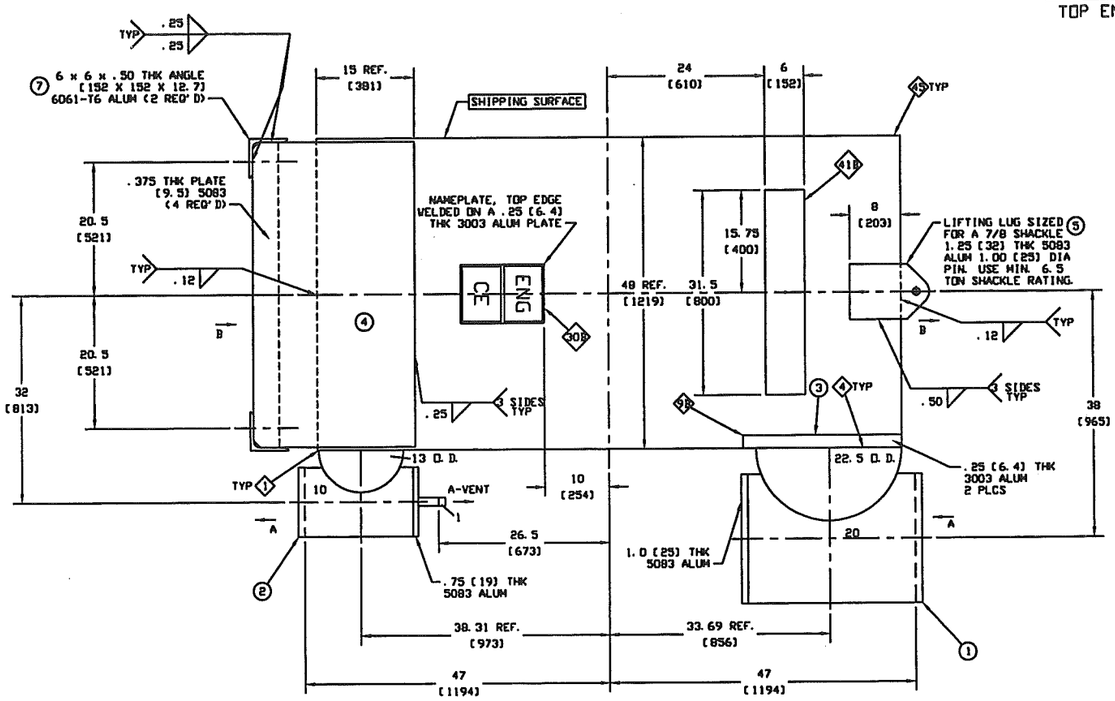
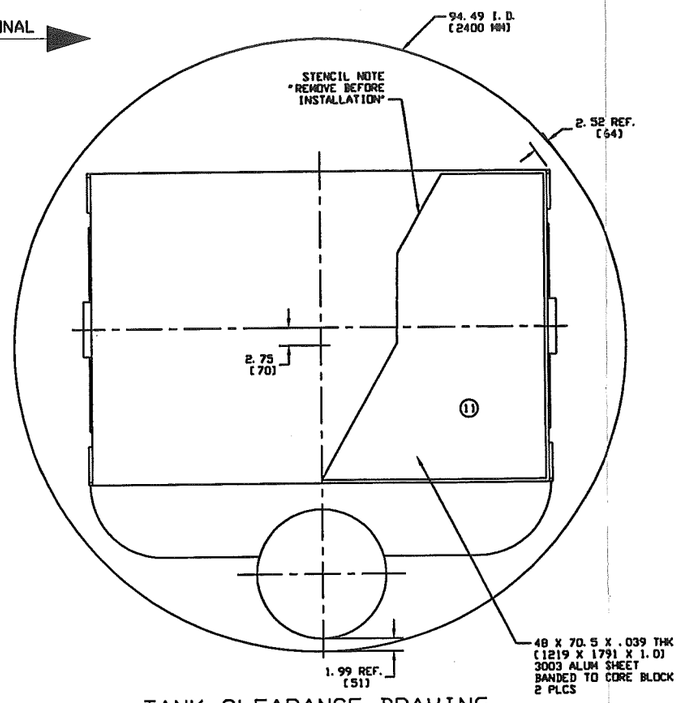
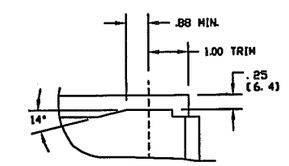


