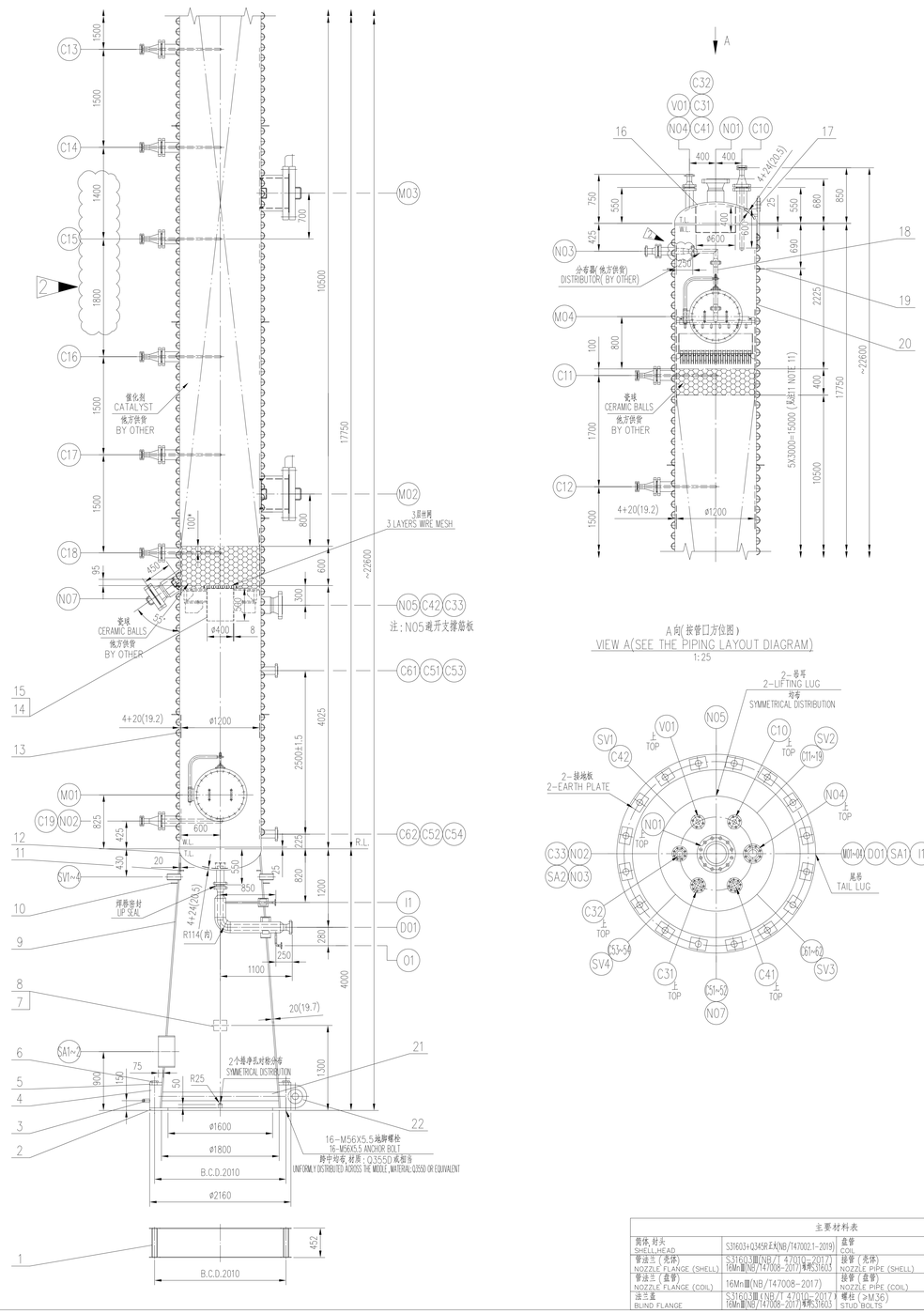


技术要求
GENERAL NOTES

1. 除注明外，所有尺寸单位为mm，厚度尺寸标注计算书给尺寸去掉小数点那厚度（材料订货厚度按不小于名义厚度且应考虑加工裕量，保证最小成形厚度满足要求）。法兰螺栓孔应在设备中心线两侧平行线跨中均布。
2. Q345R钢板应符合GB/T 713-2023的规定，正火状态使用，且试验进行100%超声检测，符合NB/T 47013.3-2023 Ⅰ级合格；Q345R钢板厚-20℃冲击试验，其焊接接头-20℃KV2≥41J，且每张热处理钢板进行拉伸和冲击试样，埋弧口焊法试板。
3. S31603材料及其焊接接头1.检验焊接工艺评定，产品焊接试件1.按GB/T 4334-2020方法1.进行晶间腐蚀试验，手动弯曲试样应不大于1.6g/m2·h，腐蚀试件取样的制备应按GB/T 21433-2008第6条规定进行。
4. 复合板应符合NB/T 47002.1-2019平板的1级要求；其基层Q345R钢板应符合GB/T 713.2-2023的要求；其覆层S31603钢板应符合GB/T 713.7-2023的要求，供货状态为固溶，表面加工处理为1D。
5. 金属环垫片之外径按，其尺寸应满足要求NB/T 47001-2017 20633-2009的规定。
6. 分布器板尺寸等于内径和每个孔的直径，其尺寸应满足要求NB/T 47013.4-2015进行磁粉检测，质量等级不低于Ⅱ级。
7. 本设备的焊接焊接制造按照应符合GB/T 20584-2020的4.4节的规定外，还应满足下列要求：
   1）每焊条采用氩弧焊接焊接方工焊，“-”过渡区“-”的每焊材料应309LMo-16，“-”面层“-”的每焊材料应316L-16。
   2）每焊道，每对的被每焊条面应进行100%渗液检测，不得有任何裂纹等缺陷存在。符合NB/T 47013.4-2015中Ⅰ级合格要求。
   3）每层每焊层均应进行100%渗液检测，符合NB/T 47013.5-2015中，Ⅰ级合格。
   4）每焊过渡层不小于2mm，面层厚度不小于3mm。
8. 不锈钢防腐加工（或热处理）应采取有效措施，防止不锈钢敏化，复合板或焊后应使焊缝区域应力，应采用固溶处理或稳定化处理。
9. 不锈钢复合钢板的复合层焊接接头应进行100%渗液检测，按NB/T 47013.5-2015规定执行Ⅰ级合格。
10. 外部不锈焊的对接接头应进行100%超声检测，合格级别不低于Ⅱ级。
11. 半管焊接应在完全压应试验完成后进行，半管焊接应先用对接焊缝，再用角缝焊缝，并采取合理的施工顺序减小焊接残余应力。
12. 本设备从焊接接头应按GB/T 150.4-2024中第9条的规定编制产品焊接试件，焊接试件的检验方评定按NB/T 47016-2023的要求进行，其中焊接接头做-20℃冲击试验，KV2≥41J。所有焊接接头不得有咬边，不得有表面裂纹、未焊透、未融合、未渗透缺陷，焊缝与母材应圆滑过渡。
13. 对头或搭后应按照NB/T 47013.3-2023进行100%超声检测，Ⅰ级合格。如果成型，应恢复材料性能并再带材料热处理试验。
14. 本设备应进行整体炉内热处理，热处理温温度应按上图。设备热处理后，母材、焊缝及热影响区的力学及硬度≤200HB。所有焊接应在热处理前与设备相焊，热处理后不得在设备上施焊，热处理应按照GB/T 30583-2014的要求。
15. 螺栓与耳环焊接应采取焊接，并进行磁粉检测，符合NB/T 47013.4-2015中Ⅱ级合格。
16. 吊装用一般直上轻盖大内径与盖小内径之差应不大于12mm。
17. 筒体长度3000mm长度每直线度偏差不得大于3mm，筒体出现直线度偏差不得大于17mm。
