



A Koch Chemical Technology Group, LLC Company



EQUIPMENT DOSSIER

CUSTOMER: YPFB REFINACION S.A.

PURCHASE ORDER NUMBER: 4010000103

**MANUFACTURER'S SERIAL
NUMBER:** 13330-10-1-01

ITEM / TAG NUMBER: 1E-1102

Manufactured by: Koch Heat Transfer Company, LP
P.O. Box 40082
Houston, Texas 77240-0082
12602 FM 529
Houston, Texas 77041
Telephone: 713-466-3535 Fax: 713-466-3701



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

1. Manufactured and certified by Koch Heat Transfer Company LP 12602 FM 529, Houston, TX 77041

(Name and Address of Manufacturer)

2. Manufactured for YPFB Refinscion S.A., EDIF. NAGO, PISO 1, Calle Celso Castedo No. 39, Santa Cruz, Bolivia

(Name and Address of Purchaser)

3. Location of Installation YPFB Refinacion S.A. Refineria Gualberto, Villarroel, Calle Celso Castedo No. 39, Cochabama, Bolivia

(Name and Address)

4. Type: Horizontal Heat Exchanger 13330-10-1-01-04 NA See Remarks 19449 2010
 (Horiz., vert., or sphere) (Tank separator, jkt. vessel, heat exch., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year Built)

5. ASME Code, Section VIII, Div. 1 Edition 2007 Addenda 2009 A NA NA
 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): One (1) (b) Overall length (ft & in.): 20' - 6 - 3/4"

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
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	3.500"	20' - 4 - 1/8"	SA-106 Gr B SMLS		0.216"	0.0625"	NA	None	NA	B & C	None	100	NA	NA

7. Heads: (a) SA-516 GR 70N / NA (b) SA-516 GR 70N / NA
 (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	(2) Fittings	0.216"	0.0625"	NA	NA	NA	NA	NA	5.250"	NA	NA	NA	NA	NA
(b)	(1) Flg.	1.375"	0.0625"	NA	NA	NA	NA	NA	**	NA	NA	NA	NA	NA

If removable, bolts used (describe other fastening) SA-193 B-7 (18) 0.625" Dia. / ** = 6.625" x 12.625"
 (Mat'l Spec. No., Grade, Size, No.)

8. Type of jacket NA Jacket closure NA
 (Describe as ogee & weld, bar, etc.)
 If bar, give dimensions NA If bolted, describe or sketch.

9. MAWP 465 NA psi at max. temp. 250 NA °F Min. design metal temp. -20 °F at 465 psi.
 (internal) (external) (internal) (external)

10. Impact test Yes, on Ret.Bnt. @ -50 degs. F. No, on all other material per UCS-66 (b & d)
 (Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press 605 PSI Proof test NA

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: SB-171- Alloy 464 2.750" 1.000" 0.0625" Bolted
 Stationary (Mat'l Spec. No.) Dia., in (subject to press.) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)
NA NA NA NA
 Floating (Mat'l Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment

13. Tubes: SB-111-443 ADM 1.900" 0.145"/0.200" 1 U
 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): NA (b) Overall length (ft & in.): NA

Course(s)			Material		Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

15 Heads: (a) NA / NA (b) NA / NA
 (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
(b)														

If removable, bolts used (describe other fastening) NA
 (Mat'l Spec. No., Grade, Size, No.)

17. Impact test No, on all materials per UNF-65.

18. Hydro., pneu., or comb. test press	100 PSI	Proof test	NA
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[illegible]

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 the part, item number, mfg's. name and identifying number)

Drawing No. 13330-10-1 ASK, C, IN, N, S, SA, TA

(Representative)

NB/0562 A, I, N TX/599
(Nat'l Board incl. endorsement, State, Province and No.)

