

Catalogue
[2022]

LPG

TANKS AND EQUIPMENT FOR LIQUEFIED PETROLEUM GASES - STORAGE AND SERVICE

STATIC TANKS

VAPORIZATION SYSTEMS

AUTO GAS SKIDS

TRANSPORTABLE TANKS

TANK CONTAINERS

SEMI-TRAILER TANKER FOR TRANSPORT

TANKER TRUCK FOR TRANSPORT



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LPG TANKS

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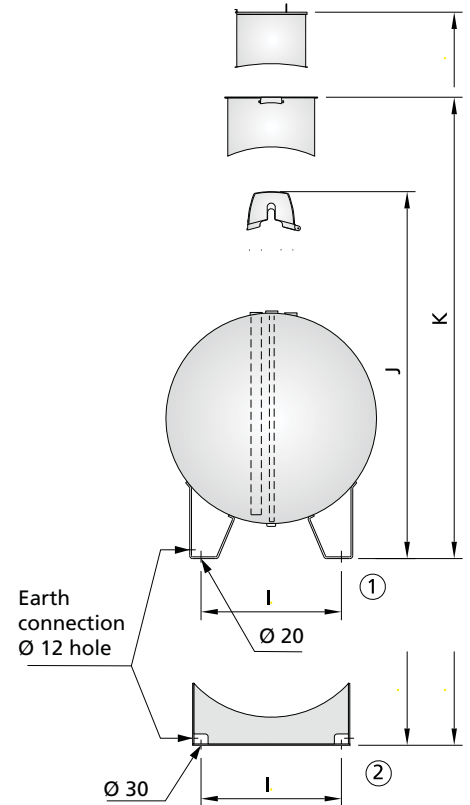
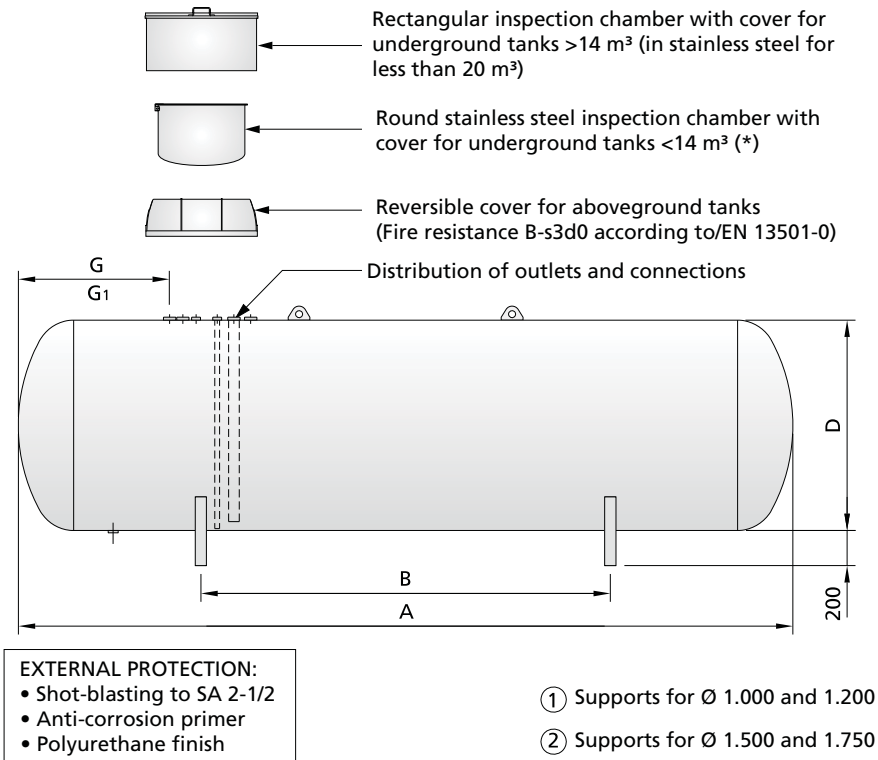
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STATIC TANKS

- Horizontal aboveground tanks
 - Horizontal underground tanks
 - Vertical aboveground tanks
- Static tanks for the storage of **LPG** in aboveground and underground installations, made in accordance with **European Directive 2014/68/UE and with CE marking**. Upon request we can manufacture tanks to the regulatory requirements of the place of destination.
 - Optionally any tank capacity can be manufactured in accordance with **ASME VIII div. 1 and ASME marking**.
 - **CAPACITIES:** capacities from 1 to 400 m³. Thanks to our extensive range of diameters, the scope of possible tank sizes always allows storage capacity requirements to adapt to the characteristics of each project.
 - **STORED PRODUCT AND DESIGN PRESSURE:**
The information in this catalogue refers to storage of LPG at a design pressure of 20 bar.
For other products of similar characteristics or other pressures, please consult us.
 - **FINISHES:** External tank protection with finishes that are highly resistant to corrosion, both for aboveground and underground installations.
 - **Standard finish:** Shot-blasting of the whole of the outer surface of the tank, application of high protection capacity epoxy-polyamide primer and top coat of white or black polyurethane depending on whether the tank is installed aboveground or underground.
 - **Special finishes:** "thick coat" finish for underground tanks, highly resistant to impacts and with dielectric strength certification (up to 15.000 V).
 - **Special finishes at customer's request:** Special finishes according to our customer's specifications and/or project requirements.
 - **VALVES:** Tanks with capacities < 20 m³ include the standard valve sets in the supply.
For tanks with capacities greater than 20 m³, the valve equipment is listed in this catalogue (page 16).
 - **CATHODIC PROTECTION:** Cathodic protection equipment comprising sacrificial anodes (optionally with bag of activating mix), wiring and connection terminals, dimensioned for each of the tank models for underground installation.
 - **OPTIONS:**
 - **Centred connections:** All models can have the "centred outlets" option (which can be useful when establishing safety distances for installation).
 - **Valves mounted:** the tank can be supplied with the valve equipment mounted, with valves tightness test and tank inerted with nitrogen.
 - **Tanks with anchor slab:** Sets of tank-concrete anchor slab for capacities of up to 8.334 litres.







(*) Models LP11E and LP13E-17 include a rectangular inspection chamber

Data (shown in the table), valid for aboveground and underground tanks.
Outlets and valves: see page 15.

CHARACTERISTICS TABLE

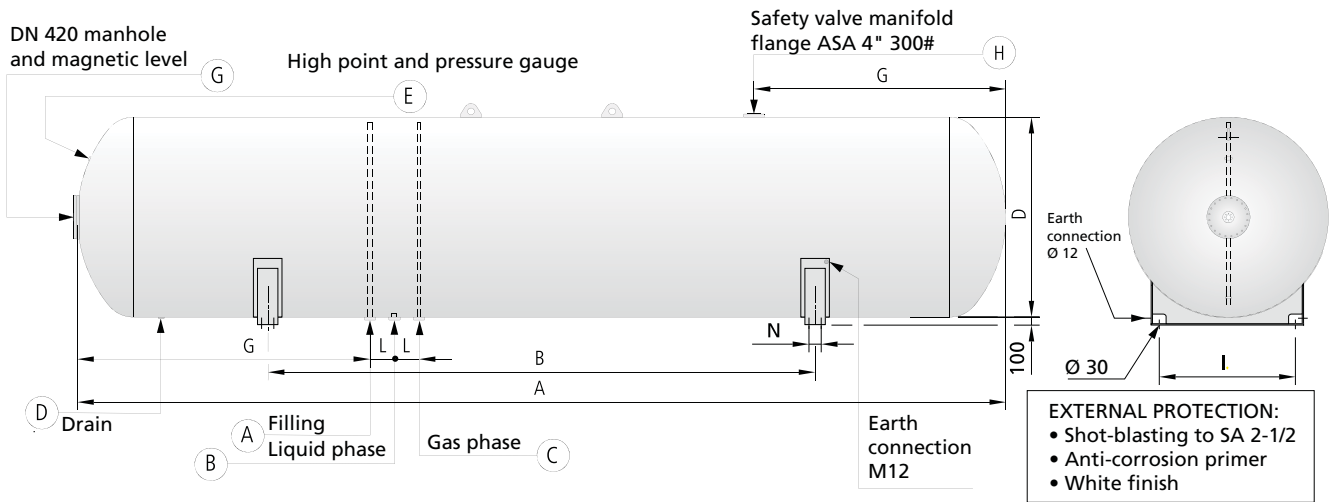
Model Ref.	Rated capacity (litres)	Approx. empty weight (Kg)	① Stored propane (Kg)	Total area (m ²)	Minimum discharge of safety valve (m ³ /min. air)		Dimensions (mm)								
					Abovegrd.	Undergrd	D	A	B	G	G1	I	J	K	
LP1000*	990	280	415	5,2	41,2	28,8	1.000	1.470	700	520	-	670	1.370	1.460	
LP1450*	1.450	390	609	6,7	50,7	35,5	1.200	1.562	700	565	-	800	1.655	1.750	
LP1825*	1.825	470	766	7,9	58,0	40,6	1.200	1.872	900	720	-	800	1.655	1.750	
LP2250*	2.250	550	945	9,3	66,3	46,4	1.200	2.255	1.300	915	-	800	1.655	1.750	
LP2450*	2.450	590	1.029	10,1	71,0	49,7	1.200	2.450	1.500	1.020	-	800	1.655	1.750	
LP2670*	2.670	650	1.121	10,9	75,6	52,9	1.200	2.660	1.500	1.010	-	800	1.655	1.750	
LP4000*	4.000	880	1.680	15,3	99,8	69,8	1.200	3.840	2.000	1.010	1.800	800	1.655	1.750	
LP4440*	4.440	1.000	1.865	16,8	107,7	75,4	1.200	4.230	2.300	1.010	1.900	800	1.655	1.750	
LP4660*	4.660	1.050	1.957	17,6	111,9	78,3	1.200	4.440	2.400	1.010	1.900	800	1.655	1.750	
LP4880*	4.880	1.100	2.050	18,4	116,1	81,2	1.200	4.650	2.500	1.010	2.000	800	1.655	1.750	
LP6430*	6.430	1.350	2.701	23,5	141,9	99,3	1.200	6.010	3.300	1.010	2.790	800	1.655	1.750	
LP6650*	6.650	1.400	2.793	24,3	145,8	102,1	1.200	6.240	3.400	1.010	3.000	800	1.655	1.750	
LP6870*	6.870	1.450	2.885	25,1	149,7	104,8	1.200	6.430	3.500	1.010	2.790	800	1.655	1.750	
LP7090*	7.090	1.550	2.978	25,9	153,6	107,5	1.200	6.640	3.600	1.010	3.000	800	1.655	1.750	
LP8334*	8.334	1.750	3.500	30,3	174,7	122,3	1.200	7.830	4.200	1.010	3.790	800	1.655	1.750	
LP1900*	500 USG**	500	798	8,2	59,8	41,9	1.200	1.940	900	760	-	800	1.655	1.750	
LP3750*	1.000 SG**	870	1.575	14,6	96,0	67,2	1.200	3.660	2.000	1.010	-	800	1.655	1.750	
LP7500*	2.000 SG**	1.600	3.156	27,3	160,4	112,3	1.200	7.030	3.800	1.010	-	800	1.655	1.750	
LP4950*	4.950	1.300	2.079	16,1	104,0	72,8	1.500	3.140	1.500	1.090	-	1.000	1.960	2.050	
LP7000*	7.000	1.700	2.940	21,7	132,9	93,0	1.500	4.320	2.300	1.090	-	1.000	1.960	2.050	
LP10*	10.000	2.300	4.200	29,9	172,8	121,0	1.500	6.050	3.500	1.090	2.830	1.000	1.960	2.050	
LP13*	13.000	2.900	5.460	38,1	210,8	147,6	1.500	7.790	4.300	1.090	3.690	1.000	1.960	2.050	
LP16*	16.000	3.500	6.720	46,2	246,9	172,8	1.500	9.520	5.100	1.090	5.430	1.000	1.960	2.090	
LP19*	19.000	4.100	7.980	54,4	282,3	197,6	1.500	11.250	6.200	1.090	6.290	1.000	1.960	2.090	
LP22*	22.000	4.700	9.240	62,6	316,8	221,7	1.500	12.990	7.100	940	6.140	1.000	1.960	2.150	
LP11*	10.750	2.450	4.515	28,6	166,6	116,6	1.750	4.880	2.600	1.160	-	1.200	2.210	2.330	
LP13*-17	13.000	2.900	5.460	34,0	192,0	134,4	1.750	5.850	3.500	1.160	3.100	1.200	2.210	2.330	
LP15*	15.300	3.350	6.426	39,3	216,3	151,4	1.750	6.820	3.500	1.160	3.100	1.200	2.210	2.330	
LP20*	19.900	4.200	8.358	50,0	263,5	184,4	1.750	8.760	4.500	1.160	4.070	1.200	2.210	2.330	
LP24*	24.450	5.150	10.269	60,6	308,5	215,9	1.750	10.700	5.600	1.010	3.920	1.200	2.210	2.410	
LP29*	29.000	6.050	12.180	71,3	352,4	246,7	1.750	12.640	6.900	1.010	6.830	1.200	2.210	2.410	
LP34*	33.600	6.900	14.112	82,0	395,3	276,7	1.750	14.580	8.000	1.010	6.830	1.200	2.210	2.410	
LP38*	38.200	7.800	16.044	92,6	436,7	305,7	1.750	16.520	9.100	1.010	6.830	1.200	2.210	2.410	

