

1. Manufactured by Camden Alloy Fabricators Camden, New Jersey
(Name and address of Manufacturer)
2. Manufactured for Hercules, Incorporated Wilmington, Delaware #104052
(Name and address of Purchaser)

Type Vert. Kind Heat Exch. Vessel No. 70-5142B (Mfr. Serial) (State & State No.)
(Horiz. or Vert.) (Tank, Jacketed, Heat Exch.)
Natl. Bd. No. 850 Yr. Built 1971

Items 4-9 incl. to be completed for single wall vessels (such as air tanks), jackets of jacketed vessels, or shells of heat exchangers.

4. SHELL: Material C/S SA-515-70 T.S. 70000 Nominal Thickness 7/16 Corrosion Allowance 1/16 In. Diam. 3 Ft. 0 In. Length 8 1/8 Ft. 1/8 In.
(Kind and Spec. No.) (Fig. or F.B. & Spec. Min. T.S.) (In. Allowance) (In. Diam.) (Ft.) (In.) (Length) (Ft.) (In.)

5. SEAMS: Long Dbt Butt H.T. No R.T. Spot Sectioned No Efficiency 85 %
(Welded, Dbt., Single, Lap, Butt) (Yes or No) (Spot or Complete) (Yes or No)
UW-13.2(d) & H.T. No R.T. Spot Sectioned No No. of Courses 4
(Welded, Dbt., Single, Lap, Butt) (Yes or No) (Spot or Complete) (Yes or No)

If riveted describe seams fully on reverse side of form.

6. HEADS (a) Material T.S. (b) Material T.S.
Location Thickness Crown Radius Knuckle Radius Elliptical Ratio Conical Apex Angle Hemispherical Radius Flat Diameter Side to Pressure (Convex or Concave)
(Top, bottom, ends) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.)
(a) _____
(b) _____
If removable, bolts used (Material, Spec. No., T.S., Size, Number) Other fastening (Describe or Attach Sketch)

7. STAYBOLTS: (Material) _____ If hollow Attachment _____ Pitch _____ X _____ Diam. _____
(Size of Hole) (Threaded, Welded) (Horiz.) (Vert.) (Nominal)

8. JACKET CLOSURE: _____
(Describe as gage & weld, bar, etc. If bar, give dimensions, if bolted, describe or sketch)

9. Constructed for max. allowable working press. 300 psi at max. temp. 600 °F. Min. temp. (when less than -20°) _____ °F. Hydrostatic Test 450 psi.
(Pneumatic or Press) (Pneumatic or Press)

Items 10 and 11 to be completed for tube sections.

10. TUBE SHEETS: Stationary. Material 316S/S SA-240 Diam. 35-1/8 In. Thickness 1-5/8 In. Attachment Welded
(Kind & Spec. No.) (Subject to Pressure) (Welded, Bolted)
Both T.S. Fixed Material 316S/S SA-240 Diam. 35-1/8 In. Thickness 1-5/8 In. Attachment Welded
(Kind & Spec. No.) (Subject to Pressure) (Welded, Bolted)

11. TUBES: Material SA-240 O.D. 1-1/4 In. Thickness 14 Gauge Number 434 Type Straight
(Kind & Spec. No.) (Straight or U)

Items 12-15 incl. to be completed for inner chambers of jacketed vessels, or channels of heat exchangers.

12. SHELL: Material 316S/S SA-240 T.S. 75000 Nominal Thickness 3/8 In. Corrosion Allowance 0 In. Diam. 3 Ft. 0 In. Length 2 7/8 Ft. 1/8 In.
(Kind and Spec. No.) (Fig. or F.B. & Spec. Min. T.S.) (In. Allowance) (In. Diam.) (Ft.) (In.) (Length) (Ft.) (In.)

13. SEAMS: Long Dbt Butt H.T. No R.T. Spot Sectioned No Efficiency 85 %
(Welded, Dbt., Single, Lap, Butt) (Yes or No) (Spot or Complete) (Yes or No)
UW-13.2 (b) & H.T. No R.T. None Sectioned No No. of Courses 1 each
(Welded, Dbt., Single, Lap, Butt) (Yes or No) (Spot or Complete) (Yes or No)

If riveted describe seams fully on reverse side of form.