18. 筒体不宜垂直度偏差不得大于20mm。
19. 螺栓孔应采用对称分布的原则，孔中心线应相对于两相邻两孔的中心线的偏差不得大于±3mm。
20. 底座板应计算以下是尺寸公差按NB/T 20584-2020中14.2.13.2的公差规定。
21. DN<250的法兰与对应接接头应按NB/T 47013-2015进行100%磁粉检测，焦点应达到级别。
22. 不锈钢设备法兰应符合国家现行法兰标准NB/T 25150-2010的规定，其焦点应达到级别。
23. 所有法兰的焊接应符合NB/T 47013-2015的要求，焊接应符合国家现行法兰标准。
24. 法兰焊接应在完成热处理后进行，焊接应符合国家现行法兰标准。
25. 螺栓孔应采用对称分布的原则，孔中心线应相对于两相邻两孔的中心线的偏差不得大于±3mm。
26. 螺栓孔应采用对称分布的原则，孔中心线应相对于两相邻两孔的中心线的偏差不得大于±3mm。
27. 螺栓孔应采用对称分布的原则，孔中心线应相对于两相邻两孔的中心线的偏差不得大于±3mm。
28. 设备螺栓应覆盖耳孔，其最大直径不得大于Ⅱ。其焊接方法应按NB/T 50160-2008《石油化工企业设计防火标准》（2018年版）第5.6条。
29. 接管、地脚螺栓、吊环、铭牌、接地板等方位见管道专业管口方位图（图纸另取）。C12~C17到20°偏差可有。
30. 注：(1) 介质组成(WT%)：正常工况：液相：甲醇：3.12，甲酸：0.05，异丁醇：2.3，异丁酸：0.02，三甲胺：1.05，新戊二醇：58.74，羟基特戊酸新戊二醇酯：0.66，异丁酸酯：0.72，水：33.24，其他：0.05，氢：0.05，气相：甲醇：5.25，异丁醇：1.56，三甲胺：39.77，水：11.84，氢气：41.58。
   还原工况：氢气≥20V%，水蒸汽，氮气，开车期间可能出现规定工况。
   (2) 正常工况：工作压力：40.8kg/cm²G，工作温度：150℃，设计压力：46kg/cm²G，设计温度：180℃。
   再生工况：工作压力：5.1kg/cm²G，工作温度：260℃，设计压力：9.2kg/cm²G，设计温度：280℃。
   再生工况每两年一次，一次10天。最高允许工作压力基于正常工况下设计温度180℃确定。
   (3) 与设备本体相焊接的平台、爬梯、管道支架（含铭板及固焊件）等预焊件由制造厂设计并供货；设备自重包括带外预焊件，带外预焊件~300kg，带内预焊件。N03分布器板安装，均由专利提供。
   (4) 变换支撑结构（包括三层丝网）由专利提供及外购，由设备制造厂设计并供货。
   (5) 本设备安装方法由制造厂和业主双方商量并协商确定，以毫外碰撞及不妨害导致大小。
   (6) 从设备整体来用作手管作热，手管长度≤N100，手管中心间距≥60mm，手管不超过50m抽头，从上往下看手管方解时针旋放，遇到法管等障碍物处不得时可取N32管来接。
   (7) 从原料：生产Max.80KPa，采用Max.20KPa。
   (8) 正常工况此开车前需要将结果初始管化剂从原料装，所以你在这最初过整个流程的工况，可按满足考虑。
   (9) 从设备在正常工况下，支撑件和件本手管不工作，但本手管处用于开工工况。(HOLD)
   (10) 除管道、管长用，触发环以及N03口被保分布器外，其它内件（包括N01导管、变换支撑结构、破碎器、其它内件等）均由邻器厂家设计并供货。
   (11) 加强圆盘板强益支撑，间距：~3000mm/圈，不得断开，遇到管口和平台支耳可上下移动，最大间距不得超过：3500mm。
   (12) 所有侧面的压力表要采用液表，测压点的向上安装，避免积液。
   (13) 本设备需作氦气压压试验，需有使排氦防止设备变形。