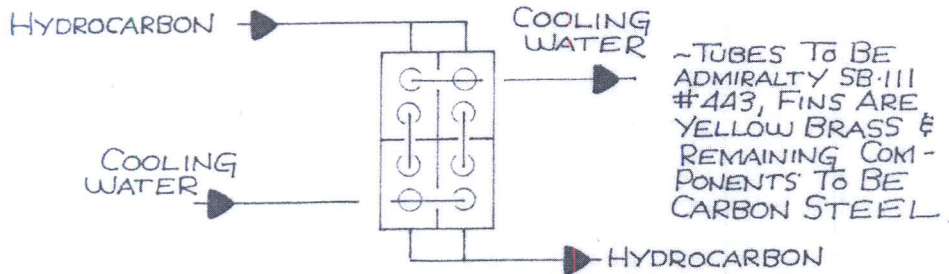
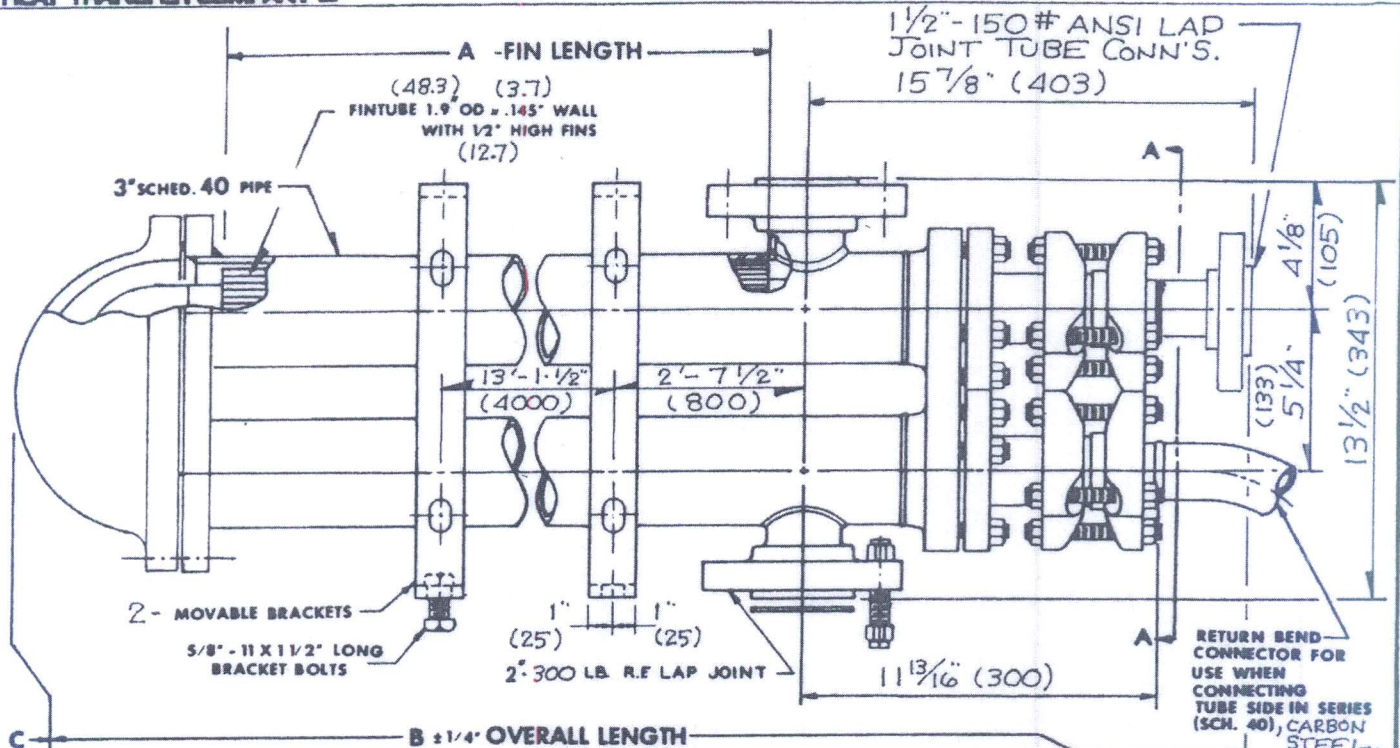
(Representative)

(Nat'l Board incl endorsement, State, Province and No.)

