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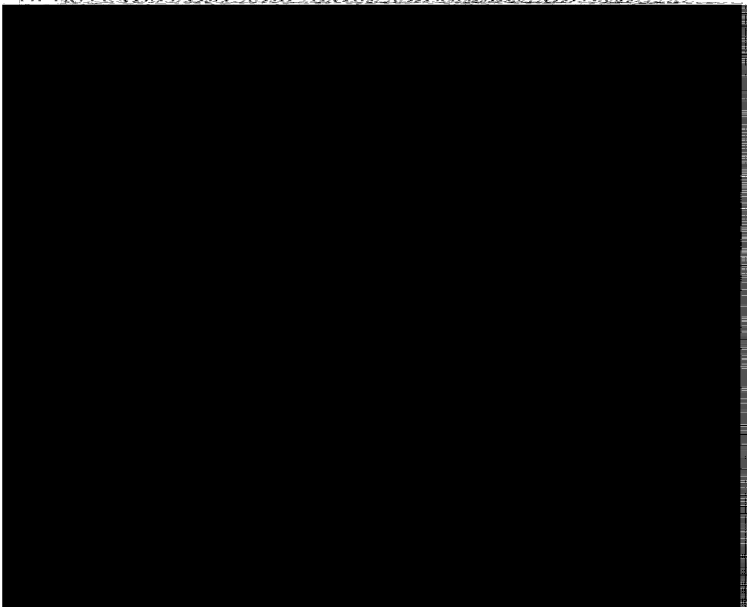
对二甲苯工程及整体公用配套工程

DAC PX Complex Project

加氢裂化装置

高压阀门采购规格书

SPECIFICATION FOR HIGH PRESSURE VALVES



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## 1 总则 GENERAL

### 1.1 范围 SCOPE

本规格书是关于高压阀门的基本技术要求, 除以下要求外, 高压阀门还应满足相应标准的其他要求

This specification is the basic technical requirement for high pressure valves. Except for the requirements here, high pressure valves should conform to other requirements in relative standards.

### 1.2 规范和标准 STANDARDS AND CODES

在使用本规格书时, 尚应符合下列标准最新版本的规定:

The latest edition of the following standards and codes shall form a part of this specification.

- 1) ASME B16.34 《法兰阀、螺纹阀和焊接阀》

Valves, flanged, threaded and welding ends

- 2) ASME B16.5 《管法兰和法兰配件》

Steel pipe flanges and flanged fittings

- 3) ASME B16.10 《阀门的面到面和端到端尺寸》

Face to face and end to end dimensions of valves

- 4) ASME B16.11 《锻制承插焊和螺纹管件》

Forged steel fittings, socket welding and threaded

- 5) ASME B16.20 《管法兰金属垫—金属环垫, 缠绕垫和包覆垫》

Metallic gaskets for pipe flanges—ring joint, spiral wound and jacketed

- 6) ASME B16.25 《对焊端部》

Butt welding ends

- 7) ASTM A105 《管道元件用碳钢锻件》

Forgings, carbon steel, for piping components

- 8) ASTM A182 《高温用锻制或轧制合金钢管道法兰, 锻制管配件、阀门和零件》

Forged or rolled alloy steel pipe flanges, forged fittings, and valves and parts for high-temperature service

- 9) ASTM A216 《可熔焊高温用碳钢铸件》

Steel castings, carbon, suitable for fusion welding for high-temperature service

- 10) ASTM A217 《高温承压零件用马氏体不锈钢和合金钢铸件》

Steel casting, martensitic stainless and alloy, for pressure containing parts suitable for high temperature service

- 11) ASTM A351 《承压元件用奥氏体、奥氏体-铁系体(双相)铸件》

Steel casting, austenitic for high-temperature service

- 11) ASTM A494 《镍和镍合金铸件》

Castings, Nickel and Nickel Alloy

- 11) ASTM A995 《承压元件用奥氏体-奥氏体-铁素体(双相)不锈钢铸件》

Castings, Austenitic ferritic (duplex) stainless steel, for Pressure-Containing Parts

