

**TRANTER** Plate & Frame Performance Specification  
FOR

Customer: Lurgi PSI  
Dennis Paganoni  
Address: 1790 Kirby Pkwy Suite 300  
MEMPHIS, TN 38138  
Cust. Reference: 5021-006 Central Illinois Energy  
Model: GCP-026-L-5-UJ-32

**INFORMATION**

Date: 08/25/2006  
Order No.: 115687  
Item No.: 2  
Technical: 1  
Run No.: 252501  
Units Required: 1

08018  
CIE: ETHANOL  
Canton, Illinois

RECEIVED OCT 03 2006

17.1  
File: EP-2102

0180010003

**Intended End Use:** Heat exchanger to heat Water 27.00°F using 250.00°F Steam with pressure drop at or below 4.00 psi on cold side.

**FIELD FILE**

**PERFORMANCE**

		Hot Side		Cold Side	
Flow Rate (Total)	lb/h	5604.72	195888.00		lb/h
Flow Rate (Unit)	lb/h	5604.72	195888.00		lb/h
Inlet Temperature	°f	250.00	163.00		°f
Outlet Temperature	°f	250.00	190.00		°f
Pressure Drop	psi	***	4.00		psi
Operating Pressure	psi/g	15.12	150.00		psi/g
Total Heat Exchanged	Btu/h		5299442		
U-Value	Btu/(h·ft <sup>2</sup> ·°F)		869		
Total Heat Transfer Area (Per Unit)	ft <sup>2</sup>		83.96		
LMTD	°f		72.67		

**FLUID DATA**

		Hot Side	Cold Side
Fluid Name		Steam	Water
Specific Gravity		0.00	0.97
Latent Heat / Specific Heat	Btu/lb	945.53	1.00
Thermal Conductivity	Btu/(h·ft·°F)	N/A	0.39
Viscosity (avg.)	cf	0.03	0.35

**CONSTRUCTION**

Plate Material/Thickness	SA-240 316 Stainless Steel	0.5 mm. Electropolished
Gasket Material (Hot/Cold)	EPDM	EPDM
Connection Material	SA-312TP 316LSS	SA-312TP 316LSS
Connection Size (Hot/Cold inlet)	4" 150# STUD	4" 150# STUD
Connection Size (Hot/Cold outlet)	4" 150# STUD	4" 150# STUD
Frame/Finish	SA-516-70 Carbon Steel	Painted, 1-3 mills DFT
Guide Bar (plate Guides)/Finish	SA-240 304 Stainless Steel	Mill Finish
Tightening Bolts/Finish	SA-193-B7 Carbon Steel	Zinc Plated
Tightening Nuts/Finish	SA-194-2H Carbon Steel	Zinc Plated

**DESIGN**

Design/Test Pressure	psi/g	150.00 / 195.00
Design Temperature	°f	300.00
ASME Stamp / CE Stamp		Yes
Total Weight Empty/Flooded (Per Unit)	lb	1189
No. Plates		32 (25% Expansion Capacity)
Pass Arrangement (Hot/Cold)		1
Plate Mix (Hot/Cold)		15L+0L
Flow Direction		Countercurrent

**REMARKS:**

EP-2102 Cook Water Trim Heater Standard Gap

Channel Velocities H/S 96.6 fps (Vapor), C/S 3.77 fps

The performance guarantee is based on the accuracy of the data presented above, and the customers ability to supply product and operating conditions in conformance with the above.

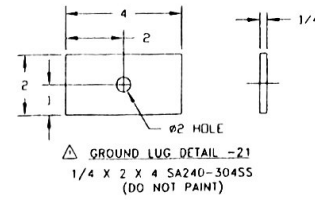
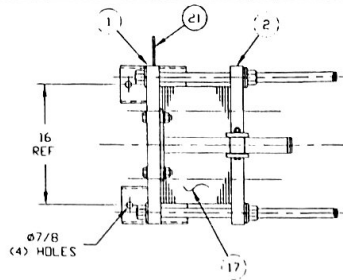
Tranter, Inc. ▲ P.O. Box 2289 ▲ Wichita Falls, TX 76307

Phn: (940) 723-7125 ▲ Fax: (940) 723-5131

http://www.tranter.com

**NOTES CONTINUED**

3. PLATES ARE TO BE ELECTROPOLISHED.
4. METAL STAMP ON ITEM #20: P.O. NO.: 601870727  
PROJECT NO: 0601B  
CENTRAL ILLINOIS ETHANOL  
CANTON, IL  
EP-2102  
COOK WATER TRIM HEATER
5. MAXIMUM FRAME CAPACITY = 40 PLATES. (25% EXPANSION)
6. MAPICS PART NO. CC-026=115687-2
7. CHANNEL VELOCITIES: H/S 96.8 fps C/S 3.77 ips
8. PLATE GAP: H/S 4.0mm C/S 4.0mm
9. ATTACH METAL TAGS TO FRAME SHOWING HOT, HOT OUT, COLD IN, COLD OUT
10. DOCUMENT CONTROL REQUIRED: DOCUMENT PACKAGE TO SHIP SEPARATELY CONSISTING OF ASME PRESSURE CALCULATIONS, SEISMIC LOAD CALCULATIONS & CERTIFIED DRAWINGS.
11. UNIT DESIGNED FOR SEISMIC LOADING PER BOCA 96  
Av=0.05, Aa=0.05 80 MPH WIND LOADING.

