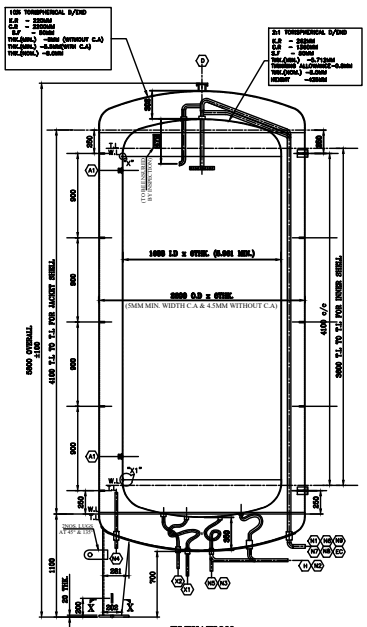
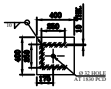
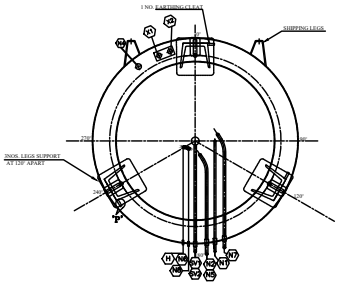
THIS DWG. IS SOLE PROPERTYOF **NEOMETRIX ENGINEERING PVT. LTD.**
UNAUTHORISED USE OF THIS DWG. OR MAKING PRODUCT AS PER THIS DWG.
WITHOUT OUR PERMISSION OR ANY OTHER MISUSE IS NOT PERMITTED.



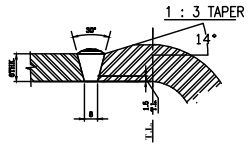
ELEVATION



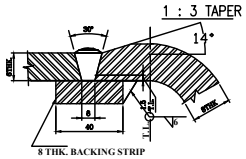
SECTION X-X



NOZZLE ORIENTATION PLAN



TYP. WELD DETAIL FOR INNER SHELL TO D/ENDS JOINT DETAIL- "X"



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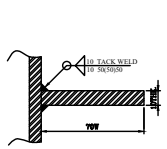
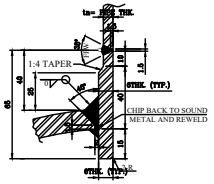
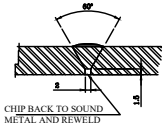


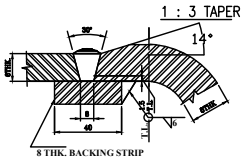
TYP. DETAIL STIFFENERS JOINTS



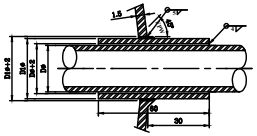
TYP. DETAIL NOZZLE NECK & SLEEVE WITH D/END JOINT FOR INNER VESSEL



TYP. DETAIL OF LONG./ CIRCUM. SEAMS JOINTS (JACKET SHELL)

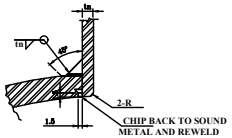


TYP. WELD DETAIL FOR JACKET SHELL TO JACKET D/ENDS

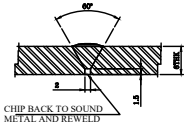


NB	15	20	25	40
Dø	21.3	26.9	33.4	48
D1ø	35	40	50	65

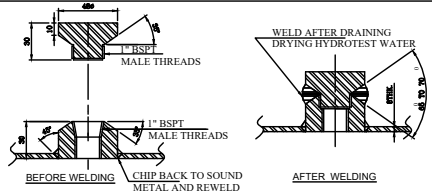
TYP. DETAIL OF SLEEVE TO JACKET/ D/END FOR ALL NOZZIE



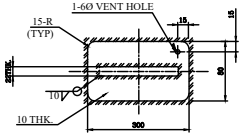
TYP.DETAIL OF NOZZLE NECK WITH SHELL & D/END JOINT