(1) Propane stored in kg, considering a degree of filling of 85% of the tank and a LPG density of 0.5 kg/l.

**=A: for aboveground tanks- *=E: for underground tanks
G1: dimension for option <centred outlets>

STATIC TANKS FOR STORAGE OF LPG

HORIZONTAL ABOVEGROUND, 2.200 and 2.450 mm diameters (greater than 20 m³)



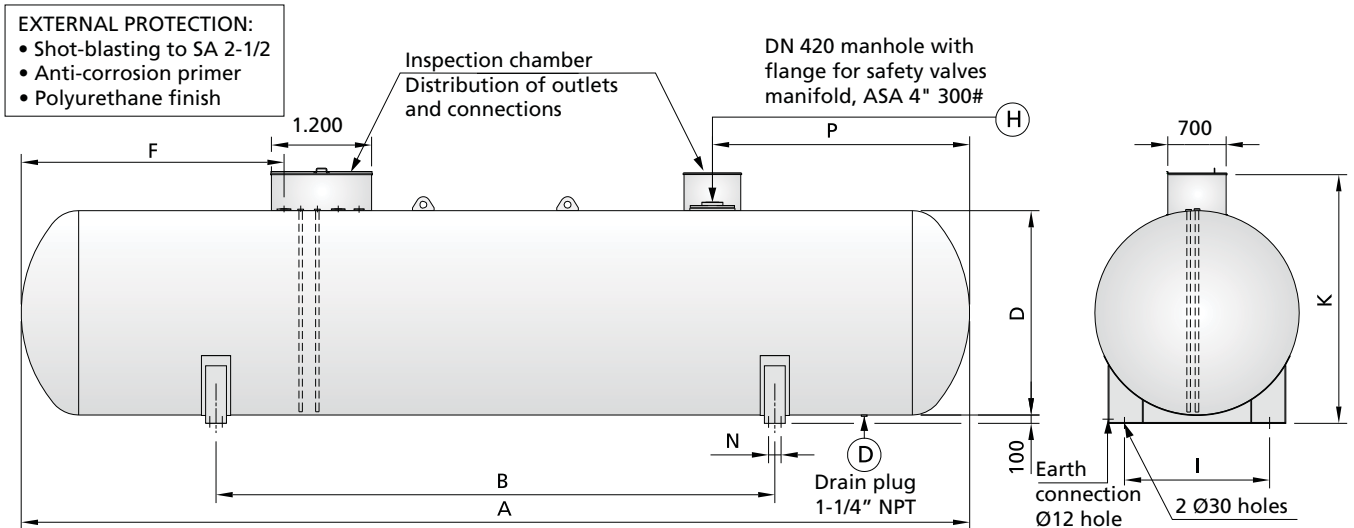
EXTERNAL PROTECTION:

- Shot-blasting to SA 2-1/2
- Anti-corrosion primer
- White finish

CHARACTERISTICS TABLE

Model Ref.	Rated capacity (litres)	Approx. empty weight (Kg)	⁽¹⁾ Stored propane (Kg)	Total area (m ²)	Minimum discharge of safety valve (m ³ /min. air)	Dimensiones (mm)						
						D	A	B	G	I	L	N
LP23A-22	23.000	5.400	9.660	48,4	256,5	2.200	6.590	2.300	2.840	1.560	300	75
LP26A-22	26.300	6.050	11.046	54,5	282,8	2.200	7.480	4.300	2.870	1.560	300	75
LP28A-22	28.000	6.350	11.760	57,6	295,9	2.200	7.920	4.300	2.370	1.560	300	75
LP30A-22	29.650	6.700	12.453	60,7	308,9	2.200	8.370	4.800	2.330	1.560	300	75
LP33A-22	32.900	7.350	13.818	66,8	334,1	2.200	9.260	5.500	2.840	1.560	300	75
LP36A-22	36.200	8.000	15.204	73,0	359,3	2.200	10.150	5.500	3.620	1.560	300	75
LP38A-22	37.900	8.350	15.918	76,0	371,4	2.200	10.590	6.000	3.620	1.560	300	75
LP40A-22	39.600	8.650	16.632	79,1	383,8	2.200	11.040	6.700	3.720	1.560	300	75
LP43A-22	42.900	9.300	18.018	85,3	408,3	2.200	11.930	6.700	3.720	1.560	300	75
LP46A-22	46.200	10.000	19.404	91,4	432,1	2.200	12.820	7.100	3.720	1.560	300	75
LP48A-22	47.800	10.300	20.076	94,5	444,0	2.200	13.260	8.600	4.120	1.560	300	75
LP50A-22	49.500	10.650	20.790	97,6	455,9	2.200	13.710	8.600	4.720	1.560	300	75
LP53A-22	52.800	11.350	22.176	103,7	479,2	2.200	14.610	8.900	4.120	1.560	500	75
LP56A-22	56.100	12.000	23.562	109,9	502,6	2.200	15.500	9.700	3.620	1.560	500	75
LP58A-22	57.700	12.350	24.234	113,0	514,1	2.200	15.950	10.200	4.120	1.560	500	75
LP59A-22	59.400	12.650	24.948	116,0	525,3	2.200	16.390	10.600	4.620	1.560	500	75
LP63A-22	62.700	13.300	26.334	122,2	548,2	2.200	17.270	10.000	6.420	1.560	500	75
LP66A-22	66.000	14.000	27.720	128,3	570,6	2.200	18.160	10.000	6.620	1.560	500	75
LP68A-22	67.700	14.300	28.434	131,4	581,8	2.200	18.600	10.000	6.620	1.560	500	75
LP69A-22	69.300	14.650	29.106	134,5	593,1	2.200	19.050	10.000	6.620	1.560	500	75
LP73A-22	72.600	15.300	30.492	140,6	615,0	2.200	19.940	11.000	7.120	1.560	500	75
LP76A-22	75.900	15.950	31.878	146,8	637,2	2.200	20.830	11.000	7.620	1.560	500	75
LP78A-22	77.600	16.250	32.592	149,9	648,2	2.200	21.270	12.000	8.120	1.560	500	75
LP79A-22	79.200	16.600	33.264	152,9	658,8	2.200	21.720	12.000	8.120	1.560	500	75
LP23A-24	22.600	5.500	9.492	44,7	240,3	2.450	5.340	3.180	2.140	1.740	300	120
LP25A-24	24.900	5.950	10.458	48,5	257,0	2.450	5.840	2.450	2.340	1.740	300	120
LP27A-24	27.200	6.400	11.424	52,3	273,4	2.450	6.330	2.450	2.540	1.740	300	120
LP32A-24	31.800	7.250	13.356	59,9	305,5	2.450	7.320	3.700	2.540	1.740	300	120
LP36A-24	36.300	8.150	15.246	67,5	337,0	2.450	8.310	3.700	2.910	1.740	300	120
LP39A-24	38.600	8.550	16.212	71,3	352,4	2.450	8.810	5.000	2.510	1.740	300	120
LP41A-24	40.900	9.000	17.178	75,1	367,8	2.450	9.300	5.000	2.750	1.740	300	120
LP46A-24	45.500	9.900	19.110	82,8	398,4	2.450	10.290	6.700	2.400	1.740	300	120
LP50A-24	50.000	10.750	21.000	90,4	428,2	2.450	11.280	6.700	3.290	1.740	300	120
LP52A-24	52.300	11.250	21.966	94,2	442,9	2.450	11.780	6.700	4.190	1.740	500	120
LP55A-24	54.600	11.700	22.932	98,0	457,5	2.450	12.270	6.700	4.490	1.740	500	120
LP59A-24	59.200	12.550	24.864	105,6	486,4	2.450	13.260	6.700	4.490	1.740	500	120
LP64A-24	63.700	13.450	26.754	113,2	514,9	2.450	14.250	7.800	4.690	1.740	500	120
LP66A-24	66.000	13.900	27.720	117,1	529,4	2.450	14.750	8.900	4.690	1.740	500	120
LP68A-24	68.300	14.300	28.686	120,9	543,4	2.450	15.240	9.200	4.690	1.740	500	120
LP73A-24	72.800	15.200	30.576	128,5	571,3	2.450	16.230	9.800	4.690	1.740	500	120
LP77A-24	77.400	16.050	32.508	136,1	598,9	2.450	17.220	10.700	5.690	1.740	500	120
LP80A-24	79.700	16.500	33.474	139,9	612,5	2.450	17.720	11.500	6.190	1.740	500	120
LP82A-24	82.000	16.950	34.440	143,7	626,1	2.450	18.210	12.000	7.190	1.740	500	120
LP87A-24	86.500	17.800	36.330	151,4	653,5	2.450	19.200	11.000	7.690	1.740	500	120
LP91A-24	91.100	18.700	38.262	159,0	680,3	2.450	20.190	12.000	7.690	1.740	500	120
LP93A-24	93.400	19.150	39.228	162,8	693,6	2.450	20.690	12.500	7.690	1.740	500	120
LP96A-24	95.700	19.550	40.194	166,6	706,9	2.450	21.180	12.500	7.690	1.740	500	120
LP100A-24	100.200	20.450	42.084	174,2	733,2	2.450	22.170	13.300	7.690	1.740	500	120
LP105A-24	104.800	21.300	44.016	181,8	759,3	2.450	23.160	13.900	7.690	1.740	500	120
LP107A-24	107.100	21.750	44.982	185,6	772,3	2.450	23.660	14.200	7.690	1.740	500	120
LP110A-24	109.400	22.200	45.948	189,4	785,3	2.450	24.150	14.500	7.690	1.740	500	120
LP114A-24	113.900	23.050	47.838	197,1	811,3	2.450	25.140	15.000	7.690	1.740	500	120

(1) Propane stored in kg, considering a degree of filling of 85% of the tank and a LPG density of 0.5 kg/l.