KKOCH

HEAT TRANSFER COMPANY LP

THE DRAWING IS LENT WITHOUT CONSIDERATION OTHER THAN THE BORROWER'S AGREEMENT THAT IT SHALL NOT BE REPRODUCED, COPIED, LENT OR DISPOSED OF DIRECTLY OR INDIRECTLY NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIFICALLY FURNISHED. THE APPARATUS SHOWN IN THE DRAWING IS COVERED BY ONE OR MORE PATENTS OR PATENT APPLICATIONS.



RECOMMENDED ARRANGEMENT

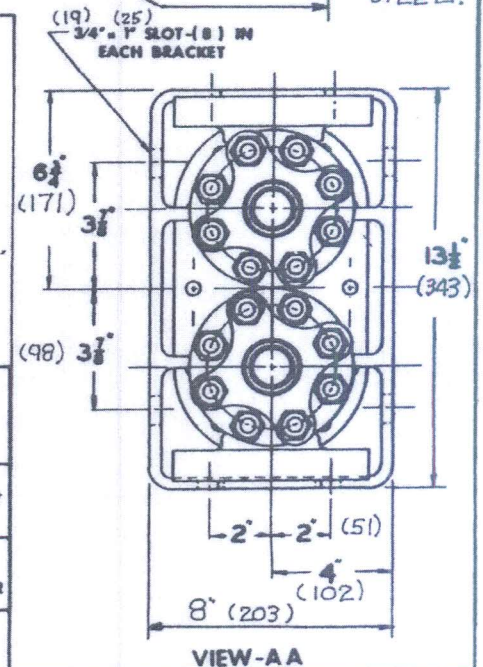
REFER TO INSTALLATION AND MAINTENANCE BULLETIN 1200/1.

SERVICE - DEETHANIZER FEED COOLER

SURFACE PER SECTION 126 SQ. FT.

EST. WT. PER SECTION, DRY 650 LBS., FULL H₂O 760 LBS.

ITEM NO.	NO. SECTIONS	SHELL		TUBE		CONSTRUCTION: ASME VIII
		PAR.	SER.	PAR.	SER.	
1E-1102	4	2	2	2	2	<input checked="" type="checkbox"/> ASME <input checked="" type="checkbox"/> STAMP DIV. 1, 2007 (A09)
<div style="border: 1px solid black; padding: 10px; text-align: center;"> CERTIFIED FINAL </div>						INSPECTION BY: <input checked="" type="checkbox"/> KHT <input type="checkbox"/> NAT. BD <input type="checkbox"/> CUSTOMER
						BY: <i>mg</i> CERTIFIED AS TO DIMENSIONS ONLY
						TO REMOVE HAIRPIN
						C
51-1E000-05	4-8"	6-2 3/8"	6'-2"			DESIGN PRESS. PSI 465
51-1E000-10	9'-9"	11'-5 1/8"	11'-3"			TEST PRESS. PSI 605
51-1E000-15	14'-10"	16'-6"	16'-4"			METAL TEMP. °F -20/250
51-1E018-720	19'-9"	21'-11 1/8"	21'-5"			MANIFOLDS
	(6020)	(6683)	(6528)			DESIGN PRESS. PSI
						TEST PRESS. PSI
						METAL TEMP. °F



CUSTOMER YPFB

REFINACION SA.

P.O. No. 4010000103

S.O. No. 913330-X1-10

DATE 4-15-10

TYPE 51-1E018-720

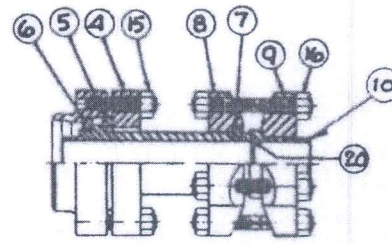
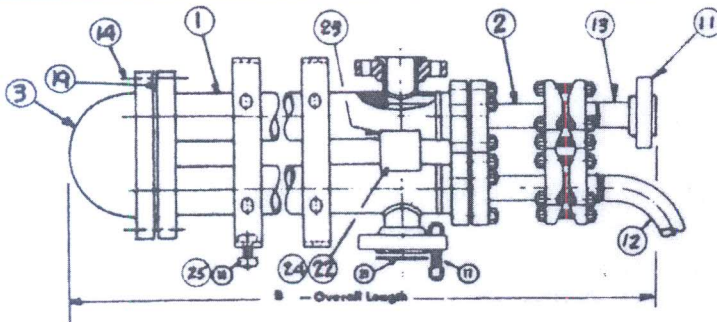
C - 13330-10-1

