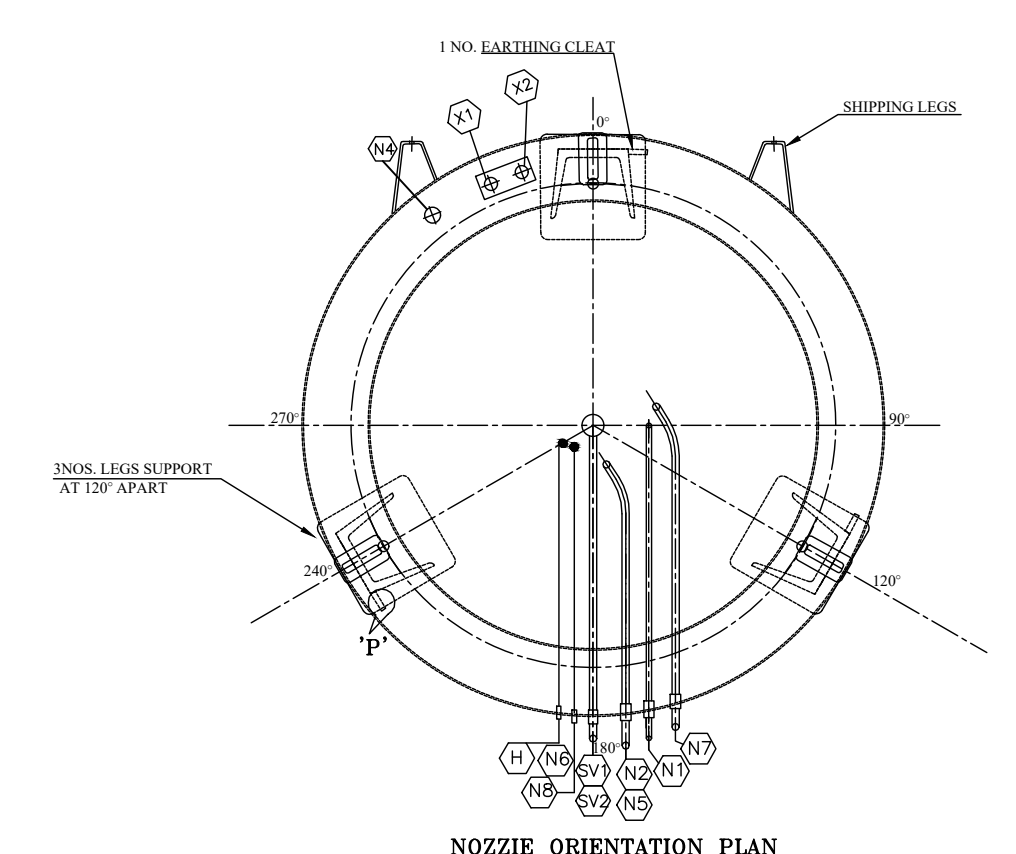
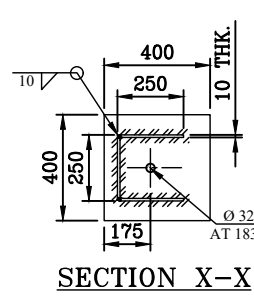
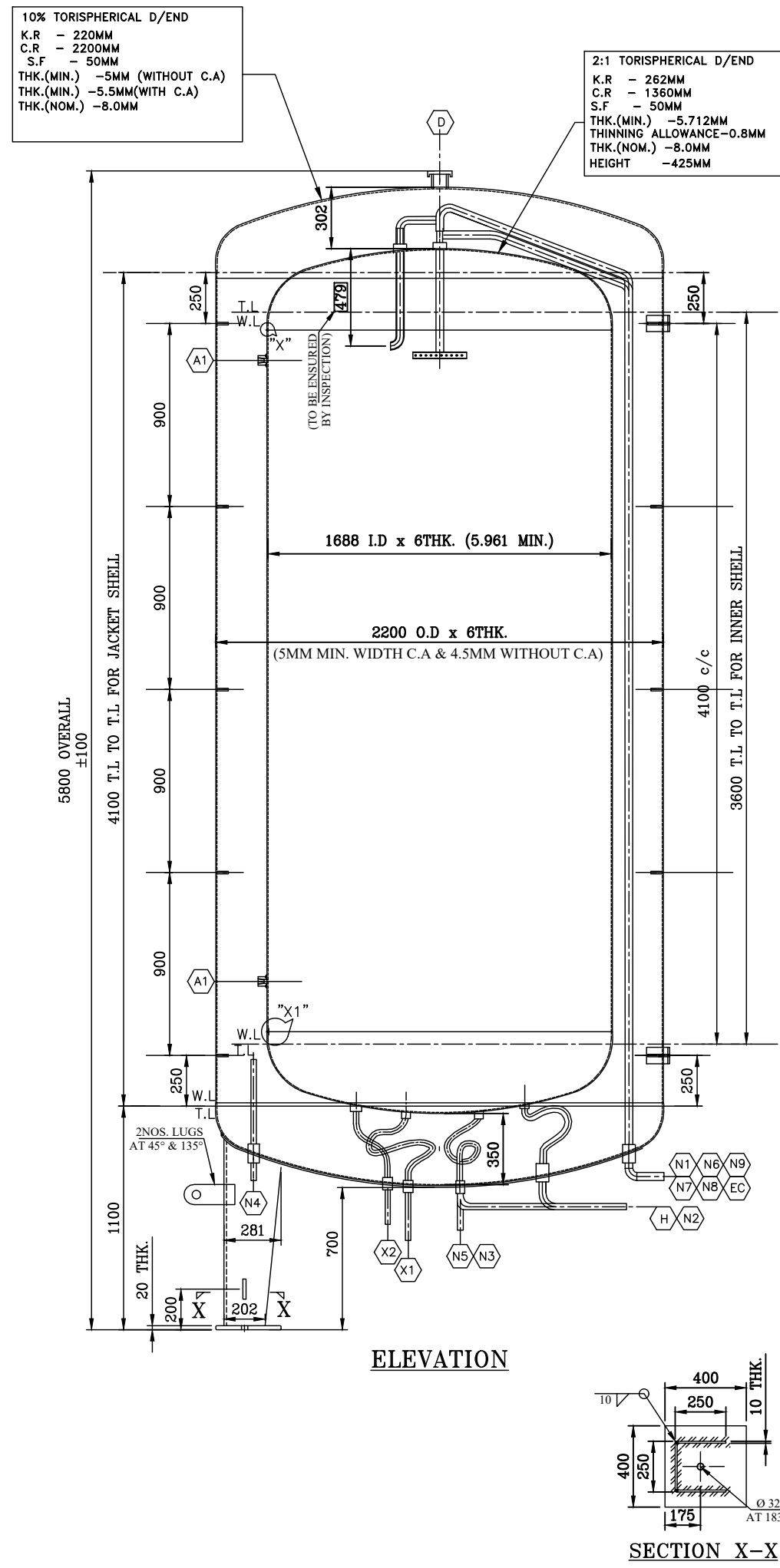


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WITHOUT OUR PERMISSION OR ANY OTHER MISUSE IS NOT PERMITTED.

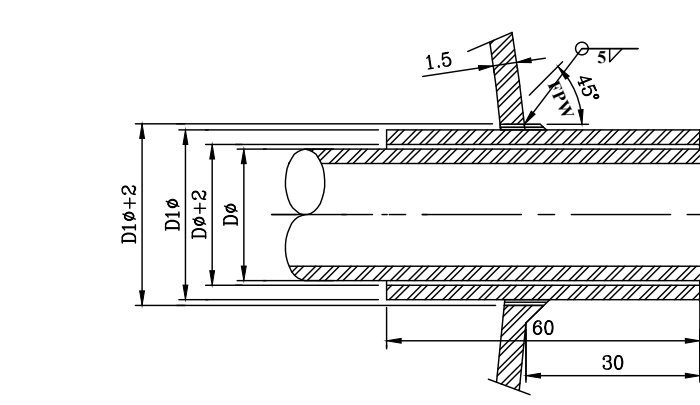
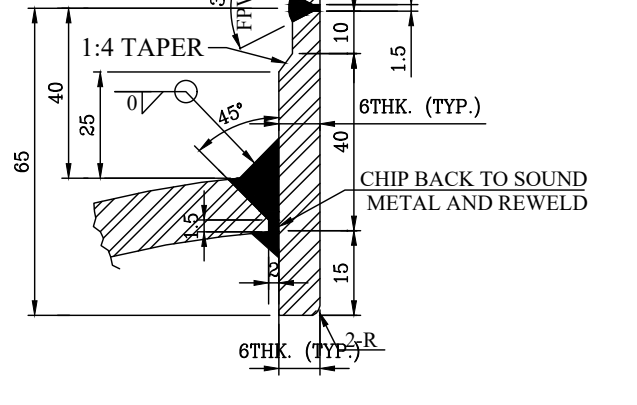
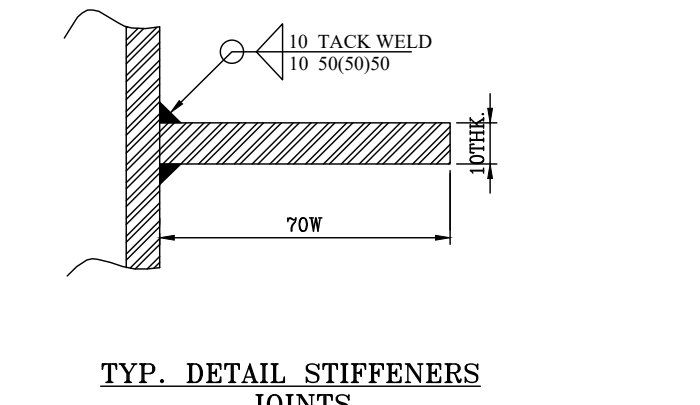
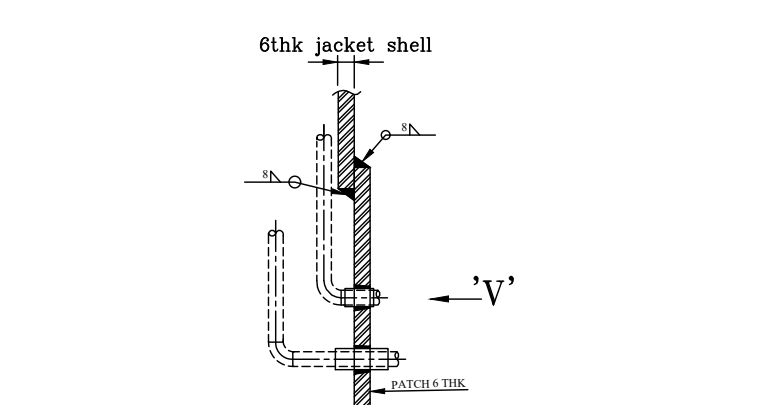
