembly. A positioner may be required to maximize the shut-off capability of the valve. Improper application may cause failure of the valve, resulting in possible personal injury or property damage.

For replacement or service parts please see Accessories and Replacement Parts in the Regulators and Control Valves section of the list price sheet.

Specifications

Model
940E

Linkages
30, 52

Motor Case
Aluminum

Yoke
Linkage 30: Aluminum
Linkage 52: Cast-iron

Power Supply
24 VAC, 60 Hz, 2.5 A or
120 VAC, 60 Hz, 0.5 A

Input Signal
4-20 mA or
0-10 VDC

Fail Position
Stem-Out (open),
Stem-In (closed), or Last Position

No-Load Timing
Fail Stem-In or Stem-Out: 90 seconds
Fail Last Position: 120 seconds

Protection
NEMA 1 (indoor only)

Maximum Temperature
Ambient: 130°F (54°C)
Process Flow: 400°F (204°C)

Humidity
Maximum: 95% RH

Approximate Shipping Weight
Actuator:
Linkage 30: 15 lbs [6.8 kg]
Linkage 52: 30 lbs [13 kg]

Valve Body:
see Valve Selection tables

HOW TO ORDER

Sample Order Number: **940E-30-J36-27**

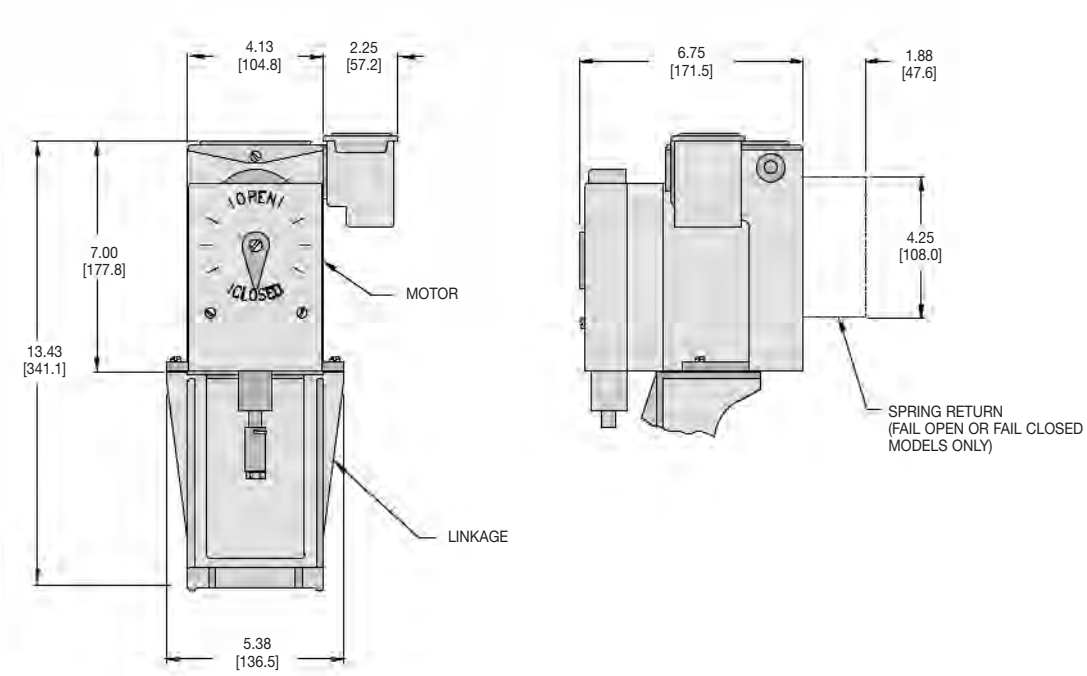
Model	Linkage Size	Valve Body Number	Power Supply	Fail Position
940E	30 52	Refer to pages 252-260	**1** 120 VAC, 60 Hz, 0.5 A **2** 24 VAC, 60 Hz, 2.5 A	**6** Stem-Out (open) **7** Stem-In (closed) **8** Last Position

1. ***Determine*** *the valve size, style and material required by the application.*
2. ***Consult*** *the Valve Selection table to determine the required Valve Body.*
3. ***Refer*** *to the maximum close-off pressure columns to determine the Linkage Size needed to provide the close-off pressure required by your application.*
4. ***Specify*** *the Model and Linkage Size.*
5. ***Specify*** *the Valve Body Number.*
6. ***Specify*** *the Power Supply and Fail Position codes.*

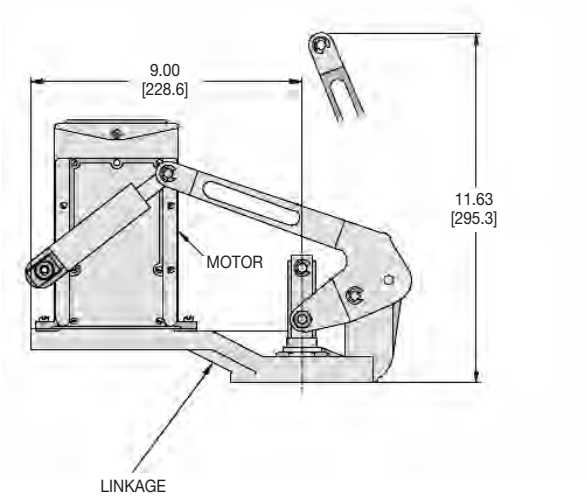
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Linkage Size 30



Linkage Size 52



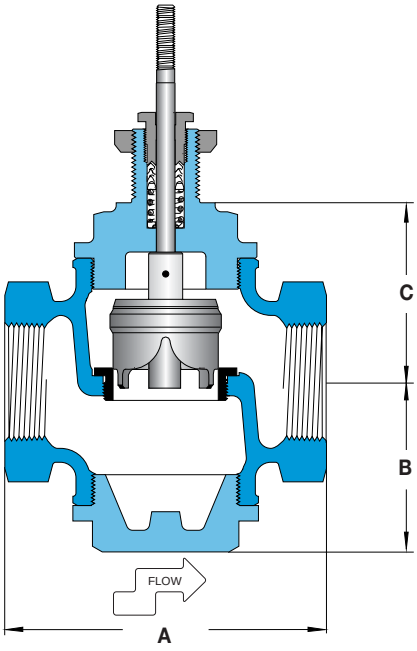
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

BRONZE

Single Seat • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Stem In-To-Close



