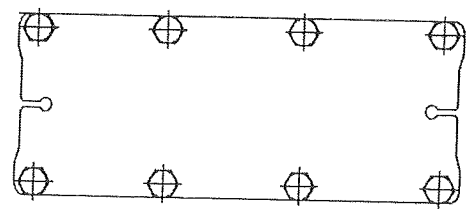


#108627

Designed constructed and stamped in accordance with 2010 ASME Code and latest Addendum.

This is a general drawing. Additional parts, if required, like protection sheets, inspection covers, etc. are not displayed.

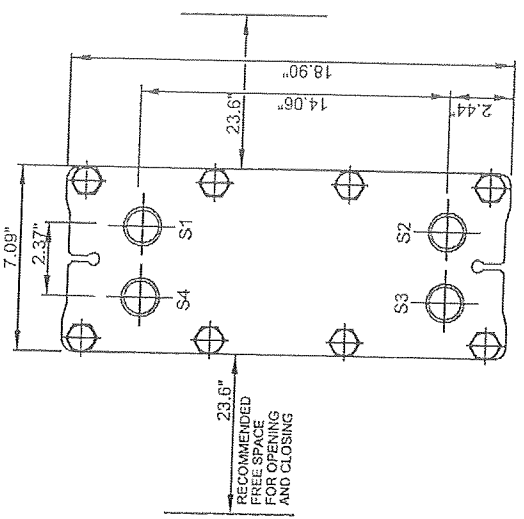
PRESSURE PLATE
(MOVABLE)
SECTION A-A
PP=19



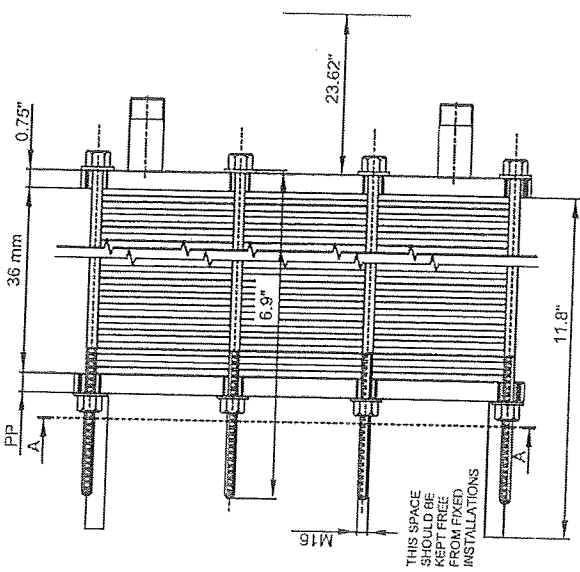
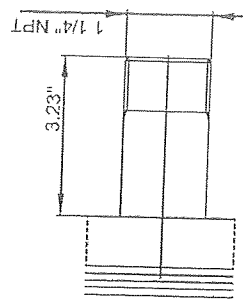
REMARKS:	SIDE 1	SIDE 2
DESIGN PRESSURE	150 psi	150 psi
TEST PRESSURE	195 psi	195 psi
MAX TEMPERATURE	300 °F	300 °F
MIN TEMPERATURE	32 °F	32 °F
MAWP	150 psi	150 psi
MDMT	-20 °F	

GASKET	HNBR CLIP-ON
PLATE MATERIAL	ALLOY 316
PLATE THICKNESS	0.60 mm
HEATING SURFACE	3.4 ft²
PLATE GROUPING	1*5MH/1*6ML
WEIGHT WITH WATER	63 lb
NETWEIGHT	61 lb

FRAME PLATE
(FIXED)



SS PIPE
S1,S2,S3,S4



THIS SPACE SHOULD BE KEPT FREE FROM FIXED INSTALLATIONS

need fluid physical properties used.

FOR APPROVAL
 Approved as Submitted
 Approved as Noted
 Not Approved
 Name TRK Date 5/31/11

TOTAL LENGTH 15"
 TOTAL WIDTH 7.1"
 TOTAL HEIGHT 18.9"

PRESSURE DROP	0.8003 psi	LIQUID VOL.	0.02 ft³
	0.5182 psi		0.03 ft³

FLOW RATE	255.8 lb/h
	2500 lb/h

TEMP.	293.0 °F
	180.0 °F

OUTLET	S3
	S1

TEMP.	293.0 °F
	80.0 °F

INLET	S4
	S2

ALL DIMENSIONS IN INCHES

SIDE	MEDIA
1	Steam
2	Xylose-Water

data sheet calls for gasket in

SUPPLIER	REF. 43507-10	ITEM NO. HP-2109
AGENT / REF.	/ 774610	
CUSTOMER NAME / REF. NO.	University Of Florida / 1100113912	
SIGN. CFN		RISK CATEGORY N/A