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED. THICKNESS SPECIFIED IN THE BRACKETS FOR BASE MATERIAL ARE THE MINIMUM ACCEPTABLE AFTER FABRICATION (THE ORDERED MATERIAL THICKNESS SHOULD NOT BE LESS THAN THE NOMINAL THICKNESS AND MUST ACCOUNT FOR PROCESSING TOLERANCES, ENSURING THAT THE MINIMUM FORMING THICKNESS MEETS THE REQUIREMENTS). FLANGE BOLT HOLES SHOULD BE EVENLY DISTRIBUTED ALONG THE CENTERLINE OR PARALLEL LINES OF THE EQUIPMENT.
2. THE Q345R STEEL PLATE SHALL COMPLY WITH THE PROVISIONS OF GB/T 713-2023 AND BE USED IN THE NORMALIZED CONDITION. EACH PLATE SHALL UNDERGO 100% UT, MEETING THE REQUIREMENTS OF NB/T47013.3-2023 WITH A QUALIFICATION LEVEL NO LOWER THAN GRADE I. THE Q345R STEEL PLATE SHALL UNDERGO A -20℃ IMPACT TEST, WITH THE WELDED JOINTS HAVING A -20℃ KV2 ≥ 41J. ADDITIONALLY, EACH HEAT-TREATED STEEL PLATE SHALL UNDERGO TENSILE AND V-NOTCH IMPACT TESTING.
3. THE S31603 MATERIAL AND ITS WELDED JOINTS (INCLUDING WELDING PROCEDURE QUALIFICATION AND PRODUCT WELDING SPECIMENS) SHALL UNDERGO INTERGRANULAR CORROSION TESTING IN ACCORDANCE WITH GB/T 4334-2020 METHOD B. THE AVERAGE CORROSION RATE SHOULD NOT EXCEED 1.6 g/m²·h. SAMPLING AND GROUPING OF CORROSION SPECIMENS SHALL BE CONDUCTED ACCORDING TO THE PROVISIONS OF ARTICLE 8 OF GB/T 21433-2008.
4. THE COMPOSITE PLATE SHALL MEET THE B1 LEVEL REQUIREMENTS IN NB/T 47002.1-2019. THE BASE MATERIAL Q345R STEEL PLATE SHALL COMPLY WITH THE REQUIREMENTS OF GB/T 713.2-2023. THE CLADDING MATERIAL S31603 STEEL PLATE SHALL COMPLY WITH THE REQUIREMENTS OF GB/T 713.7-2023, WITH THE SUPPLY CONDITION BEING SOLID SOLUTION AND THE SURFACE TREATMENT TYPE BEING 1D.
5. METALLIC GASKETS SHALL NOT BE SPLICED. OTHER TECHNICAL REQUIREMENTS SHALL COMPLY WITH THE PROVISIONS OF HG/T 20633-2009.
6. NUTS WITH A NOMINAL DIAMETER GREATER THAN OR EQUAL TO M36 SHOULD UNDERGO A HARDNESS TEST AFTER HEAT TREATMENT OF THE ROUGH MACHINING. STUDS WITH A NOMINAL DIAMETER GREATER THAN OR EQUAL TO M36 SHOULD UNDERGO MAGNETIC PARTICLE TESTING ACCORDING TO NB/T 47013.4-2015, WITH A QUALITY GRADE NO LOWER THAN CLASS I.
7. THE CLADDING WELDING MANUFACTURING OF THIS EQUIPMENT SHALL NOT ONLY COMPLY WITH THE PROVISIONS OF SECTION 9.4 OF HG/T 20584-2020, BUT ALSO MEET THE FOLLOWING REQUIREMENTS:
   1) THE CLADDING WELDING SHALL USE SUBMERGED ARC STRIP CLADDING OR MANUAL WELDING. THE CLADDING MATERIAL FOR THE "TRANSITION LAYER" SHALL BE E309LMo-16, AND THE CLADDING MATERIAL FOR THE "SURFACE LAYER" SHALL BE E316L-16.
   2) BEFORE CLADDING, THE SURFACE OF THE BASE MATERIAL TO BE CLADDED SHALL UNDERGO 100% MAGNETIC PARTICLE TESTING, WITH NO CRACKS OR ANY OTHER DEFECTS PRESENT. IT SHALL MEET THE GRADE I QUALIFICATION REQUIREMENTS OF NB/T 47013.4-2015.
   3) EACH LAYER OF THE CLADDING SHALL UNDERGO 100% PENETRANT TESTING, MEETING THE GRADE I QUALIFICATION REQUIREMENTS OF NB/T 47013.5-2015.
   4) THE CLADDING TRANSITION LAYER THICKNESS SHALL NOT BE LESS THAN 2 mm, AND THE SURFACE LAYER THICKNESS SHALL NOT BE LESS THAN 3 mm.
8. EFFECTIVE MEASURES SHALL BE TAKEN DURING THE HOT WORKING (OR HEAT TREATMENT) OF STAINLESS STEEL TO PREVENT SENSITIZATION. AFTER THE COMPOSITE PLATE FORMING AND THE HEAT TREATMENT OF THE CLADDED CORROSION-RESISTANT LAYER, THE CLADDED STEEL PLATE SHALL PASS THE INTERGRANULAR CORROSION TEST SPECIFIED IN METHOD B OF GB/T 4334-2020.
9. THE WELD JOINTS OF THE CLADDED LAYER OF THE STAINLESS STEEL COMPOSITE PLATE SHALL UNDERGO 100% PT AND MEET THE GRADE I QUALIFICATION REQUIREMENTS SPECIFIED IN NB/T 47013.5-2015.
10. ALL BUTT JOINTS OF THE EXTERNAL HALF-PIPES SHALL UNDERGO 100% RT, WITH A QUALIFICATION LEVEL NO LOWER THAN GRADE Ⅱ.
11. THE WELDING OF THE HALF-PIPES SHOULD BE CARRIED OUT AFTER THE EQUIPMENT HYDROSTATIC TEST IS COMPLETED. THE WELDING OF THE HALF-PIPES SHOULD FIRST FOCUS ON THE BUTT WELDS, FOLLOWED BY THE CORNER WELDS, AND A REASONABLE CONSTRUCTION SEQUENCE SHOULD BE ADOPTED TO MINIMIZE WELDING RESIDUAL STRESS.
12. THE A-CLASS WELD JOINTS OF THIS EQUIPMENT SHALL BE PREPARED AS PRODUCT WELDING SPECIMENS ACCORDING TO THE PROVISIONS OF ARTICLE 9 OF GB/T 150.4-2024. THE INSPECTION AND EVALUATION OF THE WELDING SPECIMENS SHALL BE CONDUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF NB/T47016-2023, WHERE THE WELDING JOINTS SHALL UNDERGO A -20℃ IMPACT TEST WITH A KV2 ≥ 41J. ALL WELD JOINTS SHALL BE FREE OF UNDERCUTS, SURFACE CRACKS, LACK OF PENETRATION, LACK OF FUSION, SLAG INCLUSIONS, AND OTHER DEFECTS. THE WELD BEAD AND BASE MATERIAL SHOULD TRANSITION SMOOTHLY.
13. AFTER THE HEAD IS FORMED,, IT SHOULD UNDERGO 100% ULTRASONIC TESTING IN ACCORDANCE WITH NB/T47013.3-2015, WITH A QUALIFICATION LEVEL OF GRADE I. IF HOT FORMING IS APPLIED, THE MATERIAL PROPERTIES SHOULD BE RESTORED, AND HEAT TREATMENT TEST PLATES OF THE BASE MATERIAL SHOULD BE INCLUDED.
14. THE EQUIPMENT SHOULD UNDERGO OVERALL FURNACE HEAT TREATMENT, AND THE HEAT TREATMENT HOLDING TEMPERATURE SHOULD PREFERABLY BE AT THE UPPER LIMIT. AFTER HEAT TREATMENT, THE HARDNESS OF THE BASE MATERIAL, WELDS, AND HEAT-AFFECTED ZONES ON BOTH INTERNAL AND EXTERNAL SURFACES SHOULD BE < 200 HB. ALL PRE-WELDED COMPONENTS SHOULD BE WELDED TO THE EQUIPMENT BEFORE HEAT TREATMENT, AND NO WELDING SHOULD BE PERFORMED ON THE EQUIPMENT AFTER HEAT TREATMENT. THE HEAT TREATMENT SHOULD ALSO COMPLY WITH THE REQUIREMENTS OF GB/T 30583-2014.
15. THE WELDS BETWEEN THE SKIRT AND THE BOTTOM HEAD MUST BE FULLY WELDED AND UNDERGO MAGNETIC PARTICLE TESTING, MEETING THE GRADE I QUALIFICATION REQUIREMENTS IN ACCORDANCE WITH NB/T 47013.4-2015.
16. THE DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM INNER DIAMETERS ON THE SAME SECTION OF THE TOWER BODY SHOULD NOT EXCEED 12 mm.
17. THE STRAIGHTNESS DEVIATION FOR ANY 3000 MM LENGTH OF THE CYLINDER BODY SHALL NOT EXCEED 3 mm, AND THE TOTAL STRAIGHTNESS DEVIATION OF THE TOWER BODY SHALL NOT EXCEED 17 mm.
