

VNT VORNET VALVE

PIGGING VALVE



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VORNET VALVE CO., LTD

☎ Tel: +8617888190118

✉ E-mail: jessamynlee@vornetvalve.com

📍 Add: No. 29, Oubei Road, Binhai County, Yancheng City,
Jiangsu Province, China

🌐 www.vornetvalve.com



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ABOUT Us

沃耐特阀门是集阀门研发、制造、服务、销售于一体的制造型企业，前身是浙江诚一阀门，自 2004 年以来，始终深耕阀门领域，为高温、高压、特殊工况领域的阀门用户提供零缺陷的产品。

本公司主导产品包括闸阀，截止阀，止回阀，球阀，节流阀，调节阀，泵保护阀，过滤器等。产品严格按照 API、ASME、ASTM、ISO、EN、GB 等规范设计和生产。产品通径 NPS:1/2"~60",DN15~1500MM，压力等级 CLASS:150LB~4500LB,PN16~760，工作温度 -196° C~680° C，阀门主体材料有碳钢、合金钢、不锈钢、钛材、蒙乃尔、20 号合金等，广泛应用于高温、高压、强腐蚀、超低温、超高温等特殊工况。

公司致力于为用户提供针对特殊工况的阀门选型、材料选择与产品定制等专业服务，提供系统解决方案。支持一件起订与批量发货。

Vornet Valve is a manufacturing enterprise integrating valve R&D, manufacturing, service, and sales. Formerly known as Zhejiang Chengyi Valve, it has been deeply engaged in the valve industry since 2004, providing zero-defect products to valve users in high-temperature, high-pressure, and special-service conditions.

Our company's leading products include gate valves, globe valves, check valves, ball valves, throttle valves, control valves, pump protection valves, strainers, and more. All products are designed and manufactured in strict accordance with specifications such as API, ASME, ASTM, ISO, EN, and GB. Product sizes range from NPS 1/2" to 60" (DN15 to DN1500 mm), pressure classes from Class 150 to Class 4500 (PN16 to PN760), and operating temperatures from -196° C to 680° C. Main body materials include carbon steel, alloy steel, stainless steel, titanium, Monel, Alloy 20, etc., and are widely used in special service conditions such as high temperature, high pressure, severe corrosion, ultra-low temperature, and ultra-high temperature.

The company is committed to providing professional services including valve selection, material choice, and product customization for special service conditions, offering systematic solutions. We support orders from a single piece to batch deliveries.

匠心制造 诚信第一

CRAFTSMANSHIP AT HEART / INTEGRITY ABOVE ALL

公司本着：品质是我们生存的根本，效益是我们发展的基础，信誉是我们立足的保障，满意是我们基本的追求。

Our company is guided by the principle that: Quality is the very root of our survival, Efficiency is the foundation of our development, Reputation is the guarantee of our foothold, Satisfaction is our fundamental pursuit.



22 YEARS
发展历程
DEVELOPMENT
COURSE

99 %
客户满意度
CUSTOMER
SATISFACTION

2004





清管阀 PIGGING VALVE

产品范围 Specifications

阀门尺寸 (锻件) / Forging Size: 2"~30"
温度范围 / Temperature Range: -46~180° C
压力等级 / Pressure Rating: 150~2500LB

设计特色 Design Features

- 低扭矩特性
Low Torque Characteristics
- 中腔压力自排放
Automatic Cavity Pressure Relief
- 防吹出阀杆
Blowout-proof Stem
- 防火设计
Fire-safe Design
- 防静电装置
Anti-static Device
- 低泄漏设计
Low Leakage Design

设计和检验标准 Design and Inspection Standards

设计标准 / Design std: ASME B16.34/API 6D
壳体壁厚 / shell: ASTM B16.34
结构长度 Face to Face: ASTM B16.10
压力试验 / Pressure Test: API 598
耐火试验 / Fire Resistance Test: API 607

连接端标准 End Connection Standards

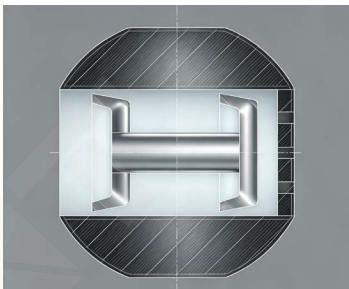
法兰端 / Flange: ASTM B16.5

结构特点 / Structural Features

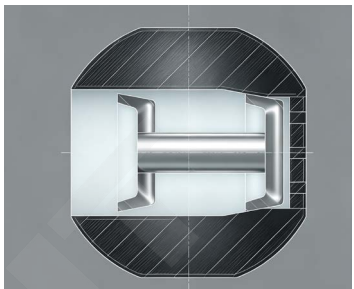
清管阀具有三种类型以适应不同的作业需要。
Pigging valves are available in three configurations to accommodate various operational requirements.

