

106606

FORM U-3 MANUFACTURER'S CERTIFICATE OF COMPLIANCE
COVERING PRESSURE VESSELS TO BE STAMPED WITH THE UM SYMBOL, SEE U-1(j)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured and certified by Alfa Laval Thermal Inc., 800 Chestnut Street, Lykens, PA 17048
(Name and address of Manufacturer)

2. Manufactured for Rohm & Haas Bayport, Inc. Philadelphia, PA
(Name and address of Purchaser)

3. Location of installation Rohm & Haas Bayport, Inc. La Porte, Texas
(Name and address)

4. Type: Vert. Spiral Heat Exchanger 1.01 Cu.Ft. 21851
(Horiz., vert., or sphere) (Tank, separator, etc.) (Capacity) (Mfg's. serial No.)
--- 21851, Rev. 1 1995
(CRN) (Drawing No.) (Year built)

5. ASME Code, Section VIII, Div. 1 1992 A93
Edition and Addenda (date) Code Case No.

6. Shell (a) No. of course(s): 1 (b) Overall length (ft & in.): 1' 0"

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	16-1/2"	1' 0"	SA-516,70	.1875"	-	*	None		*	None				

7. Heads: (a) SA-516,70 None (b) SA-516,70 None
(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)	C-Top	1.01"	-						18"					
(b)	H-Bottom	1.01"	-						18"					

If removable, bolts used (describe other fastening) SA-193,B7 (14) 3/4"D.ea.hd.
(Mat'l Spec. No., Grade, Size, No.)

8. Type of Jacket Jacket Closure
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions, if bolted describe or sketch

9. MAWP 110 psi at max. temp. 500 °F. Min. design metal temp. -20 °F at 110 psi.
(internal) (external) (internal) (external)

10. Impact test No, exempt per UCS-66(a)
(Indicate yes or no and the component(s) impact tested)

11. Hydro., proof, or safety test press. 165 psi Proof test

12. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Open.)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet	1	3" 300#RF		SA-106	SA-105	Sch.40	-	-	Welded	Welded	
Outlet	1	2" " "		"	"	"	-	-	"	"	
Inlet	1	2" 150#RF		"	"	"	-	-	"	"	
Outlet	1	2" " "		"	"	"	-	-	"	"	
Drain	1	1" NPT	-	"	-	Sch.80	-	-	"	-	

13. Supports: Skirt --- Lugs --- Legs --- Others Gussets Attached Welded to Shell
(Yes or no) (No.) (No.) (Describe) (Where and how)

14. 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)

15. Remarks: Hydro-tested per UG 99(b).
*No seams in outer spiral shell. Hoop load transferred by braces. Weld efficiency of 55%.