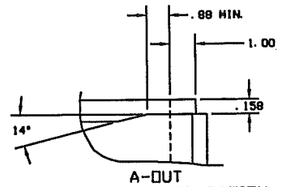
OPERATIONAL
TOP END



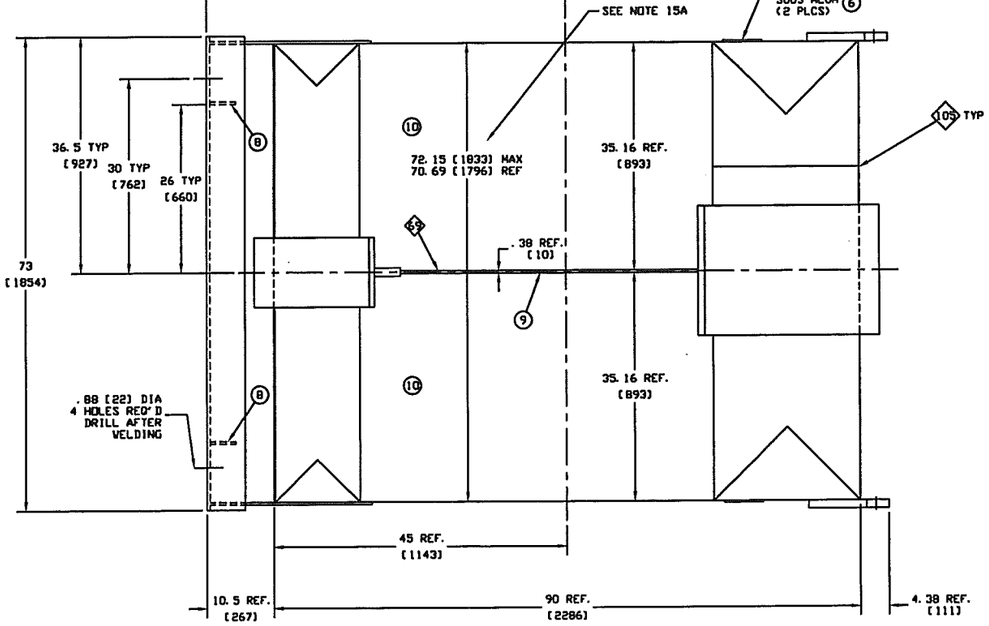
TANK CLEARANCE DRAWING



A-IN
NOZZLE END PREPARATION



A-OUT
NOZZLE END PREPARATION



A	B
148 .201 [5.1]	146 .201 [5.1]

FLOW DIAGRAM

NOTES:

