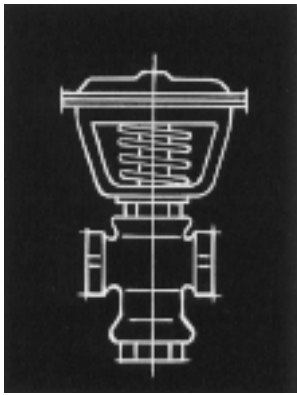




# PROCESS CONTROL VALVES

For Steam, Hot and Cold Liquids  
-40° to 450°F up to 500 psi





The Diaphragm Operated Valves on the following pages are designed for directing, diverting or mixing liquids or gases. They provide a pressure range up to 500 psi (34 bar) and are designed to handle temperatures ranging from -40°F to 450°F (-40° to 232°C). Saturated Steam Pressure Ratings: The maximum operating pressures listed for individual valves in this section may be used as the recommended Saturated Steam Pressure Rating. Line mounted 2- and 3-way, normally-open and normally-closed valves are available. This series of valves is designed primarily for use with steam and hot or cold water, but may be used to control other fluid media that are compatible with the materials used in their construction. They are widely used with pressurized gases or on vacuum service despite the slight leakage that may occur when poppet-type valves with metal-to-metal seats are used in these services. When leakage is a problem, the use of the soft seated 400 psi (28 bar) valve is recommended. Many of both styles of valves are used on freon, air, nitrogen, carbon dioxide and other non-explosive services. The cylinder-operated manifold-mounted valves are designed for areas where multiple valve manifolding would simplify valve installations.

## Applications

Diaphragm-operated valves provide a simple and effective means of achieving automatic control of fluid media in manufacturing processes. These valves are used extensively to control steam, hot and cold water and vacuum on automatic presses used to cure tires, V-belts and other rubber and plastic products. They are used to control steam in applications where constant temperature must be maintained to keep materials fluid for processing, molding or curing.

In manufacturing, these valves are being used to control steam, hot and cold water and vacuum in foam cup manufacturing, tennis ball and golf ball manufacturing and for filling different size soap containers. They are used to control hot wax in candle making, for drawing a vacuum in glass making and as unloading valves on air compressors. They are used for temperature control in optical lens manufacturing and in extruder applications while applying plastic coatings on wire.

In the foundry industry, these valves are used on pattern spray-off equipment and to blend or add soaps and oils used in coremaking. They are being used in coolant systems for large boring and drilling machines, in pressed board and particleboard manufacturing for glue control to mixing tanks. They may also be found on sterilizer equipment in hospitals and dairies.

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<u>Description</u>	<u>Valve Port Size</u>	<u>Pg #</u>
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3-Way .....	1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 3 .....	8
2WNC (Throttling Orifice) .....	1/2 .....	10
<b>400 PSI SOFT SEATED (28 bar)</b>		
2WNC, 2WNO, 3-Way .....	1/4, 3/8 .....	14
2WNC, 2WNO .....	1/2, 3/4, 1, 1-1/4, 1-1/2 .....	16
3-Way .....	1/2, 3/4, 1, 1-1/4, 1-1/2, 2 .....	18
<b>500 PSI SOFT SEATED (34 bar)</b> .....	1/4 .....	12
<b>500 PSI HARD SEATED (34 bar)</b>		
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2WNC, 2WNO (Offset Ported) .....	1/2, 3/4, 1, 1-1/4, 1-1/2 .....	22
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C244-4002 .....	6	C264-2013 .....	26	C264-6015 .....	30	C284-20042 .....	24	C294-2006 .....	22
C244-4003 .....	8	C264-20131 .....	18	C264-6016 .....	30	C284-2005 .....	24	C294-2007 .....	22
C244-5001 .....	6	C264-2014 .....	26	C264-6017 .....	30	C284-20051 .....	16	C294-2008 .....	22
C244-5002 .....	6	C264-20141 .....	18	C264-6018 .....	30	C284-2006 .....	24	C294-4001 .....	22
C244-5003 .....	8	C264-2015 .....	26	C264-6019 .....	30	C284-20061 .....	16	C294-4002 .....	22
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**Quality from the Start**

Sinclair Collins is an ISO 9001 registered facility. Bronze and stainless steel components are machined in our own facility. All components must meet our high performance specifications and quality control standards.

After assembly, each valve is fully tested at rated pressure prior to shipment and all material and workmanship are covered by a two-year warranty.

**WARNING**

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

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

**Offer of Sale**

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the full "Offer of Sale".

## Valve Design

Sinclair Collins valves are designed and quality-built to provide long, trouble-free performance. They combine economical automatic operation with precision control and maximum dependability.

**THE SERIES C264, C274, C284, C294 VALVES.** These diaphragm-operated valves are produced in two basic types, hard-seat and soft-seat. The 500 psi (34 bar) hard-seat has a metal-to-metal seat and can be used in a majority of applications. In lower pressure applications where a hard-seated valve is not acceptable, the 400 psi (28 bar) soft-seated-valve is recommended. This valve utilizes stainless steel-filled PTFE rings in the stems to provide bubbletight seal. Both of these valve types employ an exclusive swivel-stem design that reduces side load on the packer to assure smoother, faster operation and longer packer life. The chevron-packer is spring loaded and self-adjusting to reduce maintenance. The heat-treated stainless steel seat rings used in the hard-seat valves are skirted to provide minimum fluid by-pass and minimum shock during valve shift. In all 3-way valves, upper and lower seat rings are identical and interchangeable to simplify inventory and maintenance. Standard bodies are Navy-M bronze with stainless steel trim. Stainless steel/filler material spiral-wound gaskets are used. The valves are equipped with large or small size diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with recommended actuated air pressure of 40 psi (2.8 bar). (If lesser line pressures are handled, lesser actuating air pressure can be used). The small actuator provides some savings in space but its use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Chart included on the individual catalog sheets. The large and small diaphragm actuators are interchangeable within a given size. The diaphragm assembly may be replaced with the valve under pressure but de-energized.

**THE SERIES C244 VALVES.** These diaphragm-operated 200 psi (14 bar) valves employ a single piece stem, as well as a new fixed height stem seal. The seal design has an integral spring which compensates for packer wear. Because only one seal is used, the cavity for the seal in the body is shallow and the bearing length in the body is correspondingly longer. The stainless steel upper seat cage, in addition to being drop-in, also serves as a diverter to help direct the flow through the valve. Standard bodies are cast bronze and the trim is of stainless steel. A spiral wound gasket consisting of stainless steel and filler material is also utilized to seal the upper seat. These valves are equipped with a single size diaphragm actuator per basic size. The actuator permits operation of the valve at a maximum rated pressure at any port with recommended actuating air pressure of 35 psi (2.4 bar). (If lesser line pressures are handled, lesser actuating air pressure can be used). The two piece top construction allows the diaphragm assembly to be changed in areas where head space is at a premium.

**THE SERIES C304 VALVES.** These 500 psi (34 bar) manifold mounted valves combine many of the features from the 500 psi (34 bar) hard-seated line-mounted valves with the numerous advantages of manifold mounting. These valves have spring-loaded stem packers, self-aligning stems, skirted stainless-steel seats, and bronze bodies. A cylinder operator is used for space savings. Manifold mounting simplifies original installation, reduces labor costs and saves energy by allowing piping to be insulated. The design allows for multiple valve manifolding as well as single-station installations. For in-service maintenance, the manifold valve is simply unbolted, removed and replaced in minutes.

### LUBRICATION

1. Coat Packing Rings and Packer Bore with Dow Corning III Compound.

### DIAPHRAGM REPLACEMENT

- Clean old rubber from surfaces.
- Insert all screws in cover and through diaphragm, do not elongate or re-punch holes in diaphragm.
- Assemble ring and install nuts loosely.
- Use valve piston to deform diaphragm against the cover and clamp in place.
- Tighten all nuts moderately.
- For more detailed instructions, see Bulletin H101.

"If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior."

Torque Requirements for 400 PSI & 500 PSI End Caps & Adapters			
		Torque	
Basic Valve Size	Thread	lb - ft	N - M
400 & 500	1-3/8 - 12	22±2	30±3
1/2"	1-3/4 - 12	95±5	129±7
1"	2-1/4 - 12	200±10	271±14
1½"	2-7/8 - 12	300±15	407±20

### HOW TO ORDER

Refer to the Model Selection Charts and recommended Piping Connection charts on the following pages to order valves suitable for your Cv and pipe size requirements. If a 3-way valve is desired for 2-way service, it is necessary to plug the unused port. Refer to the Piping Connection chart as a guide. Complete Parts Data Charts are included for your convenience in ordering parts.

## Valves for Steam and Hot & Cold Liquids



**500 psi  
3-Way Valve**



**500 psi  
Offset  
2-Way Valve**



**200 psi  
2-Way Valve**



**200 psi  
3-Way Valve**



**400 & 500 psi  
3-Way Valve**



**400 & 500 psi  
3-Way Manifold Valve**



**400 & 500 psi  
3-Way Valve**



**400 & 500 psi  
Inline  
2-Way Valve**

## 200 psi, 2-Way Valves

Tapped 1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 3"

Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top

### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases

**Pressure:** Maximum Operating Pressure: 200 psi (14 bar)

**Temperature Range:** -40° TO 388°F (-40° TO 198°C)

These valves are designed for low pressure service and where compactness is desired. The stem and disc are machined from a single piece of stainless steel. Seat rings are stainless steel and are of drop-in variety. The upper seat which is of cage design, also serves as a diverter to help direct the flow through the valve. The stem packing consists of a single ring of glass reinforced PTFE with an integrally confined spring to eliminate the need for manual adjustments of packing. Because only one seal is used, the cavity for the seal in the body is shallow and the stem bearing length is correspondingly longer. A spiral wound gasket consisting of stainless steel and filler material is utilized to seal the upper seat.

Yoke arms are cast on the bodies to make a sturdy compact unit.

The bodies are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. These valves are equipped with a single size diaphragm actuator in each basic size. The actuator permits operation of the valve at a maximum rated pressure at any port with recommended actuating air pressure of 35 psi (2.4 bar). (If lesser line pressures are handled, lesser actuating air pressure can be used). The diaphragm actuator includes a quality reinforced-elastomer sheet that is highly resistant to elevated temperatures. Sinclair Collins diaphragm assemblies may be replaced with the valve under pressure but de-energized. The two-piece construction allows the diaphragm assembly to be changed in areas where head space is at a premium.

For dimensional data, see page 38.

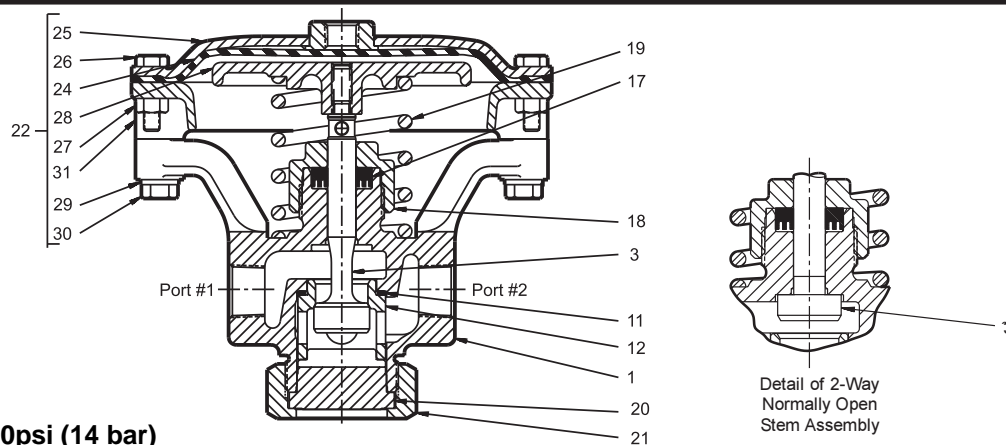
### 2-Way Normally Open

Basic Valve Size	Port Tap (NPTF)	Model Number	Pressure Rating		Cv	
					Port 1 to Port 2	Port 2 to Port 1
			psi	bar		
1/2"	1/2"	C244-2002	200	14	5.5	6.5
	3/4"	C244-3002	200	14	6.9	7.4
1"	1"	C244-4002	200	14	14.7	14.7
	1 1/4"	C244-5002	200	14	15.5	16.3
1 1/2"	1 1/2"	C244-6002	200	14	21.0	25.5
2"	2"	C244-7002	200	14	47.0	53.0
	3"	C244-9002	200	14	58.0	63.0

### 2-Way Normally Closed

Basic Valve Size	Port Tap (NPTF)	Model Number	Pressure Rating		Cv	
					Port 1 to Port 2	Port 2 to Port 1
			psi	bar		
1/2"	1/2"	C244-2001	200	14	6.4	6.0
	3/4"	C244-3001	200	14	7.4	7.1
1"	1"	C244-4001	200	14	14.5	13.0
	1 1/4"	C244-5001	200	14	15.5	15.0
1 1/2"	1 1/2"	C244-6001	200	14	26.0	23.8
2"	2"	C244-7001	200	14	51.0	48.5
	3"	C244-9001	200	14	66.0	58.0





**2-Way Normally Closed 200psi (14 bar)**

Basic Size	1/2"		1"		1½"	2"		Description
Port Size	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1½" NPTF	2" NPTF	3" NPTF	
Model No.	C244-2001	C244-3001	C244-4001	C244-5001	C244-6001	C244-7001	C244-9001	
Item No.	Part Number							
1	C093-274	C093-268	C093-269	C093-270	C093-271	C093-272	C093-273	Body
3	D093-216	D093-216	D093-217	D093-217	D093-218	D093-219	D093-219	Stem
•11	C383-070	C383-070	C383-071	C383-071	C383-072	C383-073	C383-073	Gasket
12	C963-151	C963-151	C963-152	C963-152	C963-153	C963-154	C963-154	Seat Ring
•17	H272-02	H272-02	H272-03	H272-03	H145-108	H145-110	H145-110	Seal
18	C853-101	C853-101	C853-102	C853-102	C853-103	C853-104	C853-104	Gland Nut
19	D293-140	D293-140	D293-141	D293-141	D293-142	D293-143	D293-143	Diaphragm Spring
20	D123-048	D123-048	D123-049	D123-049	D123-050	D123-051	D123-051	Stem Stop
21	C663-010	C663-010	C663-024	C663-024	C663-037	C663-057	C663-057	Union Nut
22	C392-053	C392-053	C392-056	C392-056	C392-055	C392-067	C392-067	Diaphragm Assembly
•24	C333-049	C333-049	C333-050	C333-050	C333-051	C333-066	C333-066	Diaphragm
25	C293-018	C293-018	C293-091	C293-091	C293-030	C293-044	C293-044	Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-12	H096-12	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-145	C783-145	C783-146	C783-146	C783-147	C783-148	C783-148	Piston
29	H175-16	H175-16	H175-21	H175-21	H175-21	H175-27	H175-27	Lock Washer
30	H096-32	H096-32	H266-39	H266-39	H096-52	H097-09	H097-09	Cap Screw
31	C893-050	C893-050	C893-048	C893-048	C893-022	C893-039	C893-039	Ring

**2-Way Normally Open 200 PSI (14 bar)**

Basic Size	½"		1"		1½"	2"		
Port Size	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1½" NPTF	2" NPTF	3" NPTF	
Model No.	C244-2002	C244-3002	C244-4002	C244-5002	C244-6002	C244-7002	C244-9002	
Item No.	Part Number							
1	C093-274	C093-268	C093-269	C093-270	C093-271	C093-272	C093-273	Body
3	D093-220	D093-220	D093-221	D093-221	D093-222	D093-223	D093-223	Stem
•11	C383-070	C383-070	C383-071	C383-071	C383-072	C383-073	C383-073	Gasket
12	C963-151	C963-151	C963-152	C963-152	C963-153	C963-154	C963-154	Seat Ring
•17	H272-02	H272-02	H272-03	H272-03	H145-108	H145-110	H145-110	Seal
18	C853-101	C853-101	C853-102	C853-102	C853-103	C853-104	C853-104	Gland Nut
19	D293-140	D293-140	D293-141	D293-141	D293-142	D293-143	D293-143	Diaphragm Spring
20	D123-048	D123-048	D123-049	D123-049	D123-050	D123-051	D123-051	Stem Stop
21	C663-010	C663-010	C663-024	C663-024	C663-037	C663-057	C663-057	Union Nut
22	C392-053	C392-053	C392-056	C392-056	C392-055	C392-067	C392-067	Diaphragm Assembly
•24	C333-049	C333-049	C333-050	C333-050	C333-051	C333-066	C333-066	Diaphragm
25	C293-018	C293-018	C293-091	C293-091	C293-030	C293-044	C293-044	Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-12	H096-12	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-145	C783-145	C783-146	C783-146	C783-147	C783-148	C783-148	Piston
29	H175-16	H175-16	H175-21	H175-21	H175-21	H175-27	H175-27	Lock Washer
30	H096-32	H096-32	H266-39	H266-39	H096-52	H097-09	H097-09	Cap Screw
31	C893-050	C893-050	C893-048	C893-048	C893-022	C893-039	C893-039	Ring

• SPARE PARTS

## 200 psi, 3-Way Valves

### Tapped 1/2", 3/4", 1", 1-1/4", 1-1/2", 2", 3"

#### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases

**Pressure:** Maximum Operating Pressure: 200 psi (14 bar)

**Temperature Range:** -40° TO 388°F (-40° TO 198°C)

Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top



These valves are designed for low pressure service and where compactness is desired. The stem and disc are machined from a single piece of stainless steel. Seat rings are stainless steel and are of drop-in variety. The upper seat which is of cage design, also serves as a diverter to help direct the flow through the valve.

The stem packing consists of a single ring of glass reinforced PTFE with an integrally confined spring to eliminate the need for manual adjustments of packing. Because only one seal is used, the cavity for the seal in the body is shallow and the stem bearing length is correspondingly longer. A spiral wound gasket consisting of stainless steel and filler material is utilized to seal the upper seat.

Yoke arms are cast on the bodies to make a sturdy compact unit. The bodies are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. These valves are equipped with a single size diaphragm actuator in each basic size. The actuator permits operation of the valve at a maximum rated pressure at any port with recommended actuating air pressure of 35 psi (2.4 bar). (If lesser line pressures are handled, lesser actuating air pressure can be used). The diaphragm actuator includes a quality reinforced-elastomer sheet that is highly resistant to elevated temperatures.

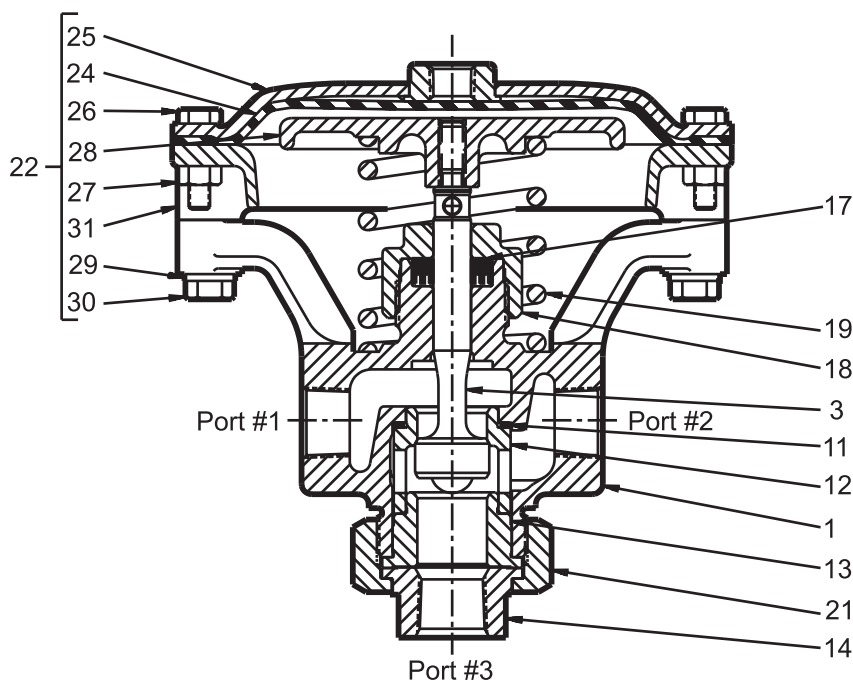
Sinclair Collins diaphragm assemblies may be replaced with the valve under pressure but de-energized. The two-piece construction allows the diaphragm assembly to be changed in areas where head space is at a premium.

For dimensional data, see page 38.

Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Closed Inline Piped	Inlet	Cylinder	Plugged
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet

### 3-Way Model Selection Chart

Basic Valve Size	Port Tap (NPTF)	Model Number	Pressure Rating		Cv			
					Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
			psi	bar				
1/2"	1/2"	C244-2003	200	14	6.2	5.9	8.0	8.1
	3/4"	C244-3003	200	14	7.6	7.3	9.3	9.5
1"	1"	C244-4003	200	14	14.2	13.2	21.2	22.0
	1 1/4"	C244-5003	200	14	18.7	18.3	26.5	28.0
1 1/2"	1 1/2"	C244-6003	200	14	27.0	23.3	30.5	33.0
2"	2"	C244-7003	200	14	51.5	49.5	71.0	67.0
	3"	C244-9003	200	14	63.0	58.0	74.0	90.0



**3-Way 200 psi (14 bar)**

Basic Size	1/2"		1"		1½"	2"		Description
Port Size	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1½" NPTF	2" NPTF	3" NPTF	
Model No.	C244-2003	C244-3003	C244-4003	C244-5003	C244-6003	C244-7003	C244-9003	
Item No.	Part Number							
1	C093-274	C093-268	C093-269	C093-270	C093-271	C093-272	C093-273	Body
3	D093-216	D093-216	D093-217	D093-217	D093-218	D093-219	D093-219	Stem
•11	C383-070	C383-070	C383-071	C383-071	C383-072	C383-073	C383-073	Gasket
12	C963-151	C963-151	C963-152	C963-152	C963-153	C963-154	C963-154	Seat Ring
13	C973-058	C973-058	C973-059	C973-059	C973-060	C973-061	C973-061	Lower Seat
14	C773-032	C773-004	C773-033	C773-016	C773-019	C773-034	C773-021	Pipe Union
•17	H272-02	H272-02	H272-03	H272-03	H145-108	H145-110	H145-110	Seal
18	C853-101	C853-101	C853-102	C853-102	C853-103	C853-104	C853-104	Gland Nut
19	D293-140	D293-140	D293-141	D293-141	D293-142	D293-143	D293-143	Diaphragm Spring
21	C663-010	C663-010	C663-024	C663-024	C663-037	C663-057	C663-057	Union Nut
22	C392-053	C392-053	C392-056	C392-056	C392-055	C392-067	C392-067	Diaphragm Assembly
•24	C333-049	C333-049	C333-050	C333-050	C333-051	C333-066	C333-066	Diaphragm
25	C293-018	C293-018	C293-091	C293-091	C293-030	C293-044	C293-044	Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-12	H096-12	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-145	C783-145	C783-146	C783-146	C783-147	C783-148	C783-148	Piston
29	H175-16	H175-16	H175-21	H175-21	H175-21	H175-27	H175-27	Lock Washer
30	H096-32	H096-32	H266-39	H266-39	H096-52	H097-09	H097-09	Cap Screw
31	C893-050	C893-050	C893-048	C893-048	C893-022	C893-039	C893-039	Ring

• **SPARE PARTS**

## 200 psi, 2-Way, Hard Seated with Throttling Orifice

### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases

**Pressure:** Maximum Operating Pressure: 200 psi (14 bar)

**Temperature Range:** -40° TO 388°F (-40° TO 198°C)

These valves are designed the same as the C244 Series valves. The seat ring is solid with a specially drilled orifice. They are widely used to purge water from the steam heating systems of automatic presses. The range of orifice sizes available for this valve permits selection of the exact size required to purge the system of water quickly without excessive loss of pressure. The diaphragm operator provides a simple and dependable means of automatically controlling the process.

