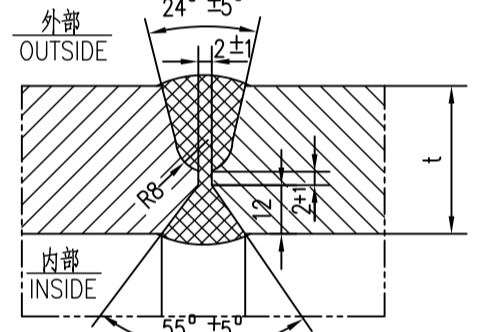


VIEW A ORIENTATION
A向管口方位图

DETAIL OF SADDLE BASE PLATE CONNECTION
鞍座连接详图(1:10)

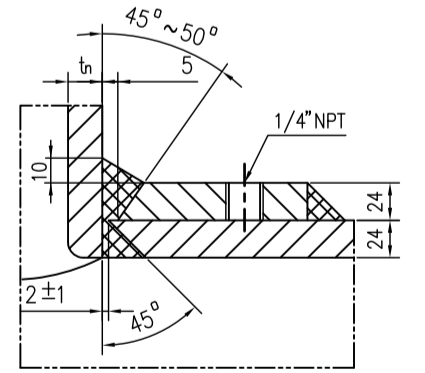
SHELL LONGITUDINAL CIRCUMFERENTIAL
JOINT & SHELL TO HEAD WELD DETAIL
筒体纵焊缝及筒体与封头焊接节点



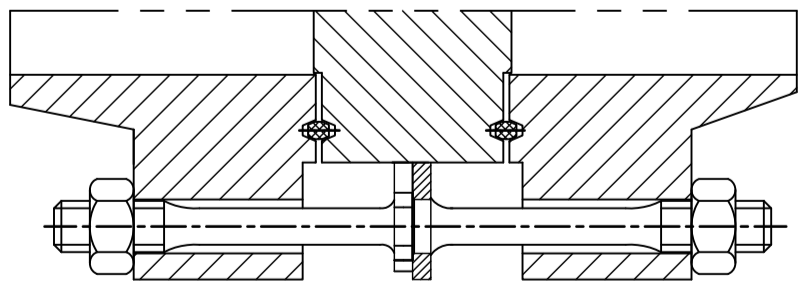
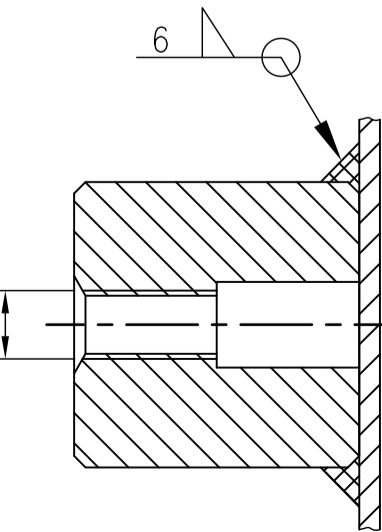
WELD NECK FLANGE DETAIL
法兰与接管焊接详图

NOZZLES WELD DETAIL
接管焊接详图

NOZZLES WITH REPAW WELD DETAIL
带补强圈的接管焊接详图



EARTHING BOSS WELD DETAIL
接地端子焊接详图



DETAIL I
详图 I

FOUNDATION DESIGN LOADS 基础设计载荷										
CASE	SLIDING SUPPORT					FIXED SUPPORT				
	F(kN)		M(kN.m)			F(kN)		M(kN.m)		
	FoHL	FoHT	Fov	ML	MT	FoHL	FoHT	Fov	ML	MT
WIND	1.02	3.72	/	0.69	2.51	1.02	3.72	/	0.69	2.51
SEISMIC	17.16	17.16	/	11.57	11.57	17.16	17.16	/	11.57	11.57
THERMAL	47.07	/	/	/	/	47.07	/	/	/	/
EMPTY WEIGHT	/	/	63.6	/	/	/	/	63.6	/	/
OPERATING	/	/	70.61	/	/	/	/	70.61	/	/
TEST	/	/	78.45	/	/	/	/	78.45	/	/

ALLOWABLE EXTERNAL LOADING OF NOZZLES 接管许用外载荷										
NOMINAL DIAMETER NPS mm	FLANGE GLASS	FORCES (kN)			MOMENTS (kN.m)			MATERIAL	QTY.	REMARK
		Fx	Fy	Fz	Mx	My				
10 250	600	12.840	15.730	15.730	19.460	13.760	13.760			
14 350	300	10.875	13.320	13.320	19.870	14.050	14.050			