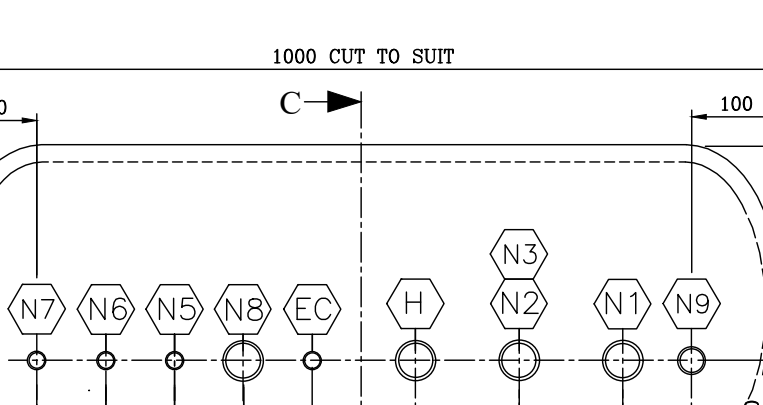
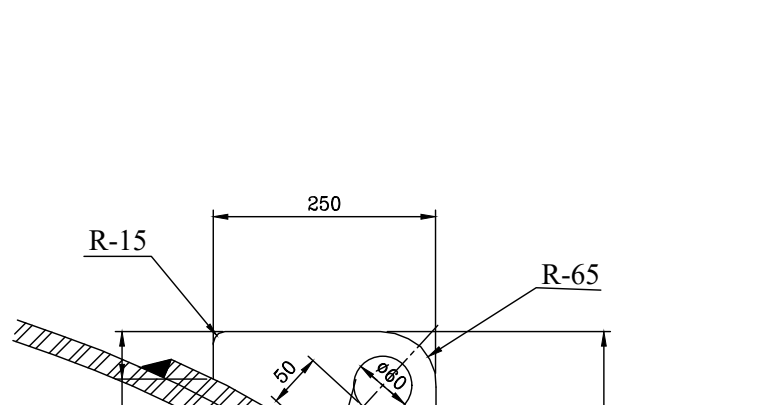
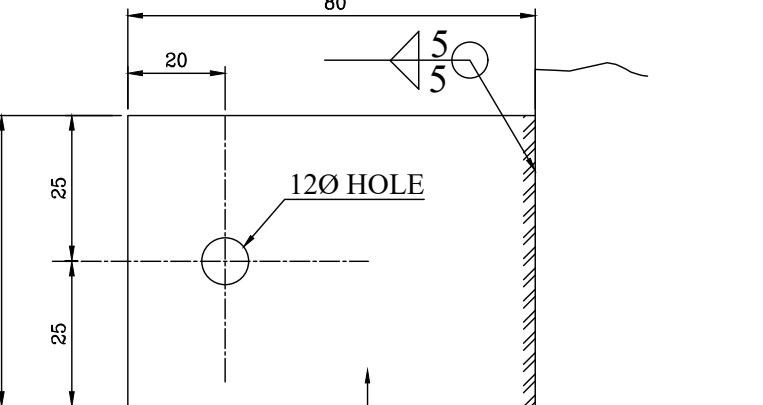
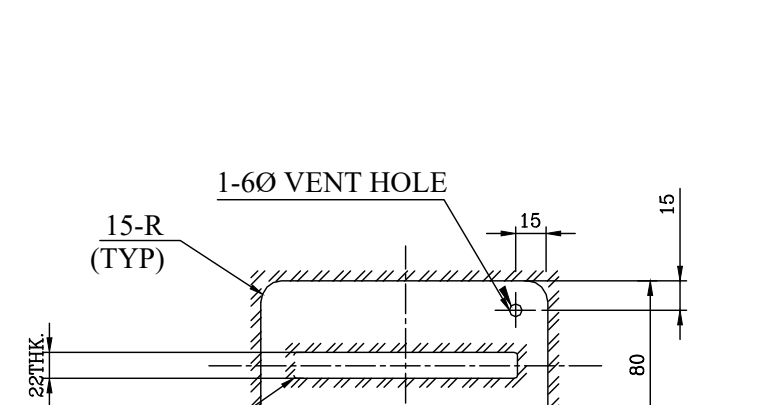
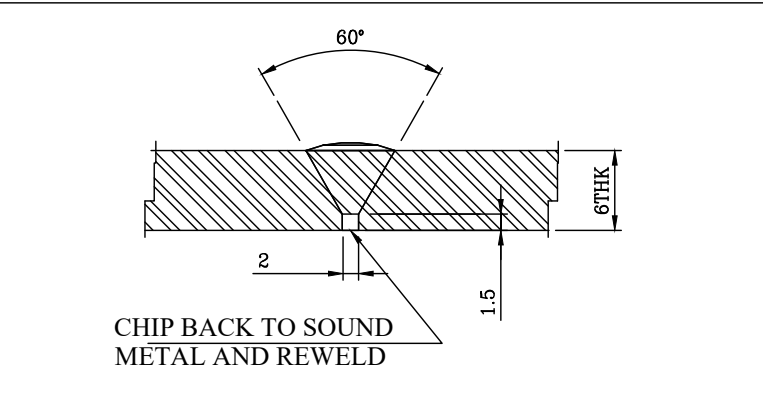
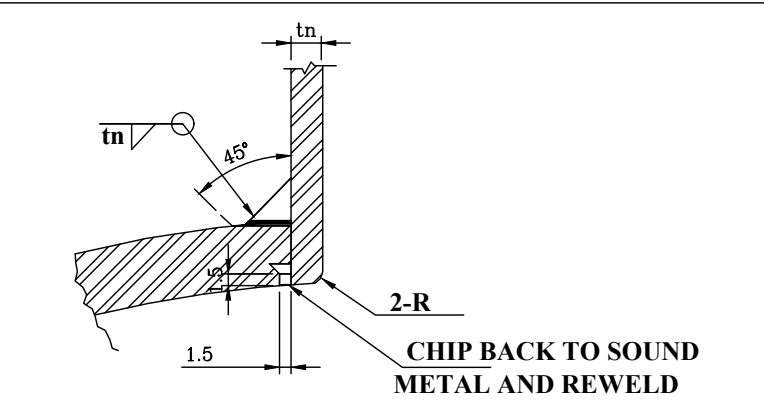
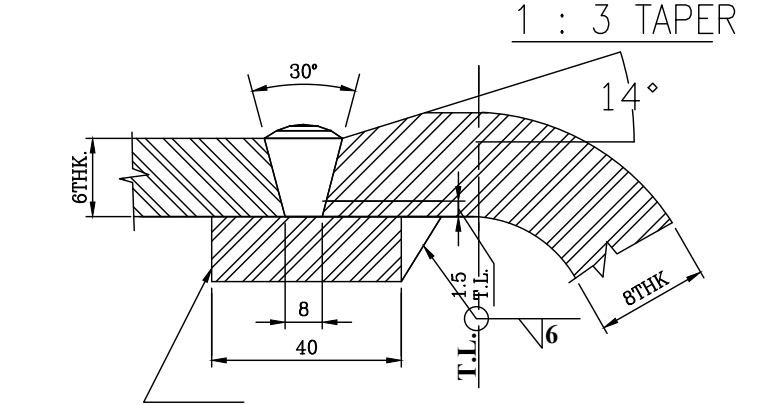
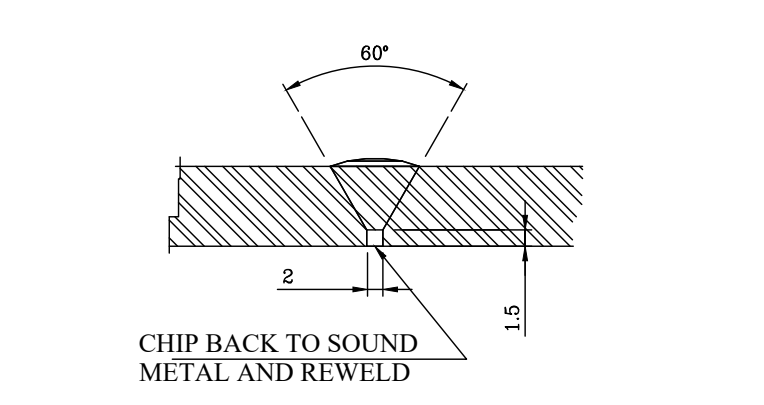
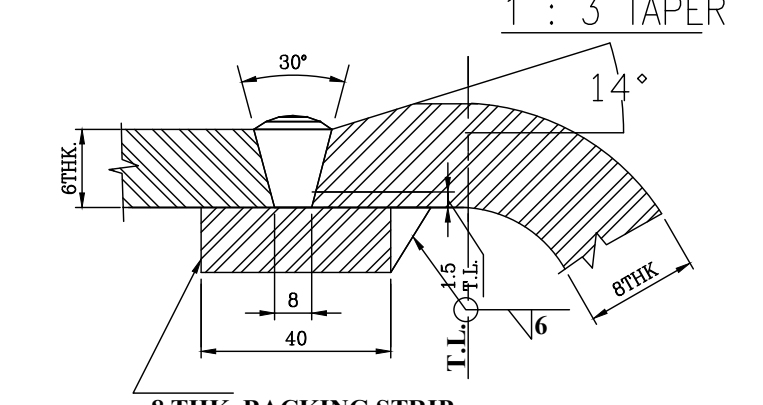
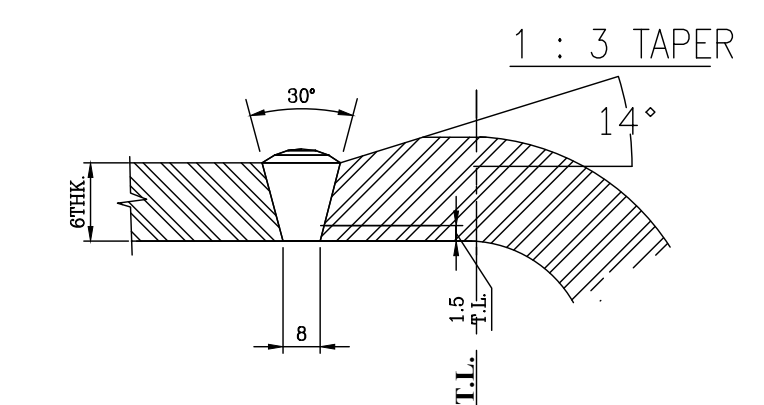


NOZZLE DETAILS