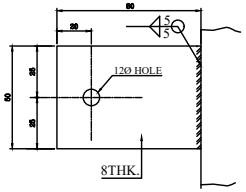


TYP. DETAIL OF LONG./ CIRCUM. SEAMS JOINTS (INNER SHELL)

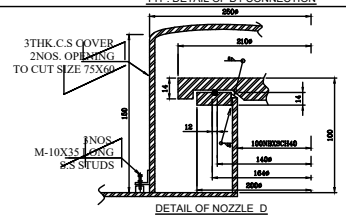


TYP. DETAIL OF D1 CONNECTION

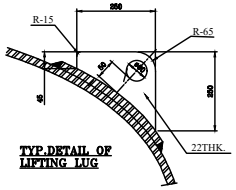




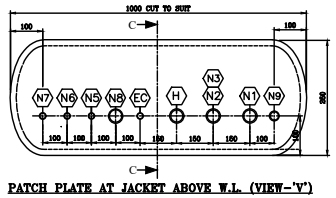
DETAIL OF EARTHING CLEAT



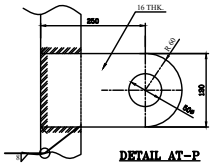
DETAIL OF NOZZLE D



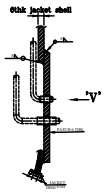
TYP.DETAIL OF LIFTING LUG



PATCH PLATE AT JACKET ABOVE W.L. (VIEW-'Y')



DETAIL AT-P



SECTION C-C

DESIGN DATA

NO.	DESIGN CONDITIONS	UNIT	VALUES SHELL SIDE	VALUES JACKET SIDE
1	DESIGN & MFG. CODE	---	EN 13458-2 : 2002-ANEX-C (U) RULES 2016	EN 13458-2 : 2002 (U) RULES 2016
2	DESIGN PRESSURE	barg	19	1.013 bar(g) external pressure
3	MAX. ALLOWABLE W/PRESSURE (MAWP)	barg	18 (CORRECTED FOR VACUUM)	FULL VACCUM
4	DESIGN TEMPERATURE (MIN. /MAX.)	°C	-196° TO +50°	0°C TO +55°C
5	OPERATING TEMPERATURE (MIN. /MAX.)	°C	-196° TO -150°	0°C 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)	--
10	THINNING ALLOWANCE	MM	0.8 FOR DISH END	0.8 FOR DISH END
11	OPERATING MEDIUM	---	LIQ.NITROGEN/OXYGEN/ARGON	PERLITE/MLSI
12	INSULATION	THK	PERLITE/MLSI+FULL VACUUM	--
13	PAINTING	---	SEE NOTES	--
14	CAPACITY (GROSS)	Ltrs.	9676±3% (AFTER COLD STRETCHING)	
15	CAPACITY (NET)	Ltrs.	9283±3% (AFTER COLD STRETCHING-LIN/LOX/LAR)	
16	EMPTY WT. OF VESSEL	Kgs	5500 (APPROX.)	
17	OPERATING WEIGHT	Kgs	LIN – 13000 / LOX – 16091 / LAR – 18440	
18	TEST PRESS. (LEAK TIGHTNESS)	barg	27.17 (HYDRAULIC)	1.1 (PNEUMATIC)
19	WIND PRESSURE	MTK/SEC	47 (AS PER IS 875 PART -3)	
20	SEISMIC DESIGN	--	AS PER IS 1893 ZONE – IV	
21	INSPECTION	BY	CCE APPROVED TPI	

NOTES :-

1:- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED THICKNESS AND DIAMETERS SHOWN APPLY BEFORE STRENGTHNING

2:-NOZZLE PROJECTION IS MEASURED FROM SHELL OR HEAD SURFACE TO FLG.GASKET FACE.

3:- ALL SS INTERNAL AND EXTERNAL SURFACES SHALL BE PICKLED AND PASSWATED.