These valves are designed for low pressure service and where compactness is desired. The stem and disc are machined from a single piece of stainless steel. Seat rings are stainless steel and are drop-in variety. The upper seat, which is of cage design, also serves as a diverter to help direct the flow through the valve.

The stem packing consists of a single ring of glass reinforced PTFE with an integrally confined spring to eliminate the need for manual adjustments of packing. Because only one seal is used, the cavity for the seal in the body is shallow and the stem bearing length is correspondingly longer. A spiral wound gasket consisting of stainless steel and filler material is utilized to seal the upper seat.

Yoke arms are cast on the bodies to make a sturdy compact unit. The bodies are of cast Navy-M bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance.

These valves are equipped with a single size diaphragm actuator in each basic size. The actuator permits operation of the valve at a maximum rated pressure at any port with recommended actuating air pressure of 35 psi (2.4bar).

This basic 1/2" valve is available with 1/8", 3/16", 1/4", 5/16" or 3/8" throttling orifice. If 1/2" orifice area is required, order valve Model No. C244-2001 on page 6.

2WNC Valves may be ported backwards with the media pressure piped to Port No. 2. This brings the pressure under the seat, removing the stem packing from continuous pressure.

The diaphragm actuator includes a quality reinforced-elastomer sheet that is highly resistant to elevated temperatures. The actuator may be replaced with the valve under pressure but de-energized.

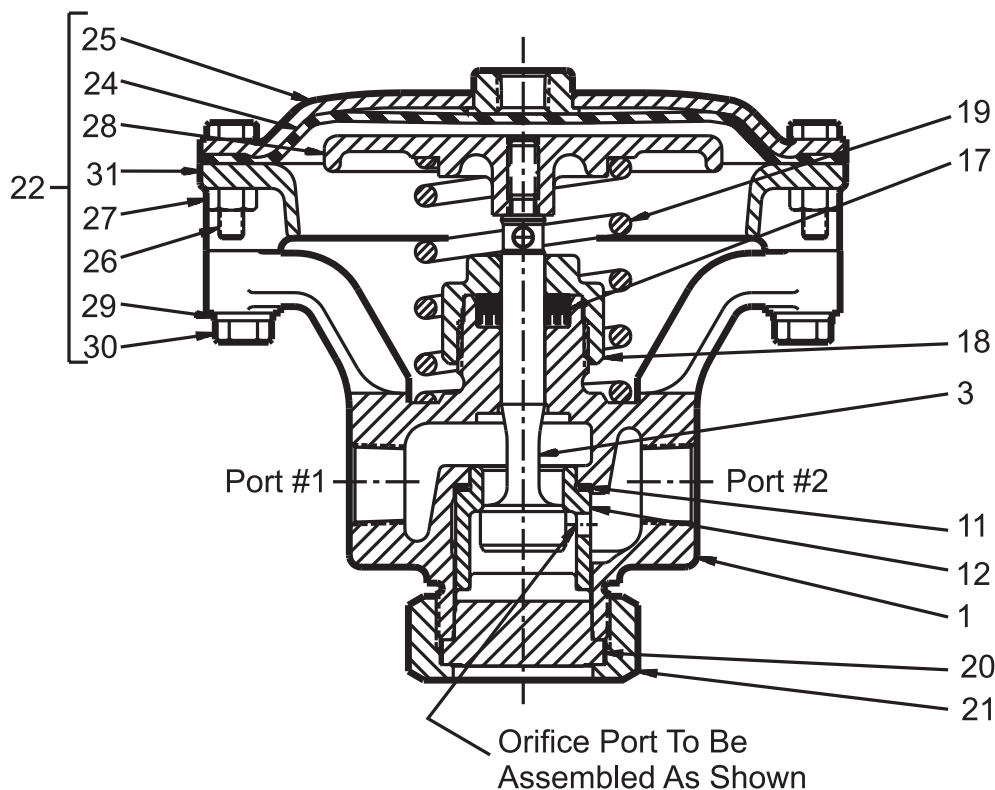
**For dimensional data, see page 38.**

Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top



### Model Selection Chart

Port Tap (NPTF)	Description	Orifice Size (Approx.)	Model Number	Pressure Rating		Cv Port 1 to Port 2
				psi	bar	
1/2"	2-Way Normally Closed	1/8	C374-2001	200	14	1.73
		3/16	C374-2002	200	14	2.00
		1/4	C374-2003	200	14	2.48
		5/16	C374-2004	200	14	3.05
		3/8	C374-2005	200	14	3.53



Orifice Size	1/8"	3/16"	1/4"	5/16"	3/8"	Description
Model No.	C374-2001	C374-2002	C374-2003	C374-2004	C374-2005	
Item No.	Part Number					
1	C093-274	C093-274	C093-274	C093-274	C093-274	Body
3	D093-216	D093-216	D093-216	D093-216	D093-216	Stem
•11	C383-070	C383-070	C383-070	C383-070	C383-070	Gasket
12	C963-155	C963-156	C963-157	C963-158	C963-159	Seat Ring
•17	H272-02	H272-02	H272-02	H272-02	H272-02	Seal
18	C853-101	C853-101	C853-101	C853-101	C853-101	Gland Nut
19	D293-140	D293-140	D293-140	D293-140	D293-140	Diaphragm Spring
20	D123-048	D123-048	D123-048	D123-048	D123-048	Stem Stop
21	C663-010	C663-010	C663-010	C663-010	C663-010	Union Nut
22	C392-053	C392-053	C392-053	C392-053	C392-053	Diaphragm Assem.
•24	C333-049	C333-049	C333-049	C333-049	C333-049	Diaphragm
25	C293-018	C293-018	C293-018	C293-018	C293-018	Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-145	C783-145	C783-145	C783-145	C783-145	Piston
29	H175-16	H175-16	H175-16	H175-16	H175-16	Lock Washer
30	H096-32	H096-32	H096-32	H096-32	H096-32	Cap Screw
31	C893-050	C893-050	C893-050	C893-050	C893-050	Ring

• SPARE PARTS

## Stainless Steel Body & Trim, 3-Way, Soft Seat Stem 1/4" Valve 500 psi (34 Bar) L204-0003

Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top



### SPECIFICATIONS

**Media:** For Steam • Hot and Cold Liquids • Air & Inert Gases

**Pressure:** Maximum Operating Pressure: 500 PSI (34 BAR)

**Temperature Range:** -40° to 400°F (-40° to 204°C)

1/4" Model L204-0003 valves are constructed with stainless steel bodies, integral seats, and stem with soft seats of stainless steel reinforced PTFE. The soft seat design provides leak free performance in the most demanding industrial applications. The stem packers are spring loaded for reduced maintenance and longer packer life. The stem is guided by an engineered proprietary polymer bearing pressed into the packer gland.

In addition to its use as a control valve for steam and hot or cold liquids, and inert gas, this valve is widely used as an instrument pilot valve to amplify pneumatic signals from process instruments. Such signals piped to the diaphragm actuator enable the valve to control large pilot operated valves or similar devices. The valve's compact design is ideally suited for instrumentation protection and for 2-Way and 3-Way applications. Stem travel from closed to fully open is extremely short and response is near instantaneous.

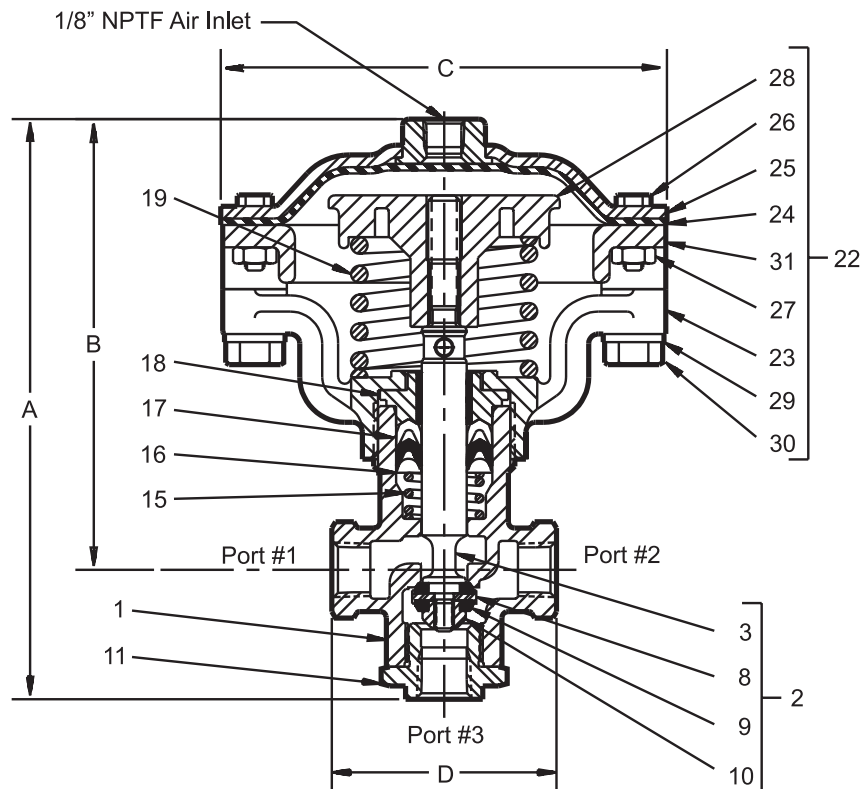
Sinclair Collins diaphragm assemblies may be replaced with valve under pressure but de-energized. The two-piece construction allows the diaphragm assembly to be changed in an area where headspace is at a premium.

To order valves with molded PTFE diaphragms, change the fourth digit in the Model Number to (6).

Example: L206-0003.

Basic Valve Size	Port Tap (NPTF)	Model Number	Pressure Rating		Cv			
			psi	bar	Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
1/4"	1/4"	L204-0003	500	34	1.4	1.6	2.1	2.4

Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Closed Inline Piped	Inlet	Cylinder	Plugged
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet



	Port Size		A	B	C	D
L204-0003	1/4" NPTF	inch	5.65	4.39	4.31	2.19
		mm	143.5	110.2	109.5	35.6

Item #	Part Number	Qty.	Description
1	C093-329	1	Body, 1/4"
2	C332-124	1	Stem Assembly
3	D093-279	1	Stem Only
•8	C353-011	1	Disc Holder
•9	C343-067	2	Seat Disc
•10	C553-027	1	Disc Nut
11	C973-064	1	Lower Seat
15	D293-131	1	Packer Spring
16	C713-017	1	Packer Spreader
•17	C242-024	1	Packing Kit
•18	C603-030	1	Packing Nut with Bearing
19	D293-130	1	Diaphragm Spring
22	C392-050	1	Diaphragm Assembly EPDM
	C392-070	1	Diaphragm Assembly PTFE
23	D283-184	1	Yoke
•24	C333-056	1	Diaphragm EPDM
	C333-067	1	Diaphragm PTFE
25	M163-005	1	Cover
26	H109-09	1	Cap Screw (Hex Head)
27	H064-16	1	Hex Nut
28	C783-141	1	Piston
29	H175-16	2	Lock Washer
30	H096-84	2	Cap Screw (Hex Head)
31	M423-002	1	Ring
	C242-074		Service Kit EPDM
	C242-079		Service Kit PTFE

• IN SERVICE KIT



## Soft Seated, 400 psi (28 bar) 2- & 3-Way Valves Tapped 1/4", 3/8"

### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases

**Pressure:** Maximum Operating Pressure: 400 psi (28 bar)

**Temperature Range:** -40° TO 400°F (-40° TO 204°C)

This basic 1/4", soft seated valve is available in 2- and 3-Way types. These valves were designed for applications where a bubble-tight seal is required. This is done through the utilization of stainless steel reinforced PTFE rings on the stem.

The body, adapter and yoke are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. The stem packer is spring loaded and self-adjusting for reduced maintenance and longer packer life. The stem is guided by an engineered proprietary polymer bearing pressed into the packer gland. Spiral wound gaskets consisting of stainless steel and filler material are utilized to seal the seats and adapter.

This valve is equipped with a single size diaphragm actuator. The actuator permits operation of the valve at the ratings shown in the Model Selection Chart. Two-piece construction is standard on this valve which allows the diaphragm assembly to be changed in areas where headspace is at a premium. The diaphragm assembly may be replaced with the valve under pressure but de-energized.

To order valves with Molded PTFE diaphragms, change the fourth digit in the Model Number to (6). Example: C266-0091

**For dimensional data, see page 39.**

Use 35 to 40 psi  
(2.4 - 2.8 bar)  
Air Pressure on Top



Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Closed Inline Piped	Inlet	Cylinder	Plugged
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet

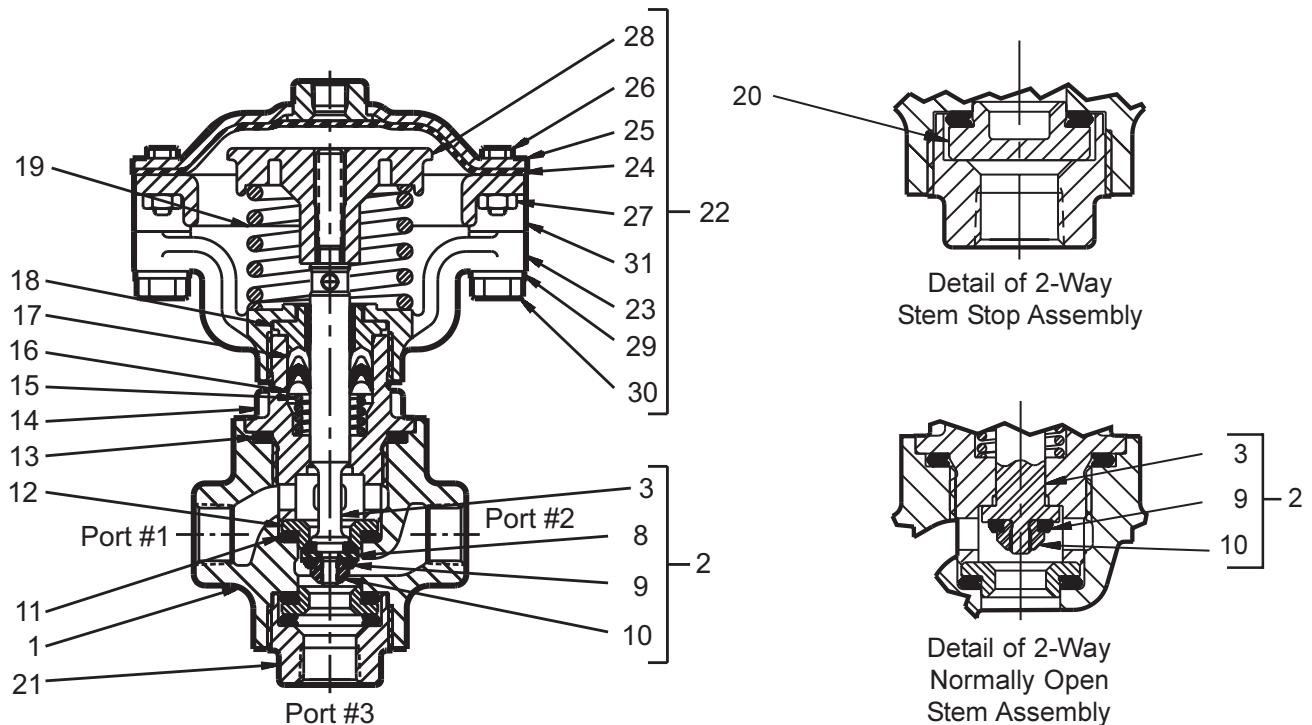
### Model Selection Chart

Basic Valve Size	Port Tap (NPTF)	Description	Model Number	Pressure Rating		Cv			
						Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
				psi	bar				
1/4"	1/4"	2WNC	C264-00091	400	28	3.35	3.75	-	-
	3/8"		C264-00101	400	28	3.05	3.25	-	-
	1/4"	2WNO	C284-00071	400†	28†	3.35	3.75	-	-
	3/8"		C284-00081	400†	28†	3.05	3.45	-	-
	1/4"	3WNC	C264-00131	400*	28*	3.35	3.75	4.15	4.25
	3/8"		C264-00141	400*	28*	3.05	3.25	4.90	4.25

#### CAUTION -See Chart Above

\* When used as a **DIRECTIONAL CONTROL VALVE**, pressures up to 400 psi are permissible. As a **MIXING VALVE** pressures up to 400 psi at Port #1 are permissible, but pressure at Port #3 must not exceed 275 psi with 35 psi pressure. At 40 psi top pressure, 400 psi may be introduced at Port #3.

† Pressure rating shown is for inlet at Port #1. With inlet at Port #2 pressure must not exceed 275 psi with 35 psi top pressure. At 40 psi top pressure 400 psi may be introduced at Port #2.



Basic Valve Size & Type	1/4" 2-Way Normally Closed		1/4" 2-Way Normally Open		1/4" 3-Way Normally Closed		Description
	1/4" NPTF	3/8" NPTF	1/4" NPTF	3/8" NPTF	1/4" NPTF	3/8" NPTF	
Model No.	C264-00091	C264-00101	C284-00071	C284-00081	C264-00131	C264-00141	
Item No.	Part Number						
1	C093-258	C093-259	C093-258	C093-259	C093-258	C093-259	Body
2	C332-079	C332-079	C332-078	C332-078	C332-079	C332-079	Stem Assembly
3	D093-209	D093-209	D093-208	D093-208	D093-209	D093-209	Stem Only
8	C353-011	C353-011	-	-	C353-011	C353-011	Disc Holder
• 9	C343-067	C343-067	C343-067	C343-067	C343-067	C343-067	Seat Disc
10	C553-027	C553-027	C553-027	C553-027	C553-027	C553-027	Disc Nut
• 11	C383-063	C383-063	C383-063	C383-063	C383-063	C383-063	Seat Gasket
12	C963-147	C963-147	C963-147	C963-147	C963-147	C963-147	Seat Ring
• 13	C383-064	C383-064	C383-064	C383-064	C383-064	C383-064	Gasket
14	C013-015	C013-015	C013-015	C013-015	C013-015	C013-015	Adapter
15	D293-131	D293-131	D293-131	D293-131	D293-131	D293-131	Packer Spring
16	C713-017	C713-017	C713-017	C713-017	C713-017	C713-017	Packer Spreader
• 17	C242-024	C242-024	C242-024	C242-024	C242-024	C242-024	Packer Assembly
18	C603-030	C603-030	C603-030	C603-030	C603-030	C603-030	Retainer
19	D293-130	D293-130	D293-130	D293-130	D293-130	D293-130	Diaphragm Spring
20	D123-052	D123-052	D123-052	D123-052	-	-	Stem Stop
21	C213-196	C213-197	C213-196	C213-197	C213-196	C213-197	Bottom Cap
22	C392-050	C392-050	C392-050	C392-050	C392-050	C392-050	Diaphragm Assembly EPDM
	C392-070	C392-070	C392-070	C392-070	C392-070	C392-070	Diaphragm Assembly PTFE
23	D283-184	D283-184	D283-184	D283-184	D283-184	D283-184	Yoke
• 24	C333-056	C333-056	C333-056	C333-056	C333-056	C333-056	Diaphragm EPDM
	C333-067	C333-067	C333-067	C333-067	C333-067	C333-067	Diaphragm PTFE
25	M163-005	M163-005	M163-005	M163-005	M163-005	M163-005	Cover
26	H109-09	H109-09	H109-09	H109-09	H109-09	H109-09	Cap Screw
27	H064-16	H064-16	H064-16	H064-16	H064-16	H064-16	Hex Nut
28	C783-141	C783-141	C783-141	C783-141	C783-141	C783-141	Piston
29	H175-16	H175-16	H175-16	H175-16	H175-16	H175-16	Lock Washer
30	H096-84	H096-84	H096-84	H096-84	H096-84	H096-84	Cap Screw
31	M423-002	M423-002	M423-002	M423-002	M423-002	M423-002	Ring
	C242-056						Service Kit EPDM
	C242-081						Service Kit PTFE

• IN SERVICE KIT

**Soft Seated 400 psi (28 bar) 2-Way Valves  
Tapped 1/2", 3/4", 1", 1-1/4", 1-1/2"****SPECIFICATIONS****Media:** Steam • Hot or Cold Water • Air & Inert Gases**Pressure:** Maximum Operating Pressure: 400 psi (28 bar)**Temperature Range:** -40° TO 400°F (-40° TO 204°C)

These soft seated valves were designed for applications where bubble-tight seal is required. This is done through stainless steel reinforced PTFE rings on the stem. Valve bodies are machined from the highest quality Navy-M bronze with stainless steel stem and seats, spring-loaded packers and stainless steel spiral-wound gaskets. The body, adapter and yoke are of cast bronze. The exclusive swivel stem design reduces side load on the stem packer for longer packer life. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance.

These valves are available with a choice of large or small diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with 30 to 40 PSI (2.1 to 2.8 bar). The small actuator provides some savings in space, but their use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Charts. The large and small diaphragm actuators are interchangeable within a given basic size. The actuator may be replaced with the valve under pressure but de-energized.

2WNO & 2WNC Valves may be ported backwards with the media pressure piped to Port No. 2. This brings the pressure under the seat, removing the stem packing from continuous pressure. For vacuum service, 2WNO & 2WNC Valves should be piped backwards with the vacuum to Port No. 2. This brings the vacuum under the seat and has no affect on the stem packing, which is designed to be pressurized from within. Internal areas in the valves are designed for higher Cv ratings. Higher Cv ratings offer faster recovery times for temperature and faster cycle rates.

To order valves with Molded PTFE diaphragms, change the fourth digit in the Model number to (6). Example: C286-20011

For dimensional data, see page 39.

