SCV VALVE

API 6D Piston Check Installation, Operation & Maintenance Manual

SCV Valve, LLC
3521 FM 646 Rd. North
Santa Fe, TX 77510

An API 6D & API 6A Monogrammed Company

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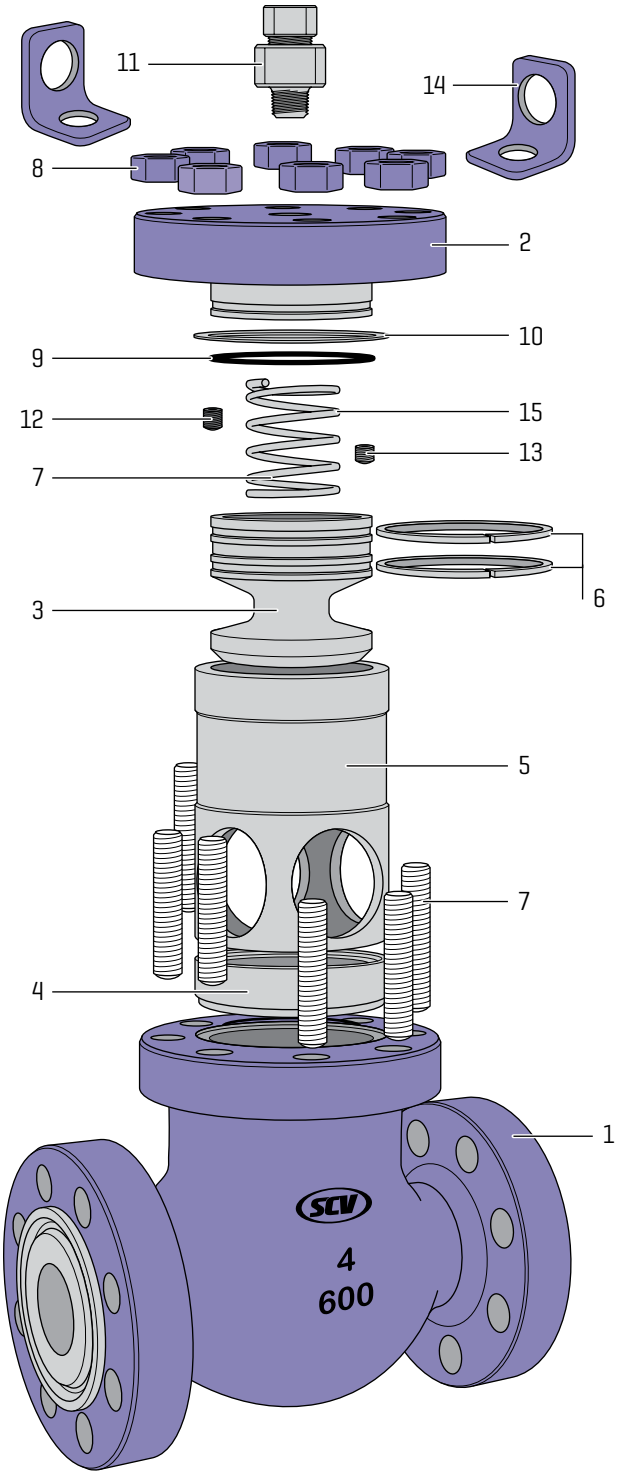


