



**SCV VALVE**  
Innovative Valve Solutions®

# API 6D Pressure Balanced Lubricated Plug Valve Installation, Operations & Maintenance Manual

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

An API 6D & API 6A Monogrammed Company



Note: SCV reserves the right to change any technical design and dimensional data without prior notice. Please contact SCV to confirm all Dimensions and Data offered in this catalog.

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## Complete Product Line

### BOLTED BONNET OS&Y WEDGE GATES

Carbon & Stainless

Sizes: 2" - 48"  
 Class: 150 - 2500  
 Design: API 600



### BOLTED COVER FULL PORT SWING CHECKS

Carbon & Stainless

Sizes: 2" - 36"  
 Class: 150 - 2500  
 Design: API 6D

Exterior Coating: Epoxy



### FLOATING BALL VALVES - 1-PIECE REDUCED PORT & 2-PIECE FULL PORT

Carbon & Stainless

Sizes: 1/2" - 12"  
 Class: 150 - 1500  
 Design: B16.34



### THRU CONDUIT GATES - SLAB & EXPANDING

Carbon Steel

Sizes: 2" - 42"  
 Class: 150 - 1500  
 Design: API 6D



### COVER PISTON CHECKS

Carbon Steel

Sizes: 2" - 24"  
 Class: 150 - 2500  
 Design: API 6D



### 3-PIECE TRUNNION BALLS

Carbon & Stainless

Sizes: 2-1/16" - 13-5/8"  
 Pressure: 2000, 3000 & 5000  
 Design: API 6A



### DUAL PLATE CHECKS - WAFER & LUG

Carbon & Stainless

Wafer Sizes: 1.5" - 36"  
 Wafer Class: 150 - 2500  
 Lug Sizes: 2" - 36"  
 Lug Class: 150 - 900  
 Design: API 594



