

# Type CSVR- EA and Type CSVR- PA Electric and Pneumatic V-Ball Control Valves

DIN / ANSI version



## Application

Control valve for process engineering and industrial applications.

**Valve size** DN25 to 600 (NPS 1 to 24)  
**Pressure rating** PN10/16/25/40/63 bar (ANSI Class 150/300 Lb)  
**Temperatures** -46 to +450°C (-51 to +842°F)



## Type CSVR V-Ball Valve with

- Electric Actuator Type CSR-G01 (FC/FO/FL/FS)
- Pneumatic Actuator Single-acting Type PTS
- Pneumatic Actuator Double-acting Type PTD

## Valve body made of

- Cast steel WN1.0619 / A216WCC
- Cast stainless steel WN1.4408 / CF8M, WN1.4404 / CF3M

## Valve Plug(Ball) made of

- Stainless steel CF8M + HCr
- Stainless steel CF8M + Stel.6

## Valve Seat

- Metal seal CF8M + HCr or CF8M + Stel.6
- Soft seal seat ring PTFE or PEEK

## V-Ball Valve Features

- Setting the single seat control valve, ball valve and butterfly valve advantages as a whole
- The valve has a large flow capacity, when the valve is fully opened, the inner cavity of the valve flow path is almost identical with the inner diameter of the process pipe
- V-Ball Control valve can be used in various working medium, especially viscous fluid, the control effect is more ideal
- When the valve in the small opening, the flow changes smoothly, accurate control
- A lot of use in the chemical / HVAC / Paper / Food / Petrochemical / and more ... industry
- Metal-seated Seal level can reach Class V
- Flanges or Wafer
- High turn down ratio 200:1

## E-Actuator Features

- Electrically powered, 24VDC, 24V/110V/230/400V AC
- High resolution and repeatability, 0.1% transducer sensitivity,  $\leq 0.3\%$  actuator accuracy
- Selecting valve position when power fail, FC/FO/FL/Any Position
- Plane tary drive, and Hand wheel without clutch
- DC brushless Motor, This allows maintenance free operation with continuous unrestricted modulation duty
- Characteristic selecting, Linear/Equal percent/Quick open/Self-definition
- Integrated Working condition PID control circuit
- Wiring, programming terminal compartment, Main engine and driving room, Separate, double-sealed



Fig.1: Type CSVR V-Ball Valve with  
Type CSR-G01 Electric Actuator



Fig.2: Type CSVR V-Ball Valve with Type PTS/PTD  
Single / Double-acting Pneumatic Actuator

- Watertight IP68 and explosion-proof enclosures
- Non-intrusive setup/calibration using Bluetooth
- Optional bus interfaces available
- With or without Ex.

### Principle of operation

In the V-Ball valve, the medium flows into the convex face of the ball. When the valve is close, the pressure acts on the convex side of the ball. The flow coefficient is determined by the opening angle of the ball. To reduce the wear on the body on controlling abrasive media, the direction of flow can be reversed.

### Fail-safe position

- With the Electric Actuator Type CSR-G01 (FC/FO/FL/FS)
  - With the Pneumatic Actuator Single-acting Type PTS (FC/FO)
- The Pneumatic Actuator Double-acting Type PTD has no spring. A defined final position is not reached when the supply air fails.

### Selection of the flow characteristic

The design of the V ball allows the same valve to be used with two different types of flow characteristic.

