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

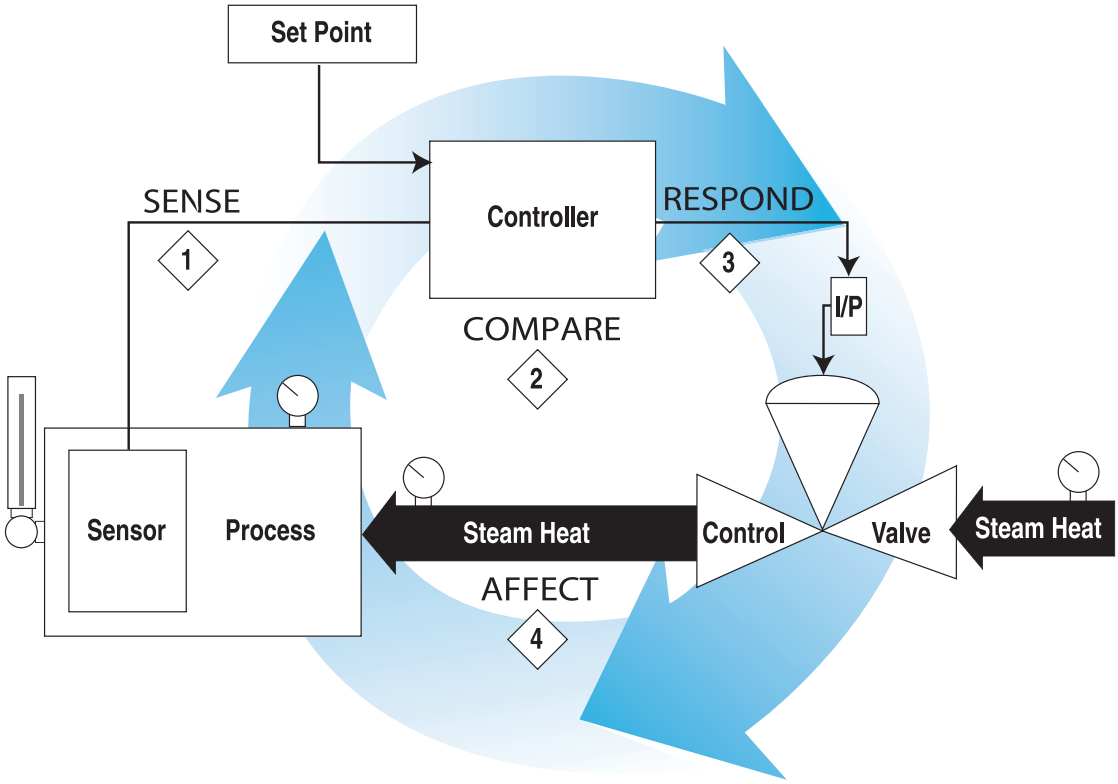
Products required for the design and installation of a complete control loop.

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

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)

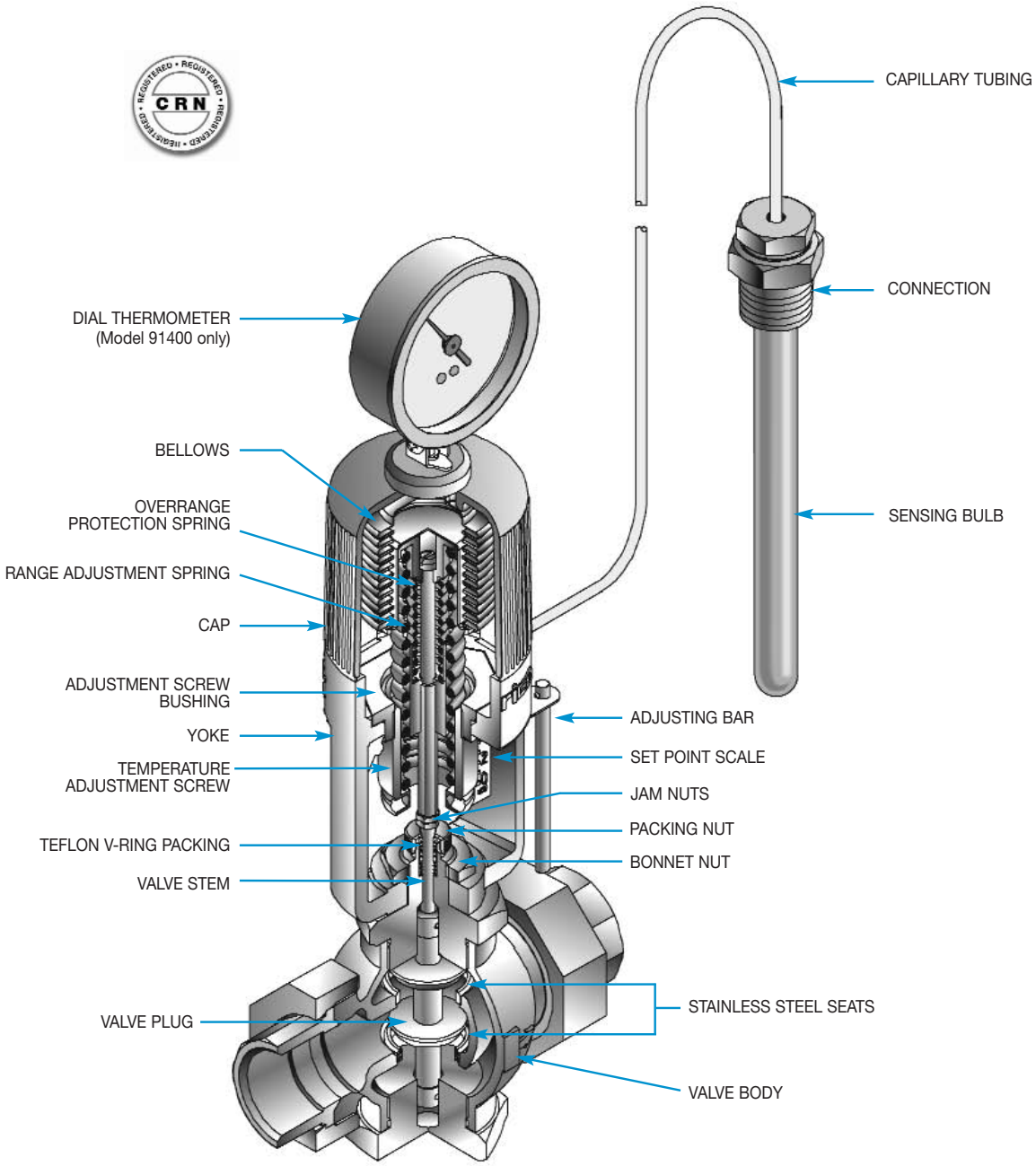
Temperature	
• L84000 Series Electric Contact Controller • Thermowell	Sense-Compare-Respond
• 960 Series Solenoid Valve • 1100 Series Pipeline Strainer	Affect

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)

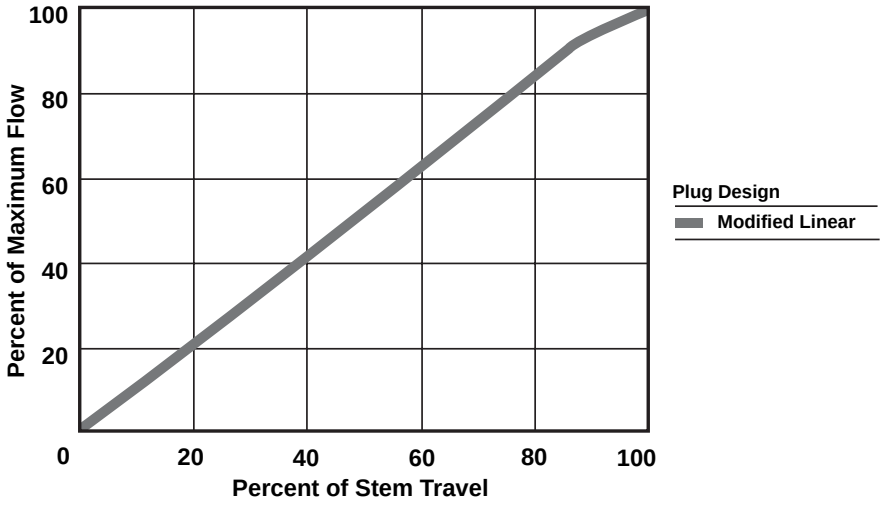
The rated valve coefficient is used to describe the relative flow capacity of the valve based on standard test conditions. Please refer to the Valve Selection Section for detailed information.

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.

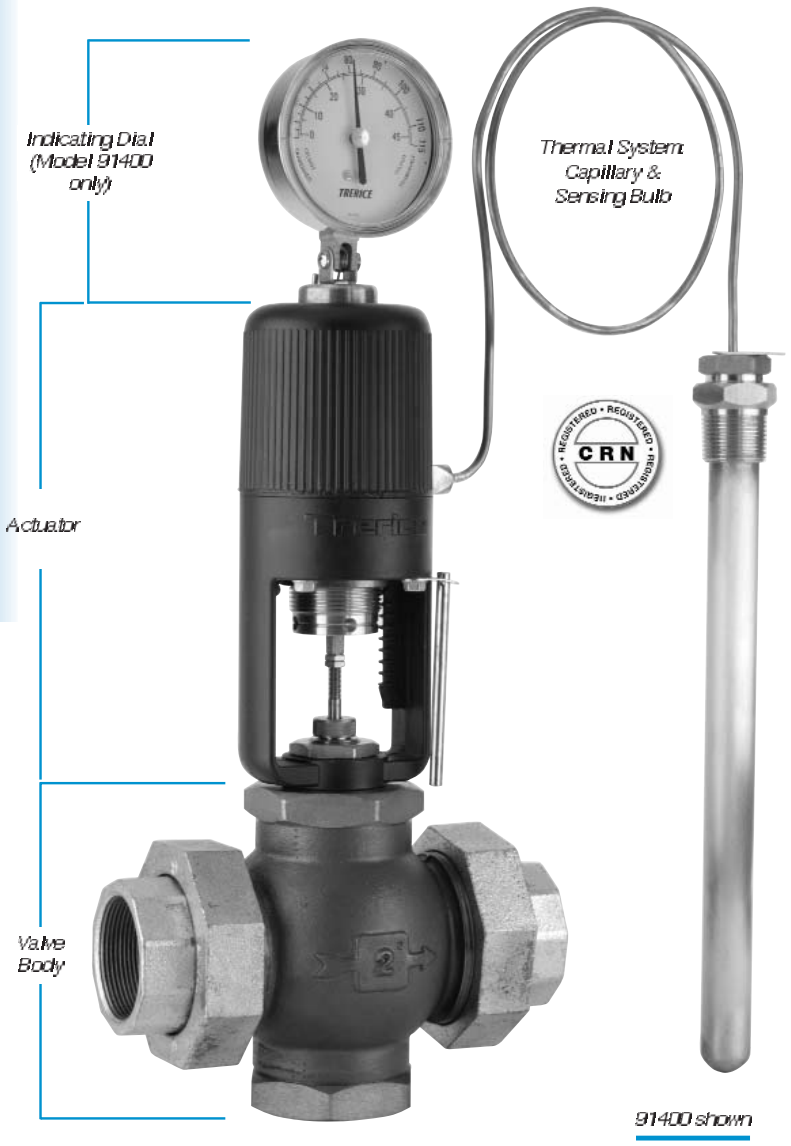
1 oz. tube: Item No. 107-0001

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)

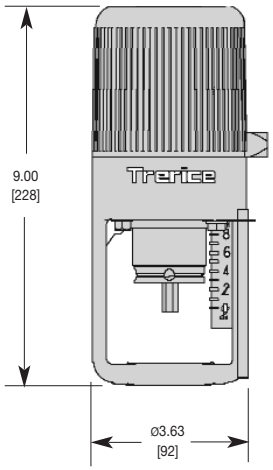
Approximate Shipping Weight

Actuator
91000: 6.0 lbs [2.70 kg]
91400: 6.6 lbs [2.97 kg]
91600: 9.5 lbs [4.32 kg]

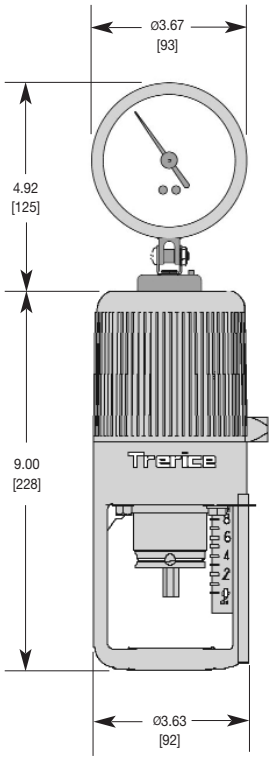
Valve
See Valve Selection tables

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

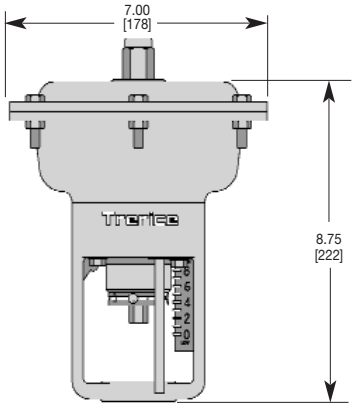
91000
Non-Indicating Actuator



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

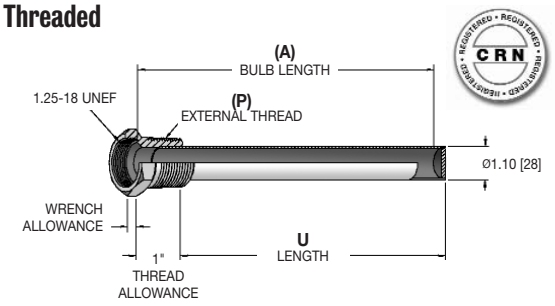
for **Temperature Regulator** (91000, 91400, & 91600 Models)

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.

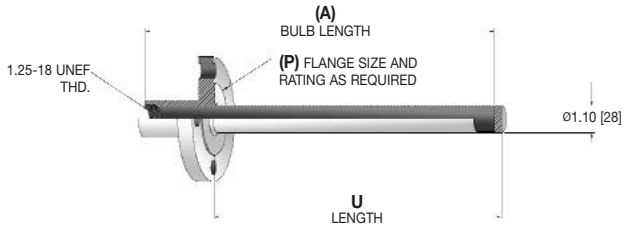
Thermowell to fit Standard Bulb

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.

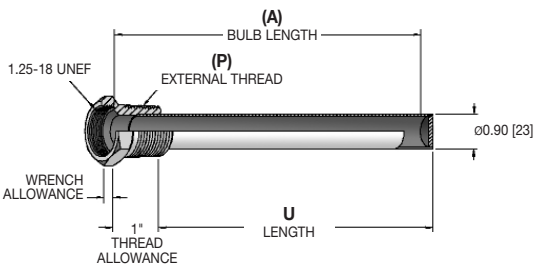
HOW TO ORDER

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.)