1: 标准型 (PC 型) / Standard Type (PC)

装置通较管道内径稍大，起到发射和接收清管器的功能同时具备截断功能。
The device bore diameter is slightly larger than the pipeline inner diameter, enabling it to perform both launching and receiving of pigs, as well as to provide a shut-off function.



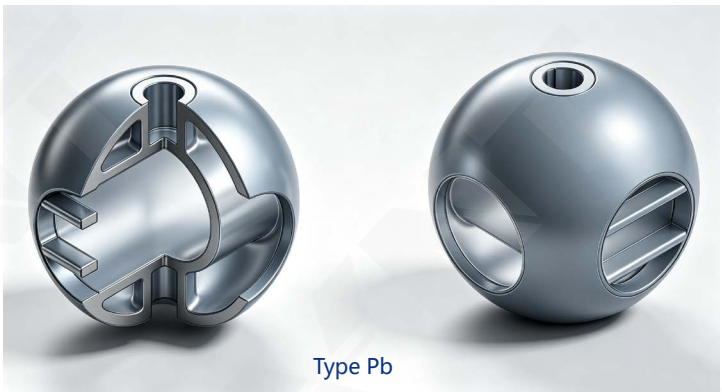
Type PC



Type PS

2: 隔离型 (PS 型) / Isolation Type (PS)

球体的孔径仅比连接管的内径大约 3%。为了尽量减少隔离球上游和下游介质的混合，在孔径挡板的上游侧安装了一个额外的密封圈。
The ball bore diameter is only about 3% larger than the internal diameter of the connecting pipeline. To minimize intermixing of the media upstream and downstream of the isolation sphere, an additional sealing ring is installed on the upstream side of the bore baffle.



Type Pb

3: 旁路型 (Pb 型) / Bypass Type (Pb)

当输送介质不允许短时切断时，应使用旁路清管阀。球比标准清管阀大，孔径和结构与标准清管阀相同，但两个旁通通孔在孔轴垂直方向上的总流量截面约为阀门孔径截面的 25%。在清管器发射和接收的过程中，流体流动不会中断。
Type Pb is a pigging valve with a bypass. The device bore diameter is slightly larger than the pipeline inner diameter, and two circular passages are provided in the hollow ball, oriented perpendicular to the ball bore. This configuration ensures that the pigging valve does not experience flow interruption even when launching or receiving pigs. Type I, on the other hand, cannot be used as a shut-off valve

清管阀是一种主要用石油、天然气、化工品及其它液体输送管线中清管作业的新型装置，进行清管器的发射、接收作业，用于管道内壁的机械清洁（除污、除锈、清除管道内异物等）、分隔不同产品，已在油气田、化工、码头、油气储运库及海上平台得到广泛的应用。
The pigging valve is a new-type device primarily used for pigging operations in pipelines transporting oil, natural gas, chemicals, and other liquids. It performs the launching and receiving of pigs, and is employed for mechanical cleaning of the internal pipe wall (removing dirt, rust, foreign objects, etc.) as well as for product separation. It has been widely applied in oil and gas fields, chemical plants, terminals, oil and gas storage depots, and offshore platforms.

工作原理 / Working Principle

本装置密封原理与球阀相同，在弹簧与介质共同作用下，使两侧阀座靠紧球体，密封通道与阀体中腔隔开。通过旋转球体来完成清管器的装入、发射和接收、取出。当球体通道对着快开盲板时可装入、取出清管器（见图一）；球体旋转 90 度后，当球体通道与管道一致时在介质作用下可发射、接收清管器（见图二）。