- 11) ASTM B564 《镍合金锻件》

Nickel Alloy Forgings

- 12) API 600 《钢制法兰和对焊闸阀》

Steel gate valves, flanged and butt-welding ends

- 13) API 602 《小型钢制闸阀》

Compact steel gate valves

- 14) API 605 《大直径碳钢法兰》

Large-diameter carbon steel flanged

- 10) API 607 《软密封四分之一球阀的防火试验》

Fire test for soft seated quarter turn valves

- 10) API 608 《法兰、螺纹和对焊法兰球阀》

Metal ball valves-flanged, threaded and butt-welding ends

- 17) API 609 《支耳型和对夹型蝶阀》

Lug and wafer type butterfly valves

- 18) API 598 《阀门的检验与试验》

Valve inspection and testing

- 19) API 594 《对夹型和对夹一支耳型止回阀》

Wafer and wafer-lug check valves

- 20) BS 5351 《钢制球阀》

Steel ball valves

- 21) BS 5352 《钢制楔形闸阀、截止阀和止回阀》

Steel wedge gate, globe and check valves 50mm and smaller



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- 22) MSS SP-25 《阀门、管件、法兰及接头用标准标志体系》  
Standard marking system valves, fittings, flanges and unions
- 23) MSS SP-54 《阀门、法兰、管件及其它管道组成件铸钢件和锻钢件射线检验》  
Quality standard for steel castings for valves, flanges and fittings and other piping components-radiographic examination method
- 24) MSS SP-55 《阀门、法兰、管件及其它管道组成件铸钢件外观检查的表面缺陷评定》  
Quality standard for cast steel valves, flanges and fittings and other piping components visual method for evaluation of surface irregularities

## 1.3 说明 EXPLAINING

本规格书以中文版为主，英文版仅供参考。

The Chinese version of specification has precedence to their english translations which is only for reference.

## 2 制造 MANUFACTURE

### 2.1 材料 Material

2.1.1 阀体、阀盖、法兰和管件等材料，应根据设计条件和制造要求选用，并应符合 ASTM A105、ASTM A182

The materials of valve body, bonnet, flange and trim shall be selected according to design conditions and manufacturing requirements, and shall conform to ASTM A105, ASTM A182, ASTM A216, ASTM A217, and ASTM A351. The pressure-temperature rating of various material shall be in accordance with ASME B16.34.

2.1.2 化学成份应符合下表要求。

Chemical composition of valve body's material shall conform to the requirements



材料 Material	C	S	P	N	其它成份 Other chemical
321s.s	0.04~0.08%	≤0.025%	≤0.03%	N/A	其他成份满足相
304Ls.s	≤0.03%	≤0.025%	≤0.03%	N/A	应 ASTM 标准规定
C.S	≤0.25%	≤0.03%	≤0.03%	N/A	要求。
1 1/4Cr-1/2Mo				N/A	Other chemical
2 1/4 Cr-1Mo	0.05~0.15%	≤0.025%	≤0.02%	N/A	Other chemical
2205 Dup S.S	≤0.15%	≤0.02%	≤0.03%	0.145~0.2%	shall be in
2205 Dup S.S	≤0.15%	≤0.02%	≤0.03%	0.145~0.2%	accordance with
					applicable ASTM
					standards.

2.1.3 每种代用材料均须经 SEI 批准同意。代用材料应等同或更优于规定的材料，其性能均要满足原规定

方法、冶炼方法等内容。

Material substitution shall be approved by SEI. The alternate material shall be equal or superior to specified material, and the properties shall meet all the requirements of

对金属的腐蚀裕量，该腐蚀裕量不得小于 3mm。

Trims contacting media are not allowed to use copper alloys, including brass and bronze.

Trims corrosion should be considered and the corrosion allowance is not less than 3mm

2.1.5 对于公称直径 DN<100 的合金钢阀与不锈钢阀的支架宜与阀盖材质一致，对于公称直径 DN≥100 的

合金钢阀与不锈钢阀的支架材质可为 WCB。

The alloy steel valves and stainless steel valves less than DN100 should be same as valve bonnet, whereas for the alloy steel valves and stainless steel valves DN100 and larger, the valve material may be WCB.



007 (latest edition).

2.2.5 阀盖密封垫片应符合 ASME B16.20 或制造商标准。

bonnet gaskets shall conform to ASME B16.20 or valve manufacturer's standard

2.2.6 柔性石墨填料环, 必须与柔性石墨编织填料组合装配。

flexible graphite packing ring shall be assembled together with flexible graphite braided packing.

