



CUST NO.	ITEM NO.	NO. REQ'D	PART NO.	DESCRIPTION	DRAWING NO.
	1	1	7810309	SHELL & TUBE ASSY 6.625"OD TEMA TYPE BEM CLASS C 304 S/S	EX00162 D
	1	1	7810234	SHELL PIPE 6" SCH10S 304/304L S/S WELDED SA312	
	2	1	7810232	TUBESHEET 10.375"OD 304 S/S SA-240 1.25" THK (FRONT)	SD7500392 B
	3	1	7810233	TUBESHEET 10.375"OD 304 S/S SA-240 1" THK (REAR)	SD7500393 B
	4	1	7810252	FLANGE SLIP-ON 6.75"ID 304 S/S SA240	SD7500451 B
	5	76 LF	7810121	TUBE SPACER .375"ODX.035"WALL 304 S/S	
	6	1	7810248	BONNET FRONT 304 S/S SA240	SD7500433 B
	7	1	9841318	CAP PIPE 6" 304 S/S SA403, SCH 10S	
	8	26	7810079	TUBE .75"OD .049"W X 240"LONG 304 S/S SA249	
	9	4	7810100	FLANGE SLIP-ON 2" W/EXT 8"OA 304/304L S/S 150# SCH 10S AS IS WELDS	
	10				
	11				
	12				
	13	2	3201005	COUPLING FULL 1"NPT 304 S/S 3000# SCREWED SA182	
	14	8	7810215	STUD THREADED .75-10NCX 5LG C/S ALL THREAD SA-193 B7 CLASS 2 THD	
	15	32	7810028	NUT HEAVY HEX .75-10NC C/S SA194 GR 2H	
	16	1	7810203	GASKET FLAT METAL JACKET DMJ FIBER 304 S/S .125"THK X 7.5"OD (FRONT)	
	17	1	7810204	GASKET FLAT METAL JACKET DMJ FIBER 304 S/S .125"THK X 7.5"OD (REAR)	
	18	56	7810214	BAFFLE 12GA X 6.232"OD 304 S/S	
	19	77 FT	7810217	ROUND .25"DIA 304/304L S/S 12" R/L	
	20	3	7810116	SADDLE PLATE .375" 304 S/S 6.625" DIA. SHELL SA240	DET D
	21	4	513534	NUT HEAVY HEX .25-20NC 304 S/S SA-194 GR 8	
	22				
	23	8	7810029	STUD THREADED .75-10NCX7"LG CS CLASS 2 THREAD CERTIFIED TO SA193-B7	
	24	1	9851299	PLATE DATA "ASME" SHELL&TUBE 18-8 S/S 5.5"X4"X.048"THK ETCHED	
	25	1	3746	PLATE NAME "MUELLER" 5"X.9"X.002"THK MYLAR W/PRESS SENS ADH	
	26	3	7810115	SADDLE GUSSET .375" 304 S/S 6.625" DIA. SHELL SA240	DET D
	27	1	7810091	EXPANSION JOINT 6.357"ID X 13.125"LG O/A LENGTH 304S/S SA-240 BELLOWS	
	28	1	7810117	SADDLE BASE .375" 304 S/S W/.75" HOLE	DET D
	29	2	7810118	SADDLE BASE .375" 304 S/S W/.75"X1.5" SLOT	DET D
	30	1	7810419	BRACKET DATA PL 12GA 304 S/S	SD7500551

- NOTES:**
- ALL FLANGES WILL HAVE BOLT HOLES STRADDLE THE 0°-180° & 90°-270° CENTER LINES, UNLESS SPECIFIED OTHERWISE.
  - VESSEL TO BE VENTED FOR SHIPMENT.
  - ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
  - WELD FINISHES AS FOLLOWS:  
INTERIOR - AS-IS (AI) EXCEPT GRIND INSIDE OF SHELL TO PREVENT HANG UP OF BAFFLES ON WELD REINFORCEMENT
  - USE "NEVER-SEIZE" THREAD LUBRICANT ON ALL STUDS.
  - TORQUE 3/4" STUDS TO 75FT-LBS.
  - FOR DYE TEST REQUIREMENTS SEE PROCEDURE ENG 103.
  - TEMA CLASS C EIGHTH EDITION, TOLERANCES APPLY.
  - ROLL TUBES TO 5% WALL REDUCTION AFTER WELDING & NOTE #14.
  - PLUG ALL THREADED PORTS WITH PLASTIC CAPS AND PROTECT ALL FLANGES WITH WOOD FOR SHIPPING.
  - BAFFLE SPACING TO BE WITHIN 1/8" OF THAT SPECIFIED.
  - BAFFLES TO BE AT LEAST 1/2" AWAY FROM NOZZLE OPENING.
  - CORROSION DISCLAIMER  
PAUL MUELLER COMPANY IS NOT RESPONSIBLE FOR CORROSION OR SUITABILITY FOR USE OF ANY MATERIAL IN ANY PARTICULAR APPLICATION! THE CORROSION RESISTANCE AND SUITABILITY FOR USE OF A MATERIAL IS DEPENDENT ON OPERATING ENVIRONMENT AND CONDITIONS, CLEANING PRACTICES, AND MANY OTHER FACTORS BEYOND THE CONTROL OF THE EQUIPMENT FABRICATOR. THE USER OF THE EQUIPMENT BEARS TOTAL RESPONSIBILITY FOR CORROSION OR SUITABILITY FOR USE OF ALL MATERIALS IN THEIR PARTICULAR APPLICATION!
  - NO EXTERNAL NOZZLE LOADS SPECIFIED.