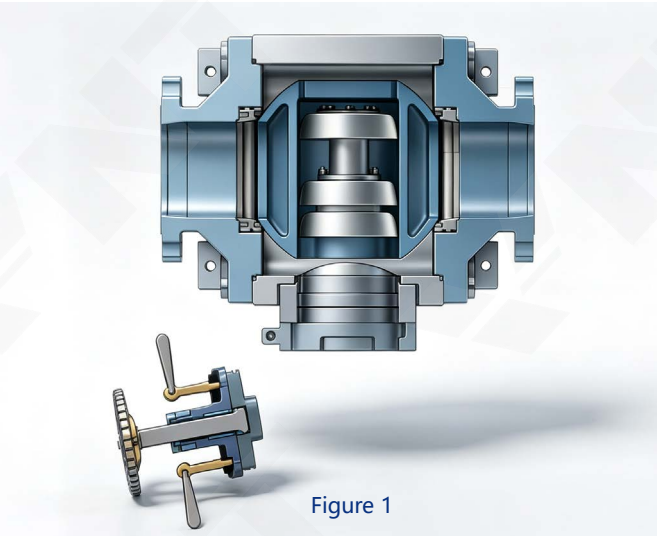


Figure 1

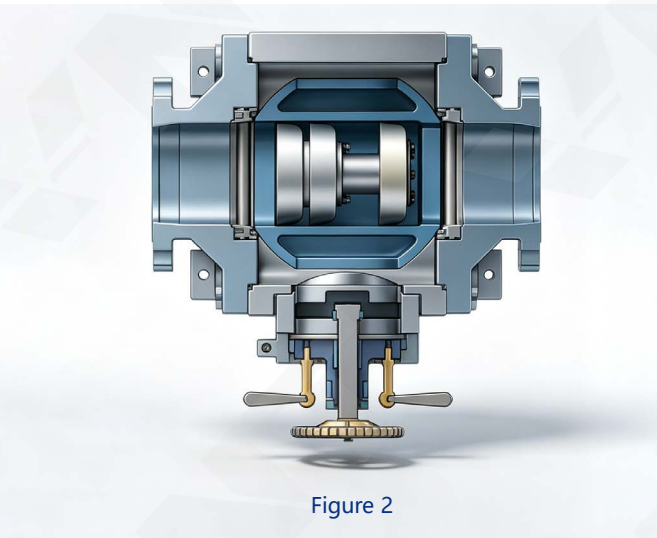
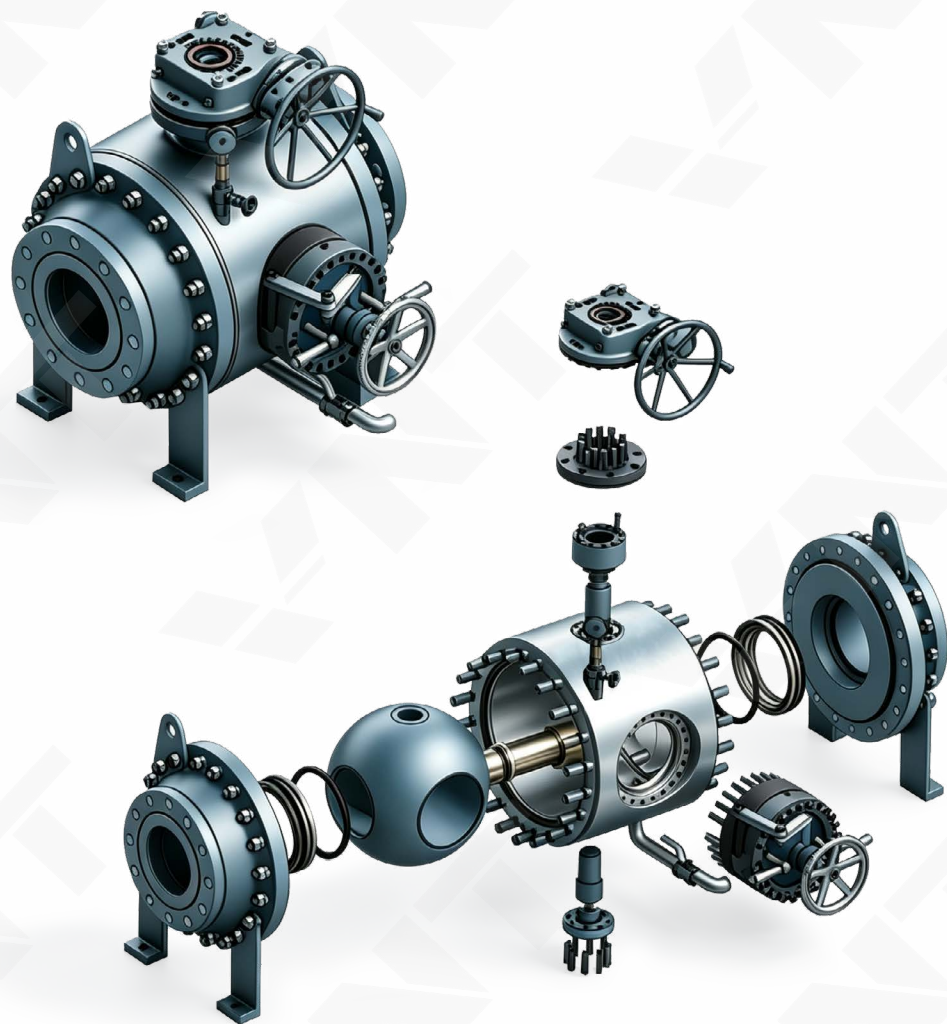


Figure 2

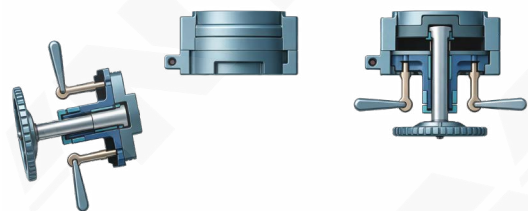
操作过程 /OPERATING PROCEDURE

清管阀结构 /Pigging Valve Structure



操作过程 /Operating Procedure

1. 操作蜗轮使球口面对盲板，观察蜗轮上指示；
2. 打开泄压阀观察压力表至压力为零；
3. 逆时针转动盲板手轮至红线位置；
4. 拔开定位销；
5. 双手握住盲板手柄逆时针转动至牙口可拉出位置；
6. 拉出盲板，装入清管器；
7. 检查 O 形圈是否完好，推进盲板，双手握住手柄顺时针转动到挡住位置；
8. 顺时针转动盲板手轮至关闭位置；
9. 插上定位销；
10. 关闭泄压阀；
11. 操作蜗轮使球口与管线一致，发射或接收清管器