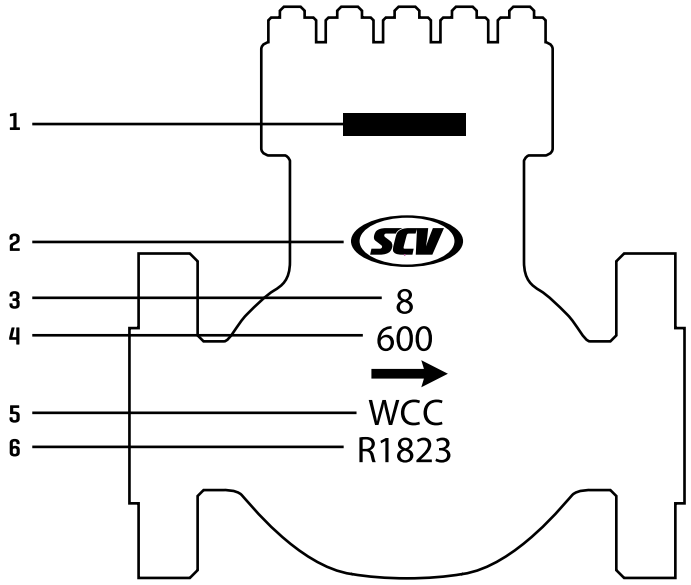
Expanded View

Bill of Materials		
No.	Part	WCC
1	Body	A216 WCC
2	Bonnet	A105
3	Piston	A105+NI-TRID+ST. 6
4	Seat	A105+St. 6
5	Cage	A105+ENP
6	Piston Ring	PEEK/Glass Filled
7	Stud	A193 B7M
8	Heavy Hex Nut	A193 2HM
9	O-ring	Viton AED
10	Bonnet Gasket	SS/Graphite
11	Vent Fitting	316 SS
12	Ball Check	316 SS
13	Orifice Fitting	316 SS
14	Lift Lug	Steel
15	Spring	X-750

All piston check valves 2" thru 6", in all pressures, comes standard with a X-750 spring installed.
Note: Available in other materials upon request.

Valve Markings

No.	Valve ID Components
1	Tag
2	Brand
3	Size
4	Pressure Class
5	Body Material
6	Heat Number



SCV PISTON CHECK FUNCTION

As upstream flow pressure increases over the downstream pressure, the SCV Piston Check Valve has an internal piston that rises from the seat allowing flow to pass thru the valve. Piston rings maintain proper piston sealing and alignment which allows the piston's beveled sealing surface to seat against the body's metal seat.

Caution: Do not apply pressure to the closed pistion that exceeds one-and-a-half times greater than the valve's rated working pressure.

Caution: Continuous operating temperatures should never exceed 400° Farenheit (204° Celsius). Please advise when the intended service will exceed 400° Farenheit (204° Celsius).

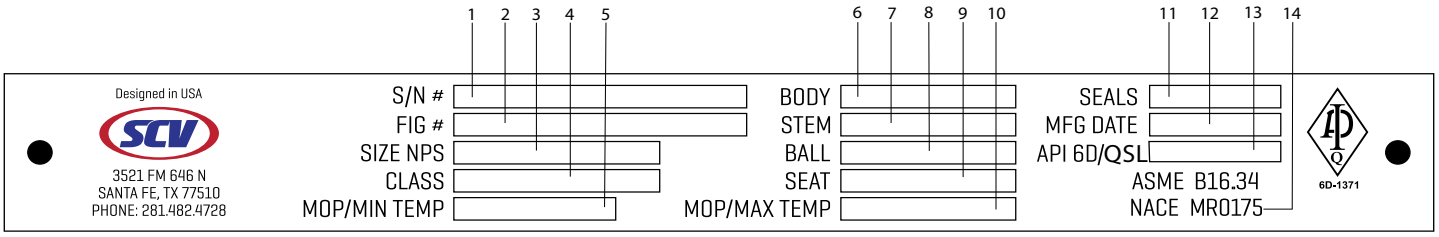
GENERAL INFORMATION

1.1 The SCV API 6D Piston Check Valve offers quality performance, backflow control for pipeline systems up to 24". SCV Piston Check Valves are quiet operating valves that effectively prevent backflow. The "flapperless" design is gentle on the seat as the piston rises and lowers with increased and decreased flow rates. The SCV design offers many features and options beneficial for oil, liquid gas, and liquid applications.

Flanged end valve are in accordance with ANSI B 16.5 and the Butt-Weld end dimensions comply with ANSI/ASME B16.25.

1.2 The SCV cast carbon or stainless steel "non-slam" piston check valve prevents media back flow in pulsating flow pipelines. The cast body design conforms to API 6D. Flanged End dimensions are in accordance with ANSI B16.5 and Butt-Weld End dimensions in accordance ANSI/ASME B16.25.