**CERTIFIED BY**  
PAUL MUELLER COMPANY  
SHELL SIDE

**DIV.1** MAWP 125 P.S.I. at 600 °F  
MAEWP 15 P.S.I. at 600 °F  
MDMT -20 °F at 150/FV P.S.I.  
SERIAL NUMBER 357149 16-18  
YEAR BUILT 2006

**TUBE SIDE**  
MAWP 150 P.S.I. at 400 °F  
MAEWP 15 P.S.I. at 400 °F  
MDMT -20 °F at 150/FV P.S.I.  
HX-503  
**MUELLER**

**NOTES CONT:**

14. TUBES SHALL BE EXPANDED INTO THE TUBESHEET FOR A LENGTH OF THE TUBESHEET THICKNESS MINUS 1/8". IN NO CASE SHALL THE EXPANDED PORTION EXTEND BEYOND THE SHELL SIDE FACE OF THE TUBE SHEET.

NOZZLE SCHEDULE			
LABEL	SIZE	TYPE	SERVICE
A	2"	CL 150 RF50	B100 SUPPLY INLET
B	2"	CL 150 RF50	B100 SUPPLY OUTLET
C	2"	CL 150 RF50	UNKNOWN LIQUID INLET
D	2"	CL 150 RF50	UNKNOWN LIQUID OUTLET
E	1"	CL 3000 FULL COUPLING	VENT
F	1"	CL 3000 FULL COUPLING	DRAIN

**MATERIAL FINISHES**  
INTERIOR MILL AS-IS EXTERIOR MILL AS-IS

**WELD FINISHES**  
AS-IS (AI) (SEE NOTE 5)  
EXTERIOR INDUSTRIAL AS-IS (AI) (HAND BRUSH)

**SPECIFICATIONS SHELL SIDE**  
CODE ASME/TEMA  
RADIOGRAPHY  
Top Head To Shell Shell Bottom Head To Shell  
HEAT TRANSFER  
CODE ASME/TEMA  
RADIOGRAPHY  
Top Head To Shell Shell Bottom Head To Shell

MODEL SERIAL NUMBER 357149 16-18

**SHELL SIDE INFORMATION**  
DESIGN PRESSURE 125 PSI DESIGN TEMP 600 °F  
HYDRO TEST PRESSURE 196 PSI DESIGN VACUUM 15 PS

**TUBE SIDE INFORMATION**  
DESIGN PRESSURE 150 PSI DESIGN TEMP 400 °F  
TEST PRESSURE 236 PSI DESIGN VACUUM 15 PS

EST. EMPTY WEIGHT 607 LBS  
SCALE 3/16"=1" (DO NOT SCALE THIS DRAWING)

DRAWN BY M. BURAGOHAIN DATE 6-29-06  
REVIEWED BY DATE  
REVIEWED BY DATE  
APPROVED BY C. R. KEULER DATE 08/4/06

SOLD TO BIOSOURCE FUELS  
ADDRESS MUSKOGEE, OK  
CUSTOMER ORDER NO. 206013

TITLE STI TEMA TYPE BEM  
SIZE 6-240 CLASS C

QUANTITY THREE

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**MUELLER**  
P. O. BOX 828 / SPRINGFIELD, MISSOURI 65801-0828, U.S.A.

SALES ORDER & SERIAL NO. 357149 16-18  
DRAWING NO. EX00253 D

REV	DATE	DESCRIPTION	BY	DATE
E	11/20/06	CHANGED BOLTS USED IN DET E FROM ITEM 8 TO ITEM 23-ADDED ITEM 23	DRS	11/20/06
D	11/13/06	CORRECTED GEOMETRY	DJG	11/13/06
C	10/30/06	ADDED ITEM #30	DRS	10/27/06
B	10/30/06	REVISED NOTE #9-ADDED NOTE #14-OMIT WELD IN DETAIL B-ADDED ONLY OF ITEM #18-REVISED WELD FOR ITEM #9 TUBE SIDE (C&D)	DEF	09/27/06
A	10/2/06	REV LENGTH TO 240-ADDED CENTER SADDLE-ADDED DIMS-REV NOTES-REV WELDS-ADDED S/D BLOCK	BT	07/13/06
SYM.	08/4/06	CHANGE	BY	DATE
REVISIONS				