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Safety

The following signs may be used in this manual. To avoid serious injury and/or possible damage to equipment, pay attention to these messages. Hazards or unsafe practices could result in severe personal injury or death.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. May also be used to alert against an unsafe operating or maintenance practice.

Use only replacement parts and devices recommended by the manufacturer to maintain the integrity of the equipment. Make sure the parts are properly matched to the series, model, serial number, and revision level of the equipment.

Safety labels are placed on equipment where appropriate. Do not remove any labeling from any piece of equipment. Replace any label that is missing.

DO NOT modify any Dixon® product. Non-factory modifications could create hazardous conditions and void all warranties. DO NOT attempt to use a Dixon product in any application that exceeds the product rating.

General Guidelines

- The owner must comply with these operating instructions and the authorized use of this piece of equipment. Should problems arise that cannot be solved using these operating instructions, please contact Dixon Sanitary. We will be happy to provide further assistance.
- If any modification work is performed on the product by the owner, Dixon shall no longer be considered the manufacturer of the device. In such cases, all components must be subjected to a new certification process for any applicable certifications that the equipment holds. Unless agreed to in writing by Dixon, liability, warranties, and guarantees shall immediately be deemed null and void as soon as you:
 - Perform modifications/conversion work on the product.
 - Use the product for unauthorized purposes.
 - Remove or disable safety elements.
 - Process products whose material, form, and size do not correspond exactly to the description provided.
 - Make alterations to the original state of the device.
- The operating instructions are regarded as part of the valve.
- The operating instructions shall be valid for the entirety of the device's lifespan.
- The operating and maintenance personnel must always be able to access the operating instructions.
- The safety instructions provided in the operating instructions must be observed.
- The operating instructions must be maintained and updated as necessary.
- The operating instructions must be passed on to any subsequent owners or operators of the device.

Safety

Owner Must Ensure...

- The product is used only as authorized.
- The product is used only when it is in fault-free, fully functional condition and the safety equipment is regularly checked to ensure that it is fully functional.
- The product is operated, maintained, and repaired only by personnel with the appropriate qualifications and authorization.
- Checks are made before the product is put into operation to ensure that only the authorized person is in the work area and no one is in danger of being injured if the product is in operation.
- The product is checked for visual damage prior to commissioning to ensure that it is operated only when free of faults.
- Any defects are reported immediately to the appropriate supervisor.
- All safety and warning notices attached to the equipment are legible, and none are removed.
- The operating instructions are always kept close to the product operation site, in a legible and complete state.
- Personnel are regularly instructed on all occupational safety and environmental protection issues and are familiar with and observe the operating instructions, especially the safety instructions contained herein.
- Personnel are trained and supervised to ensure that they follow safety measures, including the obligatory use of personal protective equipment.
- The product is only connected to pipelines that are depressurized at the time of connection.
- There is no tensile or compressive stress acting on the product connections.
- There is no residual risk at any point where pressure could occur. Pressure can cause sudden failure in or damage to the lines and connections.
- Warning notices in the documentation for supplier modules are observed and integrated into the risk assessments in the workplace.

Safety Precautions When Installing Relief Valve

- Do relieve product line pressure before attempting to install relief valve.
- Do install discharge piping that allows discharged product to flow safely to a drain or bypass.
- Do not install a damaged relief valve assembly.
- Do not install a relief valve between damaged clamp ferrules.

Safety Precautions When Relief Valve is in Operation


- Do monitor the relief valve assembly for any sign of leakage.
- Do check all clamp assemblies often to ensure that they have not loosened from vibration.
- Do not stand in the vicinity of the discharge outlet while the relief valve is in operation.
- Do not attempt to loosen any clamp assemblies while the relief valve is in operation.
- Do not attempt to perform any type of service or adjustment to the relief valve during operation.

Safety Precautions When Servicing the Relief Valve

- Do drain piping completely before servicing.
- Do vent line to relieve any pressure.
- Do relieve spring force before attempting to remove the body clamp.
- Do use caution and wear protective clothing if the relief valve has been used in applications using acids or chemicals that may be harmful.

