

INSTALLATION & MAINTENANCE MANUAL

TRIAD - SERIES 90SV 93V

SEGMENTED V-FLOW CONTROL VALVES



BRIEF INTRODUCTION

The Segmented V Flow valve is an advanced quarter-turn control valve which can be used switch on and off and proportionally adjusted. The ball core is designed with a special V type notch, which maintains accurate flow control at small volumes, has a big flow coefficient, and excellent sealing property. It is applicable to controlling gas, liquid, and solid particle medium. Due to zero clearance rotation, there is big shear force and self-cleaning property, especially applicable to controlling liquids with suspended fibers, small solid particles, and solid grains. Therefore this product is widely used in petroleum, chemistry, papermaking, polysilicon, chemical fiber, electric power, metallurgy, pharmacy, environmental protection, and other industrial self-control systems.

1. CHARACTERISTICS

- a. The central flange connection prevents leakage.
- b. Segment ball valve adopts pre-tightening force loaded spring moveable seat construction which closely contacts valve plug. Good sealing property can automatically compensate pair friction in the long-run use.
- c. The shearing action between the seat and ball core due to V type cut, makes this applicable to fibers, small solid particle and slurry, and other medium.
- d. The upper and lower valve stem is self-lubricated bearing fixation that maintains high rotation accuracy and superb rotation stability, making the valve operate much smoother.
- e. When the valve is fully open, flow capacity is big, pressure loss is minimal, and the medium is unable deposit in the body cavity.

2. DESIGN STANDARDS AND PERFORMANCE SPECIFICATIONS

2.1 Performance Specifications

- a. Nominal Diameter: Wafer type DN15-250, flange type DN25-700
- b. Nominal Pressure: PN1.0, 1.6, 2.5, 4.0, 6.4 MPa, ANSI150, 300Lb
- c. Suitable Temperature: -40°F ~ 248°F; -40°F ~ 446°F; -40°F ~ 797°F
- d. Suitable Medium: Water, steam, pulp, petroleum, natural gas, and various forms of acid and lye mediums.
- e. Mode of Connection: Wafer type, flange type
- f. Drive mode: Manual, pneumatic, electric
- g. Explosion proof as per the requirement of ATEX 94/9/EC: Group II category 2 GD, protection concept of non-electrical components: CT6

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2.2 Main Design Standards

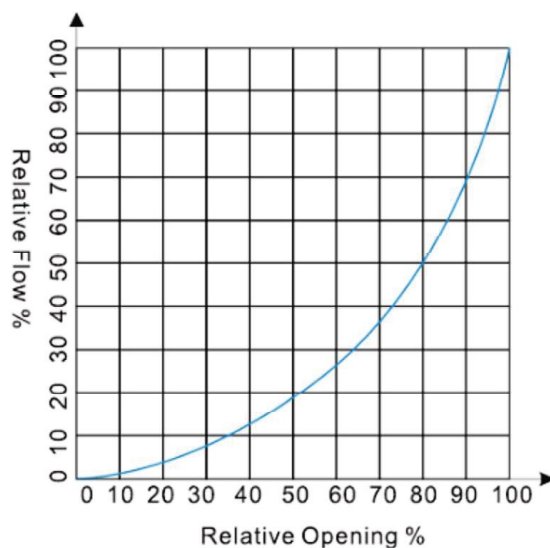
- Flange Standard: ANSI B16.5
- Structure and Length Standards: ISA S75.04, IEC/DIN 534-3-2
- Pressure Test: 1.5 times of maximum pressure in valve hydro pressure; seal test pressure is 1.1 times of
- Maximum operating pressure: The medium is water.
- Leaking Volume: In metal seal seat, test the valve under the condition that medium flows in the direction of arrow, and the valve meets class Fin 1805208 equivalent to ANSI/IFC70.21Vx1/100 standard

MAXIMUM ALLOWABLE DIFFERENTIAL PRESSURE AND RATED CV

Table 2

DN	Max.shut off dp.	Max. control dp.	Rated CV
25	50	35	27
32	50	35	47
40	50	35	70
50	50	35	135
65	50	35	210
80	50	35	390
100	40	25	560
125	40	25	790
150	40	25	1130
200	35	25	1860
250	35	20	2900
300	30	10	4320
350	30	10	6640
400	30	10	8000