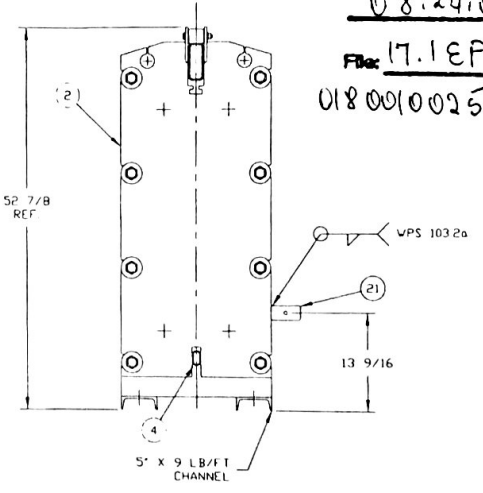
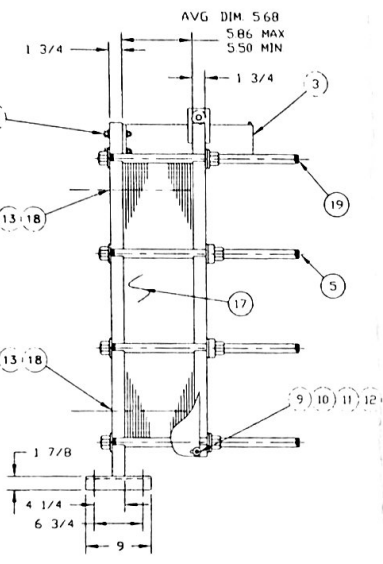
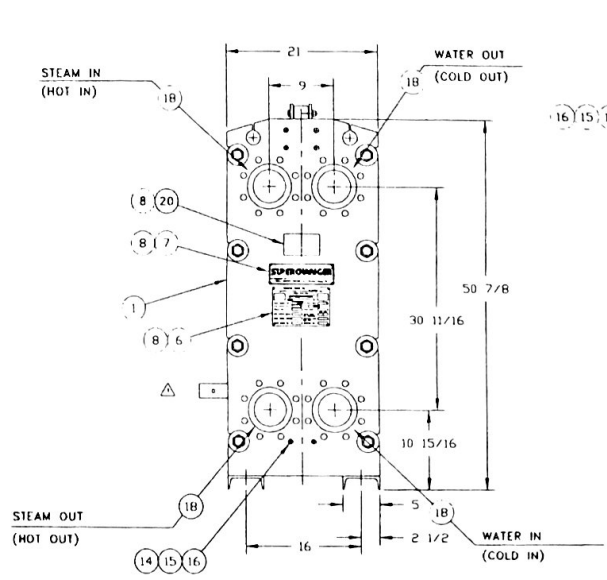


06018  
CIE: ETHANOL  
Canton, Illinois  
08.24.07

File: 17.1 EP2102

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PARTS LIST			
ITEM NO.	DESCRIPTION	DRAWING NO.	NO. REQ'D
1	STATIONARY FRAME ASS'Y. SA-516-70N	D-6-115687-9	1
2	MOVABLE FRAME ASS'Y. SA-516-70N	D-204203-1	1
3	UPPER GUIDE BAR (WORKING LGTH. 18 )	D-203785	1
4	LOWER GUIDE BAR (WORKING LGTH. 13 )	D-203787	1
5	BOLT ASS'Y. (WORKING LGTH. 22 )		
6	1 1/4 DIA. CARBON STEEL SA-193-B7	D-202087-B	4
7	DATA NAMEPLATE	B-202112	1
8	NAMPLATE	B-200734	1
9	METAL TACK FASTENER	A-203187	12
10	SHROUD SET ("L" DIM. 8 15/16 )	D-204209	1
11	SHROUD, STUD	A-200830	16
12	SHROUD, NUT	A-200831	16
13	SHROUD, WASHER	A-200832	16
14	NOZZLE PROTECTOR (NOT SHOWN)	D-204774-3	4
15	GUIDE BAR BOLT	A-203480-3	6
16	GUIDE BAR WASHER	B-203482	6
17	GUIDE BAR NUT	B-203481	6
18	PLATE		32
19	NOZZLE 4 STR ("S" FRAME) SA249-316L	D-203536-4	4
20	1 1/4 DIA. CARBON STEEL SA-193-B7	D-202087-2	4
21	3 X 5 X 16 GA 30455 TAG		1
22	GROUNDING LUG	DETAIL	1