Use 35 to 40 psi  
(2.4 - 2.8 bar)  
Air Pressure on Top

**Model Selection Chart**

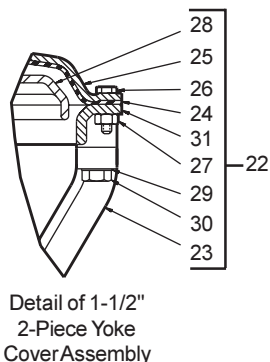
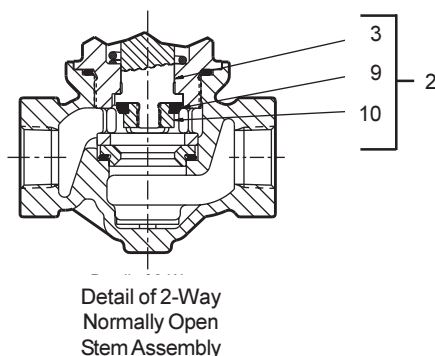
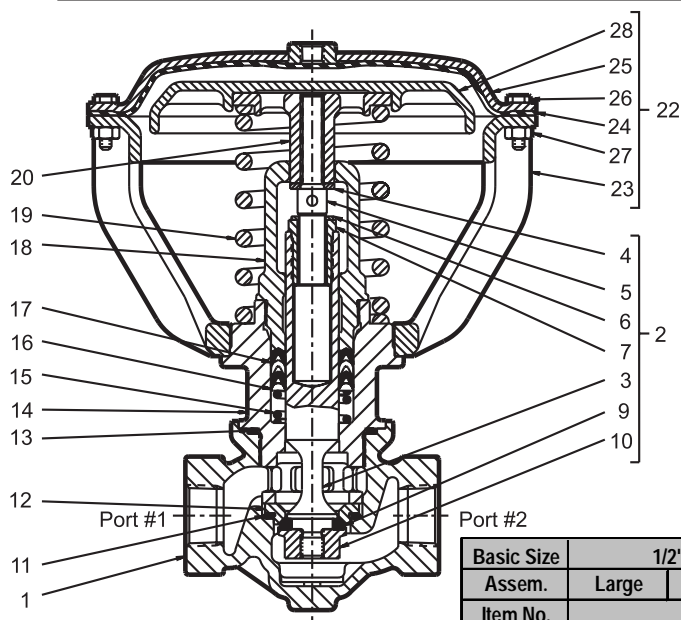
Basic Valve Size	Port Tap (NPTF)	Description		Large Top		Small Top		Cv			
								Port 1 to Port 2	Port 2 to Port 1		
				psi	bar	psi	bar				
1/2"	1/2"	2WNC	Model No.	C284-20011		C284-20051		6.9	6.9		
			Pressure Rating	400	28.0	270 (1)	18.6				
	3/4"		2WNO	Model No.	C284-20021		C284-20061		7.5	7.1	
				Pressure Rating	400	28.0	270 (1)	18.6			
	1/2"	2WNO		Model No.	C284-20031		C284-20071		6.9	6.6	
				Pressure Rating	400	28.0	135 (2)	9.3			
	3/4"		2WNO	Model No.	C284-20041		C284-20081		8.0	8.4	
				Pressure Rating	400	28.0	135 (2)	9.3			
1"	1"	2WNC		Model No.	C284-40011		C284-40051		15.2	13.5	
				Pressure Rating	400	28.0	230 (1)	15.9			
			1 1/4"	2WNC	Model No.	C284-40021		C284-40061		16.8	16.0
					Pressure Rating	400	28.0	230 (1)	15.9		
	1"	2WNO	Model No.		C284-40031		C284-40071		14.8	16.0	
			Pressure Rating		400	28.0	105 (3)	7.2			
			1 1/4"	2WNO	Model No.	C284-40041		C284-40081		15.8	17.2
					Pressure Rating	400	28.0	105 (3)	7.2		
1 1/2"	2WNC	Model No.	C284-60021		C284-60061		35.0	33.5			
		Pressure Rating	400		28.0	165 (1)			11.3		
		1 1/2"	2WNO	Model No.	C284-60041		C284-60081		33.0	35.0	
				Pressure Rating	400	28.0	60 (4)	4.1			

(1) Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 400 psi are permissible.

(2) Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 210 psi are permissible.

(3) Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 175 psi are permissible.

(4) Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 140 psi are permissible.



Basic Size	1/2"		1"		1 1/2"		Description
Assem.	Large	Small	Large	Small	Large	Small	
Item No.	Part Numbers						
22	C132-039	C132-038	C132-040	C132-041	C132-048	C132-042	Diaphragm Assembly EPDM
	C132-051	C132-052	C132-053	C132-054	C132-055	C132-056	Diaphragm Assembly PTFE
23	D283-140	D293-139	D283-148	D283-146	D283-099	D283-063	Yoke
•24	C333-053	C333-049	C333-051	C333-050	C333-052	C333-051	Diaphragm EPDM
	C333-069	C333-068	C333-070	C333-072	C333-071	C333-070	Diaphragm PTFE
25	C293-023	C293-018	C293-030	C293-091	C293-036	C293-030	Diaphragm Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-048	C783-032	C783-081	C783-061	C783-102	C783-071	Diaphragm Piston
29	-	-	-	-	H175-21	-	Lock Washer
30	-	-	-	-	H096-49	-	Cap Screw
31	-	-	-	-	C893-031	-	Ring
	C242-057	C242-058	C242-059	C242-060	C242-061	C242-062	Service Kit EPDM
	C242-088	C242-089	C242-090	C242-091	C242-092	C242-093	Service Kit PTFE

• IN SERVICE KIT

Basic Valve Size & Type	1/2" Normally Closed		1/2" Normally Open		1" Normally Closed		1" Normally Open		1 1/2" N.C.	1 1/2" N.O.	Description
	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	1" NPTF	1 1/4" NPTF	1" NPTF	1 1/4" NPTF	1 1/2" NPTF	1 1/2" NPTF	
Item No.	Part Numbers										Description
1	C093-136	C093-138	C093-136	C093-138	C093-140	C093-142	C093-140	C093-142	C093-146	C093-146	
2	C332-080	C332-080	C332-081	C332-081	C332-083	C332-083	C332-084	C332-084	C332-086	C332-087	Stem Assembly
3	D093-210	D093-210	D093-211	D093-211	D093-212	D093-212	D093-213	D093-213	D093-214	D093-215	Stem Only
4	D223-019	D223-019	D223-019	D223-019	D223-030	D223-030	D223-030	D223-030	-	-	Washer
5	D093-037	D093-037	D093-037	D093-037	D093-086	D093-086	D093-086	D093-086	D093-146	D093-146	Swivel Stem
6	H132-04	H132-04	H132-04	H132-04	H132-05	H132-05	H132-05	H132-05	H132-06	H132-06	Dust Washer
7	C643-002	C643-002	C643-002	C643-002	C643-006	C643-006	C643-006	C643-006	C643-010	C643-010	Swivel Nut
•9	C343-068	C343-068	C343-068	C343-068	C343-069	C343-069	C343-069	C343-069	C343-070	C343-070	Seat Disc
10	C553-021	C553-021	C553-022	C553-022	C553023	C553023	C553-024	C553-024	C553025	C553026	Disc Nut
•11	C383-010	C383-010	C383-010	C383-010	C383-019	C383-019	C383-019	C383-019	C383-029	C383-029	Seat Gasket
12	C963-148	C963-148	C963-148	C963-148	C963-149	C963-149	C963-149	C963-149	C963-150	C963-150	Seat Ring
•13	C383-022	C383-022	C383-022	C383-022	C383-028	C383-028	C383-028	C383-028	C383-032	C383-032	End Gasket
14	C013-006	C013-006	C013-006	C013-006	C013-009	C013-009	C013-009	C013-009	C013-007	C013-007	Adapter
15	D293-001	D293-001	D293-001	D293-001	D293-002	D293-002	D293-002	D293-002	D293-004	D293-004	Packer Spring
16	C713-003	C713-003	C713-003	C713-003	C713-004	C713-004	C713-004	C713-004	C713-007	C713-007	Packer Spreader
•17	C242-021	C242-021	C242-021	C242-021	C242-022	C242-022	C242-022	C242-022	C242-023	C242-023	Packer Assembly
18	C563-034	C563-034	C563-034	C563-034	C563-015	C563-015	C563-015	C563-015	C563-022	C563-022	Gland Nut
19	D293-157	D293-157	D293-157†	D293-157†	D293-147	D293-147	D293-147	D293-147	D293-051	D293-051†	Diaphragm Spring
20	C883-006	C883-006	C883-006	C883-006	C883-008	C883-008	C883-008	C883-008	C883-009	C883-009	Spring Retainer

† FOR NORMALLY OPEN SMALL TOP USE D293-158

‡ FOR NORMALLY OPEN SMALL TOP USE D293-054

**400psi (34 bar), 3-Way Valves**  
**Tapped 1/2", 3/4", 1", 1-1/4", 1-1/2", 2"**Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top**SPECIFICATIONS****MEDIA:** Steam • Hot or Cold Water • Air & Inert Gases**PRESSURE:** Maximum Operating Pressure: 400 psi (28 bar)**TEMPERATURE RANGE:** -40° TO 400°F (-40° TO 204°C)

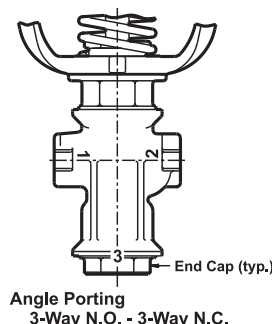
These soft seated valves were designed for applications where bubble-tight seal is required. This is done through stainless steel reinforced PTFE rings on the stem. Valve bodies are machined from the highest quality Navy-M bronze with stainless steel stem and seats, spring-loaded packers and stainless steel spiral-wound gaskets. The body, adapter and yoke are of cast bronze. The exclusive swivel stem design reduces side load on the stem packer for longer packer life. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance.

These valves are available with a choice of large or small diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with 30 to 40 PSI (2.1 to 2.8 bar). The small actuator provides some savings in space, but their use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Charts. The large and small diaphragm actuators are interchangeable within a given basic size. The actuator may be replaced with the valve under pressure but de-energized.

Internal areas in the valves are designed for higher Cv ratings. Higher Cv ratings offer faster recovery times for temperature and faster cycle rates.

To order valves with Molded PTFE diaphragms, change the fourth digit to (6).

Example: C266-20051. For dimensional data, see page 40.

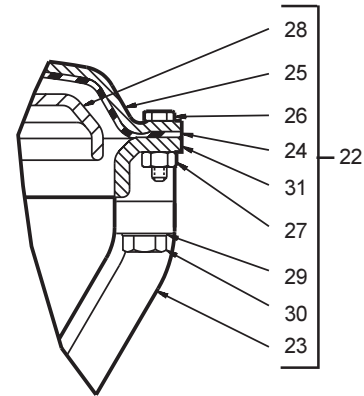
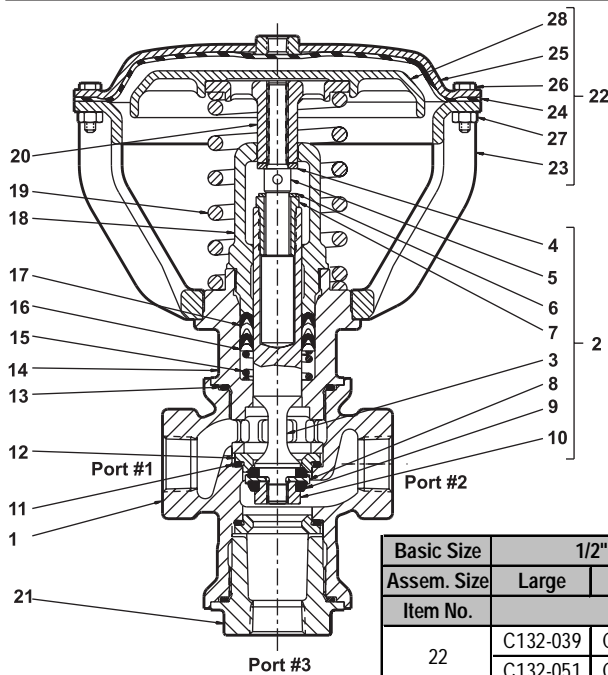


Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet

**Model Selection Chart**

Basic Valve Size	Port Tap (NPTF)	Description		Large Top		Small Top		Cv			
								Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
				psi	bar	psi	bar				
1/2"	1/2"	3WNC	Model No.	C264-20051		C264-20131		6.6	7.3	8.0	8.0
			Pressure Rating	400	28.0	270 (1)	18.6				
	3/4"		Model No.	C264-20061		C264-20141		8.3	7.8	9.9	10.8
			Pressure Rating	400	28.0	270 (1)	18.6				
1"	1"	3WNC	Model No.	C264-40051		C264-40131		15.2	16.0	19.8	23.8
			Pressure Rating	400	28.0	230 (2)	15.9				
	1 1/4"		Model No.	C264-40061		C264-40141		19.2	20.8	24.2	27.5
			Pressure Rating	400	28.0	230 (2)	15.9				
1 1/2"	1 1/4"	3WNC	Model No.	C264-60051		C264-60131		30.2	28.8	38.5	43.0
			Pressure Rating	400	28.0	165 (3)	11.4				
	1 1/2"		Model No.	C264-60061		C264-60141		34.2	35.0	38.5	44.0
			Pressure Rating	400	28.0	165 (3)	11.4				
	2"		Model No.	C264-60191		C264-60231		37.5	40.0	45.5	54.5
			Pressure Rating	400	28.0	165 (3)	11.4				

- (1) When used as a **Directional Valve**, pressures must not exceed 270 psi. As a **Mixing Valve**, pressures up to 400 psi are permissible at Port 1. However, pressure at Port 3 must not exceed 110 psi.
- (2) When used as a **Directional Valve**, pressures must not exceed 230 psi. As a **Mixing Valve**, pressures up to 400 psi are permissible at Port 1. However, pressure at Port 3 must not exceed 105 psi.
- (3) When used as a **Directional Valve**, pressures must not exceed 165 psi. As a **Mixing Valve**, pressures up to 400 psi are permissible at Port 1. However, pressure at Port 3 must not exceed 40 psi.



Detail of 1-1/2"  
 2-Piece Yoke  
 Cover Assembly

Basic Size	1/2"		1"		1 1/2"		Description
Assem. Size	Large	Small	Large	Small	Large	Small	
Item No.	Part Numbers						
22	C132-039	C132-038	C132-040	C132-041	C132-048	C132-042	Diaphragm Assembly EPDM
	C132-051	C132-052	C132-053	C132-054	C132-055	C132-056	Diaphragm Assembly PTFE
23	D283-140	D293-139	D283-148	D283-146	D283-099	D283-063	Yoke
• 24	C333-053	C333-049	C333-051	C333-050	C333-052	C333-051	Diaphragm EPDM
	C333-069	C333-068	C333-070	C333-072	C333-071	C333-070	Diaphragm PTFE
25	C293-023	C293-018	C293-030	C293-091	C293-036	C293-030	Diaphragm Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-048	C783-032	C783-081	C783-061	C783-102	C783-071	Diaphragm Piston
29	-	-	-	-	H175-21	-	Lock Washer
30	-	-	-	-	H096-49	-	Cap Screw
31	-	-	-	-	C893-031	-	Ring
	C242-057	C242-058	C242-059	C242-060	C242-061	C242-062	Service Kit EPDM
	C242-088	C242-089	C242-090	C242-091	C242-092	C242-093	Service Kit PTFE

• IN SERVICE KIT

Basic Valve Size & Type Port Size Item No.	1/2" 3-Way N.C.		1" 3-Way N.C.		1½" 3-Way N.C.			Description
	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1¼" NPTF	1½" NPTF	2" NPTF	
	Part Numbers							
1	C093-151	C093-152	C093-149	C093-148	C093-153	C093-150	C093-266	Body
2	C332-104	C332-104	C332-085	C332-085	C332-088	C332-088	C332-088	Stem Assembly
3	D090-30021	D090-30021	D093-212	D093-212	D093-214	D093-214	D093-214	Stem Only
4	D223-019	D223-019	D223-030	D223-030	-	-	-	Washer
5	D093-037	D093-037	D093-086	D093-086	D093-146	D093-146	D093-146	Swivel Stem
6	H132-04	H132-04	H132-05	H132-05	H132-06	H132-06	H132-06	Dust Washer
7	C643-002	C643-002	C643-006	C643-006	C643-010	C643-010	C643-010	Swivel Nut
8	C353-012	C353-012	C353-013	C353-013	C353-014	C353-014	C353-014	Disc Holder
• 9	C343-068	C343-068	C343-069	C343-069	C343-070	C343-070	C343-070	Seat Disc
10	C553-022	C553-022	C553-024	C553-024	C553-026	C553-026	C553-026	Disc Nut
•11	C383-010	C383-010	C383-019	C383-019	C383-029	C383-029	C383-029	Seat Gasket
12	C963-148	C963-148	C963-149	C963-149	C963-150	C963-150	C963-150	Seat Ring
•13	C383-022	C383-022	C383-028	C383-028	C383-032	C383-032	C383-032	End Gasket
14	C013-006	C013-006	C013-009	C013-009	C013-007	C013-007	C013-007	Adapter
15	D293-001	D293-001	D293-002	D293-002	D293-004	D293-004	D293-004	Packer Spring
16	C713-003	C713-003	C713-004	C713-004	C713-007	C713-007	C713-007	Packer Spreader
•17	C242-021	C242-021	C242-022	C242-022	C242-023	C242-023	C242-023	Packer Assembly
18	C563-034	C563-034	C563-015	C563-015	C563-022	C563-022	C563-022	Gland Nut
19	D293-157	D293-157	D293-147	D293-147	D293-051	D293-051	D293-051	Diaphragm Spring
20	C883-006	C883-006	C883-008	C883-008	C883-009	C883-009	C883-009	Spring Retainer
21	C213-177	C213-178	C213-175	C213-176	C213-180	C213-181	C883-201	End Cap

## Hard Seated, 500 psi, 2- & 3-Way Valves Tapped 1/4", 3/8"

Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top

### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases\*

**Pressure:** Maximum Operating Pressure: 500 psi (34 bar)\*\*

**Temperature Range:** -40° TO 450°F (-40° TO 232°C)

This basic 1/4" valve is available in 2-way and 3-way types. The 2-way, normally closed valves are inline ported. The 2-way, normally open valves may be ordered with angle or inline porting, as shown in the Model Selection Chart. The piping variations for the 3-way as well as the 2-way are shown in the Piping Connection chart. The body, adapter and yoke are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. The stem-packer is spring-loaded and self-adjusting for reduced maintenance. Spiral wound gaskets consisting of stainless steel and filler material are utilized to seal the seats and adapter.

This valve is equipped with a single size diaphragm actuator. The actuator permits operation of the valve at the ratings shown in the Model Selection Chart. Two-piece construction is standard on this valve which allows the diaphragm assembly to be changed in areas where head space is at a premium. The diaphragm assembly may be replaced with the valve under pressure but de-energized.

To order gas tested valves, add suffix (2) to the Model No. Example: C264-00092.

To order valves with molded PTFE diaphragms, change the fourth digit in the model No. to (6). Example: C266-0009.

\* See Page 2.

\*\* See maximum pressure for individual valves in "Model Selection Chart."

**For dimensional data, see page 39.**

#### CAUTION - See Chart

(1) Pressure rating shown is for inlet at Port 3. With inlet at Port 2, pressures up to 500 psi are permissible.

(2) When used as a **Directional Valve**, pressures up to 500 psi are permissible. As a **Mixing Valve**, pressures up to 500 psi at Port 1 are permissible but pressure at Port 3 must not exceed 225 psi with 30 psi top pressure. At 40 psi top pressure, 500 psi may be introduced at Port 3.

(3) When used as a **Directional Valve**, pressures up to 500 psi are permissible. As a **Mixing Valve**, pressures up to 240 psi at Port 1 are permissible but pressure at Port 3 must not exceed 375 psi with 30 psi top pressure. At 40 psi top pressure, 500 psi may be introduced at Port 3.

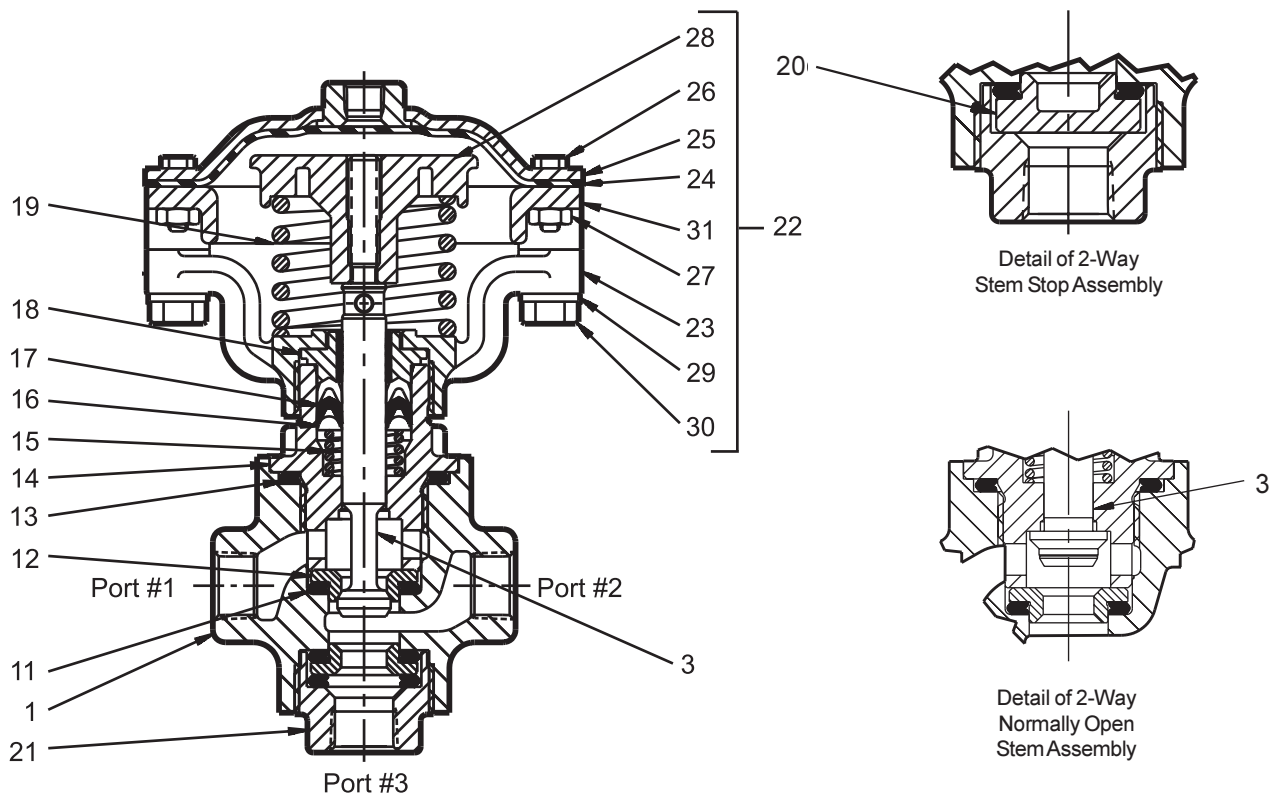
(4) Pressure rating shown is for inlet at Port 1 with inlet at Port 2, pressures up to 500 psi are permissible.



Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Closed Inline Piped	Inlet	Cylinder	Plugged
	Normally Open Inline Piped	Inlet	Cylinder	Plugged
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet

### Model Selection Chart

Basic Valve Size	Port Tap (NPTF)	Description	Model Number	Pressure Rating		Cv			
						Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
				psi	bar				
1/4"	1/4"	2WNC	C264-0009	500	34.0	2.06	-	-	-
	3/8"	(Inline Porting)	C264-0010	500	34.0	2.57	-	-	-
	1/4"	2WNO	C284-0007	375 (4)	26.0	1.80	1.85	-	-
	3/8"	(Inline Porting)	C284-0008	375 (4)	26.0	1.95	2.25	-	-
	1/4"	2WNO	C264-0011	375 (1)	26.0	-	-	2.44	3.30
	3/8"	(Angle Porting)	C264-0012	375 (1)	26.0	-	-	2.35	2.62
	1/4"	3WNC	C264-0013	500 (2)	34.0	2.06	2.06	2.44	3.30
	3/8"		C264-0014	500 (2)	34.0	2.57	2.48	2.35	3.62
	1/4"	3WNO	C264-0015	375 (3)	26.0	2.06	2.06	2.44	3.30
	3/8"		C264-0016	375 (3)	26.0	2.57	2.48	2.35	3.62



Basic Valve Size & Type	1/4" 2-Way Normally Closed		1/4" 2-Way Normally Open		1/4" 3-Way Normally Closed		1/4" 3-Way Normally Open		Description
Port Size	1/4" NPTF	3/8" NPTF	1/4" NPTF	3/8" NPTF	1/4" NPTF	3/8" NPTF	1/4" NPTF	3/8" NPTF	
Model No.	C264-0009	C264-0010	C284-0007	C284-0008	C264-0013	C264-0014	C264-0015	C264-0016	
Item No.	Part Number								Description
1	C093-258	C093-259	C093-258	C093-259	C093-258	C093-259	C093-258	C093-259	
3	D093-205	D093-205	D093-204	D093-204	D093-205	D093-205	D093-205	D093-205	Stem
• 11	C383-063	C383-063	C383-063	C383-063	C383-063	C383-063	C383-063	C383-063	Seat Gasket
12	C963-145	C963-145	C963-145	C963-145	C963-145	C963-145	C963-145	C963-145	Seat Ring
• 13	C383-064	C383-064	C383-064	C383-064	C383-064	C383-064	C383-064	C383-064	Gasket
14	C013-015	C013-015	C013-015	C013-015	C013-015	C013-015	C013-015	C013-015	Adapter
15	D293-131	D293-131	D293-131	D293-131	D293-131	D293-131	D293-131	D293-131	Packer Spring
16	C713-017	C713-017	C713-017	C713-017	C713-017	C713-017	C713-017	C713-017	Packer Spreader
• 17	C242-024	C242-024	C242-024	C242-024	C242-024	C242-024	C242-024	C242-024	Packer
18	C603-030	C603-030	C603-030	C603-030	C603-030	C603-030	C603-030	C603-030	Retainer
19	D293-130	D293-130	D293-129	D293-129	D293-130	D293-130	D293-129	D293-129	Diaphragm Spring
20	D123-052	D123-052	D123-052	D123-052	-	-	-	-	Stem Stop
21	C213-196	C213-197	C213-196	C213-197	C213-196	C213-197	C213-196	C213-197	Bottom Cap
22	C392-050	C392-050	C392-050	C392-050	C392-050	C392-050	C392-050	C392-050	Diaphragm Assembly EPDM
	C392-070	C392-070	C392-070	C392-070	C392-070	C392-070	C392-070	C392-070	Diaphragm Assembly PTFE
23	D283-184	D283-184	D283-184	D283-184	D283-184	D283-184	D283-184	D283-184	Yoke
• 24	C333-056	C333-056	C333-056	C333-056	C333-056	C333-056	C333-056	C333-056	Diaphragm EPDM
	C333-067	C333-067	C333-067	C333-067	C333-067	C333-067	C333-067	C333-067	Diaphragm PTFE
25	M163-005	M163-005	M163-005	M163-005	M163-005	M163-005	M163-005	M163-005	Cover
26	H109-09	H109-09	H109-09	H109-09	H109-09	H109-09	H109-09	H109-09	Cap Screw
27	H064-16	H064-16	H064-16	H064-16	H064-16	H064-16	H064-16	H064-16	Hex Nut
28	C783-141	C783-141	C783-141	C783-141	C783-141	C783-141	C783-141	C783-141	Piston
29	H175-16	H175-16	H175-16	H175-16	H175-16	H175-16	H175-16	H175-16	Lock Washer
30	H096-84	H096-84	H096-84	H096-84	H096-84	H096-84	H096-84	H096-84	Cap Screw
31	M423-002	M423-002	M423-002	M423-002	M423-002	M423-002	M423-002	M423-002	Ring
	C242-049								Service Kit EPDM
	C242-080								Service Kit PTFE

## • IN SERVICE KIT

**Hard Seated 500 psi (34 bar), 2-Way  
Tapped 1/2", 3/4", 1", 1-1/4", 1-1/2"****SPECIFICATIONS****MEDIA:** Steam • Hot or Cold Water • Air & Inert Gases\***PRESSURE:** Maximum Operating Pressure: 500 psi (34 bar)\*\***TEMPERATURE RANGE:** -40° to 450°F (-40° to 232°C)

These valves are designed to allow for gravity drainage through the valve where evacuation of most of the fluid is desired. The valve stem design reduces wear on the packer, and all models incorporate the exclusive Sinclair Collins swivel stem design to reduce side load on the packer for longer packer life. The stem-packer is spring loaded and self-adjusting for reduced maintenance. Spiral wound gaskets consisting of stainless steel and filler material are utilized to seal the seats and adapter. The body, adapter and yoke are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. These valves are equipped with large or small size diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with recommended actuated air pressure of 40 psi (2.8 bar) (If lesser line pressures are handled, lesser air pressure can be used).

The small actuator provides some savings in space but its use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Chart. The large and small diaphragm actuators are interchangeable within a given size. The diaphragm actuator may be replaced with the valve under pressure but de-energized.

\* See Page 2.

\*\* See maximum pressure for individual valves in "Model Selection Chart."

For dimensional data, see page 39.

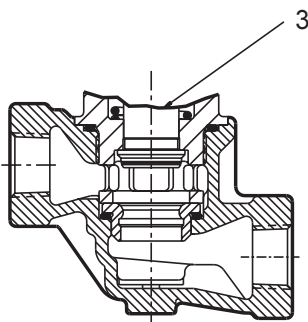
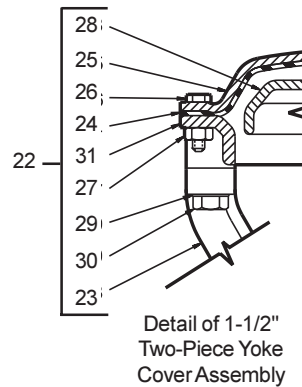
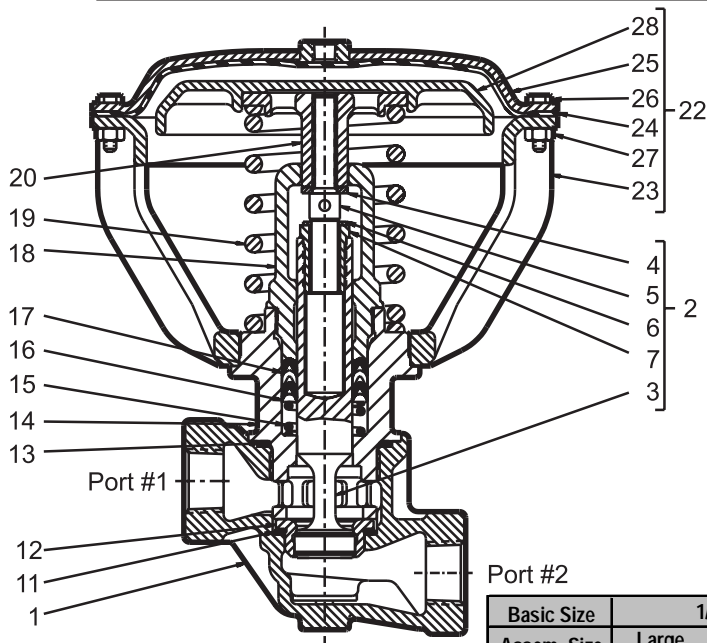
Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top

**Model Selection Chart**

Basic Valve Size	Port Tap (NPTF)	Description						Cv		
				Large Top		Small Top		Port 1 to Port 2	Port 2 to Port 1	
				psi	bar	psi	bar			
1/2"	1/2"	2WNC	Model No.	C294-2001		C294-2005		6.5	6.1	
			Pressure Rating	500	34.0	450	31.0			
	3/4"		Model No.	C294-2002		C294-2006		8.4	7.6	
			Pressure Rating	500	34.0	450	31.0			
	1/2"		2WNO	Model No.	C294-2003		C294-2007		6.9	6.4
				Pressure Rating	500	34.0	375‡	26.0		
3/4"			Model No.	C294-2004		C294-2008		8.8	8.1	
			Pressure Rating	500	34.0	375‡	26.0			
1"	1"	2WNC	Model No.	C294-4001		C294-4005		13.2	13.5	
			Pressure Rating	500	34.0	375‡	26.0			
	1¼"		Model No.	C294-4002		C294-4006		18.1	16.8	
			Pressure Rating	500	34.0	375‡	26.0			
	1"		2WNO	Model No.	C294-4003		C294-4007		13.8	13.0
				Pressure Rating	500	34.0	275†	19.0		
1¼"			Model No.	C294-4004		C294-4008		17.9	16.3	
			Pressure Rating	500	34.0	275†	19.0			
1½"	1½"	2WNC	Model No.	C294-6002		C294-6006		37.7	37.9	
			Pressure Rating	500	34.0	250	17.2			
	1½"	2WNO	Model No.	C294-6004		C294-6008		36.0	37.2	
			Pressure Rating	450‡	31.0	200‡	13.8			

‡ Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 500 psi are permissible.

† Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 350 psi are permissible.



Detail of 2-Way  
Normally Open  
Stem Assembly

Basic Size	1/2"		1"		1 1/2"		Description
Assem. Size	Large	Small	Large	Small	Large	Small	
Item No.	Part Numbers						
22	C132-039	C132-038	C132-040	C132-041	C132-048	C132-042	Diaphragm Assembly EPDM
	C132-051	C132-052	C132-053	C132-054	C132-055	C132-056	Diaphragm Assembly PTFE
23	D283-140	D283-139	D283-148	D283-146	D283-099	D283-063	Yoke
24	C333-053	C333-049	C333-051	C333-050	C333-052	C333-051	Diaphragm EPDM
	C333-069	C333-068	C333-070	C333-072	C333-071	C333-070	Diaphragm PTFE
25	C293-023	C293-018	C293-030	C293-091	C293-036	C293-030	Diaphragm Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-048	C783-032	C783-081	C783-061	C783-102	C783-071	Diaphragm Piston
29	-	-	-	-	H175-21	-	Lock Washer
30	-	-	-	-	H096-49	-	Cap Screw
31	-	-	-	-	C893-031	-	Ring
	C242-050	C242-051	C242-052	C242-053	C242-054	C242-055	Service Kit EPDM
	C242-082	C242-083	C242-084	C242-085	C242-086	C242-087	Service Kit PTFE

• IN SERVICE KIT

Basic Valve	1/2" Normally Closed		1/2" Normally Open		1" Normally Closed		1" Normally Open		1½" N.C.	1½" N.O.	Description	
Size & Type	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1" NPTF	1¼" NPTF	1½" NPTF	1½" NPTF		
Port Size	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1" NPTF	1¼" NPTF	1½" NPTF	1½" NPTF		
Item No.	Part Numbers											
1	C093-137	C093-139	C093-137	C093-139	C093-141	C093-143	C093-141	C093-143	C093-147	C093-147		Body
2	C332-007	C332-007	C332-014	C332-014	C332-022	C332-022	C332-037	C332-037	C332-044	C332-045		Stem Assembly
3	D093-088	D093-088	D093-189	D093-189	D093-147	D093-147	D093-188	D093-188	D093-173	D093-175		Stem Only
4	D223-019	D223-019	D223-019	D223-019	D223-030	D223-030	D223-030	D223-030	-	-		Washer
5	D093-037	D093-037	D093-037	D093-037	D093-086	D093-086	D093-086	D093-086	D093-146	D093-146		Swivel Stem
6	H132-04	H132-04	H132-04	H132-04	H132-05	H132-05	H132-05	H132-05	H132-06	H132-06		Dust Washer
7	C643-002	C643-002	C643-002	C643-002	C643-006	C643-006	C643-006	C643-006	C643-010	C643-010		Swivel Nut
• 11	C383-010	C383-010	C383-010	C383-010	C383-019	C383-019	C383-019	C383-019	C383-029	C383-029		Seat Gasket
12	C963-008	C963-008	C963-008	C963-008	C963-052	C963-052	C963-052	C963-052	C963-085	C963-085		Seat Ring
• 13	C383-022	C383-022	C383-022	C383-022	C383-028	C383-028	C383-028	C383-028	C383-032	C383-032		End Gasket
14	C013-006	C013-006	C013-006	C013-006	C013-009	C013-009	C013-009	C013-009	C013-007	C013-007		Adapter
15	D293-001	D293-001	D293-001	D293-001	D293-002	D293-002	D293-002	D293-002	D293-004	D293-004		Packer Spring
16	C713-003	C713-003	C713-003	C713-003	C713-004	C713-004	C713-004	C713-004	C713-007	C713-007		Packer Spreader
• 17	C242-021	C242-021	C242-021	C242-021	C242-022	C242-022	C242-022	C242-022	C242-023	C242-023		Packer Assembly
18	C563-034	C563-034	C563-034	C563-034	C563-015	C563-015	C563-015	C563-015	C563-022	C563-022		Gland Nut
19	D293-157	D293-157	D293-158	D293-158	D293-147	D293-147	D293-147	D293-147	D293-051†	D293-054		Diaphragm Spring
20	C883-006	C883-006	C883-006	C883-006	C883-008	C883-008	C883-008	C883-008	C883-009	C883-009		Spring Retainer

† FOR NORMALLY CLOSED SMALL TOP USE D293-054.

## Hard Seated 500 psi (34 bar), 2-Way Valves Tapped 1/2", 3/4", 1", 1-1/4", 1-1/2"

### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases\*

**Pressure:** Maximum Operating Pressure: 500 psi (34 bar)\*\*

**Temperature Range:** -40° TO 450° F (-40° TO 232°C)

These valves are designed for the majority of applications where a 2-Way valve is required. The bodies are machined from the highest quality Navy-M bronze with stainless steel stem and seats, spring-loaded packers and stainless steel spiral-wound gaskets. The body, adapter and yoke are of cast bronze. The exclusive swivel stem design reduces side load on the stem packer for longer packer life.

These valves are available with a choice of large or small diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with 30 to 40 PSI (2.1 to 2.8 bar). The small actuator provides some savings in space, but its use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Charts. The large and small diaphragm actuators are interchangeable within a given basic size. The actuator may be replaced with the valve under pressure but de-energized.

2WNO & 2WNC Valves may be ported backwards with the media pressure piped to Port No. 2. This brings the pressure under the seat, removing the stem packing from continuous pressure. For vacuum service, 2WNO & 2WNC Valves should be piped backwards with the vacuum to Port No. 2. This brings the vacuum under the seat and has no affect on the stem packing, which is designed to be pressurized from within. Internal areas in the valves are designed for higher Cv ratings. Higher Cv ratings offer faster recovery times for temperature and faster cycle rates.

To order gas tested valves, add suffix (2) to the Model No. **Example: C284-20012** To order valves with Molded PTFE diaphragms, change the fourth digit to (6). **Example: C286-2001**

\* See Page 2.

\*\* See maximum operating pressure for individual valves in "Model Selection Chart."

For dimensional data, see page 39.

Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top

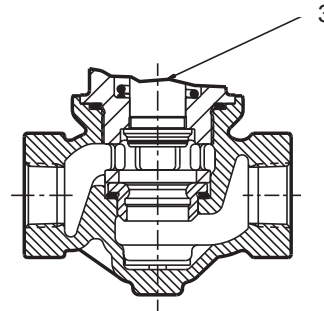
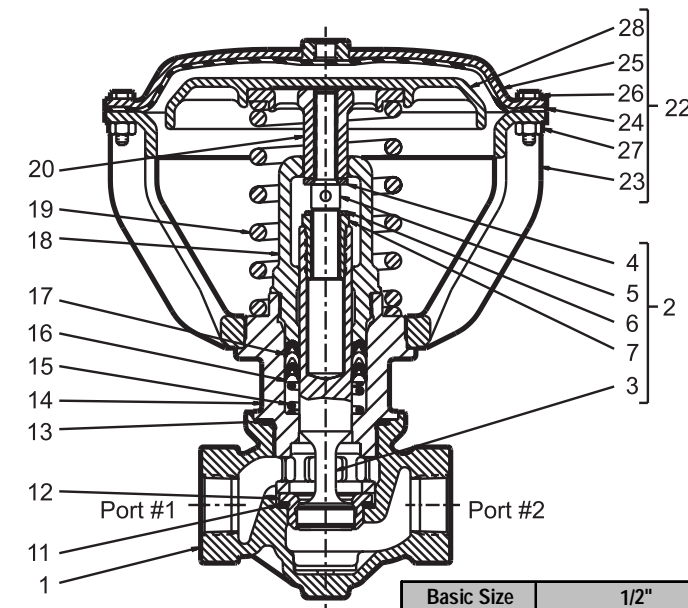


### Model Selection Chart

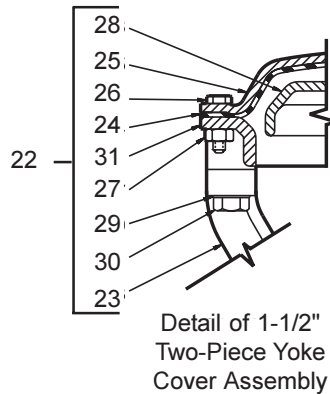
Basic Valve Size	Port Tap (NPTF)	Description		Large Top		Small Top		Cv	
				psi	bar	psi	bar	Port 1 to Port 2	Port 2 to Port 1
1/2"	1/2"	2WNC	Model No.	C284-2001		C284-2005		5.6	6.1
			Pressure Rating	500	34.0	450	31.0		
	3/4"	2WNC	Model No.	C284-2002		C284-2006		7.4	7.0
			Pressure Rating	500	34.0	450	31.0		
	1/2"	2WNO	Model No.	C284-2003		C284-2007		6.1	6.5
			Pressure Rating	500	34.0	375‡	26.0		
	3/4"	2WNO	Model No.	C284-2004		C284-2008		7.6	8.0
			Pressure Rating	500	34.0	375‡	26.0		
1"	1"	2WNC	Model No.	C284-4001		C284-4005		12.8	12.3
			Pressure Rating	500	34.0	375‡	26.0		
	1 1/4"	2WNC	Model No.	C284-4002		C284-4006		17.0	16.3
			Pressure Rating	500	34.0	375‡	26.0		
	1"	2WNO	Model No.	C284-4003		C284-4007		13.2	12.6
			Pressure Rating	500	34.0	275†	19.0		
	1 1/4"	2WNO	Model No.	C284-4004		C284-4008		17.9	17.0
			Pressure Rating	500	34.0	275†	19.0		
1 1/2"	1 1/2"	2WNC	Model No.	C284-6002		C284-6006		32.5	31.0
			Pressure Rating	500	34.0	250	17.2		
	1 1/2"	2WNO	Model No.	C284-6004		C284-6008		32.0	32.9
			Pressure Rating	450‡	31.0	200‡	13.8		

‡ Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 500 psi are permissible.

† Pressure rating shown is for use with inlet at Port 2. If inlet is piped to Port 1, line pressures up to 350 psi are permissible.



Detail of 2-Way  
Normally Open  
Stem Assembly



Detail of 1-1/2"  
Two-Piece Yoke  
Cover Assembly

Basic Size	1/2"		1"		1-1/2"		Description
Assem. Size	Large	Small	Large	Small	Large	Small	
Item No.	Part Numbers						
22	C132-039	C132-038	C132-040	C132-041	C132-048	C132-042	Diaphragm Assembly EPDM
	C132-051	C132-052	C132-053	C132-054	C132-055	C132-056	Diaphragm Assembly PTFE
23	D283-140	D283-139	D283-148	D283-146	D283-099	D283-063	Yoke
• 24	C333-053	C333-049	C333-051	C333-050	C333-052	C333-051	Diaphragm EPDM
	C333-069	C333-068	C333-070	C333-072	C333-071	C333-070	Diaphragm PTFE
25	C293-023	C293-018	C293-030	C293-091	C293-036	C293-030	Diaphragm Cover
26	H096-10	H096-10	H096-10	H096-10	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	H060-03	H060-03	H060-03	H060-03	Hex Nut
28	C783-048	C783-032	C783-081	C783-061	C783-102	C783-071	Diaphragm Piston
29	-	-	-	-	H175-21	-	Lock Washer
30	-	-	-	-	H096-49	-	Cap Screw
31	-	-	-	-	C893-031	-	Ring
	C242-050	C242-051	C242-052	C242-053	C242-054	C242-055	Service Kit EPDM
	C242-082	C242-083	C242-084	C242-085	C242-086	C242-087	Service Kit PTFE

• IN SERVICE KIT

Basic Valve Size & Type	1/2" Normally Closed		1/2" Normally Open		1" Normally Closed		1" Normally Open		1½" N.C.	1½" N.O.		
	Port Size	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	1" NPTF	1¼" NPTF	1" NPTF	1¼" NPTF	1½" NPTF		1½" NPTF
Item No.	Part Numbers											Description
1	C093-136	C093-138	C093-136	C093-138	C093-140	C093-142	C093-140	C093-142	C093-146	C093-146	Body	
2	C332-007	C332-007	C332-014	C332-014	C332-022	C332-022	C332-037	C332-037	C332-044	C332-045	Stem Assembly	
3	D093-088	D093-088	D093-189	D093-189	D093-147	D093-147	D093-188	D093-188	D093-173	D093-175	Stem Only	
• 4	D223-019	D223-019	D223-019	D223-019	D223-030	D223-030	D223-030	D223-030	-	-	Washer	
5	D093-037	D093-037	D093-037	D093-037	D093-086	D093-086	D093-086	D093-086	D093-146	D093-146	Swivel Stem	
• 6	H132-04	H132-04	H132-04	H132-04	H132-05	H132-05	H132-05	H132-05	H132-06	H132-06	Dust Washer	
7	C643-002	C643-002	C643-002	C643-002	C643-006	C643-006	C643-006	C643-006	C643-010	C643-010	Swivel Nut	
• 11	C383-010	C383-010	C383-010	C383-010	C383-019	C383-019	C383-019	C383-019	C383-029	C383-029	Seat Gasket	
12	C963-008	C963-008	C963-008	C963-008	C963-052	C963-052	C963-052	C963-052	C963-085	C963-085	Seat Ring	
• 13	C383-022	C383-022	C383-022	C383-022	C383-028	C383-028	C383-028	C383-028	C383-032	C383-032	End Gasket	
14	C013-006	C013-006	C013-006	C013-006	C013-009	C013-009	C013-009	C013-009	C013-007	C013-007	Adapter	
15	D293-001	D293-001	D293-001	D293-001	D293-002	D293-002	D293-002	D293-002	D293-004	D293-004	Packer Spring	
16	C713-003	C713-003	C713-003	C713-003	C713-004	C713-004	C713-004	C713-004	C713-007	C713-007	Packer Spreader	
• 17	C242-021	C242-021	C242-021	C242-021	C242-022	C242-022	C242-022	C242-022	C242-023	C242-023	Packer Assembly	
18	C563-034	C563-034	C563-034	C563-034	C563-015	C563-015	C563-015	C563-015	C563-022	C563-022	Gland Nut	
19	D293-157	D293-157	D293-158	D293-158	D293-147	D293-147	D293-147	D293-147	D293-051†	D293-054	Diaphragm Spring	
20	C883-006	C883-006	C883-006	C883-006	C883-008	C883-008	C883-008	C883-008	C883-009	C883-009	Spring Retainer	

† FOR NORMALLY CLOSED SMALL TOP USE D293-054.