1.3 The valve ID tag located on the valve cover plate provides applicable information including the serial number, figure number, temperature ratings, size, pressure class, and materials. Figue 1



No.	Figure Number Code	Description
1	Serial Number	Identifies certified manufacturers serial number
2	Figure Number	Identifies the detailed valve configuration (valve type, bore size, pressure class, materials, etc.)
3	MOP/Max. Temp.	Identifies the maximum operating pressure in PSI and maximum operating temperature in Fahrenheit
4	Size	Identifies nominal bore size
5	Pressure Class	Identifies pressure classifications per API requirements
6	Body Material	Identifies body metal material composition (A105, WCB, F51, CF8M, etc.)
7	Stem Material	Identifies stem material composition (A105, 410SS, 17-4pH, etc.)
8	Ball/Disc Material	Identifies ball/disc material composition (A105, 316SS, ENP, etc.)
9	Seat Material	Identifies seat material composition (PEEK, Teflon, Nylon, etc.)
10	MOP/Min. Temp.	Identifies the maximum operating pressure in PSI and minimum operating temperature in Fahrenheit
11	Manufacturing Date	Identifies the date the valve manufacturing completion date
12	API Conformance	Identifies API conformance (600, 6D, 6A, etc.)
13	O Ring	Identifies the O Ring material composition (Viton, Viton GLT, etc.)
14	NACE MR-01-75	Identifies corrosion resistance

1.4 To ensure efficient request processing for valve service and parts, please have your valve serial number available when contacting SCV. This will expedite any request and insure that correct information is given.

UNPACKING AND RECEIVING INSPECTION

Note: Upon delivery, prepare to inspect the valve.

2.1 Remove all wrapping, end protectors, and shipping supports from the valve.

2.2 Inspect valve for missing or damaged components.

2.3 Verify the interior of the valve is free of damage and/or foreign debris.

2.4 Install any loose items as soon as possible to prevent loss or damage.

HANDLING

Caution: Proper lifting equipment for the respective valve weight in required. Adhere to safe and careful lifting practices to reduce the risk of personnel injury/death and valve/component damage.

3.1 When moving the SCV piston check, use an approved lifting device and rigging.

3.1.1 Secure the rigging to the valve body as shown when moving smaller piston check valves.

3.1.2 Attach the rigging to the provided eyebolt threaded into the cover when moving larger piston checks.

HORIZONTAL FLOW SERVICE INSTALLATION/OPERATION - ALL SIZES

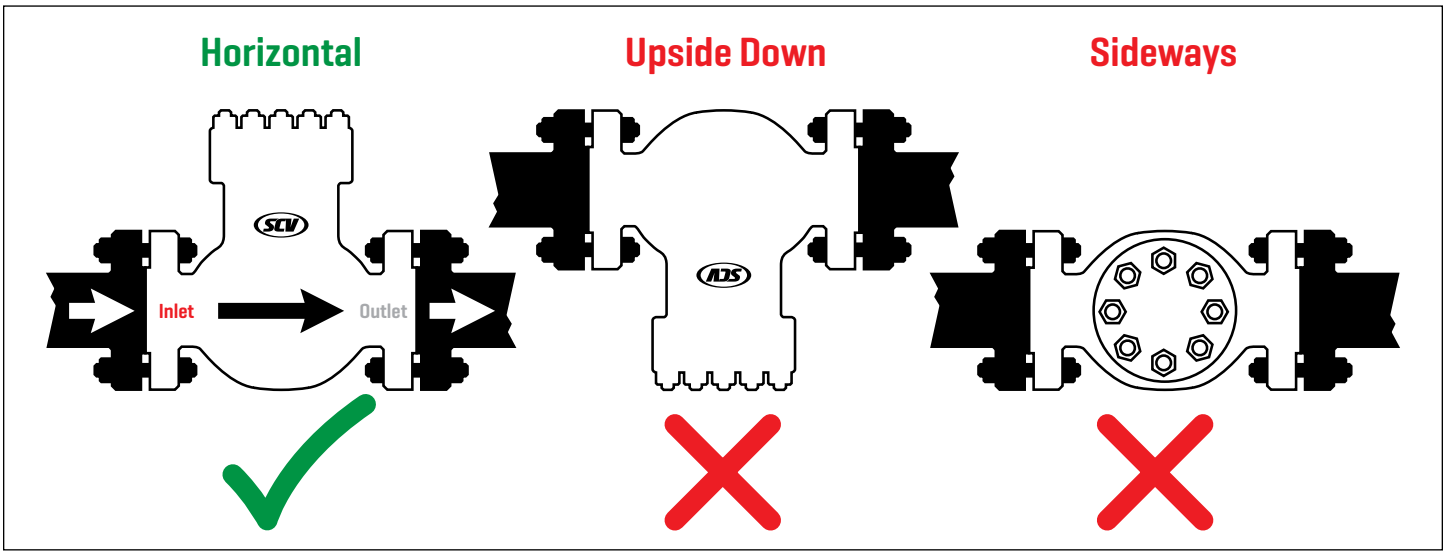
Important: To prevent strain on the pipeline and ensure proper valve function, the valve must be properly supported.