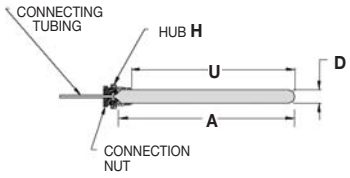
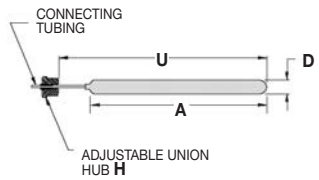
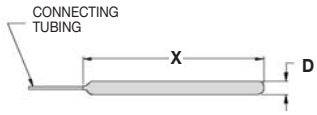
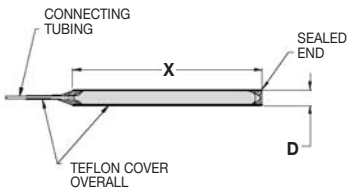
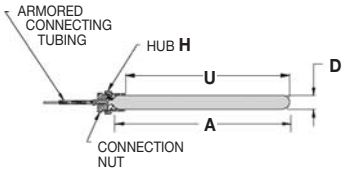
Selection of the proper thermowell is the sole responsibility of the user. Pressure limitations must be considered. Improper application may cause failure of the thermowell, resulting in possible personal injury or property damage.

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

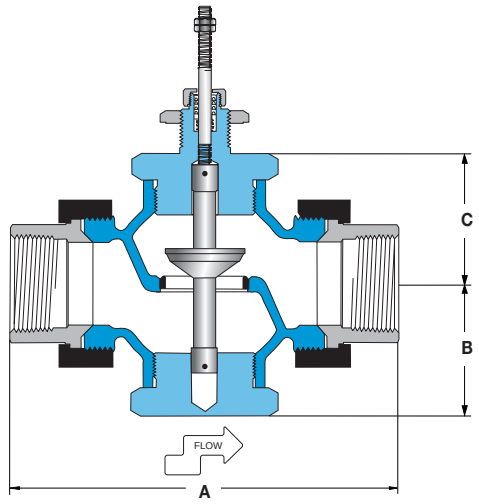
Valve Body Selection
(for 91000 & 91400 Temperature Regulators)

BRONZE

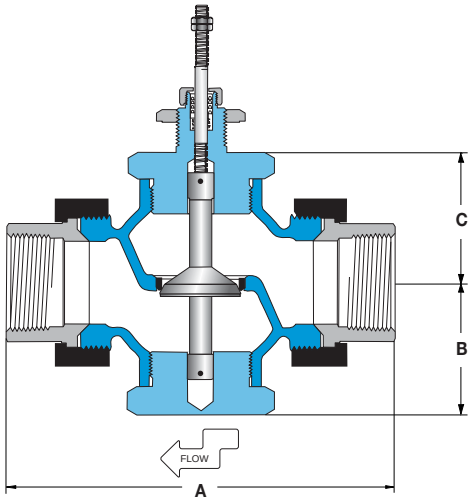
Single Seat • 1/2" – 2"

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	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.
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

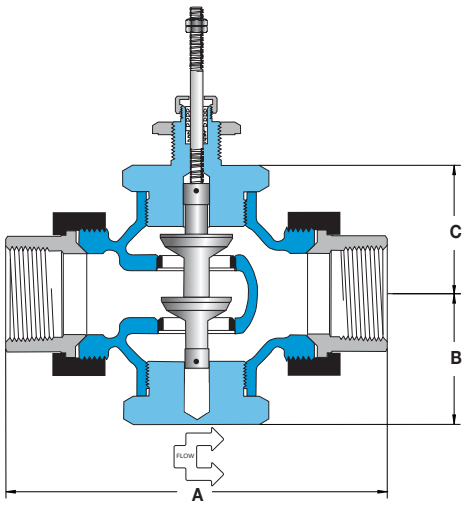
BRONZE

Valve Body Selection (for 91000 & 91400 Temperature Regulators)

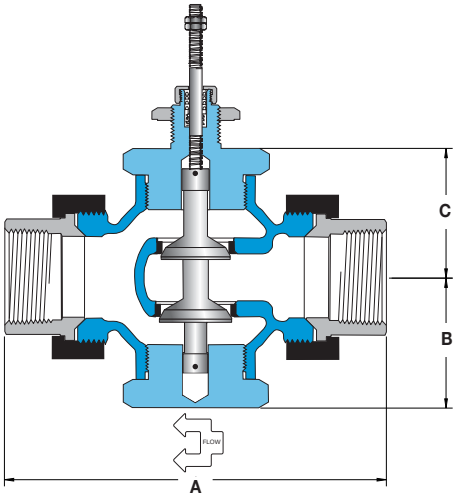
All dimensions are nominal. Dimensions in [ ] are in millimeters.

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

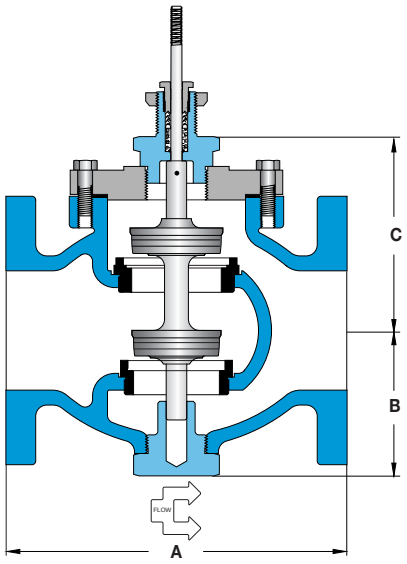
Valve Body Selection
(for 91000 & 91400 Temperature Regulators)

CAST IRON

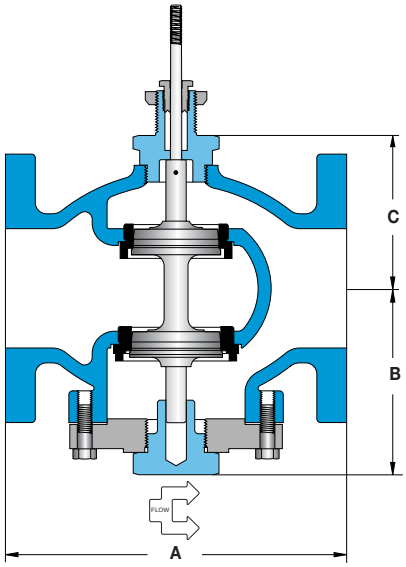
Double Seat • 2½" – 6"

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

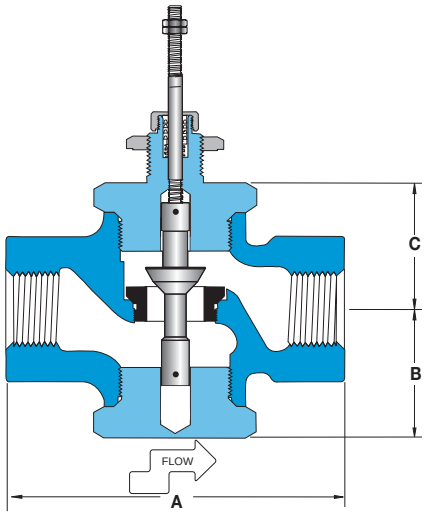
CAST STEEL (for 91000 & 91400 Temperature Regulators)

Valve Body Selection

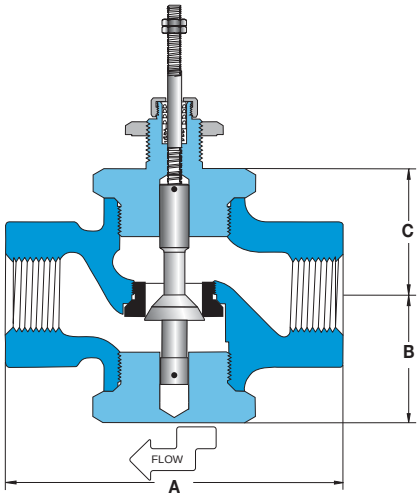
Single Seat • 3/4" – 1"

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]

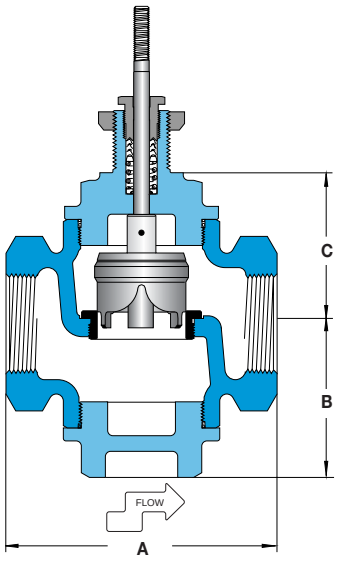
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Valve Body Selection
(for 91000 & 91400 Temperature Regulators) STAINLESS STEEL

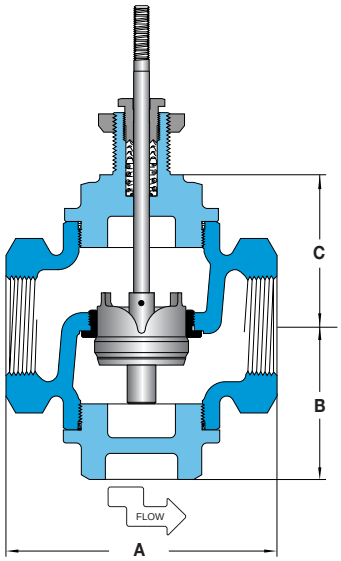
Single Seat • 1/2" – 2"

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

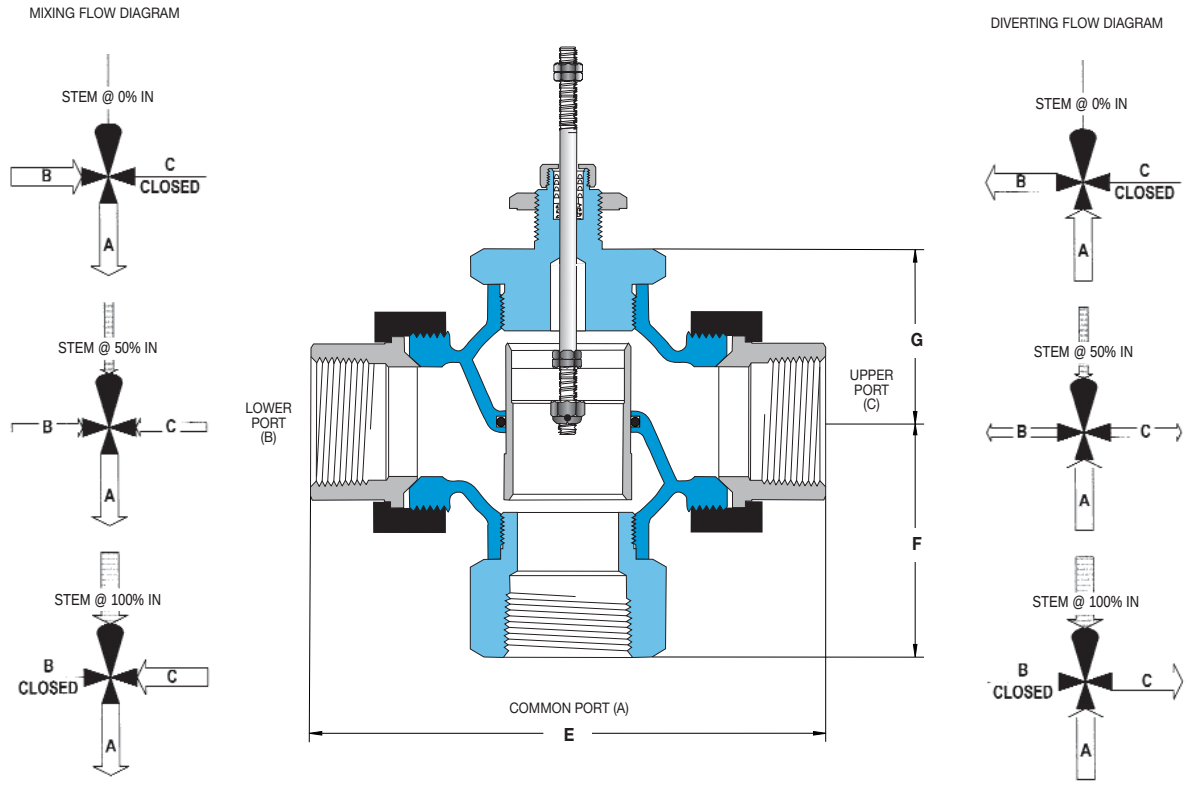
BRONZE

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

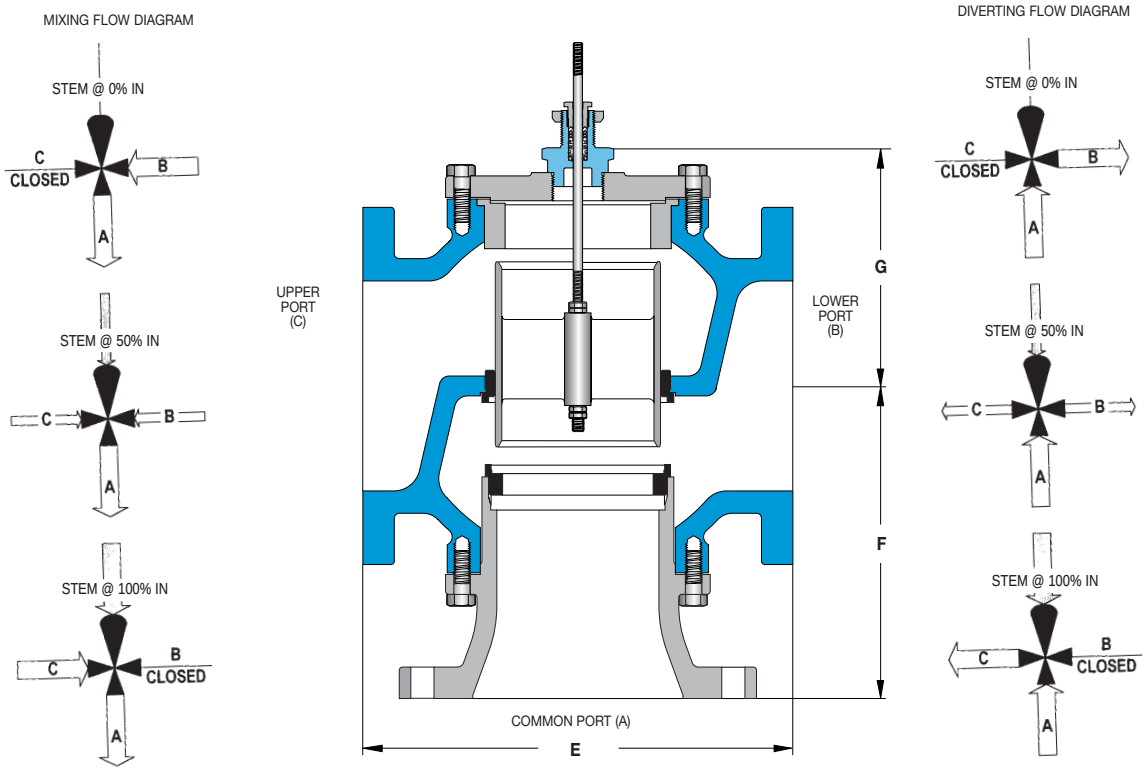
Valve Body Selection
(for 91000 & 91400 Temperature Regulators)

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]