18. THE VERTICALITY DEVIATION OF THE TOWER BODY DURING INSTALLATION SHALL NOT EXCEED 20mm.
19. THE TOLERANCE FOR THE CENTER CIRCLE DIAMETER OF THE ANCHOR BOLT HOLES IN THE SKIRT SEAT, AS WELL AS THE TOLERANCE FOR THE CHORD LENGTH BETWEEN ADJACENT HOLES AND ANY TWO HOLES, SHALL NOT EXCEED ±3 mm.
20. THE INSTALLATION DIMENSIONAL TOLERANCE FOR THE LOCAL LIQUID LEVEL GAUGE PIPE OPENING SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF ARTICLE 6, SECTION 14.2.13 OF HG/T 20584-2020.
21. THE BUTT JOINT BETWEEN THE CONNECTING PIPE AND FLANGE WITH DN < 250 SHALL UNDERGO 100% MAGNETIC PARTICLE AND PENETRANT TESTING IN ACCORDANCE WITH NB/T 47013-2015, AND THE QUALIFICATION LEVEL SHALL NOT BE LOWER THAN GRADE Ⅰ.
22. THE CHLORIDE ION CONTENT OF THE WATER USED FOR HYDROSTATIC TESTING OF STAINLESS STEEL EQUIPMENT SHALL BE LESS THAN 25 mg/L. AFTER PASSING THE TEST, THE WATER SHOULD BE DRAINED AND THE EQUIPMENT IMMEDIATELY DRIED.
23. AFTER PASSING THE LEAKAGE TEST, THE STAINLESS STEEL SURFACE IN CONTACT WITH THE MEDIUM SHOULD BE TREATED WITH ACID PICKLING AND PASSIVATION. THE PASSIVATION FILM FORMED SHOULD BE TESTED ACCORDING TO THE METHOD SPECIFIED IN GB/T 25150-2010. AFTER PASSING THE TEST, THE ACID PICKLING MEDIUM MUST BE CLEANED THOROUGHLY, THERE MUST BE NO RESIDUE.
24. DURING THE AIR TIGHTNESS TEST, ALL SAFETY ACCESSORIES (SAFETY VALVES) MUST BE FULLY ASSEMBLED. INSTALL A CONDUIT AT THE OUTLET OF THE SAFETY VALVE TO GUIDE THE DISCHARGE MEDIUM TO A SAFE LOCATION AND HANDLE IT PROPERLY. IT SHOULD NOT BE DIRECTLY DISCHARGED INTO THE ATMOSPHERE.
25. THE ANCHOR BOLTS FOR THE SKIRT BASE SHOULD BE POSITIONED USING AN ANCHOR BOLT FOUNDATION TEMPLATE. THE FOUNDATION TEMPLATE AND THE SKIRT BASE PLATE SHOULD BE DRILLED FOR THE BOLT HOLES TOGETHER. THE FOUNDATION TEMPLATE MUST BE SENT TO THE INSTALLATION SITE IN ADVANCE.
26. THE EQUIPMENT SKIRT SHOULD BE COVERED WITH A FIRE-RESISTANT LAYER, AND ITS FIRE RESISTANCE LIMIT SHOULD NOT BE LESS THAN 2 HOURS. THE SPECIFIC REQUIREMENTS SHOULD FOLLOW ARTICLE 5.6 OF GB 50160-2008 "FIRE PROTECTION DESIGN STANDARD FOR PETROCHEMICAL ENTERPRISES" (2018 VERSION).
27. THE LOCATIONS OF THE NOZZLES, ANCHOR BOLTS, LIFTING LUGS, NAMEPLATES, GROUNDING PLATES, ETC., CAN BE FOUND IN THE PIPING LAYOUT DIAGRAM (SEPARATE DRAWINGS TO BE PROVIDED). WITH C12~C17 ARRANGED UNIFORMLY IN A 120 ° STAGGERED MANNER.
NOTE: (1) THE COMPOSITION OF THE MEDIUM (WT%): NORMAL OPERATING CONDITIONS: LIQUID PHASE: METHANOL: 3.12, FORMIC ACID: 0.05, ISOBUTANOL: 2.3, ISOBUTYRIC ACID: 0.02, TRIMETHYLAMINE: 1.05, NEOPENTYL GLYCOL: 58.74, HYDROXYMETHYLPENTANAL NEOPENTYL GLYCOL ESTER: 0.66, ISOBUTYRATE ESTER: 0.72, WATER: 33.24, OTHER: 0.05, ESTER: 0.05. GAS PHASE: METHANOL: 5.25, ISOBUTANOL: 1.56, TRIMETHYLAMINE: 39.77, WATER: 11.84, HYDROGEN: 41.58. REDUCTION CONDITIONS: HYDROGEN ≤ 20 V%, STEAM, NITROGEN ,PURE HYDROGEN CONDITIONS MAY OCCUR DURING OPERATION.
   (2) THE NORMAL OPERATING CONDITIONS ARE AS FOLLOWS: WORKING PRESSURE: 40.8 kg/cm² G, WORKING TEMPERATURE: 150℃, DESIGN PRESSURE: 46 kg/cm² G DESIGN TEMPERATURE: 180℃. FOR REGENERATION CONDITIONS: WORKING PRESSURE: 5.1 kg/cm² G, WORKING TEMPERATURE: 260℃, DESIGN PRESSURE: 9.2 kg/cm² G, DESIGN TEMPERATURE: 280℃. REGENERATION OCCURS ONCE EVERY TWO YEARS FOR 10 DAYS. THE MAXIMUM ALLOWABLE WORKING PRESSURE IS BASED ON THE DESIGN TEMPERATURE OF 180℃ UNDER NORMAL OPERATING CONDITIONS.
   (3) THE PLATFORMS, LADDERS, PIPE RACK BRACKETS (INCLUDING BASE PLATES AND THEIR ACCESSORIES) WELDED TO THE EQUIPMENT BODY, AS WELL AS OTHER PRE-WELDED COMPONENTS, SHALL BE DESIGNED AND SUPPLIED BY THE MANUFACTURER. THE SELF WEIGHT OF THE EQUIPMENT INCLUDES PRE WELDED PARTS OUTSIDE THE TOWER, WHICH WEIGH APPROXIMATELY 300Kg. PRE WELDED PARTS INSIDE THE TOWER, N03 DISTRIBUTOR, AND PAD ARE ALL SUPPLIED BY THE LICENSOR.
   (4) THE CERAMIC BALL SUPPORT STRUCTURE (INCLUDING 3 LAYERS OF WIRE MESH) SHALL BE FINALLY CONFIRMED BY THE PATENT HOLDER, DESIGNED AND SUPPLIED BY THE EQUIPMENT MANUFACTURER.
   (5) THE LIFTING METHOD FOR THIS EQUIPMENT SHALL BE DETERMINED THROUGH CONSULTATION BETWEEN THE MANUFACTURER, THE OWNER, AND THE INSTALLATION UNIT. TO FINALIZE THE TYPE AND SIZE OF THE LIFTING LUGS.
   (6) THE REACTOR SHELL USES EXTERNAL HALF-TUBE HEATING, WITH A HALF-TUBE SPECIFICATION OF DN100 AND A CENTER-TO-CENTER SPACING OF 160 mm. THE HALF-TUBE SHOULD NOT EXCEED 50 METERS IN LENGTH. THE HALF-TUBE IS WOUND CLOCKWISE WHEN VIEWED FROM ABOVE. IF IT CANNOT BYPASS OBSTACLES SUCH AS PIPE CONNECTIONS, DN32 PIPES CAN BE USED FOR CONNECTION.
   (7) BED RESISTANCE REDUCTION: PRODUCING MAX 80kPa, RESTORING MAX 20kPa.
   (8) UNDER NORMAL OPERATING CONDITIONS, THE REDUCED CATALYST BED NEEDS TO BE WETTED BEFORE DRIVING, SO THERE MAY BE A SITUATION WHERE THE LIQUID LEVEL PENETRATES THE ENTIRE BED, WHICH CAN BE CONSIDERED AS FULL LIQUID.
   (9) THE EXTERNAL HEATING HALF-TUBE OF THE REACTOR DOES NOT OPERATE UNDER NORMAL CONDITIONS; IT IS ONLY USED FOR THE REDUCTION CONDITIONS. (HOLD)
   (10) EXCEPT FOR THE CERAMIC BALLS, CATALYST, CERAMIC RINGS, AND THE N03 LIQUID DISTRIBUTOR, ALL OTHER INTERNALS (INCLUDING THE N01 GUIDE TUBE, CERAMIC BALL SUPPORT STRUCTURE, DEMISTER, AND OTHER INTERNALS) ARE DESIGNED AND SUPPLIED BY THE TOWER MANUFACTURER.
   (11) THE REINFORCING RING ALSO SERVES AS INSULATION SUPPORT, WITH A SPACING OF APPROXIMATELY 3000 mm PER RING, AND MUST NOT BE INTERRUPTED. IT MAY BE ADJUSTED UP OR DOWN WHEN ENCOUNTERING NOZZLES OR PLATFORM SUPPORT LUGS, BUT THE MAXIMUM SPACING MUST NOT EXCEED 3500 mm.
   (12) ALL SIDE-MOUNTED PRESSURE GAUGES ARE REQUIRED TO MEASURE THE LIQUID PHASE, AND THE PRESSURE MEASUREMENT POINTS SHOULD BE INSTALLED AT AN UPWARD ANGLE TO PREVENT LIQUID ACCUMULATION.
   (13) IF THIS EQUIPMENT UNDERGOES A HORIZONTAL HYDROSTATIC TEST, EFFECTIVE MEASURES MUST BE TAKEN TO PREVENT DEFORMATION OF THE EQUIPMENT.

