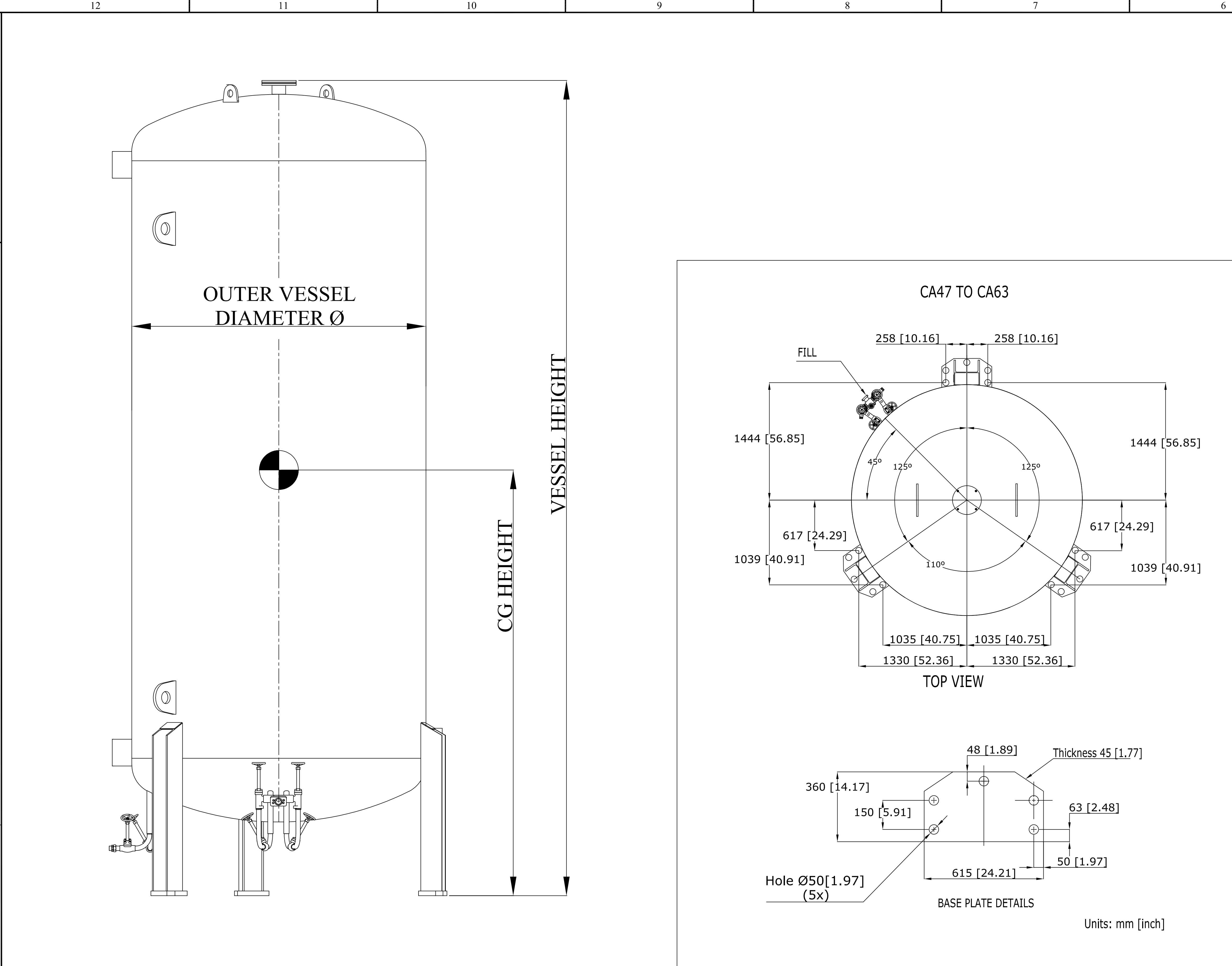
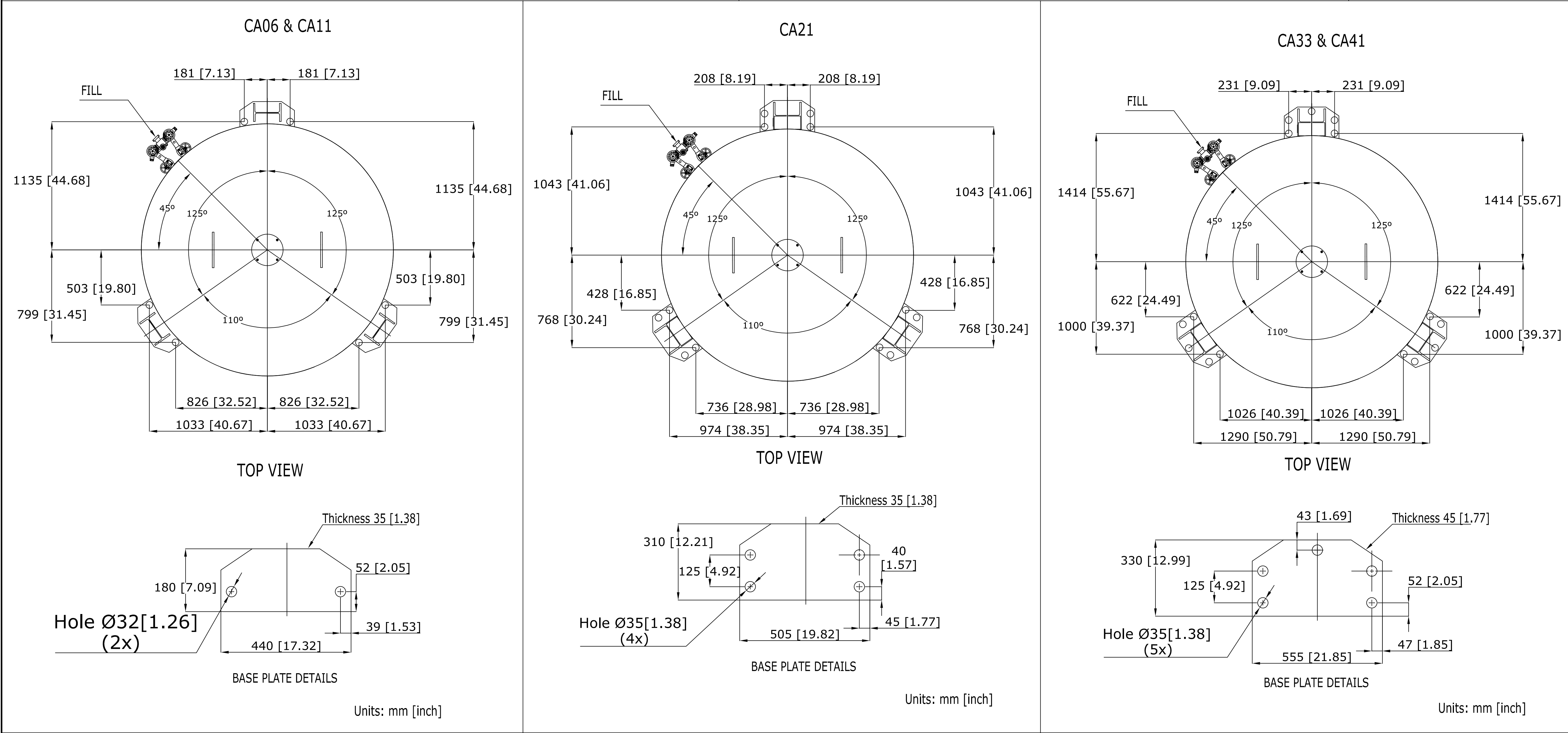
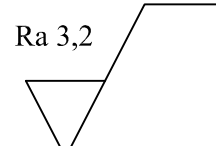
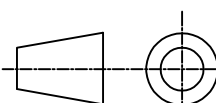




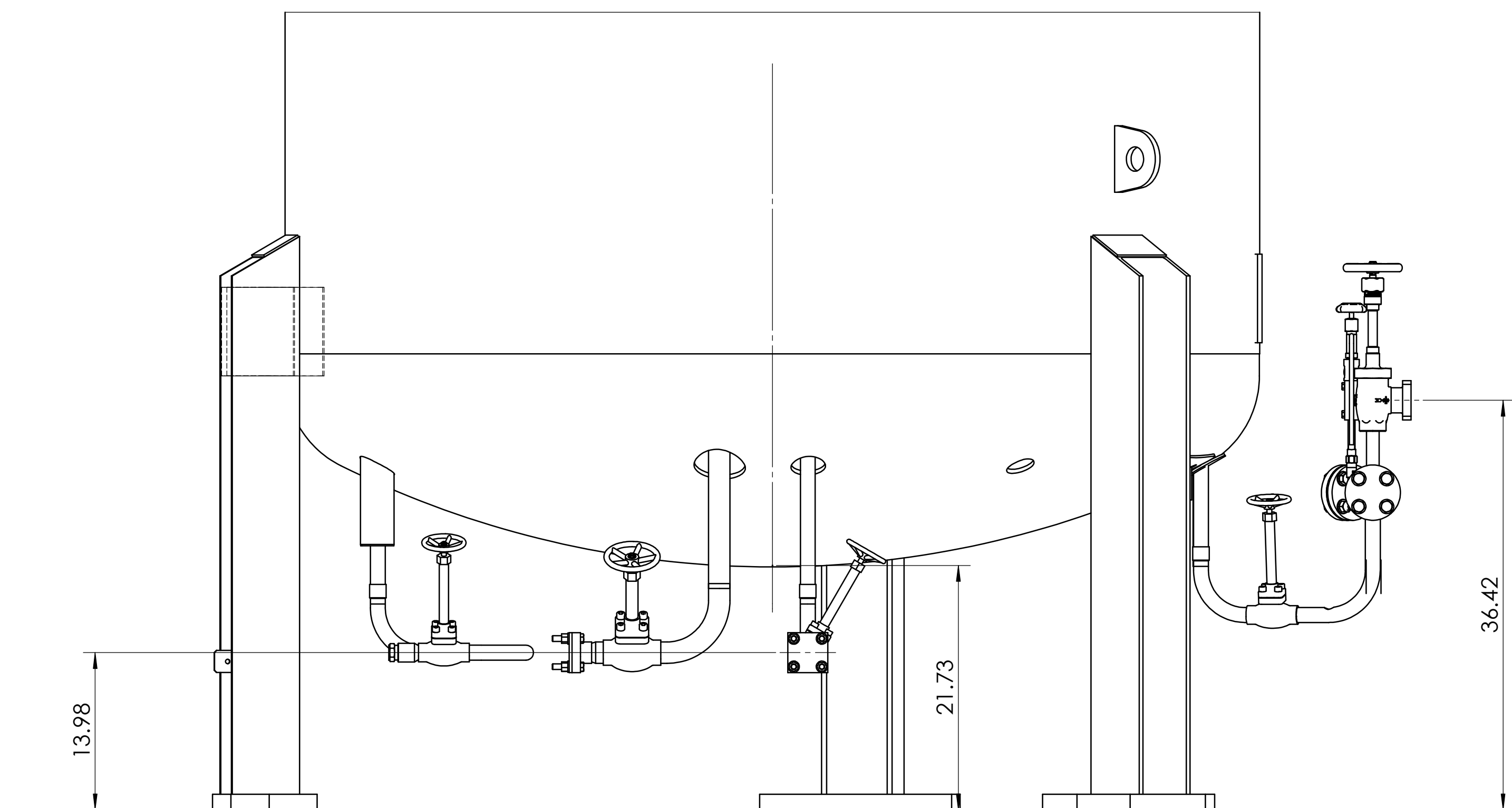
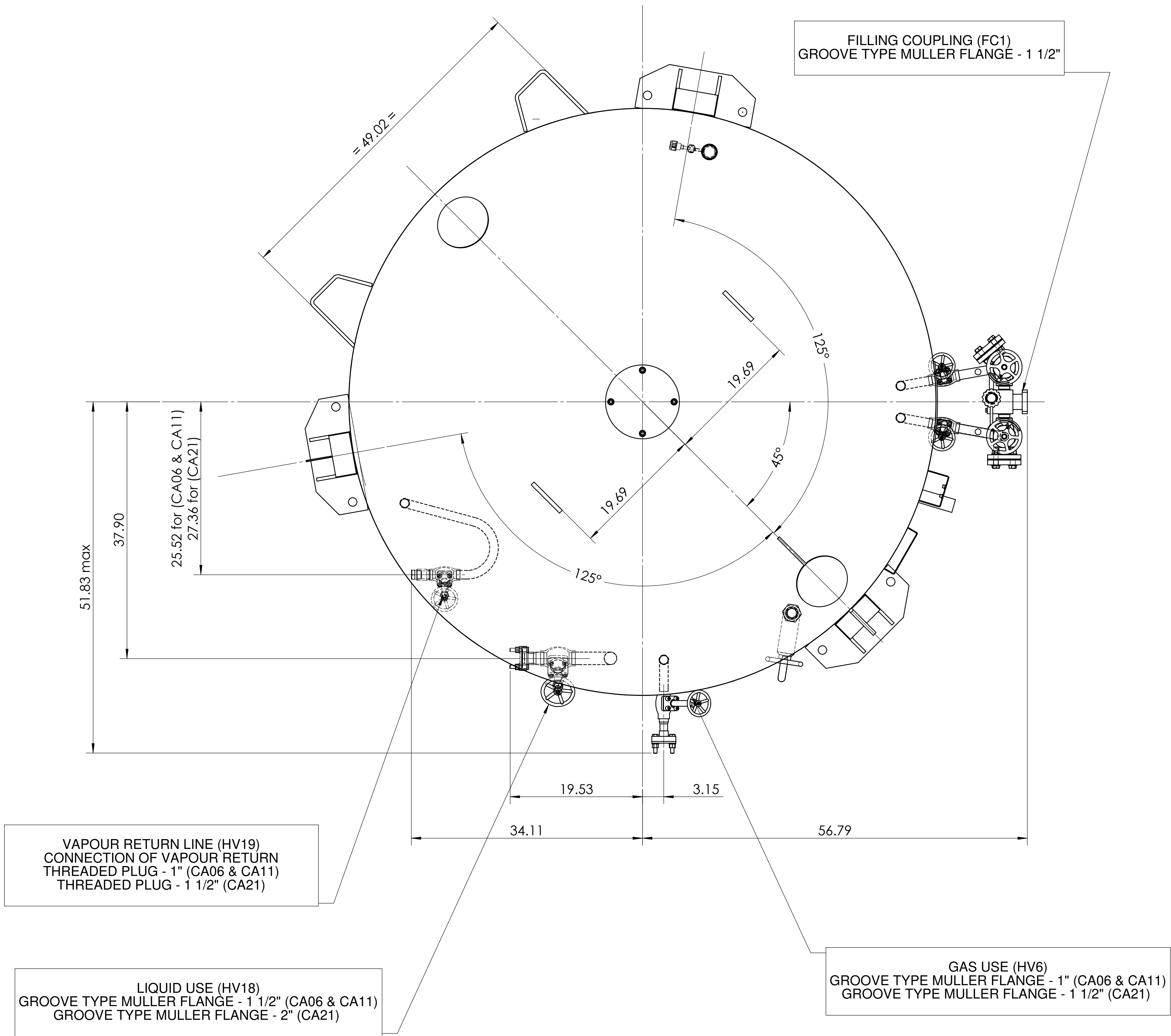
VESSEL MODEL			CA06	CA11	CA21	CA33	CA41	CA47	CA53	CA63
CAPACITY	Gross	liters	6150	10540	23660	34340	41300	47580	56270	63750
		Gallons	1625	2784	6250	9072	10910	12569	14865	16841
	Net	liters	5843	10013	22477	32623	39235	45201	53457	60563
		Gallons	1543	2645	5938	8618	10365	11941	14122	15999
