

104300

Order #
99-424B

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Div. 1

Item no.
E-6207-4

1. Manufactured and certified by Southern Heat Exchanger Corporation 6100 Old Montgomery Highway Tuscaloosa, AL
(Name and address of Manufacturer)

2. Manufactured for KOSA, Wilmington, NC
(Name and address of Purchaser)

3. Location of installation KOSA, Wilmington, NC
(Name & address)

4. Type Horizontal Heat Exchanger 99-424B None SB- 4179-2 10470 2000
(Horiz,vert,sphere) (Tank,separator,jkt. vessel,heat exh,etc.) (mfg. ser. no.) (CRN) (Dwg. No.) (Natl. Bd. No.) (Yr. built)

5. ASME Code, Section VIII, Div. 1 1998, A98 None None
Edition and Addenda(date) Code Case No. Special service per UG-120(d)

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels

6. Shell (a) No. of course(s): 3 (b) Overall length (ft & in): 20'-0"

(OD) Course(s)			Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A,B,&C)			Heat Treat.	
No.	Diameter, in.	Length (ft & in)	Spec/Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	34"	10'-0"	SA-516 GR. 70		3/8"	1/16"	1	Spot	85%	1	Spot	-	-	
1	34"	7'-0 1/4"	SA-516 GR. 70		3/8"	1/16"	1	Spot	85%	1	Spot	-	-	
1	44"	1'-9 1/2"	SA-516 GR. 70		1/2"	1/16"	1	Spot	85%	1	Spot	-	-	

7. Heads: (a) SA-516 GR. 70

(b)

(Mat'l Spec. No., Grade or Type) H.T.- Time & Temp										(Mat'l Spec. No., Grade or Type) H.T.- Time & Temp				
Location		Thickness		Radius		Elliptical	Conical	Hemisp.	Flat	Side to Pressure		Category A		
Top, Bottom, Ends		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	Center	3/8"	1/16"	(2) 44" O.D. Flanged & Flued heads w/ 1 1/8" Kn. Rad.										
(b)												X	N/A	None

If removable, bolts used (describe other fastening) Welded

(Mat'l. Spec. No., Grade, size, no.)

8. Type of jacket None Jacket closure None
(Describe as ogree & weld, bar, etc.)

If bar, give dimensions None If bolted, describe or sketch.

9. MAWP 175 N/A psi at max. temp. 350 N/A ° F. Min. design metal temp. 20 ° F. at 175 psi
(internal) (external) (internal) (external)

10. Impact test No per UG-20(f) and UHA-51
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. 265 psig hydro Proof test None

Items 12 and 13 to be completed for tube sections

12. Tubesheet: SA-240 316L 34" 2 3/8" 0" Welded
Left (Mat'l. Spec. No.) Dia., in. (subject to pressure) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)
SA-240 316L 39" 2 5/8" 0" Welded
Right (Mat'l. Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment
13. Tubes SA-213-316L 3/4" 16 BWG. 994 Straight
Mat'l. Spec. No., Grade or Type O.D., in. Nom. thk., in. or gauge Number Type (Straight or U)

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): 2 (b) Overall length (ft & in): 2'-10 5/8"

(OD) Course(s)			Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A,B,&C)			Heat Treat.	
No.	Diameter, in.	Length (ft & in)	Spec/Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	34"	1'-5 1/2"	SA-240 316L		.375"	0"	1	Spot	85%	1	Spot	-	-	
1	34"	0'-5 5/16"	SA-240 316L		.375"	0"	1	Spot	85%			-	-	

15. Heads: (a) SA-516 GR. 70

(b) SA-240 316L

(Mat'l Spec. No., Grade or Type) H.T.- Time & Temp										(Mat'l Spec. No., Grade or Type) H.T.- Time & Temp				
Location		Thickness		Radius		Elliptical	Conical	Hemisp.	Flat	Side to Pressure		Category A		
Top, Bottom, Ends		Min.	Corr.	Crown	Knuckle	Ratio	Apex Angle	Radius	Diameter	Convex	Concave	Type	Full, Spot, None	Eff.
(a)	End	2 1/2"	0"	(Liner not included in thickness)										
(b)	End	1/4"	0"			2:1					X	N/A	None	-

If removable, bolts used (describe other fastening) SA-193-B7 (40) ea 7/8"-9

(Mat'l. Spec. No., Grade, size, no.)

