

DETAIL OF A-1-A-4, B-1-B-2

DETAIL OF C-1-C-5

X-X

NOTE

1. 垫片为KAMMPROFILE(或FLEXITALLIC或LAMONS)垫片, 由3mm厚SS316L金属板和不大于0.5mm厚的石墨层组成。The gasket is KAMMPROFILE (either FLEXITALLIC or LAMONS make), thickness of peripheral gaskets shall be 3mm+0.5mm+0.5mm graphite layers in both sides, serrated metal material is SS316L.
2. 垫片系数: Gasket factor is m=2. y=2500 psi(17.234MPa).
3. 所有设备法兰密封面, 包括分程隔板表面, 均须有0.125"名义加工余量。Future Machining allowance of 0.125" has been considered on all girth flanges gasket seating face (including Pass-partition surface).
4. 所有设备法兰密封面, 分程隔板密封面, 平面度均为0.006"。The flatness of gasket seating peripheral surface on body flanges (tolerance shall be ±0.006" as per API 650 clause 5.8.3).

As Built

23	管箱法兰 2 SHELL FLANGE	1	SA-266 Gr.2H	160
22	ASME B18.2.1-2012(R2021) 全螺纹螺栓 1 1/4"-8UNF-2A L=450 FULL THREADED STUD BOLTS	24-3	SA-193 Gr. B7M	2.2
21	管箱法兰 1/8" IMPINGEMENT PLATE	1	SA-516 Gr.70N HIC	7.5
				TOTAL: 2495 kg

序号 PART NO.	图号或标准号 DWG. NO. OR STD. NO.	名称 DESIGNATION	数量 QTY.	材料 MATERIAL	重量(kg) WEIGHT	备注 REMARKS
20		带肩螺栓 1 1/4"-8UNF-2A COLLAR BOLTS	6-2	SA-193 Gr. B7M	2.8	11.2
19		管箱法兰 2 DOWELL PINS 2	2	SS-304	0.3	0.6
18		管箱法兰 1 DOWELL PINS 1	4	SS-304	0.2	0.8
17		管箱法兰 5/8"-11UNC L=115 JACK SCREWS	12	SA-479 304	0.2	2.4
16		分程隔板 1/2" PASS PARTITION	1	SA-516 Gr.70N		33.4
15		分程隔板 1/2" PASS PARTITION	2	SA-516 Gr.70N	16.0	32.0
14		2-1 椭圆封头 2-1 ELLIPTICAL HEAD	1	SA-516 Gr.70N HIC		48.5
13		壳程筒体 ID.550X16 L=4432 SHELL	1	SA-516 Gr.70N HIC		960
12	ASME B18.2.2-2022	重型六角螺母 1 1/4"-8UNF-2B HEX HEAVY NUTS	92+25	SA-194 Gr.2H	0.4	76.8
11	ASME B18.2.1-2012(R2021)	全螺纹螺栓 1 1/4"-8UNF-2A L=450 FULL THREADED STUD BOLTS	18+2	SA-193 Gr. B7M	2.6	52.0
10		壳程法兰 SHELL FLANGE	2	SA-266 Gr.2H	153	306
9		壳程垫片 SHELL GASKET	2+4	见注1/SEE NOTE 1		
8		管箱法兰 CHANNEL FLANGE	1	SA-266 Gr.2H		153
7		管箱筒体 ID.550X12 L=400 CHANNEL SHELL	1	SA-516 Gr.70N		66.5
6		管箱法兰 CHANNEL FLANGE	1	SA-266 Gr.2H		145
5		管箱垫片 CHANNEL GASKET	2+4	见注1/SEE NOTE 1		
4		平盖 FLAT COVER	1	SA-266 Gr.2H		255
3	ASME PCC-1-2018 APPENDIX M	硬面垫圈 1 1/4" HARDENED CIRCLE WASHER	128+18	TYPE 4	0.1	12.8
2	ASME B18.2.2-2022	重型六角螺母 1 1/4"-8UNF-2B HEX HEAVY NUTS	64+6	SA-194 Gr.2H	0.4	25.6
1	ASME B18.2.1-2012(R2021)	全螺纹螺栓 1 1/4"-8UNF-2A L=325 FULL THREADED STUD BOLTS	16+2	SA-193 Gr. B7	2.0	32.0
				重量(kg) TOTAL WEIGHT		
				备注 REMARKS		

WCE 无锡化工装备股份有限公司
WUXI CHEMICAL EQUIPMENT CO., LTD.