WEIGHT EMPTY		kgs	3850	4900	9000	13050	14950	17200	19600	21350
		Pounds	8488	10803	19842	28770	32959	37919	43211	47069
WEIGHT FULL	LIN	kgs	8571	12991	27161	39409	46652	53722	62793	70285
		Pounds	18896	28639	59881	86883	102850	118437	138435	154952
	LOX	kgs	10517	16325	34646	50273	59717	68774	80594	90452
		Pounds	23186	35990	76382	110833	131654	151621	177680	199413
	LAR	kgs	11989	18848	40310	58494	69604	80165	94066	105714
		Pounds	26432	41553	88869	128957	153451	176733	207379	233060
SHIPPING DIMENSIONS	Length (L)	mm	4203	5680	10158	8957	10486	11725	13476	14953
		Inches	165.47	223.62	399.92	352.64	412.83	461.61	530.55	588.70
	Width (W)	mm	2300	2300	2300	3050	3050	3050	3050	3050
		Inches	90.55	90.55	90.55	120.08	120.08	120.08	120.08	120.08
	Height(H)	mm	2500	2500	2500	3350	3350	3350	3350	3350
		Inches	98.43	98.43	98.43	131.89	131.89	131.89	131.89	131.89
VESSEL HEIGHT		mm	4203	5680	10158	8957	10486	11725	13476	14953
		Inches	165.47	223.62	399.92	352.64	412.83	461.61	530.55	588.70
CG HEIGHT		mm	2251	2912	5493	4796	5254	5723	6683	7476
