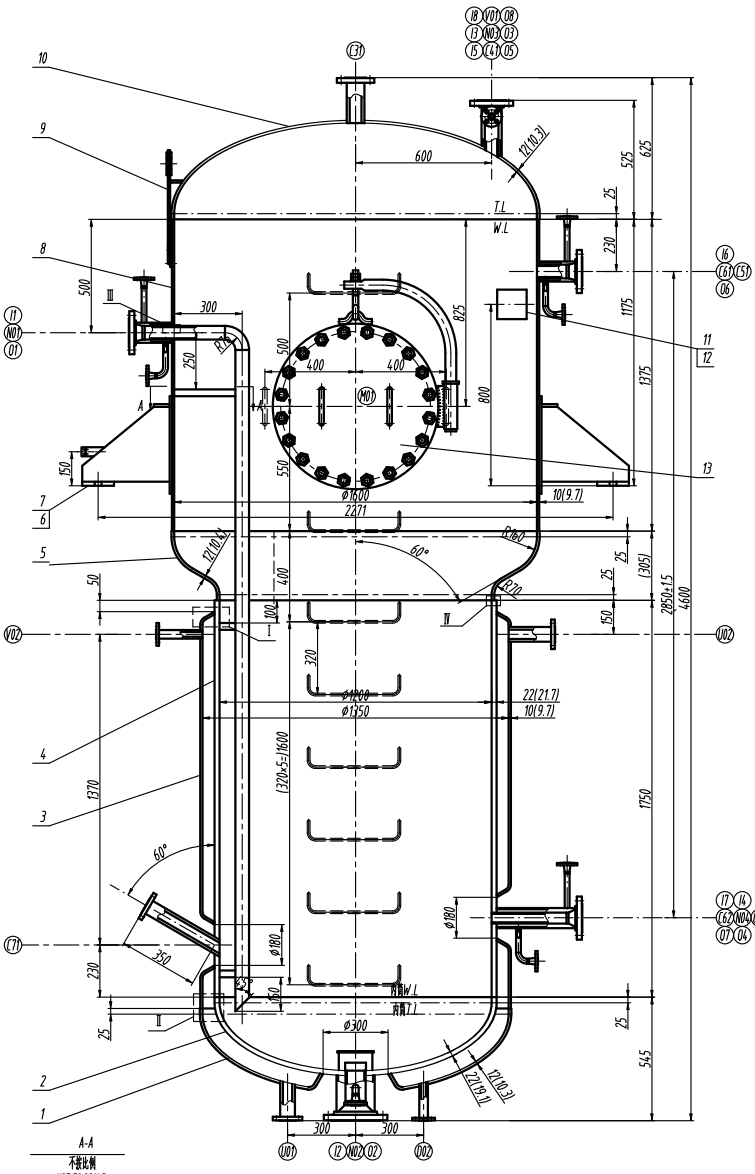
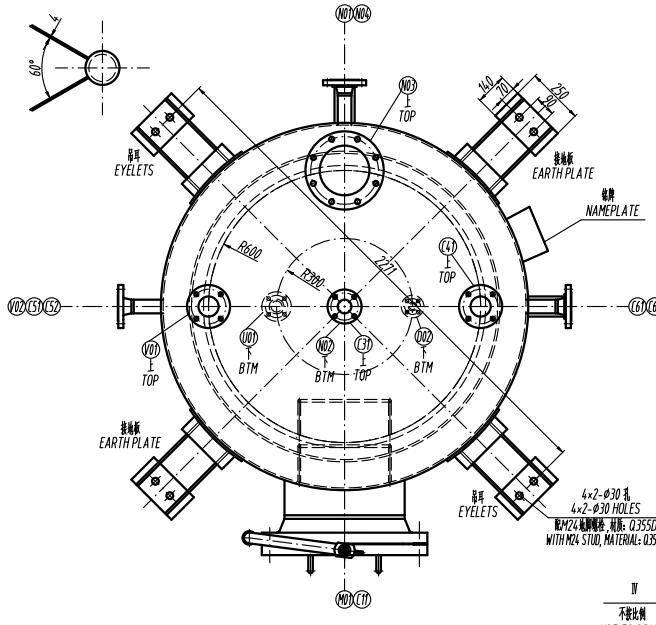
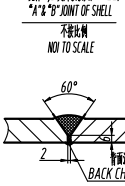


