



TABLE 1: Joint Reactions

Joint	Output Case	Px	Py	Pz
Text	Text	Kgf	Kgf	Kgf
A-1	DEAD_S	16.65	-45	861.98
A-1	DEAD	49.34	-158.83	1640.14
A-1	DEAD_OP	4.08	-14.37	93.37
A-1	DEAD_N	-1631.93	429.16	-2881.5
A-1	LIVE	3.34	25.54	1383.73
A-1	WX	31.57	329.34	-352.72
A-1	WY	-387.76	93.94	-669.09
A-1	SNOW	9.74	-24.99	547.61
A-1	EQX	106.43	1146.49	-1764.07
A-1	EQY	-156.76	337	-3289.21
A-1	EQZ	210.24	2295.13	-3529.78
A-1	EQVO	-3123.79	673.24	-6571.39
A-2	DEAD_S	-20.6	1.599E-13	380.54
A-2	DEAD	-33.06	-0.0000289	811.07
A-2	DEAD_OP	-0.21	-3.963E-07	55.27
A-2	DEAD_N	-10.59	-1.13	-378.95
A-2	LIVE	-76.47	6.853E-13	402.18
A-2	WX	1.656E-12	49.67	8.288E-12
A-2	WY	-54.91	-1.206E-13	-353.83
A-2	SNOW	-19.58	-8.653E-07	221.21
A-2	EQX	0.004037	45.8	0.00216
A-2	EQY	-48.82	-0.38	-1465.12
A-2	EQZ	0.00889	52.7	0.00438
A-2	EQVO	-98.54	-6.78	-2937.34
A-3	DEAD_S	16.65	45	861.98
A-3	DEAD	49.34	158.83	1640.14
A-3	DEAD_OP	4.08	14.37	93.37
A-3	DEAD_N	39.17	235.02	482.86
A-3	LIVE	3.34	-25.54	1383.73
A-3	WX	-31.57	329.34	352.72
A-3	WY	-387.76	-93.94	-669.09
A-3	SNOW	9.74	24.99	547.61
A-3	EQX	-106.49	1146.49	1764.07
A-3	EQY	1071.77	-428.48	-2570.23
A-3	EQZ	-210.36	2295.13	3529.78
A-3	EQVO	-2144	856.2	-5134.3
B-1	DEAD_S	34.11	-1.44	482.68
B-1	DEAD	174.23	-2.24	983.9
B-1	DEAD_OP	16.3	0.01218	81.45
B-1	DEAD_N	-670.87	1.33	2555.04
B-1	LIVE	-43.74	-6.51	64.14
B-1	WX	-255.25	0.99	-374.63
B-1	WY	-1.13	70.96	504.74
B-1	SNOW	24.65	-1.56	193.87
B-1	EQX	-985.73	4.1	-1834.5
B-1	EQY	-51.12	-28.6	2619.38
B-1	EQZ	1948.08	8.18	3658.98
B-1	EQVO	-102.38	-57.85	5233.15
B-2	DEAD_S	-3.76E-15	-9.82	342.79
B-2	DEAD	-1.146E-10	-61.15	847.79
B-2	DEAD_OP	-3.603E-11	-4.01	77.09
B-2	DEAD_N	-0.003857	-403.24	720.08
B-2	LIVE	8.844E-15	82.81	-147.91
B-2	WX	-56.07	3.583E-12	-6.399E-12
B-2	WY	-8.004E-14	-0.29	682.53
B-2	SNOW	-3.498E-11	3.21	131.34
B-2	EQX	0.02819	0.04229	-0.07544
B-2	EQY	0.00583	-1570.51	2804.88
B-2	EQZ	-0.2	0.08486	-0.15
B-2	EQVO	0.0007335	-3138.25	5603.81
B-3	DEAD_S	-34.11	-1.44	482.68
B-3	DEAD	174.23	-2.24	983.9
B-3	DEAD_OP	16.3	0.01218	81.45
B-3	DEAD_N	-670.87	1.33	2555.04
B-3	LIVE	43.74	-6.51	64.14
B-3	WX	-255.25	0.99	-374.63
B-3	WY	1.13	-70.96	-504.74
B-3	SNOW	-24.65	1.56	193.87
B-3	EQX	-985.8	-4.09	1834.58
B-3	EQY	-40.75	-28.68	1900.29
B-3	EQZ	-1948.16	-8.15	-3658.54
B-3	EQVO	-81.36	-57.83	3796.07

**NOTES:**

- Loading Data  
WIND :ASCE7-16 VELOCITY :125km/h, EXPOSURE : C  
Earthquake : Standard No. 2800, A=0.3, B=2.75, I=1.4, R=3.5, SOIL TYPE=IV
- Fans  
~100% (Adjustable pitch-manual) /  $\Delta$
- Miscellaneous  
- The Inlet Header Boxes are Fixed In The Direction Of Fin Tubes.  
- Refer To Table For The Lateral Displacement In Y Direction  
- Flange Face Details : ASME ANSI B16.5  
- All Dimensions are In Millimeter Unless Otherwise Specified.  
- All Dimensions Tolerances are According To API 661 (Figure 10)
- Bolts which are used for fixing headers to side frame, on sliding side should be removed after erection.
- PROTECTION (SEE GALVANIZING SPECIFICATION AND INSPECTION PROCEDURE: E027-DMF-V0-QC-PR0-024)
- RADIOGRAPHIC TEST (FULL/SPOT) SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OF ASME SEC. VIII DIV.1 UW-11 & UW-12.

