



Toase-ehe Park Sanati Gohar Ofoh
Petrochemical Co.
**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**



Document Title: Condenser Outline Drawing

Document No.: EI027-HSE-VD- ME-DWG-005-R1

Rev. R1

Page 1 of 4

STYRENE PARK OFFSITE

Document Title:
Condenser Outline Drawing

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R1	15-09-2024	IFA	F.SH	M.O	A.M
R0	04-07-2024	IFA	F.SH	M.O	A.M



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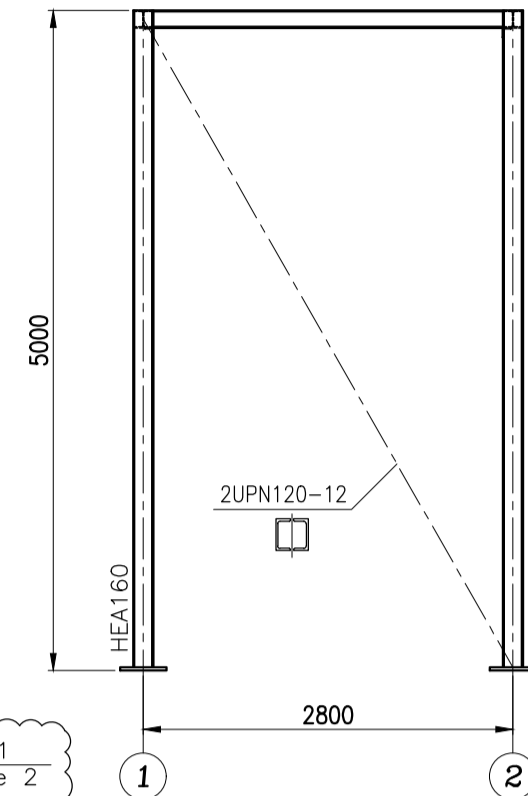
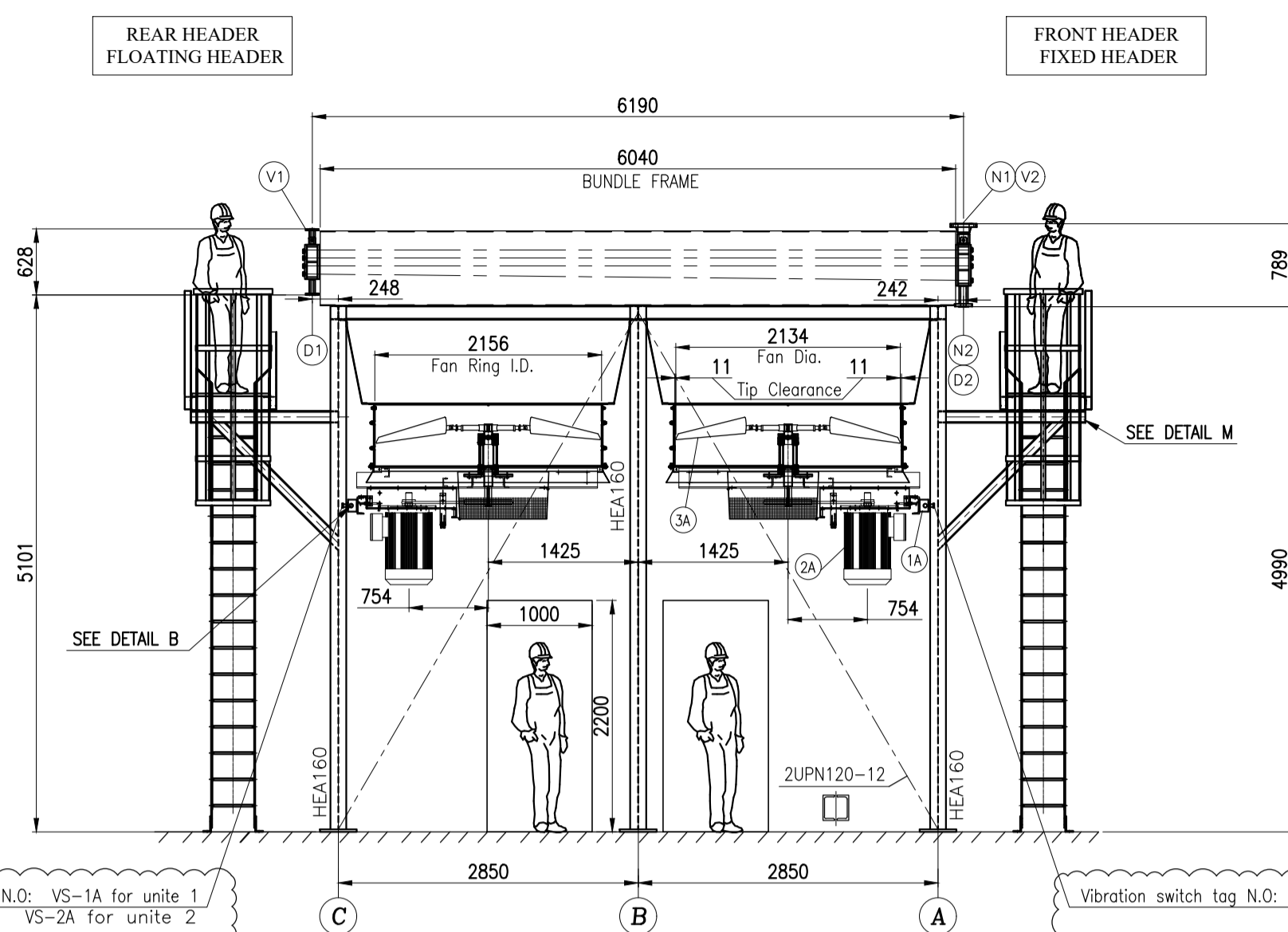
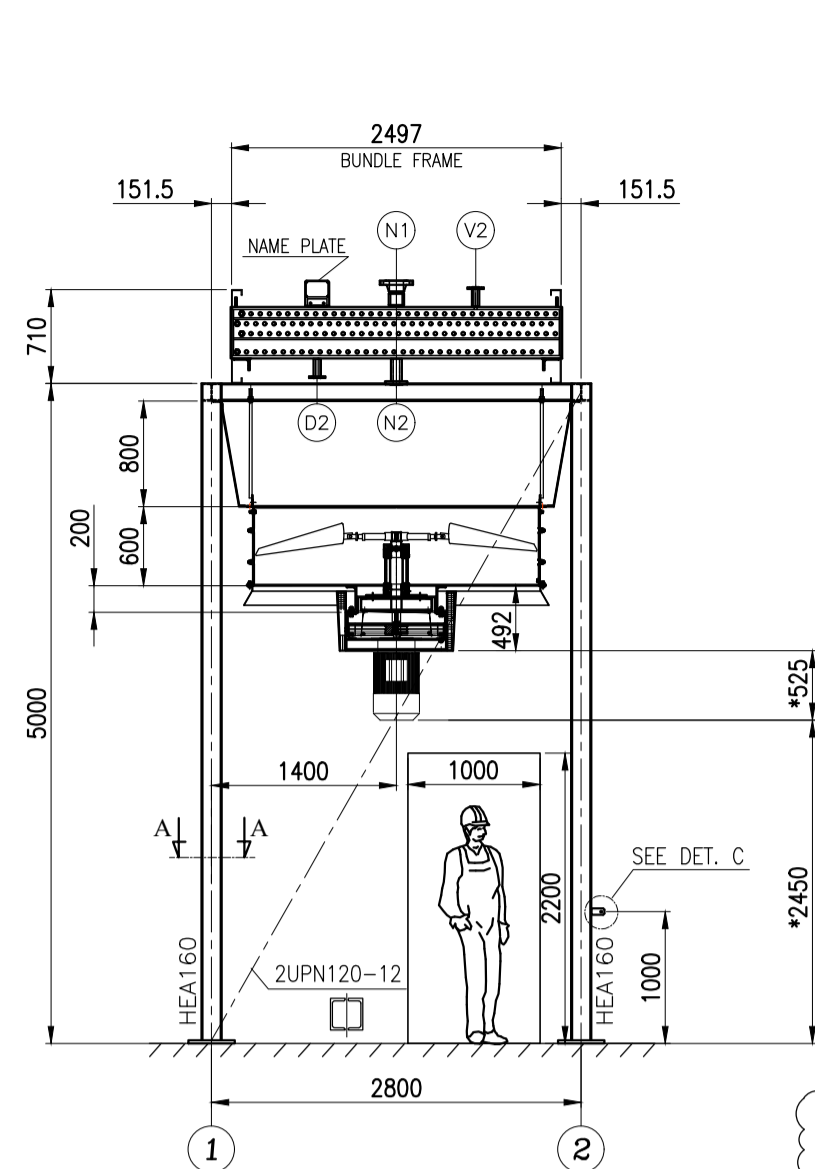
Document No.: EI027-HSE-VD- ME-DWG-005-R1