### BOLTED BONNET GLOBES

Carbon & Stainless

Sizes: 2" - 24"  
 Class: 150 - 2500  
 Design: API 623

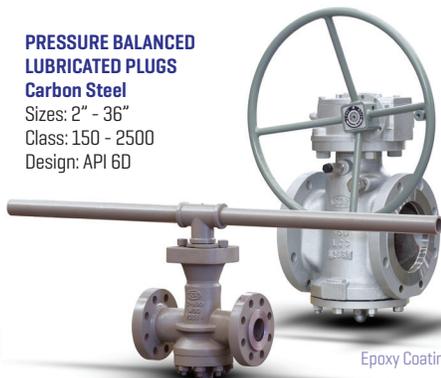


### PRESSURE BALANCED LUBRICATED PLUGS

Carbon Steel

Sizes: 2" - 36"  
 Class: 150 - 2500  
 Design: API 6D

Epoxy Coating



### 3-PIECE TRUNNION BALLS

Carbon & Stainless

Sizes: 2" - 42"  
 Class: 150 - 2500  
 Design: API 6D

Bore Coating: Scotchkote™ 134



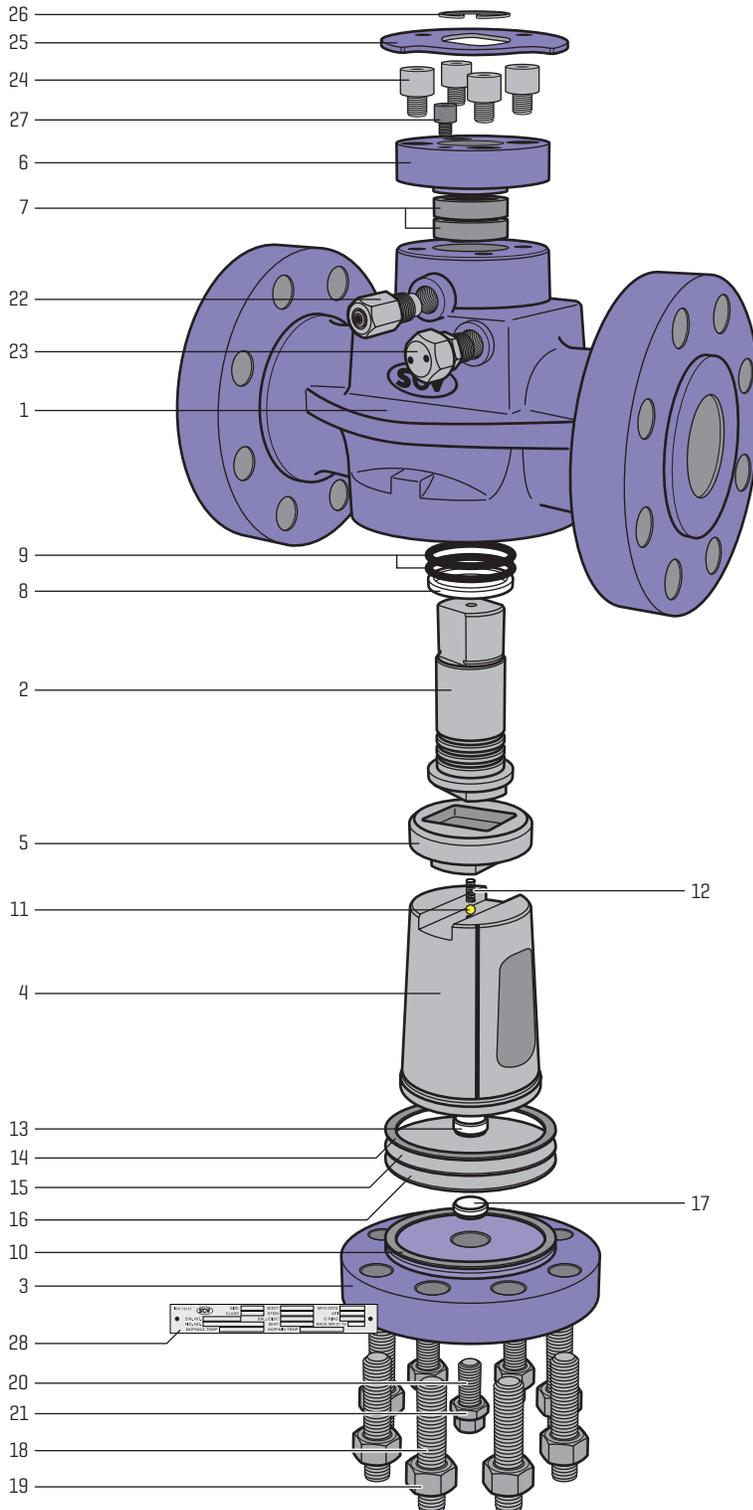


**SCV VALVE** manufactures some of the most dependable cast and forged steel Pressure Balance Lubricated Valves in the industry. Southern California Valve Lubricated Type Plug Valves are available in Short, Regular, and Venturi Pattern. The different patterns vary as regards end to end dimension and port area for a given size of valve. Regular Pattern valves have the largest port area. Short Pattern valves have a reduced port area as a consequence of their compact face-to-face dimensions which are identical to those for wedge gate valves. Venturi Pattern valves have a reduced port area and a flow path approximating a venturi shape to aid pressure recovery. The valve designs conform to API 599, API 6D, and B16.34. Face-to-face and end-to-end dimensions conform to ANSI B16.10.

**Innovative valve solutions.®**

# Pressure Balanced Lubricated Plug Valves - API 6D

[ Expanded View ]



| No | Name Of Part                  |
|----|-------------------------------|
| 1  | Body                          |
| 2  | Stem                          |
| 3  | Bonnet                        |
| 4  | Plug                          |
| 5  | Stem Plug Adapter             |
| 6  | Top Cover                     |
| 7  | Packing                       |
| 8  | Thrust Bearing                |
| 9  | O Rings                       |
| 10 | Gasket                        |
| 11 | Steel Ball                    |
| 12 | Spring                        |
| 13 | Upper Pivot Disc/Pivot Center |
| 14 | Graphite Gasket               |
| 15 | Steel Pillow                  |
| 16 | Steel Washer                  |
| 17 | Lower Pivot Disc              |
| 18 | Stud                          |
| 19 | Nut                           |
| 20 | Plug Adjustment Screw         |
| 21 | Plug Adjustment Lock Nut      |
| 22 | Stem Packing Injector         |
| 23 | Lubricant/Sealant Injector    |
| 24 | Gland Cap Screws              |
| 25 | Indicator Stop Plate          |
| 26 | Stop Plate Retainer           |
| 27 | Stop Bolt                     |
| 28 | I.D. Tag                      |

## 1. INTRODUCTION

- 1.1 The purpose of this manual is to ensure that the valves supplied are properly installed and maintained to give trouble free performance.

