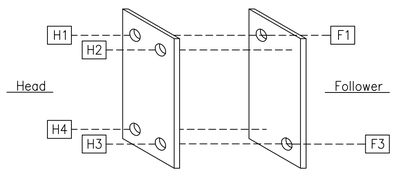
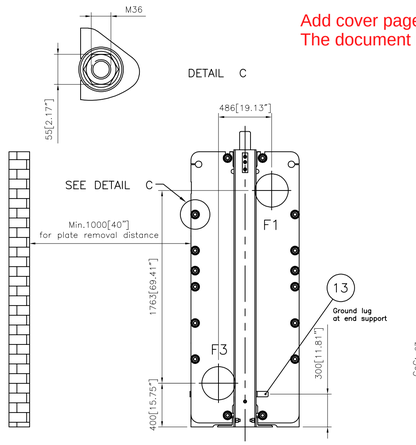
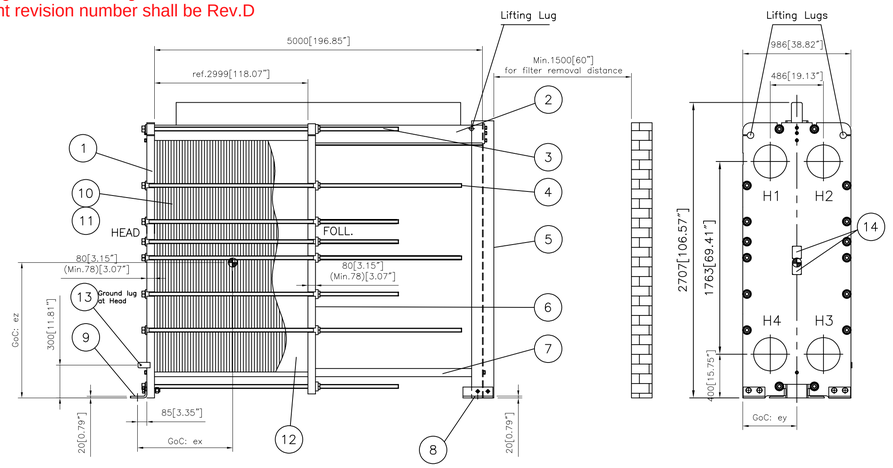
Add cover page to this drawing.
The document revision number shall be Rev.D

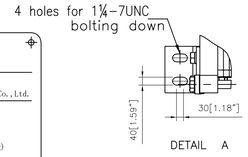
Connections

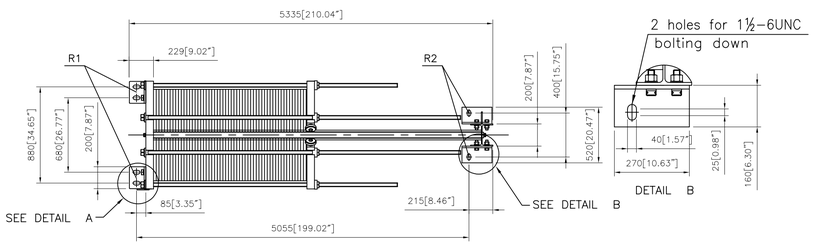
Fig.	Pos	Dimension	Description	Flange Facing
1	H1/N01	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	Wash water II(hot) inlet	RF
1	H4/N04	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	Wash water II(hot) outlet	RF
1	H3/N03	NPS12 Flange(studded) 316L Lined Class150 ASME B16.5-2020	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		

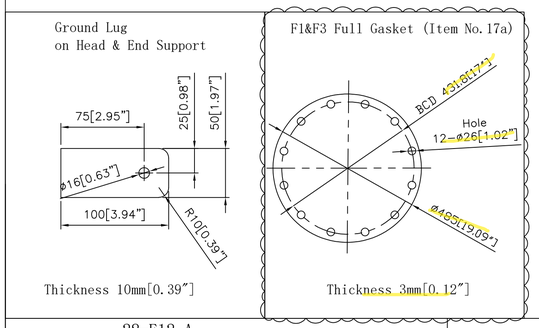


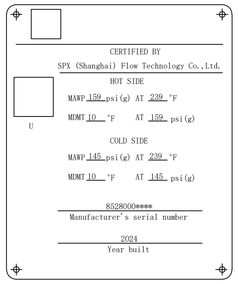












Nameplate

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

28-E12 A	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	-1559	-10445	640	-4725	1744	11204
H2/N02	-3985	9203	529	-591	2004	-11197
H3/N03	10476	-6699	3120	4852	7611	4982
H4/N04	-1667	-4188	1121	3255	2907	5381

28-E12 B	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	2320	-10541	2161	-5467	890	9750
H2/N02	-4861	8635	-2151	3765	-8616	-9314
H3/N03	12476	-7963	-4779	10509	-3974	5650
H4/N04	867	-4516	687	1122	-1608	4867

28-E12 C	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	-2152	-8994	668	-6225	2730	8490
H2/N02	5548	8934	1216	10608	-1809	-12022
H3/N03	-11270	-7639	5228	6582	2854	5499
H4/N04	-1408	-4985	-412	-1116	-2117	4930

28-E12 D	Fx(N)	Fy(N)	Fz(N)	Mx(Nm)	My(Nm)	Mz(Nm)
H1/N01	-2424	-8117	-594	-7158	2159	6560
H2/N02	-274	10533	-793	7328	-4153	-15236
H3/N03	5345	-3262	-1107	-11525	-2068	3056
H4/N04	1186	-6794	-1047	-4028	-4116	7035