Caution: SCV Piston Check valves are designed for horizontal service! Never install SCV Piston Check valves in the upside down or sideways position.

Note: SCV recommends that piston check valves (6" and smaller) intended for compressor, gas pump, or vertical service must be equipped with a piston spring for faster closing.

4.1 Prior to installation, use an approved solvent and cloth to clean all valve and pipe mating surfaces.

4.2 Install the SCV Pistion Check valve horizontally with the valve bonnet in the upward facing position, with the inlet and outlet level, with theflow-direction-arrow on valve body pointing in the direction of the intended flow. Never install SCV Piston Check valves in the upside down or sideways position. Figue 2



VERTICAL FLOW SERVICE INSTALLATION/OPERATION - 6" AND SMALLER

Important: The end-user must specify when an SCV Piston Check valve will be used in vertical service. To ensure proper operation, SCV Piston Check valves used in vertical service must be equipped with a piston spring.

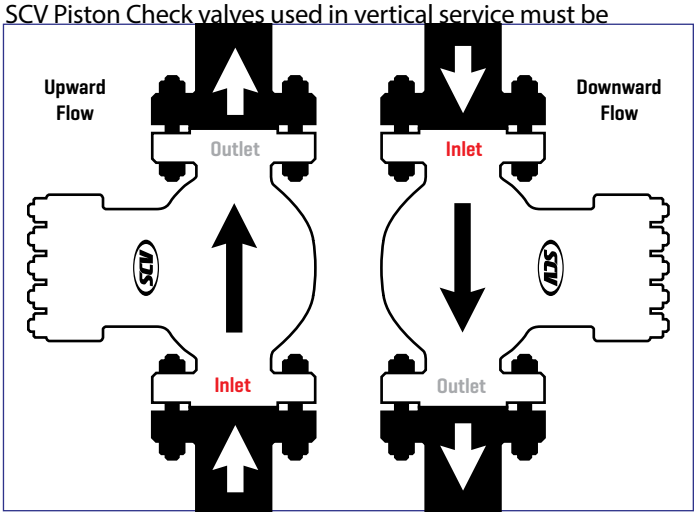
Note: Only SCV Piston Check valves 6" and smaller, equipped with a piston spring are recommended for vertical flow service.

5.1 Prior to installation, use an approved solvent and cloth to clean all valve and pipe mating surfaces.

Important: To prevent strain on the pipeline and ensure proper valve function, the valve must be properly supported.

5.2 Install the SCV Pistion Check valve vertically (with the valve bonnet in the vertical position) with the flow-direction-arrow on valve body pointing in the direction of the intended flow. Figue 3

Caution: Never install SCV Piston Check valves in the upside down position.



MAINTENANCE

6.1 SCV piston check valves are practically maintenance free when used in normal applications. The recommended spare parts for the SCV piston check include: piston, piston rings, cover seals, ball check, orifice plug, and seat. When ordering spare parts, specify the valve serial number, valve size, ANSI pressure class, and type of service in which it is being used.

Caution: Prior to servicing any valve, always review all necessary pipeline media MSDS, handling, regulations, and pipeline maintenance procedures. Properly isolate the valve, then bleed pressure from the line and valve prior accessing any internal parts of the piston check valve.

6.2 Piston Check Valve Disassembly

6.2.1 Remove the lifting lugs (if present).

6.2.2 Remove the valve bonnet, then inspect all mating surfaces for damage or imperfections.

6.2.3 Remove and discard the bonnet gasket.

Note: SCV Valve recommends replacing the bonnet gasket anytime the bonnet is removed.

6.2.4 Remove and inspect the bonnet o-ring. Replace the o-ring if damaged or worn.

6.2.5 Remove the spring (6" and smaller sizes)

6.2.6 Remove and inspect the piston with special attention on the seating surface.

6.2.7 Remove and inspect the piston rings. Replace the piston ring(s) if damaged or worn.

6.2.8 Remove the cage.

6.2.9 Remove the seat.

4.2 Piston removal.

1" 2500#

4.2.1 Remove the liner locking plug and the liner hold down plug. Both pieces are screwed into the body. Clean and inspect.