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Bronze	Stainless steel	Equal percentage	Threaded	250 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Linkage 30	Linkage 52	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
J14	1/2	1/2"	4.9	370	x	4.9 [124]	1.9 [48]	2.9 [74]	10 lbs [4.5 kg]
J19	3/4	3/4"	7.2	370	x	4.9 [124]	1.9 [48]	2.9 [74]	10 lbs [4.5 kg]
J26	1	1"	10.0	215	x	4.9 [124]	1.9 [48]	2.9 [74]	10 lbs [4.5 kg]
J36	1 1/4	1 1/4"	22.2	89	223	5.8 [147]	2.4 [61]	3.5 [89]	16 lbs [7.3 kg]
J47	1 1/2	1 1/2"	24	89	223	5.8 [147]	2.4 [61]	3.5 [89]	16 lbs [7.3 kg]
J58	2	2"	40	52	135	6.5 [165]	2.8 [71]	3.8 [97]	25 lbs [11.3 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

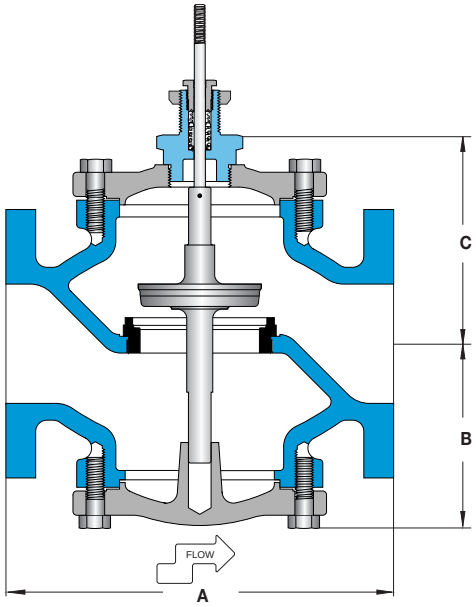
CAST IRON

Valve Body Selection
(for 940E Series Electric Motor Control Valve)

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Single Seat • 2½" – 5"

Stem In-To-Close



	Class 125			Class 250		
Size	A	B	C	A	B	C
2½"	9.0 [229]	4.9 [124]	5.5 [140]	9.6 [244]	4.9 [124]	5.5 [140]
3"	10.0 [254]	5.5 [140]	6.9 [175]	10.8 [274]	5.5 [140]	6.9 [175]
4"	13.0 [330]	6.4 [163]	7.1 [180]	13.6 [345]	6.4 [163]	7.1 [180]
5"	15.8 [401]	5.8 [147]	7.8 [198]	16.6 [422]	5.8 [147]	7.8 [198]

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Equal percentage	Class 125 flanged Class 250 flanged	125 PSI @ 350°F (176°C) 250 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close				Maximum Close-Off Pressure (psid)		
Valve Body Number				Linkage		Approximate
Class 125	Class 250	Size	C_v	30	52	Shipping Wt.
K71	L71	2½"	65	x	95	50 lbs [23 kg]
K76	L76	3"	90	x	64	95 lbs [43 kg]
K81	L81	4"	170	x	33	130 lbs [59 kg]
K86	L86	5"	280	x	9	150 lbs [68 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 940E Series Electric Motor Control Valve)

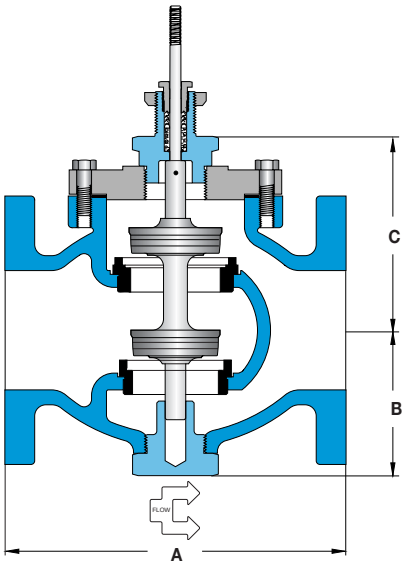
CAST IRON

Double Seat • 1½" – 8"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

Stem In-To-Close



Note: Drawing depicts flanged connection; 1½" and 2" valves have threaded connection.

	Class 125			Class 250		
Size	A	B	C	A	B	C
1½"	x	x	x	7.4 [188]	3.8 [97]	4.5 [114]
2"	x	x	x	7.4 [188]	3.8 [97]	4.5 [114]
2½"	7.8 [198]	4.1 [105]	4.9 [124]	8.4 [213]	4.1 [105]	4.9 [124]
3"	9.0 [229]	4.4 [112]	5.1 [130]	9.8 [249]	4.4 [112]	5.1 [130]
4"	11.4 [290]	5.0 [127]	6.6 [168]	12.0 [305]	5.0 [127]	6.6 [168]
5"	12.0 [305]	6.8 [173]	7.6 [193]	12.9 [328]	6.8 [173]	7.6 [193]
6"	14.1 [358]	7.5 [191]	8.5 [216]	14.5 [368]	7.5 [191]	8.5 [216]
8"	16.3 [414]	8.8 [224]	9.6 [244]	16.3 [414]	8.8 [224]	9.6 [244]

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Equal percentage	1½"-2": Threaded 2½"-8": Class 125 flanged 2½"-8": Class 250 flanged	250 PSI @ 400°F (204°C) 125 PSI @ 350°F (176°C) 250 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close				Maximum Close-Off Pressure (psid)		
Valve Body Number				Linkage		
Class 125	Class 250	Size	C_v	30	52	Approximate Shipping Wt.
x	L50	1½"	30	400	x	20 lbs [9 kg]
x	L61	2"	42	400	x	20 lbs [9 kg]
K73	L73	2½"	70	400	x	45 lbs [20 kg]
K78	L78	3"	100	400	x	70 lbs [32 kg]
K83	L83	4"	200	x	400	100 lbs [45 kg]
K88	L88	5"	260	x	400	155 lbs [70 kg]
K93	L93	6"	350	x	400	180 lbs [82 kg]
K98	L98	8"	680	x	136	310 lbs [141 kg]

* *Shipping weights shown are for Class 125 Valves. Consult factory for Class 250 valve weights.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

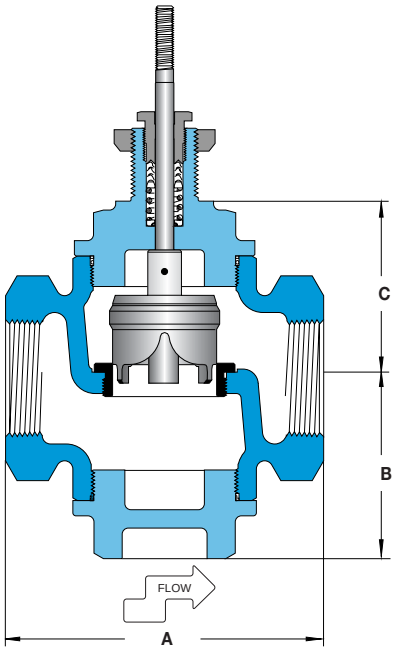
STAINLESS STEEL

Valve Body Selection (for 940E Series Electric Motor Control Valve)