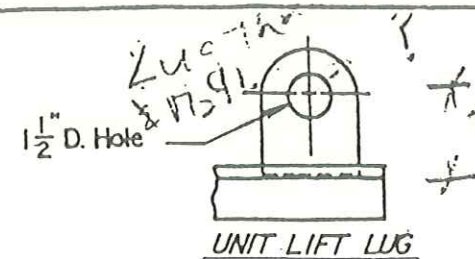
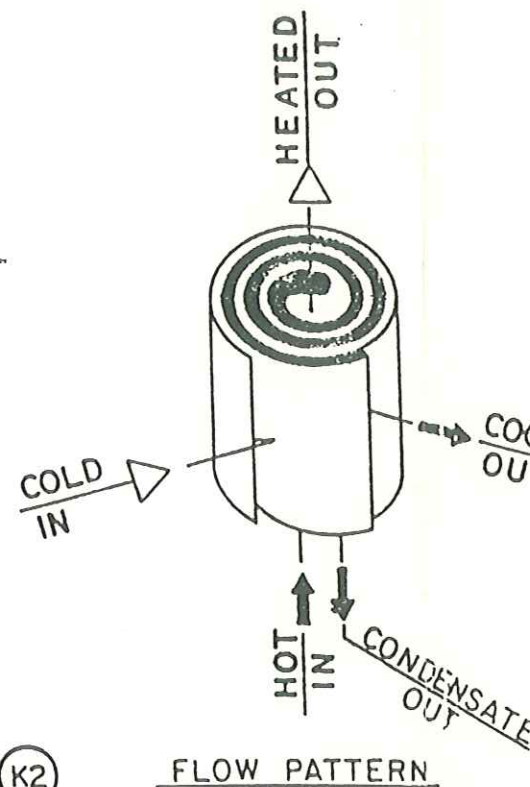
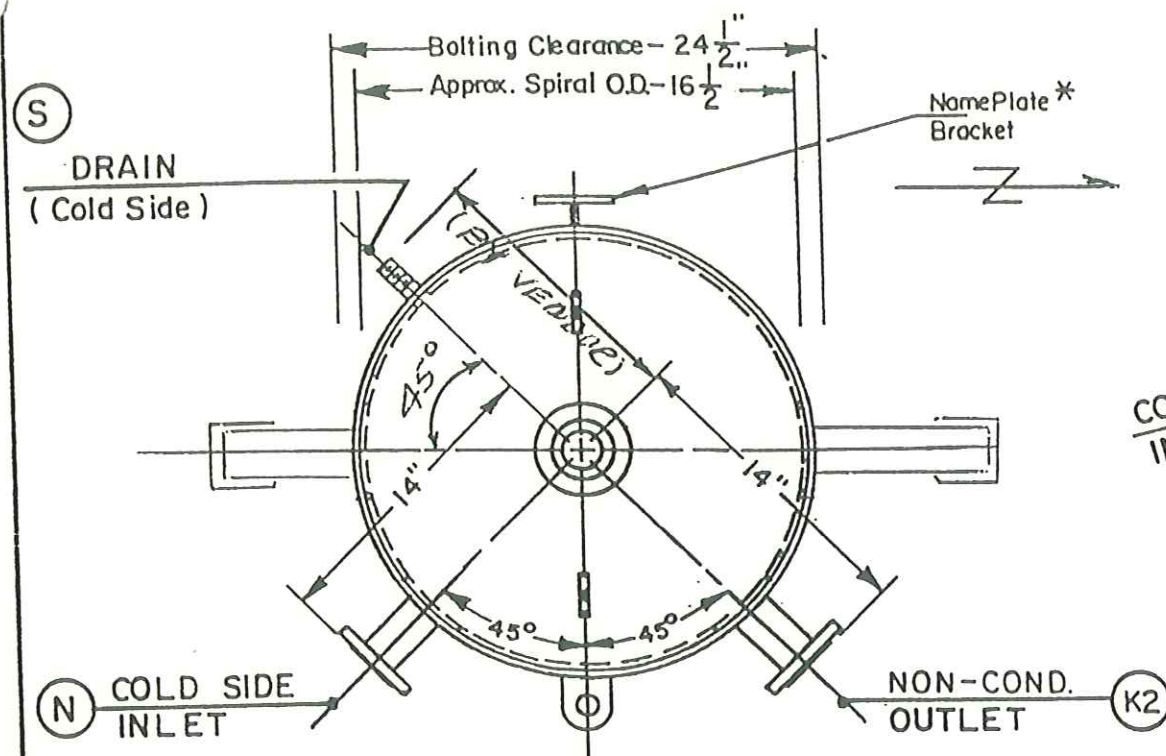
CERTIFICATE OF SHOP COMPLIANCE

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. 23,027 Expires March 30 1996

Date 5-10-95 Name Alfa Laval Thermal Inc. Signed John Giffings
(Manufacturer) (Inspector)

Joe / Jim - Please be sure that all dimensions are shown on certified drawings. *calcs & support lugs calcs with certifi for all*



APPROVED
AS NOTED 2/3/96
ROHM AND HAAS CO.

