JIANGYIN EASTERN VALVE
PARFECT GROUP

COMPANY PFOFILE

Ball Valve

2023/10/09	*Rev.1*	*Ryan.Zuo*	*Board of Directors*
Date	**Revision**	**Issued by**	**Approved**

Our Value:

Share Value, Grow together

Our Principle:

Responsibility & Co-operation

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一、BRIEF INTRODUCTION

1.1 COMPANY PROFILE

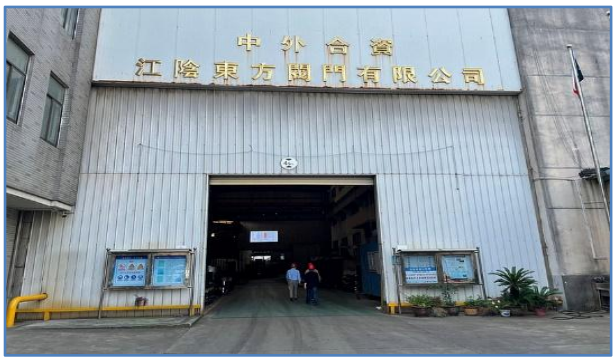
Jiangyin Eastern Valve Co., Ltd (JEV), ***established in 1984***, Locating in Zhouzhuang Town, Jiangyin City, nearby Shanghai (2.5 hours by Driving). Four divisions invested and established by the JEV are Ball Valve Plant, GGC Valve Plant, Sand Casting Plant, Precision Casting Plant.

Along with the business expansion and brand influence of JEV, **CHX Metal Tech Co.,Ltd** was established, which can customize material solutions according to customers' special requirements, with fast response and professionalism.

The above company group with **65,000** square meters in total and new established overseas sales division**- PARFECT STEEL**.

Strong Machining Capability always makes the products reliable and impressive,**over 260** machining machines, including **60** CNC machines, such as **PUMA boring & milling machining center**, **5-meter vertical turning machines** , etc.