14. HEADS (a) Material SA-240 T.S. 316 (b) Material T.S. (c) Material T.S.
Location Thickness Crown Radius Knuckle Radius Elliptical Ratio Conical Apex Angle Hemispherical Radius Flat Diameter Side to Pressure (Convex or Concave)
(Top, bottom, ends) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.) (Ft. or In.)
(a) Top, bottom, ends 7/8 In. _____
(b) Channel _____
(c) Floating _____

If removable, bolts used (a) Al. St. SA-193B7.125000 3/4", 40b
(Material, Spec. No., T.S., Size, Number)

(c) _____ Other fastening (Describe or Attach Sketch)

15. Constructed for max. allowable working press. Full Vac psi at max. temp. 500 °F. Min. temp. (when less than -20°) _____ °F. Hydrostatic Test 50 psi.
(Pneumatic or Press) (Pneumatic or Press)

Items below to be completed for all vessels where applicable.

16. SAFETY VALVE OUTLETS: Number ELSEWHERE IN SYSTEM Location _____

17. NOZZLES

Purpose (Inlet, Outlet, Drain)	Number	Diam. or Size	Type	Material	Thickness	Reinforcement Material	How Attached
A	1	20"	Lap	S/S 316	1/4"	None	Welded
B	1	10"	Lap	S/S 316	1/4"	None	Welded
C & D	2	6"	S.O.	C/S SA53B	Sch 80	C/S SA285C	Welded
H	1	1"	S.O.	S/S 316	Sch 40	None	Welded
J	1	2"	PAD	S/S 316	7/8"	None	Welded
E & F	2	1"	Coup	EG St.			

VPF# 41544

FORM U-1 (back)

VPF 4. 14

SHT. 4

EQUIP.# E-403-2B

PROJ.# 270167

ACCT. 4003

P.O.#

APPROVED: LPM

DATE 1-28-92

18. INSPECTION Manholes, No. _____ Size _____ Location _____
 OPENINGS: Handholes, No. _____ Size _____ Location _____
 Threaded, No. _____ Size _____ Location _____
 19. SUPPORTS: Skirt _____ Skirt NO Lugs _____ Legs _____ No _____ Other _____ Attached _____ (Where & How)
 (Yes or No) (Number) (Number) (Describe)
 20. REMARKS: Reboiler, 1 Pass, 1130 sq. ft., 13'-0" overall. Contents unknown.
 Non-Lethal service.
 Shell exp. Joint 48" OD x 1/2" TK. Flg'd & Flued Hds. C/S SA-515-70

(Brief description of purpose of the vessel, as Air Tank, After Cooler, Jacketed Cooker, etc. State contents of each part.)

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.

Date January 25 1991 Signed Camden Alloy Fabricators By R. J. Baughman
 (Manufacturer)

Certificate of Authorization Expires 12/31/94

CERTIFICATE OF SHOP INSPECTION

VESSEL MADE BY Camden Alloy Fabricators at Camden, New Jersey

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province Pa. and employed by Hartford Steam Boiler I & I Co. of Hartford, Conn. have inspected the pressure vessel described in this manufacturer's data report on January 20 1991, and state that to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code.

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 January 25 1991

Walter J. Comer
 Inspector's Signature

Commissions NB 4438, PA 1786
 Nat'l Board, State, or Province and No.

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province _____ and employed by _____

_____ 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 that to the best of my knowledge and belief the manufacturer has constructed and assembled this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code. 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 _____ 19 _____