## 2. TRANSPORTATION, RECEPTION, AND STORAGE

- 2.1 While unpacking the valve, check that the valves and all accessories have not been damaged during transportation.

**Note:** If the valve or any of its accessories is damaged or missing during transportation, inform the same to the factory office where the valve was ordered.

**Caution!** Placing the valves directly on the ground or on a concrete floor should be avoided.

- 2.2 Valve open or close position is indicated on the handle sleeves for lever operated valves.

- 2.3 All valves are delivered with the plug port in the full open position and ends protected with the protective end caps to avoid the entry of debris, solid particles, or damage to serrations during transportation.

- 2.4 All wrapping and protection on the valves should not be removed until the valve is ready for installation. If protective end caps are removed for examination of the internal components, they should be refitted immediately.

- 2.5 We recommend storing the valves indoors, in a dry and dust free atmosphere. All care should be taken to avoid accidental damage to the valve during storage.

- 2.6 If the valves are stored for a sustained length of time, then all of the valves should be cleaned and hydrostatic/pneumatic tested before installation in consultation with the factory office where the valve was purchased from.

**Caution!** When handling the valve or package, keep in mind the weight distribution of the valve. Ropes should be placed securely around the valve body or lift hooks [as applicable] while handling the valves. Special care should be taken not to damage the lever.

## 3. DO'S AND DON'TS

**Note:** User should ensure that he has read and understands the do's and don'ts before installation. In case of any required clarification, please contact the factory where the valve was purchased.

### 3.1 Do's:

- Use the valve for the specified application as agreed to between the manufacturer and the purchaser.
- Read the installation, operation, and maintenance manual before installing, operating, or maintaining the valve.
- The purchaser / end user should train their employees for safe use of the valve.
- Ensure that nuts and bolts are tightened to the specified torque values.
- Open or close the valve slowly to avoid hammering on the valve and the pipeline.
- Always replace damaged parts with genuine and recommended SCV Factory parts.
- Be aware of the type of media and the environment [explosive, highly flammable, toxic, oxidizing, etc.] in which the valve is to be used. Protect the people and the environment from any harmful or poisonous substances.
- Carefully read the Cautions/Warning plates on the valve.
- The valve body may become very hot or cold during use. The end user is responsible for protection of their employees against burns or other types of injuries resulting from valve temperatures.

### 3.2 Don'ts:

- Specifications of the valve are marked on the body or nameplate prior to shipment. Users are responsible for ensuring that the maximum operating conditions are never exceeded.
- Do not keep the valve open at any intermediate position.
- Do not try to rectify the valve leakage by re-working of seats.
- The threaded connections of the valve body for the plug adjustments and the threaded lines are sealed by threaded plugs. These plugs should not be removed as long as the valve is under pressure.
- Modification of the valve should not be carried out.

## 4. INSTALLATION

- 4.1 Before installing a new valve in line, make sure that the valve is checked for identification purposes. Also, ensure that the characteristics of the valve matches those specified for in the agreed specifications. Nameplate instructions and nametag plates will give the necessary information. If any information is missing, please immediately contact the factory where the material was purchased.
- 4.2 When taking a valve from storage, a careful check should be made to ensure that the valve has not been damaged during the storage period.
- 4.3 Before installation of the valves, remove the end protectors and check that the serrations on the flange face are not damaged and the bore is clean. Clean the valve, if necessary.

**Caution!** Ensure the pipeline is fully cleaned before installation of the valve into the pipeline. Pipeline debris, scaling, etc. will damage the seal of the valve and cause seat leakage during commissioning.

- 4.4 During commissioning and pipeline flushing, the valve should be kept fully open to prevent damage to internal parts.