Rev. R1

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REVISION RECORD SHEET

Page Page	Revisions							Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6		R0	R1	R2	R3	R4	R5	R6
1	X							41							
2	X							42							
3	X							43							
4	X							44							
5								45							
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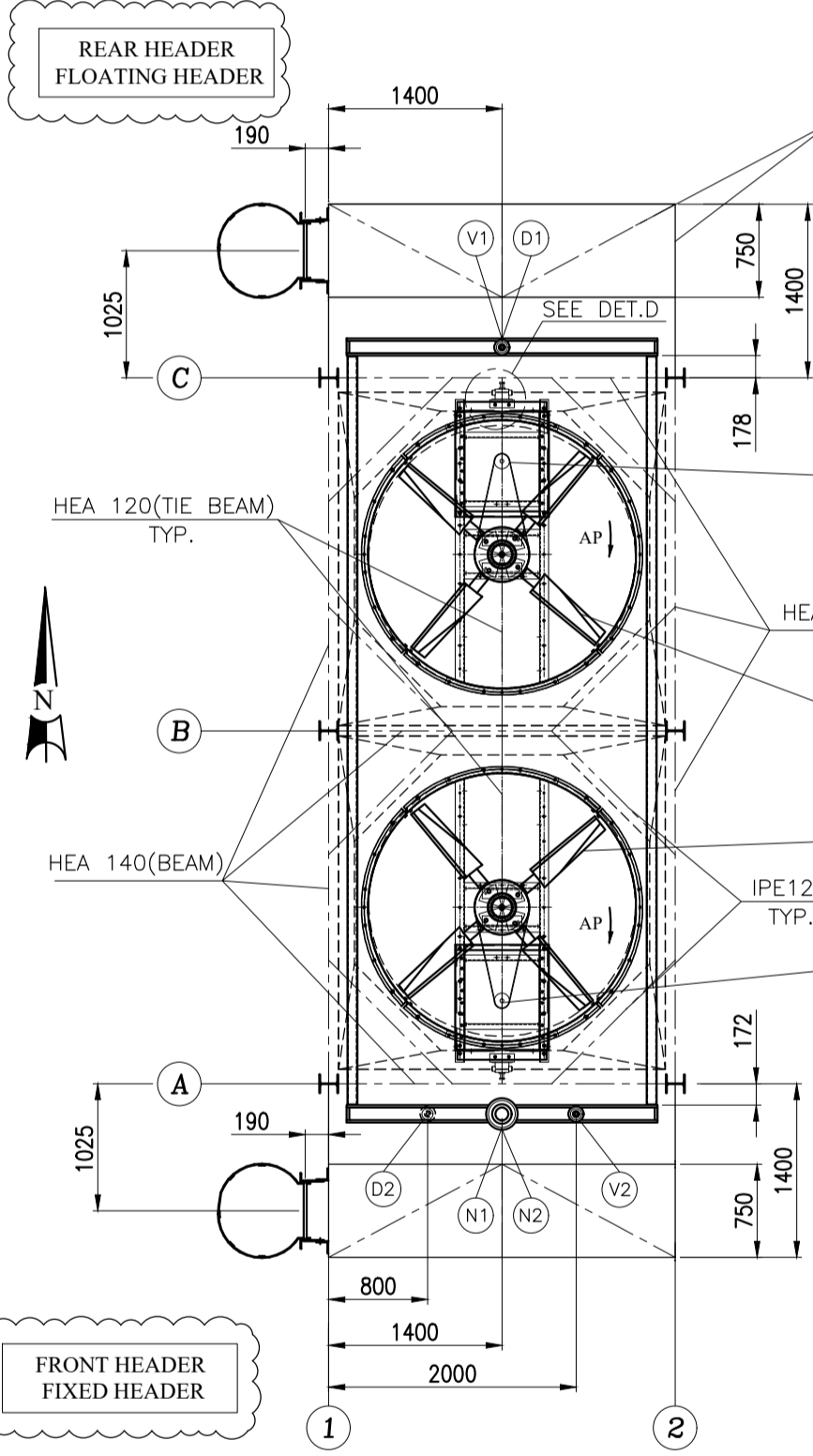


FRONT VIEW
CL. A-C

SIDE VIEW
CL. B

FRONT VIEW
CL. B

* THIS DIMENSION WILL BE FINALIZED AFTER APPROVED OF MOTOR DATA SHEET



TOP VIEW

SUPPORT WALKWAY : (HEA 120 & IPE 120)
FRAME : (UPN 140&L60*6)

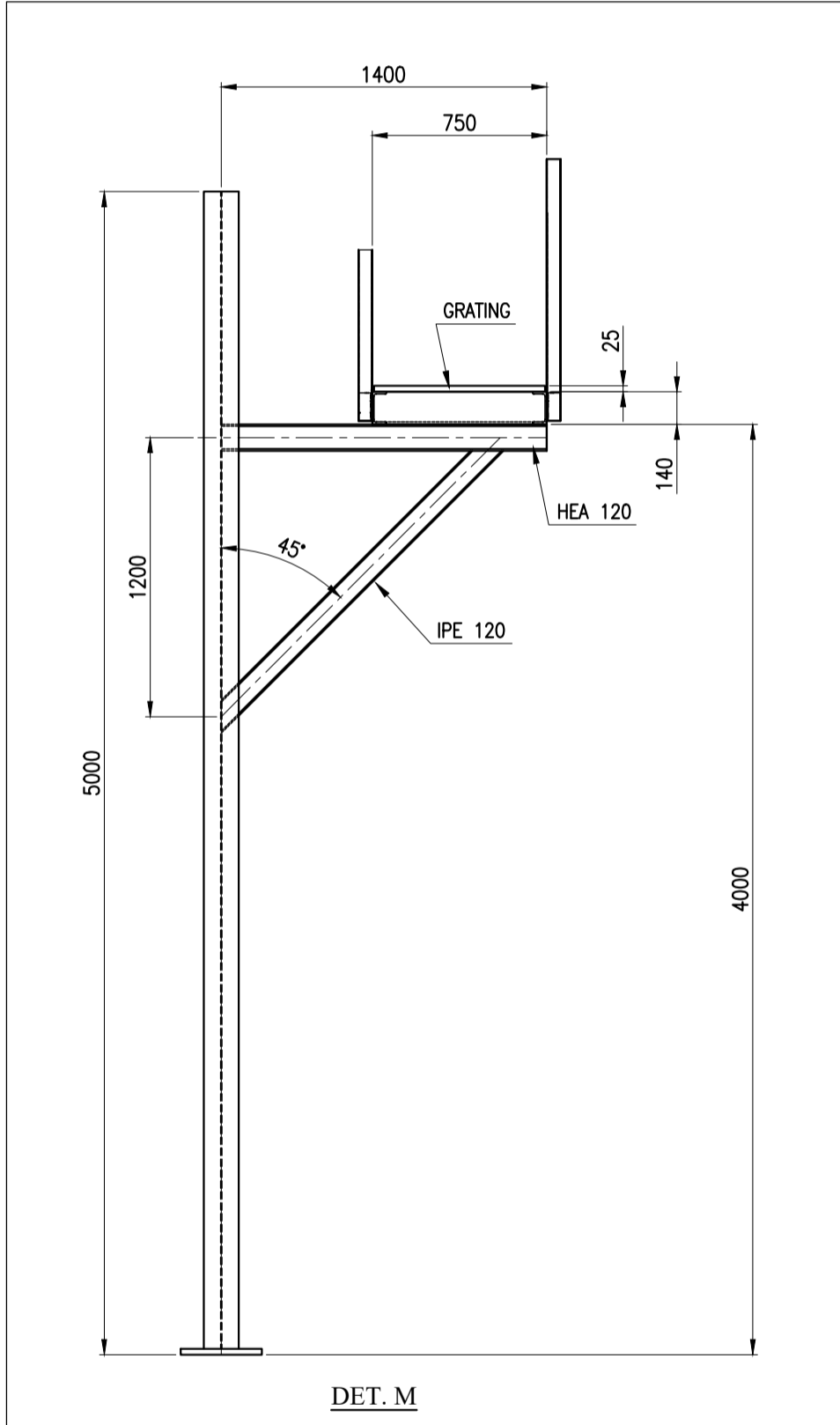
Motor tags N.O: M-1A for unit 1
M-2A for unit 2
VFD tag N.O: VFD-1 for unit 1
VFD-2 for unit 2

Fan tags N.O: F-1A for unit 1
F-2A for unit 2

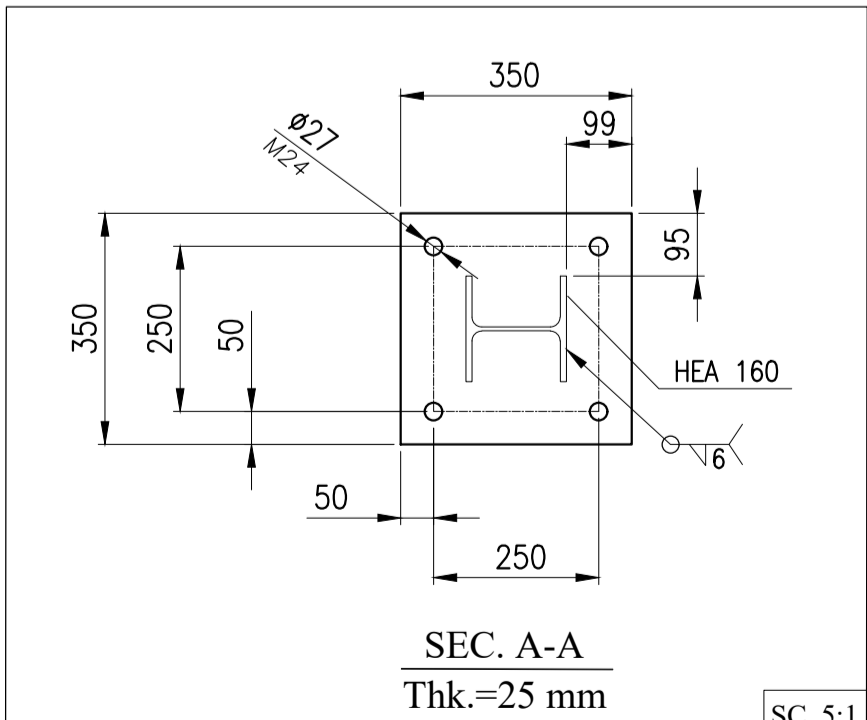
Fan tags N.O: F-1B for unit 1
F-2B for unit 2

Motor tags N.O: M-1B for unit 1
M-2B for unit 2

BASE PLATE VIEW

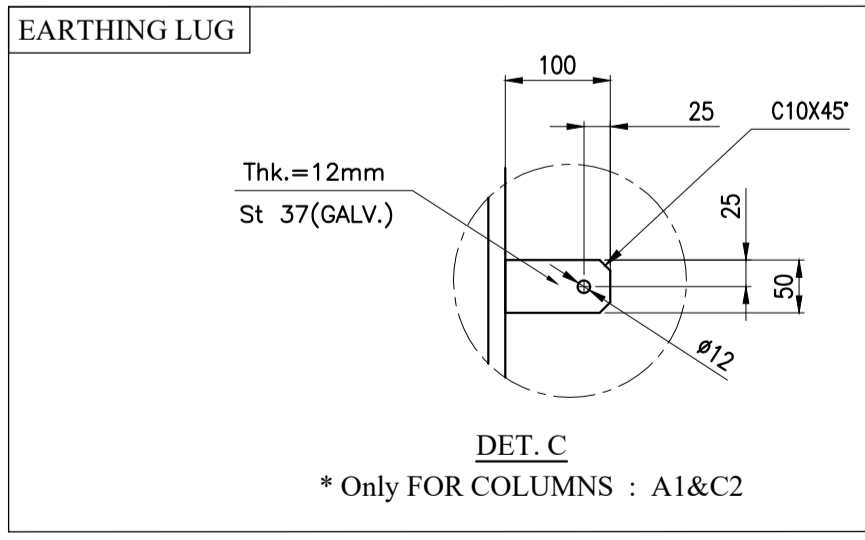


DET. M



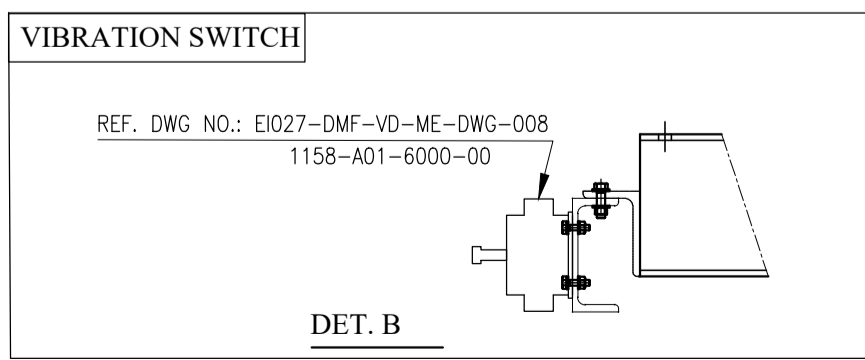
SEC. A-A
Thk.=25 mm

Anchor bolt, Nut and Washer Material:
Bolt: F1554-Gr.36
Nut: ASTM A563 Gr.DH
Washer: ASTM F436

