

**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 BENDEL CORPORATION, 4823 N. GRAHAM STREET, CHARLOTTE, NC 28269  
(Name and address of Manufacturer)

2. Manufactured for KOSA CORPORATION, WILMINGTON, NC #103532  
(Name and address of Purchaser)

3. Location of installation SAME AS ABOVE  
(Name and address)

4. Type: VERTICAL TANK 4516-1/1 --- 451698 311 1999  
(Horiz., vert., or sphere) (Tank, separator, jkt. vessel, heat exh., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

5. ASME Code, Section VIII, Div. 1 95 ED.; A97 --- ---  
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.): 25' 0"

Course(s) No.	Diameter, in.	Length (ft & in.)	Material		Thickness		Long Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
			Spec./Grade or Type		Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	42" ID	1' 0"	SA240-316L		3/16"	0"	1	NONE	70%	1	NONE	70%	N/A	N/A
2	42" ID	11' 6"	SA240-316L		3/16"	0"	1	NONE	70%	1	NONE	70%	N/A	N/A
3	42" ID	12' 6"	SA240-316L		3/16"	0"	1	NONE	70%	1	NONE	70%	N/A	N/A

7. Heads: (a) SA240-316L; H.T.: NONE (b) SA204-316L; H.T.: 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) TOP	.18"	0"	42"	3"	---	---	---	---	X	X	S	NONE	
(b) BOTTOM	.18"	0"	42"	3"	---	---	---	---	X	X	S	NONE	

If removable, bolts used (describe other fastening) TOP HEAD / SHELL; SA193; B7; 3/4"; 36  
(Mat'l Spec. No., Grade, size, No.)

8. Type of jacket N/A Jacket closure \_\_\_\_\_  
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions \_\_\_\_\_ If bolted, describe or sketch.

9. MAWP 50 14.7 psi at max. temp. 375 375 °F Min. design metal temp. -20 °F at 50 psi.  
(internal) (external) (internal) (external)

10. Impact test NO; EXEMPT PER UHA-51 AND UG-20  
(Indicate yes or no and the component(s) impact tested)

11. Hydro., pneu., or comb. test press. 80 HYDRO Proof test N/A

Items 12 and 13 to be completed for tube sections.

12. Tubesheet: ---  
Stationary (Mat'l Spec. No.) Dia., in. (subject to press.) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)

Floating (Mat'l Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment

13. Tubes: ---  
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): --- (b) Overall length (ft & in.): \_\_\_\_\_

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

15. Heads: (a) \_\_\_\_\_ (b) \_\_\_\_\_  
(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)													
(b)													

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



16. MAWP \_\_\_\_\_ psi at max. temp. \_\_\_\_\_ °F Min. design metal temp. \_\_\_\_\_ °F at \_\_\_\_\_ psi.  
 (internal) (external) (internal) (external)

17. Impact test \_\_\_\_\_  
 (Indicate yes or no and the component(s) impact tested)

18. Hydro., pneu., or comb. test press. \_\_\_\_\_ Proof test \_\_\_\_\_

19. 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	
REBOILER	1	10"	CL150L-J	SA312TP 316L	SA105	SCH.40	0"	NONE	UW16.1(d)	---	
INSPECTION	1	8"	CL150L-J	SA312TP 316L	SA105	SCH.40	0"	NONE	UW16.1(d)	---	SHELL
OUTLET	1	8"	CL150L-J	SA312TP 316L	SA105	SCH.40	0"	NONE	UW16.1(d)	---	
OUTLET, VALVE	2	6"	CL150L-J	SA312TP 316L	SA105	SCH.40	0"	NONE	UW16.1(d)	---	
SIGHT GLASS	1	6"	CL150-S.PAD	---	SA340-316L	---	0"	NONE	---	---	FIG.2-4(3)
FEED	1	4"	CL150L-J	SA312TP 316L	SA105	SCH.40	0"	NONE	UW16.1(d)	---	
LEVEL	2	3"	CL150L-J	SA312TP 316L	SA105	SCH.40	0"	NONE	UW16.1(d)	---	