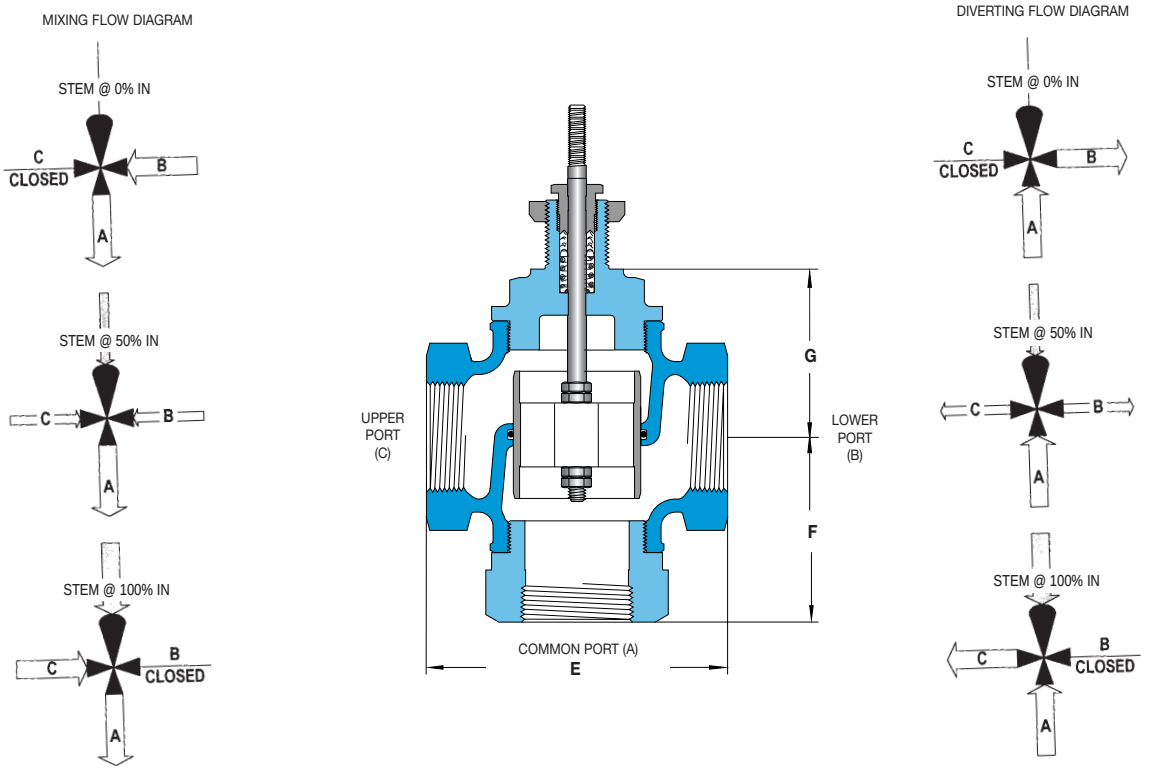
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

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

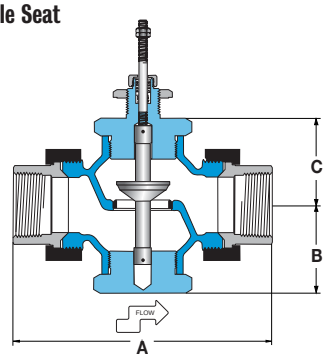
Valve Body Selection
(for 91600 Fail Safe Temperature Regulators)

BRONZE

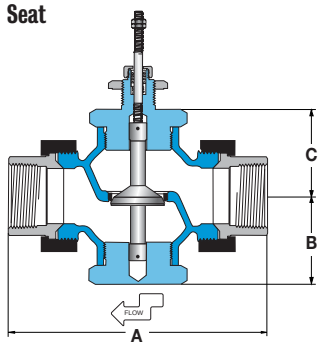
Double Seat • 1/2" – 2"

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

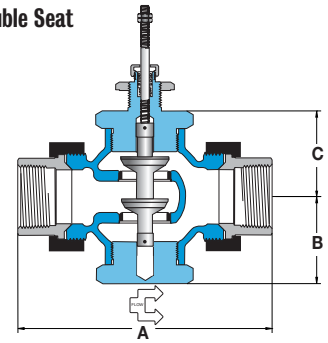
Stem In-to-Close for Heating
Single Seat



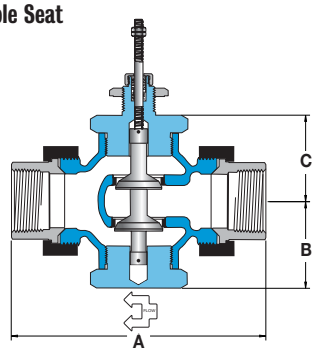
Stem In-to-Open for Cooling
Single Seat



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

TEMPERATURE REGULATORS

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

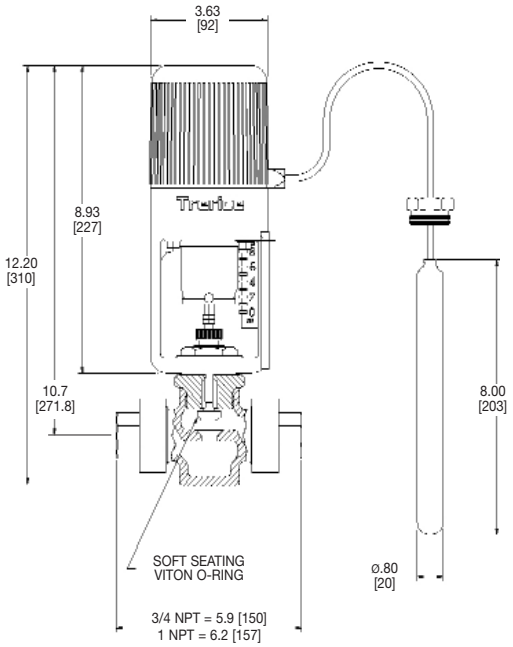
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

91000XT Series
Tank Thermostat

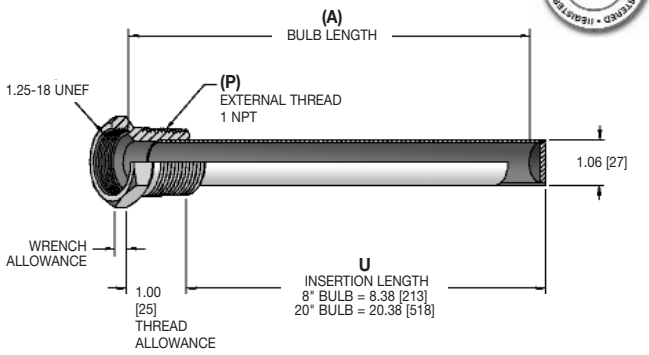
All dimensions are nominal. Dimensions in [ ] are in millimeters.

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		

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.

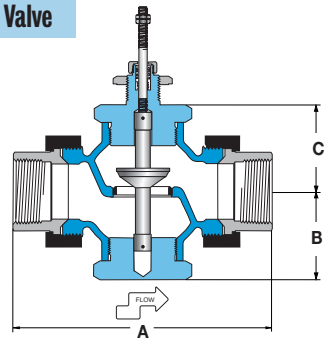
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

921 Series
Pressure Regulator

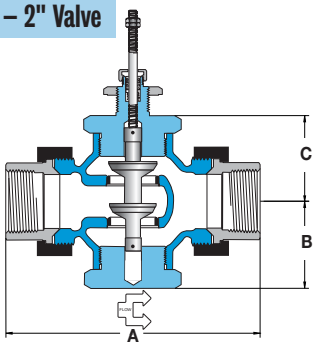
All dimensions are nominal. Dimensions in [ ] are in millimeters.

Pressure Reducing (PRV)

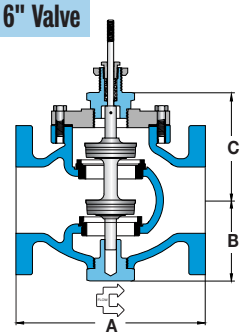
1/2" Valve



3/4" – 2" Valve

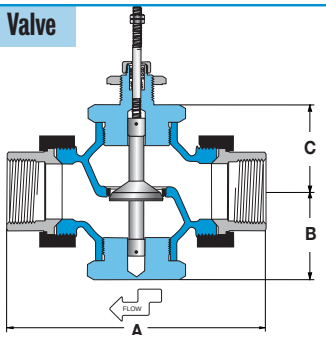


2 1/2" – 6" Valve

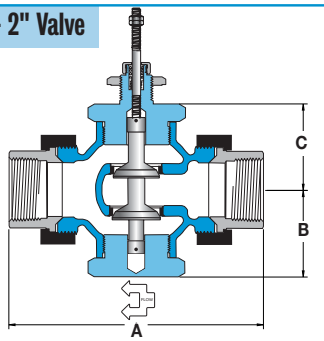


Back Pressure Relief (BPR)

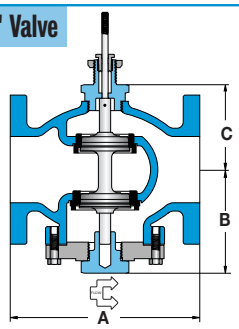
1/2" Valve

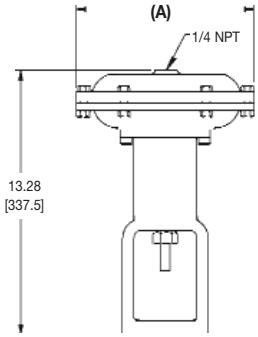


3/4" – 2" Valve



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

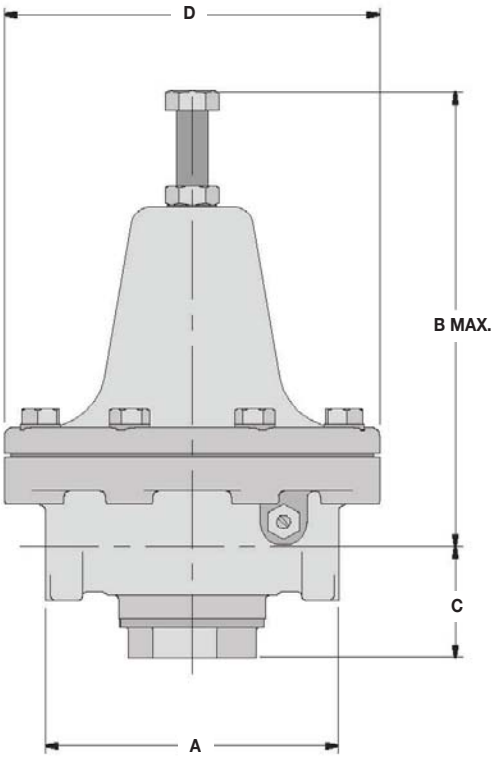
Sample Order Number: **988 O8 B**

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

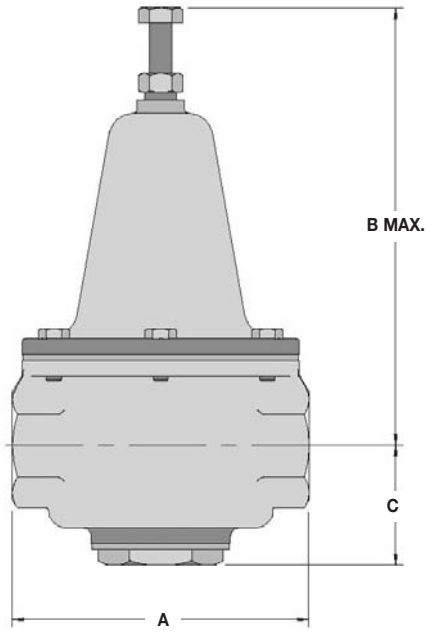
Sample Order Number: **1002 12 B**

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

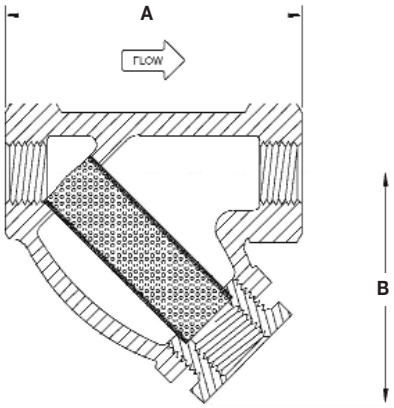
1100 Series Pipeline Strainer

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

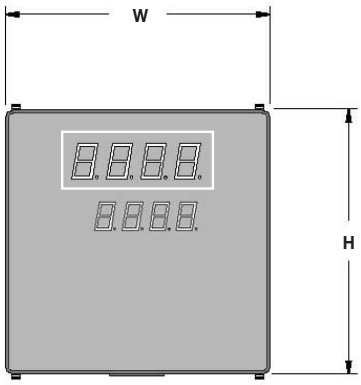
Models	**TR891:** 48 x 48 mm (1/16 DIN) **TR892:** 72 x 72 mm **TR893:** 96 x 96 mm (1/4 DIN) **TR894:** 96 x 48 mm (1/8 DIN)
Control	**Control Mode:** Auto-Tuning PID **Action:** Reverse acting (field switchable to direct acting)
Proportional Band	Off, 0.1-999.9% Full Scale Integral Time: Off, 1-6000 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.

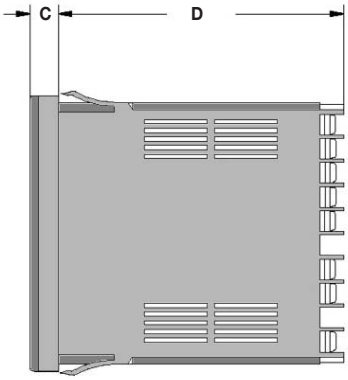
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

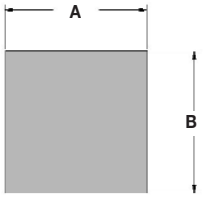
TR890 Series
Electronic PID Controller

CONTROLLERS

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	Event Outputs 2 or 3 require Control Outputs C or D	**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

**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

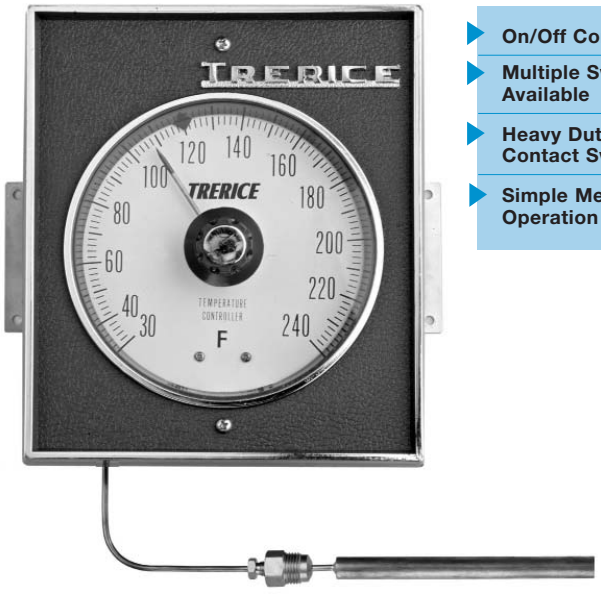
Thermocouple Inputs					RTD Inputs				Current & Voltage Inputs	
T/C Type	Range Code	Fahrenheit Range	Range Code	Celsius Range	Range Code	Fahrenheit Range	Range Code	Celsius Range	Range Code	Range (User-scalable Readout)
B*	**15**	0° to 3300°F	**01**	0° to 1800°C	**47**	-300° to 1100°F	**31**	-200° to 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