16. MAWP 175 N/A psi at max. temp. 350 N/A ° F. Min. design metal temp. 20 ° F. at 175 psi
(internal) (external) (internal) (external)

NB-26 Rev. 10

99-424B

17. Impact test No per UG-20(f) and UHA-51

(Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb. test press. 265 psig hydro Proof test _____

19. Nozzles, inspection, and safety valve openings:

(UW-16.1)

Purpose (inlet, Outlet, Drain, etc.)	No.	Diameter or size	Flange Type	Material		Nozzle Thk.		Reinforcement Material	How Attached		Location (Insp. Opn.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet/Outlet	2	6"	150#	SA-312 316L	SA-182 F 316L	.280"	0"	Inherent	e	RFSO	
Inlet	1	8"	150#	SA-106 GR. B	SA-105	.500"	1/16"	Inherent	e	RFSO	
Outlet	1	3"	150#	SA-106 GR. B	SA-105	.300"	1/16"	Inherent	e	RFSO	
Press. Indicator	1	3/4"	150#	SA-312 316L	SA-182 F 316L	.113"	0"	Inherent	e	RFSO	
Vent/Drain	2	3/4"	150#	SA-312 316L	SA-182 F 316L	.113"	0"	Inherent	e	RFSO	
Vent	1	3/4"	6000	N/A	SA-105	N/A	1/16"	Inherent	bb	Thd Cplt	

20. Supports: Skirt No Lugs N/A Legs N/A Others (2) Saddles Attached Shell, Welded
(Yes or No) (No.) (No.) (Describe) (Where and How)21. Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report:
(List the name of part, item number, mfg's. name and identifying number)22. Remarks: UG-46(a)**CERTIFICATE OF SHOP COMPLIANCE**

We certify that the statements made in this report are correct and that all details of design, material, construction and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1,

U Certificate of Authorization No. 7037 Expires 11/29, 20 02Date 04/25/00 Name Southern Heat Exchanger Corporation Signed [Signature]
(Manufacturer) (Representative)**CERTIFICATE OF SHOP INSPECTION**

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of GA and employed by Commercial Union Insurance Company of Boston, Ma have inspected the pressure vessel described in this Manufacturer's Data Report on 04/25, 20 00, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date 04/25/00 Signed [Signature] Commissions NB11599A GA419
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)**CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE**

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, division 1,

U Certificate of Authorization No. _____ Expires _____, 20 _____

Date _____ Name _____ Signed _____
(Assembler) (Representative)**CERTIFICATE OF FIELD ASSEMBLY INSPECTION**

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of _____ and employed by _____ of _____ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____ Signed _____ Commissions _____
(Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)

104309



W
R13

NATIONAL BOARD NO. 10470

CERTIFIED BY

SOUTHERN HEAT EXCHANGER CORP.

TUSCALOOSA, ALABAMA

SHELL SIDE

MAINT 175 PSI AT 350

MDMT 20 PSI AT 175

PIPE SIDE

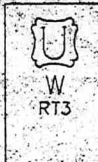
MAINT 175 PSI AT 350

MDMT 20 PSI AT 175

SHECO SER. NO. 99-424 B 2000

COST. ORDER 4500262721

COST. ITEM E-6207-4



NATIONAL BOARD NO. 10469/10470

CERTIFIED BY

SOUTHERN HEAT
EXCHANGER CORP.

TUSCALOOSA, ALABAMA

SHELL SIDE

MAWP 175 PSI AT 350 °F

MDMT 20 °F AT 175 PSI

TUBE SIDE

MAWP 175 PSI AT 350 °F

MDMT 20 °F AT 175 PSI

SHECO SER. NO. 99-424A/B YEAR 2000

CUST. ORDER 4500262721

CUST. ITEM E-4207-4/E-6207-4

CAUTION

THE PRESSURE AND TEMPERATURES SHOWN ON THE S.H.E. NAMEPLATE RELATE ONLY TO THE PRESSURE RETENTION CAPABILITY OF THIS HEAT EXCHANGER. COMPONENTS OF THIS HEAT EXCHANGER HAVE BEEN DESIGNED FOR SPECIFIC OPERATING CONDITIONS. A CHANGE IN SERVICE OR DEVIATION FROM THE SPECIFIED OPERATING CONDITIONS REQUIRES THAT A MECHANICAL DESIGN CHECK BE MADE IN ORDER TO AVOID POSSIBLE DAMAGE TO THE HEAT EXCHANGER.