MATERIAL 材料										
DESCRIPTION 名称	MATERIAL 材料	STANDARD 执行标准	APPLICATION CONDITION 使用状态	INSPECTION REQ. 检验要求	RATIO, MEANS 比例, 平均值	CRI ACC. 合格标准	MIN. TEMP. 最低温度	IMPACT ENERGY 冲击功	REMARKS 备注	
PLATE 板材	CYLINDER 筒体	SA-516 Gr.70	ASME II SA-516	NORMALIZED 正火						
	HEAD 封头	SA-516 Gr.70	ASME II SA-516	NORMALIZED 正火						
	SADD. WEAR 鞍座垫板	SA-516 Gr.70	ASME II SA-516	NORMALIZED 正火						
	SADD. SUPPORTS 鞍座支撑板	SA-36	ASME II SA-36	NORMALIZED 正火						
	FLANGES 法兰	SA-105	ASME II SA-105	NORMALIZED 正火						
	NOZZLE 接管	SA-105	ASME II SA-105	NORMALIZED 正火						
	TUBESHEET 管板	SA-266 2	ASME II SA-266	NORMALIZED 正火						
	PIPE 管材	SA-179	ASME II SA-179	NORMALIZED 正火						
	PIPE FITTINGS 管件									
	EXT. BOLTS 外螺栓	SA-193 Gr.B7	ASME II SA-193	DEQUENCHED 调质						
	EXT. NUTS 外螺母	SA-194 Gr.2H	ASME II SA-194	DEQUENCHED 调质						
	INT. BOLTS 内螺栓	SA-193 Gr.B7	ASME II SA-193	DEQUENCHED 调质						
	INT. NUTS 内螺母	SA-194 Gr.2H	ASME II SA-194	DEQUENCHED 调质						
	GASKETS 垫片	SOFT IRON	ASME B16.20							
	GASKETS 垫片	S.S.304+FG	ASME B16.20							

FABRICATION AND INSPECTION REQUIREMENT 制造与检验要求										
ADDITIONAL FABRICATION REQUIREMENT 附加制造技术要求										
PAINTING 油漆	PURPOSES 用途	PAINT TYPE 油漆类别	COLOR 颜色	DRY FILM THICKNESS 干膜厚度 (μm)	AREA 涂漆面积 (m²)	REMARKS 备注	NGP-000-PAI-15.03-0001-00			
	INTERIOR SURFACE 内涂漆	PRIMER 底漆								
		2ND COAT 中间漆								
		FINISH 面漆								
	EXTERIOR SURFACE 外涂漆	PRIMER COAT 底漆	DOUBLE BUILD ALKID ZINC PHOSPHATE PRIMER	light gray Ral 7035	40~50					
		MIDCOAT 中间漆	DOUBLE BUILD ALKID ZINC PHOSPHATE PRIMER	light gray Ral 7035	40~50					
		INTERMEDIATE COAT 中间漆	SYNTHETIC ALKID ENAMEL	light gray Ral 7035	25~30					
		FINISH COAT 面漆	SYNTHETIC ALKID ENAMEL	light gray Ral 7035	25~30					

