GENERAL DATA

	1 of 1
Name and address of manufacturer	: Wuxi Chemical Equipment Co.,Ltd.
	Huayi road,Hua Zhuang Town,Wuxi, Jiangsu. China.
Principal's purchase order No.	: 4505600575
Equip. tag No. and name	: T-20003 Recirculating Exchanger
Manufacturer's production order No.	: WHA22-029-1
Applicable design code	: ASME SECTION VIII DIV.1 2021 ED &TEMA Tenth Edition CLASS R&API660-2020
Year of manufacture	Manufacturer's serial No. : WHA22-029-1
Name of design org.	: WUXI CHEMICAL EQUIPMENT CO.,LTD.
Name of inspection org.	: WUXI CHEMICAL EQUIPMENT CO.,LTD.
Type of vessel	: Heat exchanger
Design pres. int/ext psig[barg]	: shell side:220/15 [15.17/1.03];tube side: 232/15 [16/1.03]
Design temperature (INT./EXT.) ° F[° C]	: shell side:430 [221.1]/300 [148.89];tube side:430 [221.1]/400 [204.44]
ID In.[mm]	: 12.25" [311.1]
Wall thickness, Actual In.[mm]	: shell side:0.63" [16]/tube side:0.551" [14]
Corrosion allowance, In.[mm]	: shell side:1/16 [1.588];tube side:1/8 [3.175]
Overall length of vessel In.[mm]	: 149.4" [3794.8]
Weight of vessel (empty) lb[kg]	: 3363[1529]
Weight of vessel incl. internals (empty)	: /
Heat treatment	: YES When yes, type of heat treatment: Solution (HEAD AND U-BENDS)
Pressure test date	: shell side:2023.3.8;tube side:2023.3.10
Position	: Horizontal
Test pressure Bar(g)[pisg]	: shell side:54[786.24];tube side:60[873.6]
Test medium	: Water
Temperature of medium ${}^{\circ}\mathbb{C}[{}^{\circ}\mathbb{F}]$: 16[60.8]
NDE: - radiography (X-ray/Gamr[°C]	: SPOT
- ultrasonic	: 100%
- magnetic/particle	: 100%
- dye penetrant	: 100%
Joint efficiency (SHELL/HEAD)	: shell side:0.85/1.0;tube side:0.85/1.0
Type of equipment support	: Saddle
Number(s) of approved drawing(s)	WXCE6719-00 Rev. No.: 4
:	WXCE6719-01 Rev. No.: 4
:	WXCE6719-02 Rev. No.: 4
	WXCE6719-03 Rev. No.: 4
-	WXCE6719-04 Rev. No.: 4 WXCE6719-05 Rev. No.: 4
:	WXCE6719-06 Rev. No.: 3
 Delete what does not apply 	
For manufacturer: WCE	For inspection organization:
Name: 椒皂	Name:
Position: QC Engineer	Position:

Huayi road, Hua Zhuang Town, Wuxi, Jiangsu, China Signature and stamp

2023.3.25

Place and date:

Name of company: Place and date:

Signature and stamp

Authorized Inspector:

Aug. 15, 2023

Date:

Date:

Page 1

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

			1	s Re	quire	d by the	Prov	Isions	of the	ASME	Boiler a	nd P	ress	ure Ves	sel Cod	e Rı	ıles, S	ecti	on VIII,	Divi	sion	1		
1.	Manuf	act	ured	and c	ertifie	d by	Wus	xi Chem	ical F	Guinma	ent Co., Li	14					0							
											strict, Wux		angsı	Provin	ce 2141	31, F	P. R. C	hina						
												_			ss of Manu	_								
2.	Manuf	acti	ured 1	for			Ai	ir Produ	cts M	lanufac	turing LLC	C., 19	940 A	ir Produ	icts Blvd	., All	entow	n PA	18106-	5500), US	Α		
•	1 41			-11-4							(Name	and a	ddress of	Purchaser)									
3.	Location	on c	פווו זכ	lallati	- -			-			-		-	Not Kn		_		-						
4.	Туре					Horizont	al					н	۰۱) leat e		accressy				V	۷HA	22-02	29-1		
		-		(H	lorizonta	I, vertical, o	or sphere	e)		_	(Tank, sepa	arator,	, jkt. ve:	ssel, heat	exch., etc.)	_	_		(Manuf	acture	er's seri	al number		
				NA				WX	CE6	719-00	Rev. 04				507	7						2023		
_				(CRN)	5				(Dra	wing numb	ber)	- 907		(N	ational Boar						(1	'ear built)		
5. /	ASME C	ode	e Sec	tion \	VIII, Di	v. 1	_	(California)		2021		4-11		-	(Code	N/	number	-1	The same	-19	necial S	NA Service per	UG	20/4/1
Iter	ns 6–11	ind	d. to	be co	mplete	ed for sir	nale w	Contract State of			opplicable (da of jacketed		ssels.	shell of					amber o	-				
	Shell:				of cour		igio in	u 1000	0,0, ,0	1	n jaonotoa				all length					04.0				
					-		-	Ė		T				=	Circum. Joint (Cat. A			A, B & C) Heat Treatme						
	T 8:	_	Course	s)				laterial			hickness	+		ong. Joint	-					T		-		ime
No	-	amet			Length	-		rade or Ty	pe	Nom.		+	Туре	Full, Spot		Eff.	Туре		Spot PT	-	Eff. 0.85	Temp.		one
1 NA		12.2 NA	5		104.055° NA	+		82 F316L NA	-	0.63°	1/16* NA	+	S NA	NA NA).85 NA	1 NA		Spot RT NA	1	NA NA	NA	-	VA.
											ody Flang			To Carlo										
							Π			-13		T					-		Bolting					
No.	Туре		ID	0	D F	lange Thk	Min H	lub Thk	Ma	terial	How Attache	ed Lo	ocation		Num & Size		Во	lting N	Material		asher ID,Thk	Wash	er Ma	terial
1	Integral	12	2.25*	20.0	79*	3.346*	0.0	63*	SA-18	2 F316L	Welded		Left		-8UN-2A, L: 8UN-2A, L=		1 CA.		03 C+ R7		968°, 3, 0.25°		E PC ype 4	
NA	NA		NA	N.	A	NA	N	IA	١	NA A	NA		NA		NA			NA		-	NA		NA	
7. H	leads: (a)				SA-240	316L,	, Remar	k 1, 2	2		((b)				l		NA					
-		-	-	T-15-07-1	100	number,	7.49				100000000000000000000000000000000000000	1.			1000000	spec	A SASSEMBLE OF THE		de or type)	(H.T.				
	Location (Bottom, E		4	Thick	Corr	. Cro	Radiu	us Knuckle	-1	liptical Ratio	Conical Apex Angle	S. Trees	Rad	herical lius	Flat Diamete	,	Convex		essure Concave	Tv		Category Full, Spot, N		EE
(a)	Right E	nd	1	256"	1/16			NA		2:1	NA	-	N.	A	NA		Yes		Yes	5		NA		1.0
(b)	NA		1	NA.	NA	N.	A	NA		NA	NA		N	A	NA	1	NA	1	NA	N	A	NA		NA
		-	-						_	В	ody Flange	s on	Head	s				_	Bolting					
	Locatio	, .	runa	ID	OD	Flange	Thk	Min Hub 1	nhk	Mate	rial	How A	Attached	Nun	& Size	Bol	ting Mate	erial	Was		T	Washer	Materi	al
(a)	NA		NA NA	NA NA	NA NA	NA		NA		N/			NA		NA		NA		(OD, IL	A	1	N	·	
(b)	NA		NA	NA	NA	NA		NA		N/		١	NA		NA		NA		N	A		N	١	
. T	pe of ja	acke	et			-	N	IA	-the-st		Jack	ket c	losur	9 _					NA					
1	har di		limor	cione	· If ho	ted, des	cribe (or skata	h							N		be as	ogee and	weld, I	bar, etc	:.)		
	AWP		12ps		, 11 00	FV		ax. temp		430°F	: 1	300°F	F M	in desi	gn metal	1000		31	2°F a	at		412psig		
. IVI	-		Interna	_	-	External)	-	ax. temp		(Internal		xtema	_	iii. ucsi	grimeta	ton	Je .	Ple	Na.	at		412psig	_	
0. 1	mpact t			,	,	22000	exemp	ted per	UHA		,			empera	ture of	X	自	Y A		NA				
					[Indica	ate yes or r	o and th	ne compor	nent(s)	impact tes	sted]	1			13	3	A	4	30		-			
1. ł	lydro., į	pne	u., or	comi	b. test	pressure	-		Н	ydro. at	779.5psi	g		Pro	of test		THE PERSON NAMED IN		A STATE OF THE PARTY OF THE PAR	NA				
em	s 12 an	d 13	3 to b	e con	npleted	for tube	e secti	ions.							14			1	THE					
2. 1	ubeshe	eet	-		SA-18					12.25"		_		2.756		量	证明	16	音		E	Bolted		
			[S	Stationa	ary (mate	erial spec. r	10.)]	[D	iameter		to press.)]		(No	ominal thic	kness)	De la constante de la constant	(Colr.	allow	1	Attach	ment (v	welded or t	olted)]
			-	Floatin		ial spec. no	0.11			NA (Diameter))	-		ominal thic	kness)		(Corr	allow.	.) -		(AH	NA achment)		_
3. 1	ubes				-789 S	Colorado D	··n			0.75"	,			.065"(a				36	•		(All	U		
			(Mater	ial spe	c. no ar	ade or type	1)			(O.D.)			_	minal thic		-	(Nur	nber)			Type (straight or	1/1	-