These models have two inspection chambers: one for the set of service valves and another for the safety valve manifold, as well as for the manhole. Optionally they can be supplied with a single inspection chamber (centred valving). The inspection chambers are supplied unassembled. Outlets and valves: see page 16.

CHARACTERISTICS TABLE

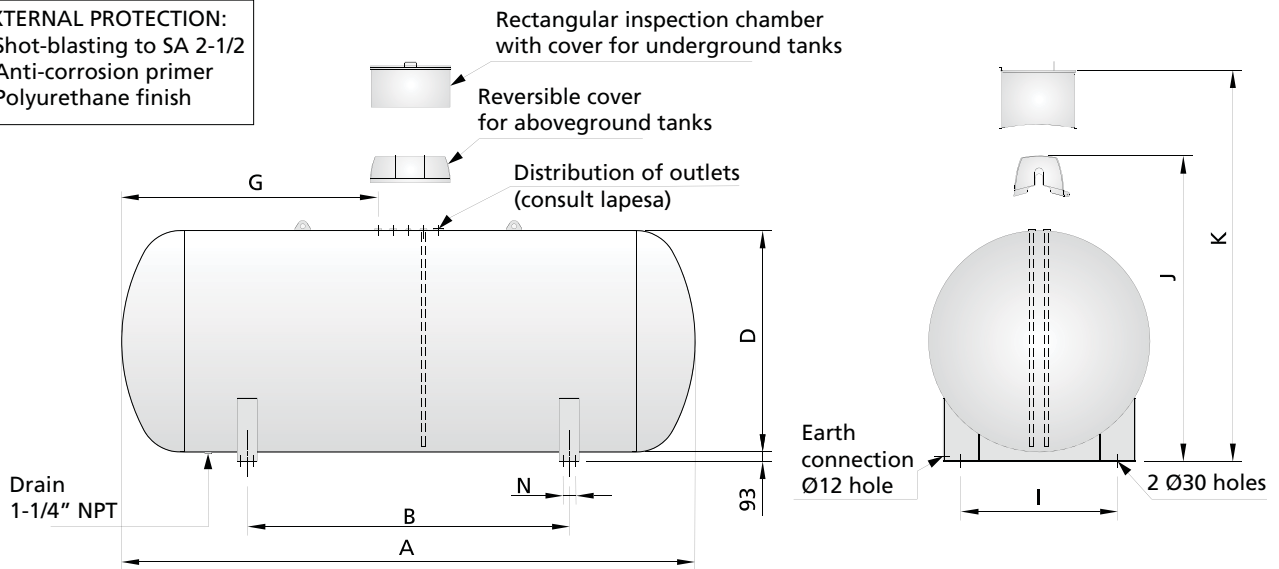
Model Ref.	Rated capacity (litres)	Approx. empty weight (Kg)	Stored propane (Kg)	Total area (m ²)	Minimum discharge of safety valve (m ³ /min. air)	Dimensions (mm)							
						D	A	B	F	I	K	N	P
LP23E-22	23.000	5.450	9.660	48,4	179,6	2.200	6.590	2.300	1.070	1.560	2.780	75	1.525
LP26E-22	26.300	6.100	11.046	54,5	197,9	2.200	7.480	4.300	1.470	1.560	2.780	75	1.925
LP28E-22	28.000	6.400	11.760	57,6	207,1	2.200	7.920	4.300	1.720	1.560	2.780	75	2.175
LP30E-22	29.650	6.750	12.453	60,7	216,2	2.200	8.370	4.800	1.620	1.560	2.780	75	2.075
LP33E-22	32.900	7.400	13.818	66,8	233,9	2.200	9.260	5.500	2.170	1.560	2.780	75	2.625
LP36E-22	36.200	8.050	15.204	73,0	251,5	2.200	10.150	5.500	2.170	1.560	2.780	75	2.625
LP38E-22	37.900	8.400	15.918	76,0	260,0	2.200	10.590	6.000	2.170	1.560	2.780	75	2.625
LP40E-22	39.600	8.700	16.632	79,1	268,6	2.200	11.040	6.700	2.170	1.560	2.780	75	2.625
LP43E-22	42.900	9.350	18.018	85,3	285,8	2.200	11.930	6.700	3.670	1.560	2.780	75	4.125
LP46E-22	46.200	10.000	19.404	91,4	302,4	2.200	12.820	7.100	4.170	1.560	2.780	75	4.625
LP48E-22	47.800	10.350	20.076	94,5	310,8	2.200	13.260	8.600	4.170	1.560	2.780	75	4.625
LP50E-22	49.500	10.700	20.790	97,6	319,2	2.200	13.710	8.600	4.170	1.560	2.780	75	4.625
LP53E-22	52.800	11.400	22.176	103,7	335,4	2.200	14.610	8.900	4.870	1.560	2.780	75	5.325
LP56E-22	56.100	12.050	23.562	109,9	351,8	2.200	15.500	9.700	4.870	1.560	2.780	75	5.325
LP58E-22	57.700	12.350	24.234	113,0	359,9	2.200	15.950	10.200	4.870	1.560	2.780	75	5.325
LP59E-22	59.400	12.700	24.948	116,0	367,7	2.200	16.390	10.600	4.870	1.560	2.780	75	5.325
LP63E-22	62.700	13.350	26.334	122,2	383,8	2.200	12.270	10.000	4.870	1.560	2.780	75	5.325
LP66E-22	66.000	14.050	27.720	128,3	399,4	2.200	18.160	10.000	4.870	1.560	2.780	75	5.325
LP68E-22	67.700	14.350	28.434	131,4	407,3	2.200	18.600	10.000	4.870	1.560	2.780	75	5.325
LP69E-22	69.300	14.700	29.106	134,5	415,2	2.200	19.050	10.000	4.870	1.560	2.780	75	5.325
LP73E-22	72.600	15.350	30.492	140,6	430,5	2.200	19.940	10.000	4.870	1.560	2.780	75	5.325
LP76E-22	75.900	16.000	31.878	146,8	446,0	2.200	20.830	10.000	4.870	1.560	2.780	75	5.325
LP78E-22	77.600	16.300	32.592	149,9	453,5	2.200	21.270	10.000	4.870	1.560	2.780	75	5.325
LP79E-22	79.200	16.650	33.264	152,9	461,2	2.200	21.720	10.000	4.870	1.560	2.780	75	5.325
LP23E-24	22.600	5.600	9.492	44,7	168,2	2.450	5.340	3.180	860	1.740	3.035	120	1.315
LP25E-24	24.900	6.050	10.458	48,5	179,9	2.450	5.840	2.450	880	1.740	3.035	120	1.335
LP27E-24	27.200	6.450	11.424	52,3	191,4	2.450	6.330	2.450	1.090	1.740	3.035	120	1.545
LP32E-24	31.800	7.350	13.356	59,9	213,9	2.450	7.320	3.700	1.590	1.740	3.035	120	2.045
LP36E-24	36.300	8.200	15.246	67,5	235,9	2.450	8.310	3.700	2.090	1.740	3.035	120	2.545
LP39E-24	38.600	8.650	16.212	71,3	246,7	2.450	8.810	5.000	2.340	1.740	3.035	120	2.795
LP41E-24	40.900	9.100	17.178	75,1	257,4	2.450	9.300	5.000	2.590	1.740	3.035	120	3.045
LP46E-24	45.500	9.950	19.110	82,8	278,9	2.450	10.290	6.700	2.590	1.740	3.035	120	3.045
LP50E-24	50.000	10.850	21.000	90,4	299,7	2.450	11.280	6.700	2.590	1.740	3.035	120	3.045
LP52E-24	52.300	11.300	21.966	94,2	310,0	2.450	11.780	6.700	3.840	1.740	3.035	120	4.295
LP55E-24	54.600	11.750	22.932	98,0	320,2	2.450	12.270	6.700	4.040	1.740	3.035	120	4.495
LP59E-24	59.200	12.650	24.864	105,6	340,5	2.450	13.260	6.700	4.540	1.740	3.035	120	4.995
LP64E-24	63.700	13.500	26.754	113,2	360,4	2.450	14.250	7.800	4.540	1.740	3.035	120	4.995
LP66E-24	66.000	13.950	27.720	117,1	370,6	2.450	14.750	8.900	4.540	1.740	3.035	120	4.995
LP68E-24	68.300	14.350	28.686	120,9	380,4	2.450	15.240	9.200	4.540	1.740	3.035	120	4.995
LP73E-24	72.800	15.250	30.576	128,5	399,9	2.450	16.230	9.800	4.540	1.740	3.035	120	4.995
LP77E-24	77.400	16.100	32.508	136,1	419,2	2.450	17.220	10.700	4.540	1.740	3.035	120	4.995
LP80E-24	79.700	16.550	33.474	139,9	428,8	2.450	17.720	11.500	4.540	1.740	3.035	120	4.995
LP82E-24	82.000	17.000	34.440	143,7	438,3	2.450	18.210	12.000	4.540	1.740	3.035	120	4.995
LP87E-24	86.500	17.850	36.330	151,4	457,5	2.450	19.200	11.000	4.540	1.740	3.035	120	4.995
LP91E-24	91.100	18.750	38.262	159,0	476,2	2.450	20.190	12.000	4.540	1.740	3.035	120	4.995
LP93E-24	93.400	19.200	39.228	162,8	485,5	2.450	20.690	12.500	4.540	1.740	3.035	120	4.995
LP96E-24	95.700	19.600	40.194	166,6	494,8	2.450	21.180	12.500	4.540	1.740	3.035	120	4.995
LP100E-24	100.200	20.500	42.084	174,2	513,2	2.450	22.170	13.300	4.540	1.740	3.035	120	4.995
LP105E-24	104.800	21.350	44.016	181,8	531,5	2.450	23.160	13.900	4.540	1.740	3.035	120	4.995
LP107E-24	107.100	21.800	44.982	185,6	540,6	2.450	23.660	14.200	4.540	1.740	3.035	120	4.995
LP110E-24	109.400	22.250	45.948	189,4	549,7	2.450	24.150	14.500	4.540	1.740	3.035	120	4.995
LP114E-24	113.900	23.100	47.838	197,1	567,9	2.450	25.140	15.000	4.540	1.740	3.035	120	4.995

(1) Propane stored in kg, considering a degree of filling of 85% of the tank and a LPG density of 0.5 kg/l.

STATIC TANKS FOR STORAGE OF LPG

HORIZONTAL ABOVEGROUND/UNDERGROUND 2.200 & 2.450 mm Ø (≤ de 20 m³ SPECIAL SERIES)

- EXTERNAL PROTECTION:**
- Shot-blasting to SA 2-1/2
 - Anti-corrosion primer
 - Polyurethane finish



For information purposes, a group of officially approved tanks is indicated which do not form part of our standard production but can meet requirements for special sizes or capacities. The details in models with capacities of less than 20 m³ are valid for both aboveground and underground installation.