## 500psi (34 bar), 2- & 3-Way Valves Tapped 1/2", 3/4"

### SPECIFICATIONS

**MEDIA:** Steam • Hot or Cold Water • Air & Inert Gases\*

**PRESSURE:** Maximum Operating Pressure: 500 psi (34.5 bar)\*\*

**TEMPERATURE RANGE:** -40° TO 450°F (-40° TO 232°C)

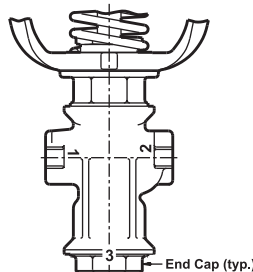
This basic 1/2" valve is available in 2-way and 3-way types. The 2-way normally closed valves are inline ported. The 2-way normally open valves may be ordered with angle or inline porting, as shown in the Model Selection Chart. The piping variations for the 3-way as well as the 2-way are shown in the Piping Connection chart. The valve stem design reduces wear on the packer, and all models incorporate the exclusive Sinclair Collins swivel stem design to reduce side load on the packer for longer packer life. The stem packer is spring loaded and self-adjusting for reduced maintenance. Spiral wound gaskets consisting of stainless steel and filler material are utilized to seal the seats, adapter and bottom cap. The body, adapter and yoke are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. These valves are equipped with large or small size diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with recommended actuated air pressure of 40 psi (2.8 bar) (If lesser line pressures are handled, lesser air pressure can be used). The small actuator provides some savings in space but its use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Chart. The large and small diaphragm actuators are interchangeable within a given size. The actuator may be replaced with the valve under pressure but de-energized. **To order gas tested valves, add suffix (2) to the Model No. Example: C264-20012. To order valves with molded PTFE diaphragms, change the fourth digit to (6). Example: C266-2001. For dimensional data, see page 40.**

\* See Page 2. \*\* See maximum pressure for individual valves in "Model Selection Chart."

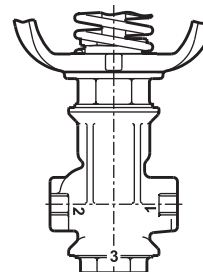
Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top



Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Open Inline Piped	Cylinder	Inlet	Plugged
	Normally Closed	Inlet	Cylinder	Plugged
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet



Angle Porting  
2-Way N.O. - 2-Way N.C.  
3-Way N.O. - 3-Way N.C.



Inline Porting  
2-Way N.O.

### Model Selection Chart

Basic Valve Size	Port Tap (NPTF)	Description		Large Top		Small Top		CV			
								Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
				psi	bar	psi	bar				
1/2"	1/2"	2WNC (Inline Porting)	Model No.	C264-2001		C264-2009		6.2	6.3	-	-
			Pressure Rating	500	34.0	450	31.0				
	3/4"	2WNC (Inline Porting)	Model No.	C264-2002		C264-2010		7.5	6.8	-	-
			Pressure Rating	500	34.0	450	31.0				
	1/2"	2WNO (Inline Porting)	Model No.	C274-2001		C274-2003		6.1	6.5	-	-
			Pressure Rating	500	34.0	375(5)	26.0				
	3/4"	2WNO (Inline Porting)	Model No.	C274-2002		C274-2004		7.6	8.0	-	-
			Pressure Rating	500	34.0	375(5)	26.0				
	1/2"	2WNO (Angle Porting)	Model No.	C264-2003		C264-2011		-	-	7.4	8.8
			Pressure Rating	500	34.0	375(1)	26.0				
	3/4"	2WNO (Angle Porting)	Model No.	C264-2004		C264-2012		-	-	9.6	12.0
			Pressure Rating	500	34.0	375(1)	26.0				
	1/2"	3WNC	Model No.	C264-2005		C264-2013		6.2	6.3	7.4	8.8
			Pressure Rating	500	34.0	500(2)	34.0				
	3/4"	3WNC	Model No.	C264-2006		C264-2014		7.6	6.8	9.6	12.0
			Pressure Rating	500	34.0	500(2)	34.0				
1/2"	3WNO	Model No.	C264-2007		C264-2015		6.2	6.3	7.4	8.8	
		Pressure Rating	500 (3)	34.0	375(4)	26.0					
3/4"	3WNO	Model No.	C264-2008		C264-2016		7.6	6.8	9.6	12.0	
		Pressure Rating	500 (3)	34.0	375(4)	26.0					

CAUTION - SEE CHART TO THE LEFT

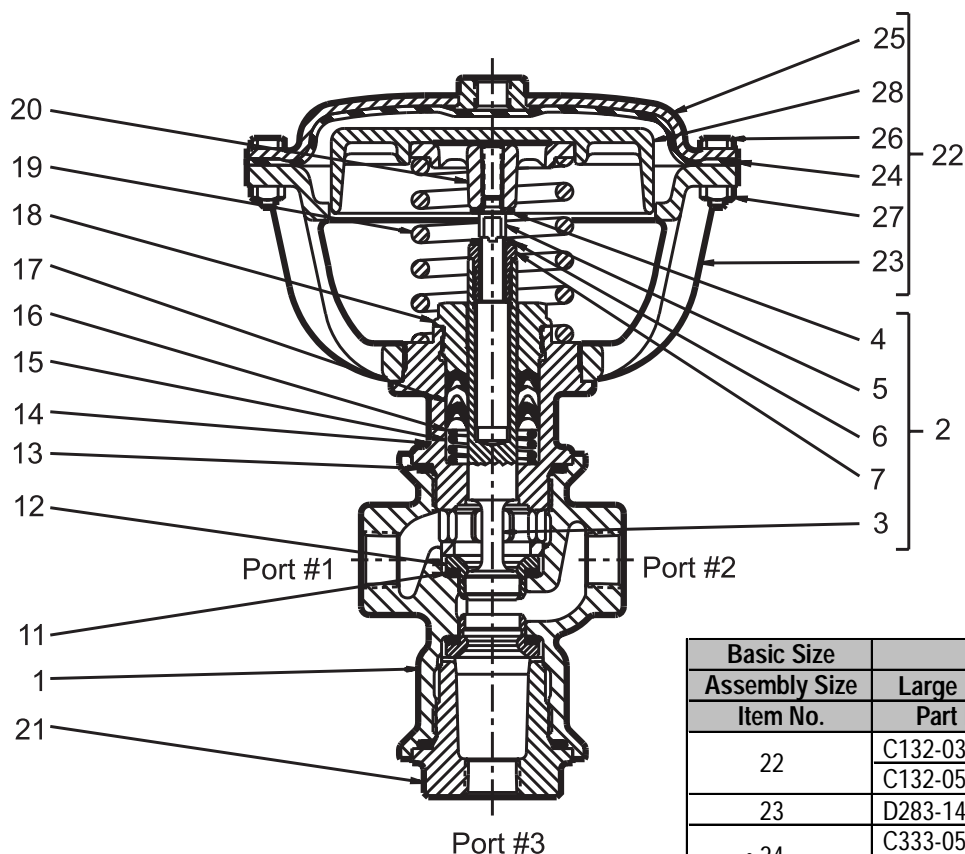
(1) Pressure rating shown is for inlet at Port 3. With inlet at Port 2, pressures up to 450 psi are permissible.

(2) When used as a **Directional Valve**, pressures must not exceed 340 psi. As a **Mixing Valve**, pressures up to 500 psi are permissible at Port 1. However, pressure at Port 3 must not exceed 325 psi.

(3) When used as a **Mixing Valve**, pressures up to 500 psi are permissible at Port 3. However, pressures at Port 1 must not exceed 400 psi.

(4) When used as a **Directional Valve**, pressures up to 450 psi are permissible. As a **Mixing Valve**, pressures up to 400 psi are permissible at Port 1; pressures up to 450 psi at Port 3.

(5) Pressure rating shown is for inlet at Port 1. With inlet at Port 2 pressures up to 450 psi are permissible.



Basic Size	1/2"		Description
Assembly Size	Large	Small	
Item No.	Part Numbers		
22	C132-039	C132-038	Diaphragm Assembly EPDM
	C132-051	C132-052	Diaphragm Assembly PTFE
23	D283-140	D283-139	Yoke
• 24	C333-053	C333-049	Diaphragm EPDM
	C333-069	C333-068	Diaphragm PTFE
25	C293-023	C293-018	Diaphragm Cover
26	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	Hex Nut
28	C783-048	C783-032	Diaphragm Piston
	C242-050	C242-051	Service Kit EPDM
	C242-082	C242-083	Service Kit PTFE

• IN SERVICE KIT

Valve Type	2-Way Normally Closed (Inline Porting)		2-Way Normally Open (Inline Porting)		2-Way Normally Open (Angle Porting) 3-Way Normally Open		3-Way Normally Closed		Description
Port Size	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	1/2" NPTF	3/4" NPTF	
Item No.	Part Numbers								
1	C093-151	C093-152	C093-151	C093-152	C093-151	C093-152	C093-151	C093-152	Body
2	C332-007	C332-007	C332-007	C332-007	C332-007	C332-007	C332-007	C332-007	Stem Assembly
3	D093-088	D093-088	D093-088	D093-088	D093-088	D093-088	D093-088	D093-088	Stem Only
4	D223-019	D223-019	D223-019	D223-019	D223-019	D223-019	D223-019	D223-019	Washer
5	D093-037	D093-037	D093-037	D093-037	D093-037	D093-037	D093-037	D093-037	Swivel Stem
6	H132-04	H132-04	H132-04	H132-04	H132-04	H132-04	H132-04	H132-04	Dust Washer
7	C643-002	C643-002	C643-002	C643-002	C643-002	C643-002	C643-002	C643-002	Swivel Nut
• 11	C383-010	C383-010	C383-010	C383-010	C383-010	C383-010	C383-010	C383-010	Seat Gasket
12	C963-008	C963-008	C963-008	C963-008	C963-008	C963-008	C963-008	C963-008	Seat Ring
• 13	C383-022	C383-022	C383-022	C383-022	C383-022	C383-022	C383-022	C383-022	End Gasket
14	C013-006	C013-006	C013-006	C013-006	C013-006	C013-006	C013-006	C013-006	Adapter
15	D293-001	D293-001	D293-001	D293-001	D293-001	D293-001	D293-001	D293-001	Packer Spring
16	C713-003	C713-003	C713-003	C713-003	C713-003	C713-003	C713-003	C713-003	Packer Spreader
• 17	C242-021	C242-021	C242-021	C242-021	C242-021	C242-021	C242-021	C242-021	Packer Assembly
18	C563-034	C563-034	C563-034	C563-034	C563-034	C563-034	C563-034	C563-034	Gland Nut
19	D239-157	D239-157	D239-158	D239-158	D239-158	D239-158	D239-157	D239-157	Diaphragm Spring
20	C883-006	C883-006	C883-006	C883-006	C883-006	C883-006	C883-006	C883-006	Spring Retainer
21	C213-179	C213-179	C213-143	C213-143	C213-177	C213-178	C213-177	C213-178	End Cap

## 500 psi (34 bar), 2- & 3-Way Valves Tapped 1", 1-1/4"

### SPECIFICATIONS

**Media:** Steam • Hot or Cold Water • Air & Inert Gases\*

**Pressure:** Maximum Operating Pressure: 500 psi (34 bar) \*\*

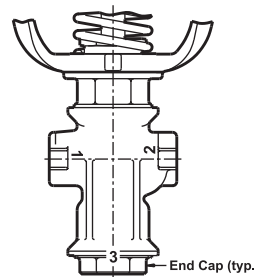
**Temperature Range:** -40° TO 450°F (-40° TO 232°C)

This basic 1" valve is available in 2-way and 3-way types. The 2-way normally closed valves are inline ported. The 2-way normally open valves may be ordered with angle or inline porting, as shown in the Model Selection Chart. The piping variations for the 3-way as well as the 2-way are shown in the Piping Connection chart. The valve stem design reduces wear on the packer, and all models incorporate the exclusive Sinclair Collins swivel stem design to reduce side load on the packer for longer packer life. The stem packer is spring loaded and self-adjusting for reduced maintenance. Spiral wound gaskets consisting of stainless steel and filler material are utilized to seal the seats, adapter and end cap. The body, adapter and yoke are of cast bronze. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance. These valves are equipped with large or small size diaphragm actuators. The large actuators permits operation of the valve at maximum rated pressure at any port with recommended actuated air pressure of 40 psi (2.8 bar) (If lesser line pressures are handled, lesser air pressure can be used). The small actuator provides some savings in space but its use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Chart. The large and small diaphragm actuators are interchangeable within a given size. The diaphragm actuator may be replaced with the valve under pressure but de-energized. **To order gas tested valves, add suffix (2) to the Model No. Example: C264-40012. To order valves with molded PTFE diaphragms, change the fourth digit to (6) Example: C266-4001. For dimensional data, see page 40. \* See Page 2. \*\* See maximum pressure for individual valves in "Model Selection Chart."**

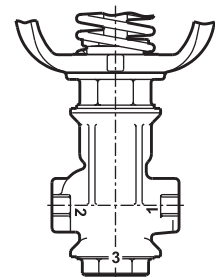
Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top



Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Open Inline Piped	Cylinder	Inlet	Plugged
	Normally Closed	Inlet	Cylinder	Plugged
	Normally Open	Drain	Cylinder	Inlet
3-Way	Normally Closed	Inlet	Cylinder	Drain
	Directional Valve	Outlet	Inlet	Outlet
3-Port	Mixing Valve	Inlet	Outlet	Inlet



Angle Porting  
2-Way N.O. - 2-Way N.C.  
3-Way N.O. - 3-Way N.C.



Inline Porting  
2-Way N.O.

### Model Selection Chart

Basic Valve Size	Port Tap (NPTF)	Description		Large Top		Small Top		Cv			
								Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
				psi	bar	psi	bar				
1"	1	2WNC (Inline Porting)	Model No..	C264-4001		C264-4009		13.5	13.8	-	-
			Pressure Rating	500	34.0	375(3)	26.0				
	1 1/4"	2WNC (Inline Porting)	Model No..	C264-4002		C264-4010		17.2	16.5	-	-
			Pressure Rating	500	34.0	375(3)	26.0				
	1	2WNO (Inline Porting)	Model No..	C274-4001		C274-4003		13.2	12.6	-	-
			Pressure Rating	500	34.0	275(4)	19.0				
	1 1/4"	2WNO (Inline Porting)	Model No..	C274-4002		C274-4004		17.9	17.0	-	-
			Pressure Rating	500	34.0	275(4)	19.0				
	1	2WNO (Angle Porting)	Model No..	C264-4003		C264-4011		-	-	17.9	18.4
			Pressure Rating	500	34.0	275(1)	19.0				
	1 1/4"	2WNO (Angle Porting)	Model No..	C264-4004		C264-4012		-	-	24.8	26.0
			Pressure Rating	500	34.0	275(1)	19.0				
	1	3-Way	Model No..	C264-4005		C264-4013		13.5	13.8	17.9	18.4
			Pressure Rating	500	34.0	275(2)	19.0				
	1 1/4"	3-Way	Model No..	C264-4006		C264-4014		17.2	17.0	24.8	26.0
			Pressure Rating	500	34.0	275(2)	19.0				

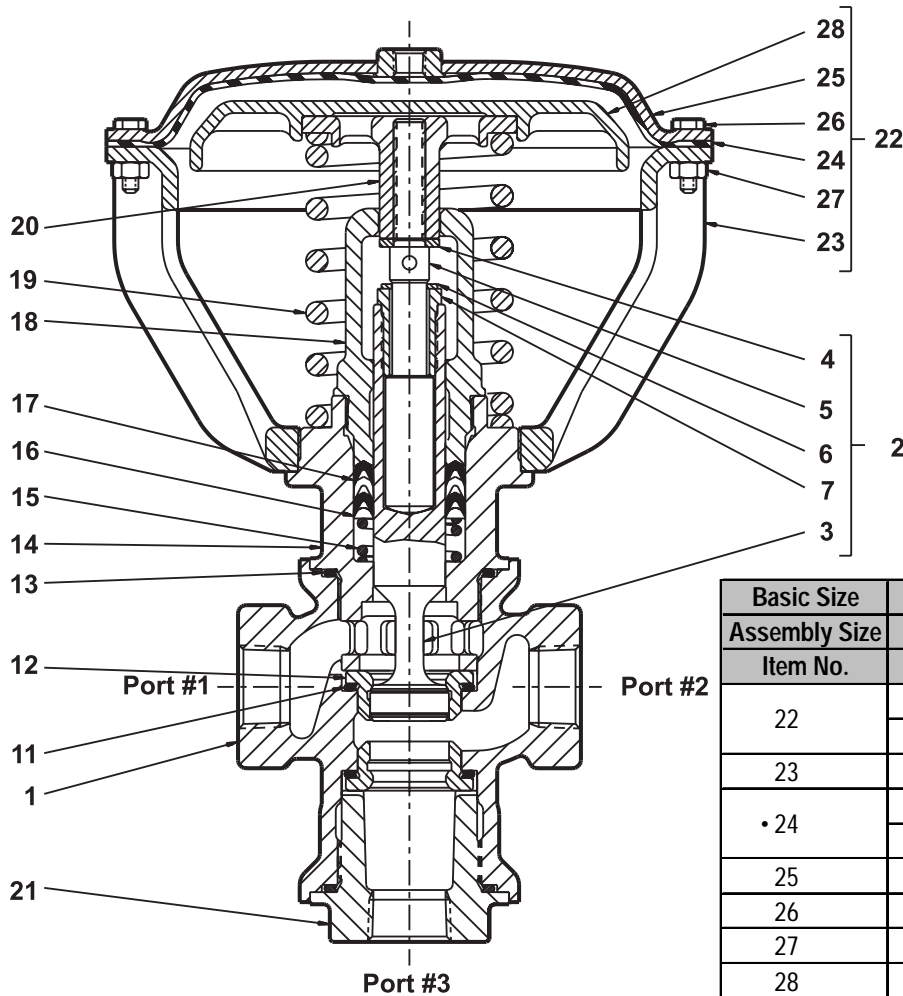
#### CAUTION - SEE CHART TO THE LEFT

(1) Pressure rating shown is for inlet at Port 3. With inlet at Port 2, pressures up to 350 psi are permissible.

(2) Pressure, rating shown is for valves piped **3-Way Normally Open**. For valves piped **3-Way Normally Closed**, pressures up to 500 psi are permissible. When used as a **Directional Valve**, pressures up to 350 psi are permissible. As a **Mixing Valve**, pressures up to 500 psi are permissible at Port 1. However, pressure at Port 3 must not exceed 275 psi.

(3) Pressure rating shown is for inlet at Port 2. With inlet at Port 1, pressures up to 500 psi are permissible.

(4) Pressure rating shown is for inlet at Port 1. With inlet at Port 2, pressures up to 350 psi are permissible.



Basic Size	1"		Description
Assembly Size	Large	Small	
Item No.	Part Numbers		
22	C132-040	C132-041	Diaphragm Assembly EPDM
	C132-053	C132-054	Diaphragm Assembly PTFE
23	D283-148	D283-146	Yoke
• 24	C333-051	C333-050	Diaphragm EPDM
	C333-070	C333-072	Diaphragm PTFE
25	C293-030	C293-091	Diaphragm Cover
26	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	Hex Nut
28	C783-081	C783-061	Diaphragm Piston
	C242-052	C242-053	Service Kit EPDM
	C242-084	C242-085	Service Kit PTFE

• IN SERVICE KIT

Valve Type	2-Way Normally Closed (Inline Porting)		2-Way Normally Open (Inline Porting)		2-Way Normally Open (Angle Porting)		3-Way		Description
	1" NPTF	1½" NPTF	1" NPTF	1½" NPTF	1" NPTF	1½" NPTF	1" NPTF	1½" NPTF	
Item No.	Part Numbers								
1	C093-149	C093-148	C093-149	C093-148	C093-149	C093-148	C093-149	C093-148	Body
2	C332-022	C332-022	C332-022	C332-022	C332-022	C332-022	C332-022	C332-022	Stem Assembly
3	D093-147	D093-147	D093-147	D093-147	D093-147	D093-147	D093-147	D093-147	Stem Only
4	D223-030	D223-030	D223-030	D223-030	D223-030	D223-030	D223-030	D223-030	Washer
5	D093-086	D093-086	D093-086	D093-086	D093-086	D093-086	D093-086	D093-086	Swivel Stem
6	H132-05	H132-05	H132-05	H132-05	H132-05	H132-05	H132-05	H132-05	Dust Washer
7	C643-006	C643-006	C643-006	C643-006	C643-006	C643-006	C643-006	C643-006	Swivel Nut
• 11	C383-019	C383-019	C383-019	C383-019	C383-019	C383-019	C383-019	C383-019	Seat Gasket
12	C963-052	C963-052	C963-052	C963-052	C963-052	C963-052	C963-052	C963-052	Seat Ring
• 13	C383-028	C383-028	C383-028	C383-028	C383-028	C383-028	C383-028	C383-028	End Gasket
14	C013-009	C013-009	C013-009	C013-009	C013-009	C013-009	C013-009	C013-009	Adapter
15	D293-002	D293-002	D293-002	D293-002	D293-002	D293-002	D293-002	D293-002	Packer Spring
16	C713-004	C713-004	C713-004	C713-004	C713-004	C713-004	C713-004	C713-004	Packer Spreader
• 17	C242-022	C242-022	C242-022	C242-022	C242-022	C242-022	C242-022	C242-022	Packer Assembly
18	C563-015	C563-015	C563-015	C563-015	C563-015	C563-015	C563-015	C563-015	Gland Nut
19	D239-147	D239-147	D239-147	D239-147	D239-147	D239-147	D239-147	D239-147	Diaphragm Spring
20	C883-008	C883-008	C883-008	C883-008	C883-008	C883-008	C883-008	C883-008	Spring Retainer
21	C213-174	C213-174	C213-139	C213-139	C213-175	C213-176	C213-175	C213-176	End Cap

**500 psi (34 Bar), 2- & 3-Way Tapped 1-1/4", 1-1/2", 2"**

**SPECIFICATIONS:** Media: Steam • Hot or Cold Water • Air & Inert Gases\* Pressure: Maximum Operating Pressure: 500 psi (34 bar)\*\* Temperature Range: -40° TO 450°F (-40° TO 232°C)

These 1-1/2" basic, hard seated valves are available in 2-Way and 3-Way types. Valve bodies are machined from the highest quality Navy-M bronze with stainless steel stem and seats, spring-loaded packers and stainless steel spiral-wound gaskets. The body, adapter and yoke are of cast bronze. The exclusive swivel stem design reduces side load on the stem packer for longer packer life. Skirted seats provide closed crossover for gradual reduction of flow prior to seating and minimal losses during cycling. Diaphragm springs are high quality spring steel and a proprietary coating is applied for maximum corrosion resistance.