Date:

Aug. 15, 2023

Am. 16. 7023

Mai	nufactur.	ad by	Wuyi (Chemical E	quipment C	o I td		FOR	RM U-1			1		Pag	ge2	_	of _	3
	nufacture				WHA22-02		_ (CRN		NA		Nat	ional Boa	rd No.			507	
_																		
Iten	ns 14-18	8 incl. (to be co	ompleted fo	r inner chan	nbers of j	ackete	d vessels d	or chann	els of hea	t exchai	ngers.						
14.	Shell: (a	a) No. (of cours	se(s)			1	_		b) (Overall le	ength			21.6	554"		
	Co	ourse(s)		М	aterial	Thick	ness		Long.	Joint (Cat. A	4)	Ci	rcum. Join	t (Cat. A	, B & C)	Heat Tre	atment
No	Diam	eter	Length	Spec./G	rade or Type	Nom.	Corr	. Type	Full,	Spot, None	Eff.	Туре	Full, S	oot, None	e E	Eff.	Temp.	Time
1	ID 12	.25"	21.654	" SA-51	6 Gr.70N	0.551"	1/8"	1	5	Spot RT	0.85	1	Sp	ot RT	0	.85	None	None
NA	N/	4	NA		NA	NA	NA	NA		NA	NA	NA		NA	1	VA	NA	NA
								1 (%)		TATA	1 1111							
								Body Flan	ges on S	hells								
	_					2000							Bolt		Wash	ner T		2200
20	Туре	ID	OD	Flange Thk	Min Hub Thk	Mater	ial	How Attached	Location	<u>'</u>	Num & Size		Bolting Ma	aterial	(OD, ID,	Thk)	Washer	
1	Integral	12.25*	20.079*	2.48*	0.551*	SA-182 F	316L	Welded	Left	20Nos 1"-	-8UN-2A, L	=10.236*	SA-193 G	6r.B7	1.963,	1302/300vc (4)	ASME I	
1	Integral	12.25*	20.079°	2.48*	0.551*	SA-182 F	316L	Welded	Right		8UN-2A, L		SA-193 G	ir.B7	1.968	Common III	ASME I	the state of the s
15	Heads:	(2)			A-266 Gr.21				(b		BUN-2A, L=	14.901		IA I	1.003, (0.25	Тур	54
	ricaus.	(a) <u> </u>	(M	-	umber, grade or		7.00	nd temp)	_ (0		(Materi	al spec. nun	/A-12 de 1-12		1.T. — ti	me and te	mp.)	
	Lauren	(T		Thickness	Radio							9	de to Pressu			Catego		
		on (Top, n, Ends)	Min.	Corr.	Crown	Knuckle	Elliptic Ratio			emispherical Radius	Flat Diame			cave	Туре		ot, None	Eff.
	-		1					-	-	20144000000	00.07	-						
(a)		End	2.086		NA	NA	NA	NA NA	-	NA	20.07			_	S		IA	0.85
(b)	N	NA .	NA	NA	NA	NA	NA	NA NA		NA	NA	N/	N	A	NA	1	IA .	NA
	_	-						Body Flang	ges on H	eads				D-W				
	Location	n Type	ID	OD	Flange Thk	Min Hub Thk		Material	Н	w Attached	Num	& Size	Bolting Ma	Bolting	Wash		Washer N	Interial
_		2000		-		20.00m	+-	Roma	- 100	March Street	1000			lena	(OD, ID,	Thk)		
(a)	NA	NA	NA	NA	NA	NA	_	NA	-	NA	N		NA		NA	-	NA	•
(b)	NA	NA	NA	NA	NA	NA		NA	1 10	NA	N	A	NA		NA		NA	•
16.	MAWP	512	.1psig	FV	at max. to	emp.	430°	F	100°F	Min. desi	gn meta	I temp.	32	2°F	at -	512	2.1psig	
		(Interr	nal)	(External	10 m		(Inter	nal)	(External)	. 20								
17.	mpact te	est			Yes, tubes	SE 704 38 70 S.			at te	st tempera	ature of		•	-4	40°F			
40 1	الساحم ح				no and the com	and the second second	· Commission	ted] o. at 832.1p	eia		Proof te	ct.			NIA			
				b. test pres			Tiyuto	. at 652. Ip	siy					-	NA			
19. I	Nozzles,	inspe	ction, a	nd safety va	alve opening	s:				NT							_	
	Purpos		No.	Diameter	Туре	-	٨	Material		Nozzle Thi	ckness	Reinforcem	ent	Attachme	ent Detai	ls	Loc	ation
(Inle	et, Outlet, D	rain, etc.)		or Size		No	zzle	Flan	ge	Nom.	Corr.	Material	No	ozzle	F	lange	(Insp.	Open.)
	T1, TS In	nlet	1	NPS 3	CL.600 LWN/R		105N	SA-10	D5N	0.803*	1/8*	Inherent	Fig. U	N-16.1(c)	2000	NA		
	T2, TS Ou	utlet	1	NPS 3	CL.600 LWN/R		105N	SA-10	not to take	0.803*	1/8*	Inherent	Fig. U\	N-16.1(c)		NA		
	S1, SS In	COMP. STATE	11	NPS 6	CL.900 WN/RF		TP316L	SA-182		0.562"	1/16"	SA-240 31		N-16.1(c)		RT, eff.1.0		_
	S2, SS Ou		1	NPS 6 NPS 2	CL.900 WN/RF		105N	SA-182 SA-10		0.562° 0.653°	1/16"	SA-240 31	_	N-16.1(c) N-16.1(c)		RT, eff.1.0 NA	-	
	Aux1~2, Aux		2	NPS 2	CL.300 WN/RF		6 Gr. B	SA-10	Monoto	Sch80	1/8	Inherent		V-16.1(c)		T, eff.0.8	1	\neg
	Aux3~4, Aux		2	NPS 2	CL.300 LWN/RI		2 F316L	SA-182		0.653*	-	Inherent	A	V-16.1(c)		NA NA		
20. 5	Supports	: Skirt		No Lu	ıgs NA	L	egs	NA	Ot	hers	2Nos S	-	Attac		· w	elded t	shell	
21. ľ	Manufact ne report	turer's t (list th	Partial	s or no) Data Repoi e of part, ite	(Numb rts properly i em number, l	dentified	and sig urer's i	name, and	mmissi	oned insp ing numbe	(Descriptions have		furnishe	for the	(e follov	Where an	i how) ns of	
22. F	Remarks										The same of	-74 - 77	-					
See	attached	Form	U-4.								The same of	See John F.						_
									27									