Center of Gravity(for single unit)		PHE (Flooded)	PHE (Empty)
	ex	1820 mm	1884 mm
	ey	493 mm	493 mm
	ez	1315 mm	1328 mm

Static Foundation Loads	Flooded	Empty
R1	41324 N	28365 N
R2	46497 N	33705 N

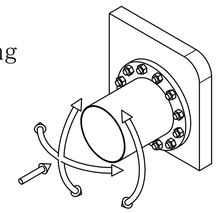
Wind Shear Load	Flooded	Empty
R1	8399 N	8233 N
R2	9450 N	9783 N

Earthquake Shear Load	Flooded	Empty
R1	5110 N	3507 N
R2	5749 N	4168 N

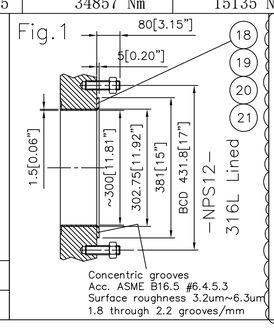
Moments(Flooded)	Windload	Earthquake
	34516 Nm	21613 Nm

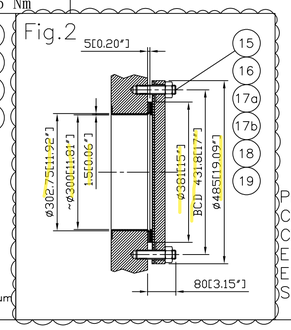
Moments(Empty)	Windload	Earthquake
	34857 Nm	15135 Nm

Max. Allowed
Nozzle Loading



H1/N01, H4/N04, H2/N02, H3/N03	Fx=Fy=Fz(N)	±12476
	Mx=My=Mz(Nm)	±15236





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 85280000346&7
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.

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	

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	
Channel Arrangement	Hot Side	Cold Side
Process Fluid	Wash water II (not lethal)	Cooling Water (not lethal)
Equipment Volume gal(US)	522	522
Design Pressure psi(g)	159	145
Operating Pressure psi(g)	79.58	43.50
MAWP psi(g)	159 psi at 239 °F	145 psi at 239 °F
In/Out Temperature °F	157.1/133	111.7/143.9
Design Temperature °F	Max.239/Min.10	Max.239/Min.10
MDMT	10 °F AT 159 psi(g)	10 F AT 145 psi(g)
Hydraulic Test Pressure	207psi AT 41~122 °F	189psi AT 41~122 °F
Both sides simultaneously Hydro. Test Pressure	207psi AT 41~122 °F	207psi AT 41~122 °F
Hydraulic Test Position	Vertical	Vertical
Joint Efficiency	1(Seamless)	1(Seamless)
Corrosion Allowance in (Dose not apply for heat plates)	C.S.=0.118"(3mm), S.S.=0.02"(0.5mm)	
Non Destructive Test RT	Seamless Frame/Pressure plate-N.A	
Non Destructive Test PT	10% For Heat Transfer Plate	
Postweld Heat Treatment	Not Required	
Impact Testing	EXEMPTED AS PER UCS-66(a), Fig UCS-66 note(c),UHA-51(d)	
Heat Exchange Area ft²	11724.2	
Quantity of plate/Max.Fitting Plates/ Min.Fitting Plates	823/823/10	
Plate Material/Gasket Material	SA-240 316L 0.0197in(0.5mm) EasyClip/ FKM (Steam) (Paradur) EasyClip	
Plate Type	C134	
Heat Duty BTU/h	233290000	
Estimated Weight lbm	20345(empty)/29053(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*3120mm	

NO.	TITLE	MATERIAL	QUTY.	Drawing No.
21	N1&N4 Gasket 12"	Rubber / Steel	2	Provided by SPXFlow
	N2&N3 Gasket 12"	SS316 / Graphite	2	
20	Liner	S.S.316L	6	N1~N4,F1,F3
19	Nuts 7/8-9" UNC	SA-194 2H	72	N1~N4,F1,F3
18	Stud bolts 7/8-9" UNCx115	SA-193 B7	72	N1~N4,F1,F3
17b	Gasket OD384*ID324*3mm THK	EPDM	2	F1&F3
17a	Full Gasket	PTFE	2	
16	Blind Flange NPS12 150# RF	SA-105	2	F1 & F3 ASME B16.5
15	Inline Filter	S.S.316L	2	F1 & F3
14	Manufacturer Nameplate	S.S.316L	1	Specify weight of inline strainer
	ASME Nameplate	S.S.316L	1	
13	Grounding lug	S.S.304	2	
12	Shroud cover	S.S.304	1	
11	Gasket	FKM Steam	823	
10	Plate	SA-240 316L/0.0197in(0.5mm)	823	
9	Foot plate for head	SA-516 Gr.70	2	
8	End Foot plate	SA-516 Gr.70	2	
7	Bottom bar	S.S.304	1	
6	Follower	SA-516 Gr.70	1	
5	End support	S.S.304	1	
4	M36 Tie bar/Nut	SA-193 B7/SA-194 7L	6	
3	M36 Tie bar/Nut	SA-193 B7/SA-194 7L	10	
2	Top bar	S.S.304	1	
1	Head	SA-516 Gr.70	1	

SPX(Shanghai)Flow Technology Co.,Ltd

APV

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

General Arrangement Drawing for
Wash Water Cooler II (28-E12X A/B/C/D)
PHE Type C134 M-16X ASME

Design press.:: PSI
Basis nr.::
Drawing No.: 8528000****
Rev. 5