These valves are available with a choice of large or small diaphragm actuators. The large actuator permits operation of the valve at maximum rated pressure at any port with 30 to 40 PSI (2.1 to 2.8 bar). The small actuator provides some savings in space, but its use reduces the usable operating pressure of the valve to the limits shown in the Model Selection Charts. The large and small diaphragm actuators are interchangeable within a given basic size. The actuator may be replaced with the valve under pressure but de-energized.

**To order gas tested valves, add suffix (2) to the Model No. Example: C264-60012**

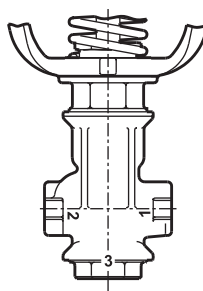
**To order valves with Molded PTFE diaphragms, change the fourth digit to (6). Example: C266-6001. For dimensional data, see page 40**

**\* See Page 2. \*\* See maximum pressure for individual valves in "Model Selection Chart."**

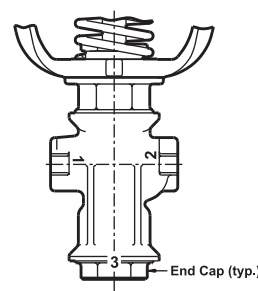
Use 30 to 40 psi  
(2.1 - 2.8 bar)  
Air Pressure on Top



Valve Type		Piping Connection		
		Port 1	Port 2	Port 3
2-Way	Normally Open Angle Piped	Plugged	Cylinder or Inlet	Inlet or Cylinder
	Normally Open Inline Piped	Cylinder	Inlet	Plugged
	Normally Closed	Inlet	Cylinder	Plugged
3-Way	Normally Open	Drain	Cylinder	Inlet
	Normally Closed	Inlet	Cylinder	Drain
3-Port	Directional Valve	Outlet	Inlet	Outlet
	Mixing Valve	Inlet	Outlet	Inlet



Inline Porting  
2-Way N.O.



Angle Porting  
2-Way N.O. - 2-Way N.C.  
3-Way N.O. - 3-Way N.C.

**Model Selection Chart**

Basic Valve Size	Port Tap (NPTF)		Description	Large Top		Small Top		Cv			
				psi	bar	psi	bar	Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
1½"	1¼"	2WNC (Inline Porting)	Model No.	C264-6001		C264-6009		31.9	29.7	-	-
			Pressure Rating	500	34.0	250	17.0				
	1½"		Model No.	C264-6002		C264-6010		35.0	32.9	-	-
			Pressure Rating	500	34.0	250	17.0				
2"	2"		Model No.	C264-6017		C264-6021		36.0	34.7	-	-
			Pressure Rating	500	34.0	250	17.0				
1½"	1¼"	2WNO (Inline Porting)	Model No.	C274-6001		C274-6003		31.9	29.7	-	-
			Pressure Rating	450(8)	31.0	200(7)	14.0				
	1½"		Model No.	C274-6002		C274-6004		35.0	32.9	-	-
			Pressure Rating	450(8)	31.0	200(7)	14.0				
2"	2"		Model No.	C274-6005		C274-6006		36.0	34.7	-	-
			Pressure Rating	450(8)	31.0	200(7)	14.0				
1½"	1¼"	2WNO (Angle Porting)	Model No.	C264-6003		C264-6011		-	-	43.2	48.5
			Pressure Rating	450(1)	31.0	200(2)	14.0				
	1½"		Model No.	C264-6004		C264-6012		-	-	45.0	49.9
			Pressure Rating	450(1)	31.0	200(2)	14.0				
2"	2"		Model No.	C264-6018		C264-6022		-	-	47.3	52.0
			Pressure Rating	450(1)	31.0	200(2)	14.0				
1½"	1¼"	3-WNC	Model No.	C264-6005		C264-6013		31.9	27.4	43.2	48.5
			Pressure Rating	500(3)	34.0	400(4)	28.0				
	1½"		Model No.	C264-6006		C264-6014		35.0	31.3	45.0	49.9
			Pressure Rating	500(3)	34.0	400(4)	28.0				
2"	2"		Model No.	C264-6019		C264-6023		36.0	34.7	47.3	52.0
			Pressure Rating	500(3)	34.0	400(4)	28.0				
1½"	1¼"	3-WNO	Model No.	C264-6007		C264-6015		31.9	27.4	43.2	48.5
			Pressure Rating	450(5)	31.0	200(6)	14.0				
	1½"		Model No.	C264-6008		C264-6016		35.0	31.3	45.0	49.9
			Pressure Rating	450(5)	31.0	200(6)	14.0				
2"	2"		Model No.	C264-6020		C264-6024		36.0	34.7	47.3	52.0
			Pressure Rating	450(5)	31	200(6)	14.0				

**CAUTION - See Chart TO THE LEFT**

(1) Pressure rating shown is for inlet at port 3 With inlet at port 2. pressures up to 500 psi are permissible.

(2) Pressure rating shown is for inlet at port 3. With inlet at port 2 pressures up to 215 psi are permissible.

(3) When used as a **Directional Valve**, pressure must not exceed 450 psi. As a **Mixing Valve**, pressures up to 500 psi are permissible at Port 1. However, pressure at Port 3 must not exceed 410 psi.

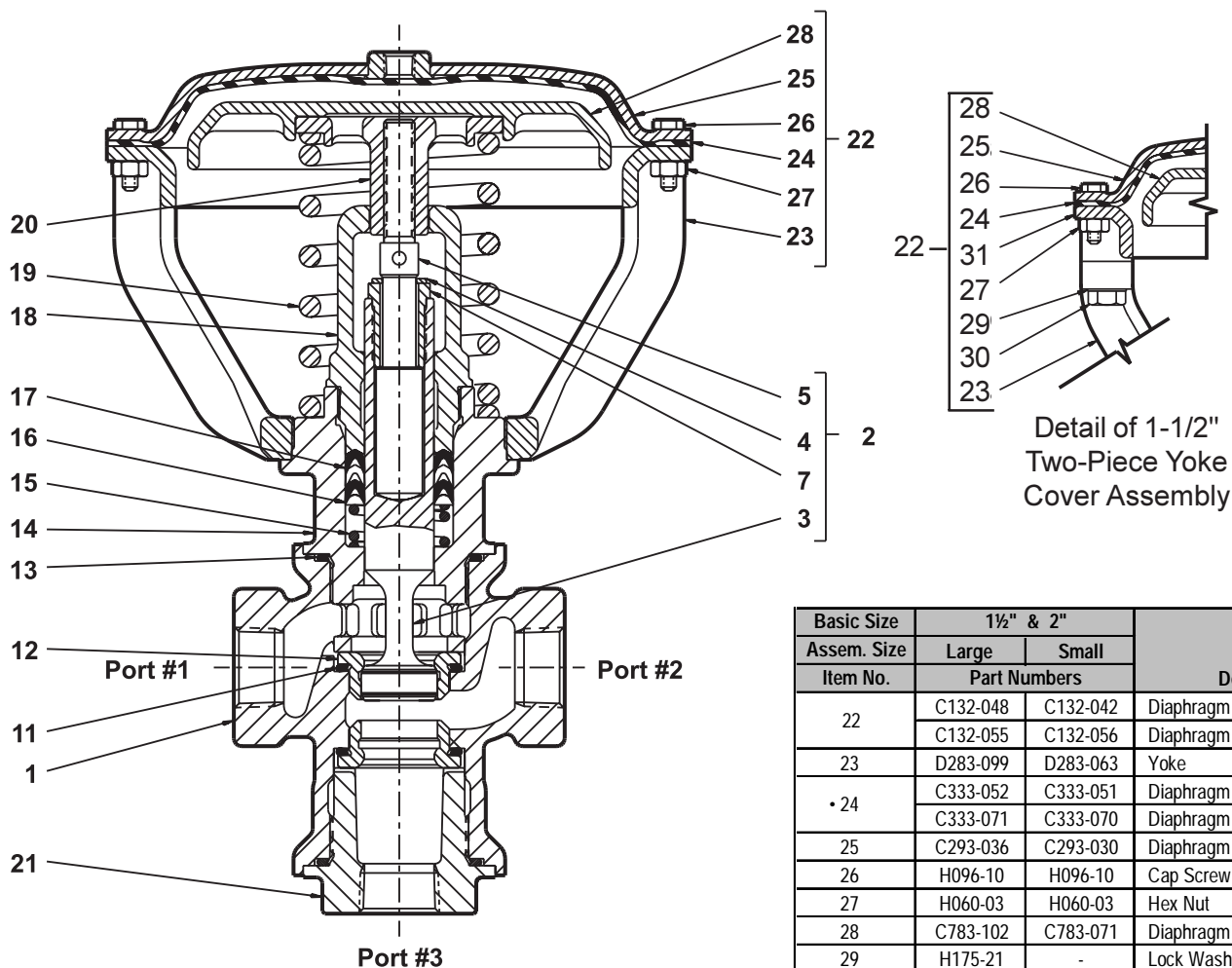
(4) When used as a **Directional Valve**, pressures must not exceed 215 psi. As a **Mixing Valve**, pressures up to 400 psi are permissible at Port 1. However, pressures at Port 3 must not exceed 200 psi.

(5) When used as a **Directional Valve**, pressures up to 500 psi are permissible. As a **Mixing Valve**, pressures up to 450 psi are permissible at Port 3. However, pressure at Port 1 must not exceed 400 psi.

(6) When used as a **Directional Valve**, pressures up to 215 psi are permissible. As a **Mixing Valve**, pressures up to 400 psi, are permissible at port 1. However, pressure at Port 3 must not exceed 200 psi.

(7) Pressure rating shown is for inlet at Port 1. With inlet at Port 2 pressures up to 215 psi are permissible.

(8) Pressure rating shown is for inlet at Port 1 With inlet at Port 2 pressures up to 500 psi are permissible.



Basic Size	1½" & 2"		Description
Assem. Size	Large	Small	
Item No.	Part Numbers		
22	C132-048	C132-042	Diaphragm Assembly EPDM
	C132-055	C132-056	Diaphragm Assembly PTFE
23	D283-099	D283-063	Yoke
• 24	C333-052	C333-051	Diaphragm EPDM
	C333-071	C333-070	Diaphragm PTFE
25	C293-036	C293-030	Diaphragm Cover
26	H096-10	H096-10	Cap Screw
27	H060-03	H060-03	Hex Nut
28	C783-102	C783-071	Diaphragm Piston
29	H175-21	-	Lock Washer
30	H096-49	-	Cap Screw
31	C893-031	-	Ring
	C242-054	C242-055	Service Kit EPDM
	C242-086	C242-087	Service Kit PTFE

• IN SERVICE KIT

Valve Type	2-Way Normally Closed (Inline Porting)			2-Way Normally Open (Inline Porting)			2-Way Normally Open (Angle Porting) 3-Way Normally Open			3-Way Normally Closed			Description
Port Item	1¼"NPTF	1½"NPTF	2"NPTF	1¼"NPTF	1½"NPTF	2"NPTF	1¼"NPTF	1½"NPTF	2"NPTF	1¼"NPTF	1½"NPTF	2"NPTF	
	Part Numbers												
1	C093-153	C093-150	C093-266	C093-153	C093-150	C093-266	C093-153	C093-150	C093-266	C093-153	C093-150	C093-266	Body
2	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	C332-044	Stem Ass.
3	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	D093-173	Stem Only
4	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	H132-06	Dust Wash.
5	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	D093-146	Swivel Stem
7	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	C643-010	Swivel Nut
• 11	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	C383-029	Seat Gasket
12	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	C963-085	Seat Ring
• 13	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	C383-032	End Gasket
14	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	C013-007	Adapter
15	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	D293-004	Pckr. Spring
16	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	C713-007	Pckr. Sprdr.
• 17	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	C242-023	Pckr. Ass.
18	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	C563-022	Gland Nut
19	D239-051†	D239-051†	D239-051†	D239-054	D239-054	D239-054	D239-054	D239-054	D239-054	D239-051†	D239-051†	D239-051†	Dia. Spring
20	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	C883-009	Spring Ret.
21	C213-182	C213-182	C213-182	C213-147	C213-147	C213-147	C213-180	C213-181	C213-201	C213-180	C213-181	C213-201	End Cap

† FOR NORMALLY CLOSED SMALL TOP USE D293-054.

## Soft Seated 400 psi (28 bar), 2- & 3-Way Valves - Sizes 1/2", 1"

These Cylinder Operated, C304 Series manifold mounted valves offer ease of maintenance where downtime is critical. They are either mounted on individual sub-bases or mounted in clusters on a common manifold for the ultimate in compact valving and minimal piping.

These 400 PSI, soft seated valves are available in 2-way and 3-way types. There are two basic sizes, 1/2" and 1", for pressures up to 400 psi (28 bar) and are designed to handle temperatures ranging from -40° to 400° F. (-40° to 204° C). The 2-Way valves can be either Normally Open or Normally Closed depending on the model selected.

Valve bodies are machined from the highest quality Navy-M bronze with stainless steel stem and seats, spring-loaded packers and stainless steel spiral-wound gaskets. Individual sub-bases are available as well as special multi-station manifolds designed to your circuit.

The cylinder actuator is anodized aluminum with floating piston and high temperature ring seal. The cylinder actuator will function on controlled 40 PSI (3 bar) instrument air pressure. The actuator may be replaced with the valve under pressure but de-energized.

For dimensional data, see page 41.



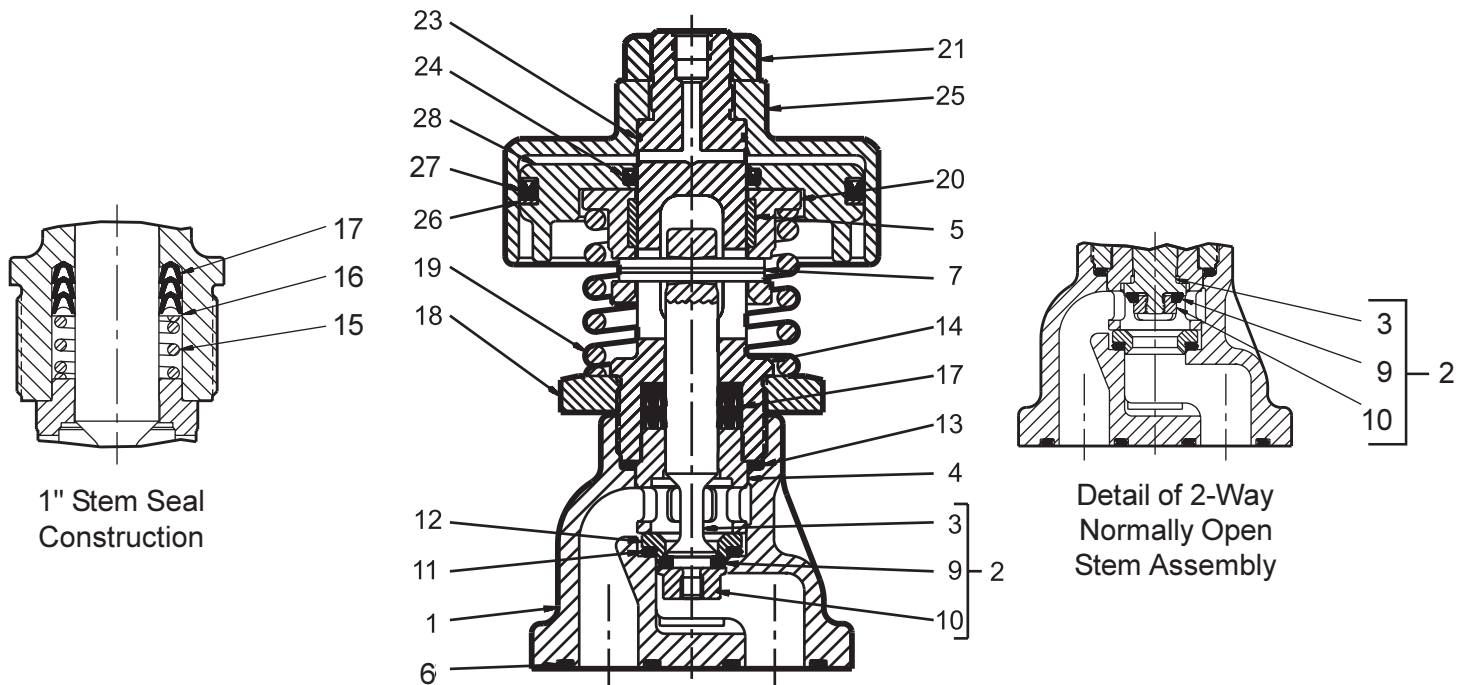
### Model Selection Chart

Basic Valve Size	Description	Model Number	Cv			
			Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
1/2"	2-Way Normally Closed	C304-20091	7.4	7.0	-	-
	2-Way Normally Open	C304-20121	7.6	7.5	-	-
	3-WAY	C304-20111	7.2	7.2	8.2	8.9
1"	2-Way Normally Closed	C304-40191	14.6	14.8	-	-
	2-Way Normally Open	C304-40221	14.0	14.5	-	-
	3-WAY	C304-40211	15.1	15.4	17.7	20.5

### Individual Sub Base Selection Chart

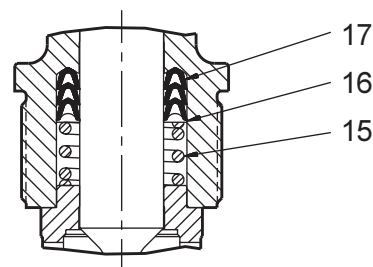
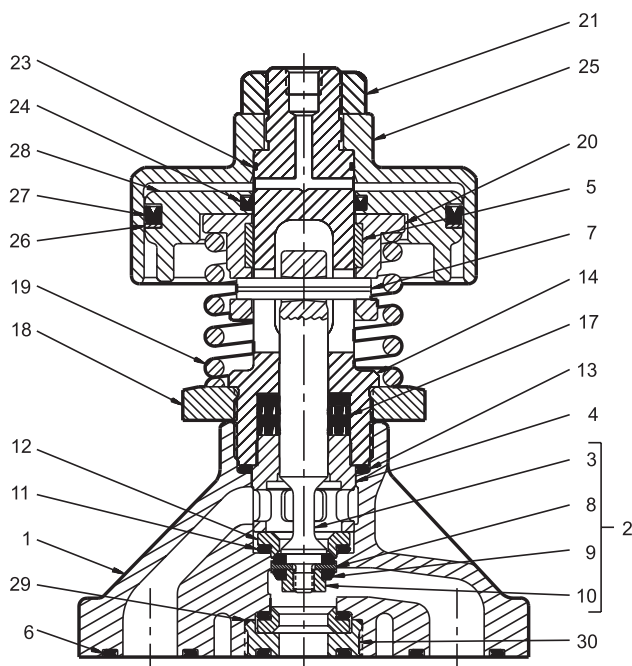
Basic Valve Size	Port Tap NPTF	Description	Model Number
1/2"	1/2"	2 Way N.C.	C342-009
	3/4"		C342-010
	1/2"	2 Way N.O.	C342-017
	3/4"		C342-018
	1/2"	3-Way	C342-013
	3/4"		C342-014
1"	1"	2-Way N.C.	C342-011
	1-1/4"		C342-012
	1"	2 Way N.O.	C342-019
	1-1/4"		C342-020
	1"	3-Way	C342-015
	1-1/4"		C342-016





Basic Valve Size & Type	1/2"		1"		
	2-Way N.C.	2-Way N.O.	2-Way N.C.	2-Way N.O.	
Model No.	C304-20091	C304-20121	C304-40191	C304-40221	
Item No.	Part Numbers				Description
1	C093-311	C093-316	C093-313	C093-318	Body
2	C332-099	C332-098	C332-102	C332-101	Stem Assembly
3	D093-239	D093-238	D093-241	D093-240	Stem Only
4	C873-015	C873-015	C873-019	C873-019	Seat Ring Ret.
• 5	D333-002	D333-002	D333-003	D333-003	Wear Ring
• 6	C383-062	C383-062	C383-077	C383-077	Gasket
• 7	H072-80	H072-80	H072-85	H072-85	Roll Pin
• 9	C343-068	C343-068	C343-069	C343-069	Seat Disc
10	C553-021	C553-022	C553-023	C553-024	Disc Nut
• 11	C383-010	C383-010	C383-019	C383-019	Seat Gasket
12	C963-148	C963-148	C963-149	C963-149	Seat Ring
• 13	C383-075	C383-075	C383-076	C383-076	Gasket
14	C013-021	C013-021	C013-022	C013-022	Adapter
15	-	-	D293-002	D293-002	Spring
16	-	-	C713-004	C713-004	Spreader
• 17	H272-03	H272-03	C242-022	C242-022	Seal
18	C633-042	C633-042	C633-043	C633-043	Spring Nut
19	D293-145	D293-145	D293-146	D293-146	Spring
20	C883-032	C883-032	C883-033	C883-033	Spring Retainer
21	C583-024	C583-024	C583-025	C583-025	Jam Nut
• 23	H136-77	H136-77	H137-84	H137-84	Seal
• 24	H145-85	H145-85	H145-43	H145-43	Seal
25	C293-107	C293-107	C293-109	C293-109	Cover
• 26	H143-111	H143-111	H143-114	H143-114	Backup Washer
• 27	H145-86	H145-86	H145-56	H145-56	Seal
28	C783-152	C783-152	C783-153	C783-153	Piston
	H096-99	H096-99	H096-95	H096-95	Bolt
	H178-24	H178-24	H178-73	H178-73	Washer
	C242-041		C242-043		Service Kit

• IN SERVICE KIT



1" Stem Seal  
Construction

Basic Valve Size & Type	1/2" 3-Way N.C.	1" 3-Way N.C.	Description
Model No.	C304-20111	C304-40211	
Item No.	Part Numbers		
1	C093-289	C093-312	Body
2	C332-100	C332-103	Stem Assembly
3	D093-239	D093-241	Stem Only
4	C873-015	C873-019	Seat Ring Ret.
• 5	D333-002	D333-003	Wear Ring
• 6	C383-062	C383-077	Gasket
• 7	H072-80	H072-85	Roll Pin
8	C353-012	C353-013	Disc Holder
• 9	C343-068	C343-069	Seat Disc
10	C553-022	C553-024	Disc Nut
• 11	C383-010	C383-019	Seat Gasket
12	C963-148	C963-149	Seat Ring
• 13	C383-075	C383-076	Gasket
14	C013-021	C013-022	Adapter
15	-	D293-002	Spring
16	-	C713-004	Spreader
• 17	H272-03	C242-022	Seal
18	C633-042	C633-043	Spring Nut
19	D293-145	D293-146	Spring
20	C883-032	C883-033	Spring Retainer
21	C583-024	C583-025	Jam Nut
• 23	H136-77	H137-84	Seal
• 24	H145-85	H145-43	Seal
25	C293-107	C293-109	Cover
• 26	H143-111	H143-114	Backup Washer
• 27	H145-86	H145-56	Seal
28	C783-152	C783-153	Piston
29	H232-87	H134-124	Seal
30	C873-017	C873-018	Seat Retainer
	H096-95	H096-101	Bolt
	H178-73	H178-74	Washer
	C242-041	C242-043	Service Kit

• IN SERVICE KIT

## 500 psi (34 BAR) 2- & 3-Way Valves Sizes 1/2", 1"

These Cylinder Operated, C304 Series manifold mounted valves offer ease of maintenance where downtime is critical. They are either mounted on individual sub-bases or mounted in clusters on a common manifold for the ultimate in compact valving and minimal piping.