Mfr. Representative	:
Authorized Inspector	:

Date:

Page

Aug. 15, 2023

Am. 15. 223

Manufactured by	Wuxi	Chemical Equipment Co., Ltd				
Manufacturer's Seria	No.	WHA22-029-1	CRN	NA	National Board No.	507

FORM U-1

		(CERTIFICATE O	F SHOP COMPL	IANCE			
We certify	that the statements in this re					construction, ar	nd workmanship	of this vessel
100	the ASME BOILER AND PRES							
	te of Authorization Number		30,972	Expires		16, 2026	~/	1
Date	Aug. 15, 2023	Name	Wuxi Chem	ical Equipment C	o., Ltd.	Signed	一黄料	般
_				(Manufacturer)			(Represer	ntative)
			CERTIFICATE C	F SHOP INSPEC	TION			
I,the unde	ersigned, holding a valid com	mission issue	d by the Nation	al Board of Boile	r and Press	ure Vessel Insp	pectors and emp	loyed by
	AI	PAVE SA			of		1	
have inspe	ected the pressure vessel descr	ibed in this Ma	nufacturer's Data	Report on		April 06, 2	023	, and
state that,	to the best of my knowledge a	and belief, the	Manufacturer h	as constructed th	is pressure	vessel in accord	dance with ASME	BOILER AND
PRESSURE	E VESSEL CODE, Section VIII, D	ivision 1. By sig	ning this certificat	e neither the Inspe	ctor nor his/h	er employer make	es any warranty, ex	pressed
or implied,	concerning the pressure vesse	described in t	his Manufacture	r's Data Report. F	urthermore, r	neither the Inspe	ector nor his/her er	mployer shall
be liable in	any manner for any personal in	njury or proper	ty damage or a lo	oss of any kind ari	sing from or	connected with t	his inspection.	
Date	Ang. 15. 2023	Signed	SE	3	Commissio	ins	NB15677	
_	- King -	_	(Authorized In	spector)		(National Board	Authorized Inspector Co	mmission number)
		CERTIF	ICATE OF FIEL	D ASSEMBLY CO	OMPLIANCE			
We certify	that the statements in this repo	rt are correct a	nd that the field a	assembly construc	ction of all pa	rts of this vessel	conforms with the	e requirements
of ASME B	OILER AND PRESSURE VESSE	EL CODE, Secti	on VIII, Division 1	. U Certificate of A	uthorization N	umber	Expires	
Date		Name				Signed		
94		_		(Assembler)	-		(Represen	itative)
				D ASSEMBLY IN				
I, the unde	ersigned, holding a valid com	mission issue	d by the Nation	al Board of Boile	er and Press	ure Vessel Insp	pectors and emp	loyed by
_								
of		, have co	mpared the state	ments in this Mar	ufacturer's E	ata Report with	the described pre	essure vessel
and state th	hat parts referred to as data iter	ns			not included	in the certificate	of shop inspectio	n, have been
inspected b	by me and to the best of my kn	owledge and b	pelief, the Manuf	acturer has cons	tructed and a	assembled this p	pressure vessel ir	n accordance
with the AS	SME BOILER AND PRESSU	RE VESSEL C	CODE, Section	VIII, Division 1.	The describe	ed vessel was i	nspected and su	bjected to a
