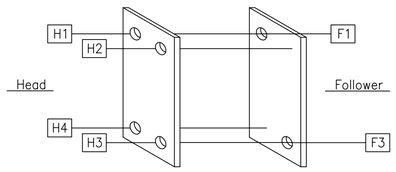
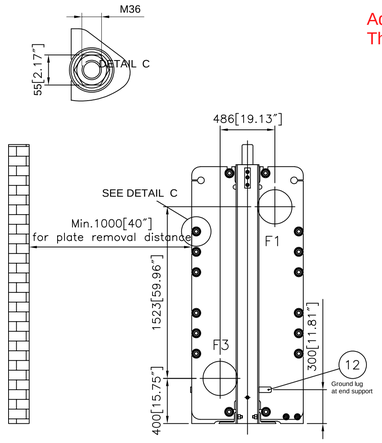
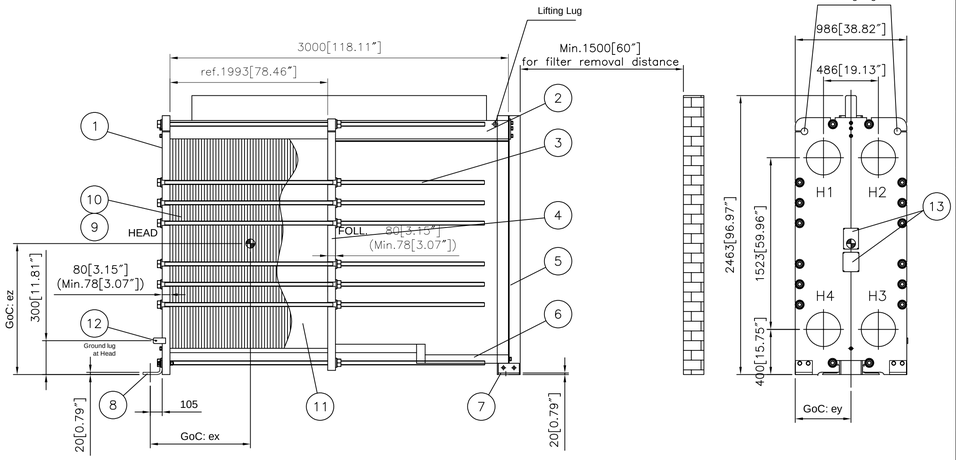
Add cover page to this drawing.
The document revision number shall be Rev.D

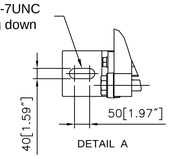
Connections

Fig.	Pos	Dimension	Description	Flange Facing
1	H1/N01	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	Wash Water(hot) inlet	RF
1	H4/N04	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	Wash Water(hot) outlet	RF
1	H3/N03	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	Cooling Water(cold) inlet	RF
1	H2/N02	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	Cooling Water(cold) outlet	RF
2	F1&F3	Blind flange for inline filter		

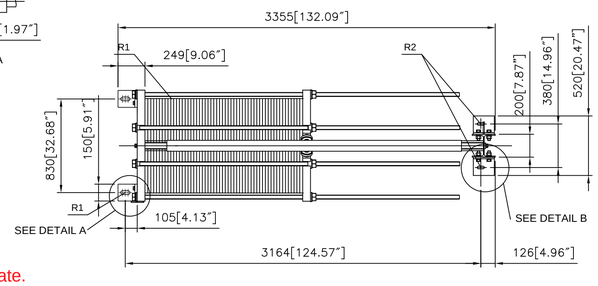


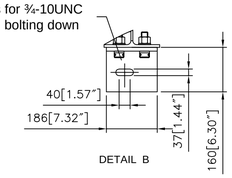




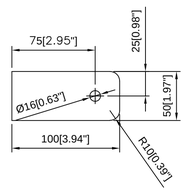


N



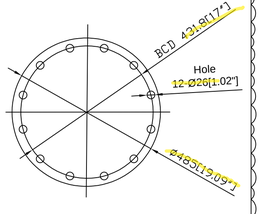


Ground Lug (Item No.12)
on Head & End Support

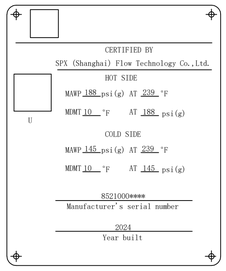


Thickness 10mm[0.39"]

F1&F3 Full Gasket (Item No.16a)



Thickness ~~3mm[0.12"]~~



Nameplate

Add details of following
- Manufacturer name pate.
- Anchor bolt washer detail.