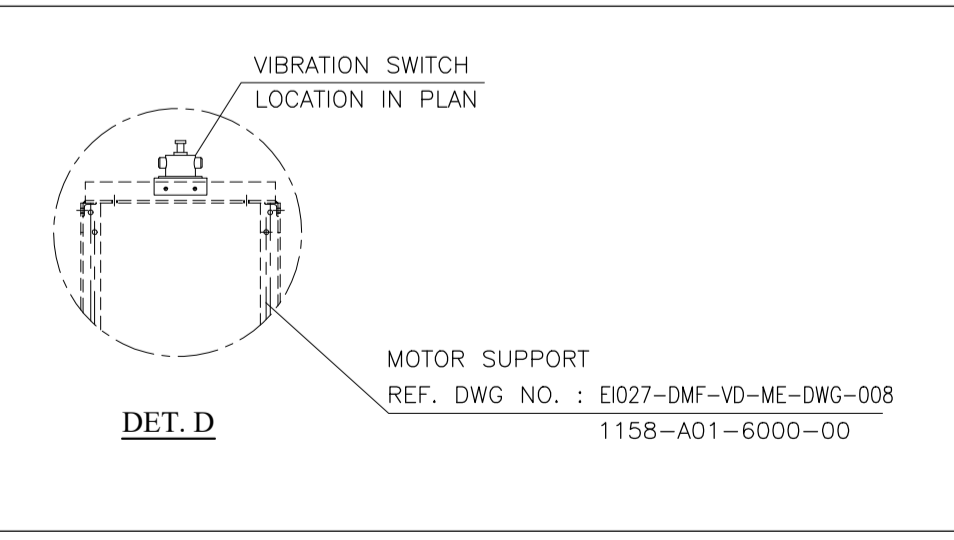


DET. C

* Only FOR COLUMNS : A1&C2



DET. B



DET. D

MOTOR SUPPORT
REF. DWG NO. : EI027-DMF-VD-ME-DWG-008
1158-A01-6000-00

Table 1. Weight of equipments For 1 Units (Total Units = 2)

Equipment	Total No in one Unit	Total Weight in one Unit (tonf)	Total No. for One Bay	Weight for One Bay (kgf)
Bundle Frame	1	0.865	1	865
Tube Bundle & Headers	1	2.635	1	2635
Water in Tubes & Headers	1	0.48	1	480
Plenum	2	0.245	2	490
Fan Ring	2	0.13	2	260
Motor	2	0.07	2	140
Fan	2	0.0275	2	55
Speed Reducer	2	0.25	2	500
Machinery Mount	2	0.32	2	640
Fan Guard	2	0.0325	2	65
sum				2150
Fabrication Weight For 1 Units				5650
Operation Weight For 1 Units				6130
Hydrotest Weight For 1 Units				6130
Total Weight of Main structure, Ladder for 1 Units				6800

TABLE: Joint Reactions

Joint	OutputCase	Fx	Fy	Fz
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	92.37
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	1146.34	-1764.17
A-1	EQY	-1561.76	337	-3289.21
A-1	EQXO	210.24	2295.43	-3529.78
A-1	EQYO	-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	6.353E-13	402.18
A-2	WX	1.165E-12	49.87	8.288E-13
A-2	WY	-54.91	-1.269E-13	-353.83
A-2	SNOW	-19.58	-8.653E-07	221.21
A-2	EQX	0.004107	45.8	0.09216
A-2	EQY	-48.82	-0.38	-1465.12
A-2	EQXO	0.00889	92.7	0.18
A-2	EQYO	-98.54	-0.78	-2927.34
A-3	DEAD S	16.65	45	861.98
A-3	DEAD	49.34	158.83	1640.17
A-3	DEAD OP	4.08	14.37	92.37
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	-106.43	-1146.49	1764.07
A-3	EQY	-1071.77	-428.48	-2570.23
A-3	EQXO	-210.36	2295.75	3529.6
A-3	EQYO	-2144	-856.2	-5134.3
B-1	DEAD S	34.11	-1.44	482.68
B-1	DEAD	174.23	-2.24	983.92
B-1	DEAD OP	16.3	0.03128	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	-1.33	-70.96	504.74
B-1	EQX	-985.73	4.1	-1834.5
B-1	EQY	-51.12	-28.6	2619.38
B-1	EQXO	-1968.03	8.18	-3658.39
B-1	EQYO	-102.38	-57.85	5233.15
B-2	DEAD S	-3.76E-15	-9.82	342.79
B-2	DEAD	-1.168E-10	-61.15	847.79
B-2	DEAD OP	-1.602E-11	-8.01	77.09
B-2	DEAD N	-0.0003857	-409.24	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	-439.42	682.53
B-2	SNOW	-3.498E-11	3.21	131.34
B-2	EQX	0.02819	0.04229	-0.07544
B-2	EQY	0.006383	-1570.51	2804.88
B-2	EQXO	-0.2	0.08416	-0.15
B-2	EQYO	0.0007535	-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	0.03128	81.45
B-3	DEAD N	-670.07	1.26	1104.47
B-3	LIVE	43.74	-6.51	64.14
B-3	WX	-255.25	-0.99	374.63
B-3	WY	1.33	-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	EQXO	-1968.16	-8.15	3658.54
B-3	EQYO	-81.36	-57.83	3796.07

GENERAL DATA

ITEM NO.	-
DESIGN CODE BUNDLE/STRUCTURE	ASME SEC.VIII DIV.1(2019), API661(2013-7th EDITION)/Standard No. 2800
INLET PRESSURE/PRESSURE HRO. (ALLOWABLE/CALC)	19.8 Bar / (0.1/0.016) Bar
DESIGN PRESSURE	22+F.V. (barg)
HYDROSTATIC TEST PRESSURE	28.6 (bar)
TEMPERATURE IN/OUT(TUBE SIDE)	73.5°C/56.32°C
DESIGN TEMPERATURE	120 °C
MINIMUM DESIGN METAL TEMPERATURE	-45°C
AIR INLET/OUTLET TEMPERATURE (AIR SIDE)	48 / 52.28 °C
MINIMUM DESIGN AMBIENT TEMPERATURE	5 °C
CORROSION ALLOWANCE	3 mm
ULTRASONIC TEST	YES(Full)[See note 8]
RADIOGRAPHY	YES(Full)[See note 8]
STRESS RELIEVING	YES
BARE/FINNED SURFACE PER UNIT	68.101/1579.2 m ²
NUMBER OF BUNDLE PER BAY	1
NUMBER OF UNIT	2
NUMBER OF BAY PER UNIT	1
NOZZLE SIZE(INLET/OUTLET/RATING/TYP)	1x4"/1x2"/SCH.160/#300
PROCESS FLUID NAME	PROPANE
SERVICE	PROPANE
PASSES PER BUNDLE	4
FINNED-TUBES/BUNDLE	NO.140 TUBES,OD=25.4,SEAMLESS MIN.W.#016,THK=1.65,1-6096 mm
Tube to tube sheet joint	STRENGTH WELD + EXPANDED
Fin (Type/material, OD,FPF)	EXTRUDEAL 1060,57,15.11
STEAM COIL	No
LOUVER/TYP	NO/-
PLENUM / FAN RING	FORCED TYPE/CONICAL L/D=0.05
VIBRATION SWITCH	YES(FOR EACHFAN) MANUAL & ELECTRIC RESET
FAN SPECIFICATION -RPM/DIAMETER	382/7 Ft
Pitch angle (for fan)	8.5°
BLADE NO. / MATERIAL	4/ALUMINIUM
AIR QUANTITY FOR FAN	26.879 m ³ /S
STATIC PRESSURE	102.95 Pa
AIR TEMPERATURE IN/OUT	48°C/52.28°C
SPEED REDUCER TYPE	BELT
REDUCTION RATIO	3.76
MOTOR TYPE	ELECTRIC-Exe.IIB-T3-IP55
VOLTAGE/Freq./PHASES	400/50/3
RPM/KW	1500/7.5 Kw
Motor VFD per unit	50%
S.P.L. 1m all side of fan:	<85 dB(A)1m all sides

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% AP(Adjustable pitch-manual)
- 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 Detail : 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: EI027-DMF-VD-QC-PRO-024
- RADIOGRAPHIC TEST (FULL/SPOT) SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OFASME SEC. VIII DIV.1 UW-11 & UW-12.
- 50% motors per unit to be VFD.

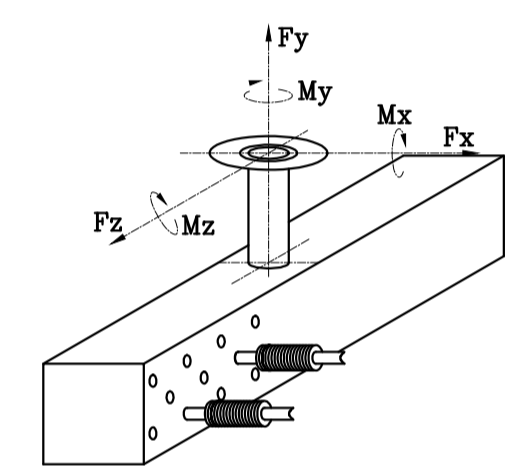
LOAD DEFINITION*

DEAD	DEAD LOAD(PLENUMS+FAN RINGS+FAN GUARDS+FAN+MOTOR+SPEED REDUCERS+GRATING+TUBE BUNDLE EMPTY)+HEADER WALK WAY
DEAD OP	WEIGHT OF LIQUID WITHIN EACH TUBE BUNDLE& STEAM COIL(WATER)
DEAD S	SELF WEIGHT OF STRUCTURE
DEAD N	NOZZEL LOAD
LIVE	WALKWAY LOAD 250 Kg/m ²
EQX	SEISMIC LOAD DIR.X
EQY	SEISMIC LOAD DIR.Y
WX	WIND LOAD DIR.X
WY	WIND LOAD DIR.Y
SNOW	66 Kg/m ²

* Further Definition Check the Steel Structure Calculation.Doc No.: EI027-DMF-VD-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 661(7.1.1.0.1)