NOTES

1. EST. WT. EMPTY: 17,000# FULL: 25,300# BDL: -
2. ALL BOLT HOLES STRADDLE NORMAL CENTERLINES.
3. SNAP ON COVERS ON ALL OPEN NOZZLES.
4. 125-224 MAIN GASKET SURFACES.
5. PAINT: SANDBLAST O.S. PER SSPC-SR-6. C.STL ONLY: APPLY (1) COAT OF CARBOLINE C2-11. S.STL ONLY: APPLY (2) COATS OF DAMPNEY THERMALOX 70 (BLACK).
6. NOZZLE FLANGES SHALL BE DUAL STAMPED 316/316L.

ANSI NOZZLE SCHEDULE

	SIZE	RATE	FACE	NOZZLE NECK	SERVICE
				TUBE SIDE	
A	6"	150#	RFSO	STD. WT.	ACID WASTE WATER INLET
B	6"	150#	RFSO	STD. WT.	ACID WASTE WATER OUTLET
C	3/4"	150#	RFSO	STD. WT.	PRESSURE INDICATOR
G/H	3/4"	150#	RFSO	STD. WT.	VENT/DRAIN
				SHELL SIDE	
D	8"	150#	RFSO	X-STG.	STEAM INLET
E	3"	150#	RFSO	X-STG.	CONDENSATE OUTLET
F	3/4"	6000#	THD.	WGT. CPT. PLUGGED	VENT

NON-PRESSURE PARTS

SUPPORTS / PADS	SA-36 / SA-516 GR. 70
BAFFLES / SUPPORTS	SA-36
TE RODS / SPACERS	C.STL/S.STL
PASS PARTITIONS	SA-240 316L
ANNULAR DIST. SLEEVE	SA-516 GR. 70
LIFT LUGS	SA-36
NAMEPLATE BRACKET	304 S.STL

WPS P1-P1	W-42(SMAW) W-54(GMAW) W-72(FCAW) W-89(SAW) W-96(GTAW)
WPS P1-P8	W-2(SMAW) W-112(FCAW) W-100(SAW) W-172 (GTAW)
WPS P8-P8	W-3(SMAW) W-45(GMAW) W-81(FCAW) W-90(SAW) W-97(GTAW)

ASME CODE REQUIREMENTS

		SHELL SIDE	TUBE SIDE
DESIGN PRESSURE	PSIG	175	175
DESIGN TEMPERATURE (MAX/MIN)	°F	350/20	350/20
HYDRO. TEST PRESSURE	PSIG	265	265
CORROSION ALLOWANCE	(CSTL ONLY)	1/16"	NONE
POSTWELD HEAT TREATMENT		NONE	NONE
RADIOGRAPHIC EXAMINATION		SPOT	SPOT
METAL TEMP. (TEMA 7th ED.)	°F	40/270	221/250

ASME CODE STAMP / NAT'L BD. REG. IS REQUIRED.

CUSTOMER INSPECTION MAY BE REQUIRED

SPECIFICATIONS: 1998 ASME CODE SECT. VIII DIV. 1, ADDENDA A9B

SPECIAL SERVICE: NONE CODE CASE: NONE PARTIAL DATA REPORTS: NONE

TEMA (B) EXEMPT FROM IMPACT TESTING PER: UC-20(1), UHA-51

TUBES: SA-213 316L WALL: AVG

NO. 994 O.D. 3/4" BWG. 16 LENGTH: 20'-0"

TUBESHEETS: SA-240 316L

PART	SHELL SIDE	TUBE SIDE
VESSEL	SA-516 GR. 70	SA-240 316L
COVERS		SA-516 GR. 70 LINED WITH SA-240 316L
FORMED HEADS	SA-516 GR. 70	SA-240 316L
FITTINGS		SA-105 LINED WITH SA-240 316L
BODY FLANGES		
NOZZLE FLANGES	SA-105	SA-182 F 316L (6)
COUPLINGS/COUPLETS	SA-105	SA-182 F 316L
NOZZLE PIPE	SA-106 GR. B	SA-312 316L
NOZZLE REINF. PADS		
STUDS/NUTS	SA-193-87/SA-194-2H	SA-193-87/SA-194-2H
GASKETS		SEE SHEET 5 FOR DETAIL

REVISIONS

03/28/00 REVISED ITEM NUMBER, ORIENTATION, AND ELEVATION.