K KOCH

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FINAL



DETAIL OF HEAD ASSEMBLY

CONSTRUCTION:

MFG. STD. ☐
A.S.M.E. ☒
STAMP ☒
INSPECTION BY:
KHT ☒
NAT. BD. ☐
CUSTOMER ☐

ITEM	DESCRIPTION	PCS. PER SECT	FINISHED PART		ASSEMBLY		TOTAL PCS.	MATERIAL CODE
			DWG. No.	REV.	DWG. No.	REV.		
1	SHELL ASSEMBLY SA-13330-10-1	1					4	
2	TUBE ASSEMBLY TA-13330-10-1	1					4	
3	RETURN BONNET	1	A11172				4	096
4	COMPRESSION FLANGE	2	B30013				8	018
5	SEALING RING	2	B29001-2				4	752
6	SPLIT RING (SHELL)	2	B28001-2				8	053
7	SPLIT RING (TUBE)	2	B28001-6				8	053
8	FINTUBE FITTING FLANGE B31042	2	B32030				8	900
9	STUB END FLANGE B31042	2	B31044				8	900
10	STUB END (INLET & OUTLET)	2	B33004-10				8	009
11	TUBE FLG.: 1 1/2" - 150# ANSI LAP JOINT		65006-01				4	084
12	RET. BEND CONN. 1-1/2" SCH. 40 PIPE X 8-5/16" C-C		B17011-5				2	053
13	TUBE NOZ.: 1 1/2" S/40 LAP JOINT STUB		69006-21				4	092
14	BOLT STUDS 5/8" - 11 X 5 1/2" LG. W/ 2 HEX NUT	18	45010-22				72	268
15	BOLT STUDS 1/2" - 13 X 2-3/4" LG. W/ 1 HEX NUT	8	45008-11				32	268
16	BOLT STUDS 1/2" - 13 X 4-1/2" LG. W/ 2 HEX NUTS	8	45008-18				32	268
17	BOLT STUDS 5/8" - 11 X 4" LG. W/ 2 HEX NUTS		45010-16				16	268
18	BRACKET BOLTS 5/8" - 11 X 1-3/4" LG. W/ 1 HEX NUT		62910-007				16	1022.06
19	COVER GASKET	1	A28043				1	744
20	FINTUBE GASKET	2	B23001-1				2	744
21	NOZZLE GASKET		68008-002				2	744
22	NAME PLATE W/ (4) RIVETS		N-13330-10-1				1	760
23	I.D. NAMEPLATE W/ (4) RIVETS		IN-13330-10-1				3	760
24	SERVICE TAG W/ (4) RIVETS						1	760
25	BRKT. BOLT WASHER		49221-110				32	008.06

MATERIAL CODE

06 ZINC PLTD.
018 SA-316-70 N
048 SA-316-8 SMLS. AVG. WALL
053 SA-106-B SMLS. AVG. WALL
054 SA-106-C SMLS. AVG. WALL
084 SA-105
088 SA-181-70
900 SA-105-N
092 SA-234 W.P.B.
098 SA-352 L.C.B.
268 SA-183-87 & SA-194-2H
401 SA-240-394 S.S.
744 GRAFOR
751 SOLID SOFT STL. DEAD SOFT ANHL'D
707 SOFT STEEL DR'L JKT'D. NON-ASB.
752 Solid COPPER, ANHL'D.
009 SA-675-70
760 316 S.S.
008 F. 436

ITEM No. No. SECT. SER. No.
1E-1102 4 13330-10-1-01-04

TYPE	OVERALL LGTH.	SURFACE	120	SO. FT. PER SECT.	
51-1E000- 05	6'-4 3/8"				1022: SA-325 & SA-194-2H
51-1E000- 10	11'-5 1/8"	DESIGN PRESS.-PSI.	465	75	
51-1E000- 15	16'-6"	TEST PRESS. - PSI.	605	100	
51-1E018- 720	21'-11 1/8"	METAL TEMP. - °F.	20/250	20/250	REV. "A" 6-30-10 m&
51-1E000- 25	26'-7 1/8"	CORR. ALLOW.	1/16"	0"	