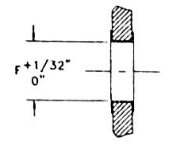
STUDDED PORT ANSI B16.5 BOLT HOLE DIMENSIONS	
SIZE	150 LB
A	5/8 11 UNC 2B
B	8
C	11/16

SPECIFICATIONS		"U" CODE STAMP DATA	
DESIGN PRESSURE:	150 PSI	M.A.W.P.:	150 PSI AT 300 °F
TEST PRESSURE:	195 PSI	M.D.M.T.:	-20 °F, AT 150 PSI
DESIGN TEMP.:	300 °F	MEDIUM:	STEAM/WATER
NO. OF PLATES:	32	FORM:	U-1 NO. REQ'D 1
SURFACE AREA:	83.96 SQ.FT.	LOCATION OF INSTALLATION	
WEIGHT:	1205 LBS	CENTRAL ILLINOIS ETHANOL	
PAINT: ROYAL BLUE		CANTON, IL	

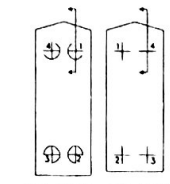
- NOTES**
- FLEXIBILITY IN PIPING SYSTEM IS NECESSARY TO PROVIDE FOR THERMAL EXPANSION. WHERE APPLICABLE, PIPE VIBRATIONS AND FLUID PULSATIONS SHOULD BE ELIMINATED FOR FATIGUE AND CYCLIC TYPE OF APPLICATIONS.
  - FABRICATE PER ASME CODE SECTION VIII, DIV. 1 SPECS., LATEST EDITION AND ADDENDA. "U" STAMP YES  NAT'L BD. YES

Certified By:  
Tranter, Inc.  
Date: 04-04-2007  
By: *Chanda Butler*

FIELD FILE



TYPICAL SECTION THRU NOZZLE



"S" FRAME "M" FRAME

**ELEMENT COMPOSITION DIAGRAM**  
NOTE: GASKETS FACE "S" FRAME

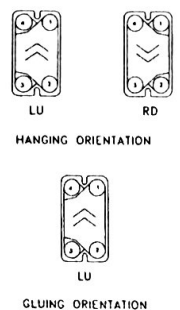


PLATE HANGING ASSEMBLY (PARALLEL FLOW)

Plate Sequence	Gasket Material	Piercing	Gluing	Hanging
2, 4 .. 28, 30	EPDM	L1234	LU Start	RD
3, 5 .. 29, 31	EPDM	L1234	LU	RD
1	EPDM	H0000	LU End	LU

CERTIFIED PRINT CHECK  
CHK. BY: *Wm Schuler*  
DATE: 8-27-07  
LURGI, INC.

PLATE ASSEMBLY SPECIFICATION (PARALLEL FLOW)

Qty	Gasket Material	Theta/Piercing	Gluing
1	EPDM	L1234	LU Start
30	EPDM	L1234	LU
1	EPDM	H0000	LU End

\*CERTI: SA240-316

SECTION	FLUID NAME	FLOW RATE (GPM)	INLET TEMP °F	OUTLET TEMP °F	PRESSURE DROP (PSI)	PLATE ARRANGEMENT	PLATE*	GASKET MATERIAL	NOZZLE
1	STEAM WATER	5604.72	250	250	---	15L X 1	316	EPDM	316L
		195888	163	190	4.0	16L X 1	316	EPDM	316L

NOZZLE LOCATION	"F" DIA. HOLE
S1	4 1/16
S2	4 1/16
S3	4 1/16
S4	4 1/16
M1	
M2	
M3	
M4	

PERFORMANCE (RUN NO: 252501)

**TRANTRER**  
TRANTRER, Inc., Wichita Falls, Texas

REVIEWED PER CUSTOMER	EP	CB	3/18/06
RELEASED FOR PRODUCTION	UR	CB	3/18/06
ISSUED FOR APPROVAL	UR	CB	3/18/06

PROPERTY OF TRANTRER, INC. AND NOT TO BE REPRODUCED WITHOUT THEIR CONSENT NOR USED IN ANY MANNER DETRIMENTAL TO THE INTEREST OF TRANTRER, INC.

CUSTOMER: LURGI PSI

Serial No: SN297

Model: SUPERCHANGER  
MODEL GCP-026-X-S-UJ-32  
EP-2102 COOK WATER TRIM HEATER

SCALE: 1/8" = 1'-0"

DATE: 9-18-06

DESIGNED BY: WS

CHECKED AND APPROVED BY: CB

DATE: 9-21-06

SCALE: 1/8" = 1'-0"

DATE: 9-21-06

DESIGNED BY: WS

CHECKED AND APPROVED BY: CB

DATE: 9-21-06