- OTHER FABRICATION AND INSPECTION REQUIREMENTS 其他制造与检验要求
- UNLESS OTHERWISE NOTED, ALL DIMENSIONS ON THE DRAWINGS ARE IN MILLIMETER;
除注明者外, 图中所有尺寸单位为毫米;
 - ALL FLANGE BOLTHOLES SHALL STRADDLE THE PRINCIPAL CENTERLINES OF THE VESSEL;
所有法兰螺栓孔均须跨中布置;
 - UNLESS OTHERWISE NOTED, THE FORMED HEIGHT OF ALL LAP WELDS AND FILLET WELDS SHALL BE THE THINNER THICKNESS OF CONNECTING PLATES, AND SHOULD BE CONTINUOUS;
除注明者外, 所有搭接和角焊缝脚高均等于较薄板厚度, 且为连续焊;
 - ALL JOINTS TYPE SHALL BE DETERMINED BY FABRICATOR AND SHALL BE FULL PENETRATION.
所有焊接接头形式可由制造厂自行决定, 但须保证全焊透形式;
 - BEFORE HEAT TREATMENT ALL STRUCTURAL PARTS SHOULD BE WELDED TO EQUIPMENT;
AFTER HEAT TREATMENT, NO WELDED ON EQUIPMENT;
热处理前所有检查合格构件焊接于壳体内部及外部, 不得遗漏; 热处理后, 禁止在设备上施焊;
 - THE TUBE SHALL NOT ALLOW BUTT WELD. THE CHANNEL SHALL CARRY OUT OVERALL STRESS RELIEF HEAT TREATMENT AFTER WELDED;
换热管不允许拼焊; 管箱组焊完毕后应进行整体消除应力热处理;
 - HYDRAULIC TEST SHALL BE CONDUCTED ON EACH PIECE OF TUBE AND THE TEST PRESSRE SHALL BE 11.21 MPa;
U形换热管等制后应进行水压试验; 试验压力为 11.21 MPa;
 - EACH REINFORCING PAD SHALL HAVE A LEAK TEST HOLE LOCATED AT LEAST 45 DEGREES OFF THE LONGITUDINAL LINE OF THE VESSEL, LEAK TEST SHALL BE PERFORMED WITH >0.1 MPa DRY AIR PRIOR TO THE HYDROSTATIC TEST;
所有补强圈均应在水压试验前通入 >0.1 MPa 的压缩空气进行试漏, 试漏孔应位于容器纵向轴线 45 度以外;
 - HELIUM GAS LEAKAGE TEST SHALL BE CONDUCTED ON THE SHELL SIDE, TEST PRESSRE: 35KPa;
壳体侧需进行氦气检测; 试验压力 35KPa;
 - THE SEQUENCE OF HYDRAULIC TEST SHALL BE IN ACCORDING WITH THE REQUIREMENT OF TEMA, THE TEST PRESSURE CAN BE FOUND IN DESIGN DATA TABLE.
水压试验顺序按照 TEMA 标准执行; 水压试验压力详见技术数据表;
 - THE HYDROSTATIC TEST PRESSURE SHALL BE MAINTAINED FOR NOT LESS THAN 60 MINUTES AT EACH SIDE;
各侧水压试验保压时间不少于 60 分钟;
 - HOT INSULATION OF HEAT EXCHANGER SHALL BE IN ACCORDANCE WITH NGP-000-PIP-15.03-0004-00-C;
换热器的保温按 NGP-000-PIP-15.03-0004-00-C 的要求进行;
 - THE HEAT EXCHANGER SHALL BE THOROUGHLY CLEANED INSIDE AND OUTSIDE AND SHALL BE FREE FROM GREASE, WELD SPATTER, SCALE, SLAG, RUST AND ANY OTHER FOREIGN MATTER;
换热器制造完后内外应清理干净, 不得有油脂、焊渣、锈块等杂物;
 - AFTER COMPLETION OF ALL TEST AND INSPECTION THE HEAT EXCHANGER SHALL BE CLEANED, DRIED, ALL FINISHED SURFACES SHALL BE COATED WITH RUST PREVENTATIVES; ALL FLANGE FACING SHOULD BE PROTECTED WITH GASKET AND COVER PLATE (WATER TIGHT);
所有试验和检验完成后, 换热器必须清理干净并干燥; 所有加工面必须用防锈剂保护; 所有法兰面均须用防锈盖板保护;
 - CYLINDER INSIDE THE WELD RESIDUAL HIGH PURITY, SMOOTH;
筒体内侧焊缝余高应去除, 并打磨光滑;
 - SAFETY VALVE SHALL BE PROVIDED IN THE PIPELINES NEARBY THE EQUIPMENT TO ENSURE THE SAFETY RELIEF OF THE EQUIPMENT;
在换热器近管线上需设置安全阀, 以保证设备的安全泄放要求;

- NOTE: 注意
- THICKNESS OF HEAD IN THIS DRAWING ARE MIN. AFTER FINAL FORMATION;
圆头封头厚度为最终成型后的最小厚度;
 - ALL THE WEAR PLATE OF THE HEAT EXCHANGER SHALL HAVE M6 WEEP HOLES;
所有换热器上焊头的垫板上必须设置 M6 的排气孔;
 - ALL FLANGES SHALL BE MARKED ON O.D. SURFACES AS: DN50(2")-300LB-WN-RF-SCH160,
所有法兰外表面应打标记, 例如: DN50(2")-300LB-WN-RF-SCH160;
 - EXPOSED EDGES SHALL BE ROUNDED R=3.
所有尖角倒圆 R=3.
 - THE DESIGNED SERVICE LIFE OF THE EQUIPMENT IS 25 YEARS (EXCEPT TUBE BUNDLE).
设备的设计寿命为 25 年 (不包括管束)。

ITEM NO. 序号	DWG NO. OR CODE 图号/标准	DESCRIPTION 名称/规格	MATERIAL 材料	QTY. 数量	WEIGHT 重量 (kg)	REMARK 备注
15	U-16-16-13	ANCHOR BOLTS INSTALLATION 地脚螺栓安装图	PARTS 组合件	1	685	685
14	U-16-16-12	FIXED BOLTS 带肩及头螺栓 M56x3x780	SA-193 Gr.B7	4	25.46	101.84
13	ASME B18.2.2	NUT 螺母	M56	64	1.66	106.24