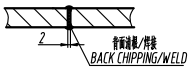
A-A
不按比例
NOT TO SCALE



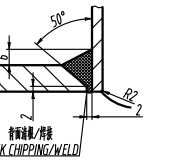


先体A、B类焊接接头(δ=22)
"A"& "B" JOINT OF SHELL
不按比例
NOT TO SCALE

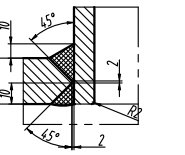
A、B类焊接接头(除注明外)
"A"& "B" JOINT (UNLESS OTHERWISE SPECIFIED)
不按比例
NOT TO SCALE



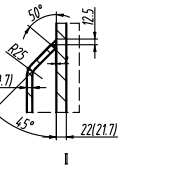
接管与壳体焊接接头
NOZZLE JOINT TO SHELL
不按比例
NOT TO SCALE



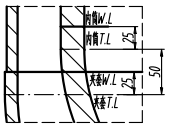
接管与壳体焊接接头(δ=22)
NOZZLE JOINT TO SHELL
不按比例
NOT TO SCALE



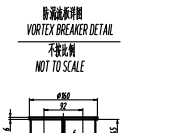
I
不按比例
NOT TO SCALE



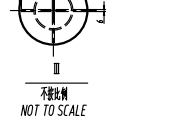
II
不按比例
NOT TO SCALE



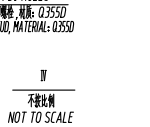
防涡流探杆图
VORTEX BREAKER DETAIL
不按比例
NOT TO SCALE



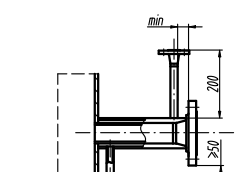
III
不按比例
NOT TO SCALE



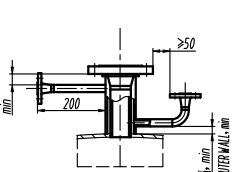
IV
不按比例
NOT TO SCALE



大备件热电偶口相定位详图
LOCATION DETAILS OF JACKET TRACING PIPE PORT
不按比例
NOT TO SCALE



封头夹套管引出管结构图
STRUCTURAL DRAWING OF JACKET OUTLET PIPE OF TOP HEAD
不按比例
NOT TO SCALE