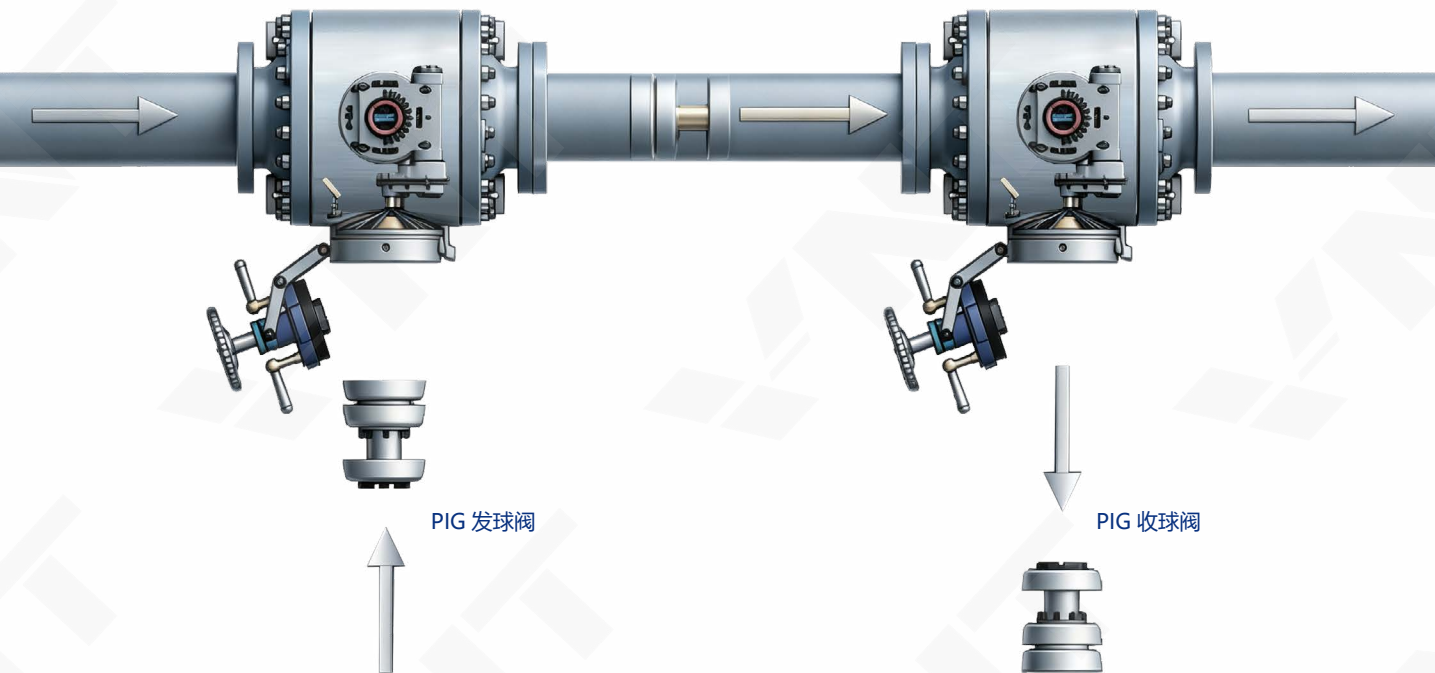


1. Operate the worm gear to turn the ball port toward the quick-opening blind plate, and observe the position indicator on the worm gear.
2. Open the pressure relief valve and watch the pressure gauge until the reading drops to zero.
3. Turn the handwheel of the blind plate counterclockwise to the red line mark.
4. Pull out the locating pin.
5. Grasp the blind plate handle with both hands and turn it counterclockwise until the locking lugs (bayonet) are aligned for removal.
6. Pull out the blind plate and load the pig.
7. Check the O-ring for integrity, then push the blind plate back in. Grasp the handle with both hands and turn it clockwise until it reaches the stop position.
8. Turn the handwheel of the blind plate clockwise to the closed position.
9. Insert the locating pin.
10. Close the pressure relief valve.
11. Operate the worm gear to align the ball port with the pipeline, then launch or receive the pig.