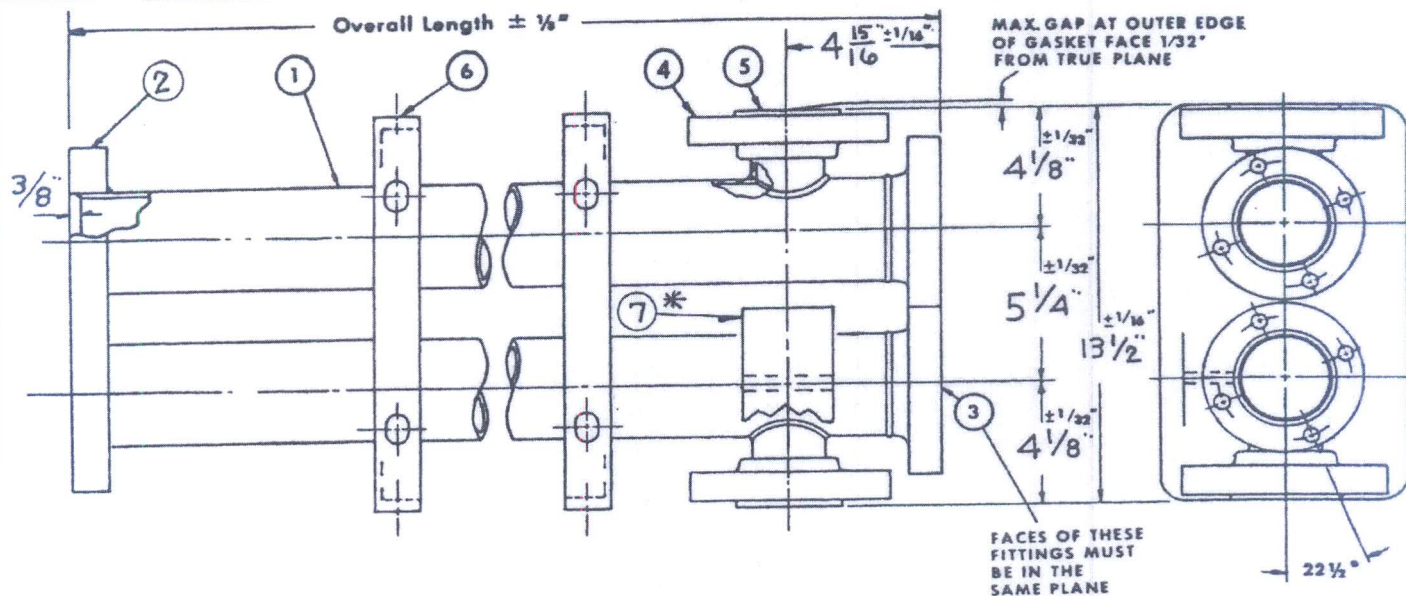
NOTE: COAT GASKET FACES WITH GREASE & PROTECT WITH WOOD OR METAL COVERS.

REMARKS: (1) TOTAL INCLUDES THREE (3) SETS SPARE GASKETS PER EXCHANGER.

TYPE- 51-1E018-720

S-13330-10-1 A

REF. ACCT. BY m& CK.



ITEM	DESCRIPTION	PCS. PER SECT.	FINISHED PART		ASSEMBLY		TOTAL PCS.	MATERIAL CODE
			DWG. No.	REV.	DWG. No.	REV.		
1	SHELL 3" SCH. 40 PIPE	2	50012-04				8	053
2	RETURN BONNET FLANGE	1	A12296				4	018
3	SHELL FITTING	2	B-15044-1				8	900
4	2" 300# LAP JOINT FLG.	2	65008-02				8	084
5	2" SCH. 80 L.J. STUB END	2	B13027-1				8	900
6	BRACKET	2	A15336				8	000
7	NAMEPLATE BRACKET	1	A41050-000				4	000
8								
9								
10								
11								
12								
13								
14								