28-E11 A						
	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	8918	8918	-8918	12353	-12353	12353
H2/N02	-3321	3116	792	2505	-3345	6537
H3/N03	-13031	-10074	1001	1498	-2601	-9686
H4/N04	8918	-8918	-8918	-12353	-12353	-12353

28-E11 B						
	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	8918	8918	-8918	12353	-12353	12353
H2/N02	-2281	-1842	808	2213	-2534	-6742
H3/N03	11908	-8971	-548	-615	524	-8112
H4/N04	8918	-8918	-8918	-12353	-12353	-12353

28-E11 C						
	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	8918	8918	-8918	12353	-12353	12353
H2/N02	-2012	-2290	-393	2812	1151	-8166
H3/N03	11731	-8676	-1664	-3297	4146	-7643
H4/N04	8918	-8918	-8918	-12353	-12353	-12353

28-E11 D						
	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	8918	8918	-8918	12353	-12353	12353
H2/N02	-1622	1108	1935	3167	-6370	1067
H3/N03	-10299	-8999	-2391	-5645	7205	-8137
H4/N04	8918	-8918	-8918	-12353	-12353	-12353

Center of Gravity(for single unit)		
	PHE (Flooded)	PHE (Empty)
ex	1272 mm	1304 mm
ey	493 mm	493 mm
ez	1188 mm	1198 mm

Static Foundation Loads		
	Flooded	Empty
R1	24997 N	17963 N
R2	33611 N	25187 N

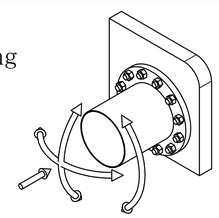
Wind Shear Load		
	Flooded	Empty
R1	4913 N	4830 N
R2	6606 N	6772 N

Earthquake Shear Load		
	Flooded	Empty
R1	3091 N	2221 N
R2	4156 N	3114 N

Moments(Flooded)		
	Windload	Earthquake
	19520 Nm	12731 Nm

Moments(Empty)		
	Windload	Earthquake
	19684 Nm	9306 Nm

Max. Allowed
Nozzle Loading



H1/N01, H4/N04, H2/N02, H3/N03	Fx=Fy=Fz (N)	±13031
	Mx=My=Mz (Nm)	±12353

Fig.1

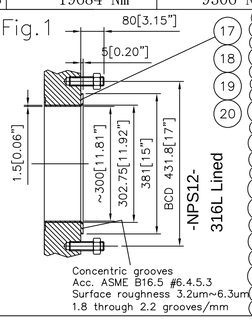
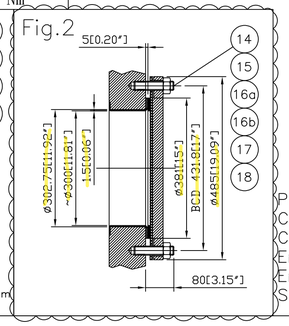


Fig.2



Technical Notes:

1: The installation, operation and maintenance shall be in accordance with the APV Heat Exchanger Instruction Manual.
2: This model heat exchanger is tightened using a wrench on the Tie Bar Hex Nuts at the follower end only.
3: Dimensions are shown in millimeters[inches].
4: The nameplate shall be welded to the rivets.
5: General tolerance for foundation length ±10mm.
6: The overpressure protection is user's responsibility in accordance with UG-150 through UG-156
7: The serial No. is 85210000243~6
8: Plate gasket shall be piece construction without joints.
9: After testing, exchangers shall be completely drained and dried.
10: Tie bar to be protected with grease and plastic sleeve.
11: Quantity in bill of material is for single unit.
12: The max chloride content of water used to hydro static test shall be less than 25mg/L and pH value between 6 and 9.
13: PMI shall be as per project specification &AA-T-SA-1001.
14: N2 filling and pressured with 0.2barg include pressure gauge.
15: For Painting details refer painting procedure document no. USBT-SX-MPPNT-36-0001.