		Inches	88.62	114.65	216.26	188.82	206.85	225.32	263.11	294.33
OUTER VESSEL DIAMETER Ø		mm	2200	2200	2200	2840	2840	2840	2840	2840
		Inches	86.61	86.61	86.61	111.81	111.81	111.81	111.81	111.81



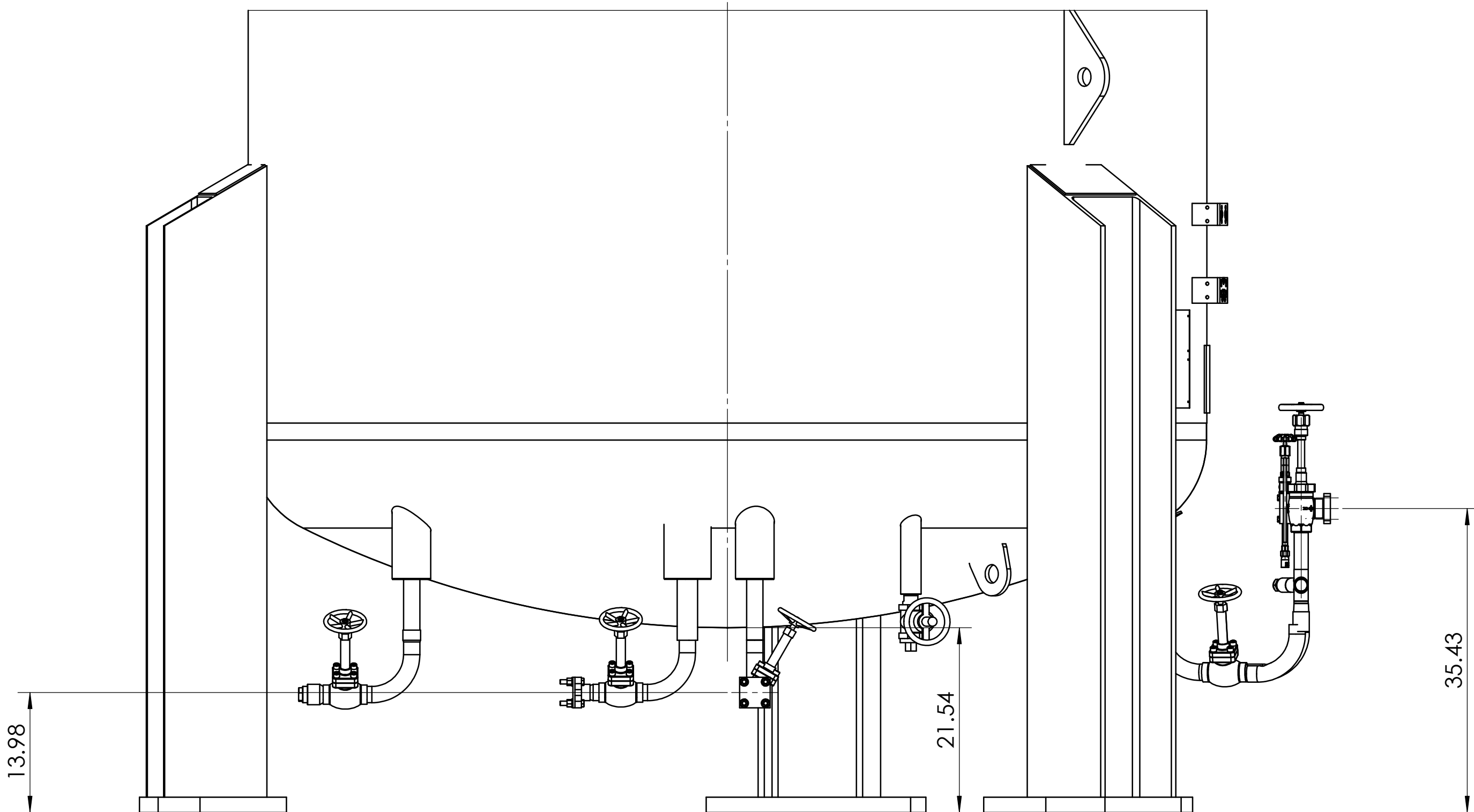
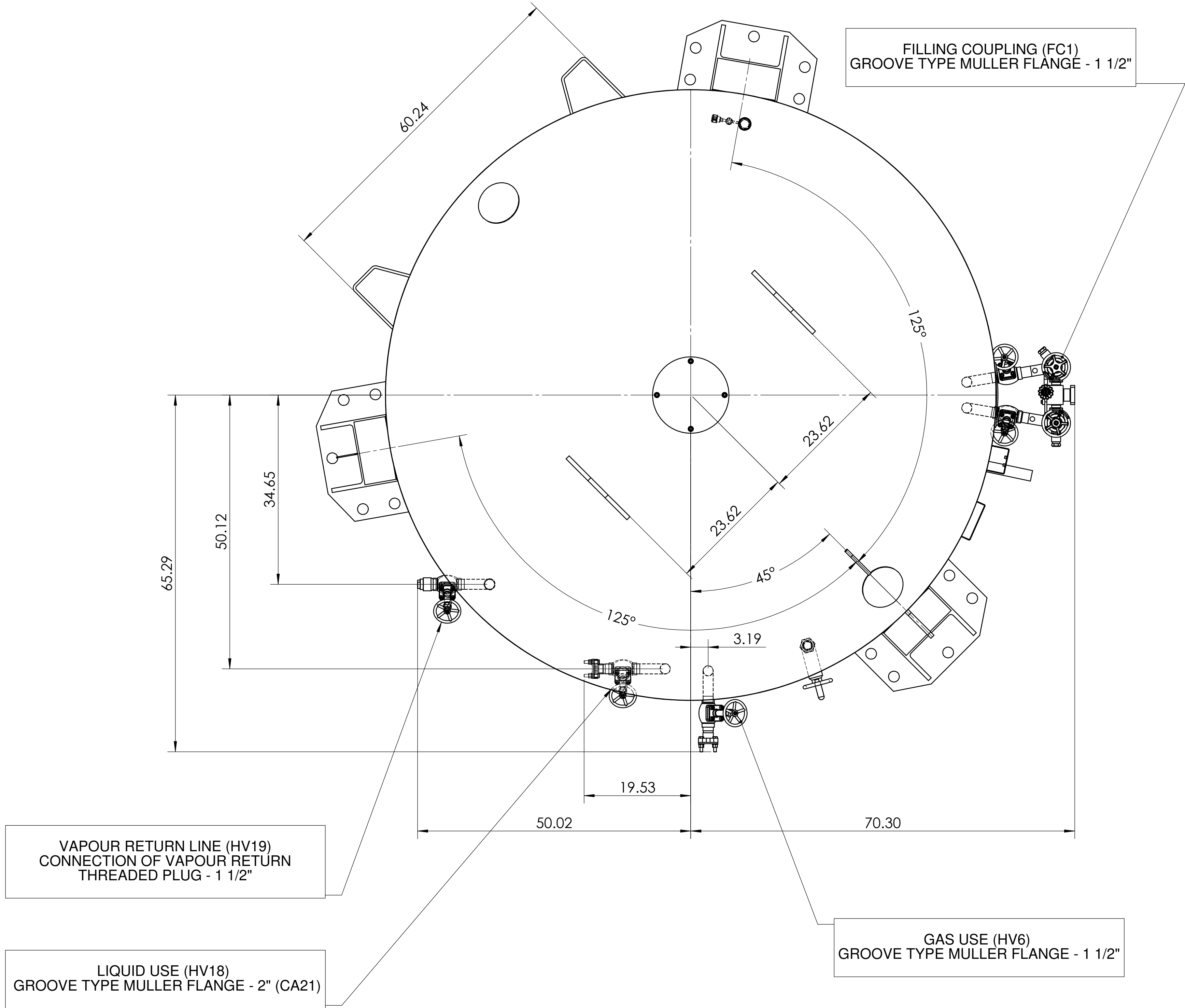
DRAFT

0	15.05.2020	ORIGINAL EDITION						
					V.ARAVIND	P.SIVA	R.K. MAHAAMURTHY	
Rev.	DATE	MODIFICATION			DRAWN BY ENGINEER DESIGN	CHECKED BY ENGINEER DESIGN	APPROVED BY HEAD TECHNICAL	
UNLESS OTHERWISE STATED : Dimensions in mm		General tolerances of machined parts : ISO 2768 - mK		Ra 3,2 	Dimensional tolerances and angular parts sheet metal, boiler ± 0.5mm per meter 2°-à 3°			This document is the property of CRYOLOR, pole industrial ENNERVY. It is delivered as strictly confidential. It can not be reproduced or communicated without permission.
Manufacturing tolerances following NH63029								
GA DRAWING - 250 Psig_ US								
 CRYOLOR ASIA PACIFIC								
100 KM Mile stone NH 45, Kadamalaipattur, Perumperkandigai Post, Madurantakam Taluk, Chengalpattu Dist - 603 310. Ph: +91 44 2752 8700.								