4.2.2 Remove and inspect spring if present and replace if required.

4.2.3 Remove piston by threading a cap screw, threaded rod, or lifting eye into the tapped hole in top of piston. Use it to pull the piston out of the valve. NOTE: Thread size varies by piston size.

4.2.3 Clean and inspect piston, piston rings, and liner. Check piston seat area for damage or uneven wear. Replace if required. Insure that ball check works properly and that orifice hole is not clogged by debris.

All other sizes

4.2.1 Remove piston by threading a cap screw.

4.2.2 Clean and inspect piston, piston rings, and liner. Check piston seat area for damage or uneven wear. Replace if required. Insure that ball check valves work properly and that the orifice hole is not clogged by debris.

4.2.3 After removing piston, inspect seal area on both piston and seat for damage. Also check condition of piston rings and liner

1.0. for excessive scratches or scoring.

4.3 Seat removal.

4.3.1 Remove Liner by pulling out of valve body. Make sure that seat locking pin is saved.

4.3.1 All Piston Check Valve seats are threaded into the valve body. To facilitate installation and removal, each seat has a slot across the threaded end for engagement with a M&J Valve seat removal tool. An example of this tool with a seat ring engaged is shown below.

1" through 4"

4.3.2 Locate slots in seat ring. Insert seat removal tool into seat area. Head of seat removal tool should rest against top of seat. Retracted ears of seat removal tool should line up with slots in seat. Engage ears of seat removal tool with seat by turning knob on top of tool.

6" and larger and 1" - 3" high pressure

4.3.3 Holding seat clamp (bar with tapped holes) at an angle, lower through the seat bore. Once past the seat, pull the seat clamp up into slots located on the bottom of the seat ring. Temporarily hold in place.

4.3.4 Set T-bar on top of seat. Using cap screws, attach T-bar to seat clamp. Tighten cap screws to lock seat, T-bar and seat clamp together into an assembly.

4.3.5 Locate seat clamp assembly on seat ring. Insert seat removal tool into seat area engaging seat clamp assembly in the slots provided.

4.3.6 With T-bar and seat clamp engaged in tool slots, turn handle counterclockwise to remove seat. NOTE: Seat may be difficult to remove on valves that have been in service for some time. Additional force may be required to break seat free.

4.3.7 Clean and inspect seat, Check seat seal area for damage or uneven wear. Replace if required.

4.4 Seat Installation

4.4.1 Before installing seat ring, clean threads in body and apply Bostik "Never Seize" regular grade anti-seize compound or equal that meets Mil Spec. 907E.

4.4.2 With tool ears engaged in seat ring slots carefully start seat threads in valve body and turn handle clockwise to install seat. Seat is completely installed when the underside of the seat flange contacts the body.

4.4.3 Remove seat tool.

4.4.4 If existing seat is being reinstalled, check to see if seat lock pin hole between body and seat match after installation. If it does, continue assembly and go to section 4.5.

4.4.5 After seat installation, drill hole for seat lock pin. Hole should engage both seat and body simultaneously. Use 3/16" drill for valve sizes up to 4", use 1/4" drill for valve sizes larger than 4", making hole 1/4" deep.

4.5 Seat Locking Pin

4.5.1 The seat locking pin prevents the seat from loosening and helps to tie the seat and liner together. If a new pin is being used bend pin as shown below before installing. Flats are between 3/8" and 3/4" long and angle can be 15 to 30 degrees.

4.6 Assembly

4.6.1 If required, install seat per section 4.4.

4.6.2 Insert one end of seat locking pin into 1/4" drilled hole. Position pin to accept hole in liner.

4.6.3 Insert liner into body insuring that the seat locking pin engages hole in bottom of liner. NOTE: Check gasket configuration before installing liner. There are four possible designs:

1) sheet gasket above the liner,

2) sheet gasket above and below the liner,

3) ring type joint gasket with rubber inner seal/spacer, and 4) for 6" 2500# only ring type joint gasket without a rubber gasket with four liner hold down screws. Install liner/ cover seal as required by valve gasket configuration.

4.6.4 Place piston rings on piston if they have been removed or are being replaced. Place the piston into the liner. NOTE:

piston to seat seal is metal to metal and to seat the piston correctly may require several heavy taps to the top of the piston coining the piston and seat together. In some cases lapping the two seal surfaces together may be required.

4.6.5 Install liner/cover gasket/gaskets as required.

4.6.6 Install cover using studs and nuts and torque bolts.