Care of Stainless Steel

The stainless steel components in Dixon Sanitary equipment are machined, welded, and assembled by skilled craftsmen using manufacturing methods that preserve the corrosion-resistant quality of the stainless steel. Retention of corrosion-resistant qualities under processing conditions requires regular attention to the precautions listed below. Examples of corrosion that can result from improper care are included below.

- Regularly check all electrical devices connected to the equipment for stray currents caused by improper grounding, damaged insulation, or other defects. Corrosion: Pitting often occurs when stray currents encounter moist stainless steel. 
- Never leave rubber mats, fittings, wrenches, or other tools in contact with stainless steel. Corrosion: pitting or galvanic action. Objects retard complete drying, preventing air from reforming the protective oxide film. Galvanic corrosion occurs when two dissimilar metals touch when wet.
- Immediately rinse equipment after use with warm water until the rinse water is clear. Clean the equipment (COP or CIP) as soon as possible after rinsing. Corrosion: discoloration, deposits, and pitting. Product deposits often cause pitting beneath the particles.
- Use only recommended cleaning compounds. Purchase chemicals from reputable and responsible chemical manufacturers familiar with stainless steel processing equipment. Ensure they continuously check the effects of their products on stainless steel.
- Use cleaning chemicals exactly as specified by the manufacturer. Do not use excessive concentrations, temperatures, or exposure times. Corrosion: pitting, discoloration, or stress cracks. Permanent damage often occurs from excessive chemical concentrations, temperatures, or exposure times.
- For manual cleaning, use only soft non-metallic brushes, sponges, or pads. Brush with the grain on polished surfaces to avoid scratching the surface. Corrosion: pitting, scratches. Metal brushes or sponges will scratch the surface and promote corrosion over a period of time. Metal particles allowed to remain on a stainless steel surface will cause pitting.
- Use chemical bactericides exactly as prescribed by the chemical manufacturer in concurrence with the local health authority. Use the lowest permissible concentration, temperature, and exposure time possible. Flush immediately after bacterial treatment. In no case should the solution be in contact with stainless steel for more than 20 minutes. Corrosion: protective film destroyed. Chlorine and other halogen bactericides can destroy the protective film. A few degrees increase in temperature greatly increases chemical activity and accelerates corrosion.
- Regularly inspect the joints in pipelines. Be sure all connections are tight fitting without binding. Corrosion: crevice corrosion. Small crevices caused by improperly seated gaskets will promote crevice corrosion. Stainless steel under stress will develop stress cracking, especially in the presence of bactericides containing chlorine.
- Regularly inspect equipment for surface corrosion (i.e. pitting deposits, stress cracks, etc.). If deposit or color corrosion is detected, remove it immediately using mild scouring powder and detergents. Rinse thoroughly and allow to air dry. Review production and cleaning procedures to determine the cause. NOTE: If corrosion is not removed, the protective film cannot be restored, and corrosion will continue at an accelerated rate.

Technical Specifications

Model	Set Pressure Range (PSI)	Maximum Operating Temperature [sterilization] ¹
SPR-TC*1A	10-49	266°F (130°C) [300°F (148°C)]
SPR-TC*2A	50-99	
SPR-TC*3A	100-300	
SPR-LC*1A	10-49	
SPR-LC*2A	50-99	
SPR-LC*3A	100-300	

* E = EPDM or V = FKM

¹ Maximum 20 minutes

Sizes

- 1-1/2" and 2"

Connections

- Clamp (standard)
- Bevel seat, I-line, and weld ends available

Materials of Construction Technical Data

- Product contact components: 316L stainless steel
- Product contact elastomers: EPDM or FKM
- Non-product contact components: 304 stainless steel
- Surface finish: 32 Ra on all product contact surfaces, other finishes available

Installation and Start Up

Unpacking

Carefully unpack all the parts of the valve and inspect for damage that may have occurred during shipment. Report any damage to the carrier immediately. The ports on the valve are protected with a plastic cover. If any covers are missing or damaged, inspect the ports on the valve thoroughly for any damage.