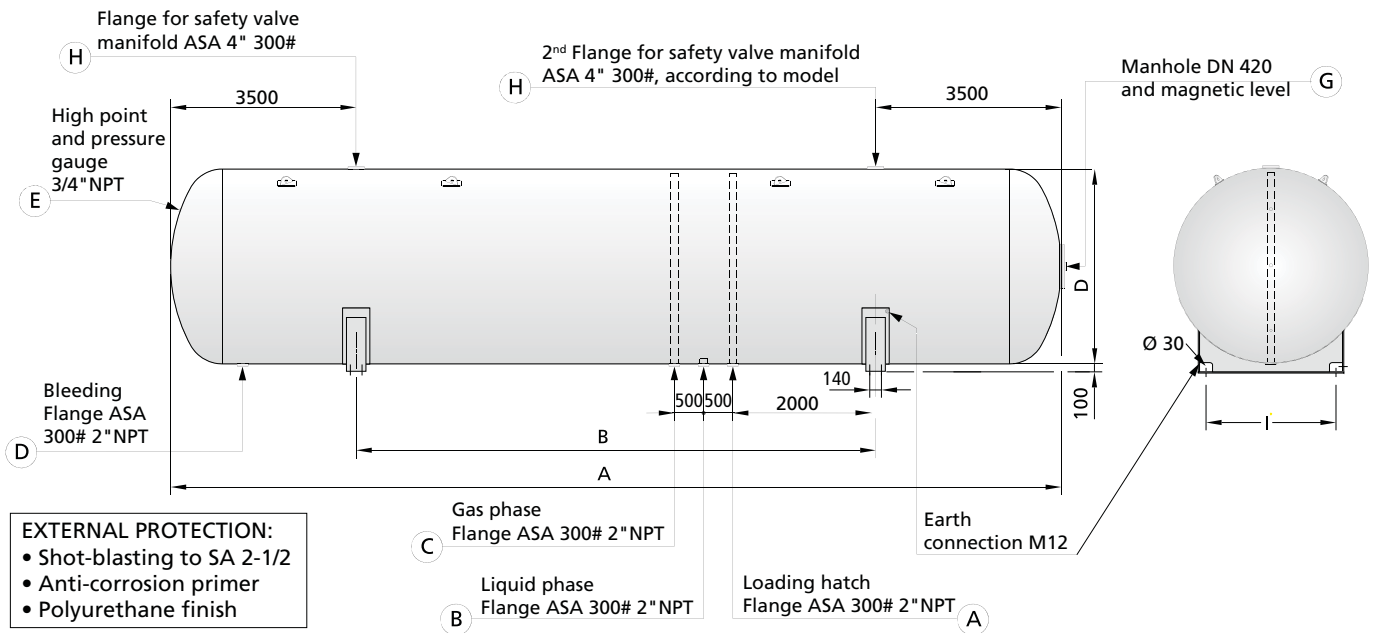
CHARACTERISTICS TABLE

Model Ref.	Rated capacity (litres)	Approx. empty weight (Kg)	⁽¹⁾ Stored propane (Kg)	Total area (m ²)	Minimum discharge of safety valve (m ³ /min. air)		Dimensions (mm)						
					Abovegrd	Undergrd	D	A	B	G	I	J	K
LP6500*-22	6.500	2.000	2.730	17,6	111,9	78,3	2.200	2.140	600	770	1.560	2.555	2.700
LP8150*-22	8.150	2.300	3.423	20,7	127,8	89,5	2.200	2.580	1.000	990	1.560	2.555	2.700
LP9800*-22	9.800	2.650	4.116	23,8	143,3	100,3	2.200	3.030	1.300	1.210	1.560	2.555	2.700
LP13*-22	13.000	3.300	5.502	29,9	172,8	121,0	2.200	3.920	2.000	1.660	1.560	2.555	2.700
LP16*-22	16.400	3.950	6.888	36,1	201,7	141,2	2.200	4.810	2.500	2.100	1.560	2.555	2.700
LP18*-22	18.050	4.300	7.581	39,1	215,4	150,7	2.200	5.250	3.000	2.320	1.560	2.555	2.700
LP20*-22	19.700	4.600	8.274	42,2	229,3	160,5	2.200	5.700	3.200	2.550	1.560	2.555	2.700
LP8950*-24	8.950	2.750	3.759	21,8	133,4	93,4	2.450	2.370	700	890	1.740	2.810	2.950
LP11*-24	11.200	3.200	4.704	25,6	152,2	106,5	2.450	2.870	1.200	1.140	1.740	2.810	2.950
LP14*-24	13.500	3.650	5.670	29,4	170,5	119,3	2.450	3.360	1.600	1.380	1.740	2.810	2.950
LP18*-24	18.050	4.500	7.581	37,1	206,3	144,4	2.450	4.350	2.000	1.880	1.740	2.810	2.950

(1) Propane stored in kg, considering a degree of filling of 85% of the tank and a LPG density of 0.5 kg/l.

*=A, for aboveground tanks. *=E, for underground tanks.





EXTERNAL PROTECTION:

- Shot-blasting to SA 2-1/2
- Anti-corrosion primer
- Polyurethane finish

LARGE DIAMETER series models.

- The size, distribution and distance between connections and other elements can be adapted to meet the requirements of each project.
 - Details of the external surface finish are to be confirmed at the quotation stage.
 - Optional supply of valve sets corresponding to each tank model.
 - The drawing shows tanks for aboveground installation.
- Same capacities for underground installation (please consult).
Outlets and valves: see page 17.

CHARACTERISTICS TABLE

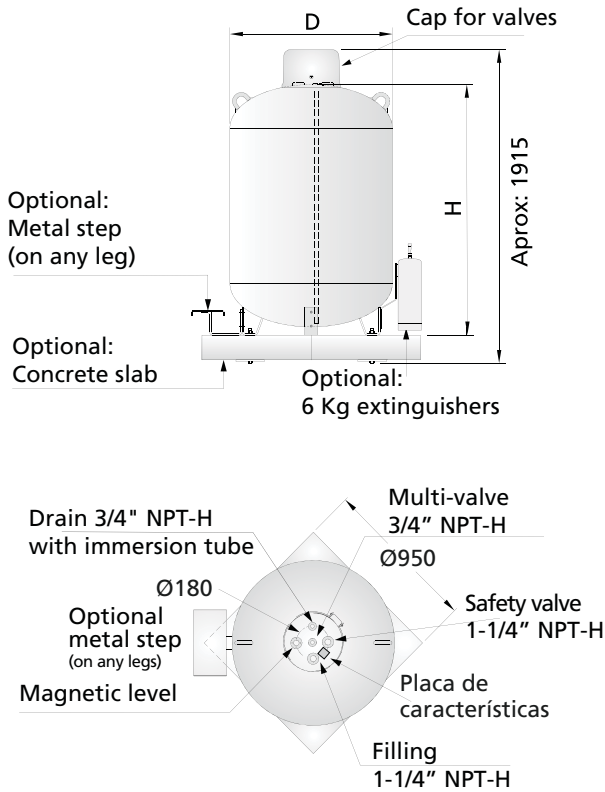
Model Ref.	Rated capacity (litres)	Approx. empty weight (Kg)	(1) Stored propane (Kg)	Total area (m ²)	Minimum discharge of safety valve (m ³ /min. air)		Dimensions (mm)			
					Abovegrd.	Undergrd	A	B	D	I
LP100A-30	101.000	21.110	42.420	147,8	640,8	448,5	15.120	9.000	3.000	2.200
LP125A-30	126.000	25.790	52.920	181,7	759,0	531,3	18.720	11.000	3.000	2.200
LP150A-30	150.800	30.460	63.336	215,7	873,6	611,5	22.320	13.000	3.000	2.200
LP175A-30	175.700	35.140	73.794	249,7	985,0	689,5	25.930	16.000	3.000	2.200
LP150A-35	150.400	32.000	63.168	189,8	786,6	550,6	16.600	11.500	3.500	2.600
LP175A-35	175.400	36.770	73.668	219,0	884,6	619,2	19.260	13.000	3.500	2.600
LP200A-35	200.400	41.540	84.168	248,1	979,8	685,9	21.910	13.900	3.500	2.600
LP250A-35	250.300	51.080	105.126	306,5	1.165,3	815,7	27.200	18.000	3.500	2.600
LP275A-35	275.800	55.940	115.836	336,2	1.257,1	880,0	29.920	20.000	3.500	2.600
LP200A-38	200.800	43.420	84.336	232,7	929,7	650,8	18.780	13.000	3.800	2.750
LP250A-38	249.600	52.920	104.832	285,3	1.098,8	769,1	23.180	14.000	3.800	2.750
LP275A-38	275.700	58.000	115.794	313,4	1.186,8	830,7	25.540	15.000	3.800	2.750
LP300A-38	300.700	62.860	126.294	340,3	1.269,7	888,8	27.790	17.000	3.800	2.750
LP325A-38	325.100	67.610	136.542	366,6	1.349,6	944,7	29.990	20.000	3.800	2.750
LP250A-40	250.500	53.920	105.210	274,5	1.064,6	745,2	21.100	13.000	4.000	3.000
LP275A-40	275.100	58.680	115.542	299,7	1.144,0	800,8	23.100	14.000	4.000	3.000
LP300A-40	299.700	63.440	125.874	324,8	1.222,0	855,4	25.100	15.000	4.000	3.000
LP325A-40	326.000	68.450	136.920	351,3	1.303,2	912,3	27.200	17.000	4.000	3.000
LP350A-40	340.000	71.300	142.800	366,3	1.348,7	944,1	28.400	20.000	4.000	3.000
LP275A-42	276.000	57.880	115.920	288,9	1.110,1	777,1	21.100	13.000	4.200	Without supports
LP300A-42	301.100	62.610	126.462	313,3	1.186,4	830,5	22.950	14.000	4.200	Without supports
LP325A-42	326.300	67.350	137.046	337,8	1.262,0	883,4	24.810	15.000	4.200	Without supports
LP350A-42	340.500	70.030	143.010	351,6	1.304,1	912,9	25.860	16.500	4.200	Without supports
LP400A-42	401.000	81.410	168.420	410,4	1.480,4	1.036,3	30.310	20.000	4.200	Without supports

(1) Propane stored in kg, considering a degree of filling of 85% of the tank and a LPG density of 0.5 kg/l.

A= Aboveground (Underground tanks: please consult us).
(*)Weights for a design pressure of 19 bar.