2.3 焊接 Welding

2.3.1 有承压焊缝的阀门, 供货方应提供焊接规程及工艺鉴定证书。承压焊缝的填充金属的物理、化学性能及耐腐蚀性均应与母体金属接近。

For the valves with containing pressure weld, supplier shall provide the certificate of identification for welding regulation and process. The physical properties, chemical properties and corrosion resistance of filler metal in containing pressure weld shall be close to the base material.

2.3.2 未经 SEI 同意, 不允许补焊修复。

Weld repair is not permitted before approved by SEI.

2.4 结构长度 Constructional length

除特殊说明外, 阀门结构长度应符合 ASME B16.10 的规定。

Face to face and end to end dimensions of valves shall conform to ASME B16.10 unless otherwise specified.

2.5 连接型式 Connection type

2.5.1 对焊阀门端部应按下表要求加工成坡口型式, 并符合 ASME B16.25 标准, 其中图 6(B) 的 C 值由设计给定, 详见数据表。

The bevel ends of butt welding valves shall be machined according to the following table.

details see data sheet.

Wall thickness	Welding bevels
$t \leq 22\text{mm}$	ASME B16.25 Fig. 2(A)
$22\text{mm} < t < 60\text{mm}$	ASME B16.25 Fig. 3(A)
$t \geq 60\text{mm}$	ASME B16.25 Fig. 6(B)

2.5.2 承插焊阀门的承插口应符合 ASME B16.11 的规定。

The ends of socket welding valves shall conform to ASME B16.11.

2.5.3 NPS≤600mm(24")的法兰阀门的密封面应符合 ASME B16.5 的要求; NPS>600mm(24")的法兰阀门的密封面应符合 ASME B16.47 B 的要求。

The flange facings of flanged valves DN600 and smaller shall conform to ASME B16.5; The flange facings of flanged valves large than DN600 shall conform to ASME B16.47B.

门的影响,确保阀门的正常使用。现场焊后热处理温度如下表。

Find better welding and heat treatment and what welding and heat treatment will be used. Post Weld Heat Treatment (PWHT) will be used to assure the normal service of valves. The heat treatment temperature on site are as follows for reference:

Valve Material	Heat treatment temperature °C
321s.s 347s.s 347Hs.s	900
1 1/4Cr-1/2Mo 2 1/4 Cr-1/2Mo 5Cr-1/2Mo 9Cr-1Mo	760~780
C.S	650

2.7 阀座内径不应小于 ASME B16.34 附录 A 中表 A1 的要求;任何偏差应经书面批准。

Seat (orifice) diameter shall not be less than the requirement of table A1 in annex A of ASME B16.34, any deviation shall be written approved.

2.9 阀门制造前需将其设计图纸提供给 SEI 确认。

The drawing of valves should be approved by SEI before manufacture.

2.10 证书 Certificate

制造厂必须提供阀门合格证书。

The manufacturers must offer the certificate of product quality.

### 3 热处理 HEAT TREATMENT

碳钢要求正火处理, 1 1/4Cr-1/2Mo 和 2 1/4Cr-1Mo 要求正火回火, 5Cr-1/2Mo 和 9Cr-1Mo 要求完全退火或正火+回火。



are required for 5Cr-1/2Mo and 9Cr-1Mo.

3.2 奥氏体不锈钢应进行固溶处理; 321、347、347H 还应进行稳定化处理, 稳定化温度 900℃±10℃, 每 25.4mm 壁厚保温 2 小时 (4.7min/in), 空冷。

Solution and stabilizing heat treatment are required after processing for austenitic stainless steel. Stabilizing heat treatment shall be at a temperature 900±10°C, heat

每 25.4mm 壁厚保温 2 小时 (4.7min/in), 空冷。

3.3 双相钢应进行固溶处理。

Solution heat treatment is required for Duplex S.S.

3.4 凡热处理的部件应予以纪录并有热处理报告。

Heat treatment shall be recorded and its report is required.

#### 4 检查和试验 INSPECTION AND TESTING

4.1 所有阀门(包括阀体、阀盖、阀杆、阀板和阀座)均应进行以下试验:

All valves (include valve body, body bonnet, stem, wedge and seat ring) shall have the following test performed:

4.1.1 化学分析: 以满足规格书第 2.1.2 条的要求。

Chemical Analysis: shall meet requirements of ITEM 2.1.2

4.1.2 强度试验: 以满足相应 ASTM 材料规范的要求。

Tension test: shall meet requirements of ASTM standard.