01/25/00 GENERAL REVISIONS.

CERTIFIED ENG. 1003/28/00

CUSTOMER KOSA

CUSTOMER P.O. NO. 4500262721

ITEM NO. E-4207-4/E-6207-4 PROJ. NO. 147-9448.1.4025.5/

PLANT WILMINGTON, NC 147-9448.1.4043.5

TEMA SIZE AND TYPE

(2) 33-240 NEM C & D-LINES ACID WASTE WATER REBOILERS

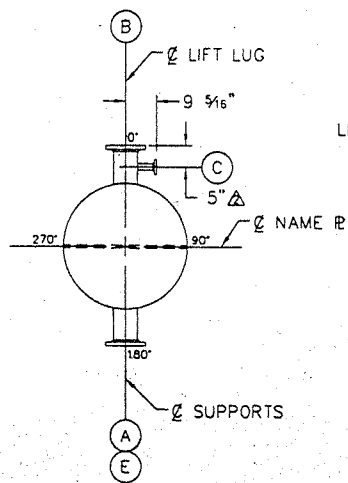
SOUTHERN HEAT EXCHANGER CORP.

P.O. BOX 1850 TUSCALOOSA, AL. 35403

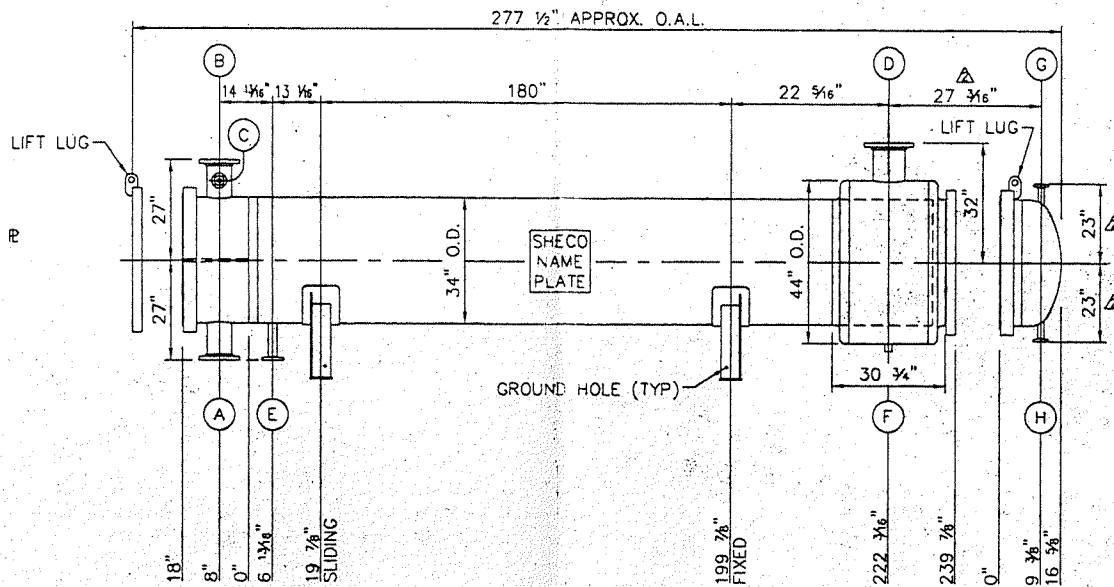
DATE 12/28/99 ORDER NO. DWG. NO. SB-4179-2