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Single Seat • 1/2" – 2"

Stem In-To-Close



Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Stainless steel	Stainless steel	Equal percentage	Threaded	515 PSI @ 400°F (204°C)

Valve Body Selection

In-To-Close				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size Connection (NPT)	Size Nominal Port	C_v	Linkage 30	Linkage 52	Dimensions A	Dimensions B	Dimensions C	Approximate Shipping Wt.
M14	1/2	1/2"	4.9	325	x	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M19	3/4	3/4"	7.2	325	x	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M26	1	1"	10.0	179	x	5.0 [127]	2.9 [74]	2.9 [74]	10 lbs [4.5 kg]
M47	1 1/2	1 1/2"	24	66	199	6.1 [155]	3.5 [89]	3.5 [89]	16 lbs [7.3 kg]
M58	2	2"	40	33	116	6.5 [165]	3.9 [99]	3.8 [97]	25 lbs [11.3 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

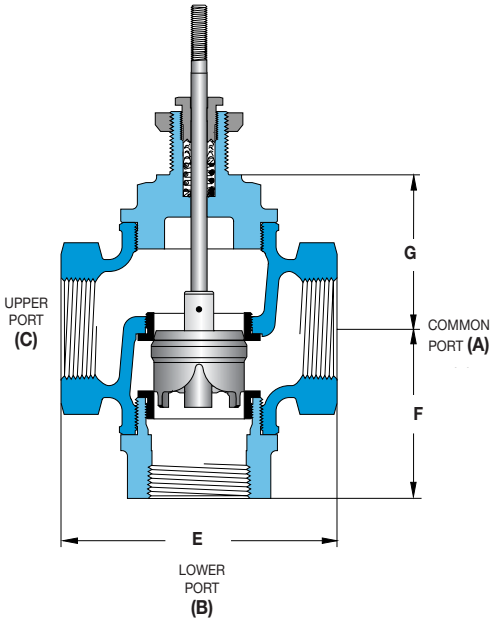
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

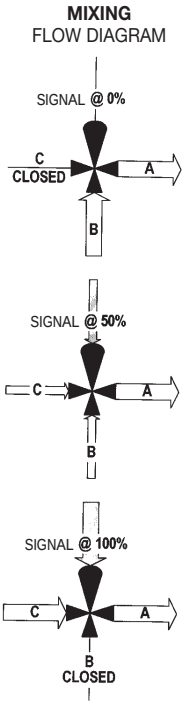
BRONZE

3-WAY • 1/2" – 2"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Mixing





Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Action	Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Mixing	Bronze	Stainless steel	Linear	Threaded	250 PSI @ 400°F (204°C)

Valve Body Selection

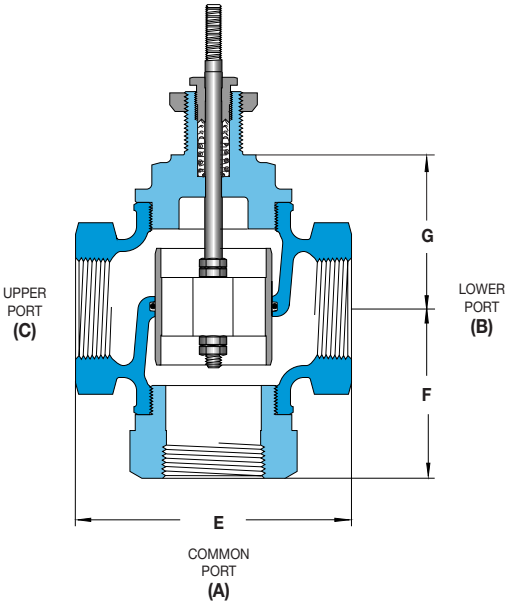
				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size			Linkage		Dimensions			Approximate Shipping Wt.
	Connection (NPT)	Nominal Port	C_v	30	52	E	F	G	
N18	1/2	1/2"	6.3	215	x	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N25	3/4	3/4"	8.2	215	x	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N34	1	1"	10	215	x	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N56	1 1/2	1 1/2"	20	89	223	5.8 [147]	3.8 [97]	3.5 [89]	15.5 lbs [7.05 kg]
N67	2	2"	40	52	135	6.5 [165]	4.0 [102]	3.8 [97]	20.0 lbs [9.10 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

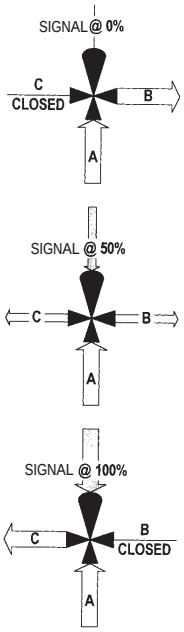
BRONZE

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Diverting



DIVERTING
FLOW DIAGRAM



Trerice 3-Way Valves are not designed for use in steam applications.

Specifications

Action	Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Diverting	Bronze	Bronze	Linear	Threaded	250 PSI @ 300°F (149°C)

Valve Body Selection

				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size			Linkage		Dimensions			Approximate Shipping Wt.
	Connection (NPT)	Nominal Port	C_v	30	52	E	F	G	
J34	1	1"	12	125	x	4.9 [124]	3.5 [89]	2.9 [74]	9.0 lbs [4.10 kg]
J56	1 1/2	1 1/2"	22	125	x	5.8 [147]	3.8 [97]	3.5 [89]	16.5 lbs [7.5 kg]
J67	2	2"	40	125	x	6.5 [165]	4.0 [102]	3.8 [97]	21.0 lbs [9.55 kg]

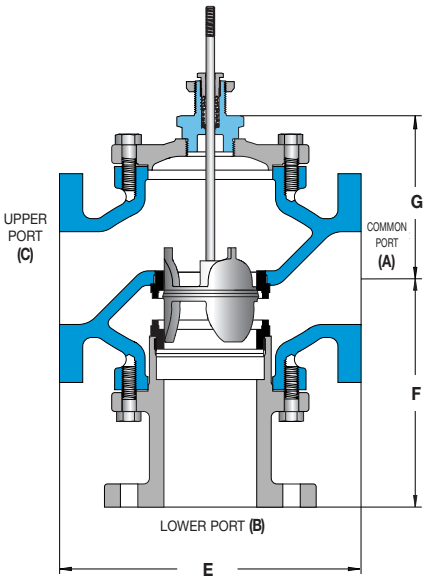
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