- Equal percentage (standard)
- Linear

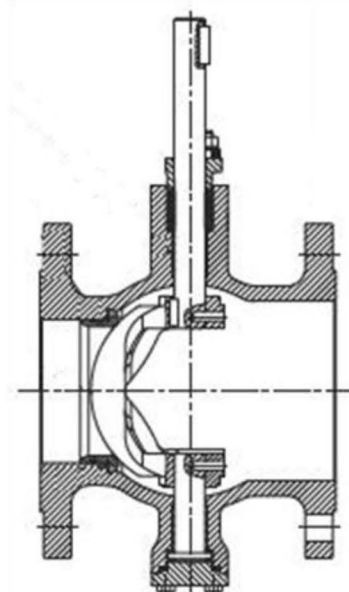


Fig.3: Type CSVR V-Ball Valve

**Table 1:** Technical data

<b>V-Ball Valve size</b>		Flange: DN25 to 600 (NPS 1 to 24)
		Wafer: DN25 to 250 (NPS 1 to 10)
Pressure rating		PN 10/16/25/40/63 bar (ANSI 150/300Lb)
Type of end connections		Flanges or Wafer . Flanges DIN EN 1902-1; ANSI B16.5
Seat ring	Metal seal	ARCAP APIC
	Soft seal	PTFE or PEEK with reinforced stainless steel
Characteristic		Percentage (standard) or Linear
Max. opening angle		90° or 70° (Only for control valve)
Range ability		≥ 100 : 1
Overall length		DIN EN 558-2 Series 36
Temperature range	Standard version	-29 to +220°C (-20 to 428°F), DIN -29 to +220°C (-20 to 428°F)
	Version with insulating section	1.0619/WCC: -29 to +220°C (-20 to 428°F) 1.4408/CF8M: -46 to +450°C (-51 to 842°F)
Leakage class according to ANSI FCI 70-2		
Metal seal		Class IV or V
Soft seal		Class VI

**Table 2:** Materials for standard version

<b>Body</b>		WN1.0619 / A216WCC; WN1.4408 / CF8M; WN1.4404 / CF3M
Plug (V ball)		CF8M + HCr; CF8M + Stel.6
Seat	Metal seal	CF8M + HCr or CF8M + Stel.6
	Soft seal	seat ring PTFE or PEEK
Shaft		17-4PH; 316SS
Plain bearing		316SS+PTFE; High-temperature versions: ARCAP APIC
Packing		V-ring PTFE; Graphite; Spring: 316SS
Bottom flange		WCC; CF8M; CF3M

**Table 3:** V-Ball Type CSVR Kvs / Cv / Initial breakaway toque

Valve Size		Kvs	Cv	Initial Breakaway Toque (N.M)	
DN	NPS			16 (bar)	40 (bar)
25	1	23	27	25	48
32		40		25	55
40	1 1/2	60	70	30	60
50	2	115	135	35	70
65	2 1/2	180	210	60	140
80	3	330	390	80	224
100	4	476	560	140	315
125	5	670	790	160	480
150	6	960	1130	220	930
200	8	1580	1860	350	1830
250	10	2460	2900	660	3125
300	12	3650	4320	1200	4000
350	14	5640	6640	1700	6120
400	16	6800	8000	2600	8030
450	18	8500	10000	3500	12000
500	20	10370	12200	3800	15000
600	24	14730	17270	6600	20500

**Table 4:** V-Ball Type CSVR with Electric or Pneumatic Actuator type selection

Valve Size		Breakaway Toque (N.M) ΔP16bar	Electric actuator		Pneumatic actuator			
DN	NPS		Type CSR-G01	Supply and control	Single-acting Type PTS	Double-acting Type PTD	Supply and control	
25	1	25	CSR-G01-060	Supply power: 24VDC; 110/230/400 VAC	PTS-088-10	PTD-075	Air supply: 4-7bar	
32		25			PTS-100-10			
40	1 1/2	30			PTS-115-10	PTD-088		
50	2	35			PTS-125-10	PTD-100		
65	2 1/2	60	CSR-G01-120	Input:4-20Ma Output:4-20mA	PTS-180-10	PTD-145	Accessories: Positioner Air filter Limit switch Solenoid ...	
80	3	80			PTS-200-10			
100	4	140	CSR-G01-220	With HW	PTS-240-10	PTD-200		Input:4-20Ma Output:4-20mA With HW
125	5	160			PTS-265-10	PTD-240		
150	6	220	CSR-G01-500	Power fail: FC/FO/FL/FS	PTS-330-10	PTD-265	Air fail: FC/FO	
200	8	350				PTD-330		
250	10	660	CSR-G01-1800	EExd / Exia IP66/67	-	-	EExd / Exia IP66/67	
300	12	1200						
350	14	1700	CSR-G01-3600					
400	16	2600						
450	18	3500	CSR-G01-5000					
500	20	3800						
600	24	6600	CSR-G01-9800					