PLATE HEAT EXCHANGER

M3-FG

ASME

SERIAL NUMBER	30113-89814
DATE	2011-05-13
REV NO.	0

Alfa Laval, Plate Heat Exchanger
Channel Plate Installation Description

2011-05-13

Customer: University Of Florida
 Model : M3-FG
 Customer PO: 1100113912
 SU Order No: 43507-10
 Serial No: 30113-89814
 Item No: HP-2109

Plate material and Thickness: ALLOY 316 0.60 mm
 A Dimension: 36 mm
 Grouping: Hot side 1*5MH Cold side 1*6ML
 Sealing material: HNBR CLIP-ON
 Port Locations: S4 -> S3 S2 -> S1
 Connection material: Stainless steel Stainless steel
 Port hole with flow on the gasketed side: U
 Port hole sealed with O-ring: O
 Plates are assembled with the gasket side facing the frame plate.

Plate no.	Plate code no.	Plate Pattern	Punched corner of the plate				Flow direction on the gasket side of the plate	
			upper left	lower left	lower right	upper right		
			S1	S2	S3	S4		
			=<=	=>=	=>=	=<=		
1	39501549 83	M3 2	A	O	O	O	O	
2	39501548 03	M3 1	B	U	U	O	O	Up
3	39501549 03	M3 2	A	O	O	U	U	Down
4	39501548 03	M3 1	B	U	U	O	O	Up
5	39501549 03	M3 2	A	O	O	U	U	Down
6	39501548 03	M3 1	B	U	U	O	O	Up
7	39501549 03	M3 2	A	O	O	U	U	Down
8	39501548 03	M3 1	B	U	U	O	O	Up
9	39501549 03	M3 2	A	O	O	U	U	Down
10	39501548 03	M3 1	B	U	U	O	O	Up
11	39501549 03	M3 2	A	O	O	U	U	Down
12	39501549 16	M3 2	B	U	U	O	O	Up
		PRESSURE PLATE		T1	T2	T3	T4	

Article No:	Quantity:
39501549 83	1
39501548 03	5
39501549 03	5
39501549 16	1

#108627

Plate Heat Exchanger



FOR APPROVAL

Approved as Submitted

Approved as Noted

Not Approved

Name TPIC

Date 6/22/11

Technical Specification

Customer :
 Model : M3-FG
 Project : FB&D Univ Of FL
 Item : HP-2109

Date: 9/21/2010

	Hot Side	Cold side
Fluid	Steam	Xylose-Water
Density	lb/ft ³ 0.1336	62.26
Specific heat capacity	Btu/lb, °F 0.56	0.94
Thermal conductivity	Btu/ft, h, °F 0.0164	0.260
Viscosity inlet	cP 0.0139	1.23
Viscosity outlet	cP 0.0139	0.400
Mass flow rate	lb/h 255.8	2500
Inlet temperature	°F 293.0	80.0
Outlet temperature	°F 293.0	180.0
Pressure drop	psi 0.800	0.518
Heat Exchanged	kBtu/h 233.8	
L.M.T.D.	°F 157.7	
O.H.T.C service	Btu/ft ² , h, °F 423.7	
Heat transfer area	ft ² 3.4	
Relative directions of fluids	Countercurrent	
Number of plates	12	
effective plates	10	
Number of passes	1	1
Extension capacity		14
Plate material / thickness	ALLOY 316 / 0.60 mm	
Sealing material	HNBR CLIP-ON	HNBR CLIP-ON
Connection material	Stainless steel	Stainless steel
Connection diameter	See drawing	See drawing
Nozzle orientation	S4 -> S3	S1 <- S2
Pressure vessel code	ASME	
Flange rating		
Design pressure	psi 150.0	150.0
Test pressure	psi 195.0	195.0
Design temperature	°F 300.0	300.0
Overall length x width x height	in 15 x 7 x 19	
Liquid volume	ft ³ 0.0	0.0
Net weight, empty / operating	lb 60.6 / 61.8	

Fouling resist?

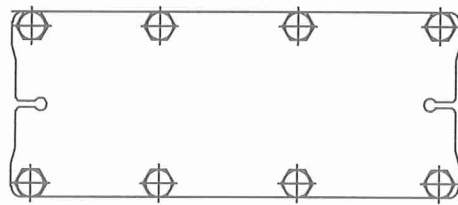
Performance is conditioned on the accuracy of customer's data and customer's ability to supply equipment. Data, specifications, and other kind of information of technological nature set out in this document and submitted by Alfa Laval to you (Proprietary Information) are intellectual proprietary rights of Alfa Laval. The Proprietary Information shall remain the exclusive property of Alfa Laval and shall only be used for the purpose of evaluating Alfa Laval's quotation. The Proprietary Information may not, without the written consent of Alfa Laval, be used or copied, reproduced, transmitted or communicated or disclosed in any other way to a third party.