设计/DESIGN: 2023.6.30
校核/REVIEW: 2023.6.30
批准/APPROVED: 2023.6.30

客户/CLIENT: WORLD ENERGY PARAMOUNT
客户文档号/CLIENT DOC NO.: /

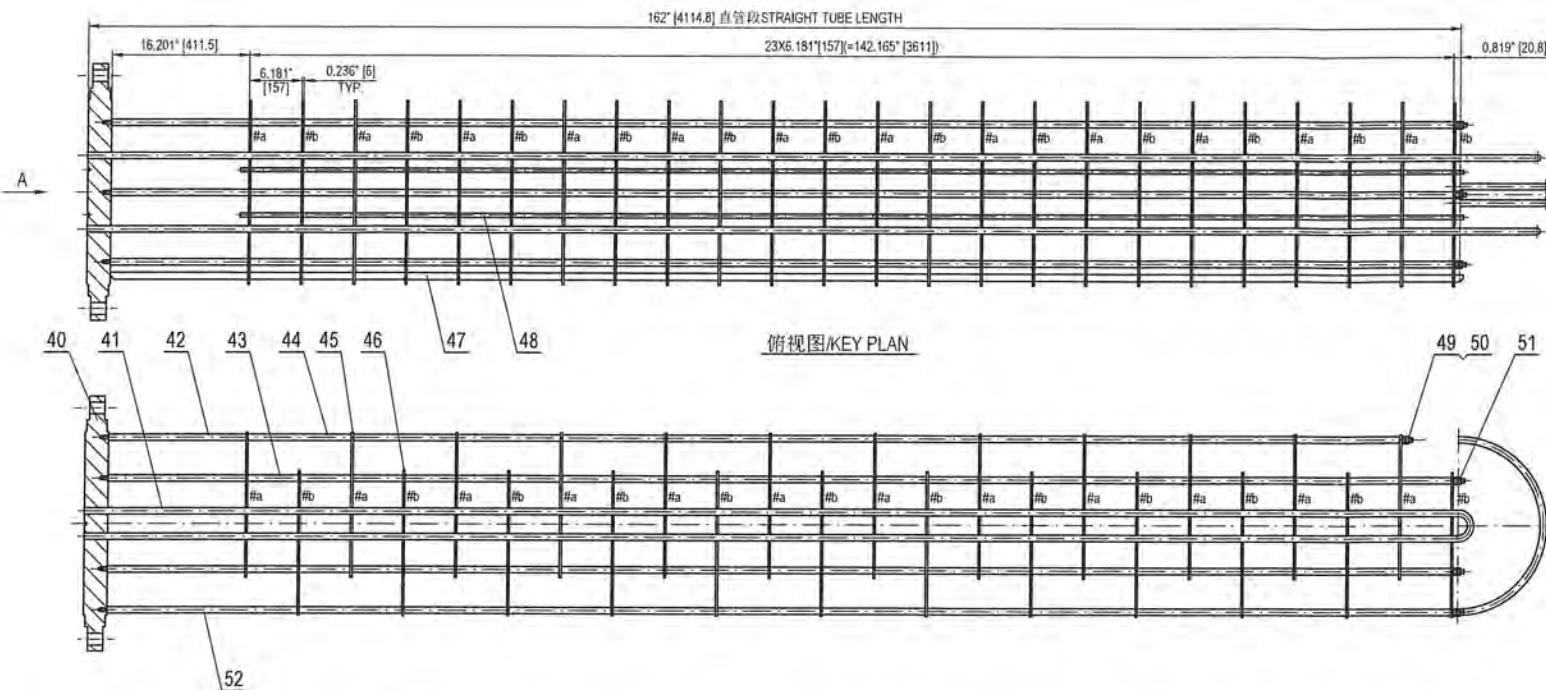
项目/PROJECT: 世界能源可再生项目
项目区域/PROJECT AREA: /