## Physical structure diagram



1. Support shaft assembly
3. End plug
5. Body
7. Ball
8. Arrow plate
9. Nameplate
10. Spring
12. Square-ended shaft
15. Gland flange
17. Bearing bushing
20. Washer
21. Seat ring (1)
21. Supporting ring (2)
22. Disc
23. Washers (1)
24. Disc
30. Retainer
40. V-ring packing
41. Silk cord packing
42. Compound packing
45. Seat seal (2)
46. Gasket
47. Metal tube-shaped seal (1)
49. Packing spacer
55. Round-head grooved pin
60. Hexagon bolt
70. Fillister head screw
80. Washer
85. Retaining ring
90. Gasket

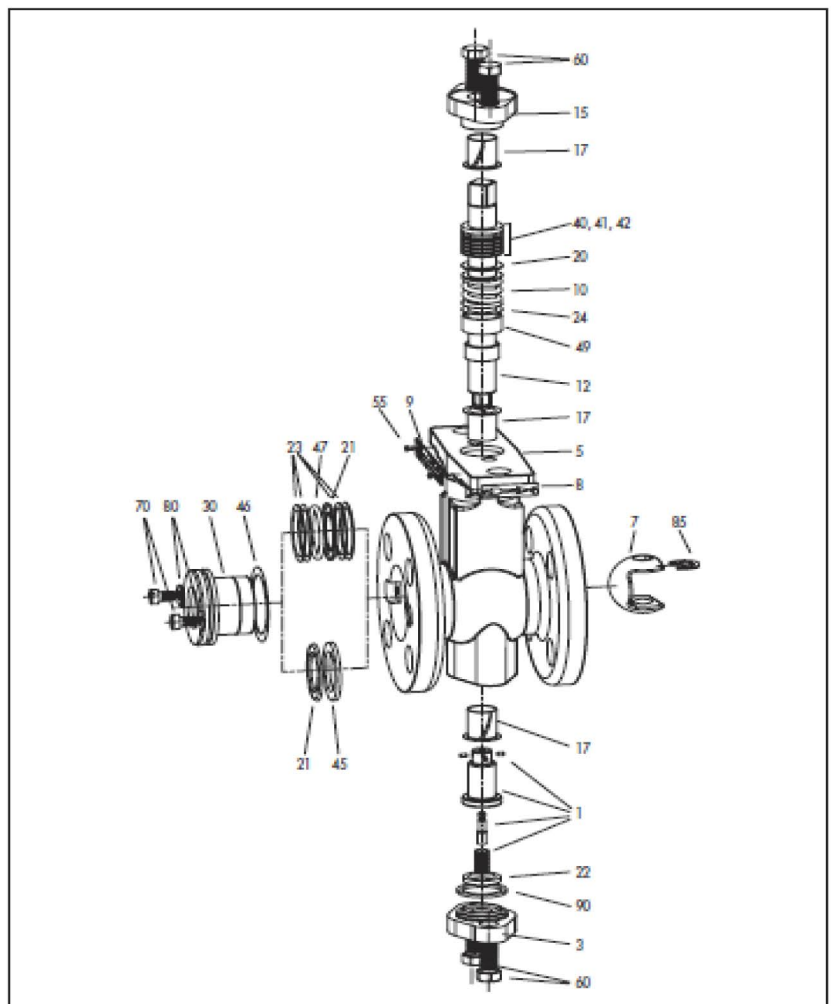
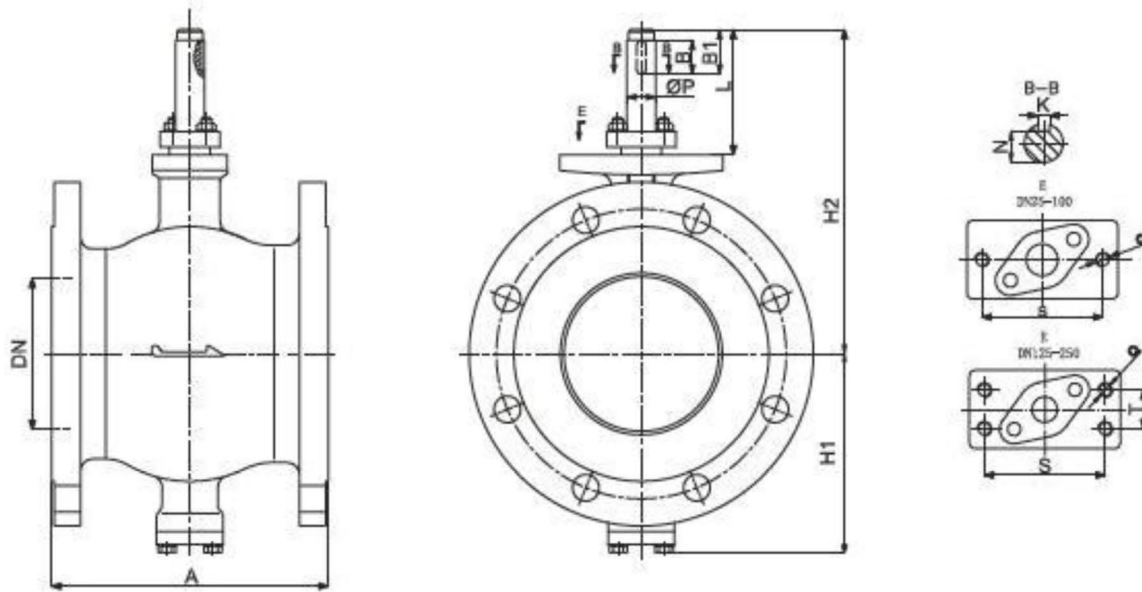