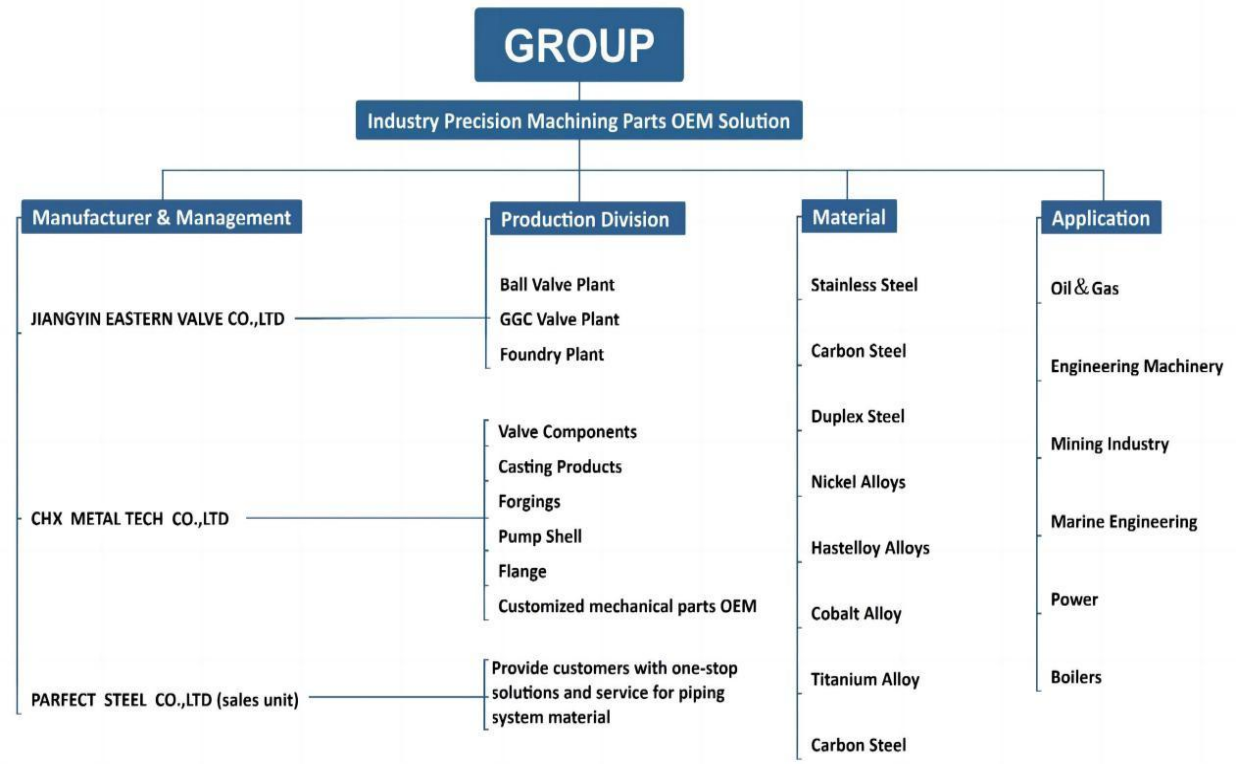
Ball Valve Plant



1.2 CAPABILITY

二、GROUP

2.1 PLANT GROUP



2.2 HUMAN RESOURCES STATISTICS OF BASIC SITUATION

Human Resources Statistics of basic situation					
2023 year	Total	400	Number	College/Above	In position(Y/N)
	Sales Department	10	Number	2	Y
	Financial Department	6	Number	2	Y
	HR	4	Number	2	Y
	R&D	7	Number	7	Y
	Eng.Dept.	8	Number	2	Y
	Tech Dept.	12	Number	10	Y
	Production Dept.	300	Number	30	Y
	Purchasing	5	Number	2	Y
	Logistics	10	Number	2	Y
	Q/C Dept.	30	Number	20	Y
	Q/A Dept.	8	Number	8	Y

三、PRODUCT SCOPE

BALL VALVES	Design Standard	Pressure Rating	Size Rang
Cast Steel 3PC Trunnion Ball Valve Soft Seated	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~1500Lb	16”~56”
Cast Steel 2PC Trunnion Ball Valve Soft Seated	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~2500Lb	2”~14”
Cast Steel 2PC Floating Ball Valve Soft Seated	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~600Lb	1/2”~10”
Forged Steel 3PC Trunnion Ball Valve Soft Seated	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~2500Lb	2”~56”
Forged Steel Floating Ball Valve Soft Seated	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~600Lb	1/2”~10”
4-Way Metal-Seated Ball Valve in High Temperature & High Pressure	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~1500Lb	2”~24”
V Type Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~1500Lb	2”~24”
Full Welded Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~1500Lb	2”~40”
Top-Entry Trunnion Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~2500Lb	2”~48”
Threaded&Socket Welded Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~2500Lb	1/4”~4”
Jacket Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~300Lb	1/2”~8”
Three-Way Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~300Lb	1/2”~12”
Cryogenic Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~600Lb	1/2”~10”
Rising-Stem Ball Valve	API6D、ASME B16.34、BS5351、API 608、MSS SP-72	Class150Lb~900Lb	2”~16”

The above products have been widely applied in chemical industrial, petroleum, power station, nuclear energy, aviation, etc.

四、PRODUCT FIGURE

Ball Valve

五、Generally Material(Otherwise,Ti、H.C、Alloy625、Zr)

Chemical composition and mechanical properties of commonly used materials for valves

