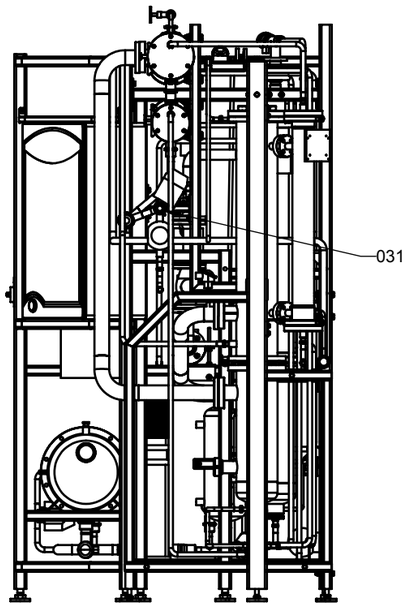
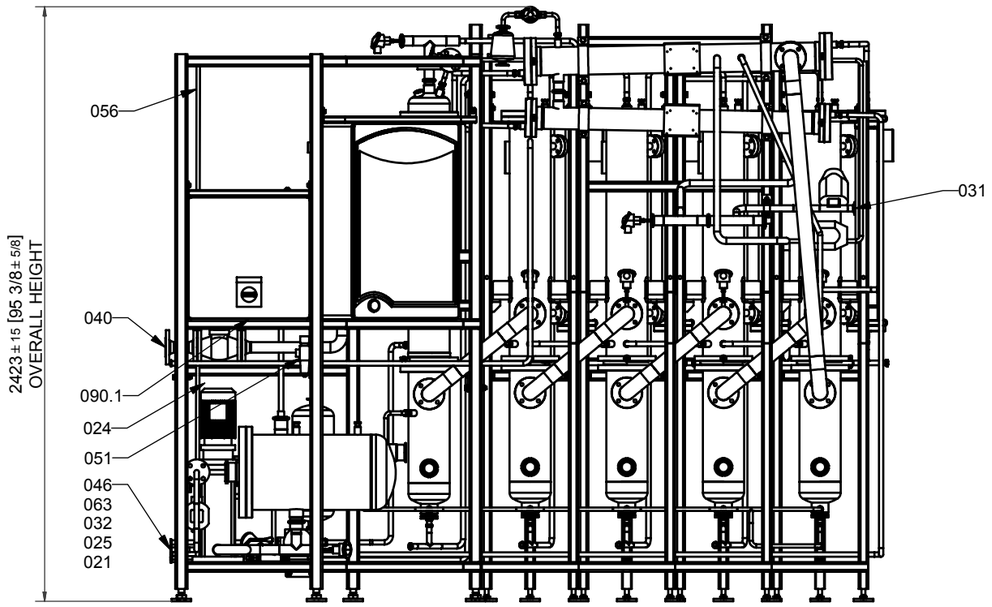
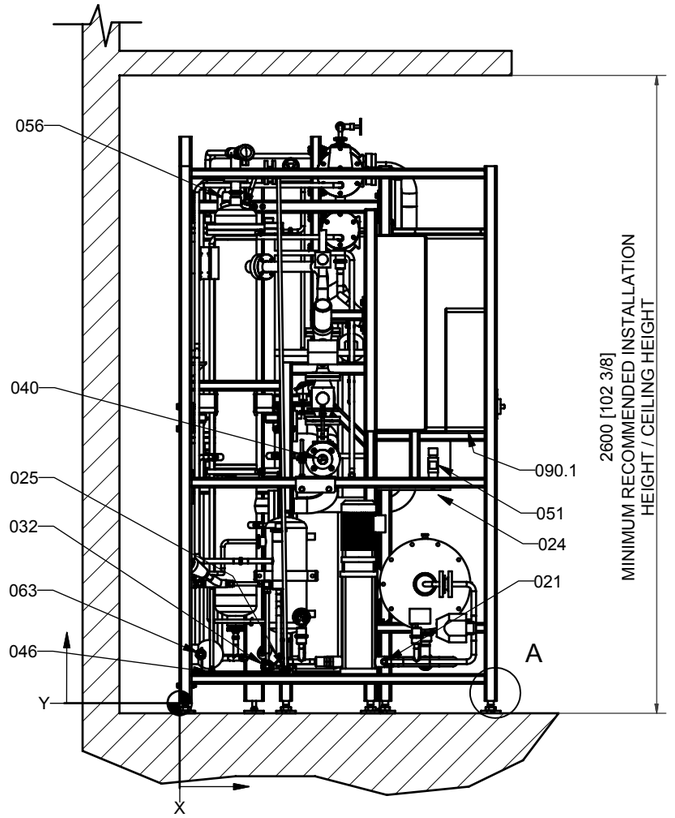