安装和使用 / Installation and Application

1. 清管阀通常成套使用，一台发射一台接收，注意安装位置有限制时注明盲板操作面应在流向的左侧或右侧。
2. 管线上如果有弯头要用大弯头，弯头半径最小是 1.5 倍通径否则清管器通过时会卡堵。
3. 配套的阀门通径一般不得小于管子内径，保持通道流畅，不得有开关不到位的情况，否则会有卡堵或清管器损坏现象。

1. Pigging valves are typically used in pairs, with one serving as launcher and the other as receiver. Attention should be paid to installation orientation: where space constraints apply, it shall be indicated whether the operating side of the blind closure should be on the left or right side of the flow direction.
2. If elbows are present in the pipeline, long-radius elbows shall be used, with a minimum radius of 1.5 times the bore diameter; otherwise, the pig may become stuck or blocked during passage.
3. The bore diameter of any accompanying valves shall not be smaller than the pipe inner diameter, so as to maintain a smooth flow path and ensure full opening/closing. Improper valve positioning may result in jamming or damage to the pig.

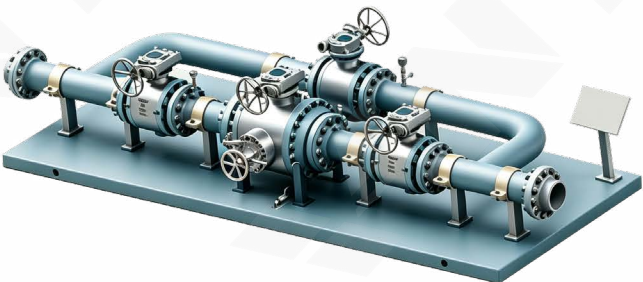


收发球撬装结构 /Launcher and Receiver Skid StructureProcedure

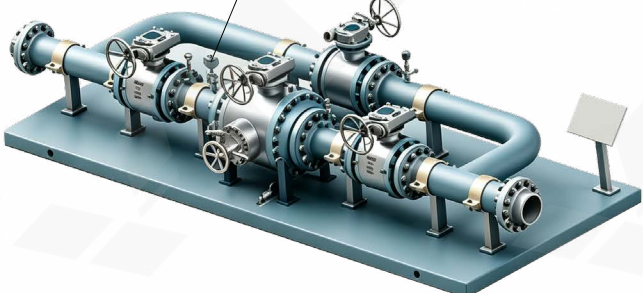
设备由 1 台清管阀、3 台球阀、3 台压力表截止阀、压力表、通球指示仪等用管线、三通、弯头、法兰等连接，集成到撬座上。撬装化设计在满足现场使用要求的同时还具有占地面积小、节约能源、易于搬迁、适用性强等特点。清管撬装置中的清管阀维护保养时，可以关闭主管线清管阀进出口处的球阀，开启旁通管路的球阀，即可进行清管阀维护保养，同时并不用关闭生产管线影响生产。

The skid assembly comprises one pigging valve, three ball valves, three pressure gauge shut-off valves, pressure gauges, and a pig indicator, connected by piping, tees, elbows, and flanges. The skid-mounted configuration provides a compact footprint, energy efficiency, easy transport, and good adaptability while meeting field operating needs. For pigging valve maintenance, the ball valves upstream and downstream of the mainline pigging valve are closed and the bypass ball valve is opened, allowing service work to be carried out without halting the production line.