**Note:** One way to prevent damage to the valve during flushing and testing of pipelines is to substitute them by spool pieces. If use of a spool piece is not possible, it is essential that the valve is kept fully open. It is also advisable to install temporary strainers at critical places to protect sealing area of the valves from solid particles.

- 4.5 Plug valves are designed for b-directional flow unless noted differently.
- 4.6 Valves can be mounted in a horizontal (with the stem pointed upward only) or vertical position depending on the pipeline routing. However, we do not recommend installing the valve with an actuator underneath. The design does not allow for dirt and water to run off.
- 4.7 It may be necessary to firmly support the pipeline in order to protect the valve from excess stress and to reduce the pipeline vibrations. To facilitate servicing, it is preferable that the valve should be supported by the body, using pipe clamps and supports. Do not fasten supports to the flange bolting or to the actuator.
- 4.8 No not attempt to correct misalignment, by means of flange bolts. During the tightening operation, ensure that the piping stresses are not transferred to the valve. Excessive over-tightening of the flange studs can cause damage and/or leakage at the end flanges.
- 4.9 For weld end valves, a qualified welder must perform the operations in accordance with ASME Boiler and Pressure Vessel Code Section IX.

**Caution!** Do not allow the temperature of the body seat area to exceed 200°F to prevent seat and seal damage during welding operation. It is recommended that thermal chucks are used to check the temperature.

**Note:** Any damage to the seats due to the temperature exceeding 200°F can cause the valve leakage. It is recommended that the customer keeps spares kits.

**Caution!** Ensure that weld splatter does not fall over plug body seals. This may damage the sealing surfaces.

- 4.10 After welding, flush the pipeline when the valve is in the open position to remove weld splatter formed during welding and then operate the valve once fully in order to ensure the proper operation of the valve.
- 4.11 On butt-weld end valves, ensure a gap of .08" to .12" between the valve ends and pipeline as per ASME welding standard and tack weld the pipeline and valve ends. After ensuring the proper alignment between the pipeline and the valve, weld the valve end.

## 5. OPERATION

- 5.1 For lever operated valves, the hand lever is either assembled with the valve or shipped loose depending upon the size of the valve.
- 5.2 For gear operated valves, the gearbox open/close adjustment must not be disturbed after shipment. Rotation of hand wheel in the clockwise direction closes the valve and counter clockwise rotation opens it. The internal details and construction of the gearbox may vary as per the manufacturer's standard.

**Caution:** Ensure that the force applied on the hand wheel of the gearbox or lever does not exceed 360Nm.

**Note:** Do not apply extra leverage with use of pipe or an extension. When the end stops of the gearbox are reached, it is in its final position.

- 5.3 SCV plug valves always close in the counter clockwise direction. The plug should always be rotated through 90 degrees to the fully open or fully closed position.

**Caution:** Keeping the valve at any intermediate position should especially be avoided, as high fluid velocity through the narrow opening will produce erosion of the body and plug over time.

## 6. MAINTENANCE

### SEALANT IS ESSENTIAL FOR PROPER VALVE OPERATION!

**Note:** Maximum valve performance is achieved with the proper selection of sealant and sealant injection program.

**Caution:** Observe the caution and safety precautions before carrying out any maintenance on the valve.

- 6.1 Routine checks to be performed by the end user:
  - Check the tightness of nuts/bolts between the body/bonnet area as well as the bracket and stem housing.
  - Ensure that the performance of the valve is satisfactory.
  - Ensure that no leakage is being observed from the valve.
  - Frequent observation is recommended under extreme applications and conditions.
  - Periodically flushing the sealant with suitable valve cleaner to flush debris from the sealant system is recommended.
  - Mounting studs and nuts of the gearbox are to be checked occasionally for tightness and re-tightened as necessary.