RIGHT VIEW



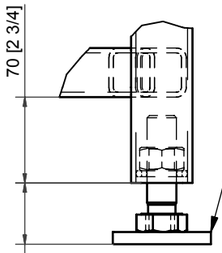
FRONT VIEW



LEFT VIEW

DIMENSIONS			
UTILITY CODE	X	Y	Z
021	835	180	-20
024	x	x	x
025	130	120	-20
031	700	1600	2770
032	x	x	x
040	585	985	-40
046	x	x	x
051	1035	1030	495
056	x	x	x
063	x	x	x
Value	Value	Value	Value

A (1 : 5)



Ø80 [Ø3] x 10 [3/8]
STAINLESS STEEL PAD POSITIONED BELOW LEVELING LEG TO DISSIPATE THE UNITS WEIGHT TO BE PROVIDED BY OTHERS.

Unit Dry Weight 1310kg

Unit Hydrostatic Weight 1590kg

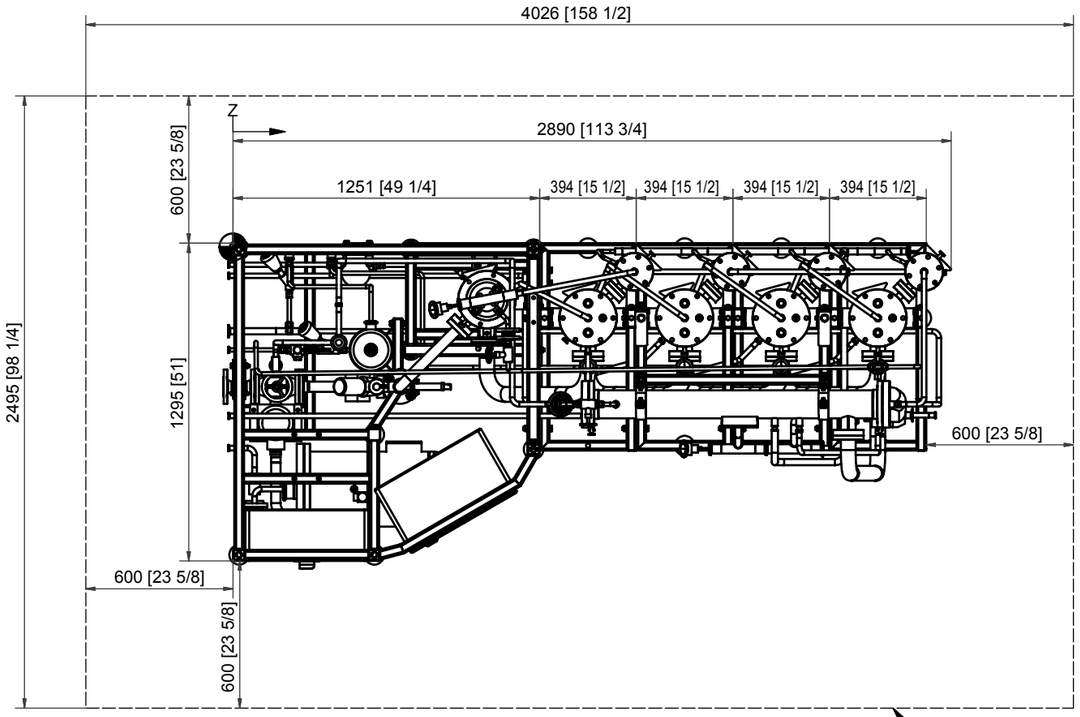
All dimensions are in millimeters [inches]
Tolerances for overall dimensions are 12mm [1/2"] unless otherwise noted.
Drawing subject to change without notice.