Provide code labels for Flanges & shell

TAG UNIT
PO15-25338
AR NO. 94-705
** ITEM NO. 420-02-40125

PL/P MASTER COPY
DATE 1-20-95



LUG DESIGN BY VENDOR

6"x6" SQ. PL (TYP. 2)

WARNING!!
WHEN COVER IS REMOVED FOR INSPECTION OF ONE PASSAGE, BE SURE THERE IS NO PRESSURE IN THE OPPOSITE CHANNEL. IF PRESSURE IS TO BE APPLIED FOR TESTING WITH ONE COVER REMOVED, THE UNCOVERED SPIRAL MUST BE RETAINED BY SUITABLE HOLD-DOWN BARS TO PREVENT PARTIAL TELESCOPING UNDER PRESSURE.

APPROVAL PRINT
Approved For Fabrication Or Erection
By _____ Date _____

DATE	SYM.	REVISION	BY

Weight, Flooded - Approx.	800 #
Weight, Empty - Approx.	750 #
Maximum Allowable Working Press. (Both Sides)	110 PSIG
Design Temp. (Both Sides)	-20°F Min. ; 500°F Max.
Inner Channel (Hot Side)	ALTERNATE CHANNELS WELDED 1/4"
Outer Channel (Cold Side)	1/4"
Outer Spiral Thickness	.1875" X 12" Wide
Spiral Material	SA-516-70

NOTE:
ALL HEADS SA-516-70(N)
GASKETS - NON-ASBESTOS, 20" NOM. DIA.
LOCATION OF NAMEPLATE MFG. OPTION
HOOKBOLT ASSY. 14 Per Cover, 3/4" D. X 6" Lg. SA-193, B7 (Zinc Plated)
PAINT - MFG. STD. CARBOLINE 801, PORCELAIN BLUE

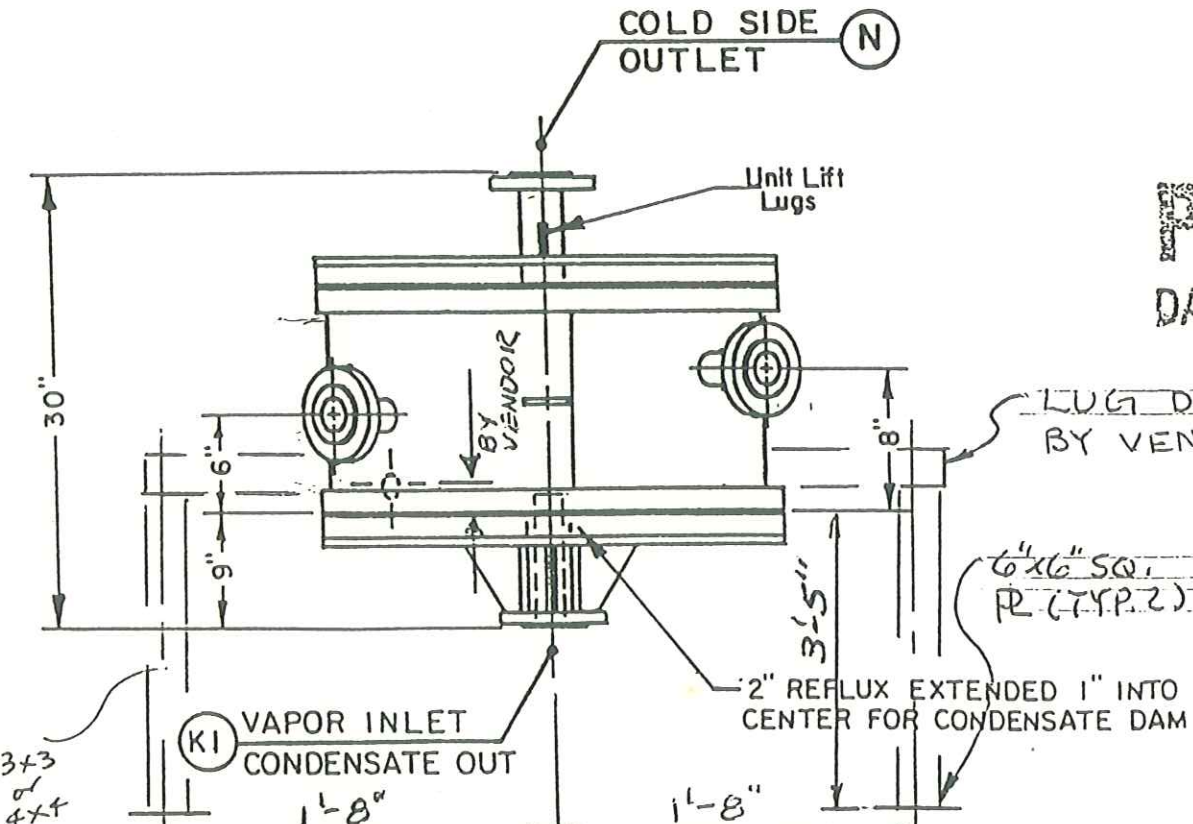
TOLERANCE ON ALL DIMENSIONS ± 1/8"
TOLERANCE ON ANGULAR DIMENSIONS ± 1°
BOLT HOLES TO STRADDLE SHOWN CENTER LINES, ± 1°
FOR WELD DETAILS SEE DWG. NO. D-65A, & B