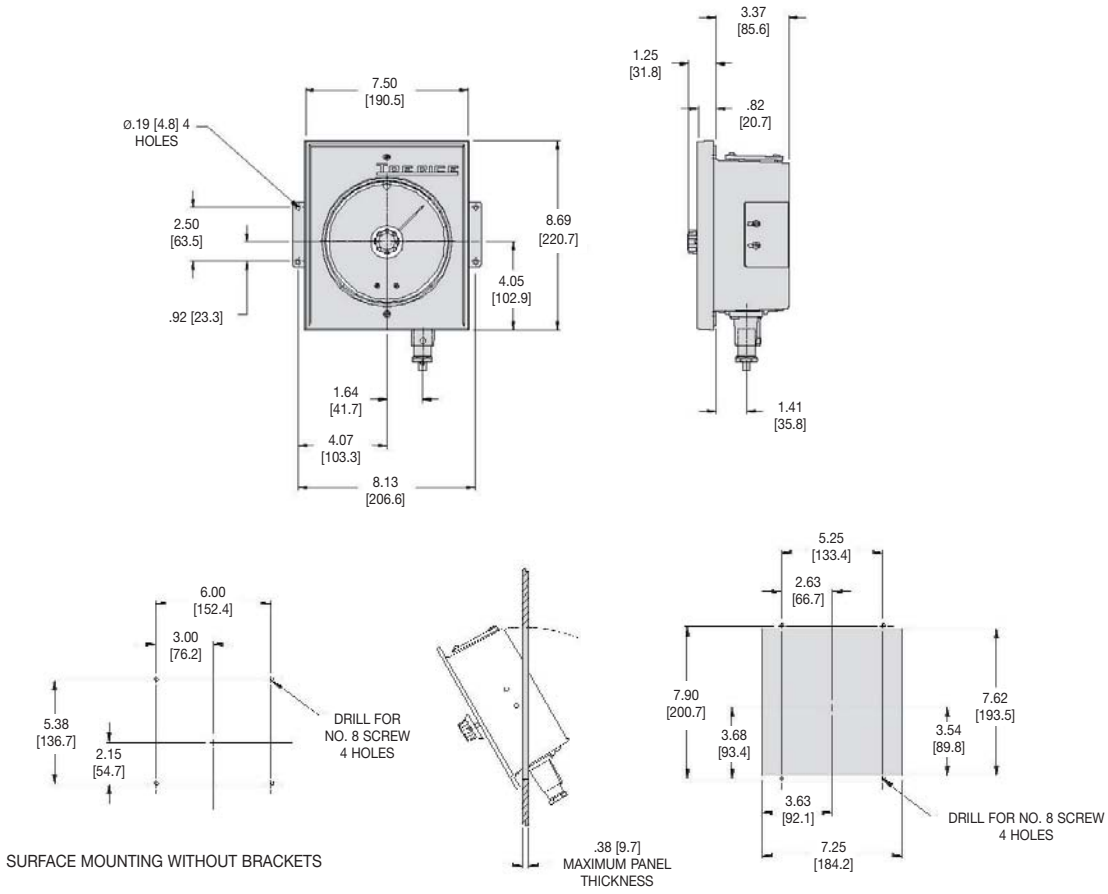
Sample Order Number: **L 84100 145 B10 10 W02**

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

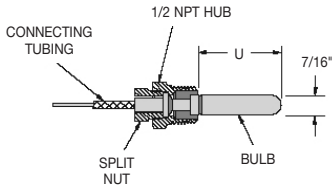
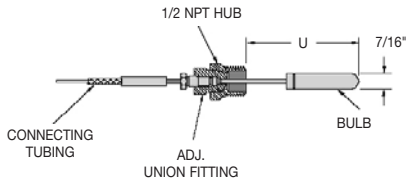
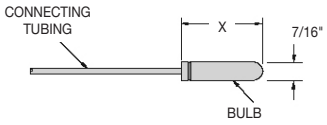
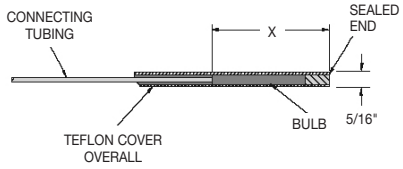


Standard Ranges

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"	5 3/8"	3 7/8"	N/A
Adjustable up to 24"			
3 7/8"	5 3/8"	3 7/8"	1 5/8"
Adjustable up to 24"			
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

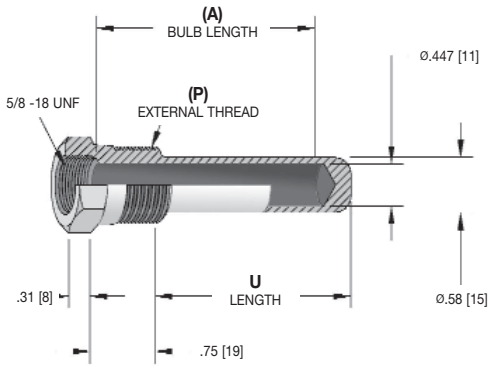
Thermowells

for L84000 Electric Contact Controllers

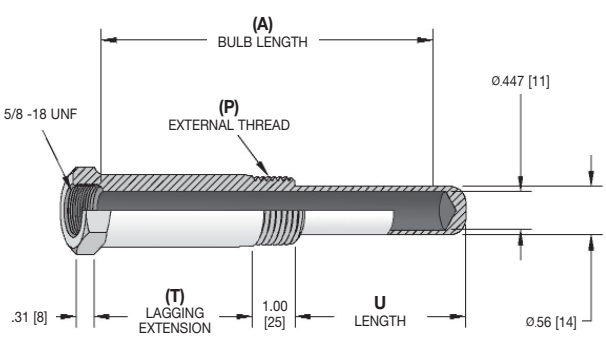
All dimensions are nominal. Dimensions in [ ] are in millimeters.

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

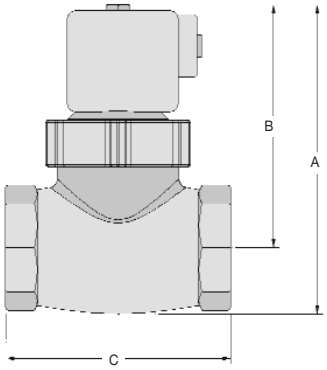
Model	Type	Coil	Service	Minimum Δ P	Maximum Temperature	Item Number	Pipe Size	C_V	Approximate Shipping Weight
960WB	General service, normally closed, bronze body, Viton seat screw	120 Vac/60 Hz, 3/8 - 2 NPT: NEMA 4X 2 1/2 - 3 NPT: NEMA 1	Water, air, oil (<400 SSU), 125 PSI max.	5 PSI	220°F (104°C)	**960WB44**	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

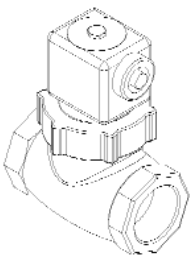
960 Series

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

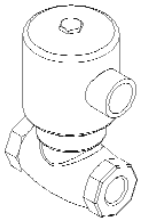


Item Number	Style	A in.	A mm	B in.	B mm	C in.	C mm
960WB44	S	5.12	130	4.25	108	2.75	70
960WB55	S	5.12	130	4.25	108	2.75	70
960WB66	S	5.50	140	4.50	114	3.25	83
960WB77	S	5.75	146	4.56	116	3.81	97
960WB88	S	6.50	165	5.06	129	4.25	108
960WB99	S	7.06	179	5.38	137	4.88	124
960WB10	S	8.00	203	5.88	149	5.88	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

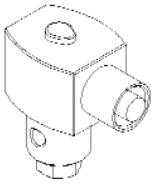
STYLE "S"



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

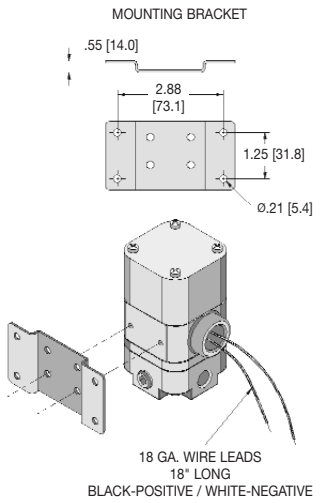
Ambient Temperature
-20°F (-30°C) to 140°F (60°C)

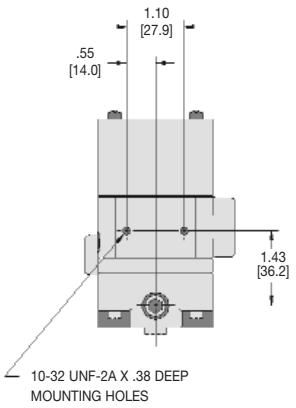
Approximate Shipping Weight
2.1 lbs [0.94 kg]

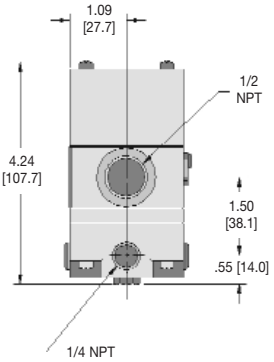
HOW TO ORDER

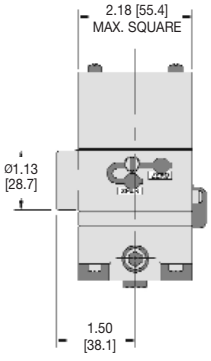
Please order using Item Number **TA901**

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

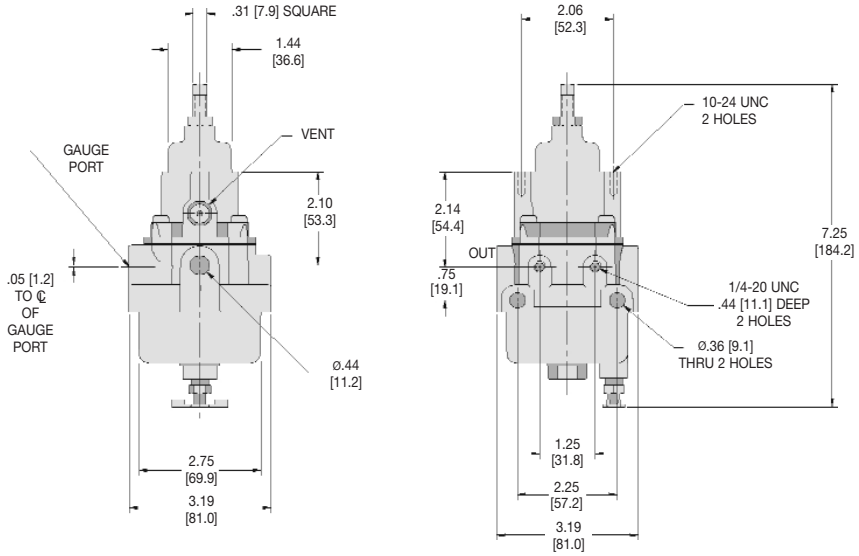
Housing
Cast aluminum

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

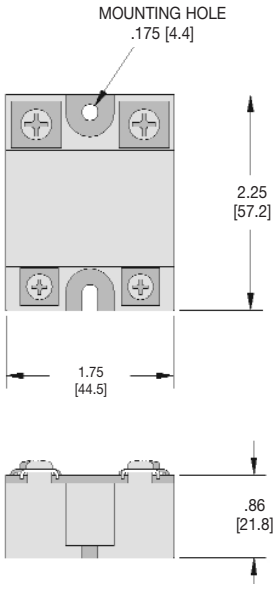
Input Voltage: 3-32 VDC
Impedance: 1000Ω minimum
Must turn on: 3.0 VDC
Must turn off: 1.0 VDC
Isolation signal to load: 7000 VDC
Isolation signal to base: 2500 VDC
Capacitance signal to load: 15 pt

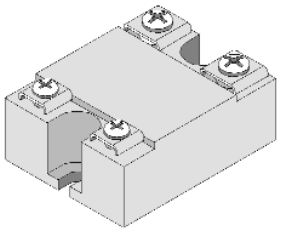
Output Voltage: 20~300 Vrms
Typical turn-on voltage: 5 Vrms
Response time: 0.5 cycle max.
OFF state DV/DT: 200 V/m sec
OFF state leakage current: 15 mA
Max. non-repetitive single cycle surge current: 400 A
Cycle surge current: 400 A
IT for fusing (T=8.3 ms): 400 AS
Peak inverse voltage: 600 Vpk

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"

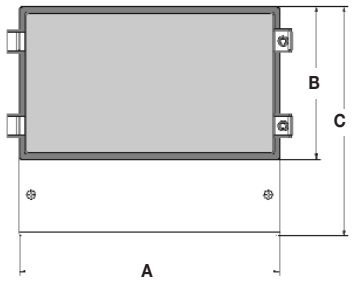
Front Panel
Anodized aluminum

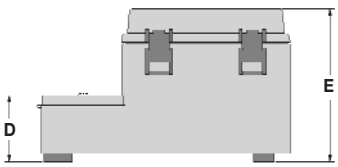
Protection
NEMA 12

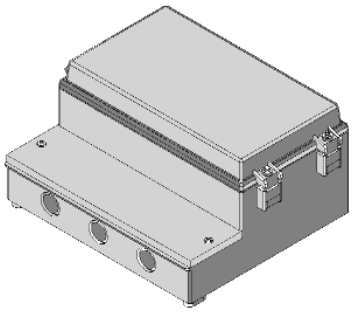
Ambient Temperature
175°F (80°C) maximum

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

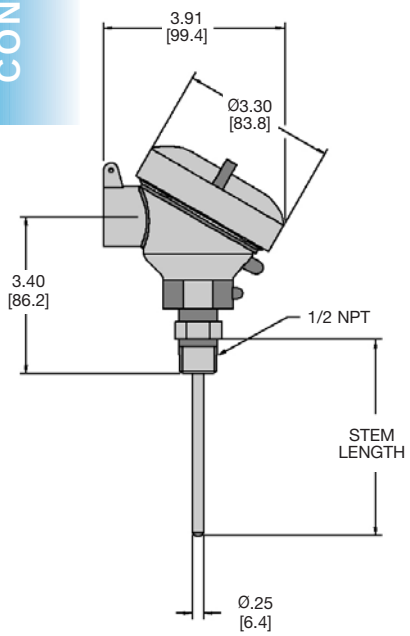
Insulation Ceramic

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.

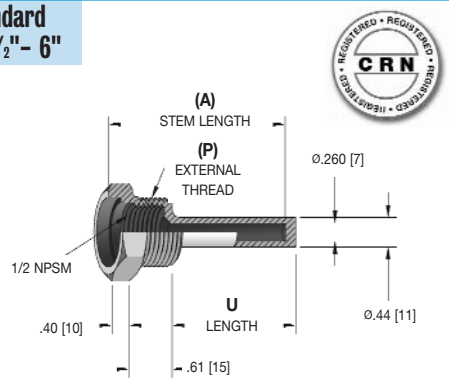
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

Thermowells

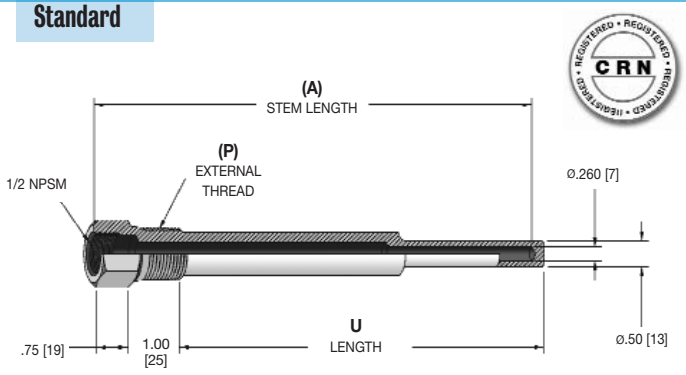
for RTD & Thermocouple Temperature Sensors

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

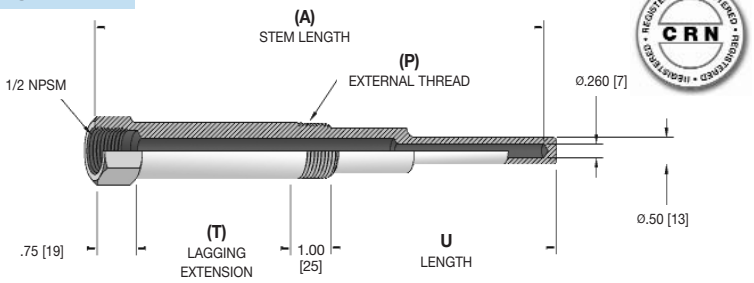
Standard 2½"- 6"



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.