Fig.4: Type CSVR V-Ball Valve exploded view

- (1) For version with metal sealing
- (2) For version with soft sealing

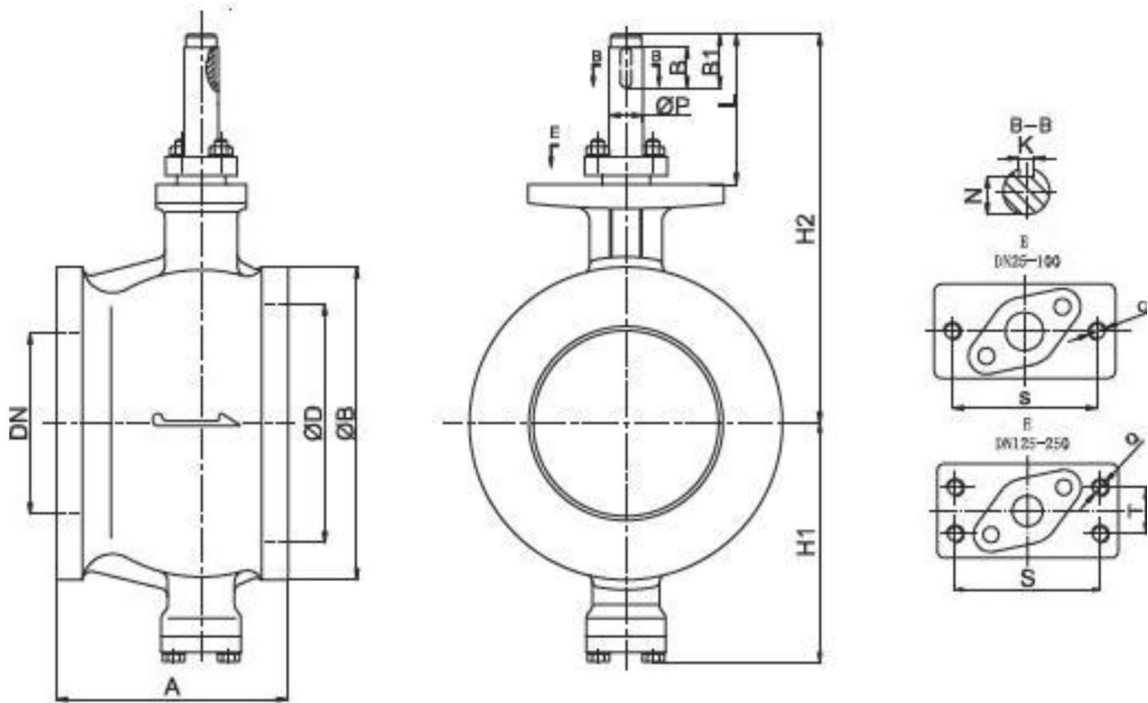
## Dimensional drawings (DIN Flanges)