NOZZLE SCHEDULE					
NOZZLES AND DRAIN ARE SA-106, GR. B, SCH. 40					
<i>Noz "S" 1" be sch 80 show individual nozzle designation for all nozzles. e.g. N1 = cold in N2 = cold out</i>					
FLANGES ARE SA-105					
S	1	1"	—	N.P.T.	CAPPED
K2	1	2"	300 #	R.F.	
N	2	2"	300 #	R.F.	
K1	1	3"	300 #	R.F.	2" REFLUX
MARK NO.	REC'D.	SIZE	RATING	FACING	REMARKS

DESIGNED, CONSTRUCTED, UM STAMPED IN ACCORDANCE WITH A.S.M.E. CODE SEC. VIII-DIV. 1-1992, ADDENDA 1993

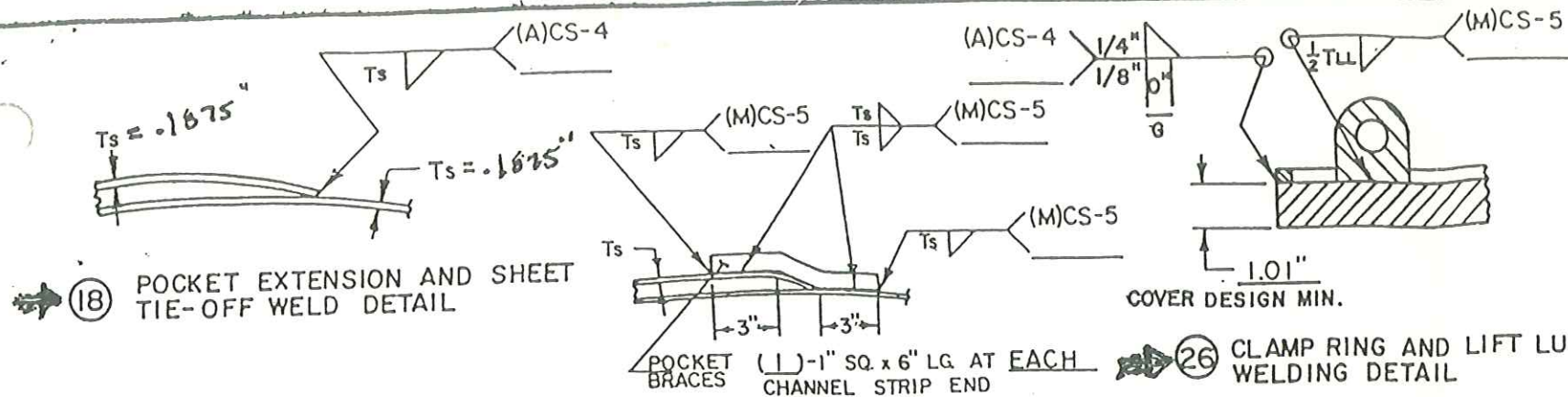
420-02-40125

Alfa Laval Thermal Inc. Lykens, PA 17048-0010	
CUSTOMER: ROHM & HAAS COMPANY	
ORDER No. PO15-25338	ITEM No. **
30 SQ. FT. SPIRAL HEAT EXCHANGER	
DWN. BY JR	CHK'D. JD
APP'D. SD	JOB No. 944409
DATE 1/6/95	MFG. No. 21851
Type	I-G

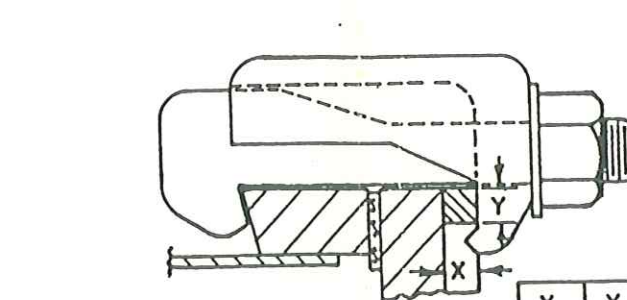
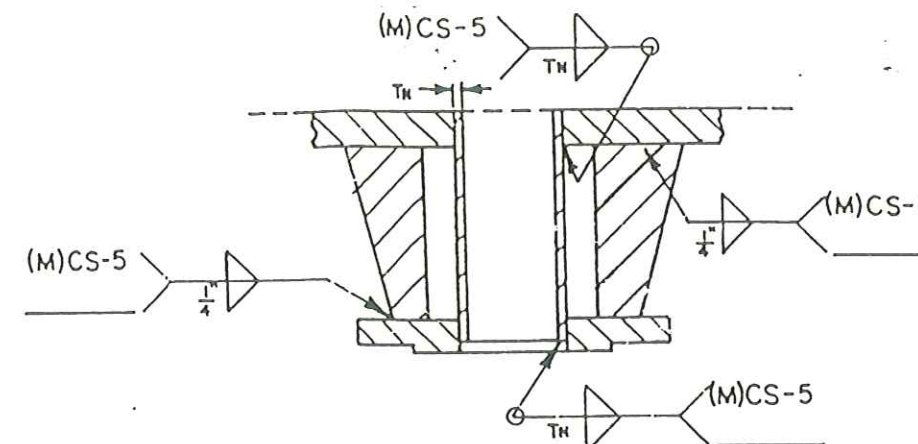
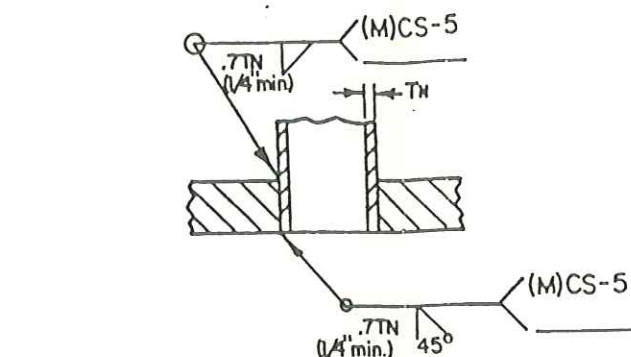