设计/DESIGN: 2023.6.30
校核/REVIEW: 2023.6.30
批准/APPROVED: 2023.6.30

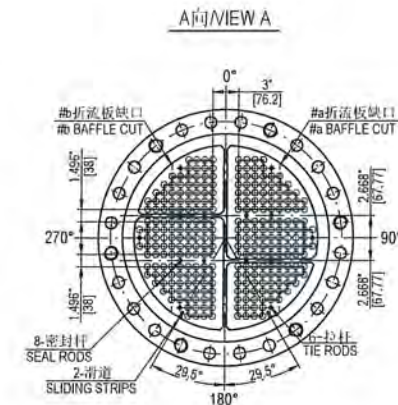
图号/ITEM NO.: WACE602-01
图名/ITEM NAME: SHELL DETAIL DRAWING

比例/SCALE: 1:1
页码/PAGE: 1 OF 1

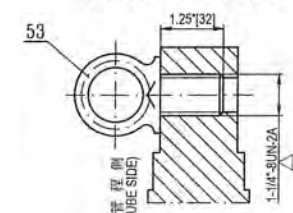
主视图/ELEVATION VIEW



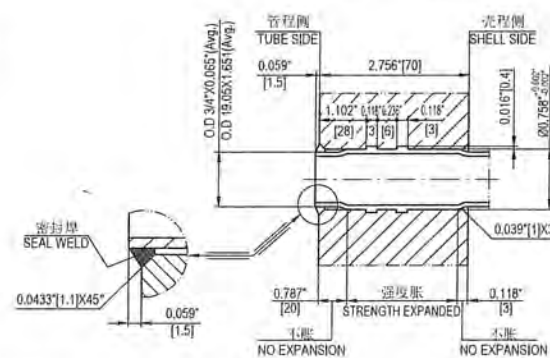
俯视图/KEY PLAN



吊环螺栓安装详图
EYE BOLTS ASSEMBLY DETAIL

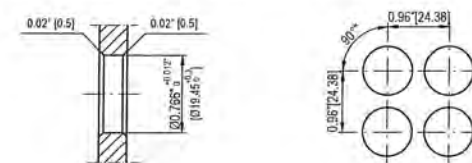


换热管与管板连接详图
TAIL OF TUBES TO TUBESHEET

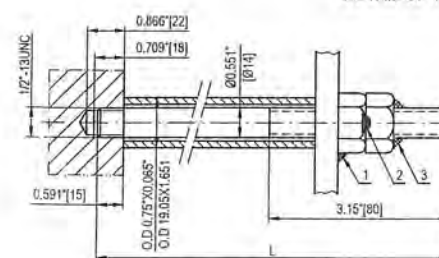


折流板管孔详图
DETAIL OF BAFFLE PLATE TUBE HOLE

换热管布置详图
DETAIL OF TUBE LAYOUT

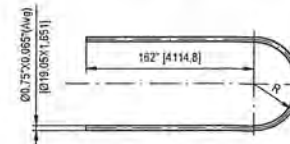


拉杆详图
DETAIL OF TIE ROD



1. 第1个螺母与支撑板相焊/Weld 1st nut to support plate
2. 第 1 个螺母与支撑杆相焊/Weld 2nd nut to tie rod
3. 两个螺母焊在一起/Weld both nuts together
4. 所有螺母平衡延长方向的焊接不得与热交换管相碰。
All welds to extend the length of one flat of nut ground clip
must not be in contact with tubes,