Metal Materials		Chemical Composition (%) ≤														Mechanical Properties ≥				
Standard	Grade	C	Mn	P	S	Si	Cr	Mo	V	Ni	Cu	W	Nb	Ti	Heat Treatment	Tensile Strength	Yield Strength	Elongation δ	Shrinkage Ψ	Hardness
																σ b MPa	σ s MPa	%	%	HB
ASTM A216	WCB	0.30	1.00	0.04	0.045	0.60	0.50	0.2	0.03	(Cu+Ni+Cr+Mo+V)≤ 1.00					Normalizing	485~655	250	22	35	HRc≤22
ASTM A352	LCB	0.30	1.00	0.04	0.045	0.60	0.50	0.20	0.03	0.50	0.30	(Ni+Cr+Mo+Cu+V)≤1.0			Normalizing	450~620	240	24	35	≤207
ASTM A352	LCC	0.25	1.20	0.040	0.045	0.60	0.50	0.20	0.03	0.50	0.30	(Ni+Cr+Mo+Cu+V)≤1.0			Normalizing	485~655	275	22	35	≤207
ASTM A351	CF8	0.08	1.50	0.04	0.04	2.00	18.0~21.0	0.50		8.0~11.0					Solid Solution	485	205	35		≤187
ASTM A351	CF8M	0.08	1.50	0.04	0.04	1.50	18.0~21.0	2.0~3.0		9.0~13.0					Solid Solution	485	205	30		≤187
ASTM A351	CF3	0.03	1.50	0.04	0.04	2.00	17.0~21.0	0.50		8.0~12.0					Solid Solution	485	205	35		≤187
ASTM A351	CF3M	0.03	1.50	0.04	0.04	1.50	17.0~21.0	2.0~3.0		9.0~13.0					Solid Solution	485	205	30		≤187
ASTM A351	CK20	0.04~0.2	1.50	0.04	0.04	1.75	23.0~27.0	0.50		19.0~22.0					Solid Solution	450	195	30		≤187
ASTM A351	CF8C	0.08	1.50	0.04	0.04	2.00	18.0~21.0	0.50		9.0~12.0				8XC~1.0	Solid Solution	485	205	30		≤187
ASTM A217	WC4	0.05~0.20	0.50~0.80	0.04	0.045	0.60	0.50~0.80	0.45~0.65		0.70~1.10	0.50	0.1	Cu+W<0.60		Normalizing+Tempering	485~655	275	20	35	149~187
ASTM A217	WC5	0.05~0.20	0.40~0.70	0.04	0.045	0.60	0.50~0.90	0.90~1.20		0.60~1.00	0.50	0.1	Cu+W<0.60		Normalizing+Tempering	485~655	275	20	35	149~187
ASTM A217	WC6	0.05~0.20	0.50~0.80	0.04	0.045	0.60	1.00~1.50	0.45~0.65		0.50	0.50	0.1	Ni+Cu+W<1.0		Normalizing+Tempering	485~655	275	20	35	149~187
ASTM A217	WC9	0.05~0.18	0.40~0.70	0.04	0.045	0.60	2.00~2.75	0.90~1.20		0.50	0.50	0.1	Ni+Cu+W<1.0		Normalizing+Tempering	485~655	275	20	35	149~187
ASTM A217	C5	0.20	0.40~0.70	0.04	0.045	0.75	4.00~6.50	0.45~0.65		0.50	0.50	0.1	Ni+Cu+W<1.0		Normalizing+Tempering	620~796	415	18	35	149~187
ASTM A296	CA15	0.15	1.00	0.040	0.040	1.50	11.5~14.0	0.50		1.00					Normalizing+Tempering	620~796	450	18	30	≤269
ASTM A105	A105	0.35	0.60~1.05	0.035	0.040	0.10~0.35	0.30	0.12	0.08	0.40	0.40				Normalizing	485	250	30	30	≤187
ASTM A350	LF2	0.30	0.60~1.35	0.035	0.040	0.15~0.3	0.30	0.12	0.08		0.40		0.02		Normalizing	485~655	250	22	30	≤197
ASTM A182	F304	0.08	2.00	0.045	0.030	1.00	18.0~20.0			8.0~11.0					Solid Solution	515	205	30	50	≤187
ASTM A182	F316	0.08	2.00	0.045	0.030	1.00	16.0~18.0	2.00~3.00		10.0~14.0					Solid Solution	515	205	30	50	≤187
ASTM A182	F304L	0.03	2.00	0.045	0.030	1.00	18.0~20.0			8.0~13.0					Solid Solution	485	170	30	50	≤187
ASTM A182	F316L	0.03	2.00	0.045	0.030	1.00	16.0~18.0	2.00~3.00		10.0~15.0					Solid Solution	485	170	30	50	≤187
ASTM A182	F321	0.08	2.00	0.045	0.030	1.00	17.0~19.0			9.0~12.0				5XC~0.7	Solid Solution	515	205	30	50	≤187
ASTM A182	F6a	0.15	1.00	0.040	0.030	1.00	11.5~13.5			0.50					Solid Solution	585	380	18	3	167~229
ASTM A182	F91	0.08~0.12	0.30~0.60	0.020	0.010	0.20~0.50	8.0~9.5	0.85~1.05		0.40	0.06~0.10				Solid Solution	585	415	20	40	≤ 248