### PREVENTATIVE MAINTENANCE

- 6.2 In order to avoid valve failure during operation, all valves in the process plant should be periodically inspected thoroughly to detect the wear of plug/seals and even the body. It is recommended that on such occasions, gaskets, seals, and packing should be replaced.
- 6.3 The type of process, fluids involved, working conditions, and the location of the valves in the process plants will determine the frequency of the required periodic inspection. Preventative maintenance is absolutely essential as the failure due to lack of the same may cause an emergency shutdown of the plant.
- 6.4 Frequency of Sealant Injections:
  - Severe service valves (hot fluid/gas, corrosive fluid/gas, high pressure fluid/gas, valves infrequently used, blow-down applications, bypass applications, venting applications, gas distribution systems, etc.) should be lubricated with proper sealant after each operation.
  - Valves installed in refineries, gasoline plants, compressor plants, and processing plants should be lubricated with proper sealant on a weekly basis.
  - Valves on gas, crude, and product transmission lines should be lubricated on a monthly basis.
  - Valves on crude, lube oil, or vegetable oil require less frequent service.
- 6.5 Sealant Injection Procedure:
  - Pipeline valves of sizes 6" NB and above are provided with sealant injection ports of the body for seat port or the stem housing. Each port provided on the body provides sealant entry to the valve seat. The port provided on the stem housing provides sealant entry to the stem sealing to the body.
  - Injecting handgun sealant is injected by connecting the outlet fitting of the handgun to the sealant injection port.
  - Sealant should not be injected unless the valve is in the closed position.

## 7. VALVE ID TAG

SCV valve configurations are identified on the stainless steel Valve ID Tag which is riveted to the valve.

**Note:** Reference the Valve ID Tag when contacting SCV Valve for parts or technical details.

The diagram shows a rectangular Valve ID Tag with 14 numbered callouts (1-14) pointing to specific fields. The fields are arranged as follows:

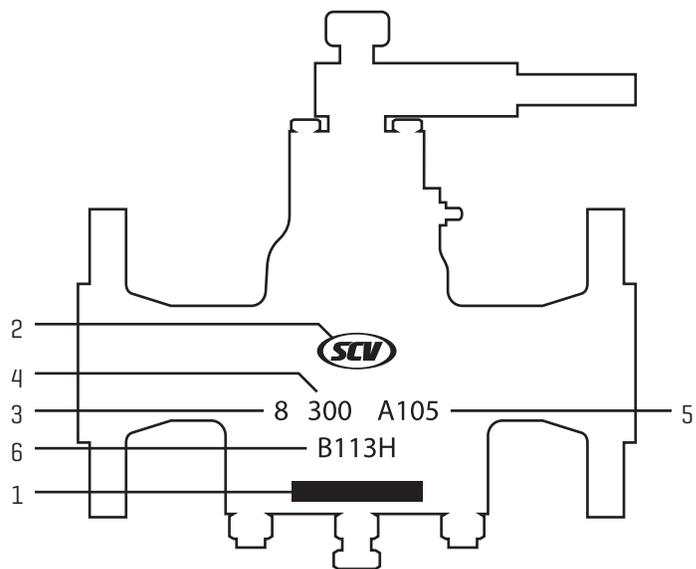
- 1: S/N. NO.
- 2: FIG. NO.
- 3: MOP/MAX TEMP
- 4: SIZE
- 5: CLASS
- 6: BODY
- 7: STEM
- 8: BALL/DISC
- 9: SEAT
- 10: MOP/MIN TEMP
- 11: MFG DATE
- 12: API
- 13: O RING
- 14: NACE MR 01 75

Other text on the tag includes "ISO 14313" and the SCV logo.

| 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 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  |

## 8. VALVE MARKINGS

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



## 9. FIGURE NUMBER PROFILE

The Figure Number Profile provides a complete breakdown of the valve configuration.

### Figure Number Profile



| No. | Figure Number Code                            | Description   |
|-----|---|---|
| 1   | Valve Type                                    | Identifies the valve body design (gate, globe, ball, plug, etc.)                          |
| 2   | Bore Size                                     | Identifies nominal port size (1/2" to 48")  |
| 3   | Pressure Class                                | Identifies pressure classes ranging from 50 to 15,000                                     |
| 4   | Body/Bonnet                                   | Identifies body and bonnet configuration (bolted bonnet, pressure seal, top entry, etc.)  |
| 5   | Body Material                                 | Identifies body material composition (A105, WCB, Stainless Steel, F51, etc.)              |
| 6   | Trim Material                                 | Identifies trim material composition (ENP, 316, F6, Cr13, HF, etc.)                       |
| 7   | Ends  | Identifies end connection configuration (weld end, RTJ, socket weld, hub, etc.)           |
| 8   | Operation                                     | Identifies valve operation mechanism (electric, gear, hydraulic, lever, etc.)             |
| 9   | Configuration<br>(ball & expanding gate only) | Identifies valve configuration (floater, trunnion, etc.)                                  |
| 10  | Seal Material                                 | Identifies seal material composition (Buna, EPDM, Grafoil, HNBR, Neoprene, Teflon, etc.)  |
| 11  | Seat Material                                 | Identifies seat material composition (Devlon, Graphite, PCTFE, Nylon, PEEK, Teflon, etc.) |
| 12  | Special                                       | Identifies special treatments or configurations (when applicable)                         |