DRAWING INCLUDES OPTIONS WHICH MIGHT NOT BE APPLICABLE FOR THE CUSTOMER UNIT

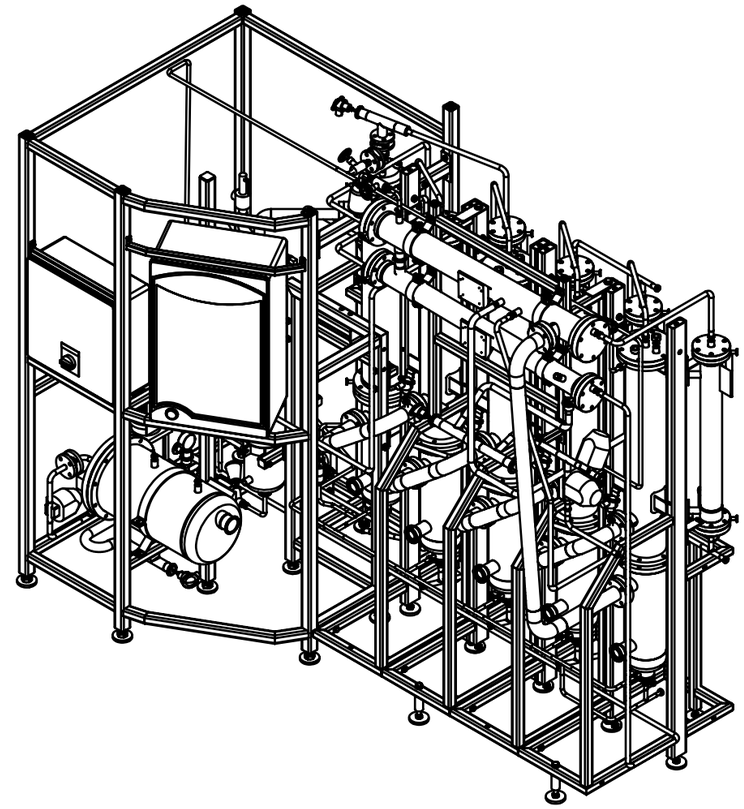
Customer:
Merckle Biotec GmbH
Dornierstrasse 10
D-89079 Ulm, Germany
FA-Serial Number: COA42355, Anlagenbezeichnung: WFI-Erzeuger WFI 01

FINN-AQUA® STERIS FINN - AQUA
TUUSULA • FINLAND

Approved By: PHE	Date: 20.4.2005		
Checked By: TLE	Date: 19.4.2005		
Drawn By: ANU	Date: 18.4.2005		
Drawing Title: ABMESSUNGS- UND INSTALLATIONSZEICHNUNG FINN-AQUA MEHRSTUFEN-DESTILLATIONSANLAGE 450-T-5-S7	Item No:	Rev: 2	
	Scale:	Sheet: 1 (3)	
	Drawing No: **327875-2**	Size: A3	



PLAN VIEW



ISOMETRIC VIEW

All dimensions are in millimeters [inches]
Tolerances for overall dimensions are 12mm [1/2"] unless otherwise noted.
Drawing subject to change without notice.

Customer:
Merckle Biotec GmbH
Dornierstrasse 10
D-89079 Ulm, Germany
FA-Serial Number: COA42355, Anlagenbezeichnung: WFI-Erzeuger WFI 01

FINN-AQUA® STERIS FINN - AQUA
TUUSULA • FINLAND

Approved By: PHE	Date: 20.4.2005
Checked By: TLE	Date: 19.4.2005
Drawn By: ANU	Date: 18.4.2005