NOM. LENGTH	SHELL LENGTH	OVERALL LGTH.	ITEM No.	No. SECT.	SERIAL No.
5' - 0"	5'-	5' - 4"	1E-1102	4	13330-10-1-01-04
10' - 0"	10'-	10' - 4 3/4"			
15' - 0"	15'-	15' - 5 5/8"			
20' - 0"	20' - 4 1/4"	20' - 6 3/4"			
25' - 0"	25'-	25' - 6 3/4"			

MATERIAL CODE

000 AISI 1010-1030	096 SA-352 L.C.B.
018 SA-516-70 N	288 SA-193-87 & SA-194-2H
048 SA-53-B SMLS. AVG. WALL	401 SA-240-304 S.S.
053 SA-108-B SMLS. AVG. WALL	744 CRAFOIL
054 SA-108-C SMLS. AVG. WALL	751 SOLID SOFT STL. DEAD SOFT ANNLD.
064 SA-105	707 SOFT STEEL DB'L. KTD. NON-ASB.
088 SA-181-70	
900 SA-105-N	
092 SA-234 W.P.B.	

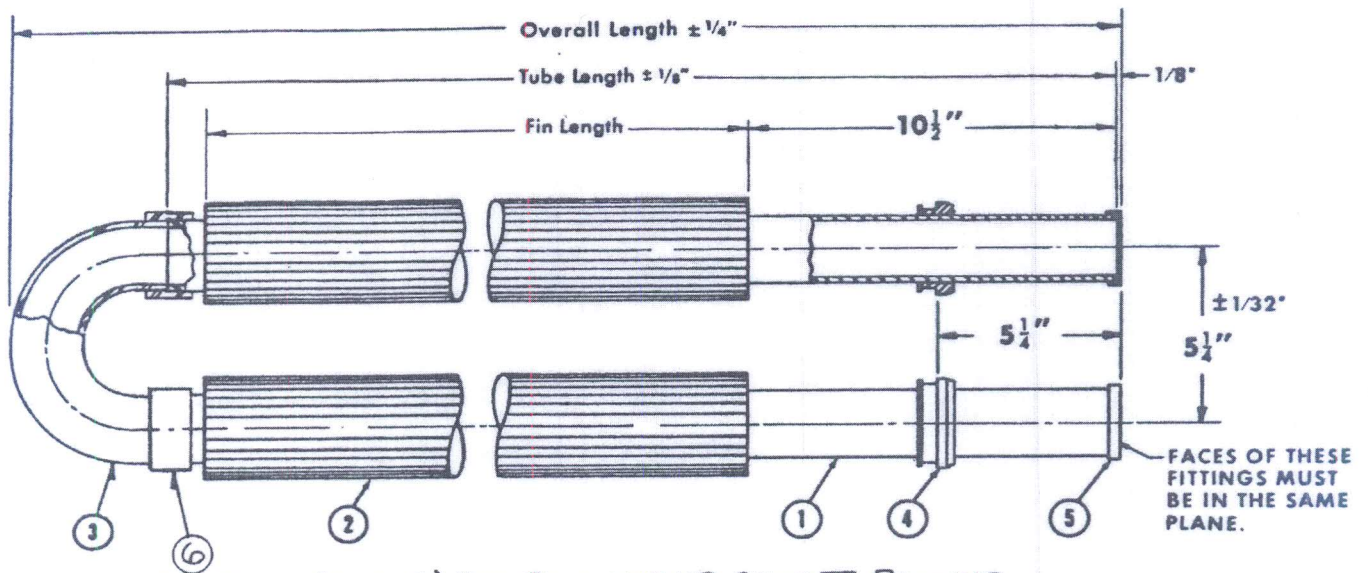
**CERTIFIED
FINAL**

*SHOP NOTE: BUILD TWO (2) SHELL ASSY'S. w/
NAMEPLATE BRACKET NEAR SIDE AS SHOWN AND
TWO (2) SHELL ASSY'S. w/ NAMEPLATE BRACKETS
FAR SIDE.