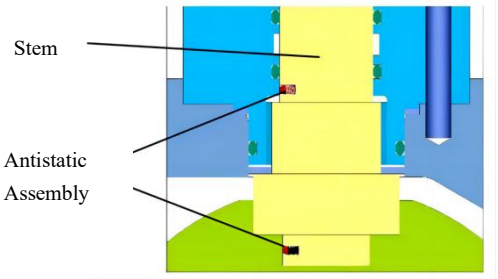
Metal Materials		Chemical Composition (%) ≤														Mechanical Properties ≥				
Standard	Grade	C	Mn	P	S	Si	Cr	Mo	V	Ni	Cu	Nb	W	Ti	Heat Treatment	Tensile Strength	Yield Strength	Elongation δ	Shrinkage Ψ	Hardness
																σ b MPa	σ s MPa	%	%	HB
ASTM A276	304	0.08	2.00	0.045	0.030	1.00	18.0~20.0			8.0~11.0					Solid Solution	515	205	40	50	
ASTM A276	316	0.08	2.00	0.045	0.030	1.00	16.0~18.0	2.00~3.00		10.0~14.0					Solid Solution	515	205	40	50	
ASTM A276	304L	0.03	2.00	0.045	0.030	1.00	18.0~20.0			8.0~12.0					Solid Solution	485	170	40	50	
ASTM A276	316L	0.03	2.00	0.045	0.030	1.00	16.0~18.0	2.00~3.00		10.0~14.0					Solid Solution	485	170	40	50	
ASTM A276	321	0.08	2.00	0.045	0.030	1.00	17.0~19.0			9.0~12.0				5XC~0.7	Solid Solution	515	205	40	50	
ASTM A276	420	0.16~0.25	1.00	0.035	0.030	1.00	12.0~14.0								Solid Solution	630	440			220~250
ASTM A564	17-4PHS17400	0.07	1.00	0.040	0.030	1.00	15.0~17.5			3.00~5.00	3.0~5.0	(Nb+Ta=0.15~0.45)			Solid Solution+Aging	930	725	16	50	Rc≥28
GB/T 12229	WCB	0.30	1.00	0.04	0.045	0.60	0.50	0.25	0.03	0.50	0.30	(Cu+Ni+Cr+Mo+V)≤ 1.00			Normalizing	485	250	22	35	
GB/T 12230	CF8	0.08	1.50	0.04	0.04	2.00	18.0~21.0	0.50		8.0~11.0					Solid Solution	485	205	35		
GB/T 12230	CF8M	0.08	1.50	0.04	0.04	1.50	18.0~21.0	2.0~3.0		9.0~12.0					Solid Solution	485	205	30		
GB/T 12230	CF3	0.03	1.50	0.04	0.04	2.00	17.0~21.0	0.50		8.0~12.0					Solid Solution	485	205	35		
GB/T 12230	CF3M	0.03	1.50	0.04	0.04	1.50	17.0~21.0	2.0~3.0		9.0~13.0					Solid Solution	485	205	30		
GB/T 12230	CF8C	0.08	1.50	0.04	0.04	2.000	18.0~21.0	0.5		9.0~12.0					Solid Solution	485	205	30		
GB/T 12230	ZG08Cr18Ni9Ti	0.08	0.8~2.0	0.04	0.03	1.50	17.0~20.0			8.0~11.0				5XC~0.7	Solid Solution	441	196	25	32	
GB/T 1220	06Cr19Ni10	0.08	2.00	0.045	0.030	1.00	18.0~20.0			8.0~11.0		相同(17) 304			Solid Solution	520	205	40	60	≤187
GB/T 1220	06Cr17Ni12Mo2	0.08	2.00	0.045	0.030	1.00	16.0~18.0	2.00~3.00		10.0~14.0		相同(38) 316			Solid Solution	520	205	40	60	≤188
GB/T 1220	022Cr19Ni10	0.03	2.00	0.045	0.030	1.00	18.0~20.0			8.0~12.0		相同(18) 304L			Solid Solution	480	175	40	60	≤189
GB/T 1220	022Cr17Ni12Mo2	0.03	2.00	0.045	0.030	1.00	16.0~18.0	2.00~3.00		10.0~14.0		相同(39) 316L			Solid Solution	480	175	40	50	≤187
GB/T 1220	06Cr18Ni11Ti	0.08	2.00	0.045	0.030	1.00	17.0~20.0			9.0~12.0		相同(55) 321		5XC~0.7	Solid Solution	520	205	40	50	≤187
GB/T 1220	12Cr13	0.08~0.15	1.00	0.040	0.030	1.00	11.5~13.5			0~0.6		(98),原1Cr13			Quenching and Tempering	540	345	22	55	≤200
GB/T 1220	20Cr13	0.16~0.25	1.00	0.040	0.030	1.00	12.0~14.0			0~0.6		(101),原2Cr13			Quenching and Tempering	640	440	20	50	≤223
05Cr17Ni4Cu4Nb		0.07	1.00	0.040	0.030	1.00	15.0~17.5			3.00~5.00	3.0~5.0	相同(137)17400			Solid Solution+Aging	930	725	16	50	Rc≥28
GB/T 699	20	0.17~0.23	0.35~0.65	0.035	0.035	0.17~0.37	0.25			0.30	0.25				Normalizing	410	245	25	55	≥156
GB/T 3077	42CrMo	0.38~0.45	0.50~0.80	0.035	0.035	0.17~0.37	0.90~1.20	0.15~0.25		0.30	0.30				Quenching and Tempering	1080	930	12	45	≤217
GB/T 700	Q235A	0.14~0.22	0.30~0.60	0.045	0.05	0.30									Normalizing	375~500	235	26		
GB/T 12226	HT200	3.0~3.6	0.5~0.8	0.15	0.12	1.5~2.2									Annealing	200				