4.1.3 硬度试验: 以满足相应 ASTM 材料规范的要求。

Hardness test: shall meet requirement of ASTM standard.

4.2 对于所有铸钢阀门的承压部件(包括阀杆), 均应进行以下检验:

All the cast steel containing parts of castings shall be test in the following manner:

4.2.1 铸钢阀门应逐件进行射线检查:

Each Cast steel valves shall have the following x-ray inspection

件的关键部位、应力集中区域、承压能力薄弱的部位。

Scope of inspection: according to ASME B16.34 drawing 6、7、11 for body; The examination

positions of U-tsc and bonnet (cover) shall be determined by valve manufacturers in terms

of the following or in the following areas: the areas where defects are easy to form in the

process of casting

containing pressure areas.

2) 程序: 按 ASTM E142

Procedure: according to ASTM E142.

3) 验收标准: ASTM E446 或 ASTM E186 中 A, B, CA, CB, CC, CD 均不低于 2 级, D, E, F, G 类不允许出现缺陷。

Check and accept standards: Shall meet ASTM E446 or ASTM E186 and Category A, B, CA, CB

and CC, CD, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ

4.2.2 对于碳钢、合金钢铸造阀门, 应逐件进行磁粉或液体渗透检查:

For carbon steel and alloy steel casting valve shall be given a magnetic particle examination or liquid penetration examination.

1) 检查范围: 阀体、阀盖和阀板的外表面及可触及的内表面和阀杆。

Check range: External surface of valve body, valve cover and valve plate and accessible internal surface and stem.

and stem.

2) 程序: 磁粉检查按 ASTM E709 或 A275; 液体渗透检查按 ASTM E165

Procedure: magnetic particle examination according to ASTM E709 or A275, liquid penetration

examination according to ASTM E165

3) 验收标准:

Maximum acceptable indications are as follow:

(A) 线性显示 Linear indications:

(1) 材料厚度小于等于13mm时, 长不大于5mm;

Not large than 5mm long for materials up to 13mm thick;

(2) 材料厚度为13mm~25 mm时, 长不大于6mm;

Not large than 6mm long for materials 13mm to 25 mm thick;

(3) 材料厚度大于25 mm时, 长不大于8mm。

Not large than 8mm long for materials over 25mm thick.

(4) 对于线性显示, 各显示之间的分隔距离必须大于可验收的显示长度。

For linear indications, the indications must be separated by a distance greater

than the length of an acceptable indication.

(B) 圆形显示 Rounded indications

(1) 材料厚度小于等于13mm时, 直径不大于5mm;

Not large than 5mm diameter for materials up to 13mm thick;

(2) 材料厚度大于13mm时, 直径不大于6mm。

Not large than 6mm diameter for materials over 13mm thick;



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(3) 在一条直线上, 边缘之间相隔小于等于 2 mm (0.06in) 的 4 个或更多的圆形显示为不合格。

Four or more rounded indications in a line separated by 2 mm (0.06in) or less edge to edge are unacceptable.

4.2.3 对于不锈钢及镍合金铸造阀门, 应逐件进行液体渗透检查:

Each Stainless steel and Nickel alloy casting valves shall be given a liquid penetration examination.

1) 检查范围: 阀体, 阀盖和阀板内外表面及密封副的内表面和阀柱。

1) Inspection range: Valve body, valve cover and valve plate inner and outer surfaces and sealing pair inner surface and valve stem.

2) 程序: 按 ASTM E165

Procedure: according to ASTM E165

3) 验收标准:

Maximum acceptable indications are as follow:

(A) 线性显示 Linear indications:

(1) 材料厚度小于等于13mm时, 长不大于5mm;

Not large than 5mm long for materials up to 13mm thick;

(2) 材料厚度为13mm~25 mm时, 长不大于6mm;

not large than 6mm long for materials 13mm to 25 mm thick;

(3) 材料厚度大于25 mm时, 长不大于8mm。

Not 8mm long for materials over 25mm thick.