TYPE - 51-1E018-720

SA - 13330-10-1

REF. ACCT. BY m8 CK.





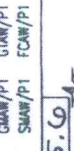

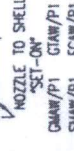

- STRESS REL. RET. BEND (ITEM 3) PER PROC. HT-113 PRIOR TO BRAZING.

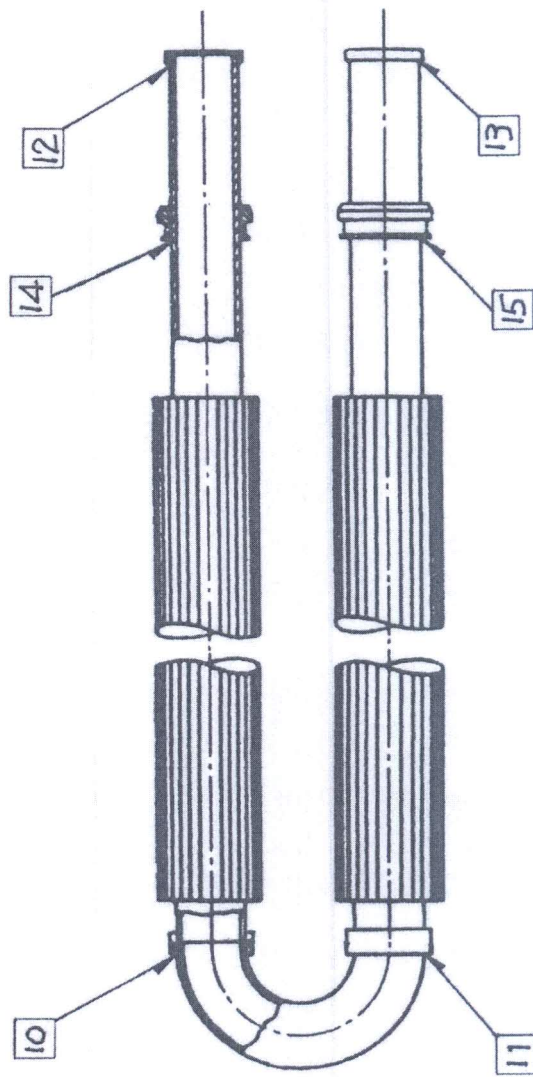
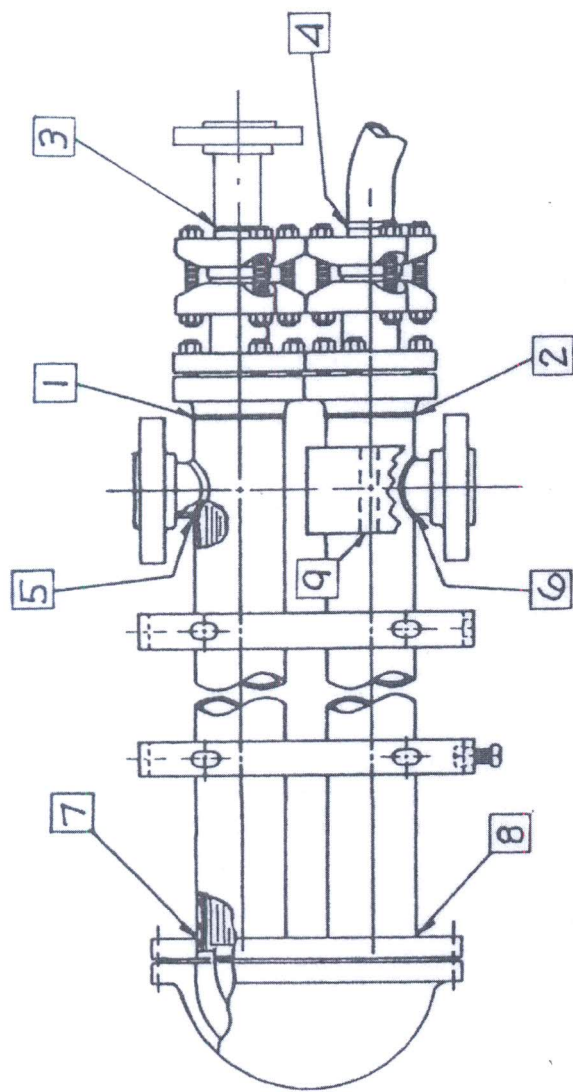
ITEM	DESCRIPTION	PCS PER SECT.	FINISHED PART		ASSEMBLY		TOTAL PC'S.	MATERIAL CODE
			DWG. No.	REV.	DWG. No.	REV.		
1	TUBE 1.9" OD X .145" M. W.	2	50006-04				8	180
2	FIN CHAN. 1/2" X .020" USE 1.05	32	48105-20		2528Ft.; 210 #		128	124
3	RETURN BEND 1.9" OD X .200" M. W. X 5-1/4" C-C	1	B 17011-72				4	180
4	FINTUBE FITTING	2	B 18005-1				8	127
5	FINTUBE FITTING, RING	2	B 18013				8	127
6	SOLDER CPL'G.	2	A60031				8	127
7								
8								
9								
10								
11								
12								
13								
14								