 Inspector's Signature

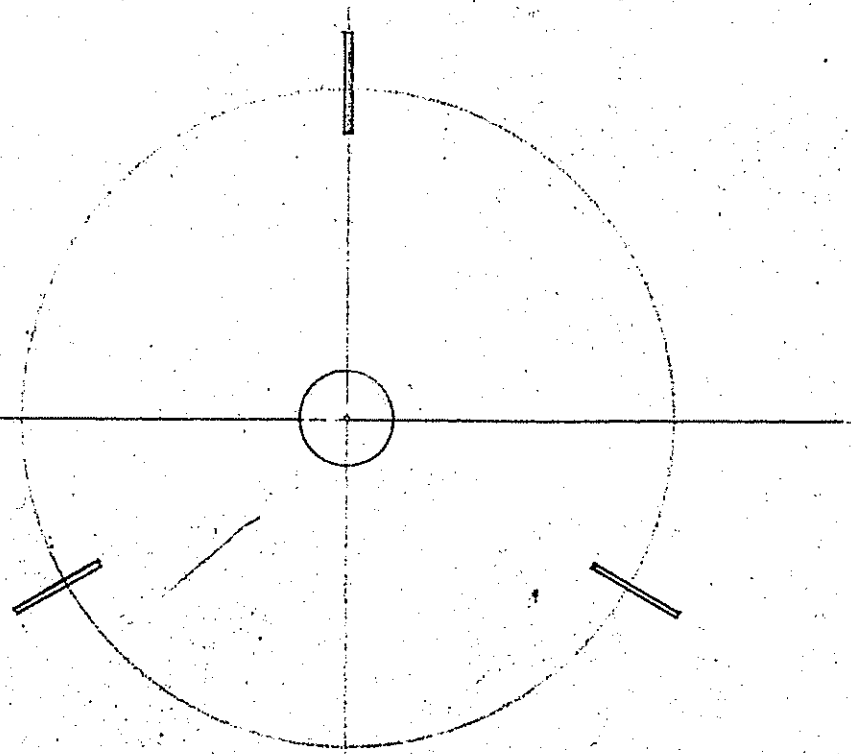
Commissions _____
 Nat'l Board, State, or Province and No.

NOTE: THD TIE RODS 1/2" - 13 TPI
X 9/16" LG 7.5' END & 2' LG OP
END.

PART NO	QTY	DESCRIPTION
2A	6	TIE RODS 1/2" DIA X 6'-10 1/2"
2B	2	5'-8 1/2"
3A	26	1/2" SCH #40 PIPE SPACERS X 13 1/2"
3B	10	X 26 1/2"
3C		
3D		

PLANT R
T.S. LAYOUT

LIFTG LUGS
D.S.P. BETWEEN
HOLE
E-743

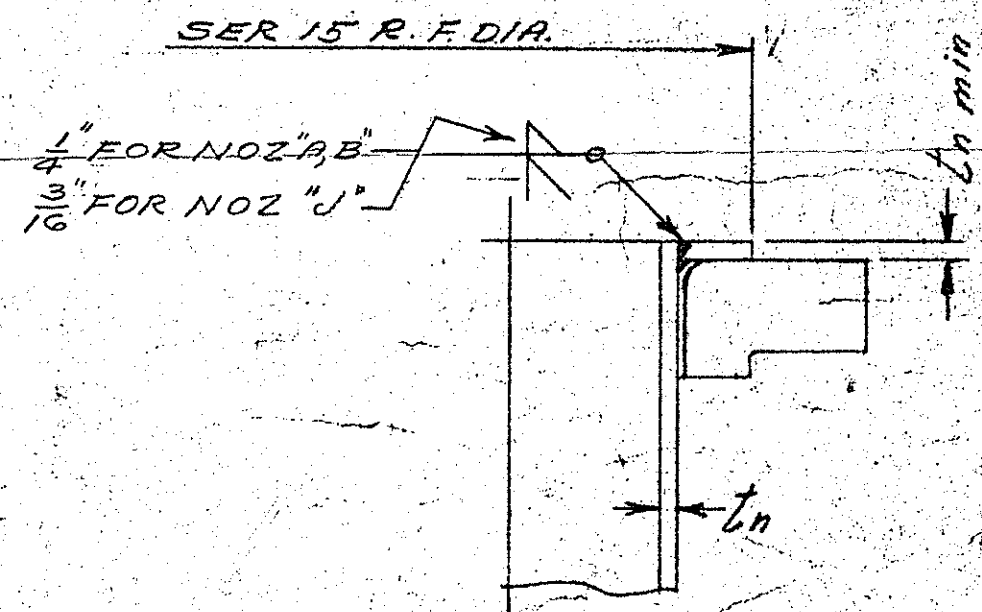


BOTTOM VIEW

NOTE: Nozzle sizes, locations and center to face dimensions are same as on original drawing A-716.