主要材料表

筒体,封头 SHELL,HEAD	S31603+Q345R+N(NB/T47002.1-2019)	盘管 COIL	Q345R(GB/T 713.2-2023)
管法兰（壳体） NOZZLE FLANGE (SHELL)	S31603Ⅲ(NB/T 47010-2017) 16Mn锻Ⅲ(NB/T47008-2017)等效S31603	接管（壳体） NOZZLE PIPE (SHELL)	S31603Ⅲ(NB/T 47010-2017) 16Mn锻Ⅲ(NB/T47008-2017)等效S31603
管法兰（盘管） NOZZLE FLANGE (COIL)	16MnⅢ(NB/T47008-2017)	接管（盘管） NOZZLE PIPE (COIL)	Q345D(GB/T 6479-2013)
法兰盖 BLIND FLANGE	S31603Ⅲ(NB/T 47010-2017) 16Mn锻Ⅲ(NB/T47008-2017)等效S31603	螺柱（>M36） STUD BOLTS	35CrMoA(GB/T 3077-2015)

设计制造检验主要数据表
DESIGN/FABRICATION/INSPECTION DATA

标准规范
STANDARD AND CODE

- 固定式压力容器安全技术监察规程 TSG 21-2016(含第1号修改单) SUPERVISION REGULATION ON SAFETY TECHNOLOGY FOR STATIONARY PRESSURE VESSELS
- 压力容器 GB/T 150.1~150.4-2024 PRESSURE VESSELS
- 等式容器 NB/T 47041-2014 VERTICAL VESSELS SUPPORTED BY SKIRT
- 钢制化工容器制造技术规范 HG/T 20584-2020 TECHNICAL STANDARD OF FABRICATION FOR STEEL CHEMICAL VESSELS

设计参数
DESIGN DATA

压力容器类别/规则 CATEGORY / LEVEL OF PRESSURE VESSEL		Ⅲ/D	
设计使用年限 DESIGN SERVICE LIFE	年 YEAR	20	
换热面积 HEAT TRANSFER SURFACE	m^2	~40	
		盘管 COIL	壳体 SHELL
设计压力 DESIGN PRESSURE	Kg/cm^2G	22/-1.03	46(注2)
工作压力 OPERATING PRESSURE	Kg/cm^2G	20	40.8(注2)
最高允许工作压力 MAWP	Kg/cm^2G	--	47.5
设计温度 DESIGN TEMPERATURE	℃	250	180(注2)
工作温度 OPERATING TEMPERATURE	℃	215~230	150(注2)
工作介质 SERVICE, FLUID		蒸汽 STEAM	氢化反应物 REACTOR FEED(注3)
介质密度 FLUID DENSITY	kg/m^3	--	880.72
介质特性 FLUID CHARACTERISTIC		--/--	易燃,氢气/易爆 (FROM CDCM/WARNE)
腐蚀裕量 CORROSION ALLOWANCE	mm	1.0	壳体:0,盘管:2.0 SHELL: 0,COIL:2.0
焊接接头系数 JOINT EFFICIENCY		1.0	1.0
容积 VOLUME	m^3	0.6	20.5
装量系数 FILLING RATIO		--	--
基本风压 REFERENCE WIND PRESSURE	Pa	400	
地面粗糙度 TERRAIN ROUGHNESS		A	
抗震设防烈度(加速度) SEISMIC FORTIFICATION INTENSITY(ACCELERATION)		7(0.15g)	
设计地震分组 DESIGN EARTHQUAKE GROUP		第三组 GROUP 1	
场地土类别 SITE-CLASS		Ⅲ	
月平均最低气温的最低值 AVERAGE MIN. TEMPERATURE OF MONTH		21	
绝热厚度 INSULATION THIK.	mm	--	1.5(0/ 经赫兹相 0.0/ (ALMANAK GUIDE)
防火 FIRE PREVENTION		YES(SKIRT)	
超压泄放装置 PRESSURE RELIEF DEVICE		PZ:44.06kg/cm²G	

注：1. NB/T 47013.1~47013.2-2015(含修改单)，NB/T 47013.3-2023，NB/T 47013.4~47013.5-2015,NB/T 47013.10-2015.
Note: 1. NB/T 47013.1~47013.2-2015 (INCLUDING AMENDMENT ORDER), NB/T 47013.3-2023, NB/T 47013.4~47013.5-2015, NB/T 47013.10-2015.

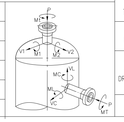
接管表
NOZZLE TABLE

符号 SYMBOL	用途或名称 SERVICE	数量 QTY.	公称尺寸 NPS	公称压力 RATING	连接标准及形式 STANDARD AND TYPE/FACE	接管规格 NECK SIZE	接管长度 PROJECTION
N01	氢气入口 H2 INLET	1	8"	Class600	ASME B16.5 LWN/RJ	ø254X(6+30)	见图 SEE DRAW
N02	循环液体出口 CIRCULATING LIQUID OUTLET	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	1080/880
N03	物料入口 INLET	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	1080/880
N04	安全阀口 SAFETY VALVE CONNECTION	1	3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
N05	氢气出口 HYDROGEN OUTLET	1	8"	Class600	ASME B16.5 WN/RJ	ø254X(6+30)	950
N07	放料口（带法兰盖板）DISCHARGE CONNECTION WITH BLIND	1	8"	Class600	ASME B16.5 WN/RJ	ø256X(6+31)	见图 SEE DRAW
V01	排气口 VENT	1	1 1/2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
D01	排液口 DRAIN	1	3"X6"	Class600	ASME B16.5 LWN/RF ASME B16.5 WN/RJ	ø117X(6+22.5) ø89X7.62/ø168X10.97	见图 SEE DRAW
M01~04	人孔(M02,M03带内筒体) MANHOLE	4	20"	Class600	参照ASME B16.5 LWN/RJ	ø548X(6+40)	970
C10~19	温度计接口（带法兰盖） TI CONNECTION(W/B)	10	1 1/2"/4"	Class600	ASME B16.5 LWN/RJ	ø152X(6+28)	见图 SEE DRAW
C31	动压力表接口（带法兰盖） PI CONNECTION(W/B)	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
C32	动压力表接口（带法兰盖） PI CONNECTION(W/B)	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
C33	动压力表接口（带法兰盖） PI CONNECTION(W/B)	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
C41	就地压力表接口（带法兰盖） PG CONNECTION(W/B)	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
C42	就地压力表接口（带法兰盖） PG CONNECTION(W/B)	1	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	见图 SEE DRAW
C51~52	动液位计接口（带法兰盖） LI CONNECTION(W/B)	2	3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	880
C53~54	动液位计接口（带法兰盖） LI CONNECTION(W/B)	2	3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	880
C61~62	就地液位计接口（带法兰盖） LG CONNECTION(W/B)	2	2"/3"	Class600	ASME B16.5 LWN/RJ	ø117X(6+22.5)	1080/880
SV1~4	排气口 EXHAUST PORT	4	3"	--	--	ø89X4	--
SA1~2	检查孔 CHECK HOLE	2	18"	--	--	ø482X16	--
E1~11	蒸汽进口 STEAM INLET	11	1"	CLass300	ASME B16.5 WN/RF	ø33.4X4.55	见图
F1~11	蒸汽出口 STEAM OUTLET	11	1"	CLass300	ASME B16.5 WN/RF	ø33.4X4.55	见图
I1	伴热出口 ACCOMPANYING HEATING OPORT	1	3/4"	CLass150	ASME B16.5 WN/RF	ø26.7X3.91	见图
O1	伴热入口 ACCOMPANYING HEAT INLET	1	3/4"	CLass150	ASME B16.5 WN/RF	ø26.7X3.91	见图