Tools Needed

The following items will be needed for installation:

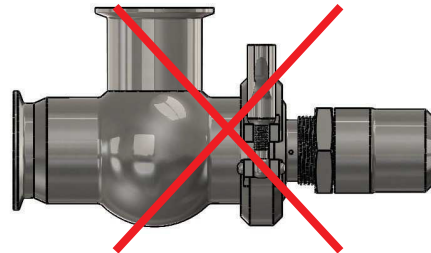
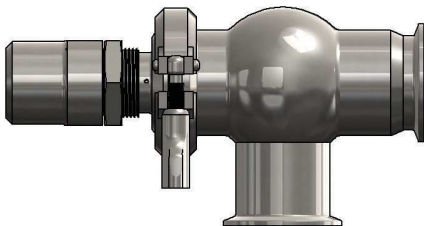
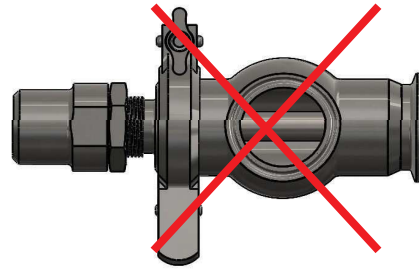
- Adjustable wrench
- Food grade anti-seize

Installation Orientation

The valve should be installed so that the fluid pressure is acting on the valve stem end. The following diagram should be followed when installing the valve for service.



Improper discharge piping from the valve could lead to serious injury. High pressure and potentially high temperature fluid exits the discharge port when the valve is open. Piping should be installed so that the discharged product flows safely to a drain.



Installation and Start Up

Setting Relief Pressure

1. Identify which spring set the valve utilizes by referring to the tag located on the adjustable cap. Below is an example of the tag that will be located on the valve. There are three separate spring sets available for the SPR-series pressure relief valve: spring set 1 (**10-50 PSI**), spring set 2 (**50-100 PSI**), and spring set 3 (**100-300 PSI**).



2. Once the spring set has been identified, refer to the set pressure table below to obtain the values needed to calculate the number of turns required for the desired set pressure.

Spring Set	Maximum Set Pressure (PSI)	PSI / Turn	Turns to Max Set Pressure
1	49	11	4-1/2
2	99	21	4-3/4
3	300	105	2-3/4

3. Once the desired set pressure has been determined, divide the set pressure by the PSI/Turn value obtained from the set pressure table. This will yield the number of required turns.
4. Using the numbered marks on the adapter (**item 8**) and the mark on the adjustable cap (**item 13**) as reference points, turn the adjustable cap (**item 13**) the calculated number of turns.
5. Using a pressure gauge on the inlet port of the valve, make any minor adjustments of the cap (**item 13**) needed to reach the exact pressure relief point desired.
6. Confirm that the valve functions as desired before installing the valve for service.
7. Tighten the locking nut (**item 9**) firmly against the adjustable cap (**item 13**) while keeping the adjustable cap stationary to avoid changing the relief pressure set point. Apply food grade anti-seize to the adapter threads if necessary.

General Maintenance

To ensure that your Dixon® SPR-series pressure relief valve functions as designed, it is important to make sure that it is properly maintained. Only use genuine Dixon replacement parts when replacing any components of the SPR-series pressure relief valve. DO NOT attempt to modify the valve in any way. Doing so will void all warranties and could result in injury.

Cleaning the Valve

1. Refer to the disassembly section of the manual and follow instructions to remove all product contact components of the valve.
2. Inspect the product contact components of the valve for any signs of possible damage. Replace components as necessary.
3. Clean all surfaces of the product contact components by manually brushing in a bath of cleaning solution (acid detergents or simple alkaline soda type detergents).
4. After cleaning, rinse all components thoroughly with water.
NOTE: Seat seal (**item 3**) must be replaced after removal.
5. Refer to the assembly section of the manual and follow instructions to properly reassemble the valve.
6. Refer to the installation and start up section of the manual for instructions on setting the valves relief pressure.