SIZE	Fx(N)	Fy(N)	Fz(N)	Mx(N.m)	My(N.m)	Mz(N.m)
4"	10020	8010	10020	2430	3660	2430
2"	3060	3990	3060	450	720	450



CONNECTIONS

NO.	REP.	QTY. PER BAY/UNIT	DIA	DESIGNATION
N1	INLET NOZZLE/FLANGE	1/2	4"	FLANGE ANSI B16.5,#300,SCH.160,MIN.FA-350 LF2 CL1 N,THK=14.3
N2	OUTLET NOZZLE/FLANGE	1/2	2"	FLANGE ANSI B16.5,#300,SCH.160,MIN.FA-350 LF2 CL1 N,THK=14.3
V1&V2	VENT	2/4	1"	FLANGE ANSI B16.5,#300,LWN,SA-350 LF2 CL1 N,THK=14.3
D1&D2	DRAIN	2/4	1"	FLANGE ANSI B16.5,#300,LWN,SA-350 LF2 CL1 N,THK=14.3
1A	VIBRATION SWITCH	2/4	-	SEE FAN DRIVE ASSEMBLY DRAWING
2A	MOTOR(7.5Kw)	2/4	-	SEE FAN DRIVE ASSEMBLY DRAWING
3A	FAN	2/4	7ft	SEE FAN DRIVE ASSEMBLY DRAWING

LATERAL DISPLACEMENT OF HEADERS (DIRECTION X) INSIDE BUNDLE FRAME IN RELATION WITH EXPANSION FORCES ON NOZZLES (mm) (ACCORDING TO API661 7-1-1-2)

MAXIMUM DISPLACEMENT	INLET/OUTLET : ±9
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* FOR MORE DETAILS FOR EACH COMPONENT OF AIR COOLER REFER TO BELOW DRAWING & DOCUMENTS.

TITLE	VENDOR DOCUMENT NO.	CLIENT DOCUMENT NO.
Tube Bundle Drawing	1158-A01-2000-00	EI027-DMF-VD-ME-DWG-025
Bundle Frame Drawing	1158-A01-2400-00	EI027-DMF-VD-ME-DWG-007
Fan Drive Assembly Drawing	1158-A01-6000-00	EI027-DMF-VD-ME-DWG-008
Fan Ring Drawing	1158-A01-5067-00	EI027-DMF-VD-ME-DWG-009
Support Mechanism Drawing	1158-A01-5167-00	EI027-DMF-VD-ME-DWG-010
Plenum Drawing	1158-A01-5110-00	EI027-DMF-VD-ME-DWG-011
Steel Structure Drawing	1158-A01-1100-00	EI027-DMF-VD-ST-DWG-013
Header Walkway Drawing	1158-A01-1200-00	EI027-DMF-VD-ST-DWG-014
Ladder Drawing	1158-A01-1920-00	EI027-DMF-VD-ST-DWG-015
Surface Preparation and Painting Procedure for Air Cooler	1158-A01-Q501-00	EI027-DMF-VD-QC-PRO-024

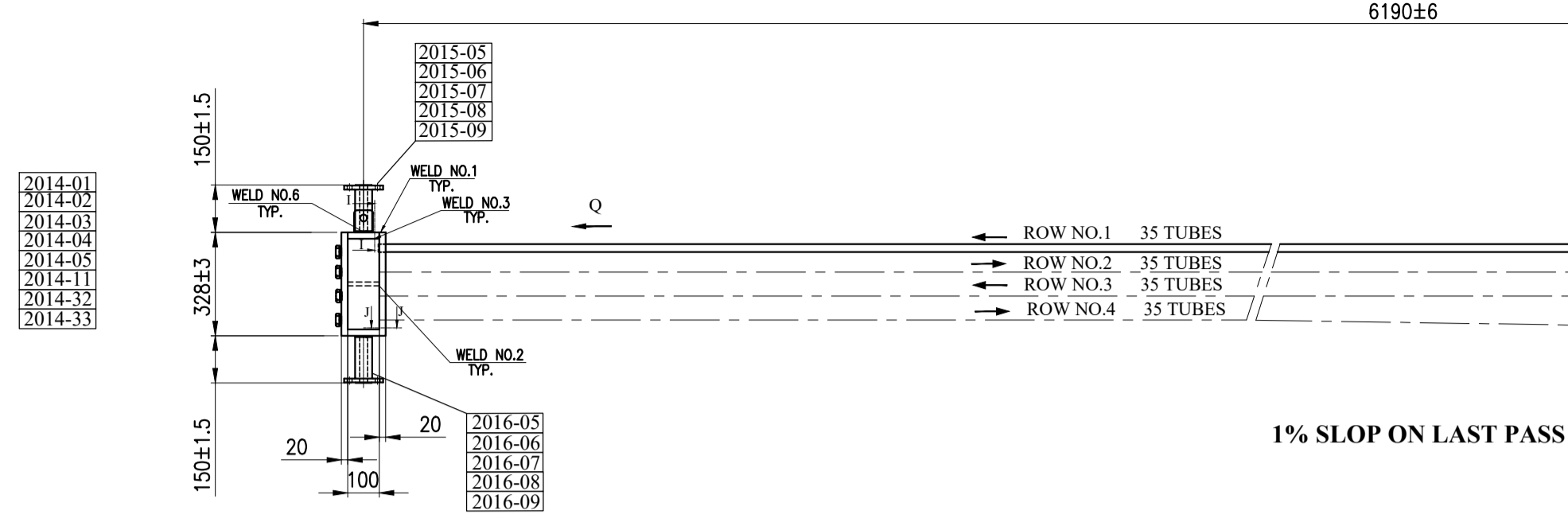
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R2	08/10/2024	ISSUED FOR APPROVAL	F.SZ	J.M.	J.B.L.	A.GHZ
R1	07/22/2024	ISSUED FOR APPROVAL	F.SZ	J.M.	J.B.L.	A.GHZ
RO	06/30/2024	ISSUED FOR APPROVAL	F.SZ	J.M.	J.B.L.	A.GHZ

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY	FINAL APPROVED BY
CLIENT:						
CONTRACTOR:						

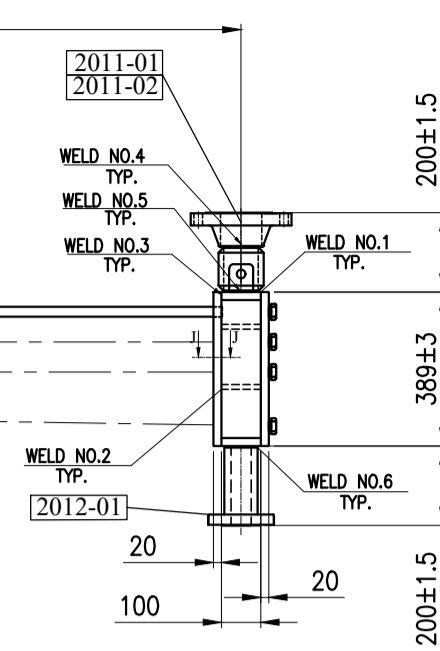
PROJECT :
AIR COOLER FOR
Toase-che Park Sanati Gohar Ofogh Petrochemical Co.
General Arrangement Drawing

DWG. NO.	EI027-DMF-VD-ME-DWG-003
SCALE:	N.T.S.
SIZE:	A1
REV.:	R3

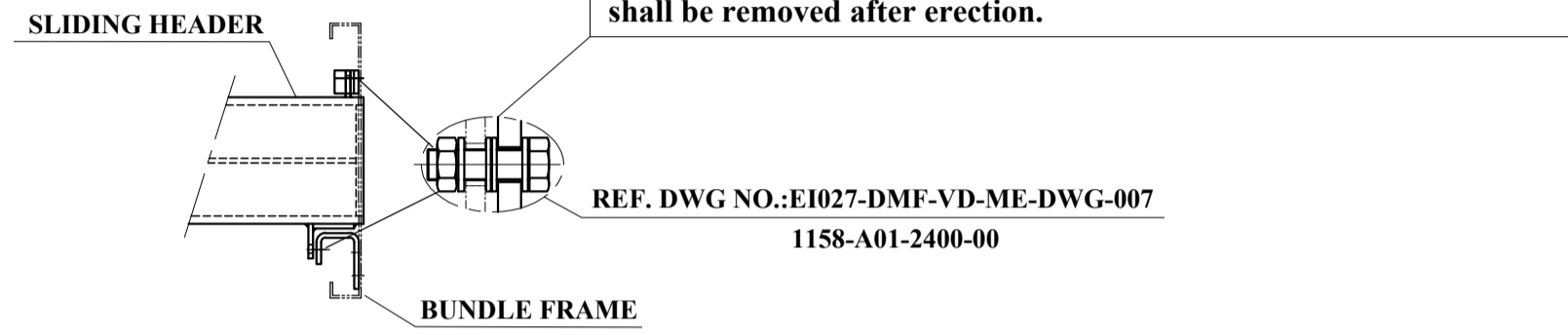
REAR HEADER (SLIDING HEADER)