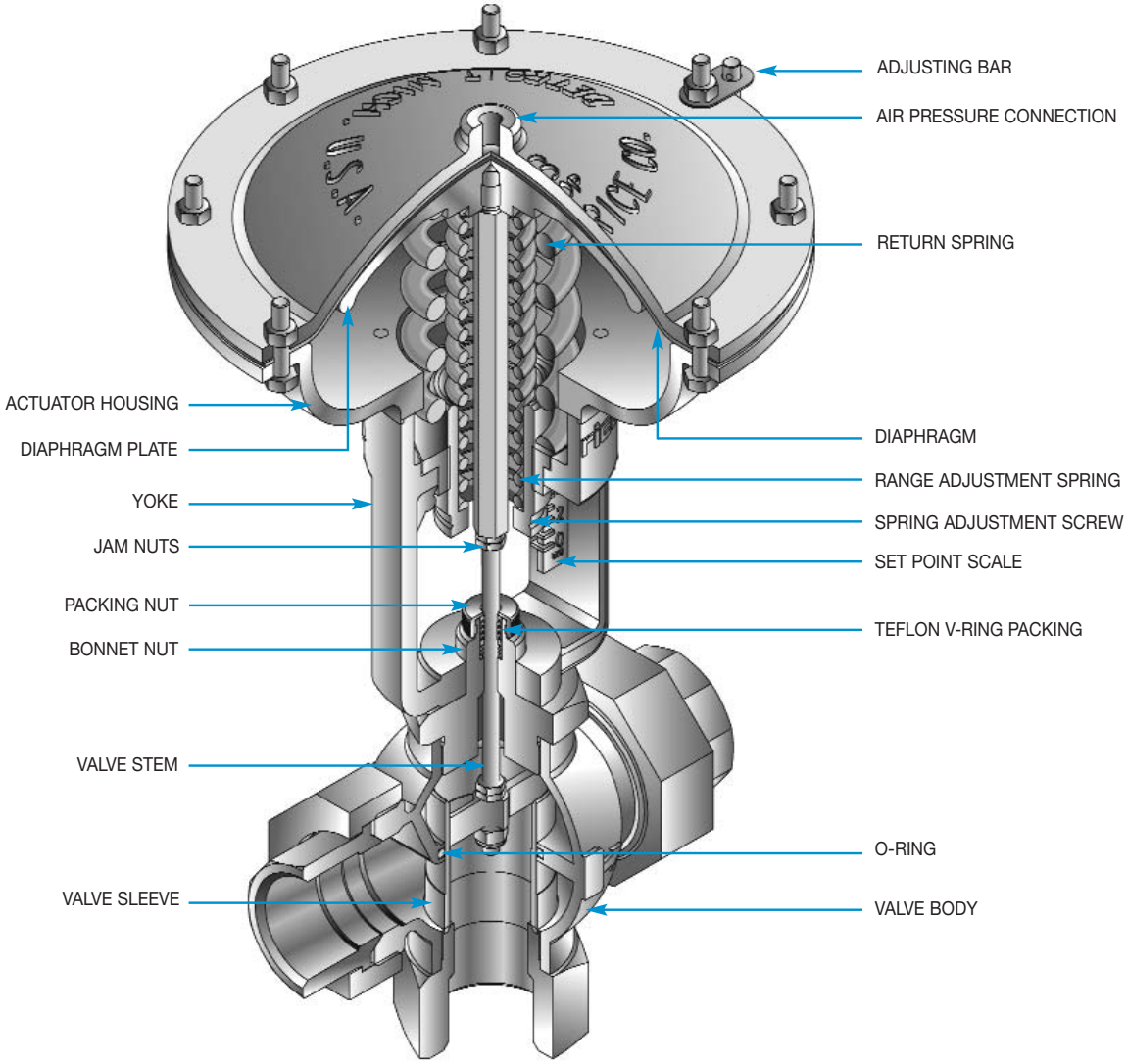
Selecting a Control Valve

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

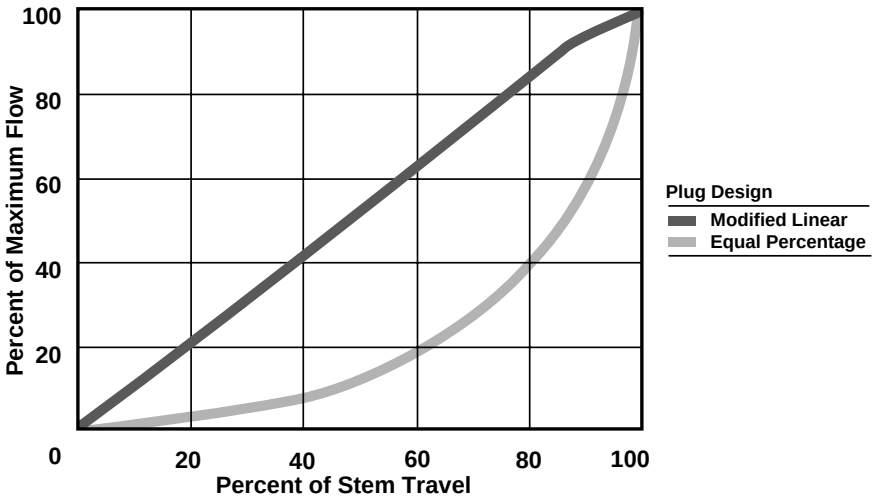
Valve trim is comprised of the stem and plug assembly, and the seats within the ports. 910 Series Control Valves employ either a quick-opening or equal percentage stainless steel valve plug and permanently brazed-in stainless steel seats for smooth performance throughout the life of the valve. The valve 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.

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

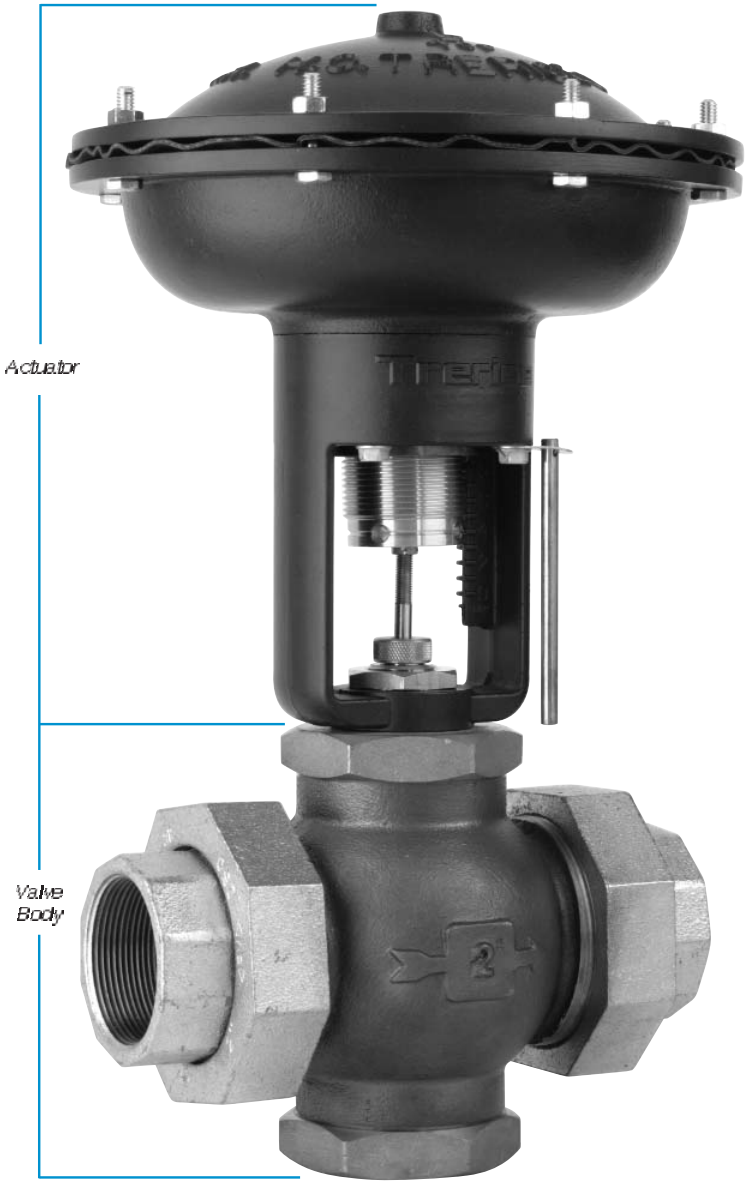
The Trerice No. TA987 Air Filter/Regulator is recommended for filtering and regulating the pressure of plant compressed air, while delivering clean, dry air at the proper pressure to pneumatic control devices.

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

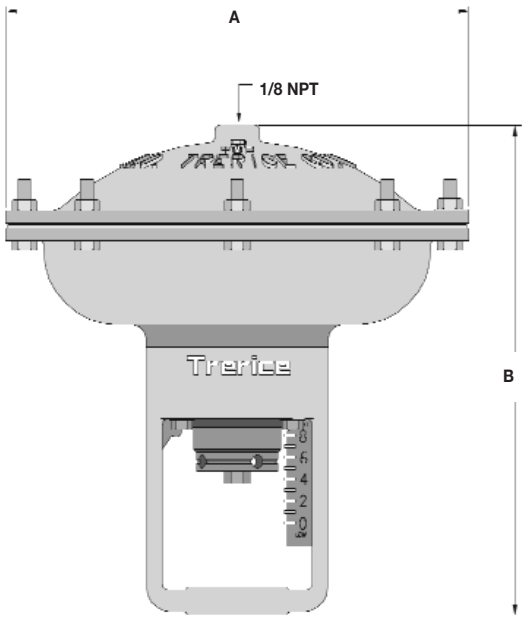
Air Pressure to Diaphragm
30 psig maximum

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)

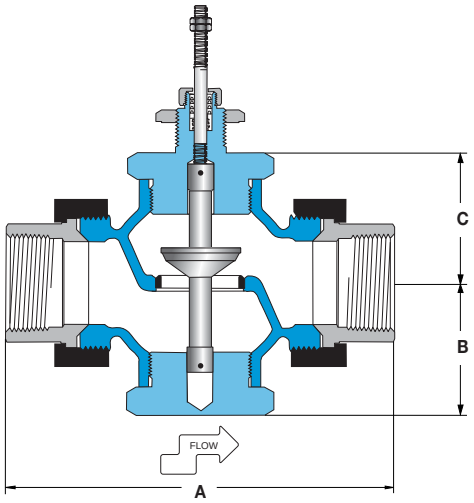
BRONZE

Single Seat • 1/2" – 2"

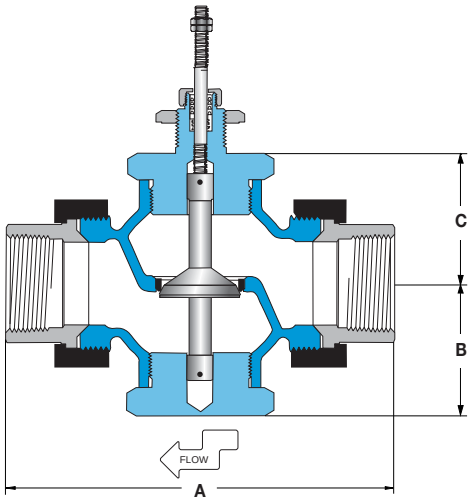
All dimensions are nominal. Dimensions in [ ] are in millimeters

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]

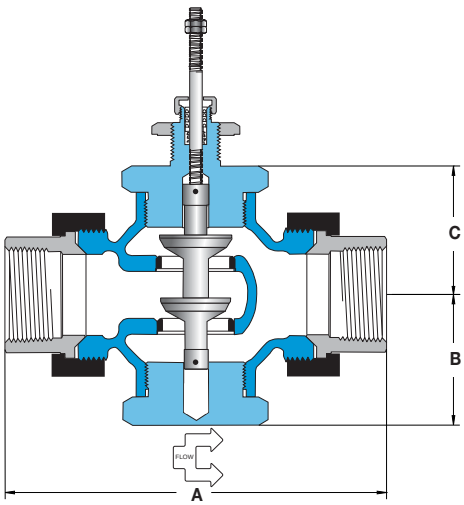
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

BRONZE

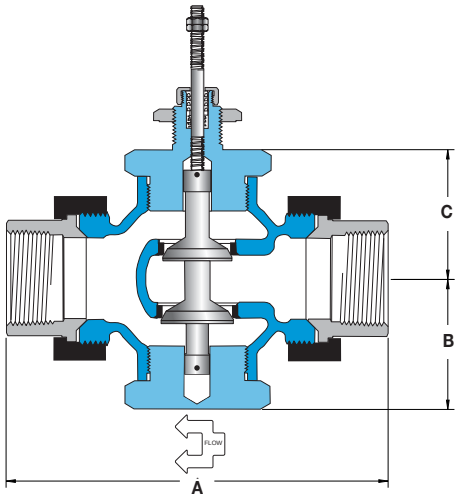
Valve Body Selection
(for 910A, 910B & 910C Control Valves)
Double Seat • 3/4" – 2"

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)

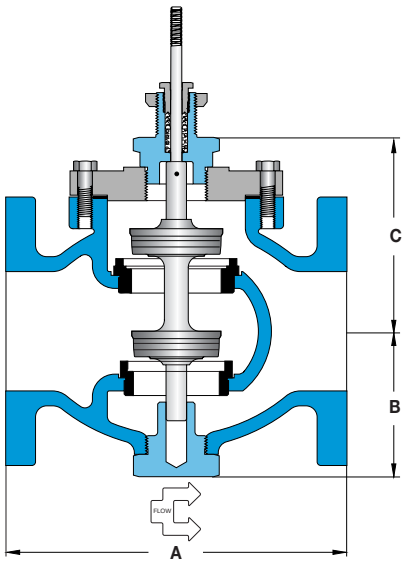
CAST IRON

Double Seat • 2½" – 4"

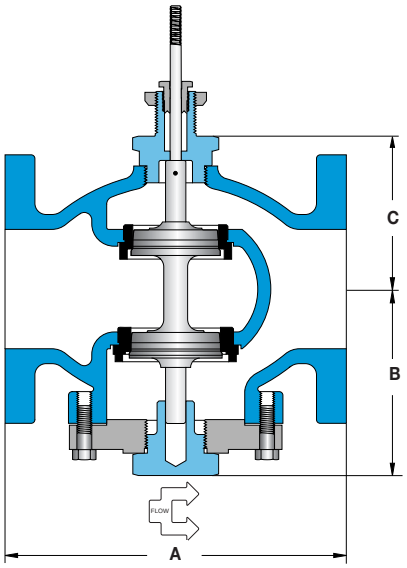
All dimensions are nominal. Dimensions in [ ] are in millimeters.