LP1000AV

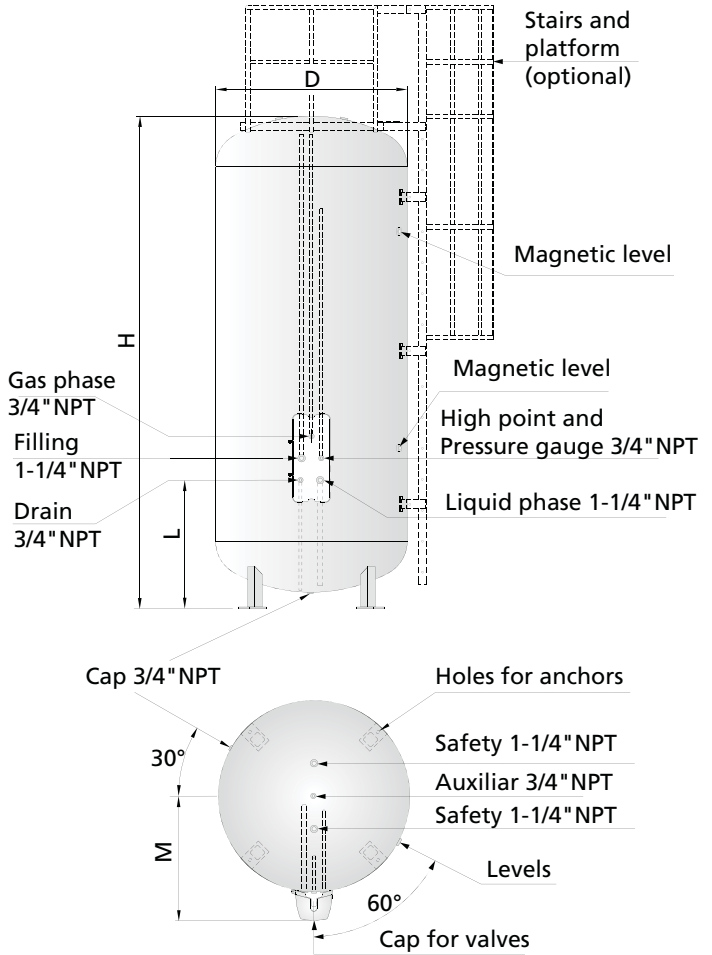
There is also a transportable version (cylinder) of this model (please consult)



EXTERNAL PROTECTION:

- Shot-blasting to SA 2-1/2
- Anti-corrosion primer
- Polyurethane finish

LP2450V...LP50V



Drawing corresponding to the LP8400AV-17 model (8400L)

Suitable for places with restricted space. The drawing is indicative. The layout and size of outlets may vary according to the model, please consult.

CHARACTERISTICS TABLE

Model Ref.	Rated capacity (litres)	Approx. empty weight (Kg)	(1) Stored propane (Kg)	Total area (m ²)	Minimum discharge of safety valve (m ³ /min. air)	Dimensions (mm)			
						D	H	L	M
LP1000AV	990	270	415	5,2	41,2	1.000	1.520	-	-
LP2450AV	2.450	590	1.029	10,1	71,0	1.200	2.560	1.120	855
LP5000AV-17	4.990	1.600	2.099	15,2	99,3	1.750	2.640	980	1.135
LP8400AV-17	8.400	2.000	3.528	23,2	140,4	1.750	4.070	980	1.135
LP13AV-17	13.000	3.250	5.460	34,0	192,0	1.750	6.010	980	1.135
LP20AV	19.900	4.550	8.358	50,0	263,5	1.750	9.260	(1)	-
LP32AV	31.800	7.800	13.356	59,9	305,5	2.450	7.820	(1)	-
LP50AV	50.000	11.525	21.000	90,4	428,2	2.450	11.780	(1)	-

(1) Propane stored in kg, considering a degree of filling of 85% of the tank and a LPG density of 0.5 kg/l.

ACCESSORIES

- Valve equipment
- Cathodic protection equipment
- Covers / inspection chambers
- Anchor slabs
- Anti-flotation trays
- Booths for cylinders



VALVE EQUIPMENT

Availability of valve equipment adapted to all our range of LPG storage tanks. The supply of valves is included in our standard range of tanks up to 59 m³ capacity. As an option, the valve equipment can be supplied ready mounted on the tanks, with air-tightness test and tank inerted with nitrogen. Specific valves and equipment for special tanks can be supplied upon request.

CATHODIC PROTECTION EQUIPMENT

Cathodic protection equipment for underground tanks, comprising magnesium anodes with connecting wires and terminals, suitable for the tank size and surface area. Bag of activating mix can be supplied as an option. Examples of anode installation and recommended distances for anodes around the underground tank are shown on page 18.

COVERS/ /INSPECTION CHAMBERS

Lockable, hinged protective valve covers for aboveground tanks. Stainless steel or PVC valve inspection chambers for underground tanks. Special inspection chambers adapted to the characteristics of the tank and/or installation.

ANCHOR SLABS FOR ABOVEGROUND TANKS

Concrete slabs for screwing down support legs of aboveground tanks up to 8.334 litres capacity. This system replaces the civil works required to support tanks and in many cases represents a considerable saving on installation costs.

ANTI-FLOTATION TRAYS FOR UNDERGROUND TANKS

HDPE and PVC anti-flotation anchoring trays with support cradle, for 1.000 and 1.200 mm diameter underground tanks. Supplied already fitted to tanks, with side trays folded for transport.

BOOTHS FOR CYLINDERS

Lockable galvanized steel plate booths with doors to store 13 kg and 35 kg LPG cylinders. Capacity: eight 35 kg cylinders or sixteen 13 kg cylinders in two-section version and twelve 35 kg cylinders or twenty-four 13 kg cylinders in the three-section version. The booth is supplied unassembled and palletized for assembling at site.

VALVE EQUIPMENT / HORIZONTAL TANKS

CAPACITY UP TO 13,0 m³

- Filling valve: connection to tank 1-1/4" NPT and connection to hose or pipe 1-3/4" ACME.
- Chek-lok 3/4" NPT to fit at drain.
- Limiter + stopvalve + 1-1/4" NPT plug for the liquid phase.
- Multi-valve 3/4" NPT at gas phase outlet, with pressure gauge, high point and flow rate limiter.
- External safety valves with valve manifold.
- ROCHESTER. magnetic level.
- Plug at connection of lower generatrix.

CAPACITY FROM 13.1 to 20.0 m³

Same equipment as above, except for:

- Gas phase outlet: flow rate limiter and shutoff valve.
- High point valve and pressure gauge, in separate connection from gas phase outlet.

CAPACITY FROM 20.1 to 50.0 m³ (diameters 1.500 and 1.750 mm)

Same equipment as before, except for:

- Safety valves mounted on manifold.

CAPACITY FROM 20.1 to 50 m³ (diameters 2.200 and 2.450 mm)

Same equipment as the previous one except for:

- 1-1/4" Chek-lok for purge placement.
- ROCHESTER magnetic level MAGNETEL type.
- Buried tanks have a cap on the lower generatrix.

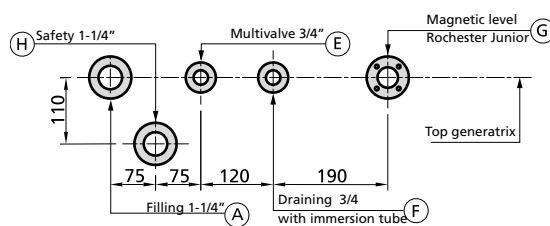
CAPACITY GREATER THAN 50.1 m³

- Filling, liquid phase, gas phase: Flanges ASA 300# 2" NPT.
- High point valve and manometer.
- Chek-lok 1-1/4" NPT for drain (Except diameters >2.450: Flange ASA 300# 2" NPT).
- ROCHESTER MAGNETEL type 8" magnetic level.
- Safety valves mounted on manifold.
- Immersion bulb thermometer, 1/2" (tanks of more than 60 m³).

OUTLETS AND VALVES (1.000, 1.200, 1.500 and 1.750 diameter tanks)

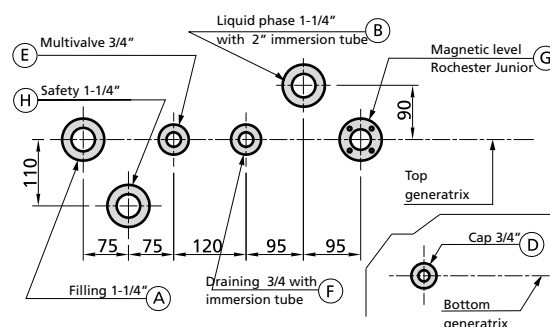
1.00 m³ CAPACITY TANK

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling(1)	1-1/4" NPTH	Filling valve	Clesse ECG C08
E. Gas phase	3/4" NPTH	Multi-valve (with excess flow feature)	Clesse ECGX452 (+ regulation equipment of 40 kg/h)
F: Drainage	3/4" NPTH	Chek-lok	Rego 7590UT
G: Magnetic level	Rochester Junior	ø 1000 level	Roch. 6281 TM D1000
H: Safety	1-1/4" NPTH	Safety valve	RS 3131 + CD31



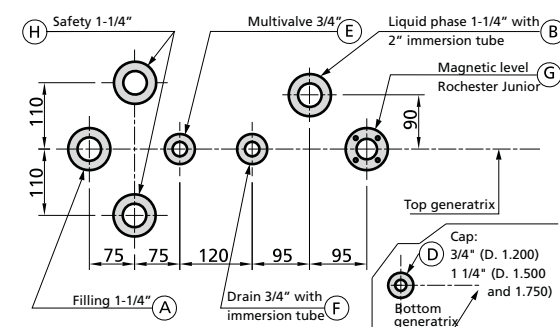
1.45 to 4.88 m³ CAPACITY TANKS

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling(1)	1-1/4" NPTH	Filling valve	Omeca VRN-S D1200
B: Liquid phase	1-1/4" NPTH	Stopvalve with excess flow feature and plug	Rego A 8020 D
D: Bottom outlet	3/4" NPTH	Blind cap	
E. Gas phase	3/4" NPTH	Multi-valve (with excess flow feature)	Clesse ECGX452 (+ regulation equipment of 40 kg/h)
F: Drain	3/4" NPTH	Chek-lok	Rego 7590UT
G: Magnetic level	Rochester Junior	level	Roch. 6281 TM D1200
H: Safety	1 1/4" NPTH	Safety valve	RS3136 + CD36



4.95 to 13.0 m³ CAPACITY TANKS

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling(1)	1-1/4" NPTH	Filling valve	Omeca VRN-S D1200
ø 1500	1-1/4" NPTH	Filling valve	Omeca VRN-S D1500
ø 1750	1-1/4" NPTH	Filling valve	Omeca VRN-S D1750
B: Liquid phase	1-1/4" NPTH	Stopvalve with excess flow feature and plug	Rego A 8020 D
D: Bottom outlet	3/4" NPT ó 1-1/4" NPT	Blind cap	
E. Gas phase	3/4" NPTH	Multi-valve (Excess flow valve)	Rego 9101 DNP Rego 12472 (with adapter)
F: Drain	3/4" NPTH	Chek-lok	Rego 7590UT
G: Magnetic level	Rochester Junior	ø 1200 level	Roch. 6281 TM D1200
ø 1500 level			Roch. 6281 TM D1500
ø 1750 level			Roch. 6281 TM D1750
H: Safety	1-1/4" NPTH (2)	Safety valve	Rego RS3136+Rego CD36 (una o dos)



(1) The indicated valve in the STD option is limited to a filling of the 85%.

(Examples of valve equipment for Lapesa tanks)

NOTES

The tanks are supplied upon request with valves mounted and inertized.

The external safety valves with check device allow valves to be dismantled in order to replace them, to carry out pressure tests, etc. without the need to empty the tank.

Note that the check device is not completely watertight once the safety valve has been removed.