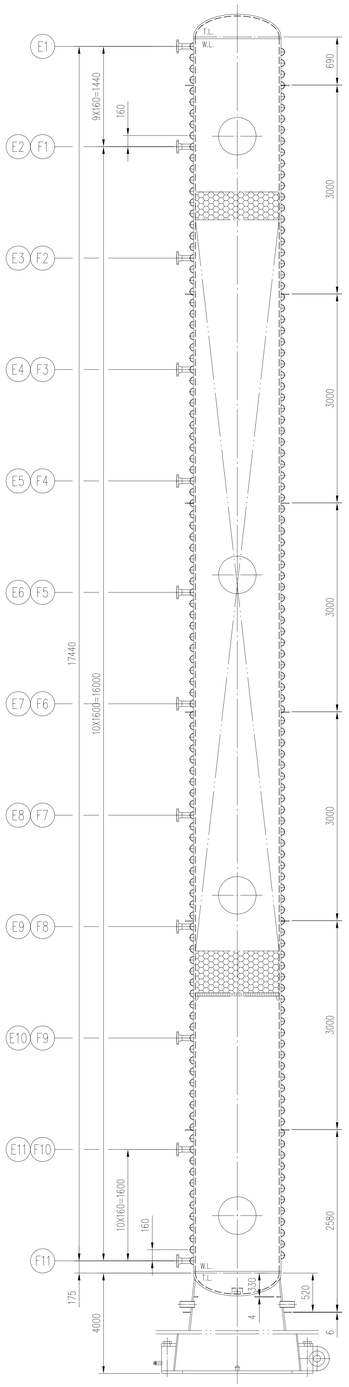
注 NOTES：1）除图面另有注明外，筒体上接管长度是按设备中心线到法兰平面的距离。
EXCEPT INDICATED ON THE DWG. THE PROJECTION IS THE DIMENSION FROM FLANGE SURFACE TO EQUIPMENT CENTER LINE.

接管载荷表
NOZZLE LOAD TABLE

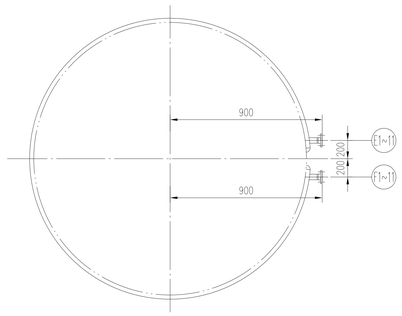
接管 NOZZLE	P (N)	VC / V1 (N)	VL / V2 (N)	MC / M1 (N·m)	MT / M4 (N·m)	ML / M2 (N·m)
N01(80%)	10240	7680	10240	4096	6144	5325
N05(80%)	10240	7680	10240	4096	6144	5325
--	--	--	--	--	--	--
--	--	--	--	--	--	--
--	--	--	--	--	--	--



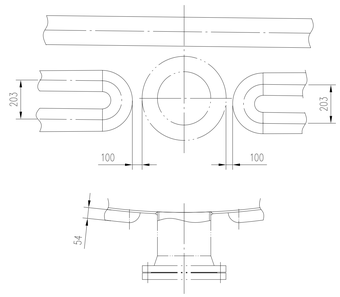
| 版次 REV. | 日期 DATE | 说明 DESCRIPTION | 设计 DSGD | 校核



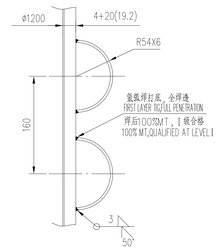
伴热盘管俯视详图
TOP VIEW DETAILS OF HEATING COIL
不按比例 NO SCALE



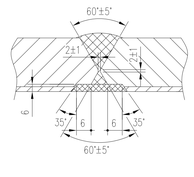
盘管遇大接管或吊耳示意图
SCHEMATIC DIAGRAM OF COIL PIPE MEETING LARGE NOZZLE OR LITTING LUG
不按比例 NO SCALE



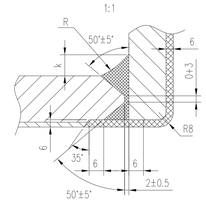
伴热盘管示意图
SCHEMATIC DIAGRAM OF HEATING COIL
不按比例 NO SCALE



A、B类焊接接头
"A" & "B" JOINT OF SHELL
1:1

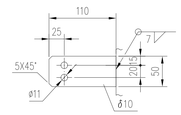


接管与壳体焊接接头
NOZZLE JOINT TO SHELL
1:1

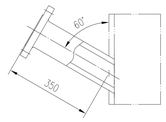


注：N01,N05口，k≥15mm
其余口，k≥6mm

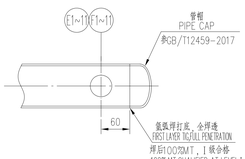
接地板详图
DETAIL OF EARTH PLATE
1:4



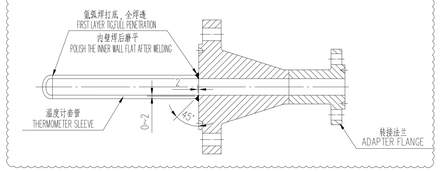
C33,C42口侧装压力计接管示意图
SCHEMATIC DIAGRAM OF SIDE-MOUNTED PRESSURE GAUGE NOZZLE
不按比例 NO SCALE



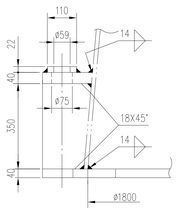
伴热蒸汽入口/出口端部示意图
SCHEMATIC DIAGRAM OF INLET/OUTLET END OF HEAT TRACING STEAM
不按比例 NO SCALE

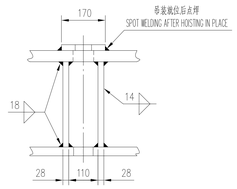


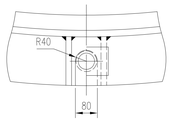
C10,C19转接法兰与温度计套管连接详图
DETAIL OF C10,C19 CONNECTION BETWEEN ADAPTER FLANGE AND THERMOMETER SLEEVE
不按比例 NO SCALE



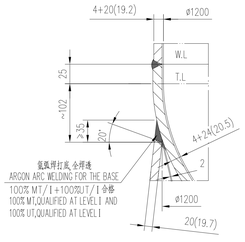
地脚螺栓座详图
DETAIL OF THE ANCHOR BOLT BASE
不按比例 NO SCALE



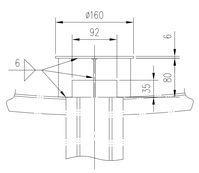




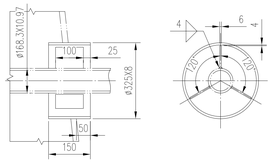
裙座与封头连接结构
SKIRT AND HEAD CONNECTION STRUCTURE
不按比例 NO SCALE



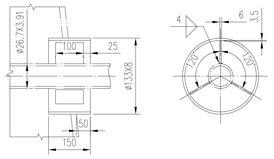
D01口防涡流挡板详图
DETAIL OF D01 ANTI-VORTEX PLATE
不按比例 NO SCALE



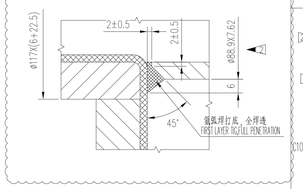
D01口引出孔结构详图
DETAIL OF D01 OUTLET HOLE STRUCTURE
不按比例 NO SCALE



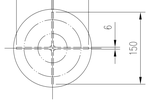
I1口引出孔结构详图
DETAIL OF I1 OUTLET HOLE STRUCTURE
不按比例 NO SCALE



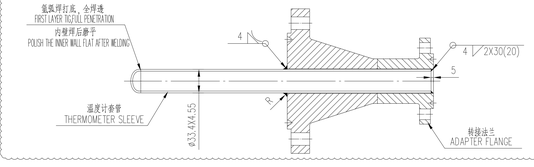
N03口内接管与锻管焊接接头
N03 INTERNAL PIPE JOINT TO FORGED PIPE
不按比例 NO SCALE