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 Shipping Wt.
	Connection	Nominal Port	C_v	910A	910B	910C	A	B	C	
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 Shipping Wt.
	Connection	Nominal Port	C_v	910A	910B	910C	A	B	C	
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

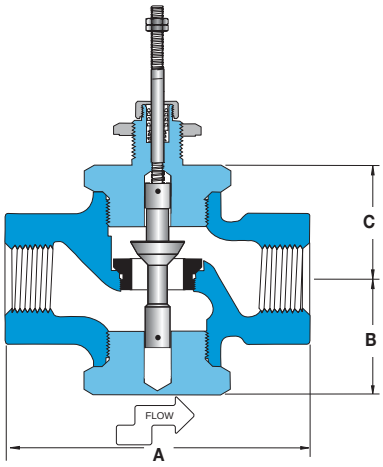
Valve Body Selection (for 910A, 910B & 910C Control Valves)

Single Seat • 1/2" – 1"

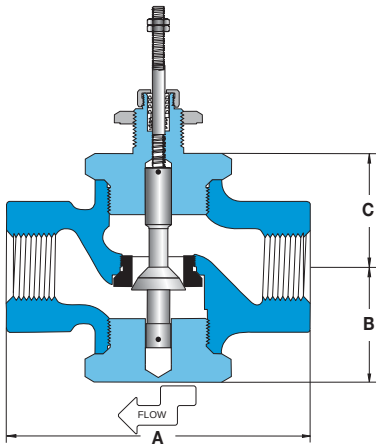
All dimensions are nominal. Dimensions in [ ] are in millimeters.

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

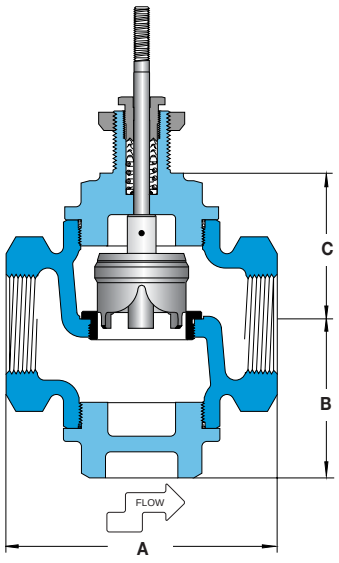
Valve Body Selection (for 910A, 910B & 910C Control Valves) STAINLESS STEEL

Single Seat • 1/2" – 2"

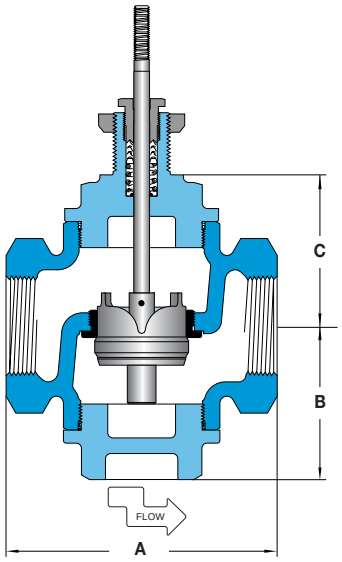
All dimensions are nominal. Dimensions in [ ] are in millimeters

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

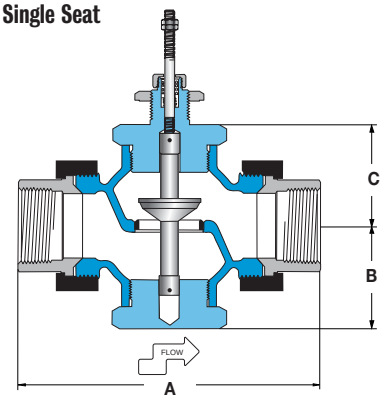
BRONZE

Valve Body Selection
(for 910TB Control Valve)

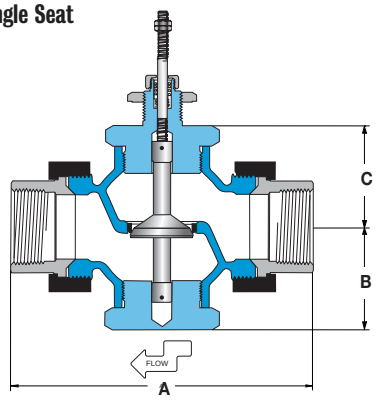
All dimensions are nominal. Dimensions in [ ] are in millimeters

Single or Double Seat • 1/2" – 2"

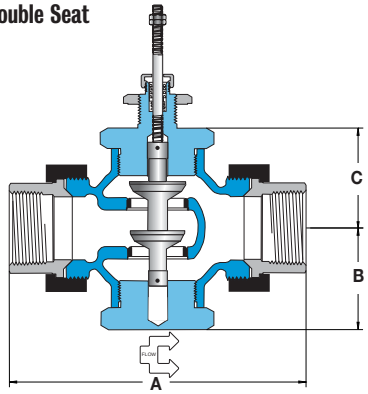
Stem In-to-Close (normally open)
Single Seat



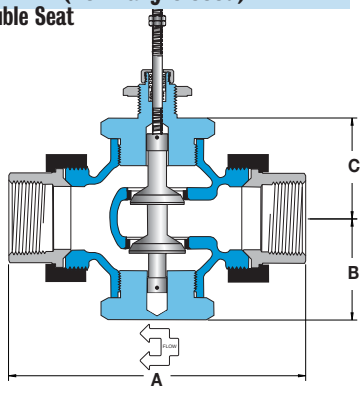
Stem In-to-Open (normally closed)
Single Seat



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		Number of Seats	C_v	Maximum Close-Off Pressure (psid) Actuator 910TB	Dimensions			Approximate Shipping Wt.
ITC Normally Open	ITO Normally Closed	Connection (NPT)	Nominal Port				A	B	C	
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)

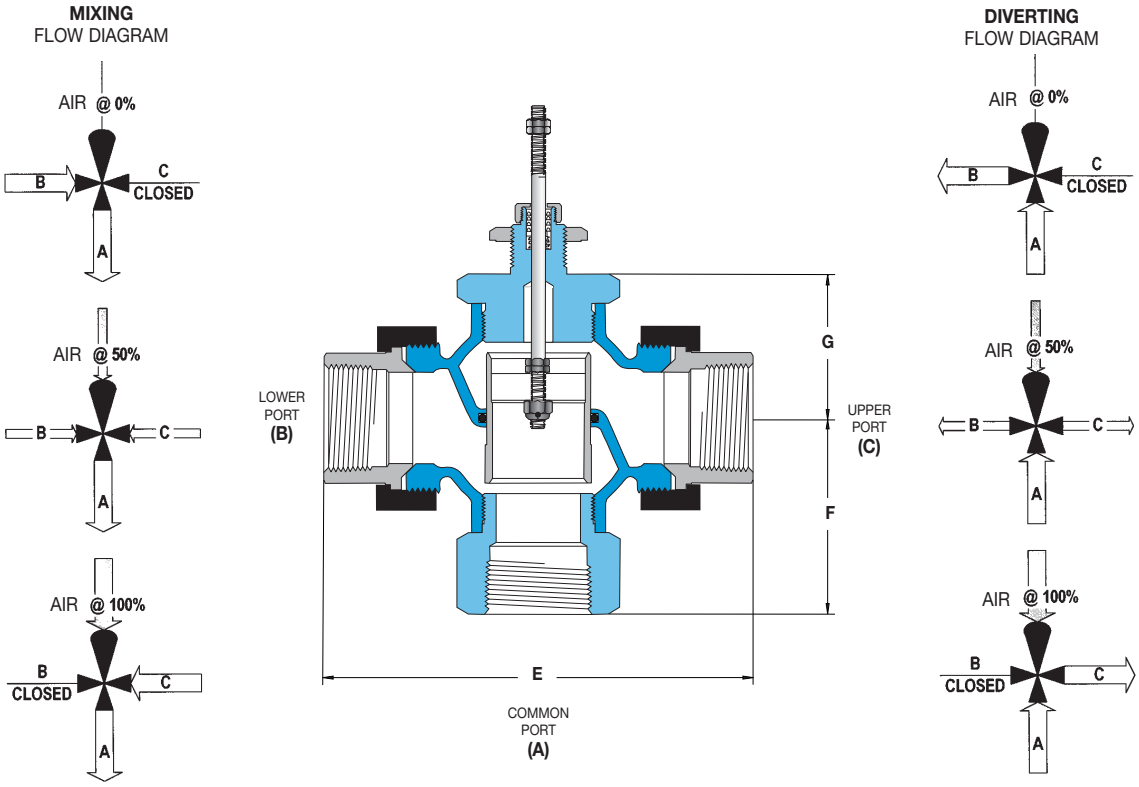
BRONZE

3-WAY • 1/2" – 2"

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
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

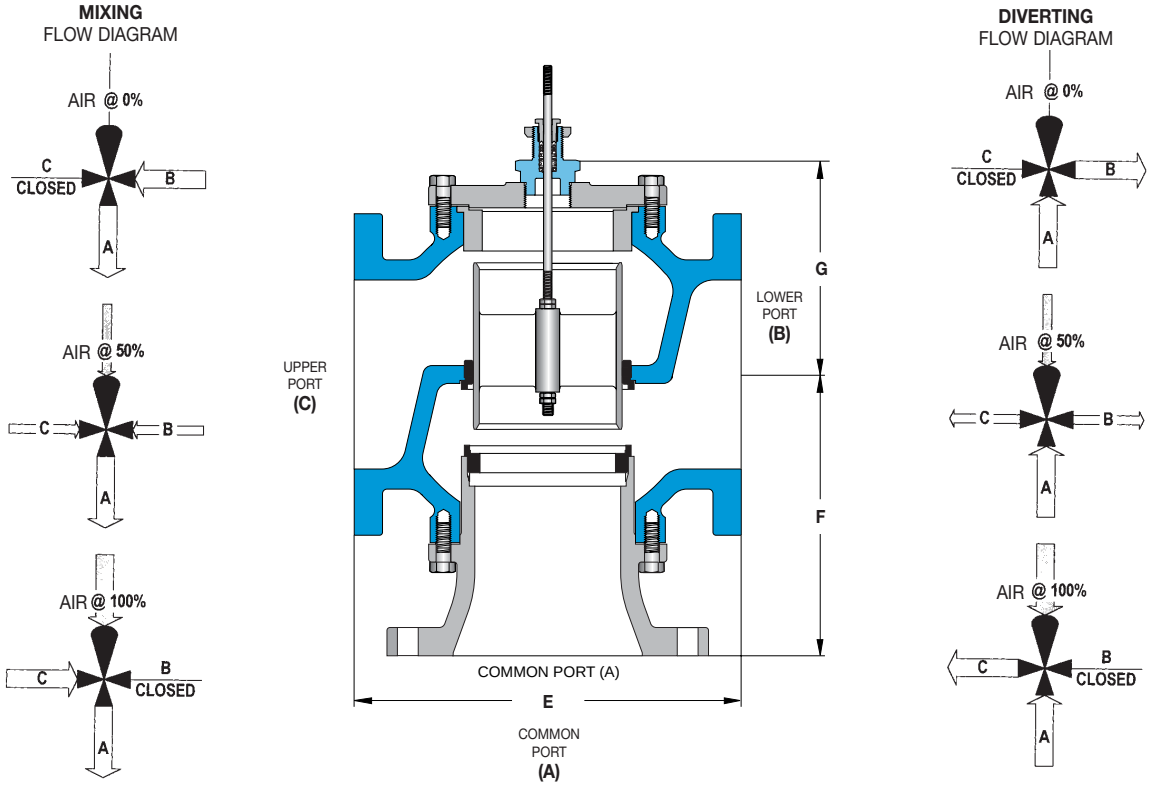
CAST IRON

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

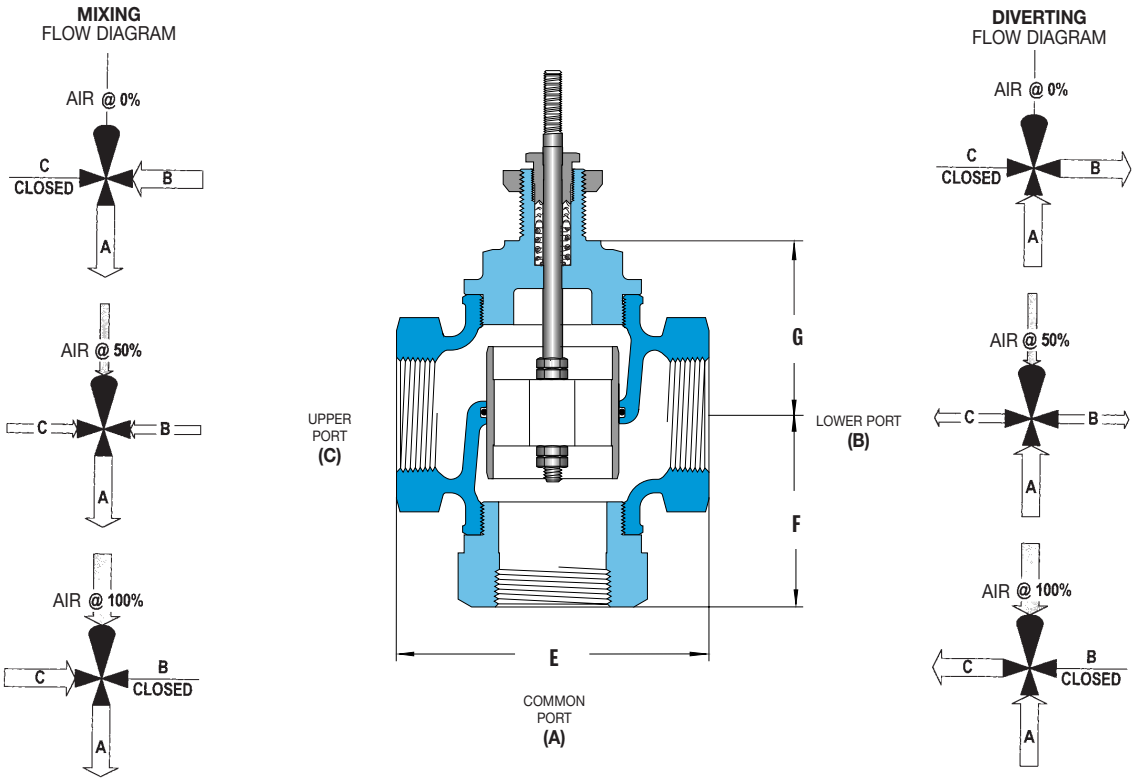
Valve Body Selection
(for 910TB Control Valve)
3-WAY • 1/2" – 2"

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]

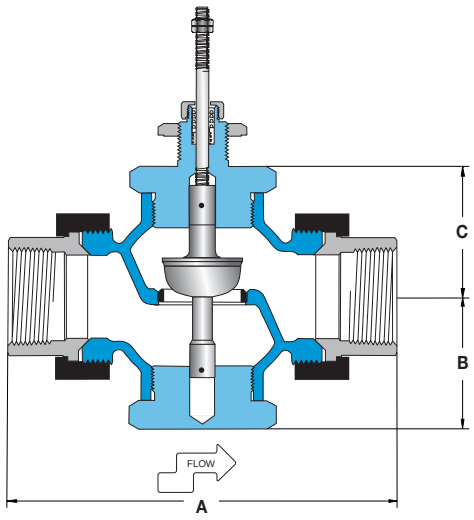
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