## 10. TROUBLE SHOOTING

The following table lists the possible malfunctions that might occur after prolonged use:

| Symptom                       | Possible Fault  | Action  |
|-------------------------------|---|---|
| Leakage through a close valve | Damaged plug surface                                      | Replace the plug                                |
|                               | Damaged seat  | Lap plug to seat                                |
|                               | Plug not closed fully                                     | Check plug open/close settings                  |
| Irregular plug movement       | Impurities between the plug and seat or plug/body cavity  | Flush the plug from inside                      |
|                               |   | Clean the sealing surface by injecting solvent  |
| Valve hard to operate         | Damaged seal  | Inject sealant                                  |
|                               | High application pressure or temperature                  | Confirm application pressure/temperature ratios |
|                               | Out of lubricant  | Inject lubricant                                |
| Noisy operation               | Error in valve sizing or flow of fluid with high velocity | Confirm valve sizing                            |
| Leakage through stem          | Gland nut loose   | Tighten gland nut                               |
|                               | Damaged stem, stem sealing surface                        | Replace the seal                                |
|                               | Damaged stem seal   | Replace the stem seal                           |

The SCV valve brand was established in 1972 as a maintenance and modification company with the ability to provide full in-line valve service and repair. In the mid-1970's, after experiencing many shortcomings of other valve products in the industry, the first SCV valve was manufactured. Since that time, the SCV brand has been expanded its manufactured products to cover a broad range of valves. Industries served include the power, paper and pulp, oil and gas, and petro-chemical sectors.

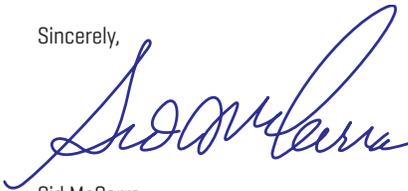
SCV Valve takes sincere pride in our ability to manufacture both commodity and specialty valves that meet and exceed the needs of our customers. All sizes, pressure classes, and metallurgical compositions are managed in house utilizing the strictest quality control measures to ensure the customer's total satisfaction.

SCV Valve products include thru conduit gates, trunnion mounted balls, floating balls, wedge gates, globes, full port swing checks, piston checks, dual plate checks and lubricated plugs. Valves utilized throughout the industry must meet rigorous quality and production standards. SCV Valve has earned its API 6A, API 6D, ISO: 9001, CE-PED, and CRN certifications while operating under the API Q1 Quality Management System.

With years of dedication and commitment to quality, design, and service, SCV Valve has grown to be one of the premier valve manufacturers in the industry with the largest inventory of high pressure ball, gate, and check valves. We pride ourselves on our high quality products, timely delivery capabilities, and competitive prices.

On behalf of all of the members at SCV Valve, we thank you for the opportunity to earn your business.

Sincerely,



Sid McCarra

President

SCV Valve, LLC

Since 1972, the SCV brand has been committed to providing quality flow control products to the Power, Paper & Pulp, Oil & Gas, and Petro Chemical industries.

As one of the largest valve manufacturers, SCV Valve's reputation is unparalleled for producing high quality commodity and specialty valves. Products range in sizes 1/2" - 48", in pressure classes from 150# - 2500# and are backed by timely deliveries and competitive prices.

Call SCV today at [281]482-4728 for all your valve needs or visit us on the web @ [www.scvvalve.com](http://www.scvvalve.com).

**SALES, PROJECTS, ENGINEERING,  
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**SCV VALVE**

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