These 500 PSI, hard seated valves are available in 2-Way and 3-Way types. There are two basic sizes, 1/2" and 1", for pressures up to 500 psi (34 bar) and are designed to handle temperatures ranging from -40 to 450 F. (-40 to 232 C). They are available in 2-Way and 3-Way types. The 2-Way valves can be either Normally Open or Normally Closed depending on the model selected.

Valve bodies and adapters are machined from the highest quality Navy-M bronze with stainless steel stem and seats, spring-loaded packers and stainless steel spiral-wound gaskets. Skirted seats provide closed crossover, on 3-Way valves, for gradual reduction of flow prior to seating and minimal losses during cycling. Individual sub-bases are available as well as special multi-station manifolds designed to your circuit.

The cylinder actuator is anodized aluminum with floating piston and high temperature ring seal. The cylinder actuator will function on controlled 40 PSI (3 bar) instrument air pressure. The actuator may be replaced with the valve under pressure but de-energized.

To order valve gas tested, add suffix (2) to the Model No. Example: C304-20092

For dimensional data, see page 41.



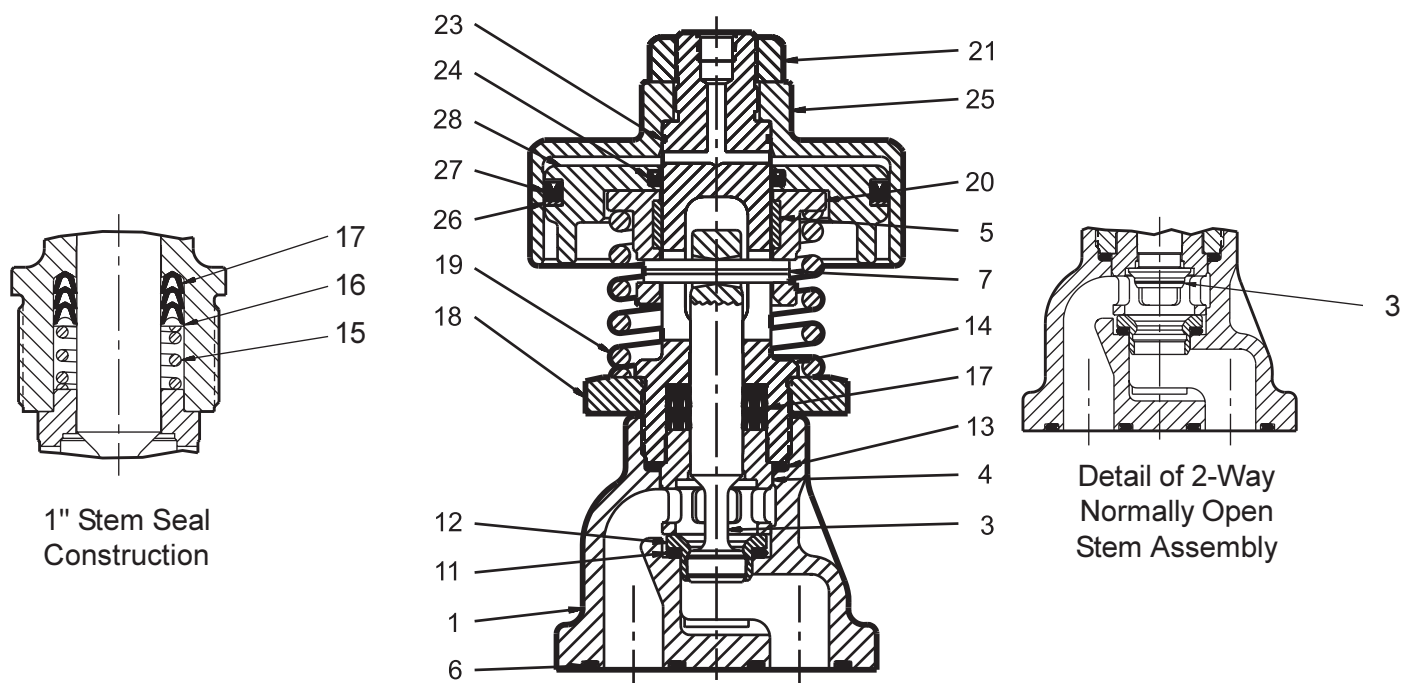
### Model Selection Chart

Basic Valve Size	Description	Model Number	CV			
			Port 1 to Port 2	Port 2 to Port 1	Port 2 to Port 3	Port 3 to Port 2
1/2"	2-Way Normally Closed	C304-2009	5.65	6.70	-	-
	2-Way Normally Open	C304-2012	8.10	8.10	-	-
	3-Way	C304-2011	6.44	5.37	7.02	10.99
1"	2-Way Normally Closed	C304-4019	12.90	14.00	-	-
	2-Way Normally Open	C304-4022	14.70	14.40	-	-
	3-Way	C304-4021	13.20	13.40	17.50	18.50

### Individual Sub Base Selection Chart

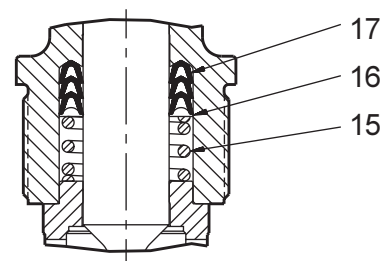
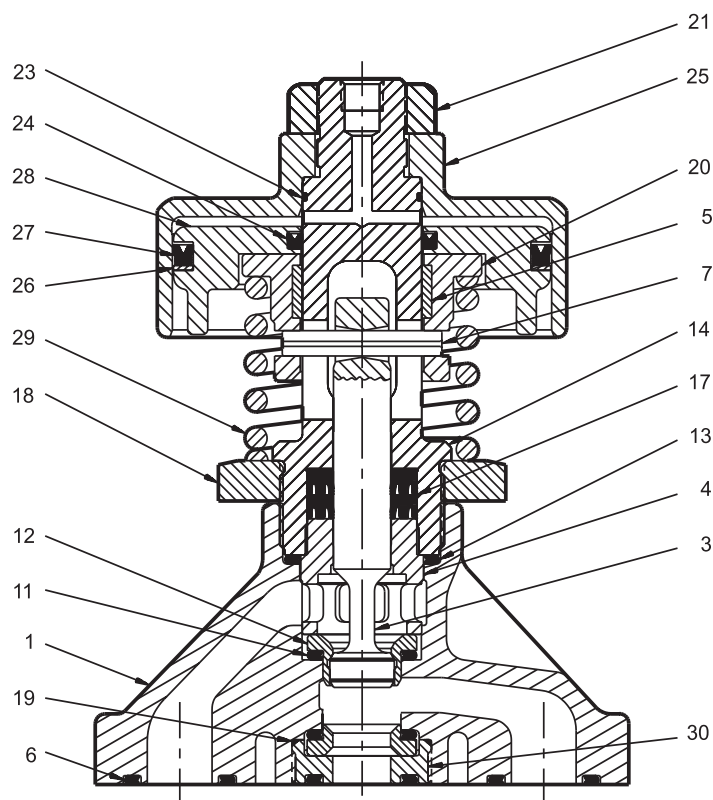
Basic Valve Size	Port Tap NPTF	Description	Model Number
1/2"	1/2"	2 Way N.C.	C342-009
	3/4"		C342-010
	1/2"	2 Way N.O.	C342-017
	3/4"		C342-018
	1/2"	3-Way	C342-013
	3/4"		C342-014
1"	1"	2-Way N.C.	C342-011
	1-1/4"		C342-012
	1"	2 Way N.O.	C342-019
	1-1/4"		C342-020
	1"	3-Way	C342-015
	1-1/4"		C342-016





Basic Valve Size & Type	1/2"		1"		
	2-Way N.C.	2-Way N.O.	2-Way N.C.	2-Way N.O.	
Model No.	C304-2009	C304-2012	C304-4019	C304-4022	
Item No.	Part Numbers				Description
1	C093-311	C093-316	C093-313	C093-318	Body
3	D093-225	D092-231	D093-230	D093-232	Stem
4	C873-015	C873-015	C873-019	C873-019	Seat Ring Ret.
• 5	D333-002	D333-002	D333-003	D333-003	Wear Ring
• 6	C383-062	C383-062	C383-077	C383-077	Gasket
• 7	H072-80	H072-80	H072-85	H072-85	Roll Pin
• 11	C383-010	C383-010	C383-019	C383-019	Seat Gasket
12	C963-008	C963-008	C963-052	C963-052	Seat Ring
• 13	C383-075	C383-075	C383-076	C383-076	Gasket
14	C013-021	C013-021	C013-022	C013-022	Adapter
15	-	-	D293-002	D293-002	Spring
16	-	-	C713-004	C713-004	Spreader
• 17	H272-03	H272-03	C242-022	C242-022	Seal
18	C633-042	C633-042	C633-043	C633-043	Spring Nut
19	D293-145	D293-145	D293-146	D293-146	Spring
20	C883-032	C883-032	C883-033	C883-033	Spring Retainer
21	C583-024	C583-024	C583-025	C583-025	Jam Nut
• 23	H136-77	H136-77	H137-84	H137-84	Seal
• 24	H145-85	H145-85	H145-43	H145-43	Seal
25	C293-107	C293-107	C293-109	C293-109	Cover
• 26	H143-111	H143-111	H143-114	H143-114	Backup Washer
• 27	H145-86	H145-86	H145-56	H145-56	Seal
28	C783-152	C783-152	C783-153	C783-153	Piston
	H096-99	H096-99	H096-95	H096-95	Bolt
	H178-24	H178-24	H178-73	H178-73	Washer
	C242-041		C242-043		Service Kit

• IN SERVICE KIT



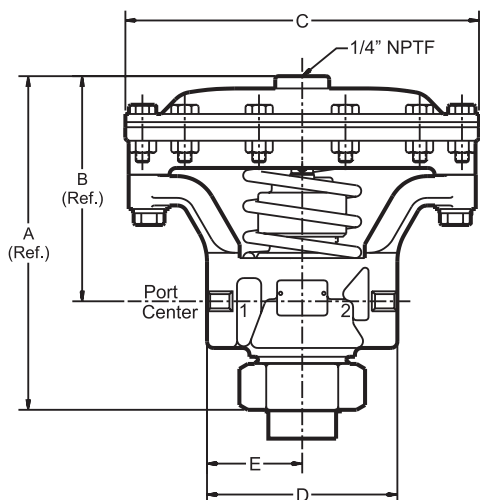
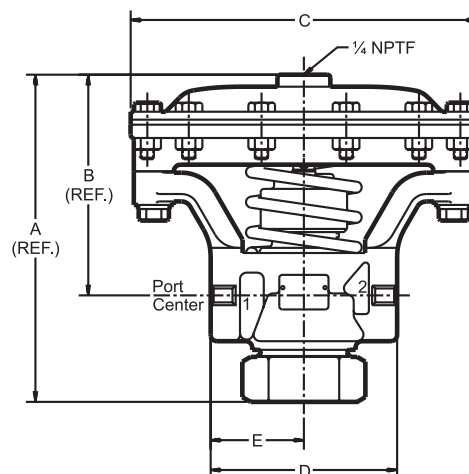
1" Stem Seal  
Construction

Basic Valve Size & Type	1/2" 3-Way N.C.	1" 3-Way N.C.	Description
Model No.	C304-2011	C304-4021	
Item No.	Part Numbers		
1	C093-289	C093-312	Body
3	D093-225	D093-230	Stem
4	C873-015	C873-019	Seat Ring Ret.
• 5	D333-002	D333-003	Wear Ring
• 6	C383-062	C383-077	Gasket
• 7	H072-80	H072-85	Roll Pin
• 11	C383-010	C383-019	Seat Gasket
12	C963-008	C963-052	Seat Ring
• 13	C383-075	C383-076	Gasket
14	C013-021	C013-022	Adapter
15	-	D293-002	Spring
16	-	C713-004	Spreader
• 17	H272-03	C242-022	Seal
18	C633-042	C633-043	Spring Nut
19	H232-87	H134-124	Seal
20	C883-032	C883-033	Spring Retainer
21	C583-024	C583-025	Jam Nut
• 23	H136-77	H137-84	Seal
• 24	H145-85	H145-43	Seal
25	C293-107	C293-109	Cover
• 26	H143-111	H143-114	Backup Washer
• 27	H145-86	H145-56	Seal
28	C783-152	C783-153	Piston
29	D293-145	D293-146	Spring
30	C873-017	C873-018	Seat Retainer
	H096-95	H096-101	Bolt
	H178-73	H178-74	Washer
	C242-041	C242-043	Service Kit

• IN SERVICE KIT

### 200 psi 2-Way Valves

Basic Valve Size	Port Tap (NPTF)		A	B	C	D	E
1/2"	1/2" & 3/4"	inch	6.16	4.19	6.50	3.50	1.75
		mm	156.50	106.40	165.10	88.90	44.40
1"	1" & 1-1/4"	inch	8.59	6.09	8.19	4.50	2.25
		mm	218.20	154.70	208.0	114.30	57.10
1-1/2"	1-1/2"	inch	9.27	6.47	9.50	5.25	2.63
		mm	235.40	164.30	241.30	133.30	66.80
2"	2" & 3"	inch	14.00	9.87	14.19	7.63	3.81
		mm	355.60	250.70	360.40	193.80	96.80

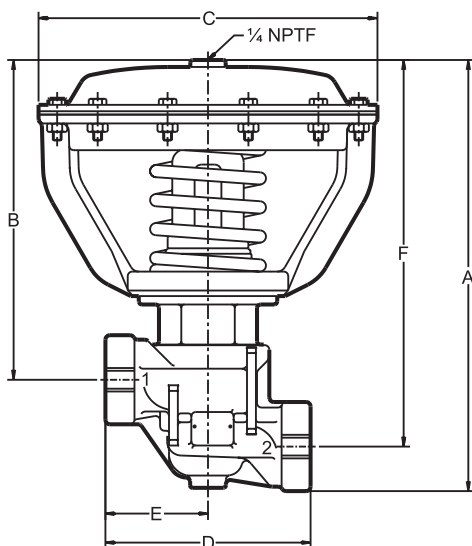
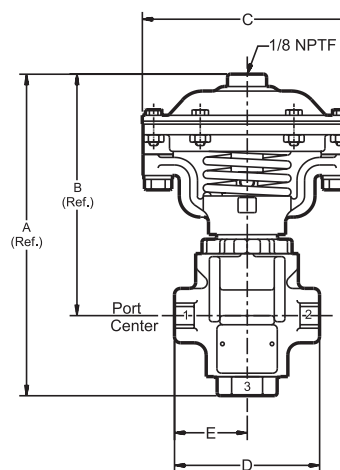


### 200 psi 3-Way Valves

Basic Valve Size	Port Tap (NPTF)		A	B	C	D	E
1/2"	1/2" & 3/4"	inch	6.69	4.19	6.50	3.50	1.75
		mm	169.90	106.40	165.10	88.90	44.40
1"	1" & 1-1/4"	inch	9.22	6.09	8.19	4.50	2.25
		mm	234.20	154.70	208.0	114.30	57.10
1-1/2"	1-1/2"	inch	9.96	6.47	9.50	5.25	2.63
		mm	253.00	164.30	241.30	133.30	66.80
2"	2" & 3"	inch	14.76	9.87	14.19	7.63	3.81
		mm	374.90	250.70	360.40	193.80	96.80

**500 psi 2-Way N.C. & N.O. Valves, 3-Way N.C. Valves**

Basic Valve Size	Port Tap (NPTF)		A	B	C	D	E
1/4"	1/4" &	inch	6.66	5.0	4.31	3.00	1.50
	3/8"	mm	169.20	127.00	109.50	76.20	38.10

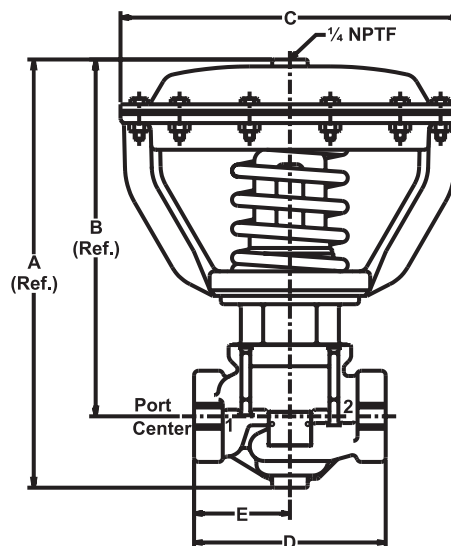


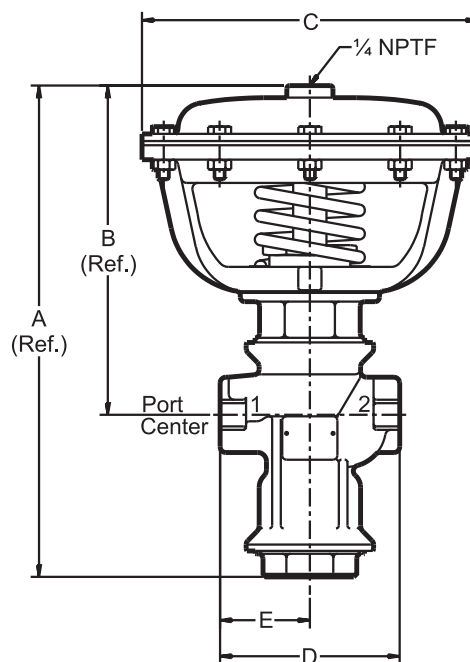
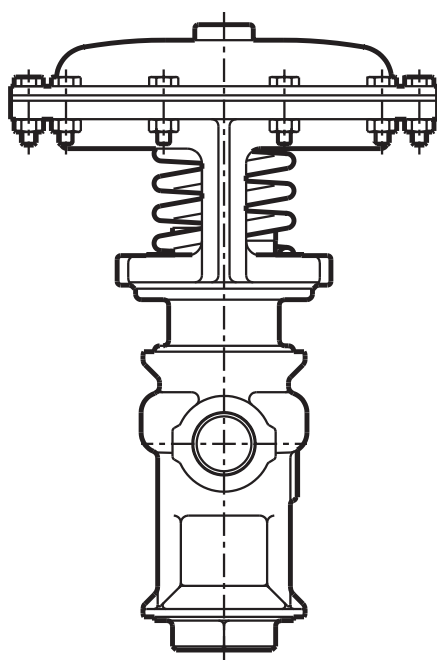
**500 psi 2-Way N.C. & N.O. Offset Valves**

Basic Valve Size	Port Tap (NPTF)	Top Size		A	B	C	D	E	F
1/2"	1/2" & 3/4"	Large	inch	8.84	6.58	7.25	3.88	1.94	7.72
			mm	224.50	167.10	184.20	98.60	49.30	196.10
		Small	inch	8.84	6.58	6.50	3.88	1.94	7.72
			mm	224.50	167.10	165.10	98.60	49.30	196.10
1"	1" & 1-1/4"	Large	inch	12.00	8.97	9.50	5.75	2.88	10.84
			mm	304.80	227.80	241.30	146.00	73.20	275.30
		Small	inch	11.88	8.84	8.19	5.75	2.88	10.72
			mm	301.80	224.50	208.0	146.00	73.20	272.30
1-1/2"	1-1/2"	Large	inch	15.06	11.31	11.75	6.50	3.25	13.72
			mm	382.50	287.30	298.40	165.10	82.60	348.50
		Small	inch	15.09	11.34	9.50	6.50	3.25	13.75
			mm	383.30	288.00	241.30	165.10	82.60	349.20

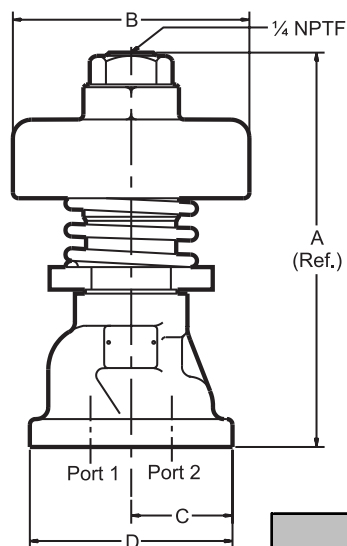
**400 & 500 psi 2-Way N.C. & N.O. Inline Valves**

Basic Valve Size	Port Tap (NPTF)	Top Size		A	B	C	D	E
1/2"	1/2" & 3/4"	Large	inch	8.84	7.03	7.25	3.88	1.94
			mm	224.50	178.60	184.20	98.60	49.30
		Small	inch	8.84	7.03	6.50	3.88	1.94
			mm	224.50	178.60	165.10	98.60	49.30
1"	1" & 1-1/4"	Large	inch	12.00	10.00	9.50	5.38	2.69
			mm	304.80	254.00	241.30	136.60	68.30
		Small	inch	11.88	9.88	8.19	5.38	2.69
			mm	301.80	251.00	208.0	136.60	68.30
1-1/2"	1-1/2"	Large	inch	15.06	12.56	11.75	6.50	3.25
			mm	382.50	319.00	298.40	165.10	82.60
		Small	inch	15.09	12.59	9.50	6.50	3.25
			mm	383.30	319.80	241.30	165.10	82.60