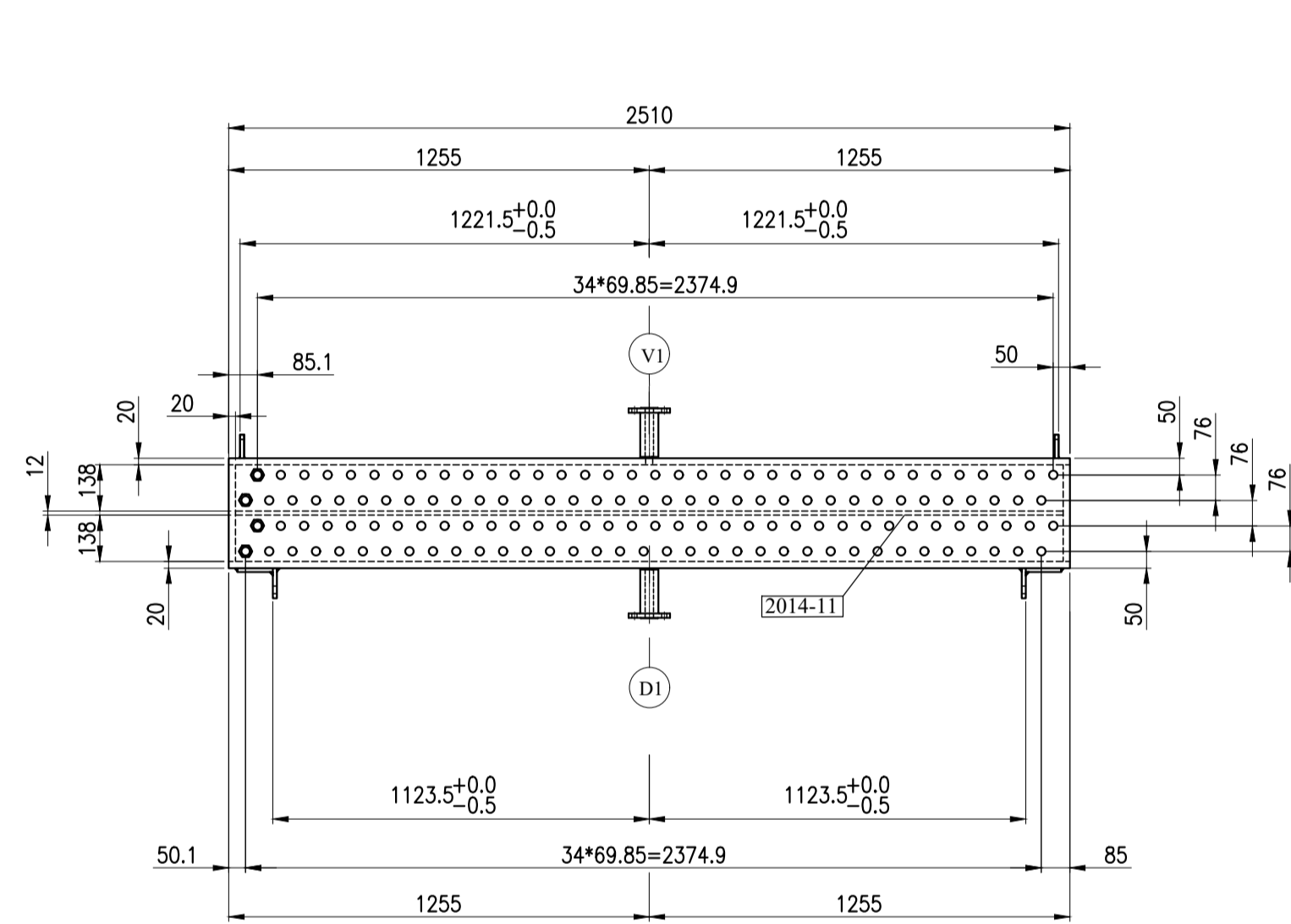
FRONT HEADER (FIXED HEADER)



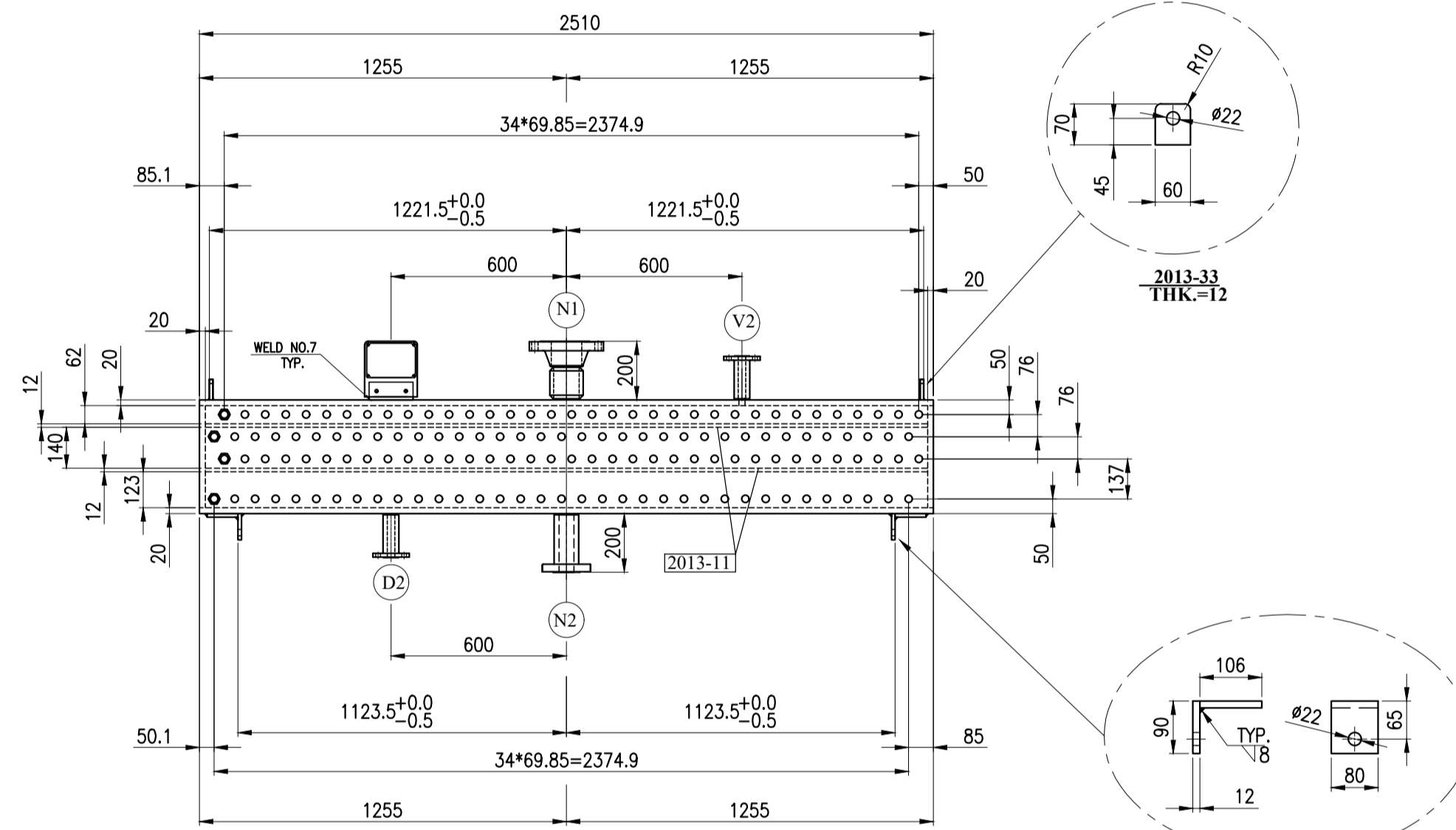
1% SLOP ON LAST PASS



DETAIL OF BOLTS FOR FIXING HEADER & TRANSPORTATION



VIEW FROM "Q"
REAR HEADER



VIEW FROM "P"
FRONT HEADER

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETERS.
 - ALL NOZZLE FACINGS SHALL BE PROTECTED BY COVER AND 4 BOLTS.
 - FLANGE CONTACT FACES SHALL BE COATED WITH GREASE.
 - ALL FLANGE BOLTS SHALL STRADDLE MAIN AXIS.
 - ALL ENGINEERING AND MANUFACTURING CHARACTERISTICS NOT MENTIONED ON THIS DRAWING ARE INDICATED ON THE FOLLOWING APPLICABLE DOCUMENTS:
 - A-CALCULATION BOOK
 - B-WELDING PROCEDURE SPECIFICATION (W.P.S.)
 - C-NON DESTRUCTIVE TEST CHECK LIST (N.D.T.)
 - D-PAINTING & GALVANIZING SPECIFICATION SHEETS

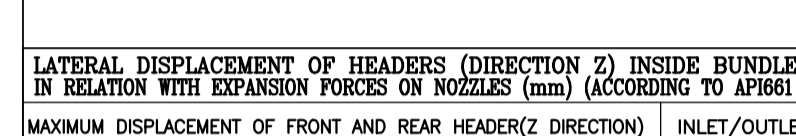
6-HEADER PLUG THREADS SHALL BE COVERED BY ANTISEIZE GREASE PROPER FOR 200°C TEMPERATURE.

7-THE MATERIAL OF THE SLIDING PAD BETWEEN THE BUNDLE FRAME AND THE HEADER IS TEFLO(PTFE). FOR MORE INFORMATION, REFER TO DWG. NO. E1027-DMF-VD-ME-DWG-007

8-MATERIAL FOR PLATE(S) FOR PRESSURE PART) TO BE IMPACT TESTED.

THE MAXIMUM ALLOWABLE MOMENTS AND FORCES PER EACH NOZZLE (IF LOADS ARE DIVIDED EQUALLY FOR NOZZLES ACCORDING TO 3xAPI 661(7.1.10.1))

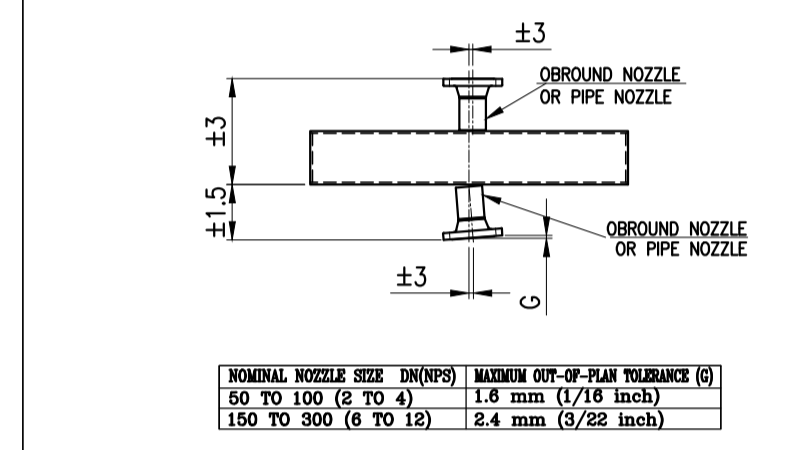
SIZE	Fx(N)	Fy(N)	Fz(N)	Mx(N.m)	My(N.m)	Mz(N.m)
4"	10020	8010	10020	2430	3660	2430
2"	3060	3990	3060	450	720	450



LATERAL DISPLACEMENT OF HEADERS (DIRECTION Z) INSIDE BUNDLE FRAME IN RELATION WITH EXPANSION FORCES ON NOZZLES (mm) (ACCORDING TO API661 7-1-1-2)