N07口把手详图
DETAIL OF N07 HANDLE
不按比例 NO SCALE



C11~18转接法兰与温度计套管连接详图
DETAIL OF C11~18 CONNECTION BETWEEN ADAPTER FLANGE AND THERMOMETER SLEEVE
不按比例 NO SCALE



特性表 CHARACTERISTIC TABLE								
	型式 TYPE	规格 SIZE	堆积密度 DENSITY kg/m³	高度 HEIGHT	层数 LAYERS	体积 VOLUME m³		
填料 PACKING	催化剂	圆柱形	1000*	10500*	1	11.88		
	鲍尔环	--	591*	350*	1	0.4		
	瓷球	ø6*	1300~1400*	50*	1	0.06		
	瓷球	ø9*	1300~1400*	50X2*	2	0.06X2		
	瓷球	ø16*	1300~1400*	100*	1	0.12		
	瓷球	ø25*	1300~1400*	400*	1	0.46		

01	ASME B16.5-2020	法兰 3/4"-CLASS150 WN/RF Sch80S FLANGE	1	S30403Ⅲ		0.91	
	GB/T12459-2017	弯头 DN20-Ⅰ-3.91 90EL ELBOW	1	S30403		0.14	
		接管 ø26.7X3.91 L=170 PIPE	1	S30403		0.38	
I1		引出管 ø133X8 L=150 OUTLET PIPE	1	20		3.7	
		筋板 100X41X6 RIB	3	S30403	0.2	0.6	
	ASME B16.5-2020	法兰 3/4"-CLASS150 WN/RF Sch80S FLANGE	1	S30403Ⅲ		0.91	
		接管 ø26.7X3.91 L=725 PIPE	1	S30403		1.6	
E1~11, F1~11	GB/T12459-2017	弯头 DN100-Ⅱ-6 180ES PIPE	25	Q345D	4.8	120	一分为二 DIVIDE INTO TWO
	GB/T12459-2017	管帽 DN100-Ⅱ-6 C PIPE CAP	11	Q345R	4.2	46.2	一分为二 DIVIDE INTO TWO
		半圆盘管 ø108X6 COIL	1/10	Q345R		3290	L≈36m/40m
		接管 ø33.4X4.55 L=202 PIPE	22	Q345D	0.65	14.3	
	ASME B16.5-2020	法兰 1"-CLASS300 WN/RF Sch80 FLANGE	22	16MnⅢ	1.82	40.04	
SA1~2		检查孔 ø482X16 L=250 CHECK HOLE	2	Q345R	46	92	
SV1~4		排气管 ø89X4 L=210 EXHAUST PIPE	4	20	1.76	7.04	
C31~C33, C41~42, C51~54, C61~62	HG/T20634-2009	螺母 M16 NUT	112	30CrMoA	0.05	5.6	
	HG/T20634-2009	小螺纹螺柱 M16X130 FULL THREADED STUD	56	35CrMoA	0.2	11.2	
	ASME B16.5-2020	法兰盖 2"-CLASS600 BL/RJ BLIND FLANGE	7	S31603Ⅲ	4.6	32.2	
	HG/T20633-2009	椭圆金属环垫 50-600 METALLIC RING JOINT GASKETS	7	S31603	/	/	
	JKB-R2502-04	转接法兰 2"/3" ADAPTER FLANGE	7	组合件 ASSEMBLY	13.8	96.6	C31~C33 C41~42,C61~62
	HG/T20634-2009	螺母 M20 NUT	176	30CrMoA	0.101	17.78	
	HG/T20634-2009	小螺纹螺柱 M20X160 FULL THREADED STUD	88	35CrMoA	0.38	33.44	
	JKB-R2502-03	法兰盖 3" BLIND FLANGE	4	16MnⅢ等同S31603	10	40	C51~54
	HG/T20633-2009	椭圆金属环垫 80-600 METALLIC RING JOINT GASKETS	11	S31603	/	/	
	JKB-R2502-04	法兰 3" FLANGE	3	16MnⅢ等同S31603	25	75	C31,C32,C41
	JKB-R2502-03	法兰 3" FLANGE	6	16MnⅢ等同S31603	23	138	C51~54,C61~62
	JKB-R2502-04	法兰 3" FLANGE	2	16MnⅢ等同S31603	30	60	C33,C42
C10~19	GB/T12459-2017	管帽 DN25-Ⅰ-4.55 C PIPE CAP	8	S31603	0.2	1.6	C11~18
	GB/T12459-2017	管帽 DN40-Ⅰ-7.11 C PIPE CAP	2	S31603	0.3	0.6	C10,C19
		温度计套管 ø48.3X7.11 L=900 THERMOMETER SLEEVE	1	S31603		6.6	C19
		温度计套管 ø33.4X4.55 L=1195 THERMOMETER SLEEVE	8	S31603	4	32	C11~18
		温度计套管 ø48.3X7.11 L=926 THERMOMETER SLEEVE	1	S31603		6.8	C10
	HG/T20634-2009	螺母 M20 NUT	80	30CrMoA	0.101	8.08	
	HG/T20634-2009	小螺纹螺柱 M20X130 FULL THREADED STUD	40	35CrMoA	0.31	12.4	
	ASME B16.5-2020	法兰盖 1 1/2"-CLASS600 BL/RJ BLIND FLANGE	10	S31603Ⅲ	3.7	37	
	HG/T20633-2009	椭圆金属环垫 40-600 METALLIC RING JOINT GASKETS	10	S31603	/	/	
	HG/T20634-2009	螺母 M24 NUT	160	30CrMoA	0.177	28.3	
	HG/T20634-2009	小螺纹螺柱 M24X180 FULL THREADED STUD	80	35CrMoA	0.612	49	
	JKB-R2502-05	转接法兰 1 1/2"/4" ADAPTER FLANGE	10	组合件 ASSEMBLY	24.5	245	
	HG/T20633-2009	椭圆金属环垫 100-600 METALLIC RING JOINT GASKETS	10	S31603	/	/	
	JKB-R2502-05	法兰 4" FLANGE	9	16MnⅢ等同S31603	43.5	391.5	C11~19
	JKB-R2502-05	法兰 4" FLANGE	1	16MnⅢ等同S31603		43	C10
M01~04	JKB-R2502-04	内部挡板 INTERNAL BAFFLE	2	组合件 ASSEMBLY	15.82	31.64	M02,M03
	JKB-R2502-06	人孔 20 MANHOLE	4	组合件 ASSEMBLY	960	3840	
D01		外接管 ø168.3X10.97 L=765 OUTER PIPE	1	S30403		33	
	GB/T12459-2017	弯头 DN150-Ⅰ-10.97 90ES OUTER ELBOW	1	S30403		10.3	
		外接管 ø168.3X10.97 L=290 OUTER PIPE	1	S30403		12.5	
		异径接头 DN146/DN91 δ=10 L=50 REDUCING PIPE	2	S30403	2	4	
		引出管 ø325X8 L=150 OUTLET PIPE	1	20		9.5	
		筋板 100X66X6 RIB	3	S31603	0.32	0.96	
	ASME B16.5-2020	法兰 3"-CLASS600 WN/RJ FLANGE	1	S31603Ⅲ		8.17	
		内接管 ø88.9X7.62 L=895 INNER PIPE	1	S31603		13.8	
	GB/T12459-2017	内弯头 DN80-Ⅰ-7.62 90EL INNER ELBOW	1	S31603		2.8	
		内接管 ø88.9X7.62 L=423 INNER PIPE	1	S31603		6.5	
D01	HG/T20634-2009	螺母 M20 NUT	16	30CrMoA	0.101	1.616	
	HG/T20634-2009	小螺纹螺柱 M20X165 FULL THREADED STUD	8	35CrMoA	0.4	3.2	
