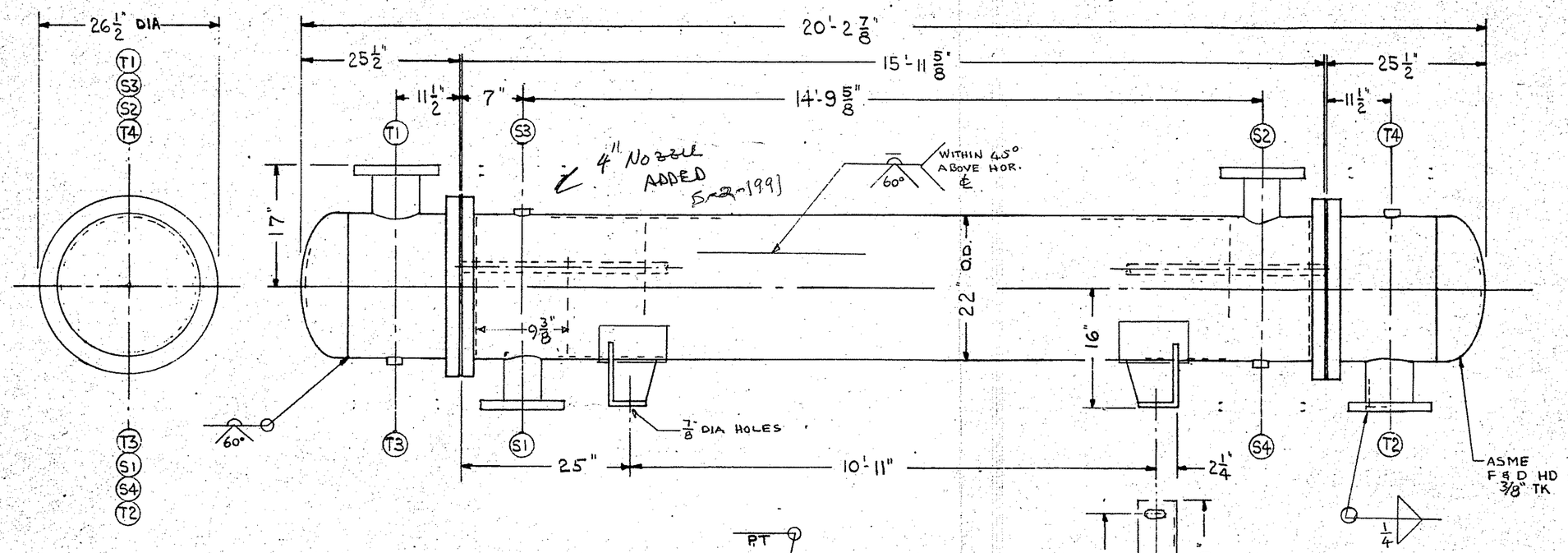
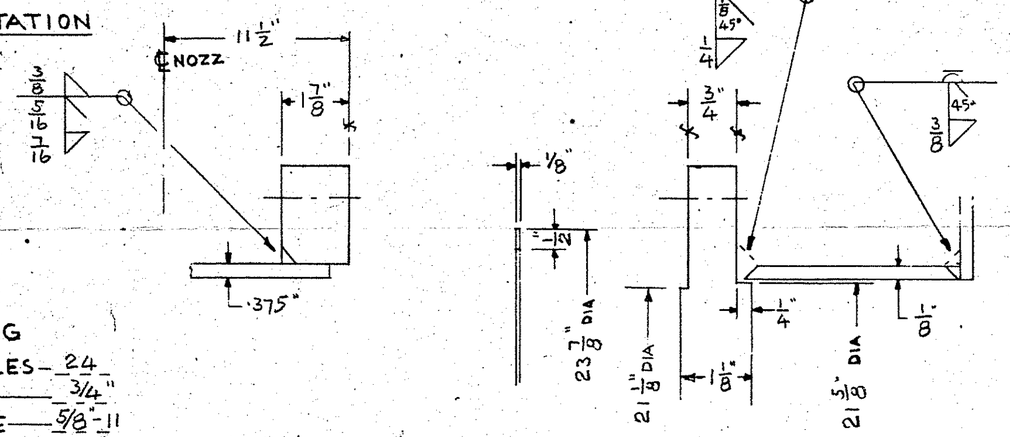