MAXIMUM DISPLACEMENT OF FRONT AND REAR HEADER(Z DIRECTION) INLET/OUTLET : ±9

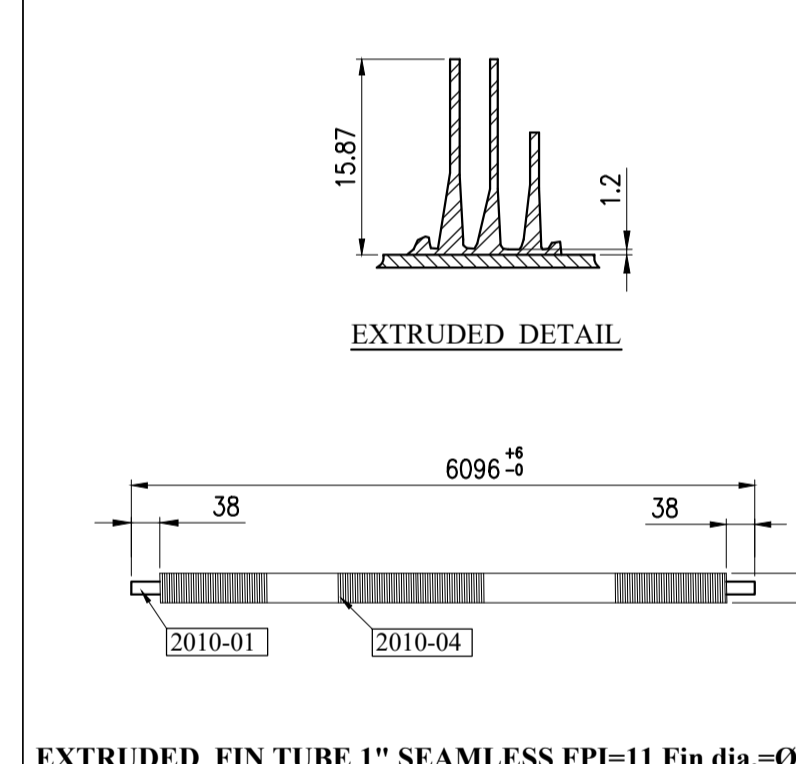
NOZZLE ALIGNMENT TOLERANCES



NOMINAL NOZZLE SIZE (DN/IPS)	MINIMUM GIP-OF-FLAT TOLERANCE (mm)
50 TO 100 (2 TO 4)	1.6 mm (1/16 inch)
150 TO 300 (6 TO 12)	2.4 mm (3/32 inch)

FIN TUBE DETAIL

EXTRUDED DETAIL



EXTRUDED FIN TUBE 1" SEAMLESS FPI=11 Fin dia.=Ø57.15

PART NO.	DESCRIPTION	DIMENSIONS			MATERIAL	QTY.	UNIT WEIGHT (Kg)	TOTAL WEIGHT (Kg)	STD DWG	REV.
		DIA (mm)	LENGTH (mm)	THK (mm)						
2000-00	TUBE BUNDLE INCLUDING :	-	-	-	-	2	2927.9	5844	-	-
2010-00	EXTRUDED FINNED TUBE INCLUDING :	-	-	-	-	-	-	-	-	-
2010-01	BASE TUBE 1" (SEAMLESS-MN WALL-BWG16)	25.4	6096	1.65	SA-334 Gr.6	140	6.5	913.2	-	-
2010-04	ALUMINIUM TUBE	35.75	5212.08	4.9	AL-1060	140	7.8	1097.5	-	-
2011-00	INLET NOZZLE INCLUDING :	-	-	-	-	-	-	-	-	-
2011-01	PIPE NOZZLE 4", SCH 160 (SEAMLESS)	107	-	13.49	SA-333 Gr.6	1	3.9	3.9	-	-
2011-02	FLANGE 4" (ANSI B16.5,300# WNRF)	254	86	-	SA-350 LF2 CL.1N	1	7.1	7.1	-	-
2012-00	OUTLET NOZZLE INCLUDING :	-	-	-	-	-	-	-	-	-
2012-01	NOZZLE 2" (ANSI B16.5,300# LWNRF)	165	196	16.6	SA-300 LF2 CL.1N	1	3.5	3.5	-	-
2013-00	FRONT HEADER INCLUDING :	-	-	-	-	-	-	-	-	-
2013-01	TUBE SHEET	-	2510	389	20	-	1	153.3	153.3	R3
2013-02	PLUG SHEET	-	2510	389	20	-	1	153.3	153.3	R3
2013-03	TOP PLATE	-	2510	100	20	-	1	39.4	39.4	R3
2013-04	BOTTOM PLATE	-	2510	100	20	-	1	39.4	39.4	R3
2013-05	END PLATE	-	349	100	20	-	2	5.5	11.0	R3
2013-06	PARTITION	-	2470	100	12	-	2	23.3	46.5	-
2013-07	SLIDING PAD	-	10560	80	12	-	2	1.6	3.1	-
2013-08	FIXING	-	70	60	12	-	2	0.4	0.8	-
2014-00	REAR HEADER INCLUDING :	-	-	-	-	-	-	-	-	-
2014-01	TUBE SHEET	-	2510	328	20	-	1	129.3	129.3	R3
2014-02	PLUG SHEET	-	2510	328	20	-	1	129.3	129.3	R3
2014-03	TOP PLATE	-	2510	100	20	-	1	39.4	39.4	R3
2014-04	BOTTOM PLATE	-	2510	100	20	-	1	39.4	39.4	R3
2014-05	END PLATE	-	288	100	20	-	2	4.5	9.0	R3
2014-06	PARTITION	-	2470	100	12	-	1	23.3	23.3	-
2014-07	SLIDING PAD	-	10660	80	12	-	2	1.6	3.1	-
2014-08	FIXING	-	70	60	12	-	2	0.4	0.8	-
2015-00	VENT INCLUDING :	-	-	-	-	-	-	-	-	-
2015-01	FLANGE LWN 1" 300# RF	124	146	14.3	SA-350 LF2 CL.1N	2	2.0	4.0	-	-
2015-02	BLIND FOR FLANGE LWN 1" 300# RF	-	-	-	SA-350 LF2 CL.1N	2	1.5	3.0	-	-
2015-03	GASKET FOR FLANGE LWN 1" 300# RF	-	-	-	SPRAL WOUND INNER: S304 OUTER: C.S GRAPHITE FILLED	2	-	-	-	-
2015-04	STUD BOLT FOR FLANGE LWN 1" 300# RF	M16	80	-	SA-320 Gr.7(Dacromet)	8	-	-	-	-
2015-05	NUT	M16	-	-	SA-194 Gr.7(Dacromet)	16	-	-	-	-
2016-00	DRAIN INCLUDING :	-	-	-	-	-	-	-	-	-
2016-01	FLANGE LWN 1" 300# RF	124	146	14.3	SA-350 LF2 CL.1N	2	2.0	4.0	-	-
2016-02	BLIND FOR FLANGE LWN 1" 300# RF	-	-	-	SA-350 LF2 CL.1N	2	1.5	3.0	-	-
2016-03	GASKET FOR FLANGE LWN 1" 300# RF	-	-	-	SPRAL WOUND INNER: S304 OUTER: C.S GRAPHITE FILLED	2	-	-	-	-
2016-04	STUD BOLT FOR FLANGE LWN 1" 300# RF	M16	80	-	SA-320 Gr.7(Dacromet)	8	-	-	-	-
2016-05	NUT	M16	-	-	SA-194 Gr.7(Dacromet)	16	-	-	-	-
2020-00	MISCELLANEOUS PARTS INCLUDING :	-	-	-	-	-	-	-	-	-
2020-01	PLUG (1 1/8" 12 UNF CL.2A)	-	-	-	SA-350 LF2 CL.1N	200	0.22	61.6	2201	-
2020-02	PLUG GASKET	2605.5	-	1.5	SOFT IRON	200	-	-	2200	-
2020-03	STAND FOR BRACKET	150	60	5	C.S	1	0.35	0.7	-	-

MARK NO.	SERVICE	SIZE	NOZZLE MATERIAL	FLANGE MATERIAL	RATING	TYPE	FACING	SCH. THK.	FLANGE FACE FINISHING	QTY. PER BUNDLE ITEM
N1	INLET NOZZLE	4"	SA-333 Gr.6	SA-350 LF2 CL.1N	300#	WVN	RF	160	125-250 µH	1 2
N2	OUTLET NOZZLE	2"	SA-350 LF2 CL.1N	SA-350 LF2 CL.1N	300#	LWN	RF	16.6	125-250 µH	1 2
V1, V2	VENT WITH BLIND & GASKET	1"	SA-350 LF2 CL.1N	SA-350 LF2 CL.1N	300#	LWN	-	-	-	2 4
D1, D2	DRAIN WITH BLIND & GASKET	1"	SA-350 LF2 CL.1N	SA-350 LF2 CL.1N	300#	LWN	-	-	-	2 4

APPLICABLE CODES AND STANDARDS

ASME VIII-DIV.1 2019, API 661	
SERVICE	PROPANE
MAXIMUM DESIGN TEMPERATURE (°C)	120
MINIMUM AMBIENT TEMPERATURE (°C)	5
MINIMUM DESIGN METAL TEMPERATURE (°C)	-45
DESIGN PRESSURE (barg)	22+ F.V.
TEST PRESSURE (barg)	28.6
CORROSION ALLOWANCE	3
WELD JOINT EFFICIENCY	0.6 FOR PARTITION / 0.85 FOR OTHER PARTS
HYDROTEST	YES
POST WELD HEAT TREATMENT	YES
N.D.T. EXAMINATION OF WELDED JOINTS	SEE NDT CHECK LIST
TUBE TO TUBE SHEET JOINT	STRENGTH WELD + EXPANDED
BUNDLE CAPACITY (m ³)	0.480
BUNDLE WEIGHT WITH FRAME (EMPTY) (Kg)	2920
BUNDLE WEIGHT WITH FRAME (FULL OF WATER) (Kg)	3400
ULTRASONIC TEST(NOZZLE TO HEADER)	YES

REFERENCE DOCUMENTS

TITLE	VENDOR DOCUMENT NO.	CLIENT DOCUMENT NO.
GENERAL ARRANGEMENT	1158-A01-1000-00	E1027-DMF-VD-ME-DWG-003
BUNDLE FRAME	1158-A01-2400-00	E1027-DMF-VD-ME-DWG-007
AIR COOLER DATA SHEET	1158-A01-0010-00	E1027-DMF-VD-ME-DSH-002
MECHANICAL CALCULATION	1158-A01-0020-00	E1027-DMF-VD-ME-CAL-006
WELDING PROCEDURE SPECIFICATION (W.P.S.)	1158-A01-0060-00	E1027-DMF-VD-QC-WPS-021
NON DESTRUCTIVE TEST CHECK LIST (N.D.T.)	1158-A01-0070-00	E1027-DMF-VD-QC-PRO-022

REV.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	APPROVED BY	FINAL APPROVED BY
R3	07/31/2024	ISSUED FOR APPROVAL	F.S.Z	S.S	J.B.L	A.GHZ
R2	07/22/2024	ISSUED FOR APPROVAL	F.S.Z	S.S	J.B.L	A.GHZ
R1	06/26/2024	ISSUED FOR APPROVAL	F.S.Z	S.S	J.B.L	A.GHZ
R0	06/02/2024	ISSUED FOR APPROVAL	F.S.Z	S.S	J.B.L	A.GHZ

CLIENT: CONTRACTOR:



PROJECT: AIR COOLER FOR Toase-che Park Sanati Gohar Ofogh Petrochemical Co.