BRONZE

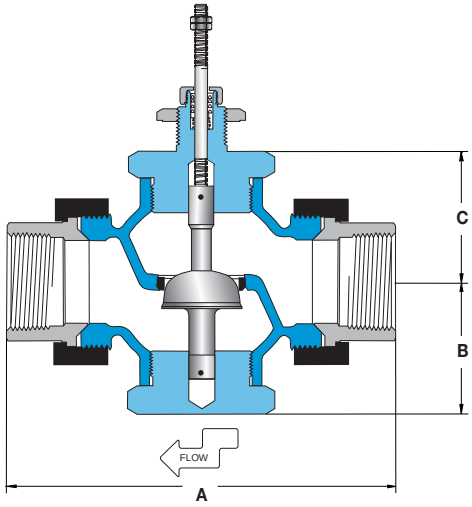
Valve Body Selection
(for 910EPA & 910EPC Control Valve)
Single Seat • 1/2" – 2"

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)

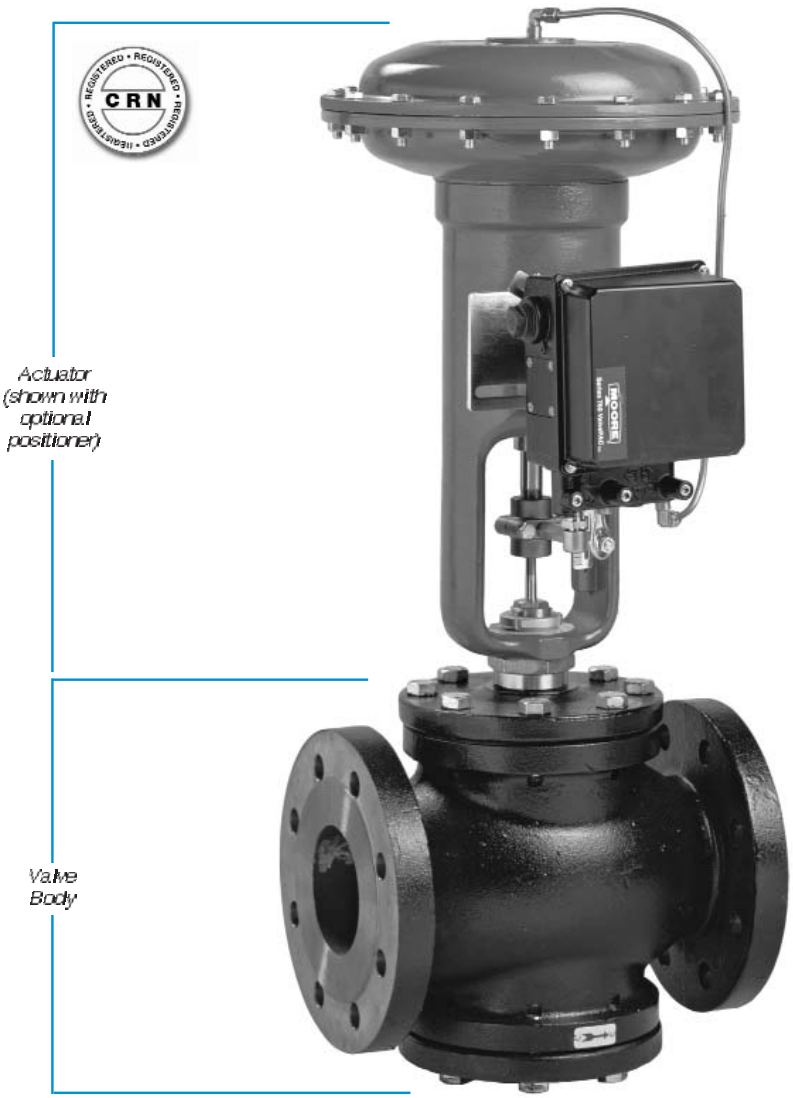
Valve Body Selection

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

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

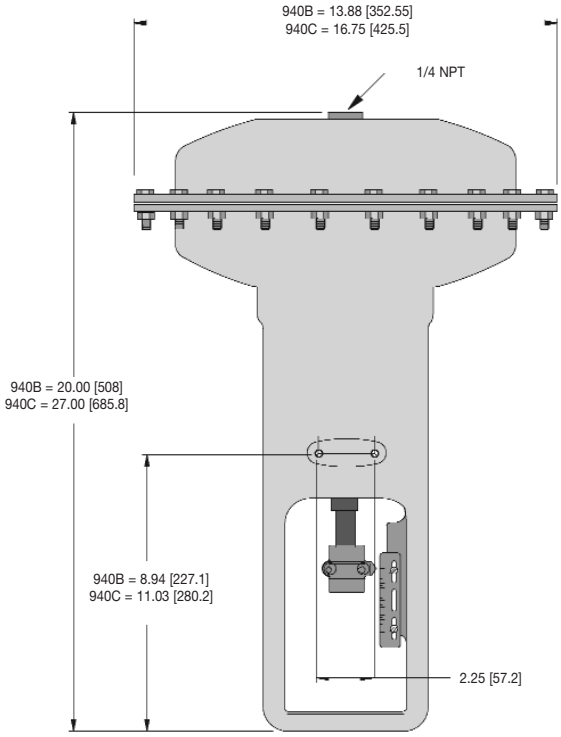
Input Signal
3-15 psi

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]

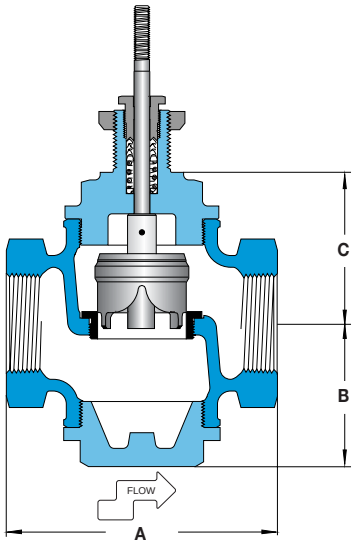
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

BRONZE

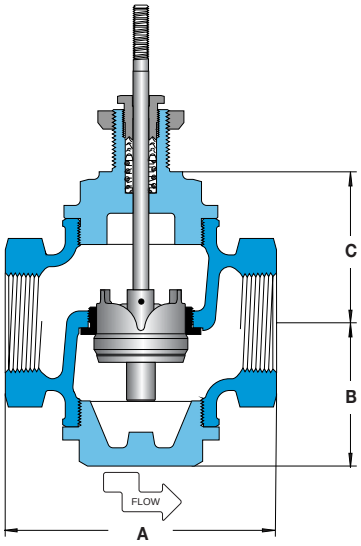
Single Seat • 1/2" – 2"

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

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]

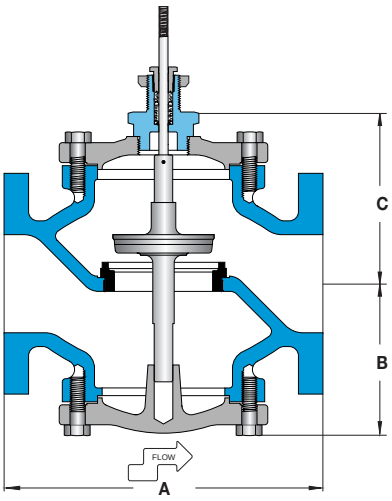
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

CAST IRON

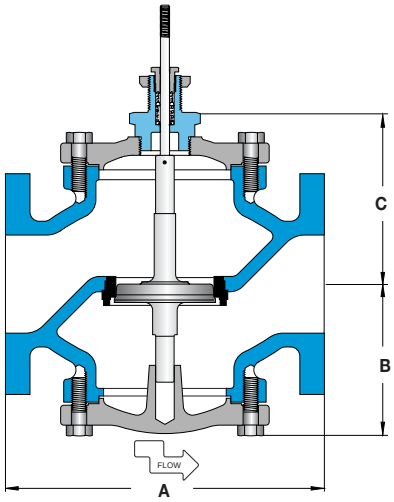
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)
Single Seat • 2½" – 8"

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)

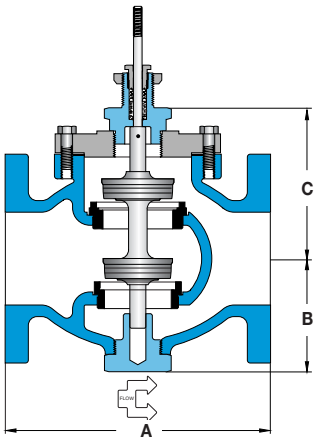
CAST IRON

Double Seat • 1½" – 8"

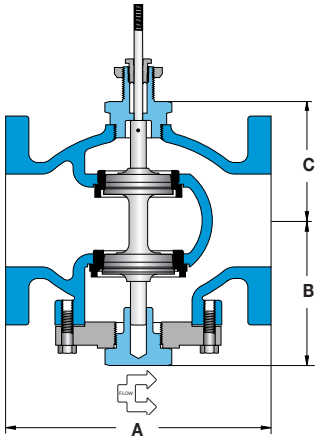
All dimensions are nominal. Dimensions in [ ] are in millimeters.

CONTROL VALVES

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		
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	Approximate 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		
Class 125	Class 250	Size	C_v	940B	940B w/Positioner	Approximate 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

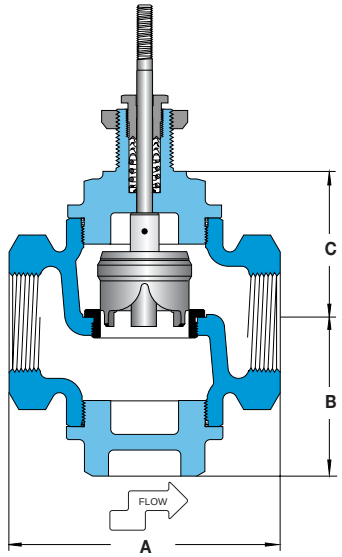
STAINLESS STEEL

Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

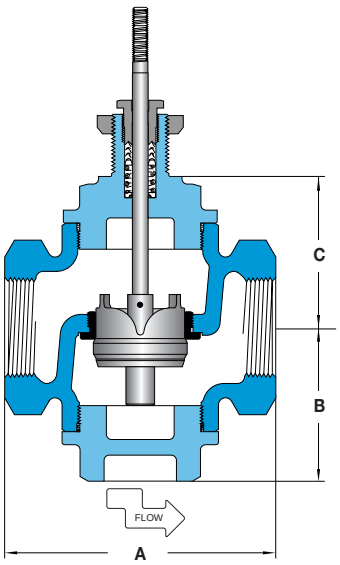
Single Seat • 1/2" – 2"

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

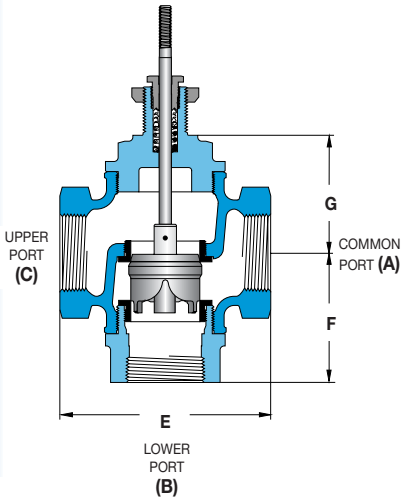
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)

BRONZE

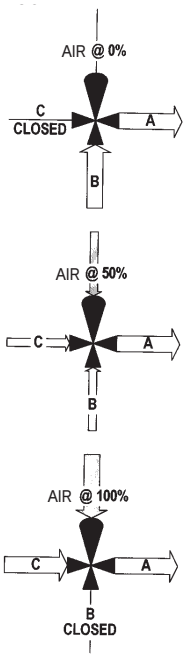
3-WAY • 1/2" – 2"

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

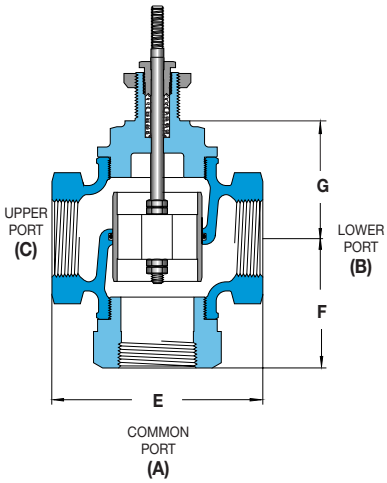
Mixing



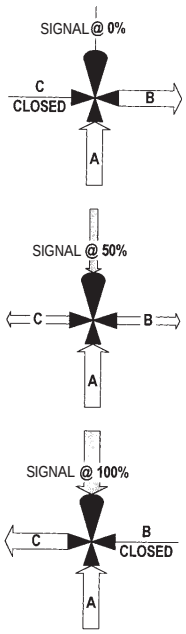
MIXING FLOW DIAGRAM



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			Actuator		Dimensions			Approximate
	Connection (NPT)	Nominal Port	C_v	940B	940B w/Positioner	E	F	G	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			Actuator		Dimensions			Approximate
	Connection (NPT)	Nominal Port	C_v	940B	940B w/Positioner	E	F	G	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)

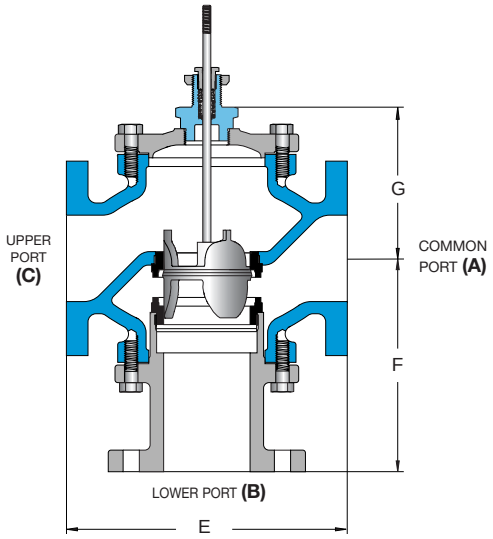
CAST IRON

3-WAY • 2½" – 8"

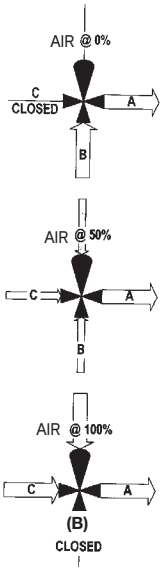
All dimensions are nominal. Dimensions in [ ] are in millimeters.