BY J.D. Crowder 99-424A/B SHEET 1 OF 5

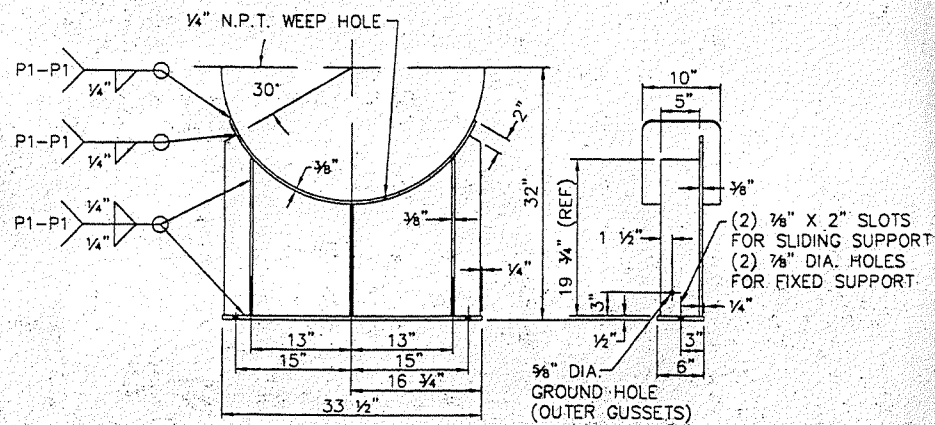
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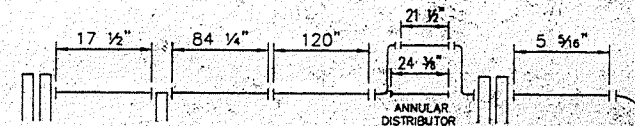
ORIENTATION



ELEVATION



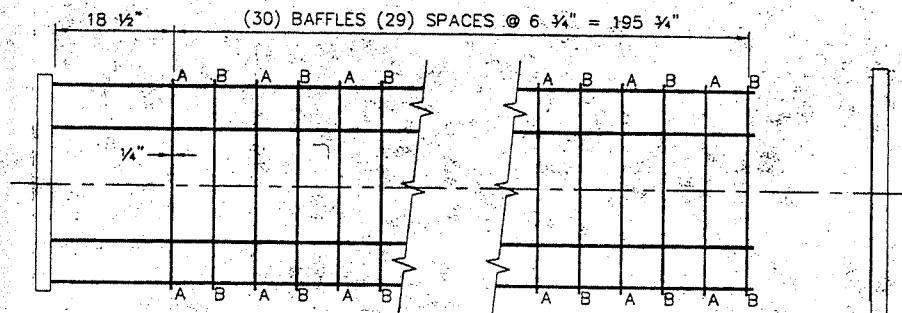
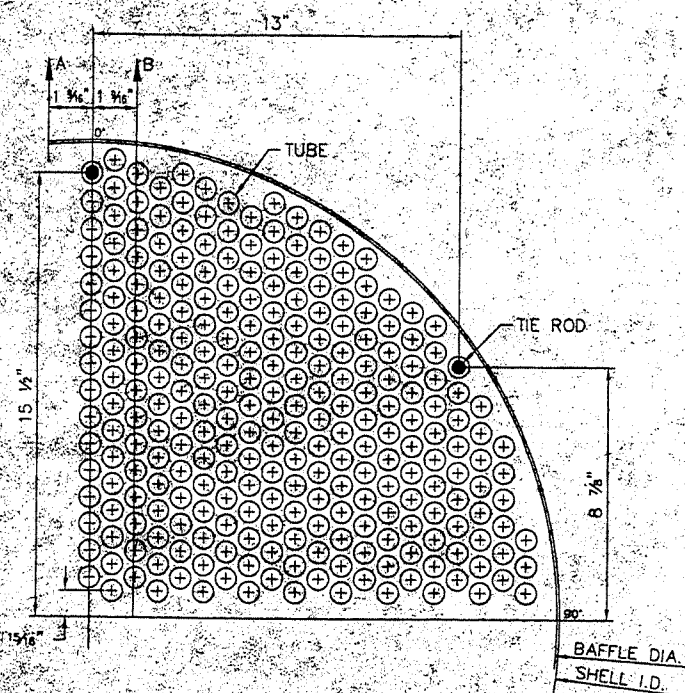
SUPPORT DETAIL