20. Supports: Skirt NO Lugs 4 Legs \_\_\_\_\_ Others \_\_\_\_\_ Attached WELDED TO SHELL  
 (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).  
N/A

22. Remarks: VESSEL CONTENTS UNKNOWN; VESSEL NOT DESIGNED FOR LETHAL SERVICE; SAFETY RELIEF DEVICE IS RESPONSIBILITY OF OWNER; VESSEL TESTED IN HORIZONTAL POSITION; BODY FLANGES FOR REMOVABLE TOP HEAD DESIGNED PER APPENDIX 2.

**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. 28314 Expires MAY 1, 2001  
 Date 2/24/99 Name BENDEL 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 NC and employed by ALLENDALE MUTUAL INSURANCE COMPANY\* of NORWOOD, MA have inspected the pressure vessel described in this Manufacturer's Data Report on 2-16, 19 99, 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.  
 \*FACTORY MUTUAL ENGINEERING ASSOCIATION  
 Date 2-24-99 Signed Earl E. Underwood Commissions NB9665A NC 1D1D  
 (Authorized Inspector) (Nat'l Board incl. endorsement, State, Province and No.)

**CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE**

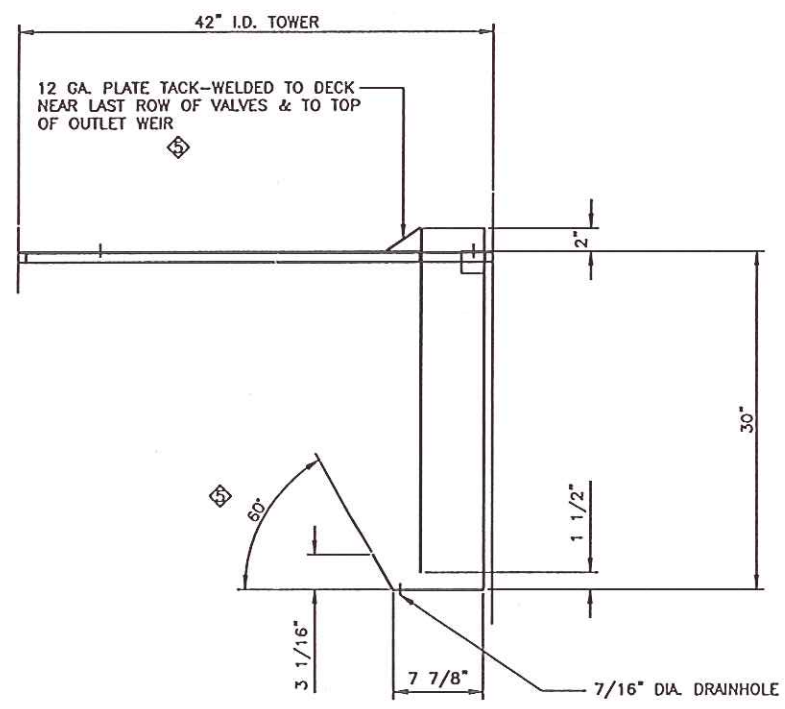
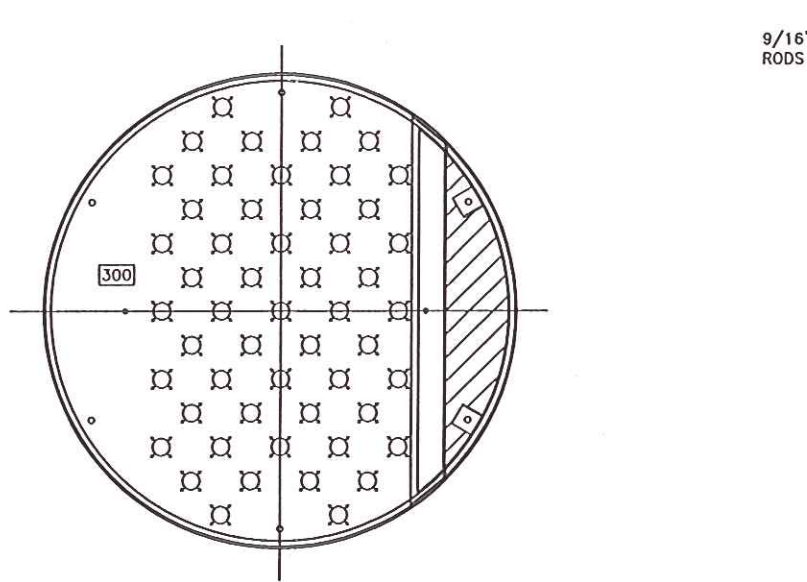
We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1,  
 U Certificate of Authorization No. \_\_\_\_\_ Expires \_\_\_\_\_, 19 \_\_\_\_\_  
 Date \_\_\_\_\_ Name \_\_\_\_\_ Signed \_\_\_\_\_  
 (Assembler) (Representative)