发球撬 /Launcher Skid

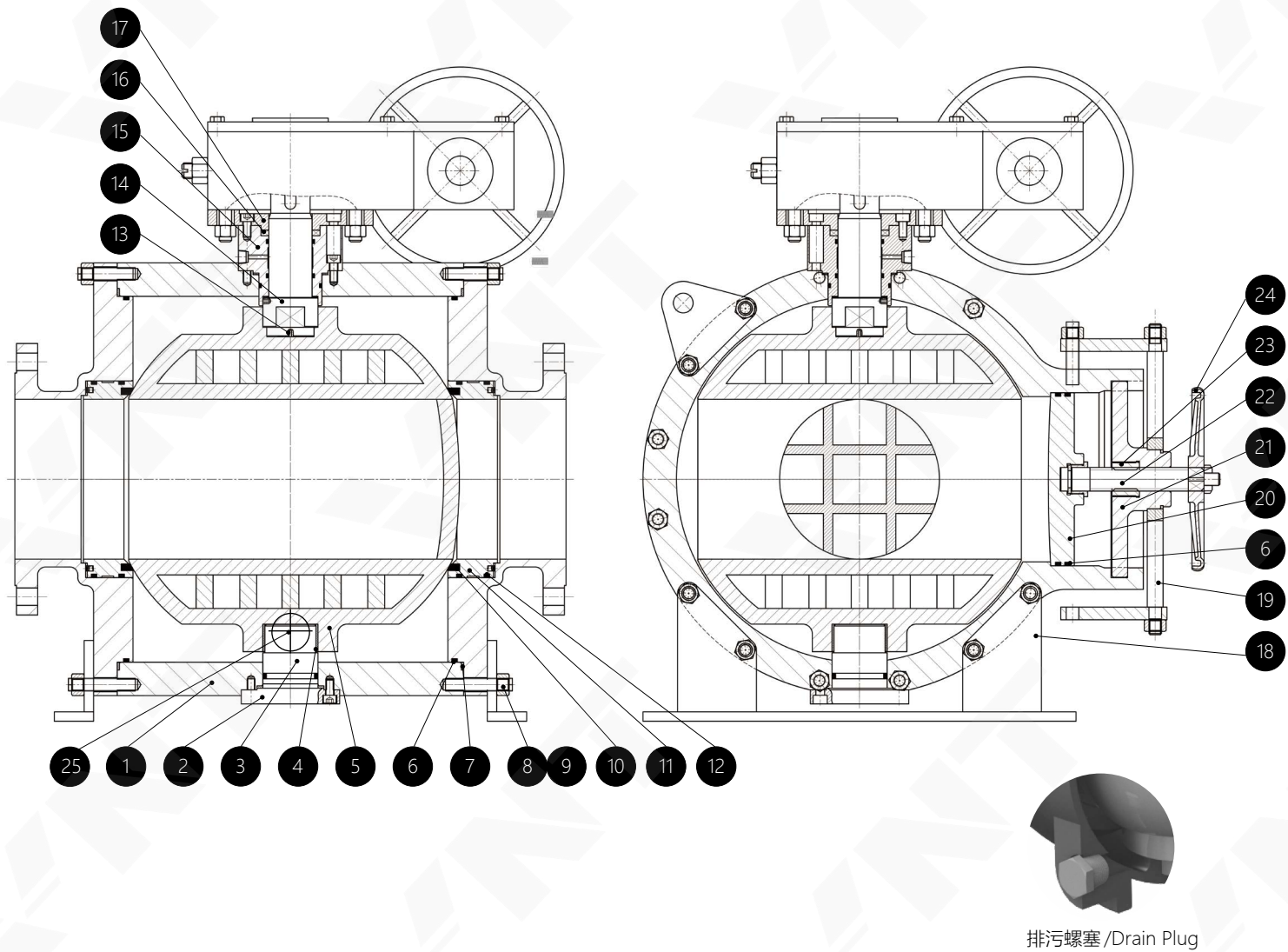


收球撬 /Receiver Skid



通球指示仪 /Pig Passage Indicator

结构示意 / STRUCTURAL DIAGRAM



- 6 O 形圈与密封垫片组合防止体盖连接部位的泄漏。
O-rings combined with gaskets prevent leakage at the body-cover connection.
- 10 当软密封材料在火灾破坏后，金属阀座受压推向金属球体，切断管线防止介质泄漏。
Fire-safe Design: If soft seals are destroyed by fire, the metal seat is forced against the metal ball, cutting off the pipeline to prevent medium leakage.
- 11 装有预紧弹簧的浮动阀座，即使在低压时也能确保密封。
Preloaded Spring Floating Seat: Ensures tight sealing even under low pressure.
- 14 双道 O 形密封圈防止阀杆部位的泄漏。
Dual O-ring seals prevent leakage at the valve stem.
- 15 压套法兰通过螺钉固定在阀体上，一端压住阀杆台阶部位，保证各种压力下的阀杆安全，不被吹出。
The gland flange is fixed to the valve body with screws, clamping the valve stem step to prevent the stem from being blown out under any pressure.