THEORETICAL COURSE LENGTH

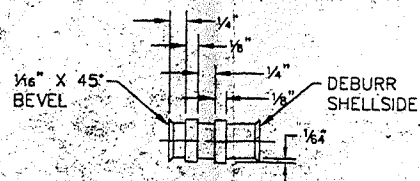


CERTIFIED	ENG. 0003/18/00
CUSTOMER	KOSA
CUSTOMER P.O. NO.	4500262721
ITEM NO.	E-4207-4/E-6207-4
PLANT	WILMINGTON, NC
TEMA SIZE AND TYPE	
(2) 33-240 NEM C & D-LINES ACID WASTE WATER REBOILERS	
SOUTHERN HEAT EXCHANGER CORP.	
P.O. BOX 1850 TUSCALOOSA, AL 35403	
DATE 12/28/99	ORDER NO.
BY J.D. Crowder	99-424A/B
DWG. NO. SB-4179-2	SHEET 2 OF 5

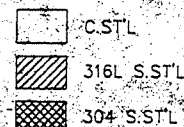


BUNDLE DETAIL

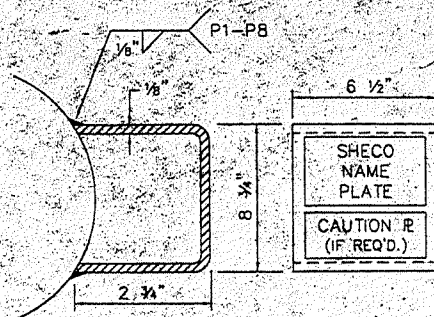
TUBE O.D.	3/4"
NO OF TUBE HOLES	994
SIZE OF TUBE HOLE IN TUBESHEET	0.760"
SIZE OF TUBE HOLE IN BAFFLE	25/32"
PITCH	1 9/16" 30°
TIE ROD O.D.	1/2"
NO. OF TIE RODS	6
TIE ROD HOLE SIZE IN TUBESHEET	9/16" x 1/2" DP. (SEAL WELD)
TIE ROD HOLE SIZE IN BAFFLE	9/16"
SPACER O.D.	3/4"
DUMMY TUBE O.D.	-
NO. OF DUMMY TUBES	-
DUMMY TUBE HOLE SIZE IN BAFFLES	-
O.T.L.	32.6939"
BAFFLE DIA.	33.0625"
BAFFLE CUT ALTERNATES	(15) A-A, (15) B-B



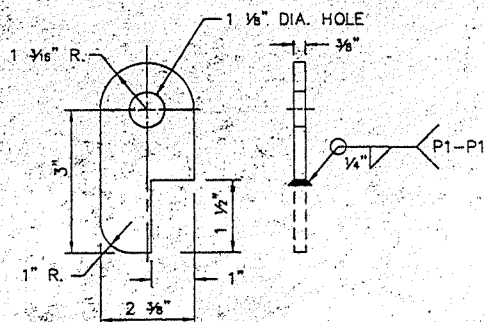
TUBE HOLE DETAIL



CERTIFIED	ENG. <i>00013/10/00</i>
CUSTOMER: KOSA	
CUSTOMER P.O. NO. 4500262721	
ITEM NO. E-4207-4/E-6207-4	
PLANT: WILMINGTON, NC	
TEMA SIZE AND TYPE: (2) 33-240 NEM C & D-LINES ACID WASTE WATER REBOILERS	
SOUTHERN HEAT EXCHANGER CORP.	
P.O. BOX 1850 TUSCALOOSA, AL 35403	
DATE 12/28/99	ORDER NO.
BY J.D. Crowder	DWG. NO. SB-4179-2
99-424A/B	SHEET 4 OF 5

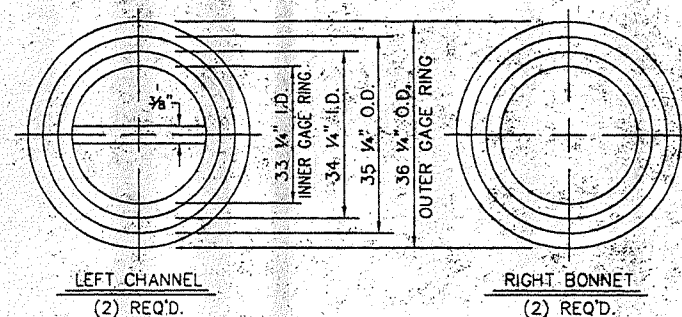


NAME PLATE BRACKET DETAIL



LIFT LUG DETAIL

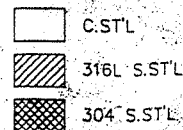
(2) REQ'D



GASKET DETAIL

(INCLUDES ONE SPARE SET)

0.175" THK. 316L S.S.T'L SPIRAL WOUND GASKET WITH TEFLON FILLER, 316L S.S.T'L DOUBLE JACKETED PASS RIBS, AND 1/8" THK. C.S.T'L OUTER GAGE RING & 316L S.S.T'L INNER GAGE RING.