**LOAD DEFINITION\***

LOAD	DEAD LOAD (FAN+INLET+GUARDS+FIN+MOTOR+REDUCERS+GRATING+TUBE BUNDLE+EMPTY HEADER WALK WAY)
DEAD OP	WEIGHT OF LIQUID WITHIN EACH TUBE BUNDLE+STEAM COIL(WATER)
DEAD SN	SELF WEIGHT OF STRUCTURE
DEAD SNZ	NOZZEL LOAD
SNOW	WALKWAY LOAD 250 kg/m2
EQX	SEISMIC LOAD DIR.X
EQY	SEISMIC LOAD DIR.Y
WX	WIND LOAD DIR.X
WY	WIND LOAD DIR.Y
SNOW	68 kg/m2

\* Further Definition Check The Steel Structure Calculation Doc No.: E027-DMF-V0-ST-CAL-004 1158-A01-0030-00

**THE MAXIMUM ALLOWABLE MOMENTS AND FORCES PER EACH NOZZLE (IF LOADS ARE DIVIDED EQUALLY FOR NOZZLES ACCORDING TO 3XAPI 681(7.1.1.0))**

SIZE	Px(N)	Py(N)	Pz(N)	Mx(N.m)	My(N.m)	Mz(N.m)
2"	10020	8010	10020	2430	3660	2430
3"	3080	3990	3080	450	720	450

**CONNECTIONS**

NO.	REP.	QTY. PER BAY/ITEM	DIA	DESIGNATION
N1	INLET NOZZLE/FLANGE	1/1	4"	FLANGE ANSI B16.5, 350, UNF SA-350 LF2 CL1 LN
N2	OUTLET NOZZLE/FLANGE	1/1	2"	FLANGE ANSI B16.5, 350, UNF SA-350 LF2 CL1 LN
V1&V2	VENT	2/2	1"	FLANGE ANSI B16.5, 350, UNF SA-350 LF2 CL1 LN
D1&D2	DRAIN	2/2	1"	FLANGE ANSI B16.5, 350, UNF SA-350 LF2 CL1 LN
1A	VIBRATION SWITCH	2/2	-	SEE FAN DRIVE ASSEMBLY DRAWING
2A	MOTOR(7.5kw)	2/2	-	SEE FAN DRIVE ASSEMBLY DRAWING
3A	FAN	2/2	71R	SEE FAN DRIVE ASSEMBLY DRAWING

**LATERAL DISPLACEMENT OF HEADERS (DIRECTION X) INSIDE TUBE BUNDLE FRAME IN RELATION WITH EXPANSION FORCES ON NOZZLES (mm) (ACCORDING TO API681 7-1-1-2)**

MAXIMUM DISPLACEMENT INLET/OUTLET :  $\pm 9$

\* FOR MORE DETAILS FOR EACH COMPONENT OF AIR COOLER REFER TO BELOW DRAWING & DOCUMENTS.

**REFERENCED DWG&DOC.**

ITEM	VENDOR DOCUMENT NO.	CLIENT DOCUMENT NO.
Tube Bundle Drawing	1158-A01-2400-00	E027-DMF-V0-ME-DWG-008
Frame Drive Drawing	1158-A01-6000-00	E027-DMF-V0-ME-DWG-007
Fin Drive Assembly Drawing	1158-A01-6000-00	E027-DMF-V0-ME-DWG-008
Ring Drawing	1158-A01-5067-00	E027-DMF-V0-ME-DWG-009
Vent Mechanism Drawing	1158-A01-8307-00	E027-DMF-V0-ME-DWG-010
Steel Structure Drawing	1158-A01-8100-00	E027-DMF-V0-ME-DWG-011
Header Walkway Drawing	1158-A01-1000-00	E027-DMF-V0-ME-DWG-012
Color Drawing	1158-A01-1000-00	E027-DMF-V0-ME-DWG-013
Surface Preparation and Painting Procedure for Air Cooler	1158-A01-0500-00	E027-DMF-V0-QC-PR0-024

**PROJECT:**  
Air Cooler For  
Tease-the Park Sanat Gohar Obgh Petrochemical Co.

**General Arrangement Drawing**  
1158-A01-1000-00

**DWG. NO.** E027-DMF-V0-ME-DWG-003

**SCALE:** N.T.S. SIZE: A1 REV: R1

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**Damafin thermal technology**  
Factory : Km 14 special Karaj road