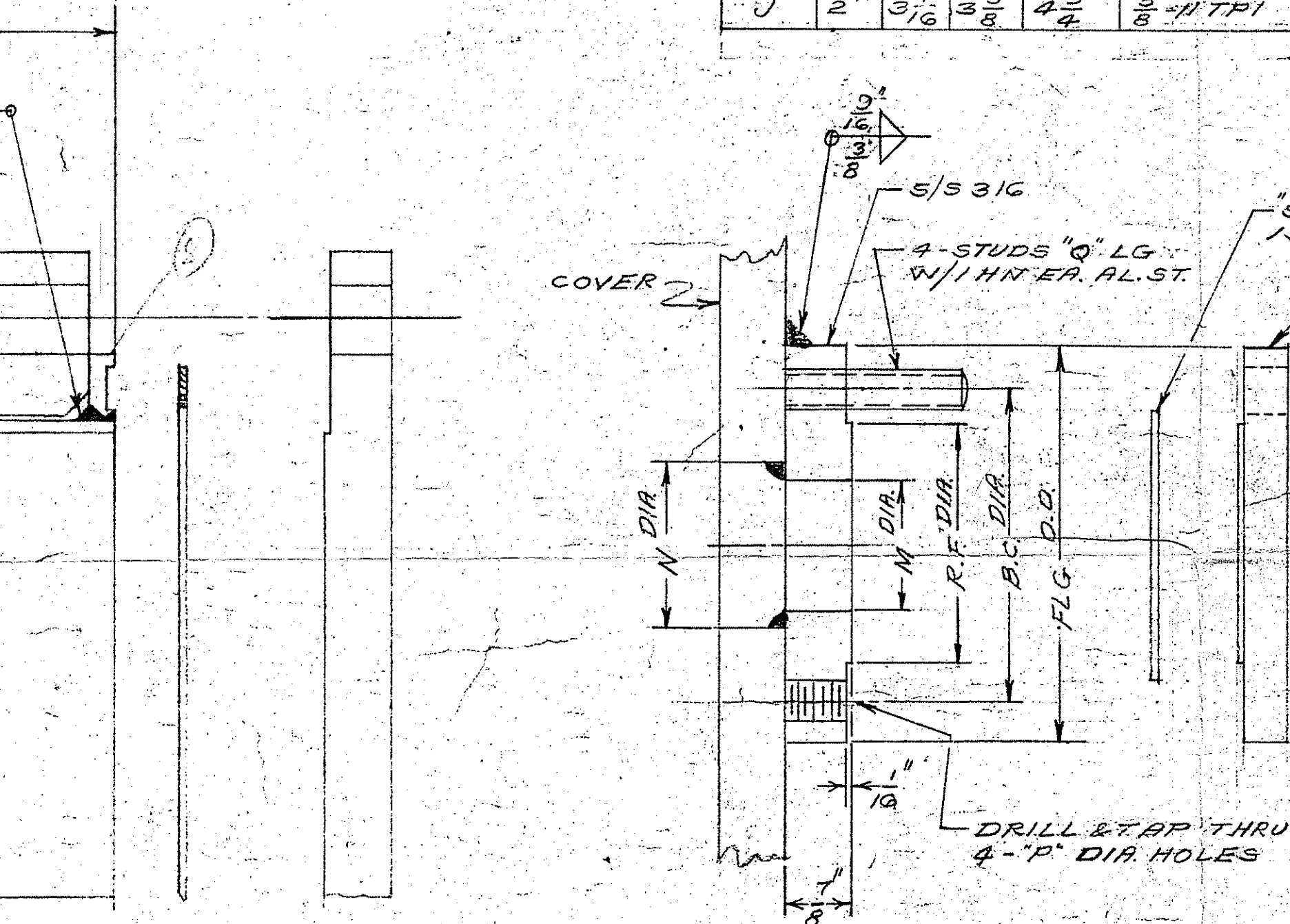
NOZ	SIZE	FLG TYPE	FLG RATG	NOZ NECK THK & MAT.	FLG MAT	RE
A	20"	LAP	SER 15	1/4" S/S 316	FGD ST.	SE
B	10"	LAP	SER 15	1/4" S/S 316	FGD ST.	SE
C, D	6"	S.O.	SER 30	SCH 80 ST.	FGD ST.	
H	1"	S.O.	SER 15	SCH 40 S/S 316	S/S 316	W/E
J	2"	RAD	SER 15	SEE DET. L.		W/E

NOTE: ALL FLANGE FACES ON TUBE SIDE HAVE COMMERCIAL CONCENTRIC SERRATED SURFACE.