换热管尺寸表 TUBES CHART



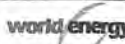
序号 NO.	弯曲半径R(mm) BEHINDING R(mm)	单根机匣长度(mm) TOTAL LENGTH	数量 QTY.	单重(Kg) UNIT WEIGHT	总重(g) TOTAL WEIGHT	表面处理 SOLUTION ANNEAL
1	1.5' [38.1]	326.74' [8350]	19	6.1	116	YES/哑
2	2.48' [62.48]	331.73' [8426]	19	6.1	116	YES/哑
3	3.42' [86.87]	334.76' [8503]	19	6.2	118	YES/哑
4	4.38' [111.25]	337.80' [8580]	19	6.2	118	YES/哑
5	5.34' [135.64]	340.79' [8656]	15	6.3	94.5	YES/哑
6	6.3' [160.02]	343.82' [8733]	15	6.3	94.5	YES/哑
7	7.25' [184.4]	346.81' [8809]	13	6.4	83.2	YES/哑
8	8.22' [208.79]	349.84' [8886]	11	6.4	70.4	YES/哑
9	9.18' [233.17]	352.87' [8963]	9	6.5	58.5	YES/哑
10	10.14' [257.56]	355.87' [9039]	2	6.6	13.2	YES/哑

注:NOTE:

1. All tubes shall be one piece without circumferential & longitudinal weld seams. 所有热交换管应为无缝管, 并不得拼焊。
2. The tubes shall supplied as average thickness, the tolerance shall be $\pm 0\%$. 管径应按照平均尺寸提供, 壁厚公差为 $\pm 0\%$ 。
3. 100% Eddy current testing shall be performed on bundle tubes at mill. 热交换管在出厂前须进行100%涡流检测。
4. Flattening tolerances after bending of U-tubes shall not exceed 10 % of the tube outside diameter. U形热交换管弯曲后壁厚变化率不得超过外径的10%。
5. Tube wall thinning ratio of the U bends should not exceed $\Delta d/\Delta R$ original tube wall thickness. Where Δd is outside wall diameter. R is mean radius of bend. U形管的减薄率不得超过 $\Delta d/\Delta R$, 其中 Δd 为壁厚减薄量; R是U形管弯曲半径。
6. Tube U-bends for duplex SS shall receive post bend solution annealing heat treatment. Heat treatment shall use electric clamp methods, and the procedure shall be submitted to Buyer for approval. Furnace heat treatments are not allowed. 所有双相不锈钢U形管应进行后弯退火处理。热处理应采用电加热的方式, 其退火工艺须提交买方批准并得到批准后方可实施。
7. Each U tubes shall be hydro tested after bending. U形热交换管在弯曲后须进行水压试验。

As Built

							TOTAL 1285 kg	
53	参照REFER TO CROSBY S-279	吊环螺栓 1 1/4"-8UN B=32 EYE BOLT	2		SS304		1.5	3.0
52		起重管 Ø19.05X1.651 L=568.5 SPACERS	1		SA-213 TP304		0.1	8.0
51		拉杆 Ø14 L=4085 TIE RODS	5		SA-479 304		5.0	25.0
50	ASME B18.2-2-2022	六角螺母 1/2"-13UNC-2B HEX NUT	12		SA-194 Gr.8		0.05	0.6
49		拉杆 Ø14 L=3925 TIE RODS	1		SA-479 304			4.9
48		密封杆 Ø10 SEAL RODS	8		SA-479 304		2.3	16.4
47		滑道 t=8 SLIDING STRIPS	2		SA-240 304		5.2	10.4
46		曲折隔板 BAFFLE t=5	12		SA-240 304		5.0	60.0
45		曲折隔板 BAFFLE t=6	12		SA-240 304		5.0	60.0
44		定距管 Ø19.05X1.651 L=308 SPACERS	22		SA-213 TP304		0.22	4.9
43		定距管 Ø19.05X1.651 L=151 SPACERS	92		SA-213 TP304		0.11	10.2
42		定距管 Ø19.05X1.651 L=411.5 SPACERS	5		SA-213 TP304		0.3	1.5
41		换热管 Ø19.05X1.651 (Avg) TUBES	141U		SA-788 S32205			682
40		管板 TUBESHEET	1		SA-182 F60			195
件 号 PART NO	图号或标准号 DWG. NO. OR STD. NO.	名 称 DESIGNATION	数量 QTY.		材 料 MATERIAL		总重量 (kg) TOTAL WEIGHT	备 注 REMARKS