**CERTIFICATE OF FIELD ASSEMBLY INSPECTION**

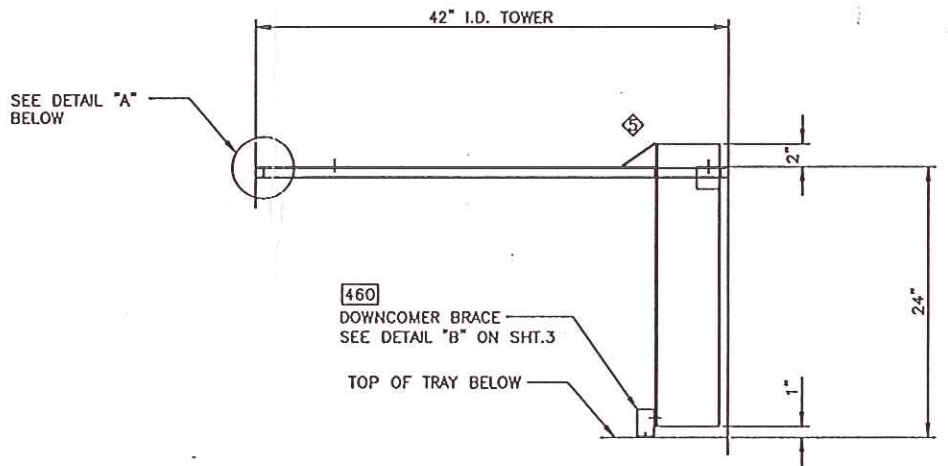
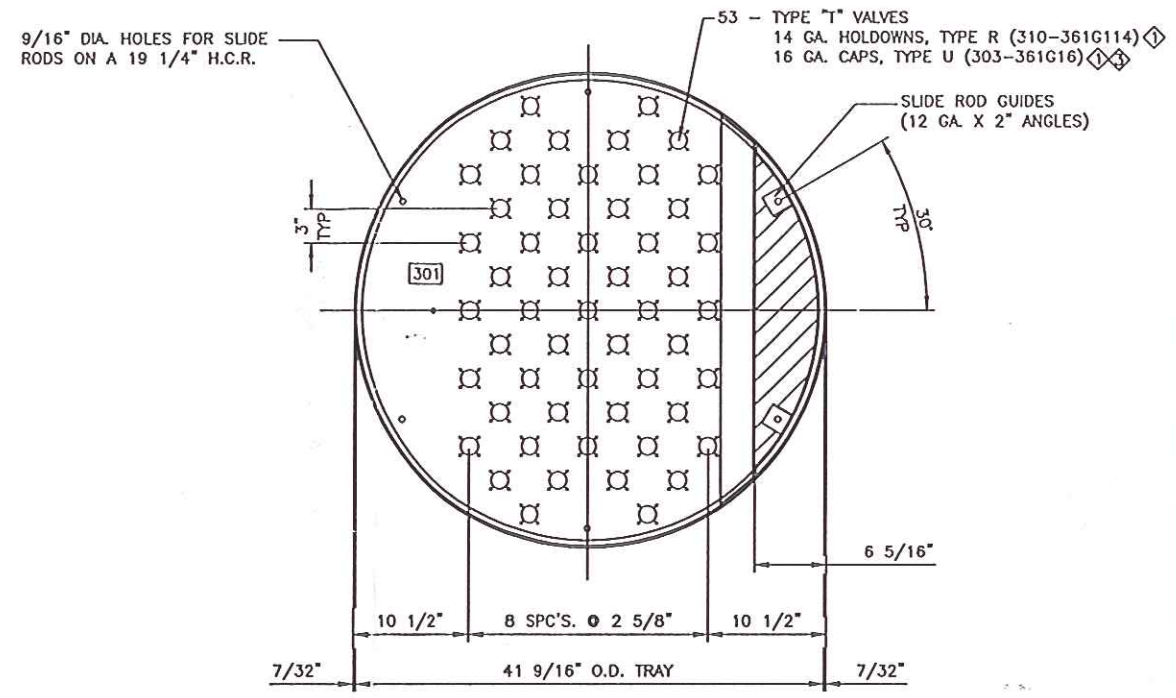
I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of \_\_\_\_\_ and employed by \_\_\_\_\_ of \_\_\_\_\_ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and 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.)