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VB-0040-0196

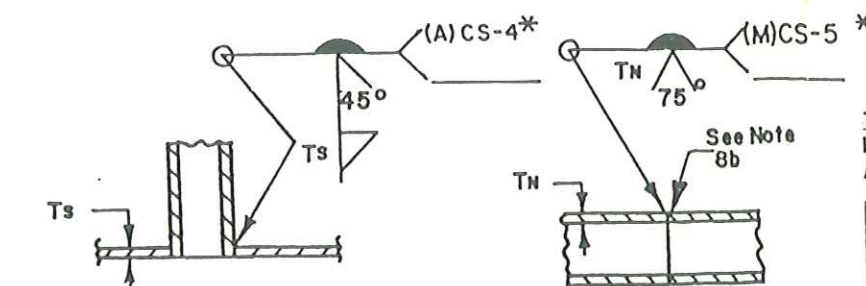
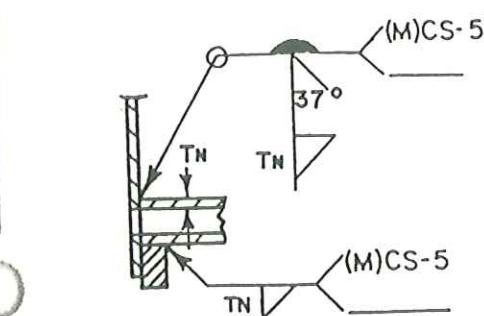
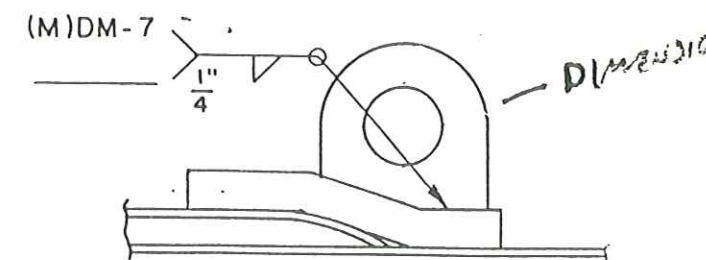
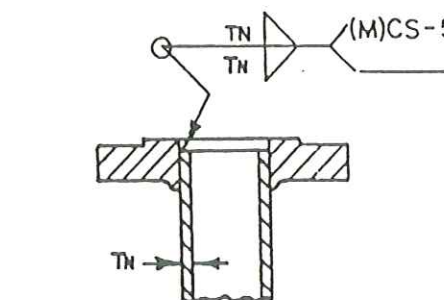


20A STRIP END BRACE WELDING DETAIL



X	Y
3/8"	3/8"
1/4"	1/2"

33 1" D. HOOKBOLT DETAIL



25 NOZZLE TO NOZZLE EXTENSION WELD DETAIL

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DATE	SYM.	REVISION	BY
	O		

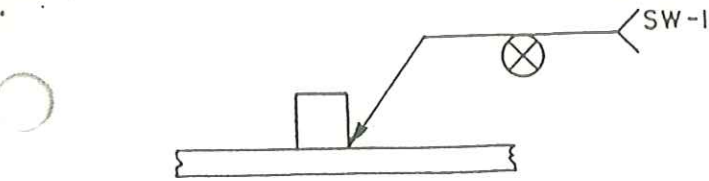
Alfa Laval Thermal Inc. Lykens, PA 17048-0010			
CUSTOMER: ROHM & HAAS COMPANY			
ORDER No. P015-25338		ITEM No.***	
WELDING AND COMPONENT PRODUCTION DWG. FOR CARBON STEEL SPIRALS, SHEET 2 OF 2			
DWN. BY JR	CHK'D <i>[Signature]</i>	APP'D <i>[Signature]</i>	JOB No. 944409
DATE 1/9/95	MFG. No. 21851	DWG. No. D-65B	



