



FABSCO LLC.

P.O. Box 988
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AIR COOLED EXCHANGER SPECIFICATION SHEET

Table with 4 columns: Item No., Description, Value, and Unit. Includes fields for Equipment Owner, Plant Location, Service, Size and Type, Surface/Unit, Heat Exchanged, and Transfer Rate-Finned Tube.

PERFORMANCE DATA - TUBE SIDE

Table with 4 columns: Item No., Description, Value, and Unit. Includes fields for Fluid Name, Total Fluid In, Vapor, Liquid, Noncond, Steam, Water, Temperature In/Out, Pressure In / Out, Velocity (midpoint), and Press. Drop Allow/Calc.

PERFORMANCE DATA - AIR SIDE (Air)

Table with 4 columns: Item No., Description, Value, and Unit. Includes fields for Std. air flow rate/item, Air Quantity/Fan, Actual Static Press, Face Velocity, and Max Mass Velocity.

DESIGN - MATERIALS - CONSTRUCTION

Table with 4 columns: Item No., Description, Value, and Unit. Includes fields for Design Pressure, TUBE BUNDLE, Arrangement, Bundles, Bays, Bundle Frame Finish, Header Finish, Structure Finish, Mounting/C TO C, Surf Prep, Louvers / Guards, and Vibration Transmitter.

MECHANICAL EQUIPMENT

Table with 4 columns: Item No., Description, Value, and Unit. Includes fields for Fan Mfg, Model, No./Bay, Fan Diam. Ft, Manual Adjust, Mat'l: Blade, hp/Fan, Design, hp/Fan, Min Amb, Plot Area, Weight per bay lbs., Weight per unit lbs., dBA @ 3', Fan Wt Lbs, and various mechanical specifications.

- 1. 10% plug & plug gasket included as spares
2. The motors will have a 1.15 SF on sine-wave power (constant frequency/speed) and will have a 1.0 SF at variable frequency.
3. Tube-tubesheet strength welded (no PWHT). Joint type e,f,g or h. Single mockup provided for Tags 18-XF-350/18-XF-352A&B/18-XF-353A&B/18-XF-354. Helium leak test.
4. 100% RT header box external welds; 100% UT nozzle attachemnt after PWHT.
5. Wall thickness under fin = 0.097"
6. Flammable requirements in Attachment C apply. Design for cyclic service. Fatigue analysis required.
7. 18-XF-350 & 18-XF-354 set side-by-side with continuous walkway on return end only. Air seal provided between bays.
8. Surface prep and primer for short columns + spanning beams: Table A-2 System 4B of A8KM-PP-000-500520-A Painting. Structural steel prep'd and primed for fireproofing shall not be galvanized.
9. Deleted
10. Each pass provided as split header for a total of 7 header boxes.
11. Galvanized per A8KM-PP-000-500540 except fireproofed Structural Steel (also reference note 8)
12. Two (2) tube skin thermocouples, weld pad type with thermal cement and clamp-on with insulation (for 2 tubes of the process bundle).
13. One (1) inspection door to access the 2 tube skin thermocouples from underneath their location and above the steam coil
14. For mixed air temp measurements (by WEP) a 1" access hole is provided with dollar plate cover between the process bundle and steam coil on both the front and rear headers at the center above the fans.
15. System 5 after Hydrotest per A8KM-PP-000-500520
16. Due to multiple split headers, surfaces that are inaccessible after bundle assembly will be painted prior to hydrotest.
17. Anti-rotation safety device provided on fan shaft bushing per fan: MOORE FAN MODEL "AIRBRAKE F BUSHING MOUNT"



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1				Date:	4/10/2024	Rev.	3
2	Equipment Owner	Air Products Manufacturing LLC	Customer/Client:	World Energy Paramount	Item No.	18-XF-354-SC	
3	Plant Location	World Energy, Paramount, CA, USA	Job No.:	A22-13312	Proj No./Unit:	EN-20-7119 / RFJU-B	
4	Service	Steam Coil for Off Spec Product Cooler	Project:	World Energy Renewables Project	PO No.:	4505606036 / A8KM-4-406-PO-1	
5	Size and Type	FORCED		No. Bays	1		
6	Surface/Unit - Finned Tube	8145.2 ft2	:Bare Tube	352.8 ft2			
7	Heat Exchanged	8579828 Btu/h		MTD, Eff.	314.2 °F		
8	Transfer Rate-Finned Tube	3.748	:Bare Tube, Service	86.5	Clean	112.7 Btu/h.ft2.F	