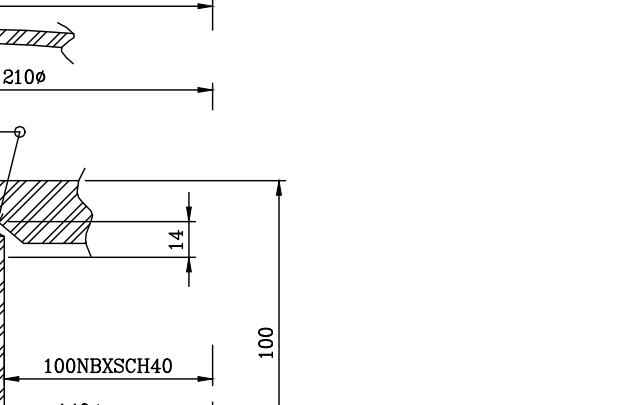
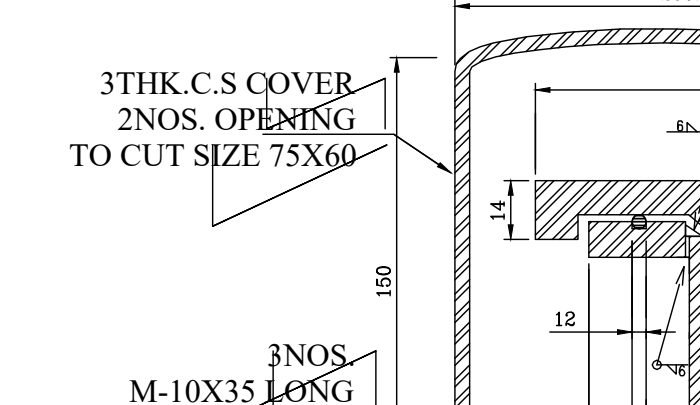
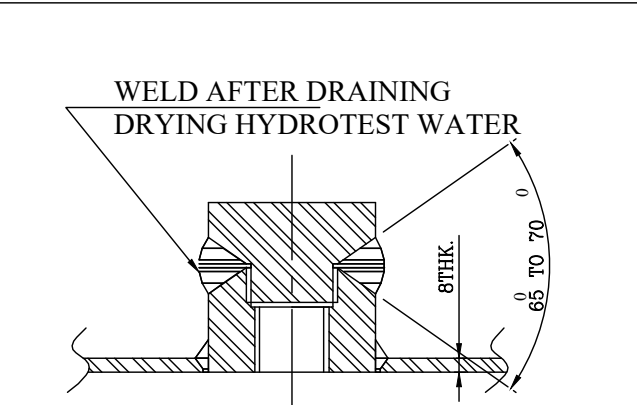
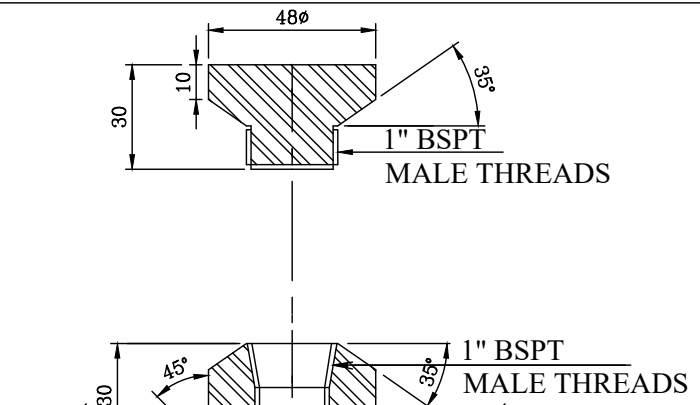
NOZ SIZE (NB)	QTY	SCH/THK	RATING	TYPE	FACING	PROJ	SERVICE	REMARKS
A1	25	2	6000#	HALF COUPLING	DRG	DRG	INNER VESSEL DRAIN	
D	100	1	40	AS PER	DRG	REF DRG	SAFETY DISC (JACKET)	
H	40	1	40	AS PER	DRG	REF DRG	SAFETY VALVE/RD/V.V	
X2	20	1	80	AS PER	DRG	REF DRG	THERMOSIPHON	OPTIONAL