	参ASME B16.5-2020	下法兰 3"-CLASS600 WN/FF LOWER FLANGE	1	S31603Ⅲ		16.4	
	JKB-R2502-04	焊唇密封环 WELDING LIP SEALING RING	2	S31603	0.8	1.6	
	JKB-R2502-04	上法兰 3" UPPER FLANGE	1	16MnⅢ等同S31603		20.5	
		筋板Ⅱ δ=6 RIB Ⅱ	1	S31603		0.45	
		筋板Ⅰ δ=6 RIB Ⅰ	2	S31603	023	0.46	
		防涡流挡板 ø160X6 BREAKING VORTEX PLATE	1	S31603		1	
V01	HG/T20634-2009	螺母 M20 NUT	16	30CrMoA	0.101	1.616	
	HG/T20634-2009	小螺纹螺柱 M20X160 FULL THREADED STUD	8	35CrMoA	0.38	3.04	
	JKB-R2502-04	转接法兰 1 1/2"/3" ADAPTER FLANGE	1	组合件 ASSEMBLY		12.8	
	HG/T20633-2009	椭圆金属环垫 80-600 METALLIC RING JOINT GASKETS	1	S31603		/	
	JKB-R2502-04	法兰 3" FLANGE	1	16MnⅢ等同S31603		25	
	JKB-R2502-04	内部挡板 INTERNAL BAFFLE	1	组合件 ASSEMBLY		2.36	
	未图	肋板 ø16 HANDLE	2	Q235B	0.38	0.76	同图200 INTERNAL-200
N07	HG/T20634-2009	螺母 M30 NUT	24	30CrMoA	0.322	7.728	
	HG/T20634-2009	小螺纹螺柱 M30X235 FULL THREADED STUD	12	35CrMoA	1.3	15.6	2
	HG/T20633-2009	椭圆金属环垫 200-600 METALLIC RING JOINT GASKETS	1	S31603		/	
	JKB-R2502-03	法兰盖 8" BLIND FLANGE	1	16MnⅢ等同S31603		66.5	
	JKB-R2502-03	锻管 8" FORGED PIPE	1	16MnⅢ等同S31603		65	
	JKB-R2502-03	法兰 8" FLANGE	1	16MnⅢ等同S31603		57	
N05	JKB-R2502-03	锻管 8" FORGED PIPE	1	16MnⅢ等同S31603		38	
	JKB-R2502-03	法兰 8" FLANGE	1	16MnⅢ等同S31603		57	
N04	JKB-R2502-04	法兰 1" FLANGE	1	16MnⅢ等同S31603		25	
	ASME B16.5-2020	内法兰 2"-CLASS150 WN/RF Sch80S INTERNAL FLANGE	1	S31603Ⅲ		2.72	N03
		异径接头 DN74/DN49 δ=6 L=80 REDUCING PIPE	1	S31603		3.5	N03 2
		内接管 ø88.9X7.62 L=106 INTERNAL PIPE	1	S31603		3.5	N03
N02, N03	HG/T20634-2009	螺母 M20 NUT	32	30CrMoA	0.101	3.232	
	HG/T20634-2009	小螺纹螺柱 M20X160 FULL THREADED STUD	16	35CrMoA	0.38	6.08	
	JKB-R2502-04	转接法兰 2"/3" ADAPTER FLANGE	2	组合件 ASSEMBLY	13.8	27.6	
	HG/T20633-2009	椭圆金属环垫 80-600 METALLIC RING JOINT GASKETS	2	S31603	/	/	
N01	JKB-R2502-03	法兰 3" FLANGE	2	16MnⅢ等同S31603	23	46	
	JKB-R2502-03	锻管 8" FORGED PIPE	1	16MnⅢ等同S31603		43	
	JKB-R2502-03	法兰 8" FLANGE	1	16MnⅢ等同S31603		57	
22	JKB-R2502-05	尾耳 TAILING LUG	1	组合件 ASSEMBLY		34	
21		支管管 ø133X8 L=1780 SUPPORT PIPE	1	20		44	
20		塔外预焊件 PRE-WELDED COMPONENTS OUTSDE THE TOWER	1	组合件 ASSEMBLY		~300	HOLD
19		加强圈 120X10 STRENGTHENING RING	6	Q235B	59	354	见注11 NOTE 11
18		塔内件（仅焊接） COMPONENTS INSIDE THE TOWER (ONLY WELD)	1	组合件 ASSEMBLY		/	见注3 NOTE 3
17	HG/T21574-2018	吊耳 SP-8-35 LIFTING LUG	2	组合件 ASSEMBLY	69	138	
16	JKB-R2502-05	导筒 GUIDE CYLINDER	1	组合件 ASSEMBLY		65.5	
15	GB/T5330-2003	丝网 CFW 10.0/2.0(平纹) WIRE MESH	3层 3 LAYERS	S31603		/	
14	JKB-R2502-02	支撑格栅组件 SUPPORT GRID COMPONENT	1	组合件 ASSEMBLY		440	
13		筒体 ID1200 δ=4+20 L=17700 SHELL	1	S31603+Q345R		12845	
12	GB/T25198-2023	封头 EHA1200X4+24(20.5) HEAD	2	S31603+Q345R	373	746	h=25
11		裙座保温圈 W=60 δ=4 TYPE Ⅳ INSULATION SUPPORT	1	Q235B		7	
10	060-STD-EQ12.01	Ⅰ型保温圈 W=100 δ=6 TYPE Ⅰ INSULATION SUPPORT	1	Q235B		20	
9		裙座筒体 ID1200/OD1800 δ=20 L=3858 SKIRT SHELL	1	Q345R		2900	
8	STD-EQ-001.1	压力容器铭牌 NAMEPLATE	1	S30408		0.25	
7	STD-EQ-001.20	铭牌托架（Ⅰ型）-V-50 NAMEPLATE BRACKER	1	组合件 ASSEMBLY		2.19	
6		垫板 110X170X22 PAD PLATE	16	Q345R	2.8	44.8	
5		盖板 ø2160/ø1780X40 COVER PLATE	1	Q345R		370	
4		筋板 4Z-28 RIB PLATE	32	Q345R	13.7	438.4	
3		接地板 EARTH PLATE	2	S30408	0.43	0.86	
2		基础环板 ø2160/ø1600X40 BASE RING PLATE	1	Q345R		515	
1	JKB-R2502-01	基础模板 BASIC TEMPLATE	1	组合件 ASSEMBLY		247	

件号 NO.	图号或标准号 DWG. NO. OR STD. NO.	名称 DESCRIPTION	数量 QTY.	材料 MATERIAL	单重 SINGL. WGHT. 总重 TOTAL WGHT. 质量 MASS (kg)	备注 REMARKS

版次 REV.	日期 DATE	说明 DESCRIPTION	设计 DSGD	校核 CHEKD	审核 APPRD	批准 AUTHD	标准化 STANDARDIZATION
2	2025.5.7	按5.7审图意见	张海建	张海建	张海建	张海建	
1	2025.4.16	按4.15审图意见					
0	2025.2.20	按工程图 REV.D00					

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江阴市科博机械有限公司
Jiangyin Kebo Machinery Co.,Ltd.

图名 DRAWING NAME	第二加氢反应器 装配图/ASSEMBLY DRAWING ITEM NO: R-2301B	用户 CLIENT	PT PETRO OXO NUSANTARA
		项目 PROJ.	30000 TPA NEOPENTYL GLYCOL PROJECT
		装置 PLANT	Neopentyl Glycol Plant
比例 SCALE	1：35 第 2 张，共 8 张 PAGE 2 OF 8	图号 DRAWING NO.	JKB-R2502-00(2/2)