					
Air Products Project Number /		Fluor Project Number /		ABKM	
Project Name		World Energy Renewables Project		RFQ No. ABKM-4-110-RQ	
Purchase Order Number /		PO/Contract No /			
Air Products Open Text document number /		Project Area /			
Client		WORLD ENERGY PARAMOUNT		Client Doc No /	
06	竣工书/ISSUED FOR AS BUILT	Tingting Wen	Chengqian Yuan	Hu Yang	30-Jun-23
05	供批准/ISSUED FOR APPROVAL	Tingting Wen	Chengqian Yuan	Hu Yang	23-Jun-23
04	供批准/ISSUED FOR APPROVAL	Tingting Wen	Chengqian Yuan	Hu Yang	06-May-23
03	供批准/ISSUED FOR APPROVAL	Tingting Wen	Chengqian Yuan	Hu Yang	02-Mar-23
02	供批准/ISSUED FOR APPROVAL	Tingting Wen	Chengqian Yuan	Hu Yang	12-Dec-22
01	供批准/ISSUED FOR APPROVAL	Tingting Wen	Chengqian Yuan	Hu Yang	07-Oct-22
00	供批准/ISSUED FOR APPROVAL	Tingting Wen	Chengqian Yuan	Hu Yang	18-Jun-22
02/2	REV 版本说明/DESCRIPTION	设计/ PREPARED	审查/ REVIEWED	批准/ APPROVED	日期/ DATE

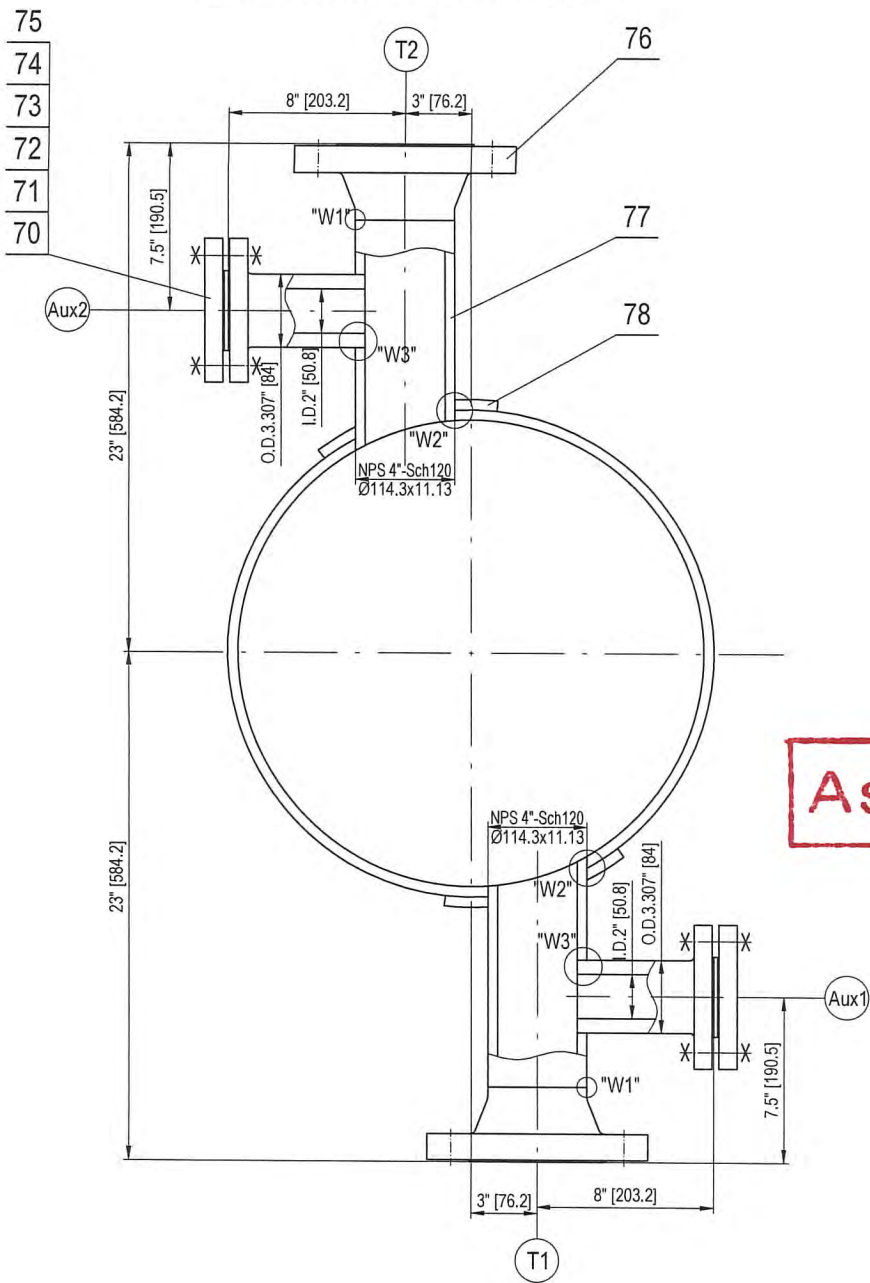
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WCE	无锡化工装备股份有限公司 WUXI CHEMICAL EQUIPMENT CO., LTD.	设计项目	World Energy
		DESIGN ITEM	Renewables Project
		设计阶段	详细设计
		DESIGN PHASE	Detailed Design