No of FAO:	PAGE 1 OF 3		Scale 1:10	Size A1	Project number As applicable	Drawing Number with revision HC003815 Rev.0		

CA06-CA21



CA33-CA63



REV	DATE	Drawn By	Reviewed By	Approved By
0	15.05.2020	V. ARAVIND		
SAFETY INDICATIONS CONTRAINDICATIONS / UNLESS OTHERWISE STATED:				
Dimension in inches / Dimensions in inches				
Tolerances in inches / Tolerances in inches				
Manufacturing tolerances in inches / Manufacturing tolerances in inches				
General tolerances in inches / General tolerances in inches				
Drawing number with Revision				
GA/implantation drawing for- 250 Psig - US				
HC002605				
Scale: 1:15				
Format: A0				
Drawing number with Revision				
HC003815 Rev.0				

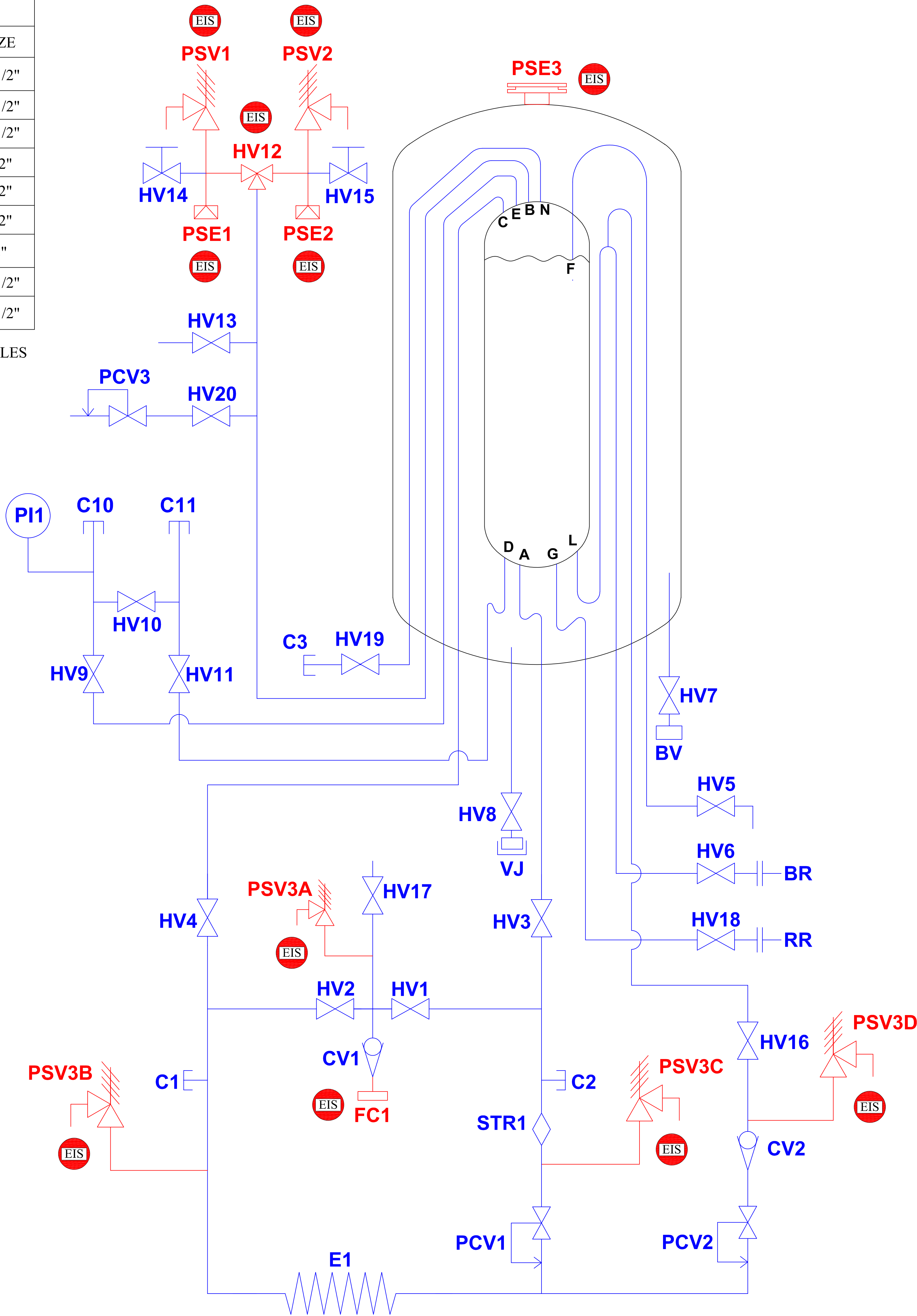
WIND AND SEISMIC DATA																							
MODEL						CA06				CA11				CA21				CA33					
CALCULATION DATA				<i>Vessel datas</i> Données du réservoir		<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon		
	<i>Ambient gas phase</i>		5%	<i>Working capacity</i> Volume utile		L	5,850				10,020				22,480				32,630				
	Phase gazeuse à l'ambient			<i>Mass of the vessel</i> Masse du récipient		kg	4,310	9,030	10,970	12,440	5,800	13,890	17,220	19,740	10,500	28,680	36,150	41,810	14,640	41,020	51,860	60,070	
	<i>Quality of the anchoring bolt</i> Qualité de la tige d'ancrage		8.8	<i>Height of the center of gravity</i> Hauteur du centre de gravité		mm	2,481	2,512	2,518	2,520	2,912	2,952	2,958	2,961	5,493	5,340	5,321	5,312	4,796	4,590	4,566	4,553	
UBC	<i>Earthquake calculation</i> Calculs au séisme			<i>Calculation results</i> Résultats des calculs		<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon		
	<i>Zone</i>		4	<i>Compression force per foot</i> Effort de compression par pied		daN	7,342	14,077	16,844	18,941	9,205	22,315	27,703	31,785	21,209	56,594	71,135	82,153	27,912	75,461	95,001	1,09,807	
	<i>Soil profile</i> Profil du sol		<i>Stiff soil profile</i> Sol Rigide	<i>Traction force per foot</i> Effort de traction par pied		daN	4,463	8,036	9,504	10,617	5,329	13,020	16,181	18,575	14,185	37,404	46,947	54,176	18,120	48,012	60,296	69,603	
	<i>Seismic source type</i> Type de source de séisme		<i>Not applicable</i>		<i>Shearing force per foot</i> Effort de cisaillement par pied		daN	1,055	2,214	2,690	3,051	1,420	3,406	4,222	4,841	1,872	5,114	6,446	7,456	3,588	10,058	12,717	14,732
	<i>Closest distance to known seismic source</i> Plus petite distance à la source sismique connue		<i>Not applicable</i>																				
UBC	<i>Wind calculation</i> Calculs au vent			<i>Calculation results</i> Résultats des calculs		<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon	<i>EMPTY</i> VIDE	<i>Nitrogen</i> Azote	<i>Oxygen</i> Oxygene	<i>Argon</i> Argon		
	<i>Basic wind speed</i> Vitesse de base du vent		210 km/h	<i>Compression force per foot</i> Effort de compression par pied		daN	4,329	5,947	6,603	7,098	6,350	9,121	10,243	11,091	20,666	26,270	28,713	30,577	16,990	25,297	28,865	31,583	
