

## **Segment Ball Valve**

## **Operation Manual**



# Zhejiang Linuo Flow Control Technology Co., LTD

## Catalogue

- I. Preface
- II. Use
- III. Structural Characteristics
- IV. Main Design Standards and Performance Specifications
- V. Main Parts and Material of Valve
- VI. Installation Instruction
- VII. Operation and Maintenance of valve
- VIII. Trouble shooting
- IX. Transportation and Storage
- X. Quality Assurance
- XI. Service Promise

## I. Preface

Thank you for your choosing of Linuo valve. As pressure equipments, there are safety loopholes owing to leakage and inappropriate use when valve delivers a fluid. For safety considerations, users should read the manual first before using.

## **II.** Applications

Segment ball valve is an advanced quarter-turn control valve which can be used switch on and off and proportionally adjusted. Segment ball core is designed with special V type notch, which owns accuracy flow control, small volume, big flow coefficient, and excellent sealing property. It is applicable to controlling gas, liquid, and solid particle medium. Owing to zero clearance rotation, there is big shear force and self-cleaning property, especially applicable to controlling suspension with 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 departments' self-control system.

## **III.** Characteristics

- i. Segment ball valve adopts overall design which avoids possible leakage owing to central flange connection.
- ii. 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.
- iii. There is shearing action between seat and ball core owing to V type cut, especially applicable to fibers, small solid particle and slurry, and other medium.
- iv. upper and lower valve stem adopts self-lubricated bearing fixation with high rotation accuracy and good rotation stability, which makes valve operate more smother
- v. When the valve is fully open, flow capacity is big, pressure loss is small, and the medium would not deposit in the body cavity

## IV. Design Standards and Performance Specifications

## Performance specifications

Nominal Diameter:wafer type DN15-250,flange type DN25-700

Nominal Pressure: PN1.0,1.6,2.5,4.0,6.4 MPa, ANSI150,300Lb

Suitable Temperature:-40°C~120°C;-40°C~230°C;-40°C~425°C

Suitable Medium :water, steam, pulp, petroleum, natural gas, and all kinds of acid and lye medium.

Mode of connection:wafer type,flange type

Drive mode: manual,pneumatic,electric

Explosive proof as per the requirement of ATEX 94/9/EC: Group II category 2 GD, protection concept of non-electrical components:CT6

#### Main Design Standards

- i. Flange Standard: ANSI B16.5
- ii.Structure and Length Standards: ISA S75.04, IEC/DIN 534-3-2

iii.Pressure Test: 1.5 times of maximum pressure in valve hydro pressure; seal test pressure is 1.1 times of iv.maximum operating pressure. The medium is water.

v.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 F in ISO5208 equivalent to ANSI/IFC70.2IVx1/100 standard

MAX PRE	IMUM ALLOV	VABLE DIFFEI RATED CV	EQUAL PERCENTAGE INHERENT FLOW CHARACTERISTIC	
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	% 7
200	35	25	1860	
250	35	20	2900	
300	30	10	4320	
350	30	10	6640	
400	30	10	8000	Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ Ψ
				0 10 20 30 40 50 60 70 80 90 100

Relative Opening %



## PARTS LIST / MATERIALS OF CONSTRUCTION

Table 1

No	Name	Quantity	Material
1	Body	1	WCB_CE8_CE8M
2	Ball	1	CE8 CE8M Hard Chromium Plating or Stellite Surfacing
2	Dali	1	
3	Cylindrical pip	1	SS304 SS316
4	Upper shaft	2	17.404 \$\$216
0	Colina	1	17-46-0, 33310
0	Splitte	1	17-4PH, 55316
/	Flatkey	2	55304,45#
8	Blind flange	1	CF8, CF8M
9	O-ring	1	Viton, Graphite
10	Gasket	1 each	PTFE, Graphite
11	Self-lubricating bearing	1	Composite material
12	Self-lubricating bearing	1	Composite material
13	Packing	1 Set	PTFE, Graphite
14	Gland	1	CF8
15	O-ring	1	Viton, Graphite
16	Seat	1	PTFE, SS304, SS316, Hard Chrome Plating or Stelllite Surfacing
17	Wavy spring	1	SS316
18	Retainer	1	Carbon Steel, SS304, SS316
19	Socked head screw	4	A193 B7, A193 B8
20	Hexagon screw	4	A193 B7, A193 B8
21	Stud	2	A193 B7, A193 B8
22	Hexagon nut	2	A194 2H, A194 8

### V. Installation Instruction and Maintenance

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.