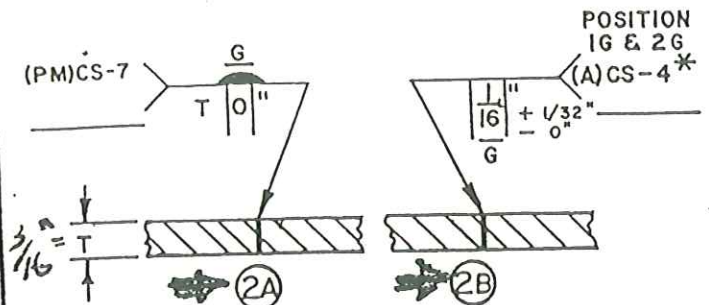
SH0102E9

VB-0040-0198

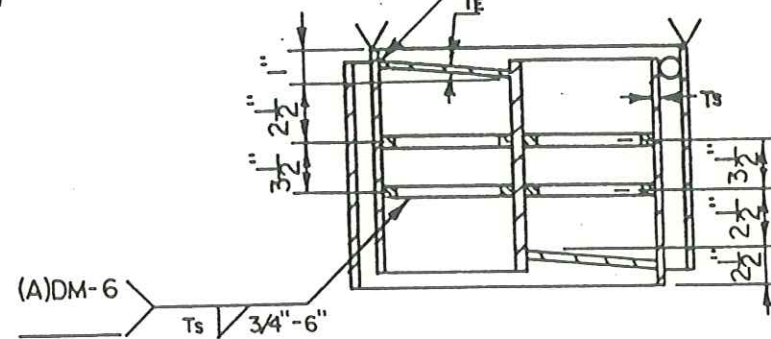
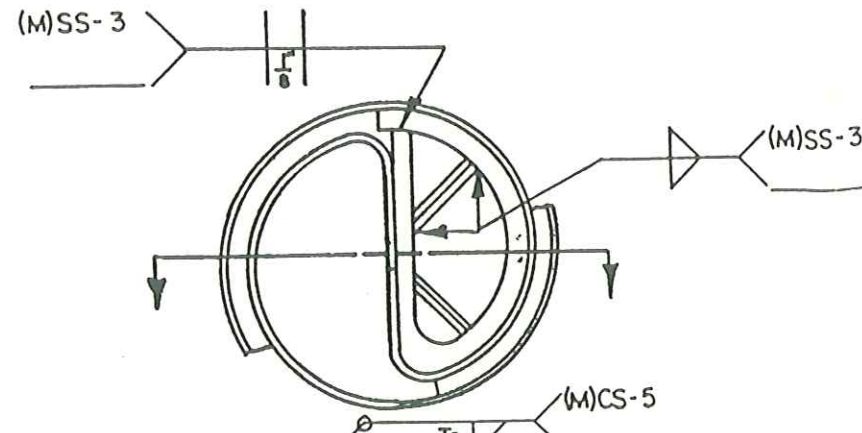
** ITEM NO. 420-02-40125



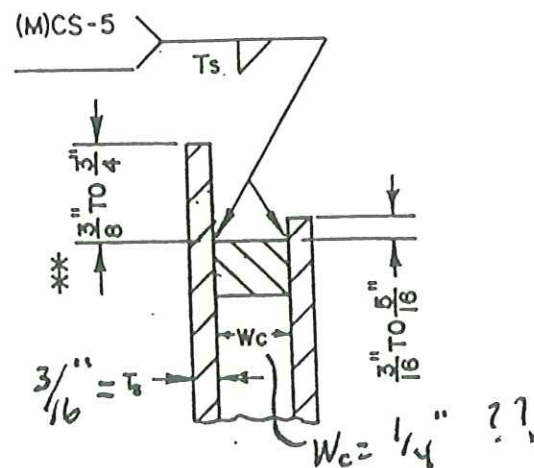
① DISTANCE PIECES WELDING
(STUD MAT'L: SA-479-316L S.S.)