(4) 对于线性显示, 各显示之间线性间隔必须大于可验收的显示长度。

For linear indications, the indications must be separated by a distance greater than the length of an acceptable indication.

(B) 圆形显示 Rounded indications

(1) 材料厚度小于等于13mm时, 直径不大于5mm。

Not large than 5mm diameter for materials up to 13mm thick;

(2) 材料厚度大于13mm时, 直径不大于6mm。

not large than 6mm diameter for materials over 13mm thick;

(3) 在一条直线上, 边缘之间相隔小于等于 2 mm (0.06in) 的 4 个或更多的圆形显示为不合格。

Four or more rounded indications in a line separated by 2 mm (0.06in) or less edge to edge are unacceptable.

4.3 对于所有锻钢阀门的承压部件(包括阀杆), 均应进行以下检验:

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FOLLOW:

4.3.1 锻钢阀门应逐件进行超声波检查:

Each forging valve shall be tested by Ultrasonic Inspection.

1) 检查范围: 按 ASME B16.34 中 8.3.2.1 条要求以及阀杆。

Scope of inspection according to paragraph 8.3.2.1 of ASME B16.34 and stem

2) 程序: 按 ASTM A388 进行

Procedure according to ASTM A388

3) 检查结果应符合下列要求:

Acceptable results shall be as follows:

Straight beam examination: any cracks are not allowed and equivalent diameter of a single

defect should be not large than  $\phi 4\text{mm}$  (but not large than  $\phi 2\text{mm}$  for stem)

(2) 斜探头检验: 不允许出现任何裂纹, V 形槽深为 L 处壁厚的 3%, 最大值为 3mm。

Angle beam examination: any cracks are not allowed and the sharp-end groove depth is

3% of the delivering wall thickness and the maximum value is 3mm.

4.3.2 对于碳钢、合金钢锻造阀门, 应逐件进行磁粉检查或液体渗透检查:

For carbon steel and alloy steel forging valves, each valve shall have magnetic particle

examination or a liquid penetration examination.

1) 检查范围: 阀体、阀盖和阀板的外表面及可触及的内表面和阀杆。

Scope of inspection: All external and accessible internal face of body, disc, bonnet (cover)

and stem.

2) 程序: 磁粉检查按 ASTM E709 或 A275, 液体渗透检查按 ASTM E165

Procedure: magnetic particle examination according to ASTM E709 or A275; Liquid Penetration

examination according to ASTM E165

3) 验收标准:

Maximum acceptable indications are as follow:

(A) 线性显示 Linear indications:

(1) 材料厚度小于等于 13mm 时, 长不大于 4mm;

(2) 材料厚度为 13mm ~ 25mm 时, 长不大于 5mm;

(2) 材料厚度为 13mm ~ 25mm 时, 长不大于 5mm;

Not large than 5mm long for materials 13mm to 25 mm thick;

(3) 材料厚度大于25 mm时, 长不大于7mm;

Not large than 7mm long for materials over 25mm thick;

(4) 对于线性显示, 各显示之间的分隔距离必须大于可验收的显示长度。

For linear indications, the indications must be separated by a distance greater than the length of an acceptable indication.

(B) 圆形显示 Rounded indications

(1) 材料厚度小于等于13mm时, 直径不大于4mm;

Not larger than 4mm diameter for materials up to 13mm thick.

(2) 材料厚度大于13mm时, 直径不大于5mm。

Not large than 5mm diameter for materials over 13mm thick;

(3) 在一条且线上, 边缘之间相隔小于等于2mm或更多的圆形显示为不可接受的。

Four or more rounded indications in a line separated by 2 mm (0.06in) or less edge

to edge are unacceptable.

4.3.3 对于不锈钢及镍合金锻造阀门, 应逐件进行液体渗透检查:

Each Stainless steel and Nickel alloy forged valves shall be given a Liquid Penetration Examination.

1) 检查范围: 阀体、阀盖和阀板的外表面及可触及的内表面和阀杆

scope of inspection: All external and accessible internal face of body, disc, bonnet, cover and stem.