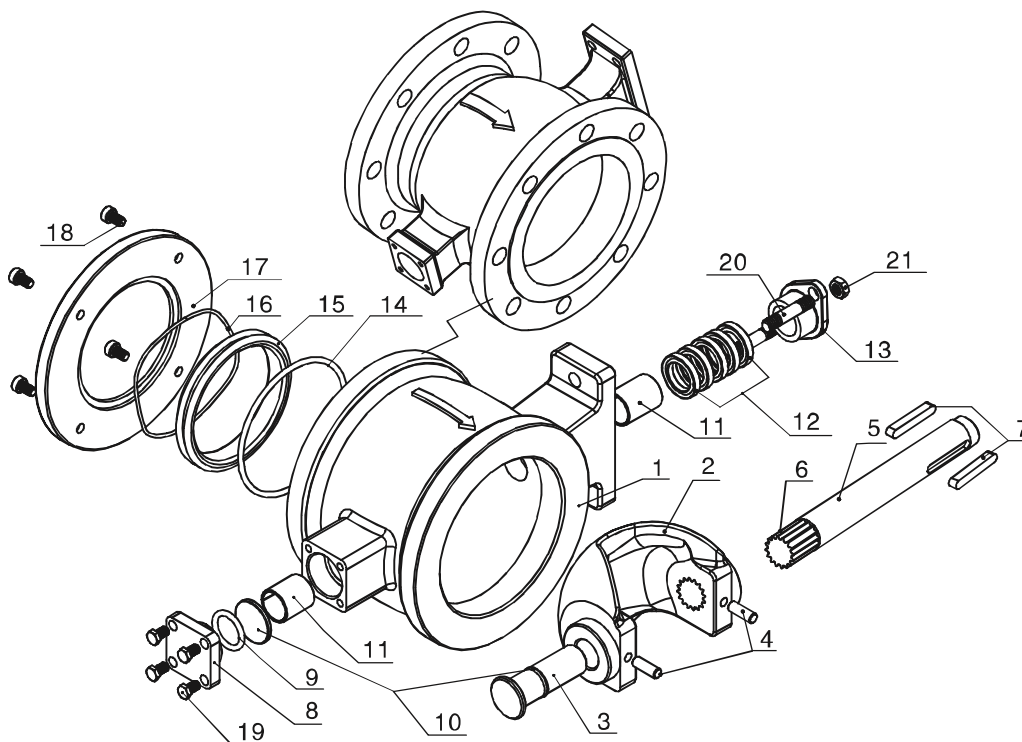
EQUAL PERCENTAGE INHERENT FLOW CHARACTERISTIC



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No.	Name	Qty	Material
1	Body	1	WCB, CF8M
2	Ball	1	CF8, CF8M, Hard Chromium Plating or Stellite Surfacing
3	Lower Shaft	1	17-4PH, SS316
4	Cylindrical Pin	2	SS304, SS316
5	Upper Shaft	1	17-4PH, SS316
6	Spline	1	17-4PH, SS316
7	Flat Key	2	SS304, 45#
8	Blind Flange	1	CF8, CF8M
9	O-Ring	1	Viton, Graphite
10	Gasket	1 ea.	PTFE, Graphite
11	Self-Lubricating Bearing	2	Composite
12	Packing	1 set	PTFE, Graphite
13	Gland	1	CF8
14	O-Ring	1	Viton, Graphite
15	Seat	1	PTFE, SS304, SS316, Hard Chrome Plating or Stellite Surfacing
16	Wave Spring	1	SS316
17	Retainer	1	Carbon Steel, SS304, SS316
18	Socked Head Screw	4	A193 B7, A193 B8
19	Hexagon Screw	4	A193 B7, A193 B8
20	Stud	2	A193 B7, A193 B8
21	Hexagon	2	A194 2H, A194 8



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3. INSTALLATION INSTRUCTION AND MAINTENANCE

Note: Before valves are installed, first check whether nameplates and body identification parameters meet requirements of piping system. If not, replace it with products meeting demands.

3.1 Preparation before Installation

Prepare pipes before and after valve. Pipes which are before and after valves should be coaxial. Two sealing faces are parallel when flanges connect to valves. When it comes to threaded valves, thread must be intact and thread standard should match valves. Pipes are able to withstand weight of valve; if not, appropriate support must be provided on pipes.