TYPICAL DETAILS
NOZ "A, B"

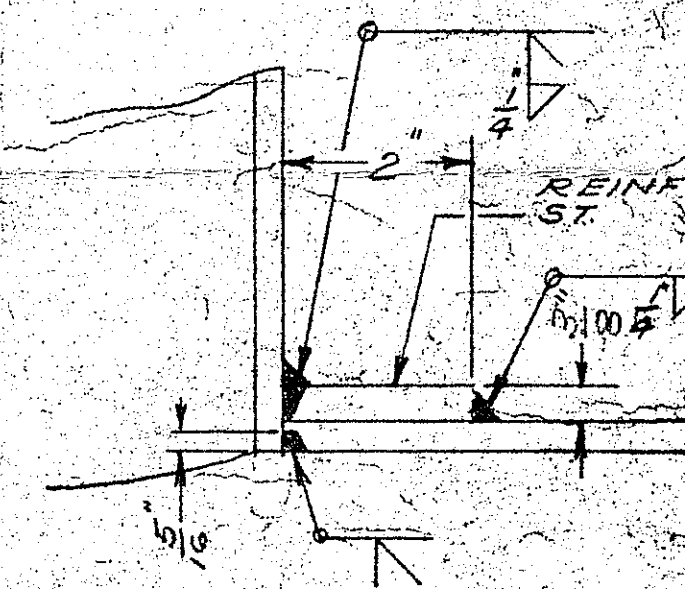
PAD	M	N	R.F.	B.C.	P	Q	FLG O.D.
U	2"	3 1/8"	3 5/8"	4 3/4"	5 1/8" NTP1	2 5/8"	6"



PLANT FILE COPY
DO NOT REMOVE FROM
FILES

B.P.F. NO. 41544 DATE 9/17/70
SHEET 3 APPARATUS NO.
PROJECT & ACCOUNT 26019 2003 2016
ORDER NO. 336-026-19336
PLANT HANOVER
APPROVED [Signature]

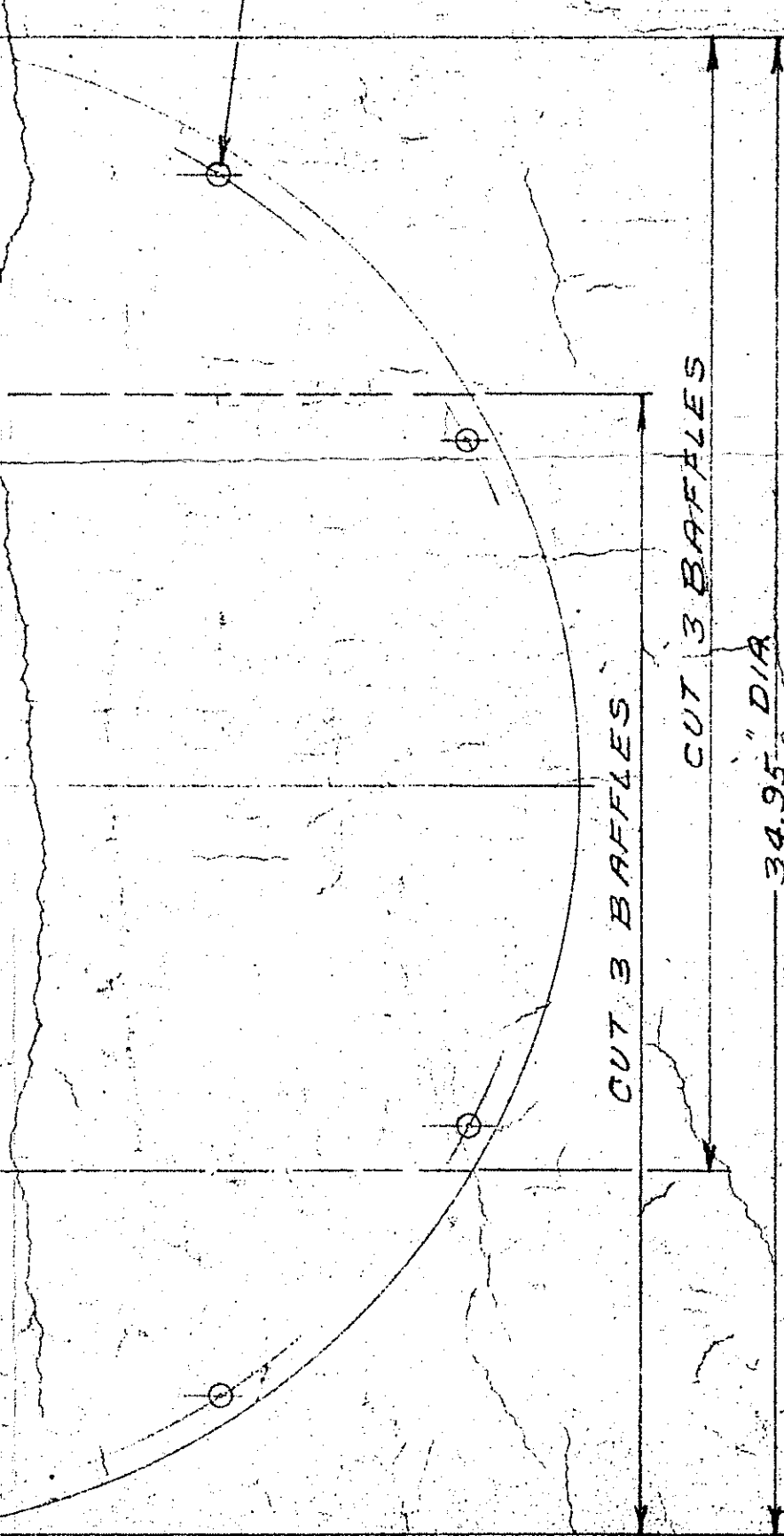
NOZ TO CHANNEL
WELD DETAILS
NOZ "A & B"