CERTIFIED	ENG. 0043/28/00	
CUSTOMER KOSA		
CUSTOMER P.O. NO. 4500262721		
ITEM NO. E-4207-4/E-6207-4		
PLANT WILMINGTON, NC		
TEMA SIZE AND TYPE		
(2) 33-240 NEM C & D-LINES ACID WASTE WATER REBOILERS		
SOUTHERN HEAT EXCHANGER CORP		
P.O. BOX 1850 TUSCALOOSA, AL 35403		
DATE 12/28/99	ORDER NO.	DWG. NO. SB-4179-2
BY J.D. Crowder	99-424A/B	SHEET 5 OF 5

KoSa				HEAT EXCHANGER SPECIFICATION				
R E F	1	PLANT: WILMINGTON	EQUIPMENT NAME: C & D-LINES ACID WASTE WATER REBOILER			SAP # 102052 & 102053		
	2	AREA: C&D-LINES	NO. UNITS: 2		EQUIPMENT NOS: E-4207-4 & E-6207-4			
	3	ACCOUNT: 4025/4043	P. O. NO: 4500262721		VPF NO: 39069 WN & 39071 WN			
	4	VENDOR: SOUTHERN HEAT EXCH	JOB NO: 99-4 A/B		REF DWG NO: P&ID 4025-14008-4 & 4043-14001-4			
	5	BY: S. D. SMITH	CHCKD: B. E. LITTLE	APPRVD: B. E. LITTLE	DATE: 9/8/99	REV.: 8/2/00	APPRVD:	
P R O C E S S & G E N E R A L	6	SURF/UNIT (EFF): 3,820 FT2	SURF/SHELL (EFF): 3,820 FT2		NO. SHELLS: ONE			
	7	WEIGHTS/SHELL: 17,000 LB	BUNDLE: 11866 LB		FULL OF WATER: 25,300 LB			
	8	FLUID ALLOCATION		SHELL SIDE		TUBE SIDE		
	9	FLUID NAME:		30 # STEAM		ACID WASTE WATER		
	10	FLUID QUANTITY, TOTAL LB/HR:				93000		
	11	VAPOR IN/OUT				5000		
	12	LIQUID				93000		
	13	STEAM		10717		88000		
	14	NON-CONDENSABLES						
	15	FLUIDS VAPORIZED OR VAPORS COND.						
N E T W O R K	16	STEAM CONDENSED		10717				
	17	TEMPERATURE (IN/OUT) DEG. F	270		270		205	
	18	DEW POINT / BUBBLE POINT DEG. F					291	
	19	DENSITY LB/FT3	0.097		58.2		58.000	
	20	VISCOSITY CP	0.01		0.01		0.296	
	21	MOLECULAR WEIGHT VAP/NONCON						
	22	SPECIFIC HEAT BTU/LB-F	.5362		1.0082		.9835	
	23	THERMAL COND. BTU/HR-FT2 - F	.016		.398		.362	
	24	LATENT HEAT BTU/LB	928		928		920	
	25	INLET PRESSURE PSIA	42				60	
C O N D I T I O N S	26	VELOCITY FT/SEC	30				11.2	
	27	PRES. DROP (ALLOW/CALC) PSI	10 / 3				10 / 1	
	28	FOULING RESISTANCE	0.0005				0.002	
	29	HEAT EXCHANGED: BTU/HR	994,624		MTD. (CORRECTED)		18 DEG. F	
	30	TRANSFER RATE - SERVICE: 144	DIRTY: 169		CLEAN: 334		BTU/HR-FT2-F	
	31	DESIGN/TEST PRESSURE: PSIG	175 / CODE				175 / CODE	
	32	DESIGN TEMPERATURE DEG. F	350				350	
	33	PASSES PER SHELL	1				2	
	34	CORROSION ALLOWANCE IN	0.0625				NONE	
	M A T E R I A L S	35	NOZ	SIZE	USE	NOTE	FLANGE	FLANGE MATERIAL
36		A	6"	VAPOR INLET		150# ANSI RF	316 SS	