设计、制造与检验主要数据表

规范、标准 CODE & STANDARD	《压力容器》GB/T150.1~150.4-2024、《钢制化工容器制造技术规范》HG/T20584-2020 PRESSURE VESSEL / PRESTRESSED STANDARD OF FABRICATION OVER STEEL CHEMICAL VESSELS				
	夹套 JACKET	壳体 SHELL	压力容器类别 PRESS.VESSEL CLASS		
工作压力 WORKING PRESS. kg/cm²G	4.6	0.102	焊接规程 WELDING SPEC.	NB/T47015-2023	
设计压力 DESIGN PRESS. kg/cm²G	7.0	4.1/-1	焊接材料 WELDING MATERIAL	S31603	A022、ER316L
最高允许工作压力 MAX.ALLOWABLE OPERATING PRESS. MPa				Q345R	R507、H110Mn2、ER50-6
工作温度 WORKING TEMP. ℃	70	70		S31603&Q345R	A312
设计温度 DESIGN TEMP. ℃	120	100			
介质(组分) FLUID (COMPONENT)	HW70	HPA、水(去污) HPA、WATER(NOTE 1)	焊接接头形式 WELDING STRUCTURE	除注明外按HG/T20583-2020规定和本规格书的 FULL PENETRATION FUNCTION AS SPECIFIED IN HG/T20583-2020 EXCEPT AS NOTED	
介质(密度) FLUID (DENSITY) kg/m³		930(液) 0.49(气体)	角焊缝高 THICK. OF FILLET WELD	除注明外角焊缝高度取较薄件厚度 EXCEPT AS OTHERWISE NOTED, TAKE THE THICKNESS OF THE THINNER PLATE OF THE WELDED PARTS	
介质特性 FLUID PERFORMANCE	/	极度危害/易燃 EXTREME TOXIC/EXPLOSIVE	法兰与接管的焊接 WELDING OF PIPE AND FLANGE	除注明外按管法规定与实际 UNLESS OTHERWISE NOTED, ACCORDANCE WITH THE RELEVANT PIPING STANDARD	
安全阀整定压力 SET PRESS.OF SAFETY VALVE kg/cm²G		3.6	产品焊接试板 PRODUCT WELDED TEST COUPON	设备(第 7) 组对图	
设计使用年限 DESIGN WORKING LIFE(YEARS)	10	10	备 注 NOTE		
主要受压元件材料 MAIN MATERIAL	钢号(名称) NAME	Q345R	S31603、S31603-3B	筒体和封头 / 每块板 BOARD TYPE / TOWER / QTY.	
	标 准 STANDARD	GB/T713.2-2023	GB/T713-2023、NB/T47008-2017	堆积类型 / 高度 PACKING TYPE / HEIGHT mm	
腐蚀裕量 CODE ALLOW. mm		3.0	0	涂漆、包装、运输 PAINT, PACKAGING, TRANSPORTATION	NB/T10558-2021、22150-00000-MC08
焊接接头系数 JOINT EFF. 探伤/封头		0.85	1.0	管口、支座方位 NOZZLE ORIENTATION	按管口方位图 ACCORDING TO THE ORIENTATION MAP OF THE VPU
耐压试验介质(压力/介质) kg/cm²G TYPE OF PRESS.TEST		9.1/8.0(HYDRO-H/V)	5.7/5.2(HYDRO-H/V)	焊接接头类型 JOINT CATEGORY	检测率 %	结果-超标级别 RESULTS-EXCEED THAN ALLOWED	标准 STANDARD	备注 REMARK
密封试验介质(压力/介质) kg/cm²G TYPE OF LEAK TEST			4.1GAS LEAK TEST PRESS	无损检测 NDE	A、B	SHELL	100%	RT-Ⅱ	AB	NB/T47013.2-2015
容 积 CAPACITY m³		0.45	5.79			夹套 JACKET	20%	RT-Ⅲ	AB	NB/T47013.2-2015
换热面积 HEAT TRANSFER AREA m²		8.4			D、E	CS	100%	MT-Ⅰ		NB/T47013.4-2015
焊接系数 FULL EFF.						SS	100%	PT-Ⅰ		NB/T47013.5-2015
保温材料/厚度 INSULATION MATERIAL/THICKNESS mm	60/硅酸盐 60/ALUMINUM SILICATE BLANKET	60/硅酸盐 60/ALUMINUM SILICATE BLANKET	定重 质量	材料编制表 MATERIAL NO. BOM	名义长度 NOMINAL LENGTH	单根长度 LENGTH OF EA.	重(kg/件) WEIGHT	管理等级	接地要求
防火材料/厚度 FIRE PREVENTION/THICKNESS mm				21	400	710.15g	Ⅲ			接地 GROUNDING

补充技术要求：Supplementary technical requirements:

1、除注明外，所有尺寸单位为"mm"，法兰螺栓孔应跨装备中心线或其平行线两中等布。

1. Unless otherwise specified, all dimensions are in millimeters, and flange bolt holes should be evenly distributed along the centerline of the equipment or its parallel lines.

2、壳体用钢板S31603须符合GB/T713.7-2023的规定，供货状态固溶，表面加工表壁(Ⅱ)，钢板应进行100%超声检测，验NB/T47013.3-2023中的Ⅰ级合格。

2. The steel plate S31603 used for the shell shall comply with the provisions of GB/T713.7-2023, with a supply state of solid fusion and a surface processing type of Ⅱ). The steel plate shall also undergo 100% ultrasonic testing and be qualified as Grade Ⅰ in NB/T47013.3-2023.