PERFORMANCE DATA - TUBE SIDE

10	Fluid Name	Steam/Water		Vapor Ref. Temp.	°F	365.87	
11	Total Fluid In	lb/h	10000	Specific Heat	Btu/lb.F	0.6659	
12	Vapor	lb/h		Viscosity	cP	0.0152	
13	Liquid	lb/h		Conductivity	Btu/h.ft.F	0.0207	
14	Noncond	lb/h		Density	lb/ft3	0.3627	
15	Steam	lb/h	10000	0	Liquid Ref. Temp.	°F	365.87
16	Water	lb/h	0.0	10000	Specific Heat	Btu/lb.F	1.0582
17					Viscosity	cP	0.1457
18	Temperature In/Out	°F	365.9	365.9	Conductivity	Btu/h.ft.F	0.3863
19	Pressure In / Out	psia	164.7	163.9	Density	lb/ft3	55.004
20	Velocity	ft/s	22.3				
21	Press. Drop Allow/Calc	psi	0.816		Fouling resistance	h.ft2.F/Btu	0.002

PERFORMANCE DATA - AIR SIDE (Air)

23	Air flow rate/item	(SCFM)	218736	Altitude above Sea Level	ft	69	
24	Air Quantity/Fan	(ACFM)	101917	Temperature In (Dry Bulb)	°F	35	
25	Actual Static Press (steam coil only)	in H2O	0.06	Temperature Out	°F	68.29	
26	Face Velocity	(SFPM)		Min. Design Ambient	°F	35	
27	Max Mass Velocity	lb/h.ft2		Fan Air Temperature	°F	35	

DESIGN - MATERIALS - CONSTRUCTION

29	Design Pressure psig	FV/	232	Test Pressure psig	302	Design Temperature	430.0	32	°F			
30	TUBE BUNDLE			HEADER, Type	PIPE	TUBE, Material	SA-179					
31	Size	13.8 X 24.5	ft	Material	SA 106B	SEAMLESS MIN WALL:						
32	No./Bay	1	No. Rows	1	No. Passes	1	OD inch	1	Thickness	0.12	in	
33	Arrangement	Bundles in Series		Slope	0.25	in/ft LAST PASS	No./Bundle	55				
34	Bundles	1	Bundles in parallel		Corr Allow	0.125	in	Length	24.5			ft
35	Bays	1	Bays in parallel		End Plate Material	SA 516-70N		Pitch	3			in
36	Bundle Frame Finish	Galvanized		Flange Material	SA-350-LF2		Fin, Type	EMBEDDED				
37	Header Finish	System 5 after hydro		In qty/in.	2	3	Material	ALUMINUM				
38	Structure Finish	Galvanized		Out qty/in.	2	3	OD	2.25	Thk.	0.016	in	
39	Mounting/C TO C			Special Nozzles	NONE		No./in	11	Fin Design Temp	430.0		
40	Surf Prep	SSPC SP 10		Rating/Facing	300# RFWN		Code -	ASME Section VIII Div 1				
41	Louvres / Guards			TI	PI		Natl Board Stamp	YES				
42	Vibration Switches			Chem. Cleaning								

MECHANICAL EQUIPMENT

44	Fan Mfg	Driver			Speed Reducer		
45	Model	Type			Type		
46	No./Bay	Mfg.			Mfg.		
47	Fan Diam. Ft	No./Bay			Model		
48	Manual Adjust	hp /Driver			No./Bay		
49	Mat'l:Blade	Rev/Min			AGMA Rating, hp		
50	hp/Fan, Design	Enclosure			Ratio		
51	hp/Fan, Min Amb	Volt;Phase;Cycle			Support		
52	Plot Area	Bundle WT Dry lb	6365	Full H2O	6692	API Noz Mult.	2
53	Weight per bay lbs.					Heat Treat	NO
54	Weight per unit.					NDE	ASME
55							
56	1. Spot RT end plates. 100% RT butt welds.						
57	2. Header finish per A8KM-PP-000-500520-A. Structure galvanized per A8KM-PP-000-500540-A.						
58	3. Wall thickness under fin = 0.109"						