4:- INSIDE SURFACES OF VESSELS SHALL BE CLEANED OFF OIL,RUST,DUST.

5:- ALL WELDING SURFACES SHOULD BE THOROUGHLY CLEANED OFF OIL RUST DUST AND OTHER FOREIGN BODIES BEFORE WELDING/ PAINTING.

6:- ALL CS SURFACES SHOULD BE CLEANED AS PER SA 2.5 BEFORE PAINTING.

7:- TWO COATS OF PU PRIMER SHOULD BE GIVEN EXTERNALLY ON CS SURFACES

8:- CHLORINE CONTENT FOR HYDROTESTING WATER NOT TO EXCEED 50 PPM.

9:- ALL RF PAD TO BE PRESSURE TESTED WITH SOAP SOLUTION USING AIR AT 1.25 KG/CM2 g AND TELL TALE HOLE 6ø.

10:- ALL MACHINING SURFACE TO HAVE FINISH UNLESS OTHERWISE SPECIFIED

11:- ALL PRESSURE BEARING WELDS SHALL BE FULL PENETRATION TYPE FOR INNER VESSEL

12:- ALL FLANGE SHALL BE AS PER ANSI B-16.5 SERRATED FINISH AND FITTING SHALL BE AS PER B-16.11 UNLESS OTHERWISE NOTED.

13:- INNER VESSEL SHOULD BE PRESSURISED UPTO 1.5 Kg/Cmg2 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.

14:- ORIENTATION PLAN, SIDE ELEVATION DECIDES THE CORRECT POSITION OF NOZZLE AND FITTINGS

15:- UNDER TOLERANCE FOR SHELL PLATES OF INNER VESSEL SHALL HAVE MINIMUM THICKNESS INDICATED.

16:- INNER VESSEL PLATES, & SLEEVES SHALL BE IMPACT TESTED AT (–) 196°C

17:- 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.

18:- WPS, PQR & WPQ SHALL BE PREPARED & PERFORMED IN ACCORDANCE WITH RELEVENT CODE (EN-288.3. EN-287.1 & EN-15614.1)

19:- 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.

20:- ONE PRODUCTION CONTROL TEST PLATE PER VESSEL AS PER CLAUSE 6.2 SHALL BE PREPARED AND TESTED.

21:- QAP SHALL BE PREPARED AS PER DESIGN & MFG. CODE & WILL BE APPROVED FROM TPIA. BEFORE START OF MANUFACTURING THE VESSEL.

22:- NO MAJOR WELDING OF PRESSURE BEARING PARTS TO MAIN VESSEL TO BE DONE AFTER COLD STRENGTHENING.

23:- CAPACITY INDICATED IN DESIGN DATA IS AFTER COLD STRENGTHENING. ACTUAL CAPACITY MAY VARY ±3% OF RATED CAPACITY.

24:- THE VESSEL TO BE DISPATCHED AFTER PURGING NITROGEN GAS TO A PRESSURE OF 0.5 Kg/ cm2g

NOZZLE DETAILS

NOZ	SIZE (NB)	QTY	SCH/THK	RATING	TYPE FLANGE	FACING	PROJ	SERVICE	REMARKS.
A1	25	2	–	6000#	HALF	COUPLING	REF 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	VACCUM VALVE/VACCUM 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	SS 304	
	INTERNAL	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

SAFETY VALVE CALULATION 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.

NEOMETRIX
NEOMETRIX ENGINEERING PVT. LTD.
E-148, Sector-63, Noida, UP-201301
Tel. No. :- 0120-4500800
Fax No. :- 0120-4500888
Email :- contact@neometrixgroup.com

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				Size	Scale	Sheet	No. Of	NEO. DWG. No.	REV
	DRAWN BY & DATE	A.K.	02/08/2022	A4	NTS	14	15	T-DAP-A3040-INSTALLATION DRAWING	00
	CHECKED BY & DATE		02/08/2022						
	APPROVED BY & DATE	S.P.S	02/08/2022						