2) 程序: 按 ASTM E165

Procedure: according to ASTM E165

3) 验收标准:

Maximum acceptable indications are as follow:

(A) 线性显示 Linear indications:

(1) 材料厚度小于等于13mm时, 长不大于4mm;

Not large than 4mm long for materials up to 13mm thick;

(2) 材料厚度为13mm~25 mm时, 长不大于5mm;

Not large than 5mm long for materials 13mm to 25 mm thick;

(3) 材料厚度大于25 mm时, 长不大于7mm;

Not large than 7mm long for materials over 25mm thick;

(4) 对于线性显示, 各显示之间的分隔距离必须大于可验收的显示长度。

For linear indications, the indications must be separated by a distance greater

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than the length of an acceptable indication.

(B) 圆形显示

Rounded indications:

(1) 材料厚度小于等于13mm时, 直径不大于4mm;

For valve parts up to 13mm thick, indications larger than 4mm in diameter are not permitted.

(2) 材料厚度大于13mm时, 直径不大于5mm。

For valve parts larger than 13mm in thick, indications larger than 5mm in diameter are not permitted.

(3) 在一条直线上, 边缘之间相隔小于等于 2 mm (0.06in) 的 4 个或更多的圆形显示为不合格。

Four or more rounded indications in a line separated by 2 mm (0.06in) or less edge to edge are unacceptable.

4.4 阀门的所有对接焊缝要求 100% X 射线探伤, 结果不得低于 ASME E110 或 ASME E186 Ⅱ 级要求, B, C 类不允许出现缺陷。

Butt Weld of valve shall be 100% X-ray test. Check and accept standards shall meet ASTM E446 or ASTM E186 and Category A, B, CA, CB, CC, CD are not less LEVEL 2, discontinuity

4.5 所有阀门在装配后均应做以下试验

All assembled valves shall be performed the following test.

4.5.1 阀体水压试验(包括泄漏试验)应符合 API598 标准要求。奥氏体不锈钢阀门试验用水, 水中氯离子含量不得超过 25ppm;

Water body hydraulic test including leakage test shall be in accordance with API598. Austenitic stainless steel valve shall have a total chloride content less than 25ppm.

High pressure seat closure test, Low pressure seat closure test and back seat test (For valves which require Back seat) shall be in accordance with API598.

4.5.3 操作检查: 阀门应装配完整、性能良好, 用户不需要进行其他工作即可直接使用。

Operation check. Valves should be fully assembled with a good performance, and can be used directly by user.

4.5.4 尺寸检查: 端部尺寸和偏差应符合 ASME B16.5、B16.25、B16.11 标准要求。

Dimensional check. Face-to-face or end-to-end dimension and tolerance of valves shall conform



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to ASME B16.15、B16.25、B16.11.

4.6 所有阀门应逐个进行外观检查, 泪眼及裂纹缺陷不允许出现, 其余缺陷合格标准不应低于 MSS SP-55 的 B 级要求, 且满足如下要求:

Each valve shall have a visual inspection, any hot tear and cracks are not allowed; other defects should meet requirements of level B in MSS SP-55, and conform to the requirements as follow:

1) 对深度不大于设计壁厚的 10% 且不侵入最小壁厚的结疤、裂纹、折叠和夹杂等缺陷, 允许打磨消除, 清除缺陷后剩余的壁厚不得小于最小壁厚。否则, 该部件应予报废。

Defects whose depth not larger than 10% of the design wall thickness, such as scabs, cracks, folds and inclusions, can be removed by grinding; But the remanent wall thickness after removal of defects shall not be less than the min wall thickness; otherwise, this valve part shall not be used.

对于深度不大于 0.8mm 的微小裂纹, 允许打磨消除。若微小裂纹深度大于 0.8mm, 该部件应予报废。

Cracks found by visual inspection NDT whose depth less than 0.8mm can be removed by grinding valve parts with cracks more than 0.8mm should not be used.

4.8 加工完成的奥氏体不锈钢部件均应进行酸洗钝化处理。

Pickling and passivation are required for Austenitic Stainless Steel valve parts.

4.9 材料检测应符合下列要求: 每炉或每 300 件或每 300 件以下的全部检测; 0 件至 200 件按照 5% 抽检且不少于 5 件检测; 200 件以上按照 3% 抽检且不少于 10 件检测; 若代表性取样用的任

一个台格的, 应对该批次的全部组件进行检测。检测结果应记录并立即标记“DMIV”。批化时应提供检测报告。测试元素见下表。

The inspection sample shall be 100% for inspection lots or pieces of less than or equal to 200 pieces or most great batch for inspection lots or pieces of 5 to 200 pieces, the inspection sample shall be 5% but not less than 5 pieces. For inspection lots or pieces greater than 200 pieces, the inspection sample shall be 3% but not less than 10 pieces. If any piece from a representative testing shall be recorded and marked "DMIV" immediately.