Assembly and Disassembly

Assembly

1. Take new seat seal (**item 3**) and install on the valve stem (**item 4**), making sure not to roll the seat seal.
2. Place the body gasket (**item 5**) on the top inside lip of the valve body (**item 1**).
3. Loosely place the valve stem and seat seal assembly (**items 3 & 4**) in the valve body (**item 1**).
4. Slide the stainless stem holder (**item 6**) over the valve stem assembly (**items 3 & 4**).
5. Apply food grade lubricant to the stem O-ring (**item 7**), and slide the O-ring over the stem (**item 4**) and press down securely into groove in the stem holder (**item 6**).
6. Slide the adapter (**item 8**) over the valve stem (**item 4**) and secure the adapter to the valve body (**item 1**) using the clamp (**item 2**).
7. Place the washer (**item 10**) in the bottom of the adapter (**item 8**).
8. Place the spring (**item 11**) on top of the washer (**item 10**) inside the adapter (**item 8**).
9. Take the top cap (**item 12**) and place it on the spring (**item 11**).
10. Apply food grade anti-seize to the threads on the adapter (**item 8**).
11. Thread the locking nut (**item 9**) and then the adjustable cap (**item 13**).
12. Tighten the adjustable cap (**item 13**) until the top edge is flush with the face of the top cap (**item 12**).

Disassembly

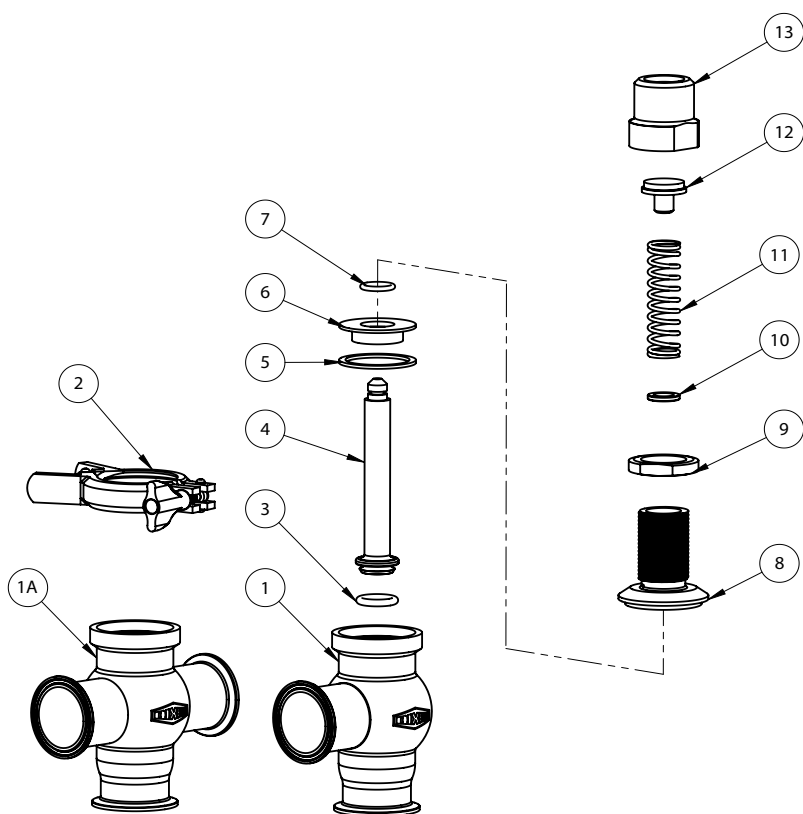


Relieve fluid pressure in the line before disassembling the valve.

1. Rotate adjustable cap (**item 13**) counterclockwise until the spring (**item 11**) is no longer under compression.
2. Loosen and remove clamp (**item 2**) that secures the adapter (**item 8**) to the valve body (**item 1**). Remove the adapter, spring (**item 11**), and adjustable cap (**item 13**) assembly from the valve body.
3. Remove the stem (**item 4**) and stem holder (**item 6**) from the valve body (**item 1**).
4. Slide the stem holder (**item 6**) off of the valve stem (**item 4**) and remove the stem O-ring (**item 7**).
5. Remove the body gasket (**item 5**) from the valve body (**item 1**).
6. Using a pick, hook the seat seal (**item 3**), and remove it from the stem (**item 4**).