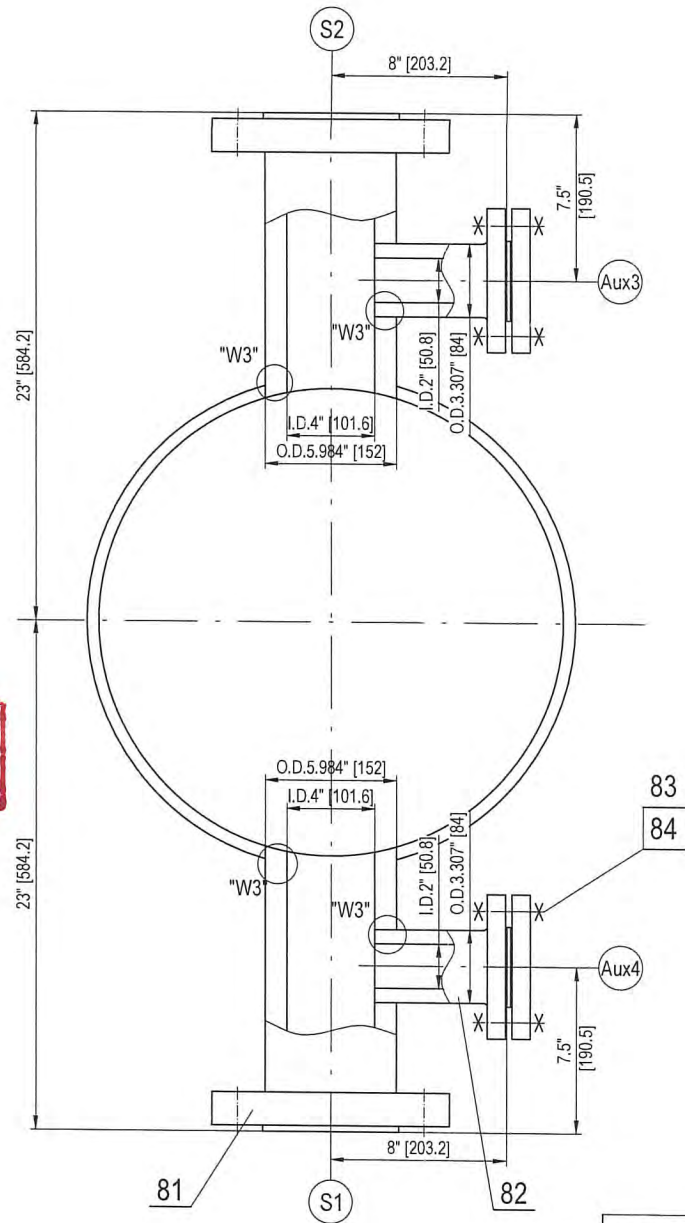
PREPARED	文建坤	2023.6.30	Inlet Cooler BUNDLE DETAIL DRAWING	设备位号	18-X-254
REVIEWED	袁竹松	2023.6.30		图号	WXCE828-02
APPROVED	松洲	2023.6.30		DWG. NO.	
				比例 1:1	第 1 页 共 1 页