CAST IRON

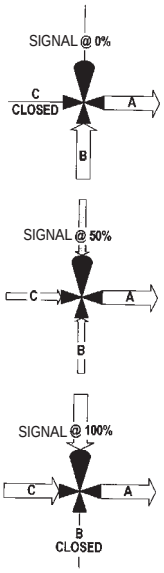
3-WAY • 2½" – 6"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Mixing



MIXING
FLOW DIAGRAM



	Class 125			Class 250		
Size	E	F	G	E	F	G
2½"	9.0 [229]	7.1 [180]	5.5 [140]	9.6 [244]	7.4 [188]	5.5 [140]
3"	10.0 [254]	8.0 [203]	6.1 [155]	10.8 [274]	8.4 [213]	6.1 [155]
4"	13.0 [330]	9.9 [251]	7.1 [180]	13.6 [345]	10.3 [262]	7.1 [180]
5"	15.8 [401]	9.3 [236]	6.0 [152]	16.6 [422]	10.4 [264]	6.0 [152]
6"	17.8 [452]	9.9 [251]	6.8 [173]	18.6 [472]	11.0 [279]	6.8 [173]

Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Stainless steel	Linear	Class 125 flanged Class 250 flanged	125 PSI @ 350°F (176°C) 250 PSI @ 400°F (204°C)

Valve Body Selection

Valve Body Number				Maximum Close-Off Pressure (psid)		
				Linkage		
Class 125	Class 250	Size	Cv	30	52	Approximate* Shipping Wt.
P75	Q75	2½"	65	x	95	62 lbs [30 kg]
P80	Q80	3"	85	x	64	80 lbs [36 kg]
P85	Q85	4"	190	x	17	140 lbs [64 kg]
P90	Q90	5"	240	x	9	157 lbs [71 kg]
P95	Q95	6"	305	x	5	203 lbs [92 kg]

**Shipping weights shown are for class 125 valves. Consult factory for class 250 valve weights.*

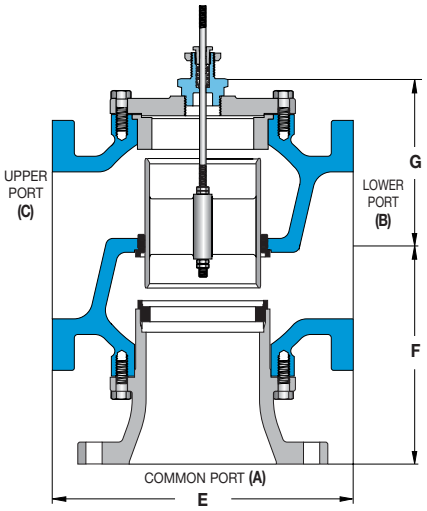
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

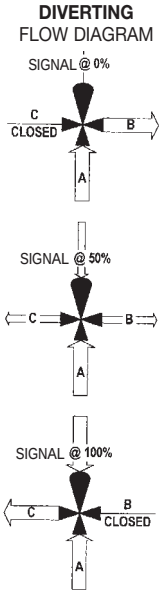
CAST IRON

Valve Body Selection
(for 940E Series Electric Motor Control Valve)
3-WAY • 2½" – 5"

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Diverting





	Class 125			Class 250		
Size	E	F	G	E	F	G
2½"	9.0 [229]	7.1 [180]	5.5 [140]	9.6 [244]	7.4 [188]	5.5 [140]
3"	10.0 [254]	8.0 [203]	6.1 [155]	10.8 [274]	8.4 [213]	6.1 [155]
4"	13.0 [330]	9.9 [251]	7.1 [180]	13.6 [345]	10.3 [262]	7.1 [180]
5"	12.0 [305]	10.5 [267]	7.5 [191]	12.9 [328]	11.0 [279]	7.5 [191]

Trerice 3-Way Valves are not designed for use in steam applications.

Specifications

Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Cast-iron	Bronze	Linear	Class 125 flanged Class 250 flanged	125 PSI @ 300°F (149°C) 250 PSI @ 300°F (149°C)

Valve Body Selection

Valve Body Number				Maximum Close-Off Pressure (psid)		
				Linkage		
Class 125	Class 250	Size	Cv	30	52	Approximate* Shipping Wt.
K75	L75	2½"	68	125	x	62 lbs [30 kg]
K80	L80	3"	85	125	x	80 lbs [36 kg]
K85	L85	4"	160	x	125	140 lbs [64 kg]
K90	L90	5"	195	x	125	157 lbs [71 kg]

**Shipping weights shown are for class 125 valves. Consult factory for class 250 valve weights.*

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

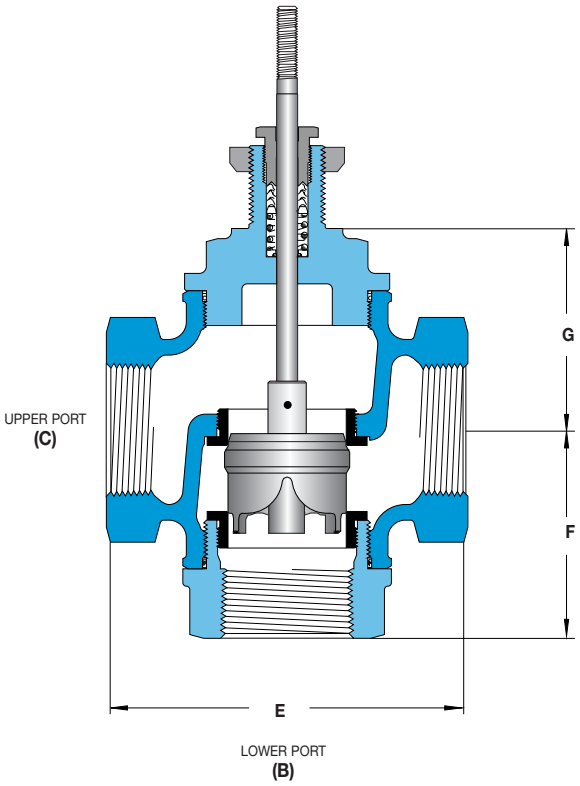
Valve Body Selection
(for 940E Series Electric Motor Control Valve)
3-WAY • 1/2" – 2"

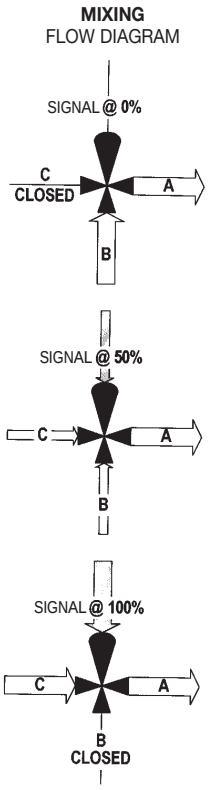
STAINLESS STEEL

All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

Mixing





Trerice 3-Way Valves are not designed for use in steam applications.
To properly control the mixing of two flows, inlet pressures at ports B and C should be as equal as possible.