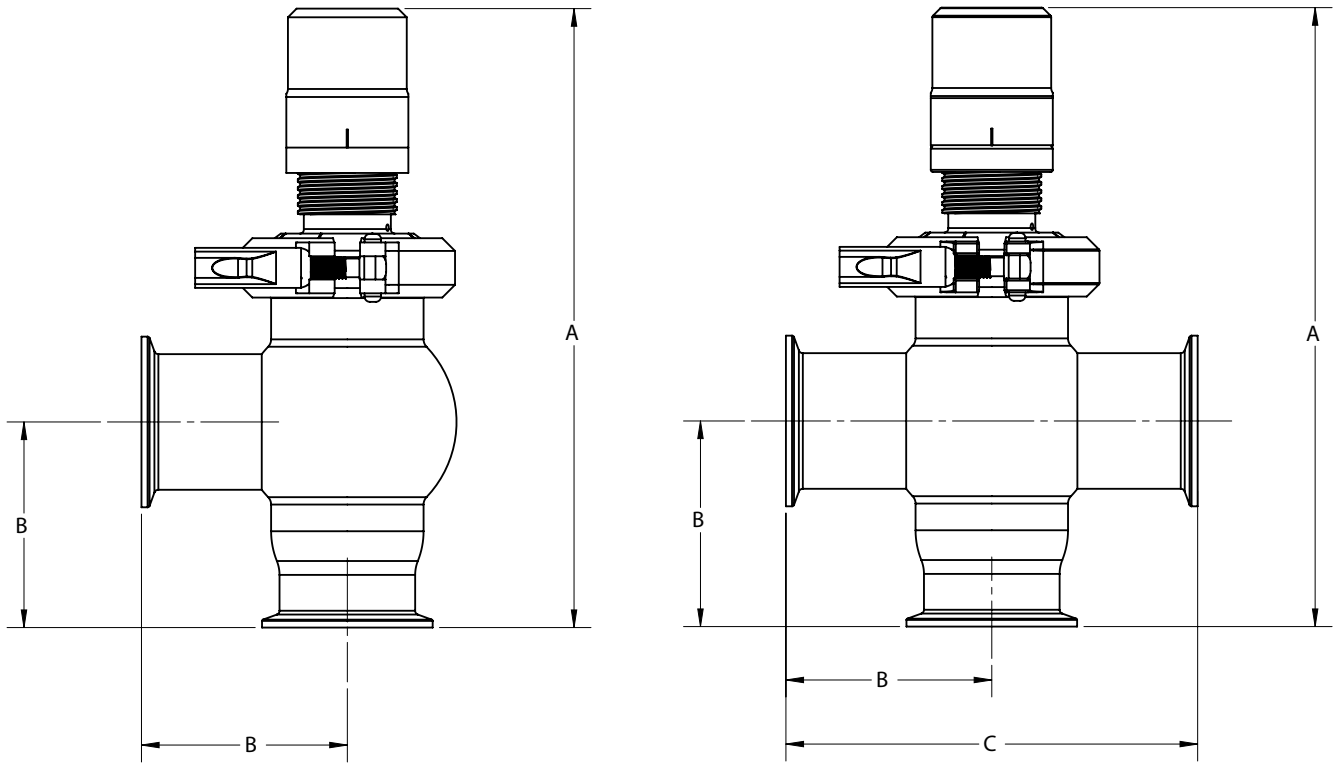
NOTE: Seat seal (**item 3**) must be replaced after removal.

Bill of Materials



Item	SPR Size	Part #	Description	Material	Qty
1	1-1/2"	SPR-LBDY150	L-body	316L stainless steel	1
	2"	SPR-LBDY200			
1A	1-1/2"	SPR-TBDY150	T-body	316L stainless steel	1
	2"	SPR-TBDY200			
2	1-1/2"	13IL-Q100150	clamp	304 stainless steel	1
	2"	13IL-Q200			
3	1-1/2" and 2"	SPR-SSE	seat seal	EPDM	1
		SPR-SSV		FKM	1
4	1-1/2"	SPR-STEM150	stem	316L stainless steel	1
	2"	SPR-STEM200			1
5	1-1/2"	40IE150	body gasket	EPDM	1
		40IV150		FKM	
	2"	40IE200		EPDM	
		40IV200		FKM	
6	1-1/2"	SPR-SH150	stem holder	316L stainless steel	1
	2"	SPR-SH200			
7	1-1/2" and 2"	SPR-SOE	stem O-ring	EPDM	1
		SPR-SOV		EPDM	
8	1-1/2"	SPR-ADPTR150	adapter	304 stainless steel	1
	2"	SPR-ADPTR200			
9	1-1/2" and 2"	SPR-LN	locking nut	304 stainless steel	1
10		SPR-WSHR	washer		1
11		SPR-S50	spring set (Code 1A)		1
11		SPR-S100	spring set (Code 2A)		1
11		SPR-S300	spring set (Code 3A)		1
12		SPR-TOPCAP	top cap		1
13		SPR-ADJSTCAP	adjustable cap		1