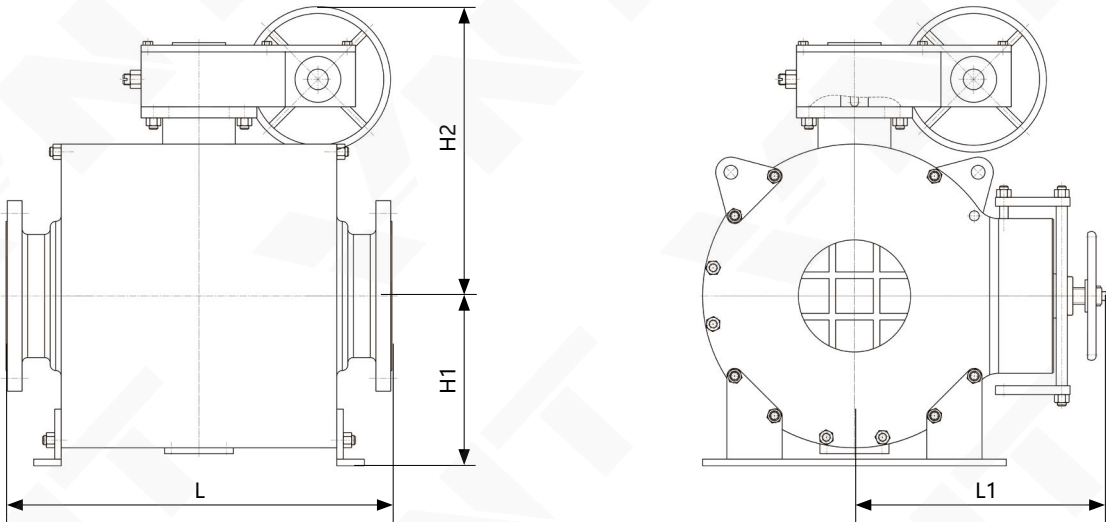
材料表 / BOM

序号 No.1	零部件 Parts Name	碳钢 CS	低温钢 LTCS	不锈钢 SS	双相钢 Duplex Steel
1	阀体 /Body	ASTM A105	ASTM A182 LF2	ASTM A182 F304/F316	ASTM A182 F51/F55
2	下阀杆压盖 / Lower Stem Gland	ASTM A105	ASTM A182 LF2	ASTM A182 F304/F316	ASTM A182 F51/F55
3	下阀杆 /Lower Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F304/F316	ASTM A182 F51/F55
4	轴套 /Bushing	PTFE	PTFE	PTFE	PTFE
5	球体 /Ball	ASTM A105+ENP	ASTM A182 F304	ASTM A182 F304/F316	ASTM A182 F51/F55
6	O 形圈 /o-ring	Viton	Viton	Viton	Viton
7	阀盖垫片/Bonnet Gasket	Graphite	Graphite	Graphite	Graphite
8	阀盖螺母 /Bonnet Nut	ASTM A194 2H	ASTM A194 7	ASTM A194 8	ASTM A194 8
9	阀盖螺栓 /Bonnet Bolt	ASTM A193 B7	ASTM A320 L7	ASTM A193 B8	ASTM A193 B8
10	阀座环 /Seat Ring	PTFE	PTFE	PTFE	PTFE
11	阀座固定圈 /Seat Retainer	ASTM A105	ASTM A182 LF2	ASTM A182 F304/F316	ASTM A182 F51/F55
12	防火圈 /Fire collar	Graphite	Graphite	Graphite	Graphite
13	防静电弹簧 /Anti-static spring	SS304	SS304	SS304	Inconel X-750
14	阀杆 /Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F304/F316	ASTM A182 F51/F55
15	压套法兰 /Gland Flange	ASTM A105	ASTM A182 LF2	ASTM A182 F304/F316	ASTM A182 F51/F55
16	阀杆填料 /Stem Packing	Graphite	Graphite	Graphite	Graphite
17	顶法兰 /Top Flange	ASTM A105	ASTM A182 LF2	ASTM A182 F304/F316	ASTM A182 F51/F55
18	支撑架 /Bracket	20#	20#	SS304	ASTM A182 F51/F55
19	摇臂 /Arm	20#	20#	SS304	ASTM A182 F51/F55
20	阀瓣 /Disc	ASTM A105	ASTM A182 F304	ASTM A182 F304/F316	ASTM A182 F51/F55
21	封盖 /End Cover	ASTM A105	ASTM A182 LF2	ASTM A182 F304/F316	ASTM A182 F51/F55
22	阀杆 /Stem	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F304/F316	ASTM A182 F51/F55
23	阀杆螺母 /Stem Nut	AL-Bronze	AL-Bronze	AL-Bronze	AL-Bronze
24	手轮 /HandWheel	Iron Cast	Iron Cast	Iron Cast	Iron Cast
25	排污螺塞 /Drain Plug	SS304	SS304	SS304	2205

备注 /Note:

1. 其他材料可根据客户要求提供，请咨询销售部门。
Other materials can be provided upon customer request, Please consult the sales office.
2. 可提供 ASTM 标准规定的所有铸造和锻造材料。
All ASTM-standard cast and forged materials available .
3. 根据客户要求，阀座可提供 RPTFE, PEEK, DEVLON, 石墨等。
Valve Seat Materials (Optional): RPTFE, PEEK, DEVLON, Graphite.