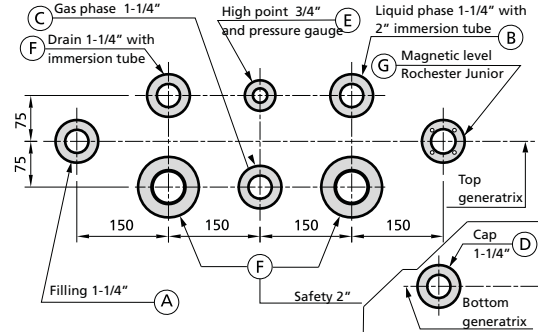
In the case of safety valves mounted in a manifold, the manifold has a mechanism inside that allows one of the valves to be replaced without the need to empty the tank.

Optionally, for 1 m³ tanks, instead of supplying a regulation equipment of 40 kg/h, a regulation equipment of 12 kg/h can be supplied, and for tanks with a higher capacity than 5 m³ a regulation equipment of 100 kg/h can be supplied.

OUTLETS AND VALVES (Tanks with 1.500 & 1.750 diameters)

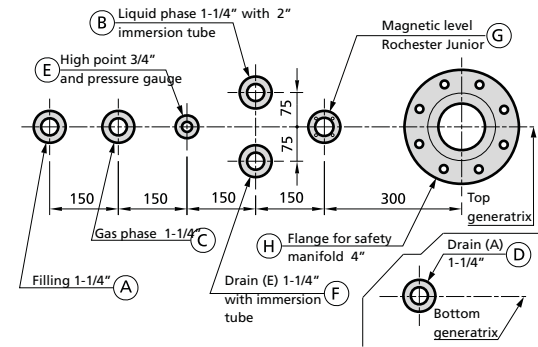
15.0 to 20.0 m³ CAPACITY TANKS

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling (1) ø 1500 ø 1750	1-1/4" NPTH 1-1/4" NPTH	Filling valve Filling valve	Omega VRN-S D1500 Omega VRN-S D1750
B: Liquid phase	1-1/4" NPTH	Stopvalve with excess flow feature and plug	Rego A 8020 D
C: Gas phase	1-1/4" NPTH	Excess flow valve Shutoff valve	Rego A 8013 DA Rego A 7507 AP
E: High point and pressure gauge	3/4" NPTH	Valve	Rego A 2805 C
D: Bottom outlet	1-1/4" NPTH	Blind cap	Rego 7591UT
F: Drain	1-1/4" NPTH	Chek-lok	Rego 7591UT
G: Magnetic level	Rochester Junior	ø 1500 level ø 1750 level	Roch. 6281 TM D1500 Roch. 6281 TM D1750
H: Safety	2" NPTH (two)	Safety valve	Rego RS3145+CD45 (dos)



22.0 to 38.3 m³ CAPACITY TANKS

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling (1) ø 1500 ø 1750	1-1/4" NPTH 1-1/4" NPTH	Filling valve Filling valve	Omega VRN-S D1500 Omega VRN-S D1750
B: Liquid phase	1-1/4" NPTH	Stopvalve with excess flow feature and plug	Rego A 8020 D
C: Gas phase	1-1/4" NPTH	Excess flow valve Shutoff valve	Rego A 8013 DA Rego A 7508 AP
D: Underground	1-1/4" NPTH	Blind cap	Rego 7591UT
E: High point and pressure gauge	3/4" NPTH	Valve	Rego A 2805 C
F: Underground (bleed)	1-1/4" NPTH	Chek-lok	Rego 7591UT
G: Magnetic level	Rochester Junior	ø 1500 level ø 1750 level	Roch. 6281 TM D1500 Roch. 6281 TM D1750
H: Safety	ASA 4" 300# Flange	Safety valve	See page 17

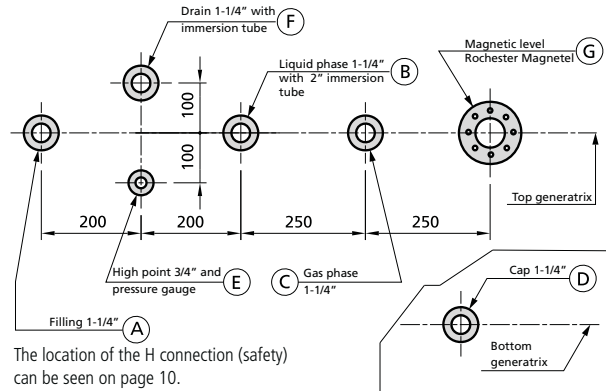


(1) The indicated valve in the STD option is limited to a filling of the 85%.
(Examples of valve equipment for Lapesa tanks)

OUTLETS AND VALVES (2.200 & 2.450 diameter underground tanks)

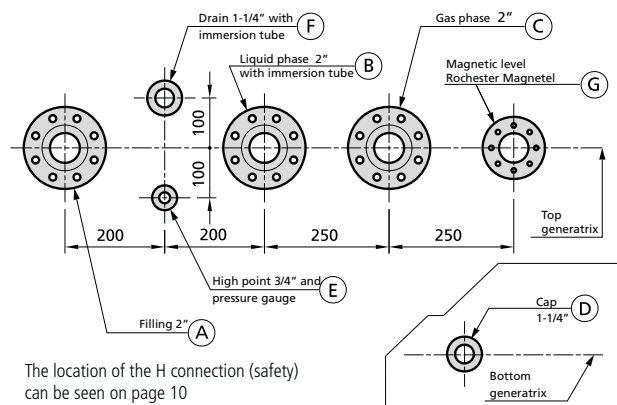
22.6 to 50.0 m³ CAPACITY TANKS

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling	1-1/4" NPTH	Filling valve	Rego 7879 C
B: Liquid phase	1-1/4" NPTH	Stopvalve with excess flow feature and plug	Rego A8020D
C: Gas phase	1-1/4" NPTH	Excess flow valve Shutoff valve	Rego A 8013 DB Rego A 7509 BP
D: Cap	1-1/4" NPTH	Blind cap	Rego 7591UT
E: High point and pressure gauge	3/4" NPTH	High point valve	Rego A 2805 C
F: Drain	1-1/4" NPTH	Chek-lok	Rego 7591UT
G: Magnetic level	Rochester Magnetel (special flange)	2200 level ø 2450 level	Roch. 6360 08 TM D2200 Roch. 6360 08 TM D2450
H: Safety	ASA 4" 300# Flange	Valve manifold	See table



TANKS WITH CAPACITIES GREATER THAN 52,2 m³

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling	2" NPTH on 2" 300# flange	One-way Shutoff valve	Rego A 3400 L4 Rego A 7513 FP
B: Liquid phase	2" NPTH on 2" 300# flange	Excess flow valve Shutoff valve	Rego A 3500 P4 Rego A 7513 FP
C: Gas phase	2" NPTH on 2" 300# flange	Excess flow valve Shutoff valve	Rego A 3500 P4 Rego A 7513 FP
D: Cap	1-1/4" NPTH	Blind cap	Rego 7591UT
E: High point and pressure gauge	3/4" NPTH	High point valve	Rego A 2805 C
F: Drain	1-1/4" NPTH	Chek-lok	Rego 7591UT
G: Magnetic level	Rochester Magnetel (special flange)	ø 2200 level ø 2450 level	Roch. 6360 08 TM D2200 Roch. 6360 08 TM D2450
H: Safety	ASA 4" 300# Flange	Valve manifold	See table



OUTLETS AND VALVES (Aboveground tanks with 2.200 and 2.450 diameters)

22.6 to 50.0 m³ CAPACITY TANKS

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling	1-1/4" NPTH	Filling valve	Rego 7879 C
B: Liquid phase	1-1/4" NPTH	Stopvalve with excess flow feature and plug	Rego A8020D
C: Gas phase	1-1/4" NPTH	Excess flow valve Shutoff valve	Rego A 8013 DB Rego A 7509 BP
D: Drain	1-1/4" NPTH	Chek-lok	Rego 7591UT
E: High point and pressure gauge	3/4" NPTH	High point valve	Rego A 2805 C
G: Magnetic level	Rochester Magnetel (special flange)	ø 2200 level ø 2450 level	Roch. 6342 08 EM D2200 Roch. 6342 08 EM D2450
H: Safety	Brida ASA 4" 300#	Valve manifold	See table



TANKS OF CAPACITY higher than 52,2 m³

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling	2" NPTH on 2" 300# flange	One-way Shutoff valve	Rego A 3400 L4 Rego A 7513 FP
B: Liquid phase	2" NPTH on 2" 300# flange#	Excess flow valve Shutoff valve	Rego A 3500 P4 Rego A 7513 FP
C: Gas phase	2" NPTH on 2" 300# flange	Excess flow valve Shutoff valve	Rego A 3500 P4 Rego A 7513 FP
D: Drain	1-1/4" NPTH	Chek-lok	Rego 7591UT
E: High point and pressure gauge	3/4" NPTH	High point valve	A 2805 C
G: Magnetic level	Rochester Magnetel (special flange)	ø 2200 level ø 2450 level	Roch. 6342 08 EM D2200 Roch. 6342 08 EM D2450
H: Safety	ASA 4" 300# Flange	Valve manifold	See table

(Examples of valve equipment for Lapesa tanks)
Valves location can be checked on page 9.



OUTLETS AND VALVES

(Aboveground tanks with diameters greater than 2.450)

TANKS WITH CAPACITIES GREATER THAN 60,0 m³

FUNCTION	CONNECTION	ACCESSORY	STD Ref.
A: Filling	2" NPTH on 2" 300# flange	One-way Shutoff valve	A 3400 L4 A 7513 FP
B: Liquid phase	2" NPTH on 2" 300# flange	Excess flow valve Shutoff valve	A 3500 P4 A 7513 FP
C: Gas phase	2" NPTH on 2" 300# flange	Excess flow valve Shutoff valve	A 3500 P4 A 7513 FP
D: Drain	2" NPTH on 2" 300# flange	Excess flow valve Shutoff valve	A 3500 P4 A 7513 FP
E: High point and pressure gauge	3/4" NPTH	High point valve	Rego A 2805 C
G: Magnetic level	Rochester Magnetel (special flange)	ø 3.000 level ø 3.500 level ø 4.000 level ø 4.200 level	6342 08EM D3000 6342 08EM D3500 6342 08EM D4000 6342 08EM D4200
H: Safety	ASA 4" 300# Flange	Valve manifold	See table

(Examples of valve equipment for Lapesa tanks)



TABLE OF MANIFOLDS FOR SAFETY VALVES

MAKE	CAEN			REGO		
	CDS	CTS	CCS	8572	8573	8574
Model						
Manifold discharge (m ³ /min.air)	403	806	1209	300	601	910
Maximum allowable surface area of underground tank (m ²)	129,7	302,1	495,2	90,5	211,2	350,2
Maximum allowable surface area of aboveground tank (m ²)	84	195,5	320,5	58,6	136,7	226,7