Specifications

Action	Body Material	Trim Material	Trim Style	Connection	Pressure & Temperature Rating
Mixing	Stainless steel	Stainless steel	Linear	Threaded	515 PSI @ 400°F (204°C)

Valve Body Selection

Mixing				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size			Linkage		Dimensions			Approximate
	Connection (NPT)	Nominal Port	C_v	30	52	E	F	G	Shipping Wt.
M18	1/2	1/2"	6.3	179	x	5.0 [127]	2.9 [74]	2.9 [74]	7.5 lbs [3.41 kg]
M25	3/4	3/4"	8.2	179	x	5.0 [127]	2.9 [74]	2.9 [74]	7.5 lbs [3.41 kg]
M34	1	1"	10	179	x	5.0 [127]	2.9 [74]	2.9 [74]	7.5 lbs [3.18 kg]
M56	1 1/2	1 1/2"	20	66	199	6.1 [155]	3.4 [86]	3.5 [89]	15.0 lbs [6.82 kg]
M67	2	2"	40	33	116	6.5 [165]	3.8 [97]	3.8 [97]	18.5 lbs [8.41 kg]

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Application Worksheet

All dimensions are nominal. Dimensions in [ ] are in millimeters.

Service Conditions

Medium Through Valve: _____ Required C_V: _____

Temperature	Maximum: _____	Minimum: _____	Normal: _____
Flow	Maximum: _____	Minimum: _____	Normal: _____
Inlet Pressure	Maximum: _____	Minimum: _____	Normal: _____
Outlet Pressure	Maximum: _____	Minimum: _____	Normal: _____
Differential Pressure	Service: _____	Shutoff: _____	

Pipeline

Upstream	Material: _____	Size: _____	Schedule: _____
Downstream	Material: _____	Size: _____	Schedule: _____

Valve Requirements

Required Fail Position: _____

Body Material: _____ Size: _____ End Connections: _____

Trim ***Check one*** ☐ Modified Linear ☐ Equal Percentage

Material: _____ Shut-off Class: _____

Additional Requirements: _____

Actuator Requirements

Check one ☐ Pneumatic On/Off ☐ Pneumatic Throttling ☐ Electric

Power Supply: _____ Input Signal: _____

Additional Requirements: _____

Positioner Requirements

Check one ☐ Pneumatic ☐ Electropneumatic

Input: _____ Output: _____

Additional Requirements: _____

Name: _____ Company: _____

Date: _____ P.O. Number: _____

Project Name: _____ Tag Number: _____

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

VALVE SELECTION

The proper sizing of a valve is one of the most important factors in the ability of a loop to maintain control. A valve that is too small is not able to provide the desired capacity during peak load conditions, while a valve that is too large will tend to overshoot the control point and operate with the valve plug too close to the seat, resulting in undue wear of the plug and seat.

Valve Coefficient (C_V)

The valve coefficient (**C_V**) is mathematically determined through an evaluation of the system service conditions. This factor can be used to select a valve body of the appropriate port size. In almost all cases, the valve should be of a smaller size than the pipeline into which it will be installed. To avoid undue wear, a valve body of the smallest possible port size should be selected; however, the valve should never be less than half the pipeline size, as this will cause extreme mechanical stress to the pipeline.

Service Conditions

The specifier should be knowledgeable of the service conditions of the application in order to properly determine the actuator and valve requirements.

Medium
The composition of the fluid passing through the valve.

Temperature (T)
The temperature of the medium passing through the valve. This measurement is required to properly specify the materials used to manufacture the valve.

Flow (q or W)
The volume of fluid passed through the valve as required by the particular application. Flow is usually expressed as either gallons per minute (**q**), or pounds per hour (**W**). Water and other liquids are usually measured in gallons per minute, while steam and other gases are usually measured in pounds per hour. This measurement is required to correctly determine the valve coefficient (**C_V**).

Inlet Pressure (Upstream Pressure or **P_1**)
The pressure (psia) of the medium flowing into the valve body. This measurement is required to correctly determine the valve coefficient (**C_V**) and valve close-off capability.

Outlet Pressure (Downstream Pressure or **P_2**)
The pressure (psia) of the medium flowing through a fully opened valve to the process. The outlet pressure from the valve is determined by the process or equipment that is being fed by the valve, and is not caused by the valve itself. This measurement is required to correctly determine the valve coefficient (**C_V**) and valve close-off capability.

Differential Pressure (Pressure Drop or **ΔP**)
The difference between the inlet and outlet pressures (**P_1-P_2**). This measurement is required to correctly determine the valve coefficient (**C_V**) and valve close-off capability.

Valve Sizing Differential Pressure:
The differential pressure (psid) for **valve sizing** is determined with the valve **full open**. This pressure drop, along with the required flow rate, is used to determine the required **C_V** to aid in the selection of the proper control valve.

Close-Off Differential Pressure:
The differential pressure (psid) for **valve "close-off"** is determined with the valve **fully closed**. Usually, in most common applications, with the valve closed the outlet pressure will be zero (0) psig and as such the pressure drop will be equal to the Inlet Pressure. In some applications there may be residual back pressure in the downstream system (such as filling a pressurized tank) that will cause the Outlet Pressure to be a value greater than zero, which in turn reduces the value of the expected differential pressure.

Example:
Valve B73 (on page 17) has a maximum "Close-Off Pressure" allowance of 65 psid. If this valve is used to control the flow into an open tank, the closed valve outlet pressure will be zero. As such the maximum inlet pressure that the actuator can close this valve against is 65 psig. (65 psid rating + zero outlet pressure = 65 psig inlet pressure).

If however this same valve B73 is used to control the flow into a closed pressurized tank (pressurized to 25 psig) then the maximum inlet pressure that the actuator can close this valve against is 90 psig. (65 psid rating + 25 psig back pressure = 90 psig inlet pressure).

Since this 90 psig is less than the body rating of 125 psig this valve would be acceptable for this service.

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Other Considerations

- **Specific Gravity** — The ratio between the weight of the flow medium at the flow temperature and that of a defined standard substance (water or air). The specific gravity may be required to correctly determine the valve coefficient (C_v).

  Liquids (G_f) water = 1.0 @ 39°F (4°C)
  Gases (G_g) air = 1.0 @ 60°F (18°C) and 14.7 psia

- **Viscosity** — The degree of thickness of a liquid. Extremely thick process media can create high friction as it passes through the valve. In most instances a sizing correction factor is not required. Please consult the factory when the flow medium is of a viscosity of 40 centistokes or greater.