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接管T1,T2,Aux1,Aux2详图
DETAIL OF NOZZLE T1,T2,Aux1,Aux2

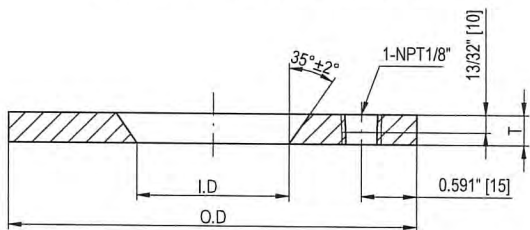


接管S1,S2,Aux3,Aux4详图
DETAIL OF NOZZLE S1,S2,Aux3,Aux4

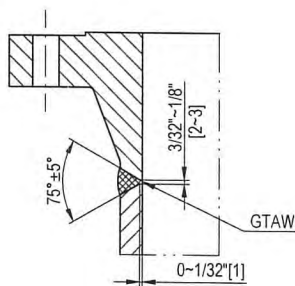


As Built

补强圈详图
DETAIL OF REINFORCEMENT PAD

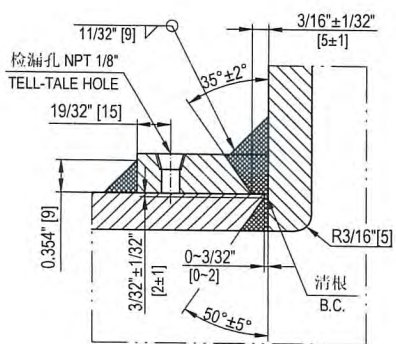


"W1"焊缝详图
DETAIL OF "W1" WELD

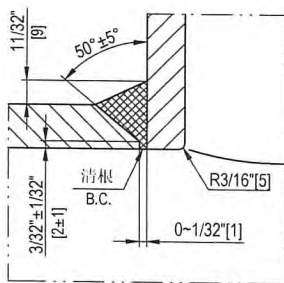


补强圈尺寸表 REINFORCEMENTS CHART					
件号 PART NO.	管口代号 NOZZLE MARK	外径 O.D.	内径 I.D.	厚度 T	备注 REMARKS
78	T1,T2	8.661\" [220]	4.921\" [125]	0.472\" [12]	整板下料 ONE PIECE
DELETE					

"W2"焊缝详图
DETAIL OF "W2" WELD



"W3"焊缝详图
DETAIL OF "W3" WELD



注/NOTE

1. 4.5mm厚316L缠绕垫, 填充带为柔性石墨, 内环为SS316L, 外环为SS316L; 垫片供应商应为Flexitallic styles CGI 或 Lamons styles WRI, WRI-LC.
4.5 mm thk. 316L Spiral Wound, Graphite Filled, SS316L inner and SS316L outer ring;
The gasket manufactures shall be Flexitallic styles CGI or Lamons styles WRI, WRI-LC.