TUBE BUNDLE DRAWING

1158-A01-2000-00
DWG. NO. E1027-DMF-VD-ME-DWG-005
SCALE: N.T.S. SIZE: A1 REV.: R3

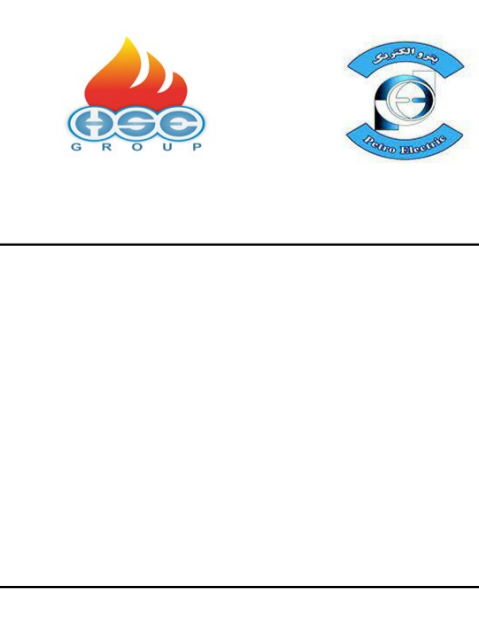
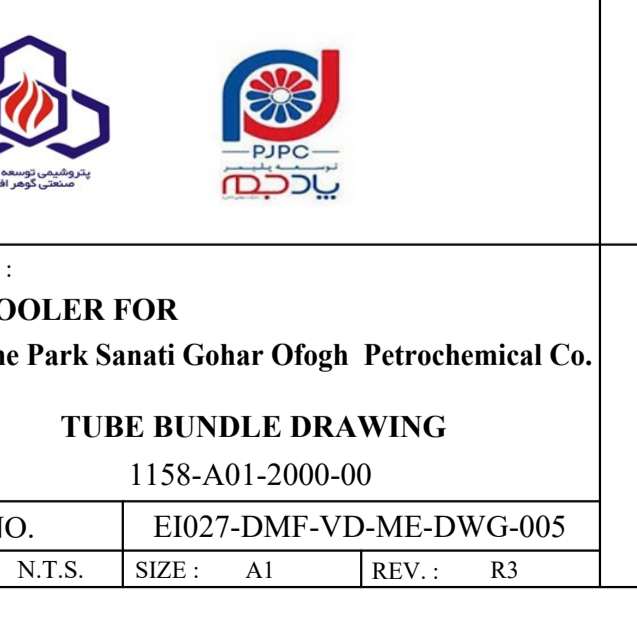
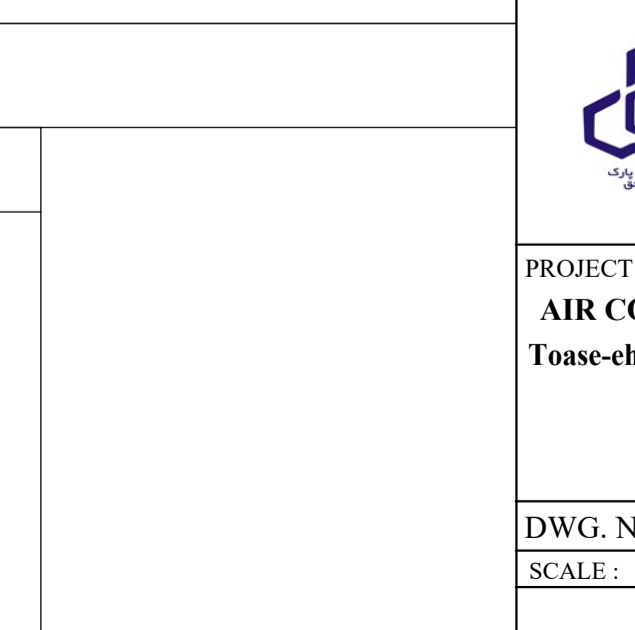
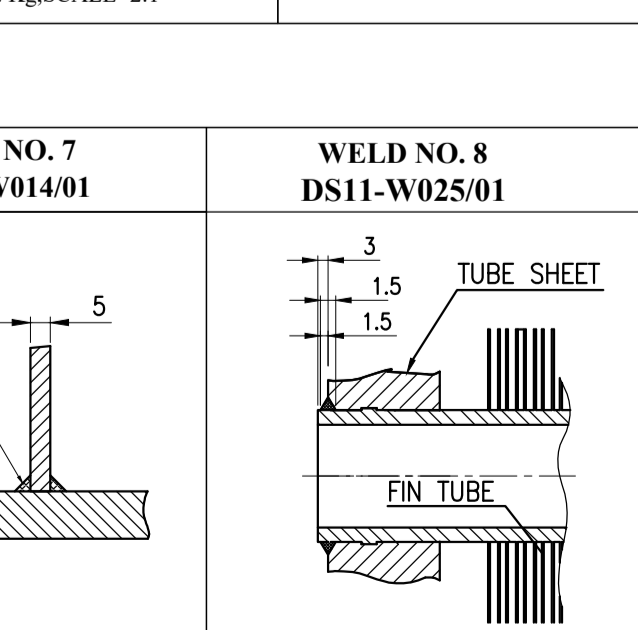
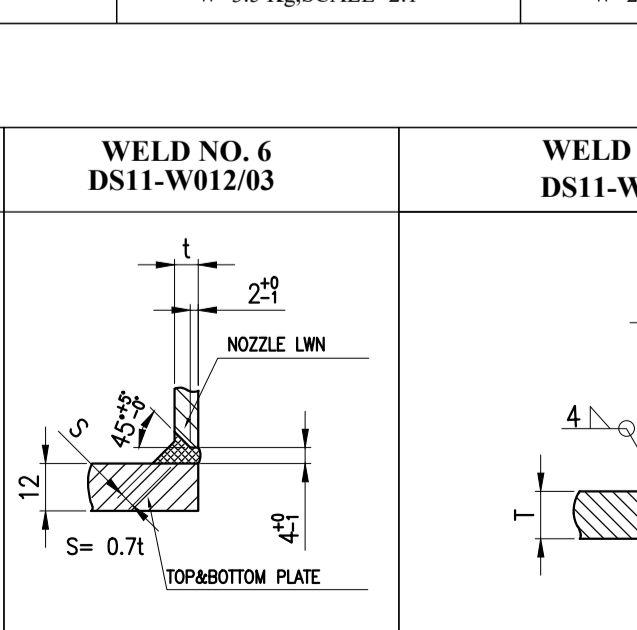