1. REFER TO BRAL-IOM FOR INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS. ASSURE COMPLIANCE WITH REQUIREMENTS PARTICULARLY OPERATING CONDITIONS TO PREVENT OVER PRESSURIZATION, THERMAL SHOCK AND OPERATION OUTSIDE DESIGN TEMPERATURE RANGE. REFER TO DRAWING 917-7684 FOR UNBRATED HEAT EXCHANGER LIFTING INSTRUCTIONS AND DRAWING 918-6671 FOR INSTRUCTIONS ON ROLLING HEAT EXCHANGER TO SIDE OTHER THAN SHIPPING SURFACE.
2. HEAT EXCHANGER DESIGNED, CONSTRUCTED, AND STAMPED PER THE LATEST MANDATORY EDITION AND ADDENDA OF THE ASME PRESSURE VESSEL CODE, SECTION VIII, DIV. 1 AND REGISTERED WITH THE NATIONAL BOARD.
3. CORROSION ALLOWANCE: ALUMINUM = 0.0000 INCHES
4. SEE DRAWING 15773C FOR MAXIMUM ALLOWABLE PIPE LOADS.
5. THE HEADERS AND NOZZLES ARE LABELED ON THE DRAWING WITH THEIR NOMINAL PIPE SIZE (NPS). IF A STANDARD SIZE IS NOT USED THE PIPING IS LISTED AT ITS ACTUAL OUTSIDE DIAMETER AND LABELED "OD". UNLESS SHOWN OTHERWISE ALL NOZZLES ARE ON THE HEAT EXCHANGER CENTERLINE.
6. TOLERANCE ON ALL DIMENSIONS IS +/- .25 INCH [6] UNLESS OTHERWISE NOTED. ANGULAR TOLERANCE ON NOZZLES IS CONTROLLED BY THE TOLERANCE ON THE CARTESIAN COORDINATE DIMENSIONS (X,Y,Z). IN NO CASE SHALL THE ANGULAR TOLERANCE EXCEED 3 DEGREES.
7. STREAM:

	A	B
MAWP (PSIG)	45	SEE NOTE
(BARG)	(3.1)	15B

DESIGN TEMP DEG. F + 150 MAX. - 320MIN.
(C) + 65 MAX. - 196MIN.

8. TESTING INFORMATION:

STREAM		A	B
FIRST AIR	(PSIG)	15	---
	(BARG)	(1.0)	---
IMPNEU	(PSIG)	67	---
	(BARG)	(4.6)	---
LEAK	(PSIG)	SEE NOTE	---
	(BARG)	18A	---

B A 1. WITNESS REQUIRED.

HELIUM VACUUM LEAK TEST

STREAMS	MAX. ALLOW. LEAKAGE
A-EXT	1E-3 STD CC/SEC. (1E-3 mbar - L/SEC)

9. THE "B" STREAM TO BE CLEANED FOR OXYGEN SERVICE. (INTERNAL AND EXTERNAL)
10. CONNECTIONS TO BE SUITABLY MARKED FOR FIELD TRIM.
11. UNIT TO SHIP WITH DRY AIR AT 5 PSIG (.3 BARG) IN "A" STREAM. GAUGES ARE REQUIRED.
12. ESTIMATED WEIGHT = 12800 LBS. (DRY)
[5805] KG
17500 LBS. (FILLED WITH WATER)
[7936] KG
(WARNING: DO NOT HYDRO TEST IN FIELD WITH WATER)
13. STREAM VOLUME:

STREAM	A	B
CU.FT.	74.1	54.3
(CU.M.)	(2.1)	(1.5)