**Table 5: V-Ball Type CSVR (DIN Flanges) Dimensions in mm**

DN	External dimensions			Connection size								
	A	H1	H2	L	φ P	B1	B	K	N	S	Q	T
25	102	87	190	80	16	30	25	5	13	80	M10	/
32	105	87	193	80	16	30	25	5	13	80	M10	/
40	114	92	195	80	16	30	25	5	13	80	M10	/
50	124	97	198	80	16	30	25	5	13	80	M10	/
65	145	112	218	80	16	30	25	5	13	80	M10	/
80	165	125	240	80	20	30	25	6	16.5	90	M12	/
100	194	135	250	80	20	30	25	6	16.5	90	M12	/
125	213	150	270	95	25	40	35	8	21	110	M12	40
150	229	165	308	95	25	40	35	8	21	110	M12	40
200	243	195	328	95	30	45	40	10	25	110	M12	40
250	297	237	380	110	35	55	50	10	30	130	M12	45
300	338	281	415	146	40	55	50	12	35	130	M12	45
350	400	338	509	180	50	68	60	16	44	134	M16	64
400	400	390	595	214	60	88	80	18	53	175	M20	70
450	520	422	642	214	70	88	80	20	62.5	190	M20	90
500	600	510	720	230	80	88	80	22	71	215	M20	96
600	680	550	845	285	85	115	100	22	75	230	M30	90

**Dimensional drawings (Wafer)**



**Table 6: V-Ball Type CSVR (Wafer) Dimensions in mm**

DN	External dimensions					Connection size								
	A	H1	H2	$\phi D$	$\phi B$	L	$\phi P$	B1	B	K	N	S	Q	T
25	60	87	165	38	68	80	16	30	25	5	13	80	M10	/
32	60	87	168	42	78	80	16	30	25	5	13	80	M10	/
40	60	92	170	50	85	80	16	30	25	5	13	80	M10	/
50	75	97	174	60	100	80	16	30	25	5	13	80	M10	/
65	90	112	191	75	120	80	16	30	25	5	13	80	M10	/
80	100	125	205	94	130	80	20	30	25	6	16.5	90	M12	/
100	115	135	215	110	158	80	20	30	25	6	16.5	90	M12	/
125	129	150	230	135	184	95	25	40	35	8	21	110	M12	40
150	160	165	263	165	216	95	25	40	35	8	21	110	M12	40
200	200	195	305	210	268	95	30	45	40	10	25	110	M12	40
250	240	237	358	260	322	110	35	55	50	10	30	130	M12	45

## Ordering text

### BODY

<b>Standard</b>	DIN or ANSI
<b>Valve size</b>	DN... or NPS...
<b>Pressure rating</b>	PN10/16/25/40/63 bar or ANSI class 150/300Lb
<b>Body material</b>	According to table 2
<b>Seat</b>	Metal or Soft seal
<b>Characteristic</b>	Equal percentage or Linear
<b>Selection Kvs</b>	Calculation opening angle, Valve data:P1, P2, Q, T...

### ACTUATOR

<b>Electric actuator</b>	Type CSR-G01
<b>Supply power</b>	24VDC; 110/230/400VAC
<b>Input/output</b>	4-20mA ...
<b>Fail-safe position</b>	FC/FO/FL/FS
<b>Hand wheel</b>	Yes or No
<b>Explosion protect</b>	Exd; Exia... IP65/66/67
<b>Pneumatic actuator</b>	Type PTS / PTD
<b>Supply air</b>	... bar
<b>Input/output</b>	4-20mA ...
<b>Fail-safe position</b>	FC/FO
<b>Hand wheel</b>	Yes or No
<b>Accessories</b>	Positioner / Solenoid / Limit switch / Air filter....
<b>Explosion protect</b>	Exd; Exia... IP65/66/67

Specifications subject to change without notice.