六、TECHNOLOGY ADVANTAGES

Such as: Ball Valves

6.1 EMERGENCY SEALS

For trunnion mounted ball valve size NPS 6 (DN 150) and above, it comes with provisions for sealant injection on both the stem and seat while for sizes NPS 5 (DN125) and below on body cavity. In case of failed under performed seals, a temporary emergency seal can be achieved by injecting sealants.



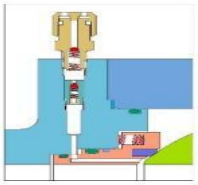
6.2 BLOWOUT PROOF STEM

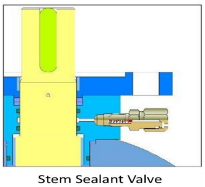
The valve stem is made with a shoulder at the bottom end. It's securely retained by the stuffing box, to avoid that the stem, under certain operating conditions, accidentally blows out. Other designs are available on request.

6.3 INTRODUCTION

A ball valve is a valve with a spherical disc, the part of the valve which controls the flow through it. The sphere has a hole, or port, through the middle so that when the port is in line with both ends of the valve, flow will occur. When the valve is closed, the hole is perpendicular to the ends of the valve, and flow is blocked.

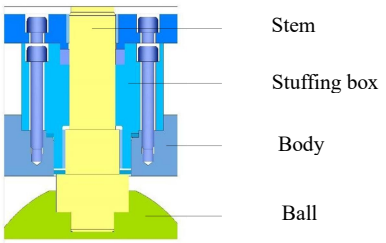
A trunnion ball valve has additional mechanical anchoring of the ball at the top and the bottom, suitable for larger and higher pressure services. To ensure tight sealing at low pressure, high-tensile springs force the seats against the ball while at higher pressure, the medium pressure pushes upstream seat towards the ball.