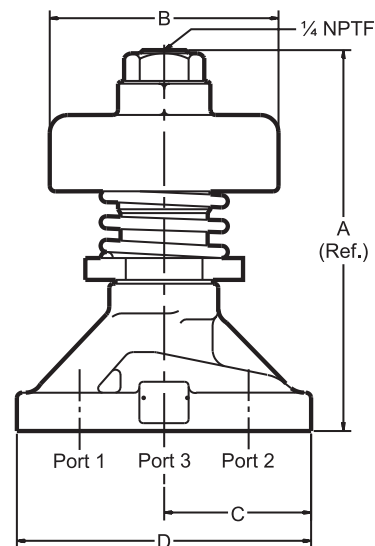


400 psi & 500 psi		3-Way Normally Closed & Normally Open Valves 2-Way Normally Closed & Open Inline Ported Valves 2-Way Normally Open Angle Ported Valves							
Basic Valve Size	Port Tap NPTF	Valve Type	Top Size		A	B	C	D	E
1/2"	1/2" & 3/4"	3-Way N.C. & N.O. 2-Way N.C. 2-Way N.O. Angle Ported	Large	inch	10.53	7.03	7.25	3.88	1.94
				mm	267.50	178.60	184.20	98.60	49.30
			Small	inch	10.53	7.03	6.50	3.88	1.94
				mm	267.50	178.60	165.10	98.60	49.30
		2-Way N.O. Inline Ported	Large	inch	10.53	8.41	7.25	3.88	1.94
				mm	267.50	213.60	184.20	98.60	49.30
1"	1" & 1-1/4"	3-Way N.C. & N.O. 2-Way N.C. 2-Way N.O. Angle Ported	Large	inch	14.00	10.00	9.50	5.38	2.69
				mm	355.60	254.00	241.30	136.60	68.30
			Small	inch	13.88	9.88	8.19	5.38	2.69
				mm	352.60	251.00	208.00	136.60	68.30
		2-Way N.O. Inline Ported	Large	inch	14.00	11.38	9.50	5.38	2.69
				mm	355.60	289.00	241.30	136.60	68.30
1-1/2"	1-1/4" & 1-1/2"	3-Way N.C. & N.O. 2-Way N.C. 2-Way N.O. Angle Ported	Large	inch	17.62	12.56	11.75	6.50	3.25
				mm	447.60	319.00	298.40	165.10	82.60
			Small	inch	17.66	12.59	9.50	6.50	3.25
				mm	448.60	319.80	241.30	165.10	82.60
		2-Way N.O. Inline Ported	Large	inch	17.62	14.31	11.75	6.50	3.25
				mm	447.60	363.50	298.40	165.10	82.60
			Small	inch	17.66	14.34	9.50	6.50	3.25
				mm	448.60	364.20	241.30	165.10	82.60
	2"	3-Way N.C. & N.O. 2-Way N.C. 2-Way N.O. Angle Ported	Large	inch	18.00	12.56	11.75	6.50	3.25
				mm	457.20	319.00	298.40	165.10	82.60
			Small	inch	18.03	12.59	9.50	6.50	3.25
				mm	458.00	319.80	241.30	165.10	82.60
		2-Way N.O. Inline Ported	Large	inch	18.00	14.31	11.75	6.50	3.25
				mm	457.20	363.50	298.40	165.10	82.60
			Small	inch	18.03	14.34	9.50	6.50	3.25
				mm	458.00	364.20	241.30	165.10	82.60



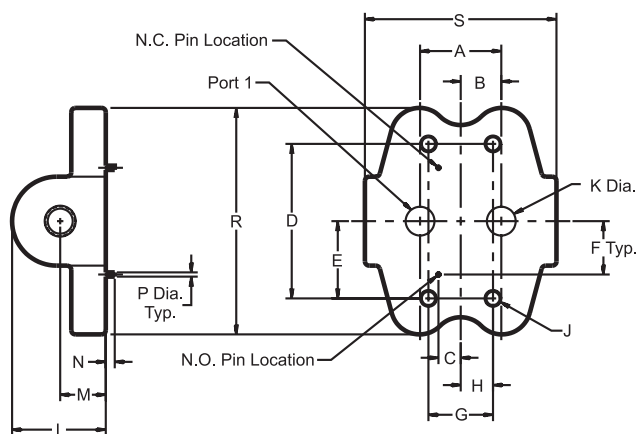
2-Way

Basic Size			A	B	C	D
1/2"	2-Way	inch	8.77	5.25	2.20	4.40
		mm	222.80	133.40	55.90	111.80
	3-Way	inch	8.77	5.25	3.34	6.68
		mm	222.80	133.40	84.80	169.70
1"	2-Way	inch	11.46	6.70	2.59	5.18
		mm	291.10	170.20	65.80	131.60
	3-Way	inch	11.46	6.70	3.88	7.75
		mm	291.10	170.20	98.60	196.80

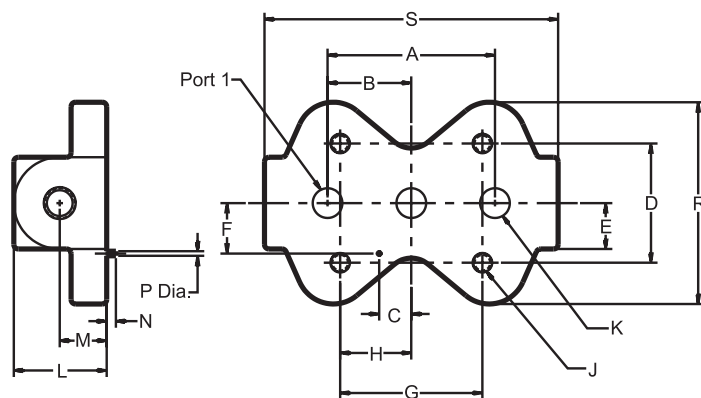


3-Way

Base Valve Size	Valve Tap NPTF	Valve Type		A	B	C	D	E	F	G	H	J (THD.)	K	L	M	N	P	R	S
1/2"	1/2" & 3/4"	2-Way	inch	2.28	1.14	0.62	4.34	2.17	1.5	1.81	0.91	7/16-14	0.81	2.53	1.28	0.25	0.12	6.38	5.38
			mm	57.9	29.0	15.7	110.2	55.1	38.1	46.0	23.1	-	20.6	64.3	32.5	6.4	3.0	162.0	136.6
		3-Way	inch	4.56	2.28	0.88	3.25	1.62	1.38	3.88	1.94	1/2-13	0.81	2.62	1.28	0.25	0.12	5.50	8.00
			mm	115.8	57.9	22.4	82.6	41.1	35.1	98.6	49.3	-	20.6	66.5	32.5	6.3	3.0	139.7	203.2
1"	1" & 1-1/4"	2-Way	inch	2.56	1.28	1.53	4.75	2.38	1.75	2.31	1.16	1/2-13	1.18	2.53	1.28	0.25	0.12	6.38	5.38
			mm	65.0	32.5	38.9	120.6	60.5	44.4	58.7	29.5	-	30	64.3	32.5	6.4	3.0	162.0	136.6
		3-Way	inch	5.12	2.56	1.0	3.5	1.75	1.5	4.25	2.12	5/8-11	1.18	2.62	1.28	0.25	0.12	5.50	8.00
			mm	130.0	65.0	25.4	88.9	44.4	38.1	108.0	53.8	-	30	66.5	32.5	6.3	3.0	139.7	203.2



2-Way Sub-Base



3-Way Sub-Base

# OFFER OF SALE

## PARKER-HANNIFIN CORPORATION OFFER OF SALE

**1. Definitions.** As used herein, the following terms have the meanings indicated.

"Buyer" means any customer receiving a Quote for Products.

"Buyer's Property" means any tools, patterns, plans, drawings, designs, specifications materials, equipment, or information furnished by Buyer, or which are or become Buyer's property.

"Confidential Information" means any technical, commercial, or other proprietary information of Seller, including, without limitation, pricing, technical drawings or prints and/or part lists, which has been or will be disclosed, delivered, or made available, whether directly or indirectly, to Buyer.

"Goods" means any tangible part, system or component to be supplied by Seller.

"Intellectual Property Rights" means any patents, trademarks, copyrights, trade dress, trade secrets or similar rights.

"Products" means the Goods, Services and/or Software as described in a Quote.

"Quote" means the offer or proposal made by Seller to Buyer for the supply of Products.

"Seller" means Parker-Hannifin Corporation, including all divisions, subsidiaries and businesses selling Products under these Terms.

"Seller's IP" means patents, trademarks, copyrights, or other intellectual property rights relating to the Products, including without limitation, names, designs, images, drawings, models, software, templates, information, any improvements or creations or other intellectual property developed prior to or during the relationship contemplated herein.

"Services" means any services to be provided by Seller.

"Software" means any software related to the Goods, whether embedded or separately downloaded.

"Special Tooling" means equipment acquired by Seller or otherwise owned by Seller necessary to manufacture Goods, including but not limited to tools, jigs, and fixtures.

"Terms" means the terms and conditions of this Offer of Sale.

**2. Terms.** All sales of Products by Seller will be governed by, and are expressly conditioned upon Buyer's assent to, these Terms. These Terms are incorporated into any Quote provided by Seller to Buyer. Buyer's order for any Products whether communicated to Seller verbally, in writing, by electronic data interface or other electronic commerce, shall constitute acceptance of these Terms. Seller objects to any contrary or additional terms or conditions of Buyer. Reference in Seller's order acknowledgement to Buyer's purchase order or purchase order number shall in no way constitute an acceptance of any of Buyer's terms or conditions of purchase. Any Quote made by Seller to Buyer shall be considered a firm and definite offer and shall not be deemed to be otherwise despite any language on the face of the Quote. Seller reserves all rights to accept or reject any purported acceptance by Buyer to Seller's Quote if such purported acceptance attempts to vary the terms of the Quote. If Seller ships Products after Buyer issues an acceptance to the Quote, any additional or different terms proposed by Buyer will not become part of the parties' business relationship unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence. If the transaction proceeds without such agreement on the part of Seller, the business relationship will be governed solely by these Terms and the specific terms in Seller's Quote.

**3. Price; Payment.** The Products set forth in the Quote are offered for sale at the prices indicated in the Quote. Unless otherwise specifically stated in the Quote, prices are valid for thirty (30) days and do not include any sales, use, or other taxes or duties. Seller reserves the right to modify prices for any reason and at any time by giving ten (10) days prior written notice. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2020). All sales are contingent upon credit approval and full payment for all purchases is due thirty (30) days from the date of invoice (or such date as may be specified in the Quote). Under any circumstances, Buyer may not withhold or suspend payment of any amounts due and payable as a deduction, set-off or recoupment of any amount, claim or dispute with Seller. Unpaid invoices beyond the specified payment date incur interest at the rate of 1.5% per month or the maximum allowable rate under applicable law. Seller reserves the right to require advance payment or provision of securities for first and subsequent deliveries if there is any doubt, in Seller's sole determination, regarding the Buyer's creditworthiness or for other business reasons. If the requested advance payment or securities are not provided to Seller's satisfaction, Seller reserves the right to suspend performance or reject the purchase order, in whole or in part, without prejudice to Seller's other rights or remedies, including the right to full compensation. Seller may revoke or shorten any payment periods previously granted in Seller's sole determination. The rights and remedies herein reserved to Seller are cumulative and in addition to any other or further rights and remedies available at law or in equity. No waiver by Seller of any breach by Buyer of any provision of these terms will constitute a waiver by Seller of any other breach of such provision.

**4. Shipment; Delivery; Title and Risk of Loss.** All delivery dates are approximate, and Seller is not responsible for damages or additional costs resulting from any delay. All deliveries are subject to our ability to procure materials from our suppliers. Regardless of the manner of shipment, delivery occurs and title and risk

of loss or damage pass to Buyer, upon placement of the Products with the carrier at Seller's facility. Unless otherwise agreed prior to shipment and for domestic delivery locations only, Seller will select and arrange, at Buyer's sole expense, the carrier and means of delivery. When Seller selects and arranges the carrier and means of delivery, freight and insurance costs for shipment to the designated delivery location will be prepaid by Seller and added as a separate line item to the invoice. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions. Buyer shall not return or repackage any Products without the prior written authorization from Seller, and any return shall be at the sole cost and expense of Buyer.

**5. Warranty.** The warranty for the Products is as follows:

(i) Goods are warranted against defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of use, whichever occurs first; (ii) Services shall be performed in accordance with generally accepted practices and using the degree of care and skill that is ordinarily exercised and customary in the field to which the Services pertain and are warranted for a period of six (6) months from the date of completion of the Services; and (iii) Software is only warranted to perform in accordance with applicable specifications provided by Seller to Buyer for ninety (90) days from the date of delivery or, when downloaded by a Buyer or end-user, from the date of the initial download. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: EXEMPTION CLAUSE; DISCLAIMER OF WARRANTY, CONDITIONS, REPRESENTATIONS: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY, CONDITION, AND REPRESENTATION, PERTAINING TO PRODUCTS. SELLER DISCLAIMS ALL OTHER WARRANTIES, CONDITIONS, AND REPRESENTATIONS, WHETHER STATUTORY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE RELATING TO DESIGN, NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE. SELLER DOES NOT WARRANT THAT THE SOFTWARE IS ERROR-FREE OR FAULT-TOLERANT, OR THAT BUYER'S USE THEREOF WILL BE SECURE OR UNINTERRUPTED, UNLESS OTHERWISE AUTHORIZED IN WRITING BY SELLER, THE SOFTWARE SHALL NOT BE USED IN CONNECTION WITH HAZARDOUS OR HIGH-RISK ACTIVITIES OR ENVIRONMENTS. EXCEPT AS EXPRESSLY STATED HEREIN, ALL PRODUCTS ARE PROVIDED "AS IS".

**6. Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to Seller within ten (10) days of delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the non-conformance is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

**7. LIMITATION OF LIABILITY. IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE THE NON-CONFORMING PRODUCTS, RE-PERFORM THE SERVICES, OR REFUND THE PURCHASE PRICE PAID WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES INCLUDING ANY LOSS OF REVENUE OR PROFITS, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCTS.**

**8. Confidential Information.** Buyer acknowledges and agrees that Confidential Information has been and will be received in confidence and will remain the property of Seller. Buyer further agrees that it will not use Seller's Confidential Information for any purpose other than for the benefit of Seller and shall return all such Confidential Information to Seller within thirty (30) days upon request.

**9. Loss to Buyer's Property.** Buyer's Property will be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer ordering the Products manufactured using Buyer's Property. Also, Seller shall not be responsible for any loss or damage to Buyer's Property while it is in Seller's possession or control.

**10. Special Tooling.** Seller may impose a tooling charge for any Special Tooling. Special Tooling shall be and remain Seller's property. In no event will Buyer acquire any interest in the Special Tooling, even if such Special Tooling has been specially converted or adapted for manufacture of Goods for Buyer and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any Special Tooling or other property owned by Seller in its sole determination at any time.

**11. Security Interest.** To secure payment of all sums due from Buyer, Seller retains a security interest in all Products delivered to Buyer and, Buyer's acceptance of these Terms is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect Seller's security interest.

**12. User Responsibility.** Buyer, through its own analysis and testing, is solely responsible for making the final selection of the Products and assuring that all performance, endurance, maintenance, safety and warning requirements of the application of the Products are met. Buyer must analyze all aspects of the application and follow

applicable industry standards, specifications, and any technical information provided with the Quote or the Products, such as Seller's instructions, guides and specifications. If Seller provides options of or for Products based upon data or specifications provided by Buyer, Buyer is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products. In the event Buyer is not the end-user of the Products, Buyer will ensure such end-user complies with this paragraph.

**13. Use of Products, Indemnity by Buyer.** Buyer shall comply with all instructions, guides and specifications provided by Seller with the Quote or the Products. If Buyer uses or resells the Products in any way prohibited by Seller's instructions, guides or specifications, or Buyer otherwise fails to comply with Seller's instructions, guides and specifications, Buyer acknowledges that any such use, resale, or non-compliance is at Buyer's sole risk. Further, Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, intellectual property infringement or any other claim, arising out of or in connection with: (a) improper selection, design, specification, application, or any misuse of Products; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of Buyer's Property; (d) damage to the Products from an external cause, repair or attempted repair by anyone other than Seller, failure to follow instructions, guides and specifications provided by Seller, use with goods not provided by Seller, or opening, modifying, deconstructing, tampering with or repackaging the Products; or (e) Buyer's failure to comply with these Terms, including any legal or administrative proceedings, collection efforts, or other actions arising from or relating to such failure to comply. Seller shall not indemnify Buyer under any circumstance except as otherwise provided in these Terms.

**14. Cancellations and Changes.** Buyer may not cancel or modify, including but not limited to movement of delivery dates for the Products, any order for any reason except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage and any additional expense. Seller, at any time, may change features, specifications, designs and availability of Products.

**15. Assignment.** Buyer may not assign its rights or obligations without the prior written consent of Seller.

**16. Force Majeure.** Seller is not liable for delay or failure to perform any of its obligations by reason of any events or circumstances beyond its reasonable control. Such circumstances include without limitation: accidents, labor disputes or stoppages, government acts or orders, acts of nature, pandemics, epidemics, other widespread illness, or public health emergency, cyber related disruptions, cyber-attacks, ransomware sabotage, delays or failures in delivery from carriers or suppliers, shortages of materials, sudden increases in the price of raw material or components, shutdowns or slowdowns affecting the supply of raw materials or components, or the transportation thereof, oil shortages or oil price increases, energy crisis, energy or fuel interruption, war (whether declared or not) or the serious threat of same, riots, rebellions, acts of terrorism, embargoes, fire or any reason whether similar to the foregoing or otherwise. Seller will resume performance as soon as practicable after the event of force majeure has been removed. All delivery dates affected by an event of force majeure shall be tolled for the duration of such event of force majeure and rescheduled for mutually agreed dates as soon as practicable after the event of force majeure ceases to exist. The right to allocate capacity is in the Seller's sole discretion. An event of force majeure shall not include financial distress, insolvency, bankruptcy, or other similar conditions affecting one of the parties, affiliates and/or sub-contractors. An event of force majeure in the meaning of these Terms means any circumstances beyond Seller's control that permanently or temporarily hinders performance, even where that circumstance was already foreseen. Buyer shall not be entitled to cancel any orders following its claim of an event of force majeure.

**17. Waiver and Severability.** Failure to enforce any provision of these Terms will not invalidate that provision; nor will any such failure prejudice either party's right to enforce that provision in the future. Invalidation of any provision of these Terms shall not invalidate any other provision herein and, the remaining provisions will remain in full force and effect.

**18. Duration.** Unless otherwise stated in the Quote, any agreement governed by or arising from these Terms shall: (a) be for an initial duration of one (1) year; and (b) shall automatically renew for successive one-year terms unless terminated by Buyer with at least 180-days written notice to Seller or if Seller terminates the agreement pursuant to Section 19 of these Terms.

**19. Termination.** Seller may, without liability to Buyer, terminate any agreement governed by or arising from these Terms for any reason and at any time by giving Buyer thirty (30) days prior written notice. Seller may immediately terminate, in writing, if Buyer: (a) breaches any provision of these Terms, (b) becomes or is deemed insolvent, (c) appoints or has appointed a trustee, receiver or custodian for all or any part of Buyer's property, (d) files a petition for relief in bankruptcy on its own behalf, or one is filed against Buyer by a third party, (e) makes an assignment for the benefit of creditors; or (f) dissolves its business or liquidates all or a majority of its assets.

**20. Ownership of Rights.** Buyer agrees that (a) Seller (and/or its affiliates) owns or is the valid licensee of Seller's IP and (b) the furnishing of information, related

documents or other materials by Seller to Buyer does not grant or transfer any ownership interest or license in or to Seller's IP to Buyer, unless expressly agreed in writing. Without limiting the foregoing, Seller retains ownership of all Software supplied to Buyer. In no event shall Buyer obtain any greater right in and to the Software than a right in a license limited to the use thereof and subject to compliance with any other terms provided with the Software. Buyer further agrees that it will not, directly or through intermediaries, reverse engineer, decompile, or disassemble any Software (including firmware) comprising or contained within a Product, except and only to the extent that such activity may be expressly permitted, either by applicable law or, in the case of open source software, the applicable open source license.

**21. Indemnity for Infringement of Intellectual Property Rights.** Seller is not liable for infringement of any Intellectual Property Rights except as provided in this Section. Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on a third-party claim that one or more of the Products infringes the Intellectual Property Rights of a third party in the country of delivery of the Products by Seller to Buyer. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of any such claim, and Seller having sole control over the defense of the claim including all negotiations for settlement or compromise. If one or more Products is subject to such a claim, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Products, replace or modify the Products to render them non-infringing, or offer to accept return of the Products and refund the purchase price less a reasonable allowance for depreciation. Seller has no obligation or liability for any claim of infringement: (i) arising from information provided by Buyer (including Seller's use of Buyer's Property); or (ii) directed to any Products for which the designs are specified in whole or part by Buyer; or (iii) resulting from the modification, combination or use in a system of any Products. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for claims of infringement of Intellectual Property Rights.

**22. Governing Law.** These Terms, the terms of any Quote, and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to the sale and delivery of the Products.

**23. Entire Agreement.** These Terms, along with the terms set forth in the Quote, forms the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale and purchase. In the event of a conflict between any term set forth in the Quote and these Terms, the terms set forth in the Quote shall prevail. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter shall have no effect. No modification to these Terms will be binding on Seller unless agreed to in a writing that is signed by an authorized representative of Seller, excluding email correspondence, 'clickwrap' or other purported electronic assent to different or additional terms. Sections 2-25 of these Terms shall survive termination or cancellation of any agreement governed by or arising from these Terms.

**24. No 'Wrap' Agreements/No Authority to Bind.** Seller's clicking any buttons or any similar action, such as clicking "I Agree" or "Confirm," to utilize Buyer's software or webpage for the placement of orders, is NOT an agreement to Buyer's Terms and Conditions. NO EMPLOYEE, AGENT OR REPRESENTATIVE OF SELLER HAS THE AUTHORITY TO BIND SELLER BY THE ACT OF CLICKING ANY BUTTON OR SIMILAR ACTION ON BUYER'S WEBSITE OR PORTAL.

**25. Compliance with Laws.** Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards, including those of the United States of America, and the country or countries in which Buyer may operate, including without limitation the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act"), U.S. and E.U. export control and sanctions laws ("Export Laws"), the U.S. Food Drug and Cosmetic Act ("FDCA"), and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), each as currently amended. Buyer agrees to indemnify, defend, and hold harmless Seller from the consequences of any violation of such laws, regulations and standards by Buyer, its employees or agents. Buyer represents that it is familiar with all applicable provisions of the FCPA, the Anti-Kickback Act, Export Laws, the FDCA and the FDA and certifies that Buyer will adhere to the requirements thereof and not take any action that would make Seller violate such requirements. Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly, to any governmental official, foreign political party or official thereof, candidate for foreign political office, or commercial entity or person, for any improper purpose, including the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller. Buyer further represents and agrees that it will not receive, use, service, transfer or ship any Products from Seller in a manner or for a purpose that violates Export Laws or would cause Seller to be in violation of Export Laws. Buyer agrees to promptly and reliably provide Seller all requested information or documents, including end-user statements and other written assurances, concerning Buyer's ongoing compliance with Export Law.



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