NOZ TO SHELL
JOINT DETAILS
NOZ "C & D"

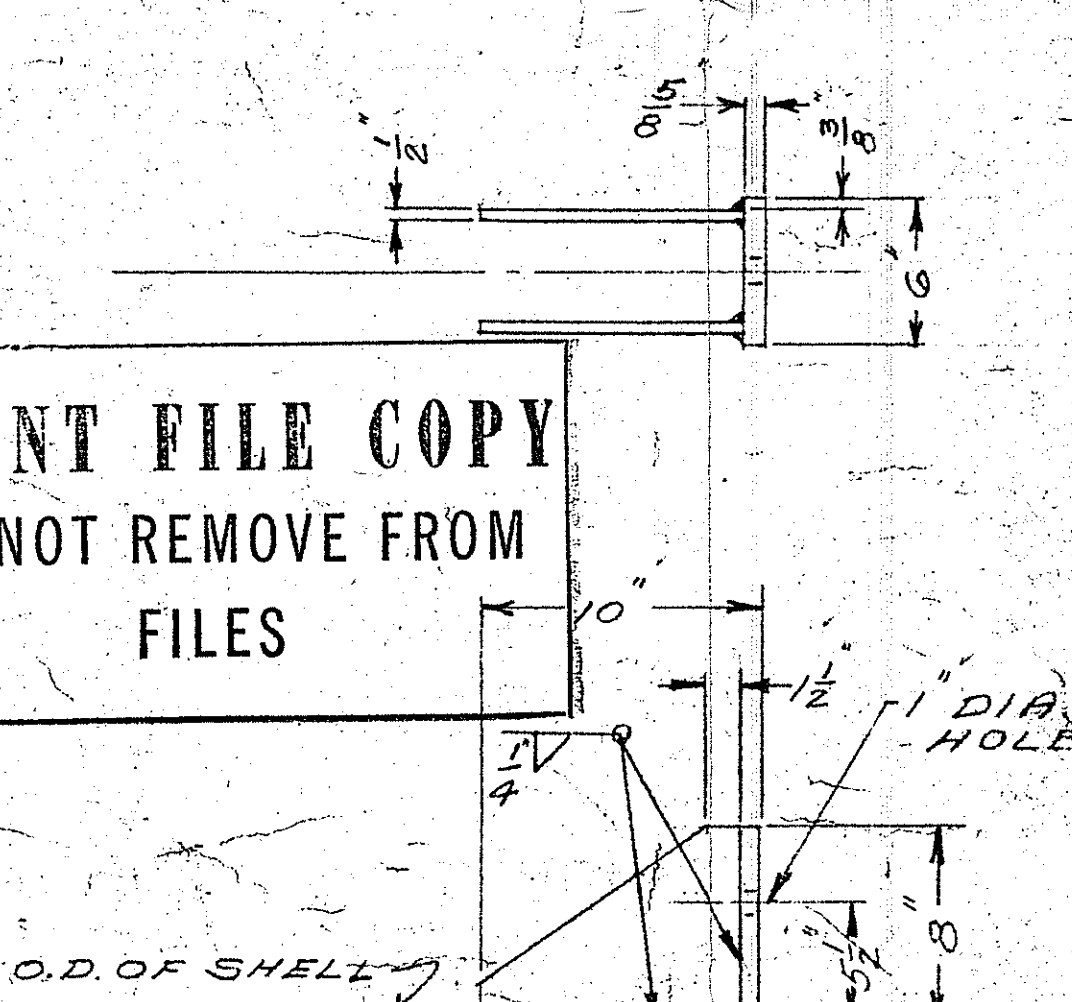
NOT SHOWN
CHANNEL

8 - 17/32" DIA. HOLES
FOR TIE RODS



INSIDE
LONG SEAM
WELD DETL
SHELL & CHANNEL

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DETAIL OF SUPP. LUGS

NOTE: SPARE GASKETS TO BE FURNISHED IN ACCORD. WITH ORDER SPEC.

HERC. INC. ORD. NO. 336-026-19336 - 07000 F.C.

GENERAL NOTES		
DESIGN, FABRICATION & INSPECTION IN ACCORD. WITH ASME U.P.V. CODE (1968) & TEMA SPEC. CLASS. C.		
ASME CODE STAMP REQ'D		
SPOT X-RAY REQ'D		
PAINT SUPPORT & LIFT LUGS ONLY PER HERC. SPEC PROJ. 26001		
DESIGN PRESS.	FULL VAC.	300 PSIG
DESIGN TEMP.	500°F.	600°F.
TEST PRESS.	50 PSIG	450 PSIG
CORROSION ALLOW.	NONE	0.025"
FLUID	ORGANICS	ACID
MATERIALS		
TUBES	S/S 316	SA-213
TUBE SHEETS	S/S 316	SA-213
TIE RODS	STEEL	
SPACERS		
BAFFLES		
CHANNELS	S/S 316	SA-213
CHANNEL COVER	S/S 316	SA-213