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.*

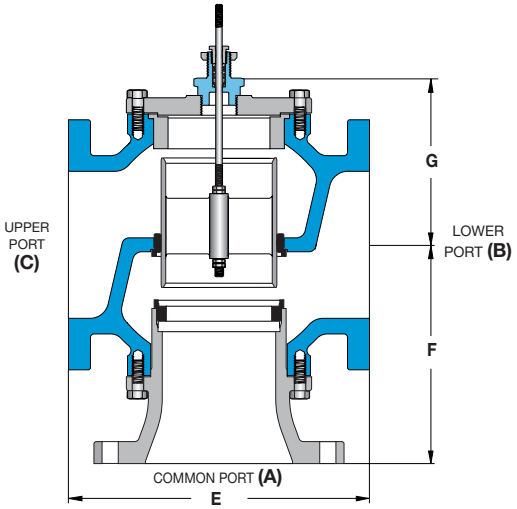
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

CAST IRON

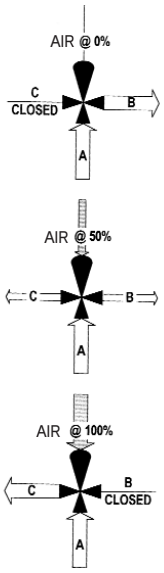
Valve Body Selection
(for 940 Series Heavy Duty Control Valve)
3-WAY • 2½" – 8"

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

Diverting



DIVERTING
FLOW DIAGRAM



Diverting	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]
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

CONTROL VALVES

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**

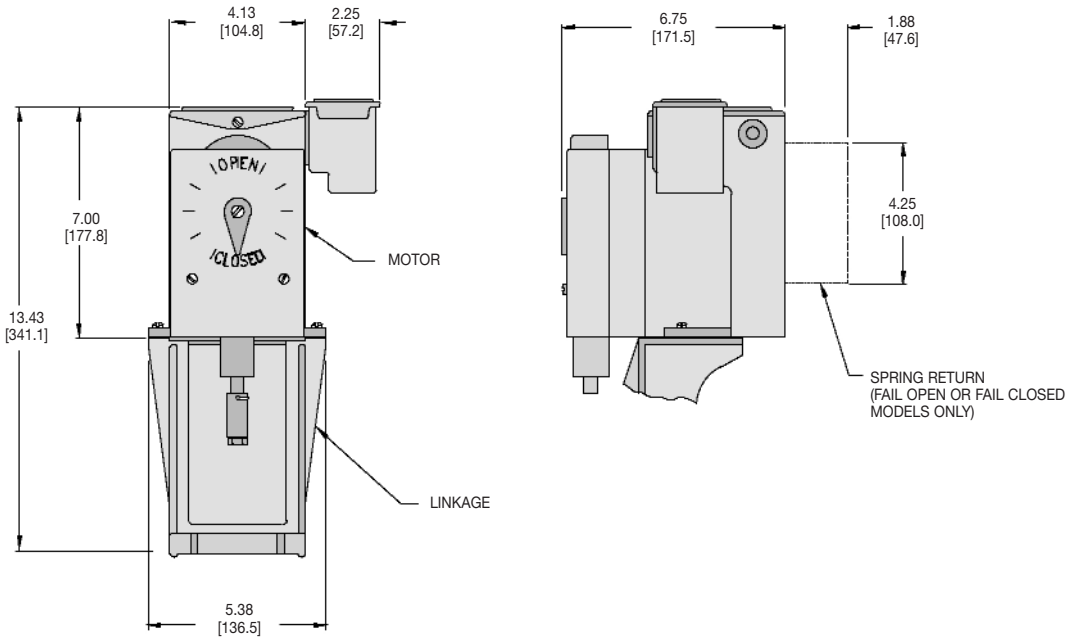
Model	Linkage Size	Valve Body Number	Power Supply	Fail Position
940E	30 52	Refer to pages 252-260	**1** 120 VAC, 60 Hz, 0.5 A **2** 24 VAC, 60 Hz, 2.5 A	**6** Stem-Out (open) **7** Stem-In (closed) **8** Last Position

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.*

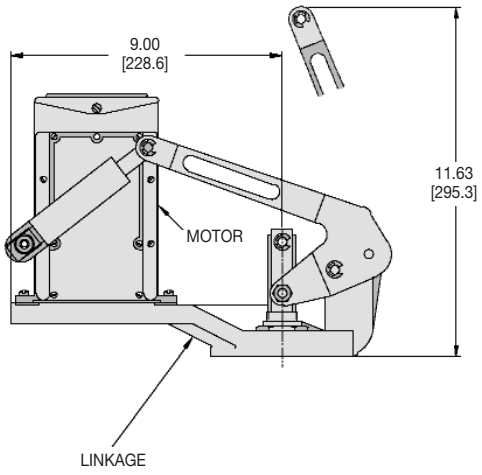
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

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

Linkage Size 30



Linkage Size 52



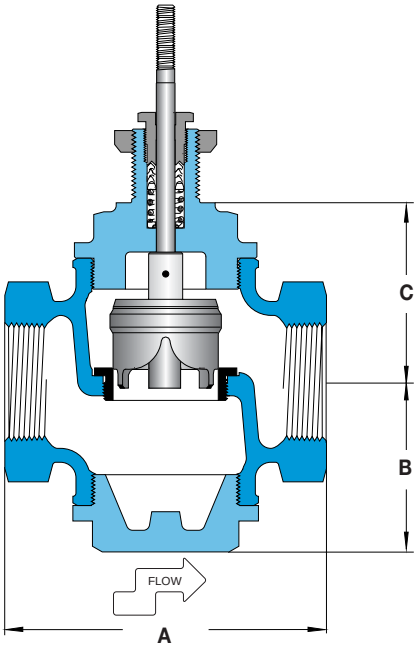
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

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

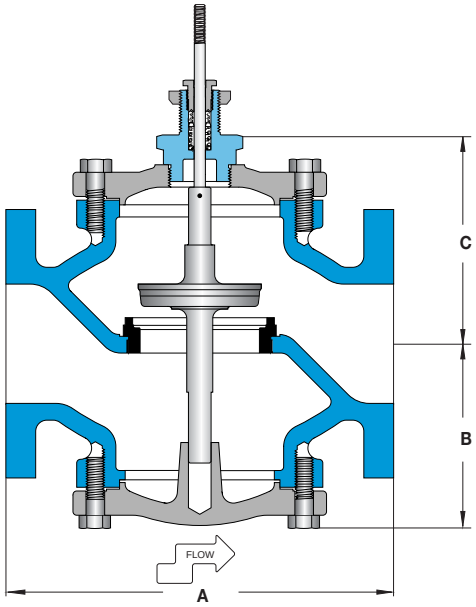
CAST IRON

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

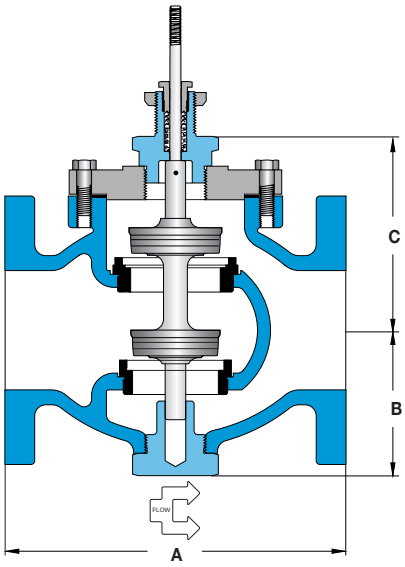
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

CAST IRON

Double Seat • 1½" – 8"

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

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						
Valve Body Number				Maximum Close-Off Pressure (psid)		
				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

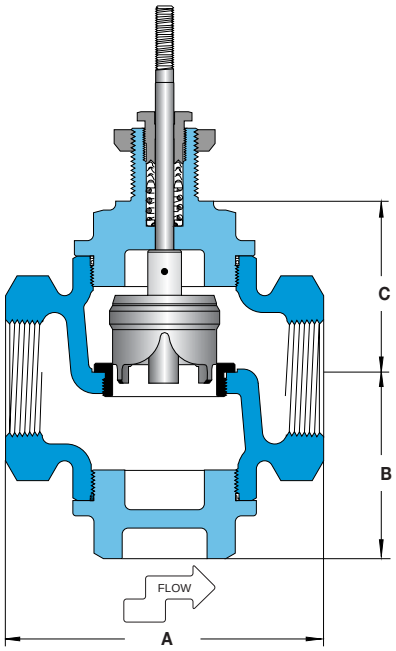
STAINLESS STEEL

Valve Body Selection (for 940E Series Electric Motor Control Valve)

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
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

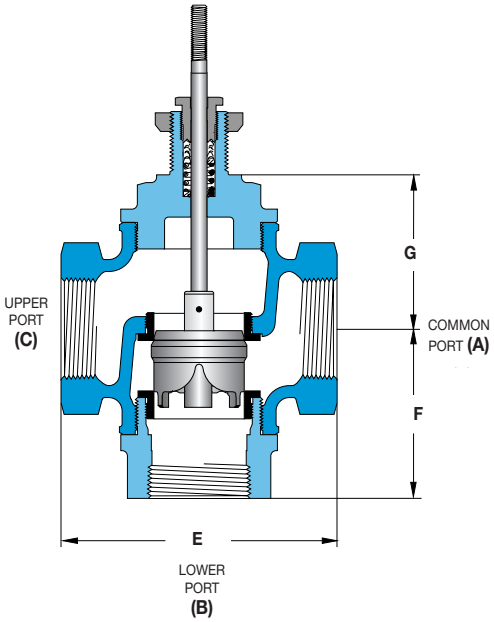
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

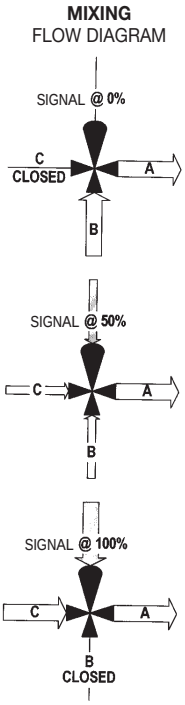
BRONZE

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

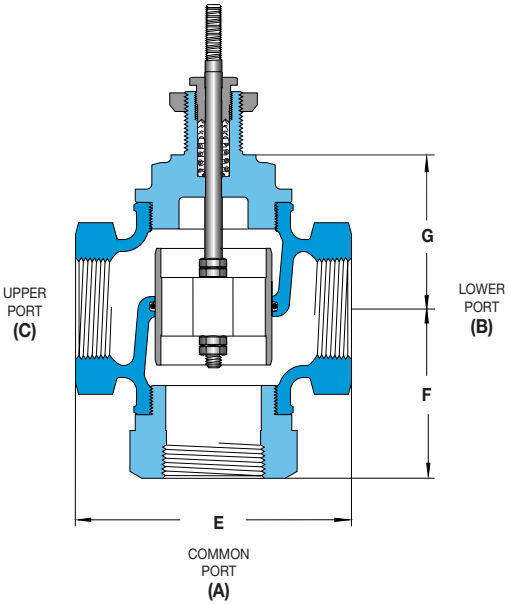
				Maximum Close-Off Pressure (psid)					
Valve Body Number	Size			Linkage		Dimensions			Approximate Shipping Wt.
	Connection (NPT)	Nominal Port	C_v	30	52	E	F	G	
N18	1/2	1/2"	6.3	215	x	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N25	3/4	3/4"	8.2	215	x	4.9 [124]	2.8 [71]	2.9 [74]	9.0 lbs [4.10 kg]
N34	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

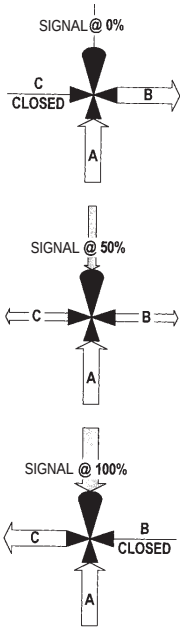
BRONZE

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]

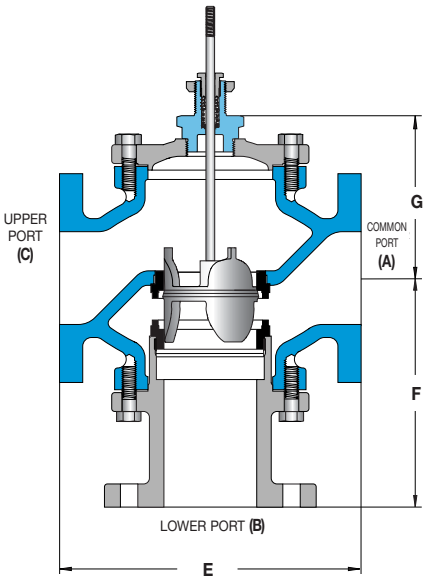
Valve Body Selection
(for 940E Series Electric Motor Control Valve)

CAST IRON

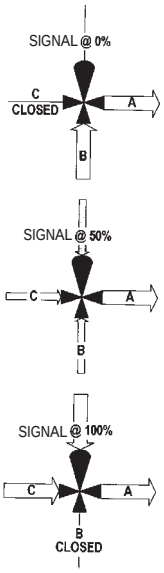
3-WAY • 2½" – 6"

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.*

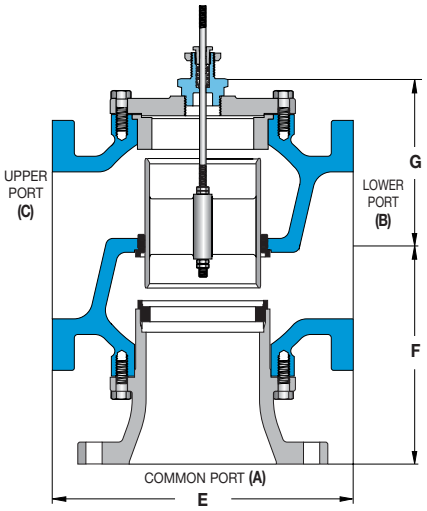
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

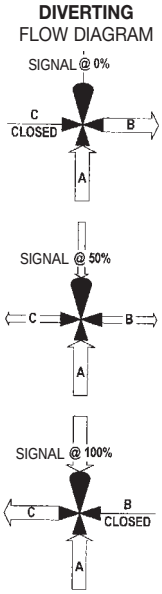
CAST IRON

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.*

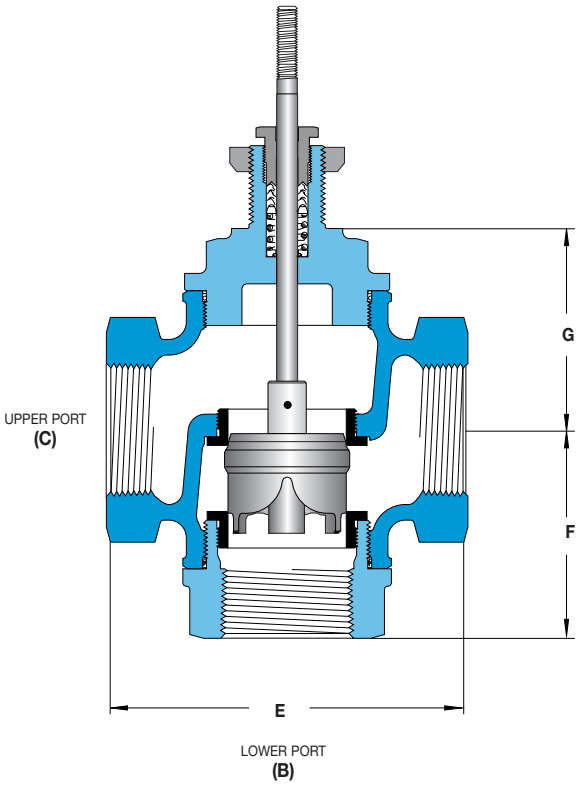
12950 W. Eight Mile Road • Oak Park, MI 48237-3288 • TEL:248/399-8000 • FAX: 248/399-7246 • www.TRERICE.com

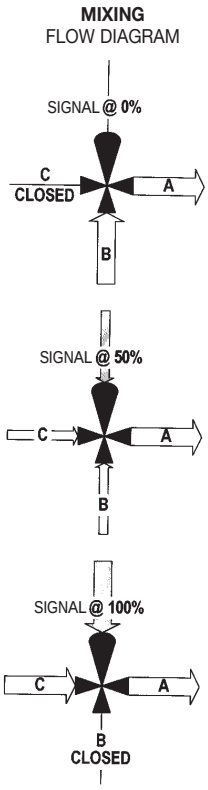
Valve Body Selection
(for 940E Series Electric Motor Control Valve)
3-WAY • 1/2" – 2"

STAINLESS STEEL

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

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