Design Code	ASME SECTION VIII, DIVISION 1 2023 EDITION API 667 2022 Edition
ASME Certificate Mark	Required "U" Stamp
NB Registration	Required
No. of units	4

		Hot Side	Cold Side
Channel Arrangement			
Process Fluid		Wash Water (not lethal)	Cooling Water (not lethal)
Equipment Volume	gal(US)	303	303
Design Pressure	psi(g)	188	145
Operating Pressure	psi(g)	57.83	58.00
MAWP	psi(g)	188 psi at 239 °F	145 psi at 239 °F
In/Out Temperature	°F	132.8/102.7	95/120.5
Design Temperature	°F	Max.239/Min.10	Max.239/Min.10
MDMT		10 °F AT 188 psi(g)	10 °F AT 145 psi(g)
Hydraulic Test Pressure		244psi AT 41~122 °F	189psi AT 41~122 °F
Both sides simultaneously Hydro. Test Pressure		244psi AT 41~122 °F	244psi AT 41~122 °F
Hydraulic Test Position		Vertical	Vertical
Joint Efficiency		1(Seamless)	1(Seamless)
Corrosion Allowance (Dose not apply for heat plates)	in	C.S.=0.118"(3mm), S.S.=0.02"(0.5mm)	
Non Destructive Test	RT	Seamless Frame/Pressure plate-N.A	
	PT	10% For Heat Transfer Plate	
Postweld Heat Treatment Impact Testing		Not Required EXEMPTED AS PER UCS-66(a), Fig UCS-66 note(c),UHA-51(d)	
Heat Exchange Area	ft²	6437.7	
Quantity of plate/Max.Fitting Plates/ Min.Fitting Plates		547/547/10	
Plate Material/Gasket Material		SA-240 316L 0.0197in(0.5mm) EasyClip/ FKM (Steam) (Paradur) EasyClip	
Plate Type		C110	
Heat Duty	BTU/h	121460000	
Estimated Weight	lbm	13749(empty)/18807(flooded)	
Wind Design Code		ASCE 07-16	
Seismic Design Code		ASCE 07-16	
Inline Filter Type (Wash water side and cooling water side)		Hole Ø2.5mm Hole Spaces 3.5mm Diameter*Length: Ø290mm*2100mm	

NO.	TITLE	MATERIAL	QUTY.	Drawing No.
20	N1&N4 Gasket 12" N2&N3 Gasket 12"	SS316 Graphite Spiral Wound Rubber Reinforced	2 2	Provided by SPX Flow
19	Liner	S.S.316L	6	N1~N4,F1,F3
18	Nuts 7/8-9" UNC	SA-194 2H	72	N1~N4,F1,F3
17	Stud bolts 7/8-9" UNC L=80mm	SA-193 B7	72	N1~N4,F1,F3
16b	Gasket OD384*ID324*3 THK	EPDM	2	F1&F3
16a	Full Gasket	PTFE	2	
15	Blind Flange NPS12 150# RF	SA-105	2	F1 & F3 ASME B16.5
14	Inline Filter	S.S.316L	2	F1&F3 Specify weight of inline strainer
13	Manufacturer Nameplate	S.S.316L	1	
	ASME Nameplate	S.S.316L	1	
12	Grounding Lug	S.S.304	2	
11	Shroud Cover	S.S.304	1	
10	Gasket	FKM steam	547	
9	Plate	SA-240 316L/0.0197in(0.5mm)	547	
8	Foot plate for head	SA-516 Gr.70	2	
7	End foot plate	SA-516 Gr.70	2	
6	Bottom bar	S.S.304	1	
5	End Support	S.S.304	1	
4	Follower	SA-516 Gr.70	1	
3	M36 Tie bar/Nut	SA-193 B7/SA-194 7L	16	
2	Top bar	S.S.304	1	
1	Head	SA-516 Gr.70	1	

Project name: BOP-2X Expansion Recovery
Client: ExxonMobil
Client Project no.: C230049S
Engineering Contractor: Kent Plc
Engineering Contractor Job no: 2648
SPX P.O. No.: 4553371542

Rev.	Date	Description	Design	Check	Review
05	1/10/2025	Revised as Client's comments	Jim Tu	Neil Mao	
04	12/20/2024	Revised as Client's comments	Jim Tu	Neil Mao	
03	11/26/2024	Revised as Client's comments	Jim Tu	Neil Mao	
02	10/25/2024	Revised as Client's comments	Jim Tu	Neil Mao	
01	9/30/2024	Original for Approval	Jim Tu	Neil Mao	

SPX (Shanghai) Flow Technology Co., Ltd.

Weight kg:
Drawn by:
Checked by:
Approved by:

General Arrangement Drawing for
Wash Water Cooler I (28-E11X A/B/C/D)
PHE Type C110 M-16X ASME

Design press.:: KPa
Basis nr.::
Drawing No.: 8521000****
Rev. 5