X1	25	1	80	AS PER	DRG	REF DRG	THERMOSIPHON	OPTIONAL
EC	10	1	80	AS PER	DRG	REF DRG	ECONOMISER	OPTIONAL
N9	25	1	80	AS PER	DRG	REF DRG	RECIRCULATION/VAPOUR LINE	OPTIONAL
N8	40	1	80	AS PER	DRG	REF DRG	LIQUID DELIVERY LINE	
N7	10	1	80	AS PER	DRG	REF DRG	FULL TRY COCK	
N6	10	1	80	AS PER	DRG	REF DRG	HIGH LEVEL	
N5	10	1	80	AS PER	DRG	REF DRG	LOW LEVEL	
N4	40/20	1	40	AS PER	DRG	REF DRG	VACUUM VALVE/VACUUM GAUGE	
N3	25	1	40	AS PER	DRG	REF DRG	TO PRESSURISING COIL/DRAIN	
N2	40	1	40	300	FLANGE	SORF	REF DRG	LIQUID OUTLET (BOTTOM)
N1	40	1	40	300	FLANGE	SORF	REF DRG	LIQUID INLET (TOP)

MATERIAL OF CONSTRUCTION

	SHELL	JACKET
SHELL/D END	SA 240 GR 304 EQ.	IS 2062 GR A
NOZZLE PIPE	SA 312 TP 304 (SEAMLESS)	SA 106 GR B
BACKING STRIP	SA 240 GR 304 EQ.	IS 2062 GR A/SS-304
FLANGE/SLEEVE	SA 182 F 304	
FITTING	SA 403 WPB 304	
GASKET / 'O' RING	LOW TEMP. GRAFOIL SILICON RUBBER	
VESSEL SUPPORT	SA 240 GR 304 EQ.	IS 2062 GR A
BOLT / NUTS	EXTERNAL INTERNAL	SS 304 SS 304
SUPPORT INTERNAL	SA 240 GR 304 EQ.	IS 2062 GR A
STIFFENER RING		IS 2062 GR A
NAME PLATE	SS - 304	SS - 304
LIFTING EYE		IS 2062 GR A



NB	15	20	25	40
Dφ	21.3	26.9	33.4	48
D1φ	35	40	50	65



SAFETY VALVE CALCULATION AS PER EN-13648-3-2002 (EXTERNAL FIRE CONDITION)

MAKE OF SAFETY VALVE - APP.BY CCE.