Drawing Title:
ABMESSUNGS- UND INSTALLATIONSZEICHNUNG
FINN-AQUA MEHRSTUFEN-DESTILLATIONSANLAGE
450-T-5-S7

Item No:	Rev: 2
Scale:	Sheet: 2 (3)
Drawing No: **327875-2**	Size: A3

UTILITY CONSUMPTION / CONNECTIONS TABLE
FINN-AQUA T-MODEL MULTIPLE-EFFECT WATER STILL
SIZE: 450-T-5

UTILITY CODE	CONN. SIZE	CONN. TYPE	FLOW MEDIA	PRESSURE [bar]	PRESSURE [psig]	TEMP [°C]	TEMP [°F]	CONSUMPTION/OUTPUT QUANTITY	CONSUMPTION/OUTPUT SI-UNIT	CONSUMPTION/OUTPUT QUANTITY	CONSUMPTION/OUTPUT US-UNIT
021	3/4"	Tri-Clamp ISO 2852	WAP; Aqua Purificate	3.5-5.5	50.7-79.7	10-25	50-77	957	l/h	253	gph
024	1"	Tri-Clamp ISO 2852	KA VL; Kaltwasser Vorlauf	3,5-5	50,7-5,8	6-8	42,8-46,4	287-2070	l/h	262,9-1889	gph
025	1"	Tri-Clamp ISO 2852	KA RL; Kaltwasser Rücklauf	2-2,5	29-36,2	40	104	287-2070	l/h	262,9-1889	gph
031	1"	Tri-Clamp ISO 2852	PROD; Pordukt	0.225	3.264	83-85	181.4-185	832	l/h	219.8	gph
032	1"	Tri-Clamp ISO 2852	VW; Verwurf	Gravity	Gravity	45	113	832	l/h	219.8	gph
040	DN32	Flange DIN 2633 PN16	HD 8; Heizdampf 8	8.0	116.0	175	347	267	kg/h	589	lb/hr
046	3/4"	Tri-Clamp ISO 2852	WSN; Prozessabwasser zur Neutralisation	-	-	-	-	267	kg/h	589	lb/hr
051	3/8"	Thread	DL; Druckluft	6.0	87.0	-	-	0.06	Nm3/min	2.0	Scfm
056.0-3	1/2"	Clamp	NKG; Nicht kondendierbare Gase	Atm.	Atm.	99	210	0...160	l/h	0...42.3	gph
063	3/4"	Tri-Clamp ISO 2852	WSN; Absuhlämmwasser Aus	Gravity	Gravity	45	113	125	l/h	33.0	gph
071	DN40	Flange DIN 2633 PN16	SIV HD; Sicherheitsventil Heizdampf	8.6	124.7	178	352	1448	kg/h	3192	lb/hr

		U [VAC]	f [Hz]	P [kW]	IN [A]
090.1	Electrical connection (terminal) with P861.1	380-415	50	0.90	2.36

All utility consumption data is based on maximum distillate output rate @ 8 bar [116 psig] plant steam pressure at column.

Maximum or recommended utility values are provided for utility piping and system design purposes.

Feed water inlet pressure shall be min. 2 bar [29 psig] and max. 6 bar [87 psig].

Blowdown output rate is based on momentary maximum value for line sizing purposes.

Typical blowdown rate is 10-15 % of distillate output rate, depending on the operation point of the still.

Condenser cooling water consumption rate is based on dT = 83 °C [150 °F]. Pressure differential should be min. 3 bar [44 psi].

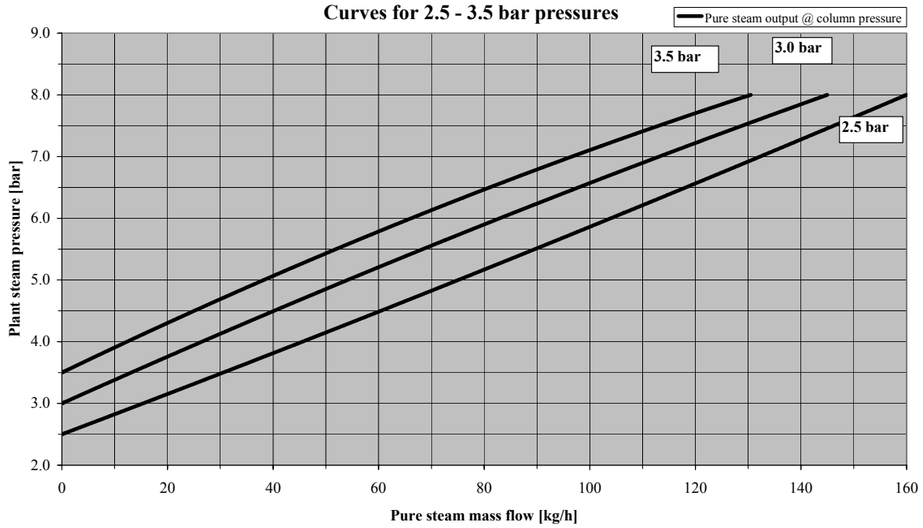
Optional blowdown cooling water consumption rate is based on dT = 30 °C [54 °F]. Pressure differential should be min. 2 bar [29 psi].

Optional reject distillate cooling water consumption rate is based on dT = 30 °C [54 °F]. Pressure differential should be min. 2 bar [29 psi].

Optional reject distillate cooling water consumption is periodical, and consumed only if distillate is rejected.

Cooling water and/or feed water inlet temperature higher than standard raises the cooling water consumption rate.