37		B	6"	VAPOR OUTLET		150# ANSI RF	316 SS	
38		C	3/4"	PRESSURE INDICATOR		150# ANSI RF	316 SS	
39		D	8"	STEAM INLET		150# ANSI RF	CS	
40		E	2"	CONDENSATE OUTLET		150# ANSI RF	CS	
41		DESIGN, FABRICATION AND INSPECTION			GASKETS (SERVICE & TEST)		SPIRAL WOUND, TFE/SS	
42		WELD PROC. SPECs AND QUALIFICATIONS RECORDS REQ'D						
43		CODE REQUIREMENTS: ASME SECT. VIII DIV I			TEMA CLASS: B		TEMA TYPE: NEM	
44		TUBES MATL: 316L SS	QTY: 994	OD 0.75	IN 0.065	IN WALL	LENGTH 20 FT	
S P E C I F I C A T I O N S	45	TUBE ATTACH: ☐ GROOVED AND EXPANDED;			☐ GROOVED, EXPANDED, & SEAL WELDED			
	46	☒ GROOVED, EXPANDED, & STRENGTH WELDED						
	47	PITCH: 0.9375 IN	TUBE PATTERN: TRIANGULAR					
	48	SHELL - MATL: CS	ID: IN	OD: 34	IN	☐ VERTICAL	☒ HORIZONTAL	
	49	SHELL COVER - MATL: NA	THICKNESS: IN		☐ REMOVABLE ☒ INTEGRAL			
	50	CHANNEL OR BONNET - MATL: 316L SS			THICKNESS: IN			
	51	CHANNEL COVERS - MATL: 316L SS CLAD			THICKNESS: IN			
	52	BAFFLES - CROSS:	TYPE: SINGLE SEGMENT	CUT (%D) 45	VERT.	PITCH: 6.75	IN	
	53	BAFFLES - LONG:	SEAL TYPE:		INLET: 18.5 IN			
	54	TUBE SHEETS - STATIONARY: 316L SS			FLOATING:			
S P E C I F I C A T I O N S	55	EXPANSION JOINT: ☐ YES ☐ NO		TYPE: FLANGED & FLUED, IF REQUIRED				
	56	EXPANSION JOINT DESIGN CRITERIA:		SHELL TEMP: AMBIENT	F	TUBE TEMP: 221	F	
	57	IMPINGEMENT PLATE: YES		MATERIAL: CS	THICKNESS: IN			
	58	PAINTING: SS: PREPARE SURFACE (SSPC-SP-1 & 2) & PAINT W/2 COATS DAMPNEY THERMOLOX 70 BLACK OR APPROVED EQUAL. CS: SANDBLAST (SSPC-SP-6) & PAINT W/2 COATS CARBOLINE CARBO-ZINC 11 ONE-COAT SYSTEM OR APPROVED EQUAL						
R E M A R K S	59	1. TUBES SHALL BE SA-213 SEAMLESS; TUBE/TUBESHEET WELDS SHALL BE AUTOMATIC WELDED						
	60	2. DOCUMENTATION SHALL BE A RECEIVABLE PURCHASE ORDER ITEM. MINIMUM REQUIREMENT 4 COPIES EACH:						
	61	- ALL FABRICATION DRAWINGS*			- INSPECTION REPORTS		- U1 FORM, COMPLETED AND SIGNED	
	62	- CALCULATIONS			- ALL MATERIALS CERTIFICATION PAPERS		- RUBBING OF VESSEL NAMEPLATE	
	63	3. VENDOR'S SHOP DRAWINGS MUST BE APPROVED BY BUYER'S ENGINEER BEFORE FABRICATION.						
	64	4. SUPPORTS: FOR HORIZONTAL MOUNTING						
S P E C I F I C A T I O N S	65	5. CHANNEL COVER SHALL BE GROOVED FOR GASKET RETENTION, SPARE GASKETS FOR EACH END SHALL BE SUPPLIED.						
	66	6. CLAD AND LAP JOINT FLANGES AND CLAD COVERS ARE ACCEPTABLE.						