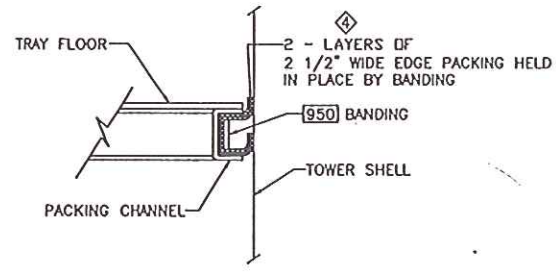




PLAN & SECTION VIEWS FOR TRAY 1



PLAN & SECTION VIEWS FOR TRAYS 3, 5 & 7



DETAIL "A"

ALL TRAYS ARE ASSEMBLED INTO 1 - BUNDLE PRIOR TO SHIPPING IN KOCH-GLITSCH SHOP. SEE SHT. 3 FOR BUNDLE ARRANGEMENT

GENERAL NOTES

- UNLESS OTHERWISE SPECIFIED:
1. TRAY MANWAYS ARE NOT REQUIRED.
  2. TRAYS TO BE INSTALLED OR REMOVED WITH WORKING TOP VESSEL FLANGE.
  3. TRAYS ARE NUMERED FROM BTM. TO TOP.
  4. ALL THREADED PARTS WILL BE AMERICAN STANDARD UNIFIED NATIONAL COURSE THREAD SERIES.
  5. G.C. TO FURNISH THE FOLLOWING SPARES:  
BOLTING 5%  
HARDWARE 5%
  6. PART NOS. ARE SHOWN THUS [NO.]
  7. ALL GAUGE MATERIAL IS PURCHASED TO MANUFACTURERS STANDARED GAUGE..
  8. CORROSION ALLOWANCE ON TRAY PARTS: NONE
- VESSEL FABRICATORS NOTES:
- A. OUT OF ROUNDNESS NOT TO EXCEED PLUS OR MINUS 1/16" ON DIAMETER.
  - B. ALL LONGITUDINAL AND GIRTH SEAM WELDS ARE TO BE BOLTING ASSEMBLIES ARE ENCLOSED THUS: GROUND FLUSH ON INSIDE OF VESSEL WHERE TRAYS MUST PASS DURING INSTALLATION.
  - C. ALL NOZZLE CONNECTIONS ARE TO BE FLUSH WITH INSIDE OF VESSEL SHELL WHERE TRAY EDGES MUST PASS DURING INSTALLATION.
  - D. ALL FLANGED CONNECTIONS ON TOWER SHELL MUST BE CHECKED AFTER WELDING TO SEE THAT SHRINKAGE HAS NOT MADE THE INSTALLATION OF TRAYS IMPOSSIBLE. 1/16" ON DIAMETER MAX.
  - E. IF VESSEL IS FABRICATED FROM PIPE THE WALL THICKNESS MUST NOT BE LESS THAN 87.5% OF NOMINAL THICKNESS.
  - F. REMOVE ALL WELD SPLATTER FROM SHELL ON INSIDE OF TOWER.