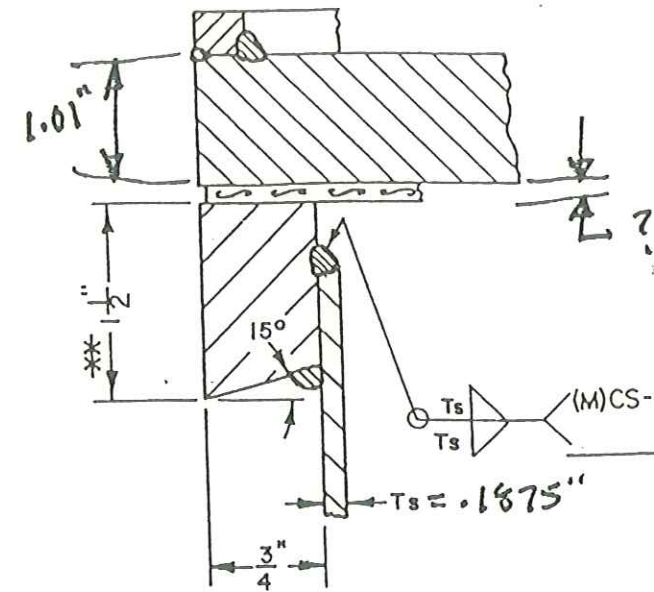
SPIRAL SHEET BUTT WELDING,
1/4" THICK AND LESS



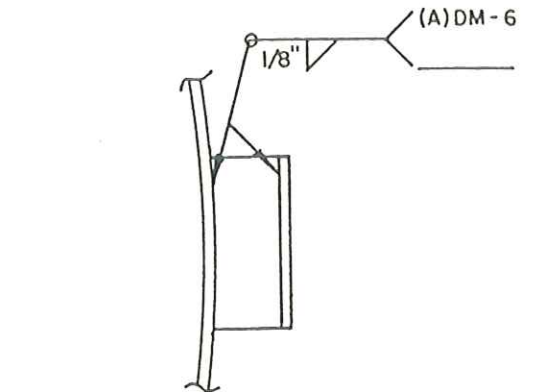
④ CENTER WELDING DETAIL



⑥ WELDING BAR CLOSURE
OFF-SET SPIRAL SHEETS
AND TIE-OFF BLOCKS

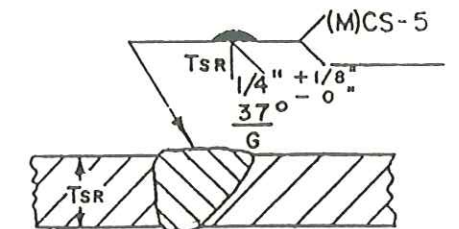


⑧ SEAL RING AND SHEET
GASKET DETAIL



⑫ NAMEPLATE BRACKET
WELDING DETAIL

SH0102E8



⑬ SEAL RING BUTT
WELD DETAIL

APPROVED
AS NOTED
2-23-96
ROHM AND HAAS CO.

NOTES:

11. E70T-1 & E71T-1 WIRE USED FOR PROCEDURE (M)CS-5
10. ER 70S-6 WIRE USED FOR PROCEDURE (PM)CS-7
9. E7018 & E7024 ELECTRODES USED FOR PROCEDURE (A)CS-4
- 8a. SPIRAL EXTENSION BUTT WELDS, WELD METAL BACKING USED
- b. WELD METAL BACKING USED
7. ALL WELD POSITIONS ARE FLAT & HORIZ., EXCEPT AS NOTED
6. ** = DIMENSION BEFORE MACHINING
5. ALL GAPS 3/32" ± 1/32", EXCEPT AS NOTED
3. * = WITH E7018 ROOT PASS
2. TOLERANCES ON PREPARATION ANGLES ± 5°
1. SIZES OF SHOWN WELDS ARE MINIMUMS

**ITEM NO. 420-02-40125

				CUSTOMER: ROHM & HAAS COMPANY			
				ORDER No. P015-25338		ITEM No. **	
				WELDING AND COMPONENT PRODUCTION DWG. FOR CARBON STEEL SPIRALS, SHEET 1 OF 2			
				DWN. BY JR	CHK'D. <i>Jhy</i>	APP'D. <i>Jhy</i>	JOB No. 944409
				DATE 1/9/95		MFG. No. 21851	DWG. No. D-65A
DATE	SYM.	REVISION		BY			

VB-0040-0197