MWS 450-T PURE STEAM OUTPUT CHART
Curves for 2.5 - 3.5 bar pressures



1. It is recommended to install, in accordance with local, current, statutory regulator requirements relating to electrical isolation of fixed electrical equipment, a means of overcurrent protection and switches.
2. Purge or flush the building utility lines prior to final connection to the unit.
3. It is recommended to size the feed water, plant steam and safety valve outlet lines at least one size larger, depending on the length of the pipe run, to ensure adequate service supply pressure and demand flow to or from the unit. Also include the effect of coincident draw in multiple unit installations.
4. It is recommended to pipe the safety relief line to atmosphere, outside of the facility, for safe discharge. Piping is to be performed by others than STERIS FINN-AQUA.
5. The floor sink and drain line capacity must be able to handle the maximum rejected distillate (code 032) and blowdown (code 063) output and temperature.
6. It is recommended that the concrete slab below the still be sloped towards the floor sink next to still to promote drainage. The maximum temperature of the discharge is not to exceed 100 °C (212 °F).
7. All material for concrete and floor sink is to be supplied by others than STERIS FINN-AQUA. All construction work on site is to be performed by others than STERIS FINN-AQUA.
8. The maximum static pressure of the incoming utility is not to exceed the maximum value of the pressure range.
9. The feed water supplied to the unit must have a conductivity of less than 5 µS/cm (0.2 MOhm-cm resistivity). Total silica content must be less than 1 ppm and chloride content must be less than 100 ppb.
10. The distillate output is gravity discharged. As standard no head pressure can be placed on the system.
11. As standard the rejected distillate output, will be gravity discharged to drain for approximately 15 minutes, upon startup, until the process stabilises.
12. Dry, saturated, oil free plant steam is to be provided with a vapor quality of 97-100 %. If incoming plant steam pressure is higher than 8 bar (116 psig), the plant steam pressure reducing valve (PRV) is required. Notify that the PRV has a pressure drop of max. 1 bar (14.5 psi) depending on unit size and operating point.
13. Clean, dry, oil free, compressed Instrument air is required.
14. It is recommended to locate a condensate drip leg on the incoming plant steam line as close to the plant steam connection as possible.
15. The plant steam condensate return backpressure must not exceed 30% of the incoming plant steam pressure.
16. The cooling water hardness must be less than 125 ppm CaCO3.
17. The condenser cooling water consumption rates are based on nominal consumption values and cooling water temperature difference of 83°C (149 °F). The optional blowdown and/or reject distillate cooling water consumption rates are based on nominal consumption values and cooling water temperature difference of 30 °C (54 °F) If cooling water inlet temperature exceed 20 °C (68 °F), consult STERIS FINN-AQUA.
18. The minimum pressure differential between the cooling water in and out connections is 3 bar (44 psi), and the minimum inlet pressure of cooling water should be 3 bar (44 psig).
19. The blowdown and gas outlet lines are to be piped to drain by others than STERIS FINN-AQUA. Maintain a minimum air gap of 2" (50 mm), or as required by local, current, statutory regulator requirements.
20. The blowdown output figure is based on a blowdown rate of approximately 10-15 % from the distillate output rate during distillate production.
21. EN connection types and sizes indicated in parentheses are provided as per pressure vessel statutory regulator requirements.
22. The customer shall provide a distillate line. It should be minimum of the same diameter as the unit's distillate outlet pipe.
23. All input and output utility line connections, independent of size and type, must be free of external forces. The internal supports of these lines are designed only to carry internal loads. Any additional load may cause damage to the unit or to connections. Utility connection lines must be installed with required supports provided by others than STERIS FINN-AQUA.
24. Standard flange connection pressure ratings are for ASME 150lbs and for PED PN16.
25. Room operating temperature shall not exceed +40 °C [104 °F] . Relative humidity 20 to 95 % non-condensing.
26. The still is shipped in one module (sizes 70-250) and in multiple modules for other sizes depending on the unit configuration. Each top corner of a module is provided with a lifting lug.

Customer:
Merckle Biotec GmbH
Dornierstrasse 10
D-89079 Ulm, Germany
FA-Serial Number: COA42355, Anlagenbezeichnung: WFI-Erzeuger WFI 01

FINN-AQUA® **STERIS FINN - AQUA** TUUSULA • FINLAND

Approved By:	PHE	Date:	20.4.2005
Checked By:	TLE	Date:	19.4.2005
Drawn By:	ANU	Date:	18.4.2005

Drawing Title:
ABMESSUNGS- UND INSTALLATIONSZEICHNUNG
FINN-AQUA MEHRSTUFEN-DESTILLATIONSANLAGE
450-T-5-S7

Item No:		Rev:	2
Scale:		Sheet:	3 (3)
Drawing No:	**327875-2**	Size:	A3