SHELL	STEEL	SA-213
EXP. JOINT	STEEL	SA-213
CHANNEL FLG	FGD ST.	SA-213
NOZ. NECK (CHANNEL)	S/S 316	SA-213
NOZ. NECK (SHELL)	STEEL	SA-213
NOZ. FLGS	FGD ST.	SA-213
EXT. STUDS	AL. ST.	SA-193
EXT. NUTS	AL. ST.	SA-193
GASKETS	"SPIRAL WOUND" S/S 316	
REIN. RINGS (SHELL)	STEEL	
CHANNEL COVER JACKET		
WEIGHT OF UNIT 3400 LB		
THOROUGHLY CLEAN INSIDE & OUTSIDE OF UNIT. BE FREE OF ALL MILL SCALE, RUST, GREASE, DIRT, SLAG OR OTHER FOREIGN MATTER.		
PAINT EQUIP. NO. ON OUTSIDE OF UNIT MIN. 2" LETTERS		

104052

No.	DATE	REVISION
2	9-9-70	Checking & adding more tie rods
1	8-12-70	Direct copy of A-716 (24-333) w/ current code requirements

SCALE	DRAWN	DATE	REF.	ABBY	DWGS.
1" = 1'-0"	R. J. 2961	8-12-70	E-603		
CAMDEN COPPER WORKS, INC.					CHECKED
REBOILER ITEM E-403-2A					TRACED
2-2403-2A					APPROVED
1130 SQ. FT. / PASS					DRAWING
FIRST MADE FOR HERC. INC. 5142					A-8