- a. Pipes before and after valves shall be blown out cleanly, greased, welding slag, and other impurities shall be cleaned.
- b. Check valve mark; find out valve is intact.
- c. Remove protectors of connecting interfaces on both sides of valve.
- d. The prevent damage to the sealing surface of the seat, check if there is foreign material in valve flow channel. Even tiny particles between the seat and the plate can damage sealing surface of seat.

3.2. Installation

- a. Before installing the valve, convenient operation shall be considered. Install valve in an easy operation place as far as possible. Pay attention to reserving installing space when installing valves with hand wheels or turbine operating device. Do not install valve in a place where difficult to close. It is easy to operate in horizontal pipe work.
- b. When installing threaded and welded valves, detachable flexible connectors shall be considered for convenient maintenance and disassembling. Distance between two valve flange and pipe flange shall be appropriate.
- c. Verify that flow direction is consistent with arrow marked on body.
- d. When repair to the flange is necessary, immediate welding to the valve is not permitted soon after the pipe flange plate is welded. Pipe-welding operation is to be implemented when the temperature of the flange plate drops to room temperature. It is forbidden to weld the pipe when a valve is already fixed unto the flange plate.
- e. After the flange is welded unto the pipe center and the corresponding valve has been repaired, a pipe bolt is to be inserted into the bottom of the flange to keep the valve from falling. The remaining pipe bolts are to be repaired in order.
- f. The sequence of tightening bolt on the flange should be in line with diagonal position, with signal side tighten will sure cause leakage, so that both sides should be tightened correctly.
- g. Load gasket between flange and pipe flange according to requirements of pipe. Thread shall tangle PTFE THREAD SEAL TAPE or coat seal gum.

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Installation cont.

- h. In a special and important section, set bypass pipe for valve. When inspection or replacement, guarantee normal operation of bypass pipe.

3.3 Check after Installation

- a. Operate drive to open and close valves for several times. The valve shall be flexible stagnancy, and normal operation.
- b. Inspect sealing performance between pipe and flange according pipeline design requirements. When conduct pipeline pressure test, do not replace valve with blind plate valve. Keep valve fully open when testing.

4. USE AND MAINTENANCE

- a. Working pressure is no more than the rated value of maximum pressure under serving temperature (see performance parameters of each product) and maximum temperature.
- b. Maintain stability of medium composition; avoid elevating working pressure owing to expansion, which results in leakage. Use stipulated medium according to instruction book.
- c. For spontaneous medium, users should keep temperature below self-ignition temperature to avoid combustion explosion.
- d. To avoid invalidity and leakage, avoid extended strenuous vibration.
- e. Valve is fully open when cleaning pipes.
- f. Even without running for a long time, open and close valves for 1-2 times.
- g. Before using a long-time unused valve, conduct performance test to ensure that valve can put into use to meet the requirements.
- h. Check valves regularly if in storage for extended periods of time. For the exposed finished surface, it is needed to replace anti-rust oil, and clear surface dirt and rust. In the use of valve, this valve shall be keep clean. Lubricate stem threads and bearing at regular intervals.

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5. TROUBLE SHOOTING

Malfunction	Possible Cause	Solution
Valve is jerking	1. Press upper seal tightly	1. Loosen the nut and readjust.
	2. Parts contacting face with shaft is with dirt in or is hurt.	2. Disassemble and finish stem, and eliminate dirt.
	3. Valve is over stroking at opening or there is dirt on sealing face surface.	3. Disassemble and clean the valve.
Leakage through seat, or back seat	1. Insufficient pre-tightening force	1. Increase pre-tightening force.
	2. Damage or dirt on sealing face.	2. Refurbish or grind sealing face, and eliminate dirt.
	3. Deformation or invalidity of sealing face.	3. Replace sealing ring.
Leakage through back seat	1. Insufficient compression of packing	1. Readjust nut
	2. Inaccurate gasket due to long service	2. Replace gasket
Leakage through packing	1. Insufficient pressing force on packing	1. Readjust nut and bolt
	2. Inaccurate packing due to long service.	2. Replace packing

6. TROUBLE SHOOTING

- Products shall be kept in well-ventilated, dry place where relative humidity is no more than 80% of indoor. Air shall not contain harmful substances that can cause corrosion to the valves.
- In order to avoid debris going into the valve, resulting in leakage; do not open valve prior to installation.
- In the transportation process, valve shall be fixed firmly, and have protective measures of preventing snow and rain.