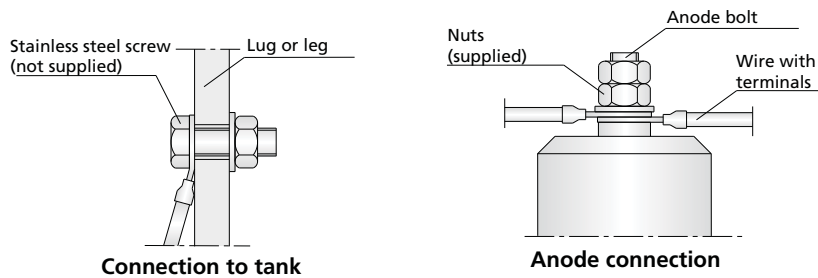
This table can be used to choose the type of manifold according to the discharge that the tank requires or the surface area it has. Manifold discharges are carried out at an opening pressure of 20 bar and at 20% overpressure. Manifold valves are set at 20 bar
Connection of manifold to tank: ASA 4"300#

CATHODIC PROTECTION FOR UNDERGROUND TANKS

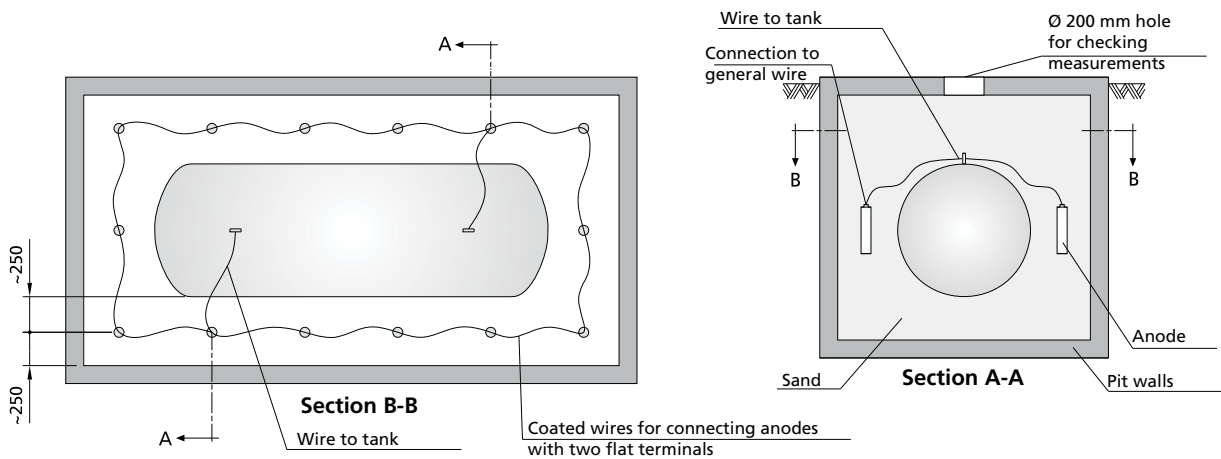
When considered advisable, the underground tank should be equipped with active protection against corrosion. The type of cathodic protection equipment will be decided by specialized technicians, taking into account the specific characteristics of each installation. The following is an example of the cathodic protection system that LAPESA can supply, with sacrificial anodes (without impressed current).

- Anodes usually last 15 years, generating the potential specified in the standard, however it depends on the type of soil and the area in which it is installed. In some cases it will be necessary to place an activating mix around the anode.
- Anodes are connected to the tank through special holes in the lifting lugs.
- Optionally the cathodic protection equipment can be supplied with a bag of activating mix.

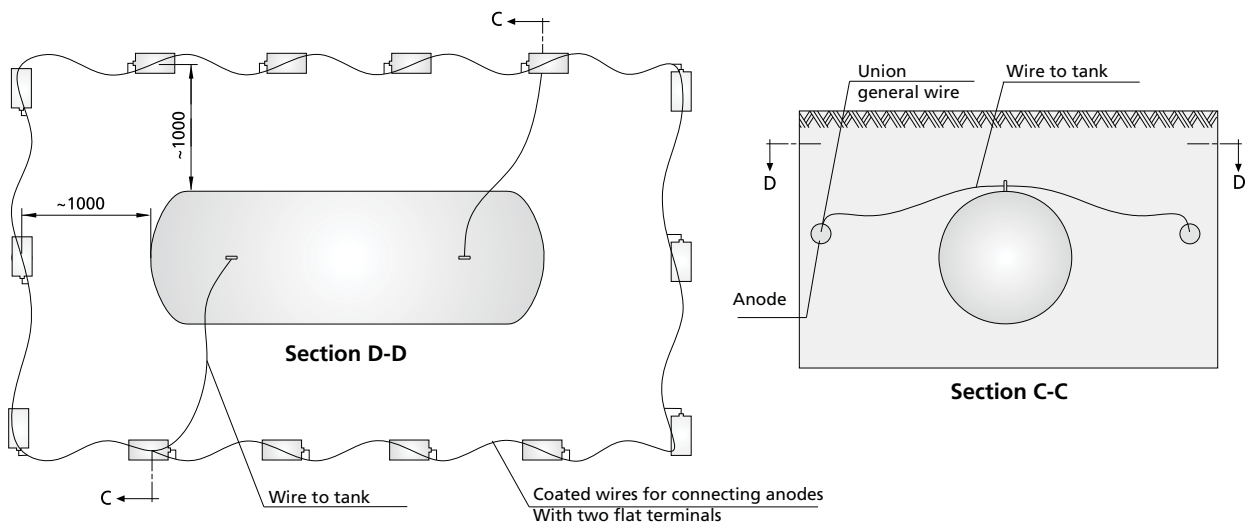
DETAIL OF INSTALLATION* OF ANODES IN UNDERGROUND TANKS



LOCATION OF ANODES IN UNDERGROUND TANK WITH PIT



LOCATION OF ANODES IN UNDERGROUND TANK WITHOUT PIT



(*) Insulate connections with self-vulcanizing tape. Ensure correct contact of all connections. The tank should be electrically insulated from the rest of the installation (pipes, etc.).

BOOTHS FOR CYLINDERS

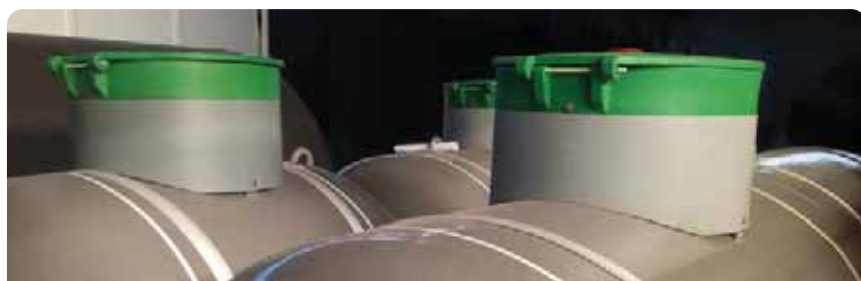


COVERS / INSPECTION CHAMBERS



COVERS ON ABOVEGROUND TANKS

lapesa
Solutions



REGULATION EQUIPMENT (100 kg/h)



INSPECTION CHAMBERS ON UNDERGROUND TANKS

ANCHOR SLABS



ANCHOR SLABS FOR ABOVEGROUND TANKS



ANTI-FLOTATION TRAYS FOR UNDERGROUND TANKS

TECHNICAL INFORMATION

- Foundations and pits
- Natural vaporization tables
- LPG maximum degree of filling
- LPG pressures
- Tanks for storing ammonia (NH₃)

FOUNDATIONS AND PITS

The foundations and pits for aboveground and underground tanks shown on pages 21 to 25 are for information purposes and should be reasoned for each specific installation project, apply the regulations in force.

NATURAL VAPORIZATION TABLES

The natural vaporization values in a LPG tank depend on several factors related to the tank itself, the type of installation: aboveground or underground, consumption flows, ambient temperature and type of mix contained, amongst other factors. The tables provided on page 26 show the natural vaporization values for our standard models of tanks for propane in the conditions of installation and use indicated.

MAXIMUM DEGREE OF FILLING

The maximum degree of filling for LPG tanks according to current regulations is 85%.

The table on page 27 gives the maximum filling heights for the tank and the free liquid heights, for the adjustment of the tubes on the valves indicating the maximum filling level.

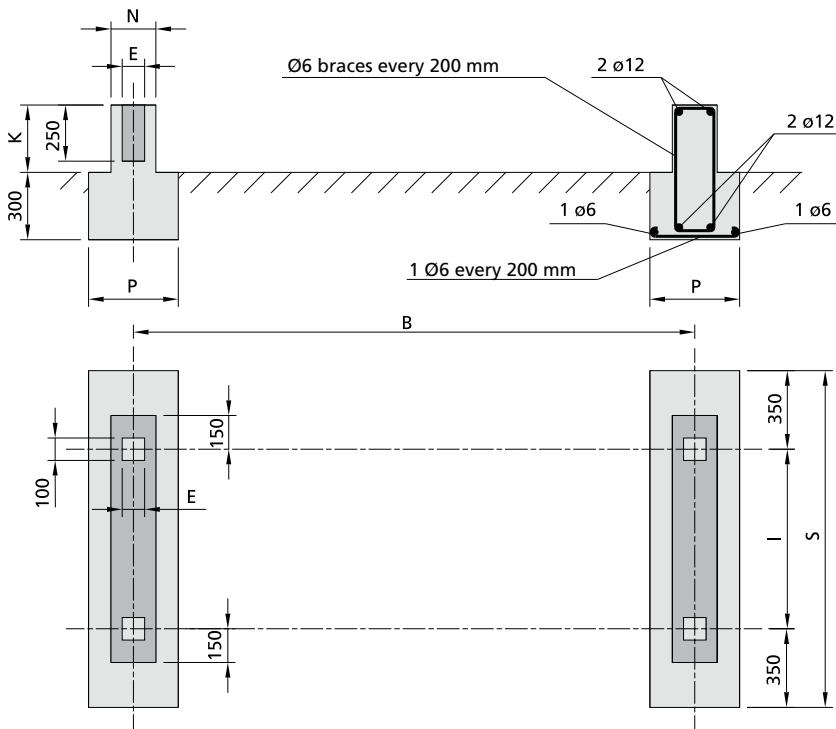
TANKS FOR STORING AMMONIA (NH₃)

The whole range of tanks for LPG presented in this catalogue can be produced for storing anhydrous ammonia, by adapting their design:

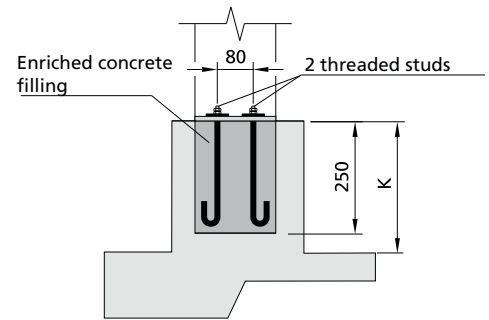
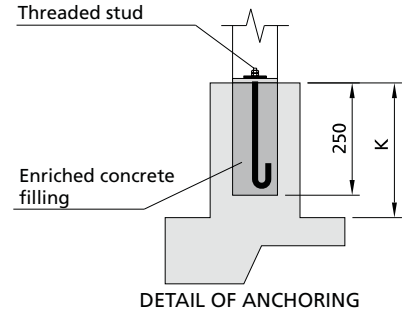
- Officially approved tanks for storing NH₃
- Design pressure: 22 bar
- Composition materials compatible with NH₃
- Corrosion allowance thickness: 1 mm
- Increase in X-ray control of welds
- Post welding heat treatment



FOUNDATIONS FOR ABOVEGROUND TANKS 1.200, 1.500 and 1.750 diameters



Foundation valid for tanks with drain valve on bottom generatrix.