### **1.1Preparation before Installation**

(1) 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.

(2) Pipes before and after valves shall be blown out cleanly, and all grease, welding slag, and other impurities shall be cleaned.

- (3) Check valve mark; find out valve is intact.
- (4) Remove protectors of connecting interfaces on both sides of valve.

(5) Check if there is foreign material in valve flow channel. Even tiny particles between seat and plate can damage sealing surface of seat.

## 1.2Installation

- (1) Before installing 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.
- (2) When installing threaded and welded valve, detachably flexible connectors shall be considerate for convenient maintenance and disassembling. Distance between two valve flange and pipe flange shall be appropriate.
- (3) Pay attention that flow direction shall be consistent with arrow marked in body.
- (4) When a valve is to be fixed unto the flange, no instant valve-welding is allowed shortly 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 al ready fixed unto the flange plate.
- (5) After the flange is welded unto the pipe center and the corresponding valve fixed, a pipe bolt is to be inserted into the bottom of the flange so as to keep the valve from falling. The remaining pipe bolts are to be fixed in order.
- (6) 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.
- (7) Load gasket between flange and pipe flange according to requirements of pipe. Thread shall tangle PTFE THREAD SEAL TAPE or coat seal gum.
- (8) In a special and important section, set bypass pipe for valve. When inspection or replacement, guarantee normal operation of bypass pipe.

## 1.3 Check after Installation

- (1) Operate drive to open and close valves for several times. The valve shall be flexible stagnancy, and normal operation.
- (2) 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.

## VI. Use and Maintenance

- (1) Working pressure is no more than rated value of maximum pressure under serving temperature (see performance parameters of each product) and maximum temperature.
- (2) Maintain stability of medium composition; avoid elevating working pressure owing to expansion, which results in leakage. Use stipulated medium according to instruction book.
- (3) For spontaneous medium, users should keep temperature below self-ignition temperature to avoid combustion explosion.
- (4) Prevent valve from long-time strenuous vibration to avoid invalidity and leakage.
- (5) Valve is fully open when cleaning pipes.
- (6) Even without running for a long time, open and close valves for 1-2 times.
- (7) Before using a long-time unused valve, conduct performance test to ensure that valve can put into use to meet the requirements.
- (8) Check valves regularly if valves are in long term storage. 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 keep clean. Lubricate stem threads and bearing at regular intervals.

Malfunction	Possible Cause	Solution
	1. press upper seal tightly	1. Loose nut and readjust it
	2. Parts contacting face with shaft	2. Disassemble and finish stem,
Valve is jerking	is with dirt in or is hurt.	and eliminate dirt
	3. Valves is over stroking at	3. Take valve apart, and clean
	opening or there is dirt on	it ,in order to eliminate dirt
	sealing face surface	
Leakage through seat, or back	1. Insufficient pretightening force	1. Increase pretightening force
seat	2. Damage or dirt on sealing face	2. Refurbish or grind sealing face,
	3. Deformation or invalidity of	and eliminate dirt.
	sealing face	3. Replace sealing ring

## VII. Trouble shooting

	1. Insufficient compression of	1. Readjust nut
Leakage through back seat	packing	2. Replace gasket
	2. linvalidity gasket due to long	
	term service	
Leakage through packing	1. Insufficient pressing force on	1. Readjust nut and bolt
	packing	2. Replace packing
	2. Invalidity packing due to long	
	service	

## VIII. Transportation and Storage

Products shall be kept in well-ventilate, dry place where relative humidity is no more than 80% of indoor. Air shall not contain harmful substance which can be corrosion of valves

Do not open valves before they are installed in order to avoid trash and debris to go to valves, and result in leakage.

In the transportation process, valve shall be fixed firmly, and have protective measures of preventing snow and rain.

## IX. Quality Assurance

Valve warranty period is according to contract. If there is any problem in valve warranty period, owing to manufacturer's responsibility, all incurred costs including fixing, replacement and so on should be beard by manufacturer. Quality problem caused by inappropriate use of valves, user bears all the incurred cost.

## X. Service Promise

Power originates from promise. Linuo always upholds value of "integrity, positive, innovation, and win-win" to manage company into the direction of harmonious and orderly development. With the management idea "Quality first, Credit Prior", we serve every customer attentively, and provide best products and service. We sincerely welcome friends from all walks of life to our company for study and guidance, technology exchange and cooperation. Through communication, Linuo will be your best choice.