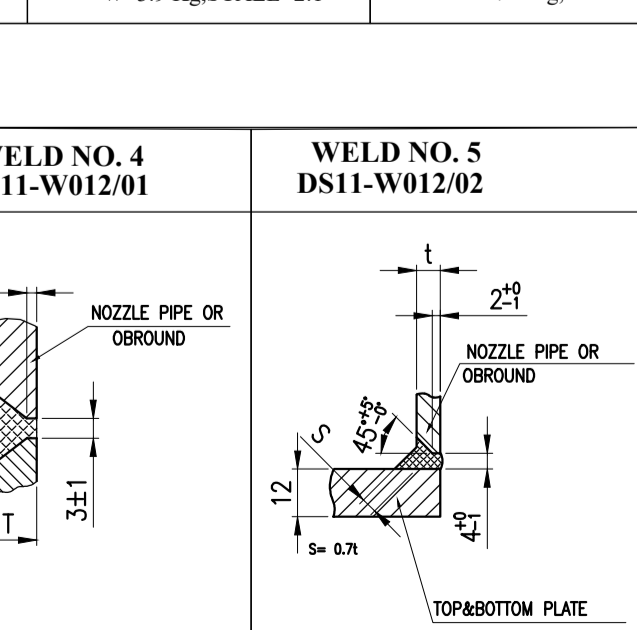
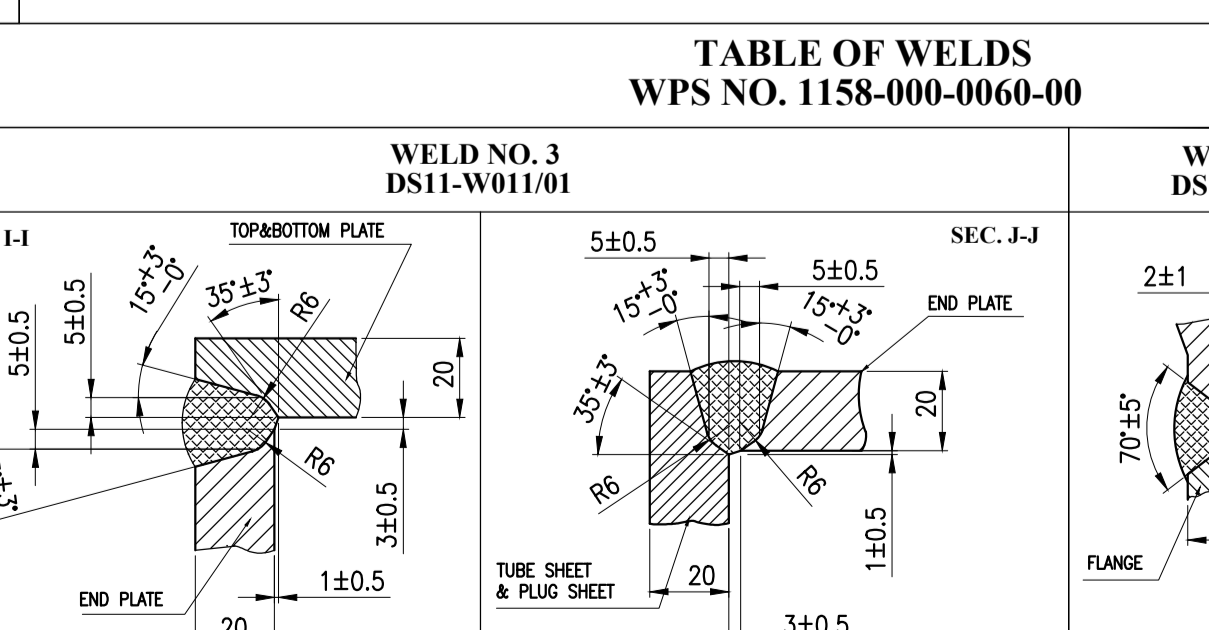
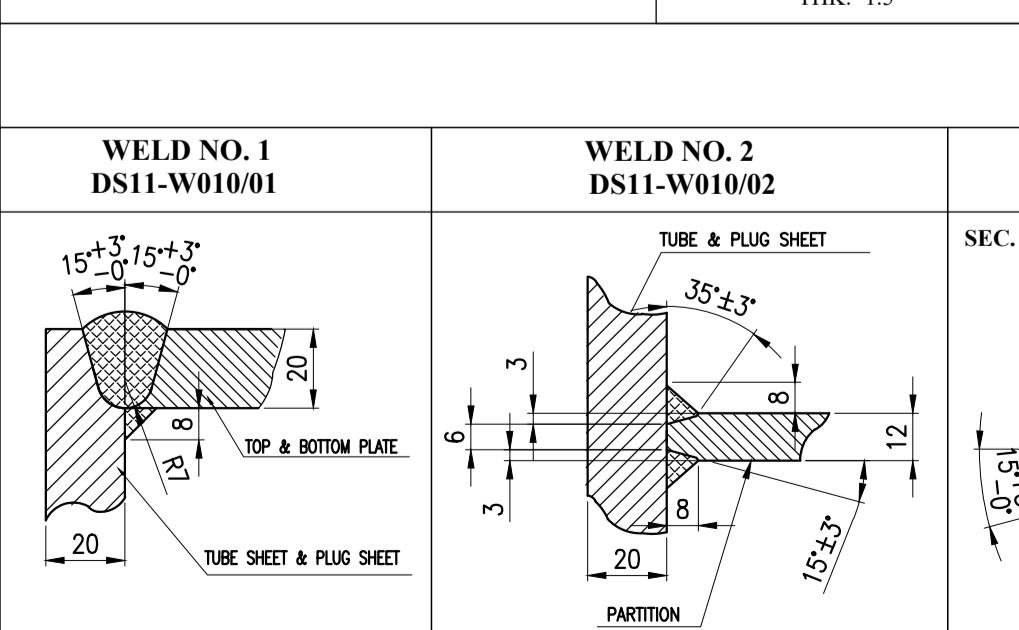
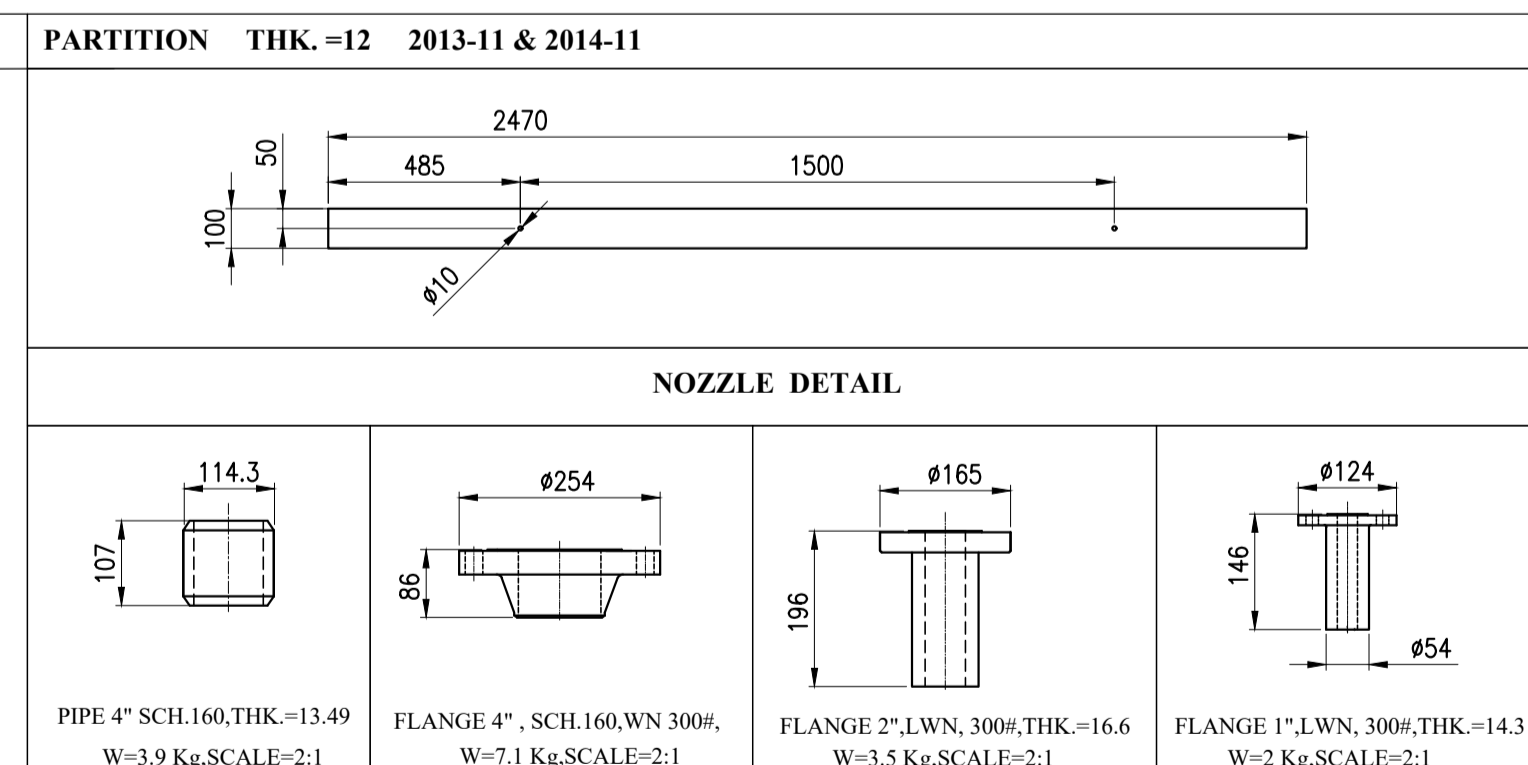
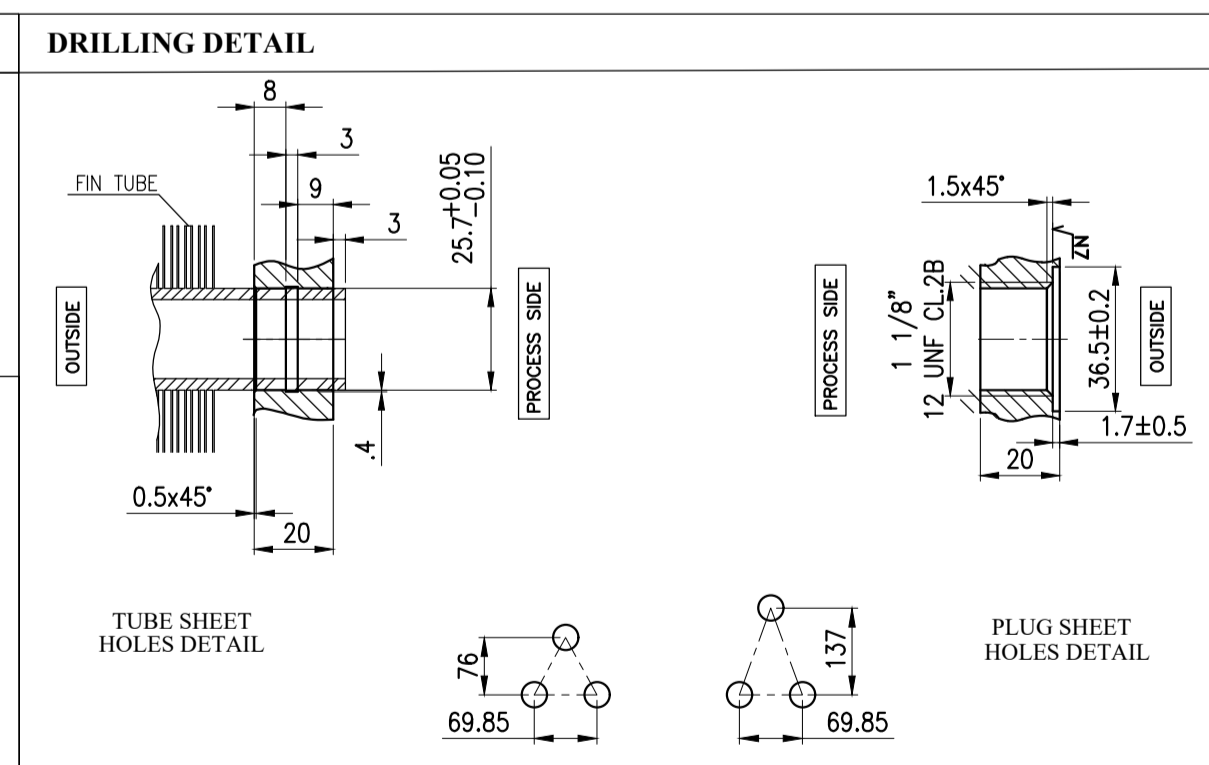
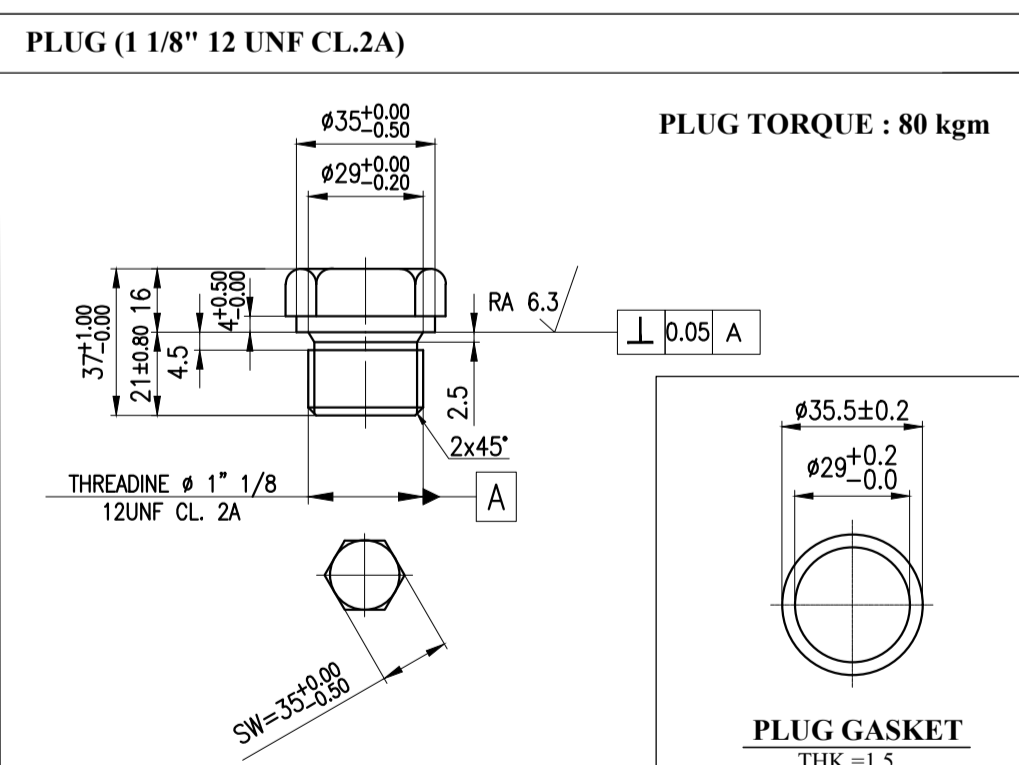


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