14. DYE PENETRANT EXAMINE ALL LIFTING LUG WELDS.
15. CUSTOMER NOTE:
    A. ESTIMATED BRAZE HEIGHT. ACTUAL BRAZE HEIGHT MAY VARY +/- .12 INCH/FOOT (+/- 10 MM/M) OF BRAZE HEIGHT. MAX DIMENSION INCLUDES TOLERANCE ON BRAZE HEIGHT PLUS HEADER ATTACHMENT PLATES.
    B. DURING OPERATION THE "B" STREAM SUBJECTS THE EXCHANGER TO EXTERNAL PRESSURE. EXCHANGER DESIGNED FOR 45 PSIG (3.1 BARG) EXTERNAL PRESSURE (EXTERNAL MAWP = 60 PSIG (4.7 BARG)) BUT NOT TESTED BY CHART. IF THE "B" STREAM IS PRESSURE TESTED AFTER INSTALLATION DO NOT SUBJECT THE EXCHANGER TO A DIFFERENTIAL PRESSURE (GAUGE + L10 HEAD, "B" STREAM TO "A" STREAM) GREATER THAN 1.3 TIMES THE EXTERNAL MAWP.
    C. EXTERNAL MAWP OF EACH PIPING RUN TO BE DETERMINED BY CUSTOMER. DEPENDING ON PIPING CONFIGURATION, EXTERNAL MAWP MAY BE LOWER THAN EXTERNAL MAWP OF THE EXCHANGER.
    D. CLEANING SPECIFIED IN NOTE 9 COMPLIES WITH AL SC274-01-D AND V-GS-3-1-1.
16. CUSTOMER REQUIREMENT:
    A. ONE MITERED END WELD TO BE SPOT RADIOGRAPH INSPECTED PER ASME PRESSURE VESSEL CODE, SECTION VIII, DIVISION 1, PAR UW-52.
    B. ALL WELDS TO BE 100 % DYE PENETRANT EXAMINED PER ASME CODE, SECTION VIII, DIVISION 1.
17. PED NOTE:
    A. HEAT EXCHANGER TO COMPLY WITH EU PED 97/23/EC; ASSESSMENT MODULE "B + F".
    B. PED NOTIFIED BODY IS TUV SUEDDEUTCHLAND BAU UND BETRIEB.
    C. ASSESSMENT CATEGORY IS "IV", WORKING FLUIDS ARE GROUP 1. (A STREAM)
18. PRODUCTION NOTES:
    A. INSTALL TWO RELIEF VALVES NOT EXCEEDING 83 PSIG (5.7 BARG) ON "A" STREAM. PERFORM LEAK TEST AT 45 PSIG (3.1BARG). REMOVE RELIEF VALVES AFTER TEST.
    B. INSPECT OPEN PASSAGES FOR BLOCKAGE USING LIGHT TEST.
    C. AFTER BRAZING MEASURE AND RECORD FIN GAPS ON OPEN PASSES.
    D. AFTER BRAZING MEASURE AND RECORD HEIGHT OF PORT FIN ON OUTER OPEN PASSES.
    E. UNIT TO BE WRAPPED IN PLASTIC WITH DESICCANT.

STREAM	INLET		OUTLET	
	HEADER O.D. X WALL	NOZZLE O.D. X WALL	HEADER O.D. X WALL	NOZZLE O.D. X WALL
A (CAR)	22.500 X .500 (572 X 12.7)	20.000 X .500 (508 X 12.7)	13.000 X .375 (330 X 9.5)	10.750 X .365 (273 X 9.3)
A-VENT (CAR)	--------	--------	--------	1.315 X .133 (33 X 3.4)
B (BATH)	--------	--------	--------	--------

ALL MATERIAL IN TABLE ABOVE IS 5083 ALUMINUM

Reviewed
TÜV S... ...Product Service GmbH
Noti... ...sure
Equipment according to 97/23/EC
-Testing Laboratory-
FEB 0 1 2005

REVISION RECORD				
	A	B		
ADDED PRODUCTION SYMBOLS.	PCG 12-7-04	WILHELM		
FLUIDS WERE GROUP 2. ECN 5977	LARSON 3-3-05			

DR DATE	LARSON 11-2-04	STD ENGR SPEC 11-6.00
CHKD DATE	EBERT 11-8-04	NOTE 8: SES 9-8.01 PARA 1.3.1, 3.2 & 4.1
PROD ENG DATE	GOETHEL 11-16-04	NOTE 9: SES 9-14.00
MFG ENG DATE		
WELD ENG DATE		THIRD ANGLE PROJECTION

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LEGEND
○ PART NUMBER (PRODUCTION USE ONLY)
◇ JOINT DETAIL-REF.(PRODUCTION USE ONLY)
□ FIN DATA INFORMATION
△ DIMENSIONAL REVISION
▷ SPECIAL NOTATION

DIMENSIONS: PRIMARY IN INCHES, SECONDARY IF SHOWN IN (MM).

Chart Heat Ex

BRAZED ALUMINU
HEAT EXCHANGER
2 STREAM PLATE/F
ITEM NO. W40001

SIZE	DWG NO.
D	15773A

509.3 (1) 11/04