TRUE ORIENTATION



BOLTING

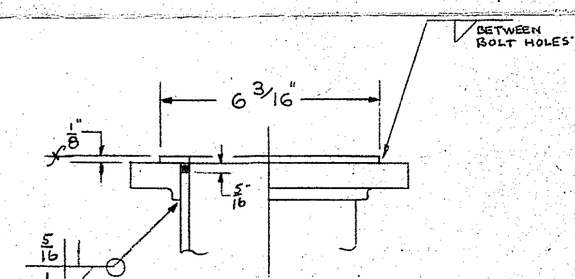
Nº OF HOLES — 24

HOLE DIA — 3/4"

STUD SIZE — 5/8"-11

BOLT CIRCLE — 25"

CONSTRUCTION DETAILS



NOZZLE DETAIL
S1 & S2

CONSTRUCTION TO COMPLY WITH ASME CODE SECT. VIII 1965 ED. INCLUDING CERT. AND STAMP (FORM U-1) ☒

TEMA CL. C ☒

FOR INSTALLATION IN STATE OF

SHELL SIDE	CONDITIONS	TUBE SIDE
75	DES. PRESS. (PSIG)	75
300	DES. TEMP. (°F)	300
136	TEST PRESS. (PSIG)	113
METHANOL	DESIGN FLUID	WATER

0" CORR. ALLOW. (EXCEPT TUBES) 1/16"

~~Low Temp. Service-See Fab. Note B~~ ☐
~~Designed per UCS-66 (NO IMPACT TEST)~~ ☐

~~Halogen Test @ PSIG PER SA-7540~~ ☐
~~Dehydrate~~ ☐
~~Air and Soap Test~~ Reinf. Pads ☐ Facings ☐

WEIGHTS (lbs.)	
Empty:	5730
Flooded:	8900

FABRICATION NOTES

S=Req'd. in Shell, C=Req'd. in Channel, NR=Not Required

			S	C	NR
A	X-Ray - Spot ☐ Full ☐				☒
B	Impact Test	Weld Metal / Base Metal			☒
C	Post Weld Heat Treat				☒
D	Sandblast C.S. After Fab (SEE-A-11138)	Ext. / Int.		☒	
E	Pickle				☒
F	Paint Exterior C.S. One Shop Coat PER-A-11138			☒	
		Req'd.			NR
G	Tube End Welding	SA-8571 Manual / Automatic			☒
H	Tube Hole Grooving	SA-8480	☒		
J	Customer's Nameplate				
K	Nozzle Protection M&L Std. ☒ USE TEFLON TAPE WITH ALL SCREWED CONN ☒				
L	Spare Parts: 4 SETS OF GSKTS TAGGED WITH OD, ID, STYLE & MAT'L				☒
M	PAINT EQUIP. Nº ON OUTSIDE OF VESSEL WITH LETTERS AT LEAST 2" HIGH				

CARBON STEEL						STAINLESS STEEL TYPE 304			
A 53 B	A 106 B	A 285 C	A 212 B	A 181 I	A 105 II		A 312	A 240	A 182	ELC
						SHELL				
						Barrel		☒		
						Shell Flg.				
						End Plate				
						Formed Hd.				
					☒	Nozzle Nk.				
				☒		Nozzle Flg				
						Exp. Joint				
						Cone				
						Reinf. Pad				
						Weld Ftgs.				
						Scr. Ftgs.			☒	
						FACINGS		☒		
						BONNET OR CHANNEL				
						Barrel				
				☒		Chan. Flg.				
						End Plate				
		☒				Formed Hd.				
☒						Nozzle Nk.				
					☒	Nozzle Flg				
						Cover				
						Cone				
						Reinf. Pad				
						Weld Ftgs.				
					☒	Scr. Ftgs.				