FIN LENGTH	TUBE LENGTH	OVERALL LGTH.	CUTTING LGTH	ITEM No.	No. SECT.	SERIAL No.
4' - 6-1/2"	5' - 7 3/4"	6' - 0-1/2"	5' - 7 3/4"	1E-1102	4	13330-10-
9' - 7"	10' - 8 1/2"	11' - 1-1/4"	10' - 8 1/2"			1-01-04
14' - 8"	15' - 9 3/8"	16' - 2-1/8"	15' - 9 3/8"			
19' - 9"	20' - 10 1/2"	21' - 3-1/4"	20' - 10 1/2"			
24' - 9"	25' - 10 1/2"	26' - 3-1/4"	25' - 10 1/2"			

MATERIAL CODE			180: ADMIRALTY SB-111 # 443
001 STEEL, C-1018, C-1015	055 SA-179 SFL'S. MIN. WALL	124 YELLOW BRASS B-36 NO. 6	
002 STEEL, C-1015, C-1005	060 SA-210A2 SFL'S. MIN. WALL	127: B21 ALLOY 464	
005 SA-306 GR. 60 BAR STOCK	078 SA-214 R.W. MIN. WALL	BAR ~ CERT. TO	
007 A-7 PLATE	082 SA-105-11, 0.30% MAX. CARB	SB-171	
008 SA-306 GR. 70 BAR STOCK	083 SA-105-1, 0.35% MAX. CARB		
012 SA-315 GR. 60 FIREBOX C-81	084 SA-105-11, 0.35% MAX. CARB		
014 SA-315 GR. 70 FIREBOX C-81	087 SA-105-1, 0.35% MAX. CARB		
020 SA-205-C FIREBOX	092 A-236-APB		
048 SA-53-B SFL'S. AVG. WALL	095 SA-216-MCB		
055 SA-106-B SFL'S. AVG. WALL	122 NAVAL BRASS SB171 PLATE		
	123 NAVAL BRASS B-36 NO. 6		

REMARKS:	CERTIFIED FINAL	TYPE - 51-1E018-720
		TA - 13330-10-1
	BY <i>m</i> CK.	

1-4	 SINGLE V BUTTWELD GMAW/P1 GTAW/P1 SAW/P1 FCW/P1
5,6	 NOZZLE TO SHELL "SET-ON" GMAW/P1 GTAW/P1 SAW/P1 FCW/P1
7,8	 DOUBLE FILLET GMAW/P1 GTAW/P1 SAW/P1 FCW/P1
10,11	 SILVER SOLDER - TUBE/TUBE BEND • SILVER SOLDER CPLG. QB-201
12,13	 SOCKET WELD QB-201
14,15	 DOUBLE FILLET QB-201



9

 FILLET WELD
 (1/8" WELD UNLESS NOTED
 OTHERWISE)
 GMAW/P1 GTAW/P1
 SAW/P1 FCW/P1

CERTIFIED
FINAL

BY: m&

DRAWING NUMBER
WM-13330-10-1

KOCH HEAT TRANSFER CO. LP
WELD/WELDER MAP