- **Steam Superheat** — The number of degrees Fahrenheit (T_{sh}) above the saturation temperature of steam at a given pressure. Superheated steam is created when saturated steam is further heated from another source after leaving the water from which it is formed. This measurement is required to correctly determine the valve coefficient (C_v).

Valve Sizing Equations

The following formulas can be used to determine the C_v requirement for a specific set of service conditions,

where:

C_v = valve coefficient
G_f = liquid specific gravity at flow temperature (water = 1.0)
G_g = gas specific gravity (air = 1.0)
P_1 = inlet pressure (psia)
P_2 = outlet pressure (psia)
ΔP = inlet pressure minus outlet pressure (psi)
q = liquid flow in gallons per minute (gpm)
T_{sh} = steam superheat (°F)
W = gas flow in pounds per hour (pph)

Cavitation

Water and Other Liquids

Cavitation takes place when the pressure through a valve drops to or below the vapor pressure of a liquid, causing it to vaporize and rapidly expand in gas form. Vapor bubbles flow downstream where the fluid velocity decreases and the surrounding pressure increases. The vapor bubbles then collapse or implode, causing sudden condensation and producing shock waves that may result in excessive noise, vibration, erosion or mechanical damage to valve and/or piping. In most liquid applications, the outlet pressure (psia) should be no less than one-third the inlet pressure (psia). Where extremely large differential pressures are required, the use of multiple valves in series will reduce the possibility of cavitation.

Water

where:

q = liquid flow in gallons per minute (gpm)
ΔP = inlet pressure minus outlet pressure (psi)

$$C_v = \frac{q}{\sqrt{\Delta P}}$$

example:

medium = water
q = 160 U.S. gallons per minute
ΔP = 25 [100 psia inlet – 75 psia outlet]

$$C_v = \frac{160}{\sqrt{25}} \quad \text{or} \quad C_v = \frac{160}{5} \quad \text{or} \quad C_v = 32$$

Saturated Steam

where:

W = gas flow in pounds per hour (pph)
P_1 = inlet pressure (psia)
P_2 = outlet pressure (psia)
ΔP = inlet pressure minus outlet pressure (psi)

$$C_V = \frac{W}{2.1\sqrt{\Delta P(P_1 + P_2)}}$$

example:

medium = saturated steam
W = 4000 pph
P_1 = 100 psia
P_2 = 75 psia
ΔP = 25 [100 psia inlet – 75 psia outlet]

$$C_V = \frac{4000}{2.1\sqrt{25(100 + 75)}}$$

$$C_V = \frac{4000}{138.9}$$

$$C_V = 28.8$$

Choked Flow (Critical Drop)

Steam and Other Gases

When P_2 is less than 1/2 P_1, set P_2 equal to 1/2 P_1 in the appropriate sizing equation for steam or gases.

Steam, as are all gases, is a compressible fluid. The maximum velocity of the steam or gas through the valve is limited to the speed of sound. When the outlet pressure (psia) is equal to one-half (or less) of the inlet pressure (psia), the fluid velocity through the valve reaches the speed of sound, and flow cannot be further increased by a reduced outlet pressure. This is known as a choked flow condition. The pressure drop under these conditions is known as critical drop.

example:

medium = saturated steam
W = 4000 pph
P_1 = 100 psia
P_2 = 35 psia (actual)
ΔP = 65 psia

Since the outlet pressure is less than 1/2 of the inlet pressure, choked flow will occur. Set P_2 to equal 1/2 of P_1. Use this revised P_2 in the normal sizing formulae.

$P_2 = P_1 / 2$ **$P_2 = 100 / 2$** **$P_2 = 50$**

$\Delta P = P_1 - P_2$ **$\Delta P = P_1 - P_1/2$** **$\Delta P = 100 - 50$** **$\Delta P = 50$**

$$C_V = \frac{W}{2.1\sqrt{\Delta P(P_1 + P_2)}}$$

$$C_V = \frac{4000}{2.1\sqrt{50(100 + 50)}}$$

$$C_V = \frac{4000}{181.9}$$

$$C_V = 22$$

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

STEAM PROPERTIES

Steam is perfectly transparent, colorless, dry and invisible. When it comes in contact with air, it partially condenses and forms a visible mist, or wet steam. Wet steam has the same temperature as dry steam contained under the same pressure.

Steam in its most common state is known as saturated steam. Its temperature is the same as that of the water from which it is formed and is dependent on the pressure under which it is contained. Superheated steam is created when saturated steam is further heated from another source after leaving the water from which it is formed.

Saturated Steam Pressure and Temperature

Vacuum	Temperature	Vacuum	Temperature	Latent Heat
in Hg	°F	kPag	°C	BTU/lb
29.74	32	-100.7	0	1075.5
25	133	-85	56	1018
20	161	-68	72	1002
15	179	-51	82	991
10	192	-34	89	983
5	203	-17	95	976

Pressure	Temperature	Pressure	Temperature	Latent Heat
psig	°F	kPag	°C	BTU/lb
0	212	0	100	970
5	227	34	108	961
10	239	69	115	953
15	250	103	121	946
20	259	138	126	939
25	267	172	130	934
30	274	207	134	929
35	281	241	138	924
40	287	276	142	920
45	292	310	145	916
50	298	345	148	912
60	307	414	153	905
70	316	483	158	898
80	324	552	162	892
90	331	621	166	886
100	338	689	170	881
110	344	758	173	875
120	350	827	177	871
130	356	896	180	866
140	361	965	183	861
150	366	1034	185	857
175	377	1207	192	847
200	388	1379	198	837
225	397	1551	203	828
250	406	1724	208	820

Adjusted to Sea Level — 14.696 psia (760 mm Hg)

Technical Information

STEAM PROPERTIES

- One cubic foot of water will become 1646 cubic feet of steam when evaporated at zero psi gauge pressure and a temperature of 212°F.
- One cubic foot of steam weighs 0.03732 pounds, and one pound of steam occupies 26.796 cubic feet at zero psi gauge pressure and a temperature of 212°F.
- One cubic foot of dry air weighs 0.08073 pounds, and one pound of dry air occupies 12.387 cubic feet at zero psi gauge pressure and a temperature of 0°F.
- The latent heat created from the vaporization of water to steam is:

  970 BTU per pound @ 14.7 psia

  889 BTU per pound @ 100 psia
- One British Thermal Unit (BTU) is the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit, usually from 39.2°F to 40.2°F.