The alloy elements to be checked are as follow:



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	材料	测试元素	材料	测试元素
1 1/4Cr-1/2 Mo	Cr, Mo	321	Cr, Ni, Ti	
	5Cr-1/2Mo	Cr, Mo	316	Cr, Ni, Mo
	9Cr-1Mo	Cr, Mo	316L	* C, Cr, Ni, Mo
304H	Cr, Ni, Mo	* Cr, Ni, Mo	317, 317L, 317D	Cr, Ni, Mo
304	Cr, Ni	347H	* C, Cr, Ni, Nb	

使用地测量敏感度的化学分析。

chemical analysis using lower measurement sensitivity.

## 5 标记 MARKING

### 5.1 一般规定 GENERAL

5.1.1 所有阀门应按相应的制造标准进行标记，MSS SP-25 应作为最低导则。

All valves shall be marked in accordance with the standard to which they are manufactured,

5.1.2 用于色标和标记的涂料不得含有任何有害金属或金属盐，如锡、铊、铅、硫、铜或氯化物等在加热时可引起腐蚀的物质。且涂料应能抗热水、热带环境或类似情况的腐蚀。

Painting material used for the color coding and stencil marking on components shall not

tropical or similar attack.

5.1.3 印记应使用低应力硬印模，且印模应有至少 0.25mm 半径的圆头。

Marking by stamp shall be applied with low-stress hard-die stamping and a low-stress stamp shall be round nosed with a radius of 0.25mm minimum.

5.1.4 标记必须清楚且不易毁坏。

Marking shall be clearly indicated and shall not be easily erased.

5.1.5 标记不能用于下列部位:

Marking shall absolutely not be applied to the following locations:

部件的内表面 Inside of parts

螺纹 Threads

坡口 Bevels

密封面 Sealing Surfaces

5.2 标记 MARKING

5.2.1 一般来说, 标记应包括下列各项, 且容易识别的符号。

Marking shall be carried out, in general, with regard to the following items using easily identifiable symbols.

公称直径 Nominal Size

压力等级 Rating

壁厚或表号 Wall Thickness or Schedule Number (only for butt welded valves)

材料标准和级别 Material Specification and Grade

装料号或炉号 Charge/Heat No.

厂家或商标 Manufacturer's Name or Trade Mark

订单上的编码 Commodity Code as stated on purchase order

5.2.2 对难以标记的小尺寸物件, 应用不锈钢丝拴不锈钢标牌的方法来标记。

labels attached by stainless steel wire.

6 包装和运输 PACKING AND SHIPPING

6.1 阀门在检验和试验之后应放净水, 使其干燥, 应提供足够的保护措施以防止运输中的机械损坏和海水大气腐蚀。

水大气腐蚀。

After inspection and test, valves shall be completely free of water, dried and prepared for shipment. Adequate protection shall be provided against mechanical damage and atmospheric corrosion in transit.

6.2 阀门端部处应用坚实的木头、金属或塑料挡板盖上或塞住, 以防损坏。



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in order to avoid damage.

6.3 运输中阀门不能有任何损坏。

For all valves, no damage can be made during shipments.

6.4 包装由生产厂负责。

Packing shall be the responsibility of the manufacturer.

6.5 碳钢、合金钢和不锈钢阀门要分开装运，不得混装。

All stainless steel valves shall be kept away from carbon steel valves and alloy steel

(A.S) parts, and packed respective.

## 7 阀门规格书使用说明 INSTRUCTION OF VALVE SPECIFICATION

7.1 各类阀门的规格分别见下列规格表。同类阀门以不锈钢阀、合金钢阀和碳钢阀的顺序排列。同一阀体材质、同一端面连接型式的阀门，按公称压力从小到大排列。

The specifications of all kinds of valves are specified in the following tables. Similar valves are listed in the sequence of stainless steel valves, alloy steel valves and carbon steel valves. The valves with the same body material and same connection type are listed from low pressure rating to high pressure rating.