hydrostatic	test of	. By signing	this certificate n	either the Inspect	or nor his/he	r employer make	es any warranty, e	expressed or
implied, co	ncerning the pressure vessel	described in t	his Manufacture	er's Data Report.	Furthermore	e, neither the In	spector nor his/h	er employer
shall be liab	ole in any manner for any perso	nal injury or pr	operty damage o	or a loss of any kir	nd arising fro	m or connected	with this inspectio	n.
Date		Signed		С	ommissions			
			(Authorized I	Inspector)	la la	(National Board Au	thorized Inspector Comm	nission number)

(07/17)

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Man	nufactured and cert	illed by _		ical Equipment Co., Lt		wines 044404 D D	Obir-		
-			36 Huayi I	Road, Binhu District, W	ress of Manufactu		R. China.		
2. Man	ufactured for		Air Prod	ucts Manufacturing LL			wn PA 18	106-5500. US	A.
			7.111100	dots Mandiacturing EE	(Name and addre		,,,,,,,,,,		
3. Loca	ation of installation				No	t Known and address)			
4. Type	e Hor	izontal		Heat ex		and address)	1	WHA22-029-1	
	(Horizontal, ver		re)	(Tank, separator, he				cturer's serial nu	
							•		
	NA (CRA)			WXCE6719-00 Rev. 04		507			2023
	(CRN)			(Drawing number)		(National Board number	er)		(Year built)
	Report Number				Rema	rko	31.		
2. Rema	AND THE RESERVE OF THE PARTY OF	1 Shell side	e head is co	ld formed by others wit			nealing h	eat treatment a	after cold formin
				~1976°C, holding 30mi		diodang solution an	modining in	cat a cauncint	arter core remini
				nts were performed spe		to LIM 11(a)(5)(b)			
				blind flange: 2Nos, SA				00 DI /DE 6	d with full three
				/8"-11 UNC-2A, L=5.91	, o pos for eac	i nozzie, and neavy	y nex nuts	5 SA-194 Gr. 8	, 5/8 -11 UNC-2
1000000			each nozzle.		04 40511 155				
		4. NOZZIE(A	Aux 1/Aux 2/	TV) blind flange: 3Nos	SA-105N, ASN	1E B16.5-2017 NPS	S 2 CL.30	U BL/RF, fixed	with full thread
				/8"-11 UNC-2A, L=5.91	, 8 pcs for eac	n nozzle, and heav	y hex nuts	SA-194 Gr. 2	H, 5/8"-11 UNC
			for each noz						
		5. The U-tu	be bends w	ere performed Solution	at 1922~2012°	F, holding 15~25s.			
				are omitted according					
		7. The over	pressure pro	otection system not sup	oplied by the ve	ssel Manufacturer.			
								9.30.0	
						be the			
						The little was a second and th			
ertificate	of Authorization:	Fire		No. 24	0.072				
ertificate	of Authorization:	Гуре	U	No3),972	Expires	A	April 16, 2026	
			U	No3(0,972	Expires		April 16, 2026	4
ertificate	e of Authorization:		U	No. 30	1 se	EBrm+mak	A	April 16, 2026	1
					uipment Co. L	EBrm+mak		和女	P-tative)
				Wuxi Chemical Eq	uipment Co. L	EBrm+mak	A	和女	7 P- tative)
				Wuxi Chemical Eq	uipment Co. L	EBrm+mak	A	和女	tative)

(07/19)