尺寸 / SIZE



PIG VALVE		L/RF		L/RTJ		L1		H1		H2		VALVE BORE		BALL CORE ID		ENTRY PLUG BORE		Weight	
SIZE	ASME	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lb	Kg
2"	150	11.50	292	11.88	302	5.62	143	4.00	102	7.62	194	2.06	52	2.50	64	2.56	65	135	61
	300/600	14.25	362	14.62	371	5.62	143	4.00	102	7.62	194	2.06	52	2.50	64	2.56	65	145	66
	900	14.50	368	14.62	371	5.62	143	4.00	102	7.62	194	2.06	52	2.50	64	2.56	65	175	79
3"	150	12.75	324	13.12	333	6.38	162	4.75	121	8.38	213	3.13	80	3.56	90	3.59	91	190	86
	300/600	14.00	356	14.12	359	6.38	162	4.75	121	8.38	213	3.13	80	3.56	90	3.59	91	210	95
	900	15.00	381	15.12	384	6.38	162	4.75	121	8.38	213	3.13	80	3.56	90	3.59	91	230	104
4"	150	15.50	394	16.00	406	7.34	186	5.35	136	10.03	255	4.13	105	4.56	116	4.59	117	310	141
	300	16.00	406	16.50	419	7.34	186	5.35	136	10.03	255	4.13	105	4.56	116	4.59	117	325	147
	600	17.00	432	17.12	435	7.34	186	5.35	136	10.03	255	4.13	105	4.56	116	4.59	117	350	159
	900	18.00	457	18.12	460	7.34	186	5.35	136	10.03	255	4.13	105	4.56	116	4.59	117	370	168
	1500	21.50	546	21.62	549	7.50	191	6.25	159	15.38	391	4.00	102	4.75	121	4.97	126	600	272
6"	150	18.00	457	18.38	467	9.50	241	7.12	181	12.12	308	6.13	156	6.75	172	6.72	171	580	263
	300	18.88	480	19.38	492	9.50	241	7.12	181	12.12	308	6.13	156	6.75	172	6.72	171	580	281
	600	22.00	559	22.12	562	9.50	241	7.12	181	12.12	308	6.13	156	6.75	172	6.72	171	580	317
	900	29.00	737	29.12	740	22.38	568	8.79	223	29.97	761	6.00	152	6.63	168	6.75	171	1460	662
	1500	35.00	889	35.25	895	25.11	638	11.11	282	32.71	831	6.00	152	6.63	168	6.75	171	2600	1179
8"	150	28.50	724	-	-	23.37	594	10.67	271	32.70	831	8.00	203	9.00	229	8.75	222	1937	878
	300	28.50	724	29.00	737	23.37	594	10.67	271	32.70	831	8.00	203	9.00	229	8.75	222	2075	941
	600	31.20	792	31.32	796	23.37	594	10.67	271	32.70	831	8.00	203	9.00	229	8.75	222	2225	1009
	900	35.00	889	35.12	892	24.65	626	11.24	285	33.34	847	8.00	203	9.00	229	8.75	222	2785	1263
	1500	42.00	1067	42.38	1076	31.51	800	12.74	324	35.61	904	8.00	203	9.00	229	8.75	222	4150	1882
10"	150	35.36	898	35.86	911	26.09	663	12.00	305	34.56	878	10.00	254	11.00	279	10.75	273	2985	1354
	300	35.36	898	35.86	911	26.09	663	12.00	305	34.56	878	10.00	254	11.00	279	10.75	273	3225	1463
	600	37.12	943	37.25	946	26.09	663	12.00	305	34.56	878	10.00	254	11.00	279	10.75	273	3400	1542
12"	150	40.75	1035	41.25	1048	29.15	740	14.17	360	38.88	988	12.00	305	13.00	330	12.75	324	4593	2083
	300	40.75	1035	41.25	1048	29.15	740	14.17	360	38.88	988	12.00	305	13.00	330	12.75	324	5120	2322
	600	42.06	1068	42.19	1071	29.15	740	14.17	360	38.88	988	12.00	305	13.00	330	12.75	324	5300	2404
14"	900	47.00	1194	47.12	1197	32.15	817	15.38	391	37.67	957	12.00	305	13.00	330	12.75	324	6340	2875
	600	45.00	1143	45.12	1146	49.00	1245	16.31	414	44.84	1139	13.25	337	14.25	362	14.25	362	7062	3203
	150	47.62	1210	-	-	48.51	1232	17.12	435	41.57	1056	15.25	387	16.25	413	16.25	413	7598	3446
16"	300	54.00	1372	54.50	1384	48.51	1232	17.12	435	41.57	1056	15.25	387	16.25	413	16.25	413	8860	4018
	600	54.00	1372	54.12	1375	48.51	1232	17.12	435	41.57	1056	15.25	387	16.25	413	16.25	413	9035	4098
18"	150	48.50	1232	-	-	48.28	1226	17.78	452	45.14	1147	17.25	438	18.25	464	18.25	434	6887	3123
20"	150	49.38	1254	-	-	50.15	1274	19.43	494	47.63	1210	19.25	489	20.25	514	20.25	514	7525	3413

沃耐特承诺：自本产品售出 18 个月或者产品安装 12 月以内（以先到达者为限），如买方能够证实产品是符合本公司所建议的方法正确安装与使用；能够证实产品本身确实有设计、材料或者加工缺陷，并向本公司提出书面申诉，本公司将负责缺陷产品免费召回维修，更换或者按订货价全额退款。

在任何情况下，本公司均不承担因缺陷产品维修，更换而导致的劳务、材料、设备，工程或其他相关的连带费用。本公司此项质量担保可替代其他明示或暗示形式产品质量担保，并且可视为买方唯一赔偿和卖方的唯一责任。

Vornet Warranty: Within 18 months from the date of purchase or 12 months from installation (whichever occurs first), if the buyer can prove that the product was correctly installed and used according to the company's recommended methods, and can demonstrate a defect in design, material, or workmanship, XX will, upon receipt of a written claim, repair or replace the defective product free of charge, or provide a full refund of the purchase price.

In no event shall XX be liable for any labor, material, equipment, construction, or other related costs incurred as a result of repairing or replacing the defective product. This warranty replaces all other express or implied warranties and constitutes the buyer's exclusive remedy and the seller's sole liability.