DESIGN DATA TABLE											
技术数据表											
CERTIFICATION MARK 认证标志			U-STAMP U-戳印		THIRD PARTY INSPECTION 第三方检验			YES			
NATIONAL BOARD REGISTRATION REQ'D NB注册				YES / NO		VESSEL CATEGORY P.R.C 容器类别					
DESIGN PARAMETER 设计参数					DESIGN\FABRICATION & INSPECTION STANDARD 设计、制造、检验标准						
HEAT EXCHANGER TYPE 换热器型式					1.ASME CODE SECTION VIII DIV.1 2015 EDITION. TEMA, NINTH EDITION, CLASS"R" 1.ASME 锅炉及压力容器规范第VIII卷第一分册, 2015版 并参照TEMA"R" 第九版.						
PARAMETER NAME 参数名称											
OPERATING PRESS. 工作压力											
DESIGN PRESS. 设计压力											
MAWP 最高允许工作压力											
MAEWP 最高允许工作外压											
OPERATING TEMP.(IN/OUT) 工作温度(进/出) °C(F)											
DESIGN TEMP. 设计温度 °C(F)											
MIN.TEMP 最低设计金属温度 °C(F)											
MEDIUM 介质											
MEDIUM CHARACTERISTIC 介质特性											
MAIN PRESSURER PART MATERIAL 主要承压元件											
CORR.ALLOWANCE 腐蚀裕量											
JOINT EFFICIENCY 焊接接头系数											
PASSES 层数											
INSULATION THK. 保温厚度											
INSULATION MATERIAL 保温材料											
SURFACE AREA 换热面积											
TUBE No.xØxL 换热管数量规格xTL											
JOINT TYPE OF TUBE SHEET 管子与管板连接方式											
EQUIPMENT NET WEIGHT 设备净重											
OPERATION WEIGHT 操作重量											
HYDROSTATIC TEST WEIGHT 水压试验重量											
TUBEBUNDLE WEIGHT 管束重量											
WIND SPEED 风速											

NOZZLE SCHEDULE 管口表										
MARK	SERVICE	DN(NPS.)	QTY.	FLANGE TYPE & CONNECTION 法兰类型及密封面型式	PROJ FROM 壳体外伸高度	MATCH FLANGE 配对法兰	REMARK			
代号	用途	公称尺寸	数量	CLASS 压力等级	TYPE 型式	FACE 密封面	壳体外伸高度	MATERIAL 材质	NECK SIZE 焊端规格	备注
N1	SHELL SIDE INLET 壳程进口	DN350(14")	1	300LB	WN	RF	810	SA-105N	SCH STD	ASME B16.5
N2	SHELL SIDE INLET 壳程进口	DN250(10")	1	600LB	WN	RF	810	SA-105N	SCH 80	ASME B16.5
N3	SHELL SIDE OUTLET 壳程出口	DN350(14")	1	300LB	WN	RF	810	SA-105N	SCH STD	ASME B16.5
N4	TUBE SIDE OUTLET 管程出口	DN250(10")	1	600LB	WN	RF	810	SA-105N	SCH 80	ASME B16.5

12	U-16-16-11-00	FIXED SADDLE 固定鞍座	H=200	PARTS 组合件	1	76.94	76.94			
11	U-16-16-10-00	BUNDLE 管束		PARTS 组合件	1	4923	4923			
10	U-16-16-09	EARTHING BOSS 接地端子		S.S.316	2	0.8	1.6			
9	U-16-16-08-00	SLIDING SADDLE 滑动鞍座	H=200	PARTS 组合件	1	76.94	76.94			
8	U-16-16-07-00	INSULATION SUPPORT 保温支撑		PARTS 组合件	1	181.82	181.82			
7	U-16-16-06	NAMEPLATE 铭牌		PARTS 组合件	1	8.5	8.5			
6	U-16-16-05-00	SHELL 壳体		PARTS 组合件	1	4075	4075			
5	ASME B18.2.1	SCREW BOLTS 全螺纹螺栓	M56x3x780	SA-193 Gr.B7	28	25.17	719.88			HOT DP CALWAZED 热浸镀锌
4	U-16-16-04	PARTITION PLATE GASKET 分程隔板垫片		ALUMINUM	1	0.10	0.10			
3	U-16-16-03	SHELL GASKET NEXT CHANNEL SIDE 管箱侧垫片		PARTS 组合件	1	25.60	25.60			参照 U-16-16-02
2	U-16-16-02	BOUNNET GASKET 管箱垫片		PARTS 组合件	1	25.60	25.60			
1	U-16-16-01-00	CHANNEL 管箱		PARTS 组合件	1	2450	2450			

ITEM NO. 序号	DWG NO. OR CODE 图号/标准	DESCRIPTION 名称/规格	MATERIAL 材料	QTY. 数量	UNIT WEIGHT 单重 (kg)	TOTAL WEIGHT 总重 (kg)	REMARK 备注
0	IFC- Issued For Contruction 供制造	2016.07.20	XU.W.F	Tang.W.J.	Zhou.S.B.		
Rev.	Revision	Description	Date	Originate By	Review By	Approve By	
Project	项目名称	巴斯斯坦 NASHPA 项目					</