7.2 本规格表中使用的代号、缩写词解释如下：

The codes and abbreviations used in the tables are decoded as follows:

### 8.1 材料 Material

材料	代号	材料	代号	材料	代号
Material	Code	Material	Code	Material	Code
304	K9	316L	K4	316	K8
CF8	KZ9	13Cr	K13	4Cr14Ni14W2Mo	K14
CF8M	KZ10	628M	KZ10	321	K11
347	K15	CF8C	KZ15	30CrMoA	C5
F5	G1	F11	D1	F22	E1
25Cr2MoVA	C4	35CrMoA	C3	25Cr2Mo1VA	C7
C5	GZ1	WC6	DZ1	WC9	EZ1
A105	A12	35#	A6	25#	A7
WC6	A11	304B	K10	A317-C12A	JZ01
铂铱钨合金	SIL	柔性石墨	FG	HI200	HI



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Stellite	Flexible graphite	347H	K16
镀硬铬	HCr	聚四氟乙烯	PTFE
Hard Cr plated	Polytetrafluoroethylene	F9	I9
	A351 CF3	KZ18	A217 C12
			JZ9

B462 UNS N08020 F20

B564 N08825 W25 A182 F51 K25

A494 CU5MCuC WZ25 A995 CD3MN KZ25

## b) 结构特征 Construction features

螺栓连接阀盖 B.B	螺纹连接阀盖 T.B	明杆支架型 OS&Y
Bolted Bonnet	Threaded Bonnet	Outside Screw & Yoke
升降式阀瓣	旋启式阀瓣	弹簧推压式阀瓣
Lift Disc	Swing Disc	Spring Loaded Disc

蝶板可调, 双偏心, 球面密封 TA  
Adjustable disc, Bi-eccentric, Spheric seating surface

蝶板可调, 三偏心, 球面密封 TC  
Adjustable disc Tri-eccentric Spheric seating surface

压力自紧密封阀盖 PSB	圆盘式 DS	双金属片 TM
Pressure Sealing Bonnet	Disc type	Bi-metal

浮动直通式 FS 固定球, 通径 TF  
Floating Ball & Straight Through Trunnion Ball & Full Port

固定球, 缩径 TR 焊接阀盖 W.B  
Trunnion Ball & Reduced Port Welded Bonnet

斜盘式 TT 双半式 DP  
Tilting Disc Dual Plate

## c) 法兰密封面型式 Flange facing

光滑面 RF 凹面 FE 环连接面 RJ  
Raised Face Female Face Ring Joint

## d) 端面连接型式 End connection

一端焊接、另一端丝堵 WPL 承插焊连接 SW 内螺纹连接 THR  
Welding at one end, plug at another Socket Welding Female thread

一端承插焊、另一端内螺纹 SW/THR 壁厚偏差 TFWT  
Socket Welding at one end, thread at another Tolerance for wall thickness

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### e) 垫片 Gasket

低碳钢芯片-柔性石墨复合垫 COAG

Low carbon steel core-flexible graphite composit gasket

不锈钢芯片-柔性石墨复合垫 COKG

Stainless steel core-flexible graphite composit gasket

不锈钢芯片-柔性石墨缠绕垫 SWKG

Stainless steel core flexible graphite composit gasket

不锈钢-柔性石墨密封环 OCKO

Stainless steel flexihle granhite sealing ring

304椭圆垫 OVKO

304 s.s oval ring gasket

10#八角垫 OCA2

10# Octagonal ring gasket

321八角垫 OCKO

304 s.s octagonal ring gasket

10#椭圆垫 OVA2

10# oval ring gasket

321八角垫 OCK1

321 s.s octagonal ring gasket

347八角垫 OCK5

347 s.s octagonal ring gasket

316L八角垫 OCK9

316s.s octagonal ring gasket

316八角垫 OCK8

316s.s octagonal ring gasket

### f) 填料 Packing

不锈钢金属丝与柔性石墨编织填料 GWF

Stainless steel wire & flexible graphite braided packing

不锈钢金属丝与柔性石墨编织填料 + 柔性石墨填料环 GFL

聚四氟乙烯填充 PTFE

PTFE filling

### g) 驱动方式 Actuator

蜗轮传动

Worm gear operation

C

蜗轮传动  
Worm Gear operation

手动

手动  
Manual operation

省略  
Default