Stem Sealant Valve

6.4 ANTI-STATIC

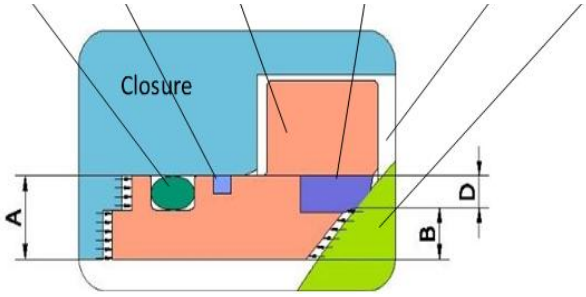
Because the ball and stem in a ball valve are suspended on non-metallic parts, i.e. the seat seal and stem seal, there is a possibility a static charge may build up on the stem-ball, a mechanical (antistatic metal spring and ball) is introduced in the design to maintain the metal- to-metal contact between the rotating ball/stem and the valve body which will ground any charges to the valve body.



6.5 SINGLE PISTON EFFECT

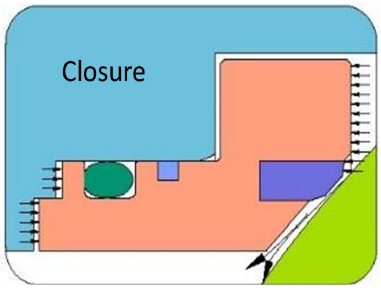
(I)Downstream Valve Seat

O-ring Gasket Seat Retainer Seat Insert Valve Cavity Ball



The different in area (D) times the line pressure creates a “piston effect” force which pushes the seat against the ball surface resulting in a tight seal.

(II)Upstream Valve Seat

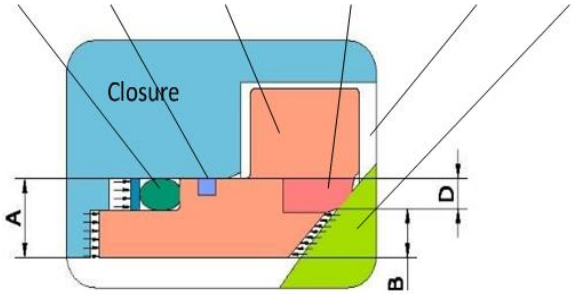


When the pressure in the valve cavity reaches a level that the total force from cavity acting on the seat is larger than the total force from upstream line pressure, the seat will be pushed away from the ball to relief the valve cavity pressure.

6.6 DOUBLE PISTON EFFECT

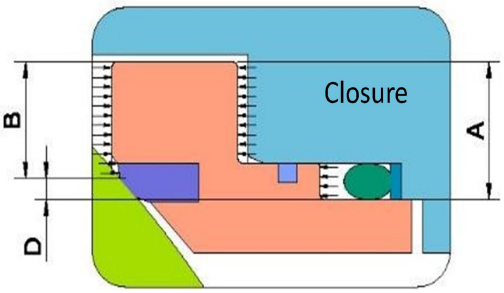
(I)Downstream Valve Seat

O-ring Gasket Seat Retainer Seat Insert Valve cavity Ball



The different in area (D) times the line pressure creates a “piston effect” force which pushes the seat against the ball surface resulting in a tight seal.

(II)Upstream Valve Seat



The difference in area (D) times the line pressure creates a “piston effect” force which pushes the seat against the ball surface resulting in a tight effect seal.

6.7 FIRE SAFE DESIGN

During a fire, non-metallic soft material will be burnt, subsequently seat leakage or external leakage may occur and cause the fire spread or contaminate the environment. The ball valves are fire tested in accordance with API 6FA or API 607, witnessed and certified by TUV SUD. If valve is not covered according to the standards, they are designed to be fire safe.