					TOTAL : 160 kg		
84	ASME B18.2.2-2022	重型六角螺母 5/8"-11UNC-2B HEAVY HEX NUTS	64+8	SA-194 Gr.2HM	0.05	3.2	Aux3~4
83	ASME B18.2.1-2012(R2021)	全螺纹螺栓 5/8"-11UNC-2A L=150 FULL THREADED STUD BOLTS	16+2	SA-193 Gr.B7M	0.2	3.2	Aux3~4
82	ASME B16.5-2017	法兰 LWN 2"-300# RF B=50.8 FLANGE	2	SA-105N	7.2	14.4	Aux3~4
81	ASME B16.5-2017	法兰 LWN 4"-600# RF B=101.4 FLANGE	2	SA-105N	30.0	60.0	S1,S2
80		DELETE					
79		DELETE					
78		补强圈 REINFORCEMENT PAD	2	SA-516 Gr.70N	2.6	5.2	T1,T2
77		接管 Ø114.3X11.13 NOZZLE	2	SA-105N	7.2	14.4	T1,T2
76	ASME B16.5-2017	法兰 WN 4"-300# RF Sch120 FLANGE	2	SA-105N	12.5	25.0	T1,T2
75	ASME PCC-1-2019 APPENDIX M	硬质垫圈 5/8" HARDENED WASHER	64+8	TYPE 4	/	/	Aux1~4
74	ASME B18.2.2-2022	重型六角螺母 5/8"-11UNC-2B HEAVY HEX NUTS	64+8	SA-194 Gr.2H	0.05	3.2	Aux1~2
73	ASME B18.2.1-2012(R2021)	全螺纹螺栓 5/8"-11UNC-2A L=140 FULL THREADED STUD BOLTS	16+2	SA-193 Gr.B7	0.2	3.2	Aux1~2
72	ASME B16.20-2017	缠绕垫 2"-300# RF SPIRAL WOUND GASKET	4+8	见注 1/SEE NOTE1	/	/	Aux1~4
71	ASME B16.5-2017	法兰盖 BL 2"-300# RF BLIND FLANGE	4	SA-105N	3.2	12.8	Aux1~4
70	ASME B16.5-2017	法兰 LWN 2"-300# RF B=50.8 FLANGE	2	SA-105N	7.2	14.4	Aux1~2
件 号 PART NO.	图号或标准号 DWG. NO. OR STD. NO.	名 称 DESIGNATION	数量 QTY.	材 料 MATERIAL	单EACH 重量(kg) WEIGHT	总TOTAL 重量(kg) WEIGHT	备 注 REMARKS

AIR PRODUCTS		world energy		FLUOR®							
Air Products Project Number		/		Fluor Project Number		A8KM					
Project Name		World Energy Renewables Project		RFQ No.		A8KM-4-410-RQ					
Purchase Order Number		/		PO/Contract No		/					
Air Products Open Text document number		/		Project Area		/					
Client		WORLD ENERGY PARAMOUNT		Client Doc No:		/					
06	竣工版/ISSUED FOR AS BUILT		Tingting Wen	Chengqian Yuan	Hu Yang	30-Jun-23					
05	供批准/ISSUED FOR APPROVAL		Tingting Wen	Chengqian Yuan	Hu Yang	23-Jun-23					
04	供批准/ISSUED FOR APPROVAL		Tingting Wen	Chengqian Yuan	Hu Yang	06-May-23					
03	供批准/ISSUED FOR APPROVAL		Tingting Wen	Chengqian Yuan	Hu Yang	02-Mar-23					
02	供批准/ISSUED FOR APPROVAL		Tingting Wen	Chengqian Yuan	Hu Yang	12-Dec-22					
01	供批准/ISSUED FOR APPROVAL		Tingting Wen	Chengqian Yuan	Hu Yang	07-Oct-22					
00	供批准/ISSUED FOR APPROVAL		Tingting Wen	Chengqian Yuan	Hu Yang	18-Jun-22					
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				设计阶段 DESIGN PHASE		详细设计 Detail Design					
设计 PREPARED		文婷婷 2023.6.30		Inlet Cooler NOZZLE DETAIL DRAWING		设备位号 ITEM NO.		18-X-254			
审核 REVIEWED		袁晓东 2023.6.30				图号 DWG. NO.		WXCE6828-03			
批准 APPROVED		杨湖 2023.6.30				第 1 页 共 1 页 PAGE 1 OF 1					

标准铭牌详图



*1:  *2: 

NOTES

- *1:  *2: 

- ## As Built

ASME铭牌详图

☒ Reviewed / ☐ Witnessed

HUANG Jiangqiang NB14080 A
APAVE SA



Sign: 28/8 Date: 22.6.30
(Name):

TOTAL 6 kg

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无锡化工装备股份有限公司	设计项目 DESIGN ITEM	World Energy Equipment Project
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