				<i>Traction force per foot</i> Effort de traction par pied		daN	1,450	0	0	0	2,474	0	0	0	13,642	7,080	4,524	2,600	7,198	0	0	0	
				<i>Shearing force per foot</i> Effort de cisaillement par pied		daN	663	663	663	663	862	862	862	862	1,814	1,814	1,814	1,814	1,885	1,885	1,885	1,885	

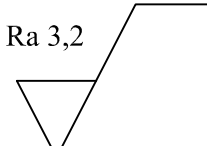
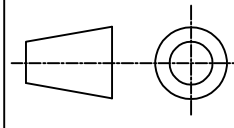
					CA41				CA47				CA53									
CALCULATION DATA				Vessel datas Données du réservoir		EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon	EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon	EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon					
	Ambient gas phase		5%	Working capacity Volume utile		L	39,240				45,210				53,460							
	Phase gazeuse à l'ambient			Mass of the vessel Masse du récipient		kg	17,810	49,540	62,570	72,450	19,420	55,980	71,000	82,380	22,800	66,030	83,800	97,260				
	Quality of the anchoring bolt Qualité de la tige d'ancrage		8.8	Height of the center of gravity Hauteur du centre de gravité		mm	5,254	5,207	5,201	5,199	5,723	5,761	5,765	5,767	6,683	6,638	6,633	6,631				
UBC	Earthquake calculation Calculs au séismeC0003389_A			Calculation results Résultats des calculs		EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon	EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon	EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon					
	Zone		4	Compression force per foot Effort de compression par pied		daN	36,632	1,01,163	1,27,682	1,47,776	42,406	1,22,913	1,55,998	1,81,066	56,860	1,63,717	2,07,631	2,40,904				
	Soil profile Profil du sol		Stiff soil profile Sol Rigide	Traction force per foot Effort de traction par pied		daN	24,717	68,013	85,805	99,287	29,409	85,452	1,08,483	1,25,934	41,601	1,19,526	1,51,550	1,75,813				
	Seismic source type Type de source de séisme		Not applicable	Shearing force per foot Effort de cisaillement par pied		daN	4,366	12,147	15,345	17,768	4,762	13,727	17,411	20,202	5,591	16,193	20,550	23,851				
	Closest distance to known seismic source Plus petite distance à la source sismique connue		Not applicable																			
UBC	Wind calculation Calculs au vent0			Calculation results Résultats des calculs		EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon	EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon	EMPTY VIDE	Nitrogen Azote	Oxygen Oxygene	Argon Argon					
	Basic wind speed Vitesse de base du vent		210 km/h	Compression force per foot Effort de compression par pied		daN	21,889	32,366	36,713	40,010	26,083	38,444	43,486	47,302	34,846	49,130	55,055	59,549				
				Traction force per foot Effort de traction par pied		daN	9,975	0	0	0	13,092	990	0	0	19,587	4,938	0	0				
				Shearing force per foot Effort de cisaillement par pied		daN	2,268	2,268	2,268	2,268	2,598	2,598	2,598	2,598	3,091	3,091	3,091	3,091				

TAG REFERENCE	DESCRIPTION	SIZE		VALVE REFERENCE	
		CA06 - CA11	CA21 - CA53	MANUFACTURER	MODEL / REFERENCE No.