Designed constructed and stamped in accordance with 2010 ASME Code and latest Addendum.

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PRESSURE PLATE
(MOVABLE)

SECTION A-A
PP=19

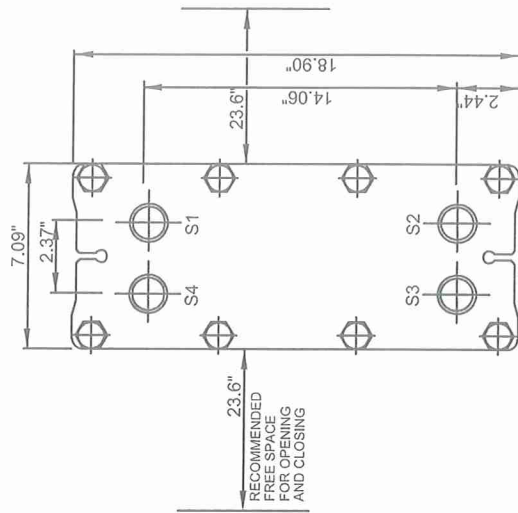


REMARKS:	SIDE 1	SIDE 2
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TEST PRESSURE	195 psi	195 psi
MAX TEMPERATURE	300 °F	300 °F
MIN TEMPERATURE	32 °F	32 °F
MAWP	150 psi	150 psi
MDMT	-20 °F	

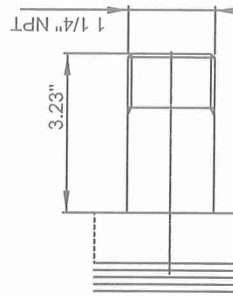
GASKET	HNBR CLIP-ON
PLATE MATERIAL	ALLOY 316
PLATE THICKNESS	0.60 mm
HEATING SURFACE	3.4 ft ²
PLATE GROUPING	1*5MH/1*6ML
WEIGHT WITH WATER	63 lb
NETWEIGHT	61 lb

11
108627

FRAME PLATE
(FIXED)



SS
PIPE
S1,S2,S3,S4



TOTAL LENGTH 15"
TOTAL WIDTH 7.1"
TOTAL HEIGHT 18.9"

CERTIFIED
APPROVED FOR FABRICATION
BY CF DATE 07-13-2011

ALL DIMENSIONS IN INCHES REV.1:MARKED CERT.

SIDE	MEDIA	INLET	TEMP.	OUTLET	TEMP.	FLOW RATE	PRESSURE DROP	LIQUID VOL.
1	Steam	S4	293.0 °F	S3	293.0 °F	255.8 lb/h	0.8003 psi	0.02 ft ³
2	Xylose-Water	S2	80.0 °F	S1	180.0 °F	2500 lb/h	0.5182 psi	0.03 ft ³

SUPPLIER	REF.	ITEM NO.
	43507-10	HP-2109
AGENT / REF. / 774610		
CUSTOMER NAME / REF. NO. University Of Florida / 1100113912		
SIGN.	CFN	RISK CATEGORY N/A

PLATE HEAT EXCHANGER

M3-FG
ASME

SERIAL NUMBER 30113-89814	
DATE 2011-07-13	REV NO. 1

Alfa Laval, Plate Heat Exchanger
Channel Plate Installation Description

2011-07-13

Customer: University Of Florida SU Order No: 43507-10
 Model : M3-FG Serial No: 30113-89814
 Customer PO: 1100113912 Item No: HP-2109

Plate material and Thickness: ALLOY 316 0.60 mm

A Dimension: 36 mm

	Hot side	Cold side
Grouping:	1*5MH	1*6ML
Sealing material:	HNBR CLIP-ON	HNBR CLIP-ON
Port Locations:	S4 -> S3	S2 -> S1

Connection material: Stainless steel Stainless steel

Port hole with flow on the gasketed side: U

Port hole sealed with O-ring: O

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				S1	S2	S3	S4	
				=<=	=>=	=>=	=<=	
	FRAME PLATE							
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2	39501548 03	M3 1	B	U --<---	U	O	O	Up
3	39501549 03	M3 2	A	O	O	U --<---	U	Down
4	39501548 03	M3 1	B	U --<---	U	O	O	Up
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6	39501548 03	M3 1	B	U --<---	U	O	O	Up
7	39501549 03	M3 2	A	O	O	U --<---	U	Down
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11	39501549 03	M3 2	A	O	O	U --<---	U	Down
12	39501549 16	M3 2	B		--<---			Up
	PRESSURE PLATE							
				T1	T2	T3	T4	

Article No:	Quantity:
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39501548 03	5
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CERTIFIED
 APPROVED FOR FABRICATION
 BY: CF DATE: 07-13-2011