1 Gal. (U.S.) = 0.1337 ft^3

1 Gal. (U.S.) water = 8.337 lbs

1 ft^3 water = 62.364 lbs

Steam Required to Heat Water
According to Temperature Rise and Gallons per Hour

	U.S. Gallons of Water Heated per Hour (for fuel oil — multiply pounds per hour listed by 0.5)																	
	25	50	75	100	150	200	300	400	500	750	1000	1500	2000	3000	4000	5000	7500	10000
Temperature Rise (°F)	Pounds of Steam per Hour Required																	
10	—	—	—	—	—	17	25	33	42	63	83	120	167	250	330	420	620	830
20	—	—	—	—	25	33	50	67	83	125	167	250	330	500	670	830	1250	1670
30	—	—	—	25	37	50	75	100	125	190	250	370	500	750	1000	1250	1900	2500
40	—	—	25	33	50	66	100	130	170	250	330	500	660	1000	1330	1700	2500	3300
50	—	21	31	42	63	84	125	170	210	310	420	630	840	1250	1680	2100	3100	4200
60	12	25	37	50	75	100	150	200	250	370	500	750	1000	1500	2000	2500	3700	5000
80	16	33	50	67	100	130	200	270	330	500	670	1000	1340	2000	2700	3300	5000	6700
100	21	42	63	83	120	170	250	330	420	630	830	1250	1700	2500	3300	4200	6300	8300
120	25	50	75	100	150	200	300	400	500	750	1000	1500	2000	3000	4000	5000	7500	10000
140	29	58	88	117	175	230	350	470	580	880	1170	1750	2340	3500	4700	5800	8800	11700
160	33	66	100	133	200	270	400	530	660	1000	1330	2000	2700	4000	5300	6600	10000	13300
180	37	75	113	150	225	300	450	600	750	1125	1500	2200	3050	4500	5950	7500	11300	14950
200	42	84	126	165	250	330	500	660	840	1260	1660	2500	3400	5000	6600	8300	12600	16600

12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Using the Table

1. Find the units you wish to convert FROM in the left hand column. 2. Find the units you wish to convert TO in the top row.
3. Insert the multiplier shown at the intersection into the following formula:

FROM units x MULTIPLIER = TO units
Example: 100 psi x 6.894757 = 689.475 kPa

TO / FROM	PSI	in H_2O	mm H_2O	cm H_2O	oz/in2	mbar	bar	mm Hg	cm Hg	in Hg	kg/cm2	kPa	MPa	ft H_2O	m H_2O	atm
psi	1	27.68068	703.1	70.308927	16	68.95	0.06894757	51.71486	5.171486	2.03602	0.070306958	6.894757	0.0069	2.306723	0.70308927	0.0680460
in H_2O	0.03612628	1	25.4	2.54	0.578020	2.488	0.00249	0.0735539	0.187	0.0735539	0.00254219	0.2490819	0.00025	0.08333	0.0254	0.00245825
mm H_2O	0.001422	0.0394	1	0.1	0.0227	0.098	0.000098	0.0735	0.00735	0.00289	0.0001	0.0098	0.00001	0.00328084	0.001	0.000097
cm H_2O	0.0142229	0.3937	10	1	0.227566	0.98	0.000980634	0.7355372	0.0735	0.0289581	0.00099997	0.980634	0.0001	0.032808	0.01	0.000967814
oz/in^2	0.0625	1.73004	43.943	4.394308	1	4.31	0.004309223	3.23218	0.323	0.12725125	0.04394308	0.4309223	0.00043	0.14417	0.04394308	0.004252875
mbar	0.0145	0.4012	10.20	1.020	0.2321	1	0.001	0.75	0.075	0.0295	0.00102	0.1	0.0001	0.03345622	0.00101975	0.000987
bar	14.5038	401.8596	10,197	1019.7466	232.0608	1000	1	750.0626	75	29.53	1.019716	100	0.1	33.4833	10.197466	0.986923
mm Hg	0.0193368	0.535255	13.60	1.359554	0.3093888	1.333	0.001333225	1	0.1	0.039370079	0.00135951	0.1333225	0.000133	0.0446046	0.01359554	0.0013157895
cm Hg	0.1934	5.358	136.0	13.60	3.10	13.33	0.01333	10	1	0.394	0.0136	1.333	0.00133	0.44604625	0.13595509	0.01316
in Hg	0.4911542	13.595484	345.3	34.53253	7.85847	33.86	0.03386389	25.4	2.54	1	0.0345316	3.386389	0.00339	1.132957	0.3453253	0.0334211
kg/cm^2	14.223343	393.711806	10,000.3	1000.028	227.57349	980.7	0.98066494	735.5588	73.56	28.95901	1	98.066494	0.0981	32.809312	10.00028	0.967841598
kPa	0.1450377	4.014742	101.97	10.19745	2.320603	10	0.01	7.500610	0.75	0.2952997	0.01019716	1	0.001	0.3345618	0.1019745	0.009869235
MPa	145.04	4019	101,975	10,197	2321	10,000	10	7500	750	295.3	10.2	1000	1	334.56218	101.9748043	9.869
ft H_2O	0.433515	12	304.80	30.48	6.93624	29.88981	0.02988981	22.4192	2.24192	0.882646	0.03047912	2.988981	0.002988981	1	0.3048	0.02949896
m H_2O	1.42229	39.370079	1000	100	22.7566	980.66494	0.98066494	73.55372	7.35537	2.89581	0.099997	9.8063439	0.0098063439	3.2808399	1	0.0967814
atm	14.696	406.794	10,333	1033.2633	235.136	1013	1.0132535	760	76	29.9213	1.033231	101.32535	0.1013	33.8995	10.332633	1

All units of H_2O at 39.2°F(4°C), all units of Hg at 32°F(0°C)

Hydraulic Ram Conversion

Use the formulas below to convert tons on a given diameter ram to PSI.

(Tons on ram x 2000) / (0.7854 x dia.^{2}) = PSI

(Dia.^{2} x 0.7854 x PSI) / 2000 = Tons on ram

Temperature Conversion

°F = Degrees Fahrenheit	°C = Degrees Celsius	°R = Degrees Reaumur
°F = (°C x 1.8) + 32	°C = (°F – 32) x 0.5555	°R = (°F – 32) x 0.4444
°F = (°R x 2.25) + 32	°C = (°R x 1.25)	°R = (°C x 0.80)

At sea level:
Water boils at 212°F, 100°C and 80°R
Water freezes at 32°F, 0°C and 0°R

TECHNICAL INFORMATION

Miscellaneous Information

Warranty

The H.O. Trerice Co. warrants products of its manufacture to be free from defects in workmanship and material for a period of one year from the date of shipment to the original purchaser. Trerice will repair or replace such product (F.O.B. Factory) should our internal examination reveal it to be defective. Product used in conjunction with non-Trerice product, or in any way modified or altered, may not be covered under the terms of this warranty. Trerice assumes no other responsibility or liability.