3、S31603锻件应符合NB/T47010-2017《承压设备用不锈钢和耐热钢锻件》中Ⅲ级的要求，

16Mn锻件应符合NB/T47008-2017《承压设备用碳素钢和合金钢锻件》中Ⅲ级的要求。

3. S31603 forgings shall comply with the requirements of Grade Ⅲ in NB/T47010-2017;

16Mn forgings shall comply with the requirements of Grade Ⅲ in NB/T47008-2017.

4、S31603钢管应符合GB/T14976-2012《流体输送用不锈钢无缝钢管》的规定，无缝钢管的壁厚负偏差不大于10%S(S为钢管厚度)。

4. S31603 steel pipes shall comply with the provisions of GB/T14976-2012. The negative deviation of the thickness of seamless steel pipes shall not exceed 10% S (S is the thickness of the steel pipe).

5、S31603材料及焊接接头(包括焊接工艺评定、成品焊接试样)按GB/T4334-2020方法Ⅰ进行晶间腐蚀试验，平均腐蚀速率应不大于1.6g/m2.h。腐蚀试验取样和检验按GB/T21433-2008附录B规定进行。

5. S31603 materials and welded joints (including welding process qualification and finished welding specimens) shall undergo intergranular corrosion testing in accordance with GB/T4334-2020 method B. The average corrosion rate shall not exceed 1.6g/m2. h, and the sampling and batch assembly of corrosion specimens shall be carried out in accordance with the provisions of Article B of GB/T21433-2008.

6、与工艺介质接触的焊缝表面需用氩弧焊打底并保护。

6. The weld seam in contact with the process medium should be covered with argon arc welding and maintained in the welded state.

7、内筒体A-A类焊接接头应按GB/T150.4-2024中第九条规定制取产品焊接试样，焊接试件和检验和评定按NB/T47016-2011规定来进行。

7. The A-class welded joint of the inner cylinder shell shall be prepared as product welding specimens in accordance with Article 9 of GB/T150.4-2024, and the inspection and evaluation of the welding specimens shall be carried out in accordance with the requirements of NB/T47016-2011.

8、内筒体组焊完毕后，按GB/T150.4-2024第6.5.11条检查圆度。

8. After the welding of the inner cylinder is completed, the roundness should be checked according to Article 6.5.11 of GB/T150.4-2024.

9、液位计管口安装尺寸公差按HG/T20584-2020中第14.2.13条第6款。

9. The installation dimensional tolerance of the liquid level gauge pipe mouth shall comply with the provisions of Article 14.2.13, Clause 6 of HG/T20584-2020.

10、内筒体承上的A B C D E类焊接接头、异种钢焊接接头、DN<250的接管与法兰和对接接头与壁厚NB/T47013.5-2015进行100%渗透检测 合格等级不低于Ⅰ级；M01/接管与壳体焊缝焊接接头应按照NB/T47013.3-2023进行100%超声检测 合格级别不低于Ⅰ级。

10. The Class A, B, C, D, and E welded joints on the inner cylinder shell, dissimilar steel welded joints, and butt joints between DN < 250 connecting pipes and flanges shall undergo 100% penetration testing in accordance with NB/T47013.5-2015, with a qualification level not lower than Grade Ⅰ; The welding joint between the M01 takeover and the shell should undergo 100% ultrasonic testing in accordance with NB/T47013.3-2023, and the qualification level should not be lower than Level Ⅰ.

11、不锈钢组合水压试验 用水的氯离子含量应小于25mg/L，试验合格后应立即将水排净干。

11. The chloride ion content of the water used for the hydrostatic test of stainless steel equipment should be less than 25mg/L. After passing the test, the water should be immediately drained and dried.

12、液压试验合格后，介质接触的不锈钢表面应进行酸洗钝化处理，按照成品焊接试样用，按照成品焊接试样用，按照成品焊接试样用