EQUIVALENT AIR DISCHARGE CAPACITY OF SAFETY VALVE AT 16°C = 86.637 CFM.
SET PRESSURE - 18.00 barg
MEAN SURFACE AREA OF VESSEL - 31.3600 M
SAFETY VALVE REQUIRED - ONE
SAFETY VALVE PROVIDED - TWO.

DESIGN DATA

NO.	DESIGN CONDITIONS	UNIT	VALUES SHELL SIDE	VALUES JACKET SIDE
1	DESIGN & MFG. CODE		EN 13458-2 : 2002-ANNEX-C (U) RULES 2016	EN 13458-2 : 2002 (U) RULES 2016
2	DESIGN PRESSURE	barg	18	1.013 bar(g) external pressure
3	MAX. ALLOWABLE W/PRESSURE (M.A.W.P.)	barg	18 (CORRECTED FOR VACUUM)	FULL VACUUM
4	DESIGN TEMPERATURE (MIN./MAX.)	°C	-196° TO +50°	0° TO +55°C
5	OPERATING TEMPERATURE (MIN./MAX.)	°C	-196° TO -150°	0° TO +45°C
6	CORROSION ALLOWANCE	MM	NIL	0.5
7	WELD JOINT FACTOR		HEAD/ SHELL 1.0	HEAD-1.0/SHELL-0.8
8	RADIOGRAPHY (HEAD/SHELL)		FULL	FULL/SPOT
9	STRENGTHENING TEST PRESSURE	barg	28.50 (HYDRAULIC)	0.8 FOR DISH END
10	THINNING ALLOWANCE	MM	0.5 FOR DISH END	1.1 (PNEUMATIC)
11	OPERATING MEDIUM		LIQ NITROGEN/OXYGEN/ARGON	PERLITE/MSL
12	INSULATION	THK	PERLITE/MSL+FULL VACUUM	-
13	PAINTING		SEE NOTES	
14	CAPACITY (GROSS)	Ltrs.	98764.3% (AFTER COLD STRETCHING)	
15	CAPACITY (NET)	Ltrs.	92834.3% (AFTER COLD STRETCHING-LN/LOX/LAR)	
16	EMPTY WT. OF VESSEL	Kgs	3500 (APPROX.)	
17	OPERATING WEIGHT	Kgs	LN - 13500 / LOX - 16091 / LAR - 18440	
18	TEST PRESS. (LEAK TIGHTNESS)	barg	LN - 27.17 (HYDRAULIC)	1.1 (PNEUMATIC)
19	WIND PRESSURE	MTR/SEC	47 (AS PER IS 875 PART -3)	
20	SEISMIC DESIGN		AS PER IS 1893 ZONE - IV	
21	INSPECTION	BY	CCE APPROVED TPI	

- NOTES :-**
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED THICKNESS AND DIAMETERS SHOWN APPLY BEFORE STRENGTHENING
 - NOZZLE PROJECTION IS MEASURED FROM SHELL OR HEAD SURFACE TO FLG.GASKET FACE.
 - ALL SS INTERNAL AND EXTERNAL SURFACES SHALL BE PICKLED AND PASSEVATED.
 - INSIDE SURFACES OF VESSELS SHALL BE CLEANED OFF OIL,RUST,DUST.
 - ALL WELDING SURFACES SHOULD BE THOROUGHLY CLEANED OFF OIL RUST DUST AND OTHER FOREIGN BODIES BEFORE WELDING/ PAINTING.