Trademarks

The following trademarks are not owned by Trerice and are the property of their respective owners:

Tri-Clamp®
Teflon®
Viton®

Memberships

The H.O. Trerice Co. is a proud member of the Fluid Controls Institute (FCI) and the Valve Manufacturers Association of America (VMA), and participates with The Instrumentation, Systems, and Automation Society (ISA). These nonprofit associations work with manufacturers and other organizations to develop standards and exchange statistical and technical knowledge.

Caution

All Trerice products should be carefully selected to meet the demands of the particular application. The information contained in this catalog is offered only as a guide to assist in making the proper selection. Selection of the proper product, as well as its installation and use, is the sole responsibility of the user. Improper application or product misuse may cause failure of the product, resulting in possible personal injury or property damage. For correct use and application of all Trerice products, please refer to the proper standard set forth by ASME. These documents may be obtained from the American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990.

A word about this catalog

The information contained in this catalog was correct at the time of printing. Due to the Trerice commitment of continuous development and improvement, these specifications are subject to change without notice. Any information contained within this catalog should not be interpreted as a contractual agreement by Trerice. All orders are subject to the approval of the H.O. Trerice Co., Oak Park, Michigan.

H.O. Trerice

The H.O. Trerice Co., founded in 1923 by Mr. Howard O. Trerice, in Detroit, Michigan, U.S.A., has long been recognized as a leader in the design and manufacture of instrumentation and controls of the highest quality.

Perhaps no single organization within our industry is specified over a greater product spectrum than Trerice. And perhaps no single organization offers its marketplace more avenues of service than Trerice. For Trerice is more than simply a product line, Trerice is a dynamic service network of qualified distribution, regional sales and marketing management, and expert engineering and customer satisfaction personnel.

Headquartered in Oak Park, Michigan, Trerice is a multinational corporation of diverse, experienced, and determined personnel committed to the continuation and furtherance of our founder's credo: Quality in Product and Service.

Contact us at 1.888 .TRERICE or visit our web site at www. TRERICE .com.

Industrial Thermometers

Light Powered-Digital Thermometers

Dial Thermometers

Temperatur e Sensors

Temperatur e Regulators

Pr essur e Regulators

PID Controllers

Control Valves

TRERICE

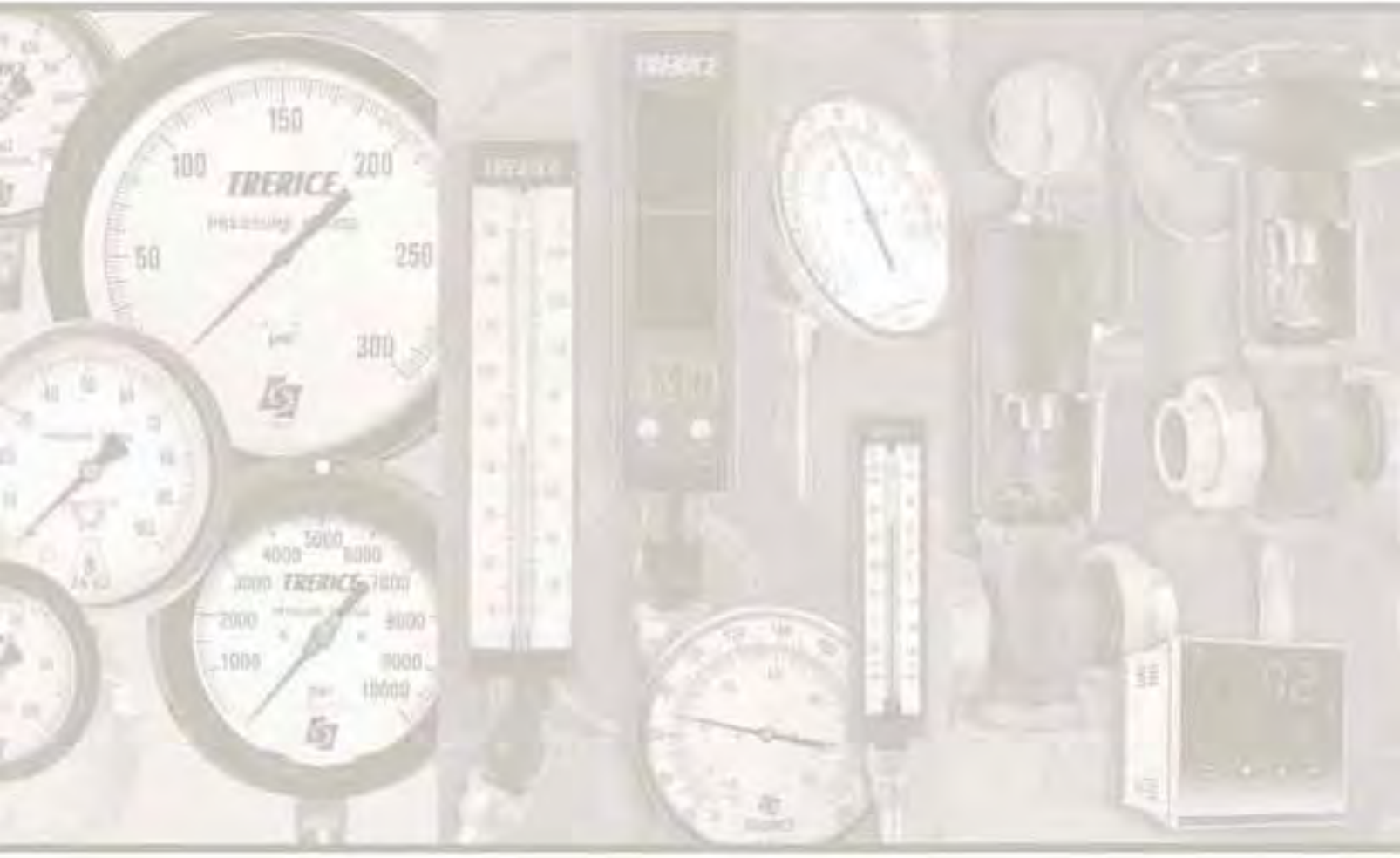
12950 W. Eight Mile Road · Oak Park · MI 48237-3288

Tel: 1.888.TRERICE · Fax: 1.248.399.7246

Website: www.TRERICE.com

E-mail: info@trerice.com

TRERICE



12950 W. Eight Mile Road • Oak Park • MI 48237-3288
Tel: 1.888.TRERICE • Fax: 1.248.399.7246
Website: www.TRERICE.com
E-mail: info@TRERICE.com