Dimensions



Size	A (in)	B (in)	C (in)	Connection
1-1/2"	9.2"	2.7"	5.4"	tri-clamp
2"	9.8"	3.0"	6.1"	tri-clamp

Part Number Key

SPR-Series Pressure Relief Valve Part Number Key Example: SPR-LCE1A150		Series		Body Style	Connection	Elastomer	Spring Set Range (PSI)	Size	Finish
		SPR	-	L	C	E	1A	150	
Series	Code								
SPR	SPR	←							
Body Style	Code								
L-body style	L	←							
T-body style	T								
Connection	Code								
Clamp	C	←							
Elastomer	Code								
EPDM	E	←							
FKM	V								
Spring Set Range	Code								
10-49 PSI	1A	←							
50-99 PSI	2A								
100-300 PSI	3A								
Size	Code								
1-1/2"	150	←							
2"	200								
Surface Finish	Code								
32 Ra	blank	←							
25 Ra	B								
20 Ra	C								
15 Ra	D								

Troubleshooting

Problem	Possible Cause	Suggested Action
Valve is leaking from detection port.	Damage to stem O-ring.	Replace stem O-ring.
Valve is leaking between body and adapter.	Damage to body gasket.	Inspect & replace body gasket.
Valve is relieving at pressures lower than the set pressure.	Locking nut is loose which could allow the adjustable cap to move.	Tighten locking nut.
High pressure fluid is leaking past seat seal.	Obstruction between seal and body or damaged seat seal.	Inspect for obstructions and replace seat seal.
Valve is not stroking properly when opening.	Valve is installed in an improper orientation.	Check installation section to make sure the valve is properly oriented.
Any other issues		Contact Dixon Sanitary at 800.789.1718.

Limited Warranty

DIXON VALVE AND COUPLING COMPANY, LLC (herein called "Dixon") warrants the products described herein and manufactured by Dixon to be free from defects in material and workmanship for a period of one (1) year from date of shipment by Dixon under normal use and service. Its sole obligation under this warranty being limited to repairing or replacing, as hereinafter provided, at its option any product found to Dixon's satisfaction to be defective upon examination by it, provided that such product shall be returned for inspection to Dixon's factory within three (3) months after discovery of the defect. The repair or replacement of defective products will be made without charge for parts or labor. This warranty shall not apply to: (a) parts or products not manufactured by Dixon, the warranty of such items being limited to the actual warranty extended to Dixon by its supplier; (b) any product that has been subject to abuse, negligence, accident, or misapplication; (c) any product altered or repaired by others than Dixon; and (d) to normal maintenance services and the replacement of service items (such as washers, gaskets, and lubricants) made in connection with such services. To the extent permitted by law, this limited warranty shall extend only to the buyer and any other person reasonably expected to use or consume the goods who is injured in person by any breach of the warranty. No action may be brought against Dixon for an alleged breach of warranty unless such action is instituted within one (1) year from the date the cause of action accrues. This limited warranty shall be construed and enforced to the fullest extent allowable by applicable law.

Other than the obligation of Dixon set forth herein, Dixon disclaims all warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose, and any other obligation or liability. The foregoing constitutes Dixon's sole obligation with respect to damages, whether direct, incidental or consequential, resulting from the use or performance of the product.

Some products and sizes may be discontinued when stock is depleted or may require a minimum quantity for ordering.