 - ALL CS SURFACES SHOULD BE CLEANED AS PER SA 2.5 BEFORE PAINTING.
 - TWO COATS OF PU PRIMER SHOULD BE GIVEN EXTERNALLY ON CS SURFACES
 - CHLORINE CONTENT FOR HYDROTESTING WATER NOT TO EXCEED 50 PPM.
 - ALL RF PAD TO BE PRESSURE TESTED WITH SOAP SOLUTION USING AIR AT 1.25 KG/CM2 g AND TELL TALE HOLE 6φ.
 - ALL MACHINING SURFACE TO HAVE FINISH UNLESS OTHERWISE SPECIFIED
 - ALL PRESSURE BEARING WELDS SHALL BE FULL PENETRATION TYPE FOR INNER VESSEL.
 - ALL FLANGE SHALL BE AS PER ANSI B-16.5 SERRATED FINISH AND FITTING SHALL BE AS PER B-16.11 UNLESS OTHERWISE NOTED.
 - INNER VESSEL SHOULD BE PRESSURISED UPTO 1.5 Kg/Cm2 PRESSURE BEFORE PRESSURISING JACKET SPACE FOR PNEUMATIC TEST.SIMILARLY JACKET SIDE PRESSURE SHOULD BE RELEASED FIRST AFTER CONDUCTING JKT SIDE PNEUMATIC TEST TO AVOID POSSIBLE COLLAPSE OF INNER VESSEL.
 - ORIENTATION PLAN, SIDE ELEVATION DECIDES THE CORRECT POSITION OF NOZZLE AND FITTINGS
 - UNDER TOLERANCE FOR SHELL PLATES OF INNER VESSEL SHALL HAVE MINIMUM THICKNESS INDICATED.
 - INNER VESSEL PLATES, & SLEEVES SHALL BE IMPACT TESTED AT (-) 196°C.
 - COLD STRETCHING OR STRENGTHENING PROCEDURE SHALL AS PER EN13458-2-2002 ANNEXURE-C AND Q.C PROCEDURE BASED ON IT. HYDRAULIC PRESSURE TEST SHALL BE WITNESSED AT THE SAME TIME. HOWEVER HYDRAULIC TEST MAY ALSO BE CONDUCTED SEPARATELY AT A PRESSURE NOT LESS THAN NORMAL TEST PRESSURE AFTER COLD STRENGTHENING TEST AS PER CLAUSE C.6.1.6.
 - WPS, PQR & WPQ SHALL BE PREPARED & PERFORMED IN ACCORDANCE WITH RELEVANT CODE (EN-288.3, EN-287.1 & EN-15614.1)
 - SS 304 PLATES FOR SHELL & D/ENDS SHOULD BE TESTED & QUALIFIED FOR PRESSURE STRENGTHENING AS PER CLAUSE C.4.2 OF EN13458-2-2002. THE ANTICIPATED VALUE OF OK= 405 N/MM2 AS PER CLAUSE C.5.1.3 & TABLE C-1.
 - ONE PRODUCTION CONTROL TEST PLATE PER VESSEL AS PER CLAUSE 6.2 SHALL BE PREPARED AND TESTED.
 - QAP SHALL BE PREPARED AS PER DESIGN & MFG. CODE & WILL BE APPROVED FROM TPIA BEFORE START OF MANUFACTURING THE VESSEL.
 - NO MAJOR WELDING OF PRESSURE BEARING PARTS TO MAIN VESSEL TO BE DONE AFTER COLD STRENGTHENING.
 - CAPACITY INDICATED IN DESIGN DATA IS AFTER COLD STRENGTHENING. ACTUAL CAPACITY MAY VARY ±3% OF RATED CAPACITY.
 - THE VESSEL TO BE DISPATCHED AFTER PURGING NITROGEN GAS TO A PRESSURE OF 0.5 Kg/ cm2g

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MAIN TITLE	LIQUID MEDICAL OXYGEN PLANT	Q.A No.	
SUB - TITLE	GA & DETAIL DRAWING	Cross Ref. Doc. No.	
CODE	A3040	Customer Dwg./Ref. No.	
CUSTOMER	---	Note:	
END - USER	---		
TENDER NO.	---		
PROJECTION	DRAWN BY & DATE CHECKED BY & DATE APPROVED BY & DATE	A.K. 02/08/2022 S.S. 02/08/2022 S.P.S. 02/08/2022	Size Scale Sheet A4 NTS 14/15 NEO. DWG. No. REV