LIST OF MATERIAL

DESCRIPTION	TH'K.	MATERIAL
TRAY FLOOR	12 GA.	T-316L
DOWNCOMER	12 GA.	T-316L
BOLTS	1/4, 3/8 & 1/2"	T-316
NUTS	1/4, 3/8 & 1/2"	T-316
MISC. HARDWARE	-	T-316
WELD ROD	-	E-316L
SLIDE RODS	1/2" DIA	T-316
LIFTING ANGLE	1/4"	T-316
BANDING	14 GA.	T-316
PACKING CHANNEL	14 GA.	T-316
EDGE PACKING	1/16"	CORTEX
SPACERS	12 GA.	T-316

EQUIPMENT DESCRIPTION

QUAN	ITEM	DESCRIPTION	REMARKS
1	TRAY 1	WITH SEAL PAN BELOW	AS SHOWN
3	TRAYS 3, 5 & 7		AS SHOWN
3	TRAYS 2, 4 & 6		SEE SHT. 2
1	TRAY 8	WITH INLET WEIR	SEE SHT. 2

NO.	DESCRIPTION OF REVISION	CHK BY/DATE	APPV
1	ADDED VALVE PART NO'S.	JWB 01-12-99	B.F.
2	REV'D. CORTEX THK. (WAS 1/8" THK.)	BARRY 01-15-99	
3	CAP. PART NO. TYPE U 303-361G16 ( WAS TYPE Z 304-361G16) REV'D DUE TO DIRTY SERVICE	JWB 01-26-99	C.W.
4	ADDED EXTRA LAYER OF CASSET IN DETAIL "A"	V.K. 01-27-99	C.W.
5	ADDED SLOPING OUTLET WEIR & SLOPING SEAL PAN AS PER K-G PROCESS CHECK	BARRY 1-28-99	

CUSTOMER IDENTIFICATION

PURCHASED BY: HOECHST CELANESE CORP.  
 P.O. NO.: 4500201381  
 USER: HOECHST CELANESE CORP. PLANT SITE: WILMINGTON, NC.  
 SPEC. NO.: REFERENCE: 01451698 REV.0 (BENDEL)  
 SERVICE: WASTE WATER STILL UNIT NAME:

NOTICE: Koch-Glitsch mass transfer equipment may be covered by various United States and foreign patents, including pending applications. This drawing and the information contained herein are the proprietary property of KOCH ENGINEERING COMPANY, INC. and its affiliates. This drawing and the information contained herein were provided to you in confidence, and may not be used by or disclosed to any third party, or reproduced in any manner whatsoever, without Koch's prior written consent.

**KOCH-GLITSCH** MASS TRANSFER TECHNOLOGY  
 KOCH ENGINEERING COMPANY INC. UXBRIDGE, CANADA

DRAWN BY: BARRY	DATE: 12-23-98	TITLE: CRT-091
CHECK BY: .	DATE: .	CARTRIDGE TRAYS
PROCESS: .	DATE: .	JOB No: 10196
DRAWING ISSUE		PART No: GLITSCH ORDER NO: 18-8535-KII-18
CERTIFIED FOR FABRICATION:	CERTIFIED FINAL AS FABRICATED:	TOWER I.D. 42" VESSEL NO.
BY: CW	DATE: 01-12-99	DWG. NO.: C98-8535-D405
		SHT. 1 OF 5 REV. 0

103532