BV	Vacuum pump down connection	-		-	-
BR	Vaporizer connection	1"	1 1/2"	-	Groove type Muller flange
C1, C2	Connections for additional PBU	1"		-	Threaded plug
C3	Connection of vapour return	1"	1 1/2"	-	Threaded plug
FC1	Filling coupling	1 1/2"		REGO	1" : CFM00002D 1 1/2" : CFM00004D
CV1	Filling check valve	1"	1 1/2"		
HV1	Filling liquid	1"	1 1/2"		
HV2	Filling gas	1"	1 1/2"		
HV17	Purge valve	1/2"			
HV3	Doubling filling liquid	1"	1 1/2"	HEROSE	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV4	Doubling filling gas	1"	1 1/2"	HEROSE	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV5	Full trycock	1/2"		HEROSE	01321.1521.0014
HV6	Gas use	1"	1 1/2"	HEROSE	1": 01321.2533.0014 1 1/2": 01321.4048.0014
HV7	Vacuum isolation valve	1 1/2"		ITT	1.5" - 2401-T-903-Vacuum
HV8	Vacuum probe isolation Valve	-		HOKE	4551-F2B-1/8"
HV9	Level gauge manifold, Gas	-		PARKER	4A-V4LR-SS-C3
HV10	Level gauge manifold, Equalizer	-		PARKER	4A-V4LR-SS-C3
HV11	Level gauge manifold, Liquid	-		PARKER	4A-V4LR-SS-C3
HV12	3 way diverter	3/4"	1 1/4"	HEROSE	3/4": 06510-2040-6426 1 1/4": 06510-3210-6227
HV13	Gas purge	1"		HEROSE	01321.2533.0014
HV14 & HV15	Vent valve for safety tree	1/4"		SWAGELOK / PARKER	B-4JNA2-SC11 / 4M-V4AR-B-C3
HV16	Economizer isolation valve	1/2"		HEROSE	01321.1521.0014
HV18	Liquid use	1 1/2"	2"	HEROSE	1 1/2" : 01321.4048.0014 2" : 01321.5060.0014
HV19	Vapour Return line	1"	1 1/2"	HEROSE	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV20	Ext. Economizer isolation valve	1/2"		HEROSE	01321.1521.0014
PI1	Mechanical pressure gauge	-		WIKA	232.54
PSE1, PSE2	Vessel bursting disk	1/2"	1"	BS&B	Plug Type
PSE3	Annular space pressure relief	-		CRYOLOR	Lift plate
PSV1 & PSV2	Vessel safety valve	1/2"	1"	HEROSE	1/2" : 06388-1004-5000 1" : 06388-1510-5000
PSV3A-PSV3D	Thermal expansion valve	-		GENERANT	CRB-250B-K-580
PCV1	Pressure build regulator	1/2"		CASH ACME	B type; Set at 116 psi
PCV2	Economiser regulator	1/2"		CASH ACME	FRM2 type; Set at 123 psi
PCV3	Back pressure regulator to atmosphere	1/2"		CASH ACME	FRM2 type; Set at 232 psi
STR1	Strainer	1/2"		HEROSE	8414.1521.0004
CV2	Economizer check valve	1/2"		HEROSE	05416.1521.0004
RR	Liquid use connection	1 1/2"	2"	-	Groove type Muller flange
VJ	Vacuum gauge	-		TELEDYNE HASTINGS	DV-6R
E1	Pressure build-up vaporizer	-	-	ALUMINIUM FIN	CA06-CA21 KL : 500 Nm3/hr CA33-CA53 KL : 1000 Nm3/hr
C10 & C11	Connections for Mechanical Liquid Level gauge	-	-	-	-

TANK NOZZLE LINE SIZES		
ITEM	FUNCTION	SIZE
A	BOTTOM FILL	1 1/2"
B	VENT	1 1/2"
C	TOP FILL	1 1/2"
D	BOTTOM GAUGE LINE	1/2"
E	TOP GAUGE LINE	1/2"
F	FULL TRYCOCK LINE	1/2"
G	LIQUID DRAW	2"
L	LIQUID DRAW / DIP. TUBE	1 1/2"
N	AUX. VAPOR	1 1/2"

NOTE: ALL NOZZLES ARE SCHEDULE 40S NOZZLES



0	15.05.2020	ORIGINAL EDITION		V.ARAVIND	P.SIVA	R.K. MAHAAMURTHY
Rev.	DATE	MODIFICATION		DRAWN BY ENGINEER DESIGN	CHECKED BY ENGINEER DESIGN	APPROVED BY HEAD TECHNICAL
UNLESS OTHERWISE STATED : Dimensions in mm		General tolerances of machined parts : ISO 2768 - mK		Dimensional tolerances and angular parts sheet metal, boiler ± 0.5mm per meter 2" & 3"	 100 KM Mile stone NH 45, Kadamalaiputtur, Perumperkandigai Post, Madurantakam Taluk, Chengalpattu Dist - 603 310. Ph: +91 44 2752 8700.	
Manufacturing tolerances following NH63029						
P&ID and BOM for vessel						
No of FAO:	PAGE 3 OF 3		Scale 1:10	Size A3	Project number As applicable	Drawing Number with revision HC003815 Rev.0