	C. STL A 285 C	C. STL A 212 B	S. STL A 240	ELC
Tube Sheet			☒	
Tubes AVG ☒ Min. ☐	C.S. A 214	C.S. A 179	S.S. A 249	S.S. A 213 ELC
			☒	

Studs	Nuts
A193-B7 ☒	A194-2H ☒

		1/8	1/16
Gaskets			
Comp. Asb.		☒	

	CS	SS
Dbl. Jkt. Asb. Fill		
Spiral Wound		
Packing	Neoprene	
Baffles		☒
Tie Rods, Spacers		☒
Impingement Baf.		
Pass Partitions		
Unit Supports	☒	
Support Pad	☒	
Sealing Strips S.S. 302		

MATERIAL NOTES

Stainless Steel is of the type shown in Column heading unless indicated otherwise

A-312 is welded pipe unless indicated by "S" (For Seamless)

The letter "F" indicates facing of material under which it appears.

Carbon Steel A53 Gr. B is Seamless Pipe

NOZZLE SCHEDULE (NOZZ. FLG-ASA EXCEPT AS NOTED)

MK	SIZE	RTG#	FACE	TYPE	NECK	REMARKS	SERVICE
S1	4"	150	-	SO	S/40S	SEE DET.	OUTLET
S2	4"	"		"	"	"	INLET
S3	3/4"	3000	-	H.C.	-	PLUGGED	VENT
S4	3/4"	"	-	"	-	"	DRAIN
T1	8"	150	RF	SO	S/30		INLET
T2	8"	"	"	"	"		OUTLET
T3	3/4"	3000	-	H.C.	-	PLUGGED	DRAIN
T4	3/4"	"	-	"	-	"	VENT

★ BAFFLES
H=HOR; V=VERT; D=SEE DET

No.	20	Pitch	9"
Dia.	21 5/8	Cut	27 %
Tk.	3/16"	Cut★	H

TUBES
FOR U-TUBES LG.=LENGTH OVER BUNDLE

No.	402	Lg.	16'-0"
OD	3/4"	Pitch	15/16" Δ
BWG	18	Passes	1

REV	DESCRIPTION	BY	DATE	CK.
4	CHG'D NOTES D & F	DAR	3,31,67	8
3	DIM. LOCATING SUPPORTS 25" WAS 36"; 10'-11" WAS 10'-0"	G	2/24/67	
2	ADDED SLOTTED HOLES I SUPPT	G	1/27/67	
1	ADDED BPF Nº & DETAILS	G	1/9/67	

REFERENCE DRAWINGS:
T.S. DRILLING TEMPLATE: ET-10067

Certified Correct
Date: By:

Shop	Date			1/27	2/27	4/3	
CUST.	Sepia	—	—	—			
	Prints	4	8	—	8	8	
	Date	11/30	1/11	—	2/27	4/3	
Issued	Rev.	0	1	2	3	4	5

CUSTOMER: HERCULES INC.
P.O. No.: 336-026-01092-11-000-FCD
ENGINEERS:
UNITS REQUIRED: TWO
M&L SER. NO. 4833 - 4834
NAT'L. BD. NO. 2559 - 2560
TAG NO. E-205-7 E-2205-7

B.P.F. No. 37192

104511

Insp. by Customer: Req'd. ☐ NR ☐

M&L JOB NO. 16371-6

MANNING & LEWIS ENGINEERING CO.
UNION, N. J.

22-192 METHANOL COOLER

TEMA TYPE BEM HOR.

SCALE	MADE	CKD	DATE	DRAWING NO
~	HWS		11/28/66	C-10066-4