DETAIL OF ANCHORING FOR TANKS OF Ø1750 AND CAPACITIES GREATER THAN 20 m³

Option: Threaded studs housed in hole in concrete with bonding dowel (not expanding dowel)

The following are some of the suggested foundation options. Foundations must be calculated for each specific installation project.

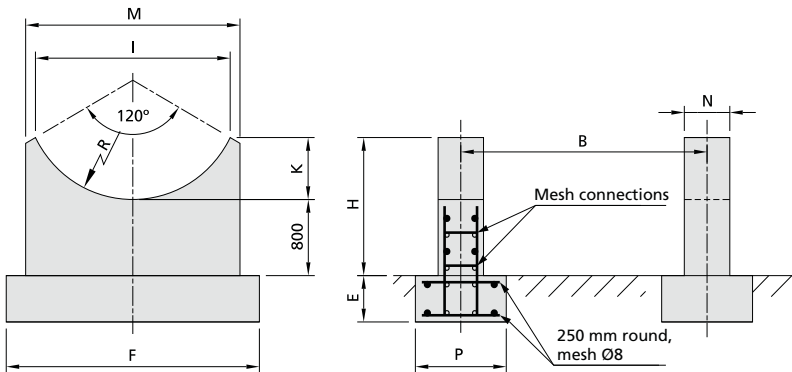
Dimensions of supports for terrains with a bearing capacity of 1 kg/cm²

CHARACTERISTICS TABLE

Model Ref.	Anchor stud (min)	Dimensions (mm)						
		B	P	N	S	I	K	E
LP2450A	M12	1.500	400	200	1.500	800	300	100
LP2670A	M12	1.500	400	200	1.500	800	300	100
LP4000A	M14	2.000	400	200	1.500	800	300	100
LP4440A	M14	2.300	400	200	1.500	800	300	100
LP4660A	M14	2.400	400	200	1.500	800	300	100
LP4880A	M14	2.500	400	200	1.500	800	300	100
LP6430A	M16	3.300	400	200	1.500	800	300	100
LP6650A	M16	3.400	400	200	1.500	800	300	100
LP6870A	M16	3.500	400	200	1.500	800	300	100
LP7090A	M16	3.600	400	200	1.500	800	300	100
LP8334A	M16	4.200	400	200	1.500	800	300	100
LP4950A	M16	1.500	400	200	1.700	1.000	300	100
LP7000A	M16	2.300	400	200	1.700	1.000	300	100
LP10A	M16	3.500	400	200	1.700	1.000	300	100
LP13A	M16	4.300	400	200	1.700	1.000	300	100
LP16A	M16	5.100	400	200	1.700	1.000	300	100
LP19A	M16	6.200	400	200	1.700	1.000	300	100
LP22A	M20	7.100	600	400	1.700	1.000	600	100
LP11A	M16	2.600	400	200	1.900	1.200	300	100
LP13A-17	M16	3.500	400	200	1.900	1.200	300	100
LP15A	M16	3.500	400	200	1.900	1.200	300	100
LP20A	M16	4.500	400	200	1.900	1.200	300	100
LP24A	M20	5.600	600	400	1.900	1.200	600	180
LP29A	M20	6.900	600	400	1.900	1.200	600	180
LP34A	M20	8.000	600	400	1.900	1.200	600	180
LP38A	M20	9.100	600	400	1.900	1.200	600	180

SUPPORTS FOR ABOVEGROUND TANKS ≥ 2.200 mm diameter

TANKS WITHOUT WELDED SUPPORTS*



Foundations for terrains with a bearing capacity of 2 kg/cm², considering the largest tank model in the series

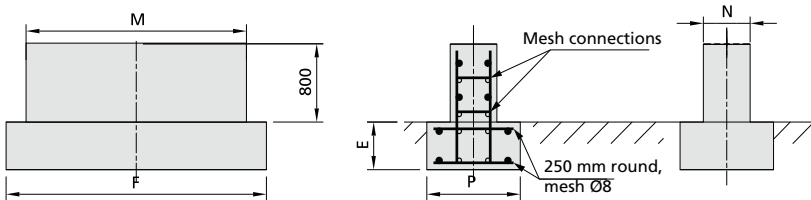
CHARACTERISTICS TABLE

Dimensions in mm	Tank diameter			
	2200	2450	3000	3500
E	400	500	600	800
F	3.000	3.200	3.800	4.000
H	1.355	1.418	1.555	1.680
I	1.923	2.139	2.615	3.048
K	555	618	755	880
M	2.300	2.500	3.000	3.500
N	400	500	600	800
P	800	1.100	1.500	1.900
R	1.110	1.235	1.510	1.760

(*) For this system the following is recommended:

- 1- Build a flat wall with a height of 800 mm
- 2- Place the tank on top.
- 3- Carry out formwork once the tank is in place to obtain the indicated shape.

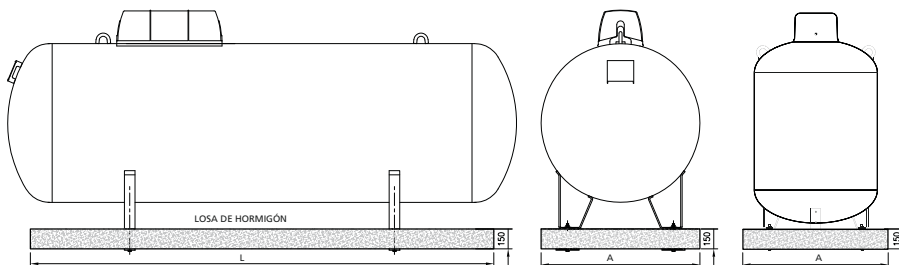
TANKS WITH WELDED SUPPORTS



CHARACTERISTICS TABLE

Dimensions in mm	Tank diameter			
	2200	2450	3000	3500
E	400	500	600	800
F	3.000	3.200	3.800	4.000
M	2.300	2.500	3.000	3.500
N	400	500	600	800
P	800	1.100	1.500	1.900

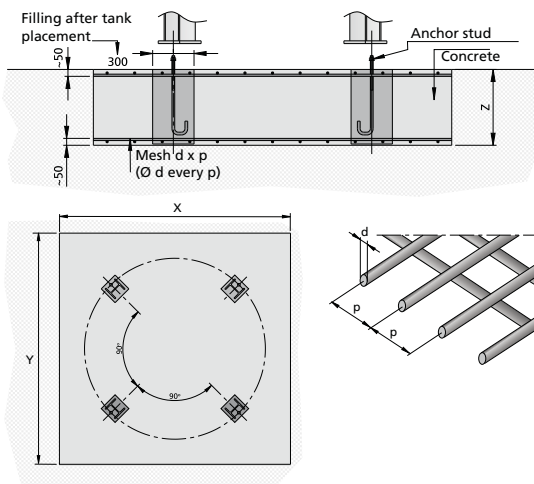
CONCRETE SLABS FOR ABOVEGROUND TANKS



SLABS: DIMENSIONS AND WEIGHTS

Model tank	L (mm)	A (mm)	Peso (kg)
LP1000A	950	950	250
LP1000AV	950	950	250
LP1450A	1.200	1.200	345
LP2450A	1.750	1.200	500
LP4000A	3.500	1.200	990
LP4880A	3.500	1.200	990
LP6650A	3.600	1.200	1.015
LP8334A	5.000	1.200	1.410

FOUNDATIONS FOR VERTICAL ABOVEGROUND TANKS



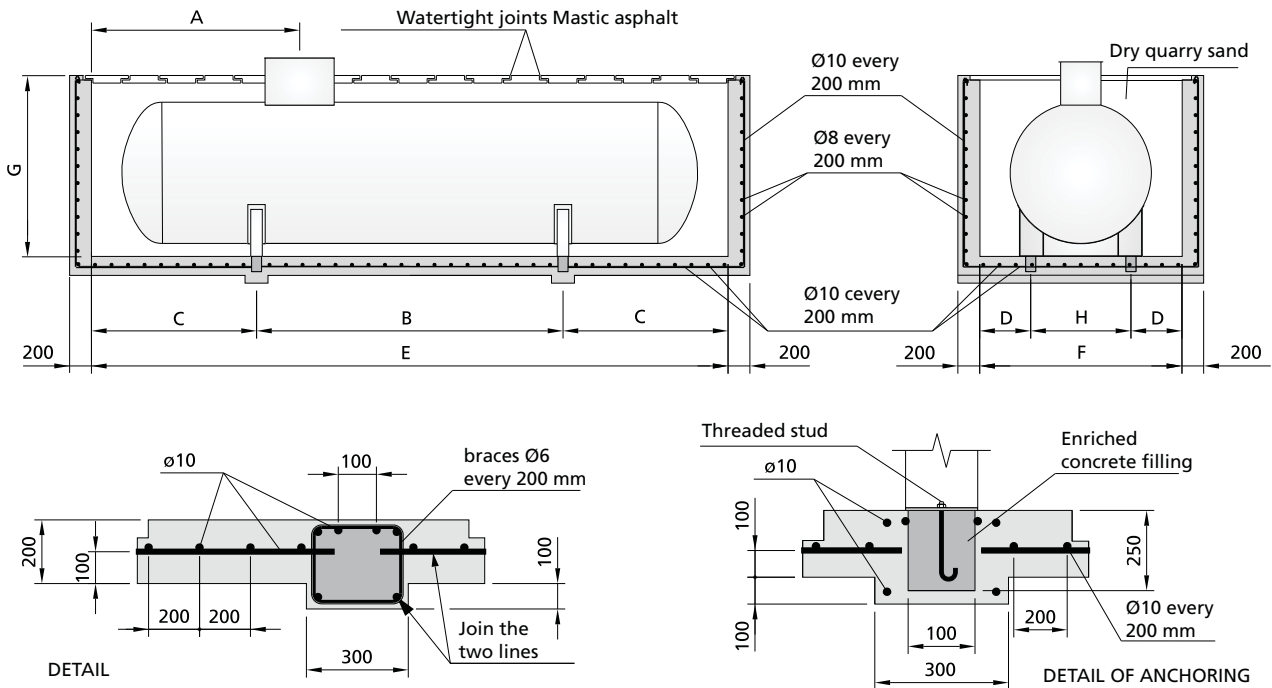
Foundations for aboveground vertical tanks.

CHARACTERISTICS TABLE

DIM. in mm	Anchor stud (minimum)	Dimensions (mm)			Mesh	
		X	Y	Z	d	p
LP1000AV	M14	1.000	1.000	300	8	150
LP2450AV	M14	1.200	1.200	300	8	150
LP5000AV-17	M16	1.600	1.600	300	8	150
LP8400AV-17	M16	1.600	1.600	300	10	150
LP13AV-17	M18	2.000	2.000	550	10	150
LP20AV	M20	2.600	2.600	550	16	200
LP33AV	M22	3.100	3.100	550	20	200
LP50AV	M24	3.900	3.900	600	25	200

Dimensions of supports for terrains with a resistance of ≥ 3 kg/cm²

PITS FOR UNDERGROUND TANKS OF LESS THAN 20 m³



Option: Threaded studs housed in hole in concrete with bonding anchor dowel (not expanding dowel)

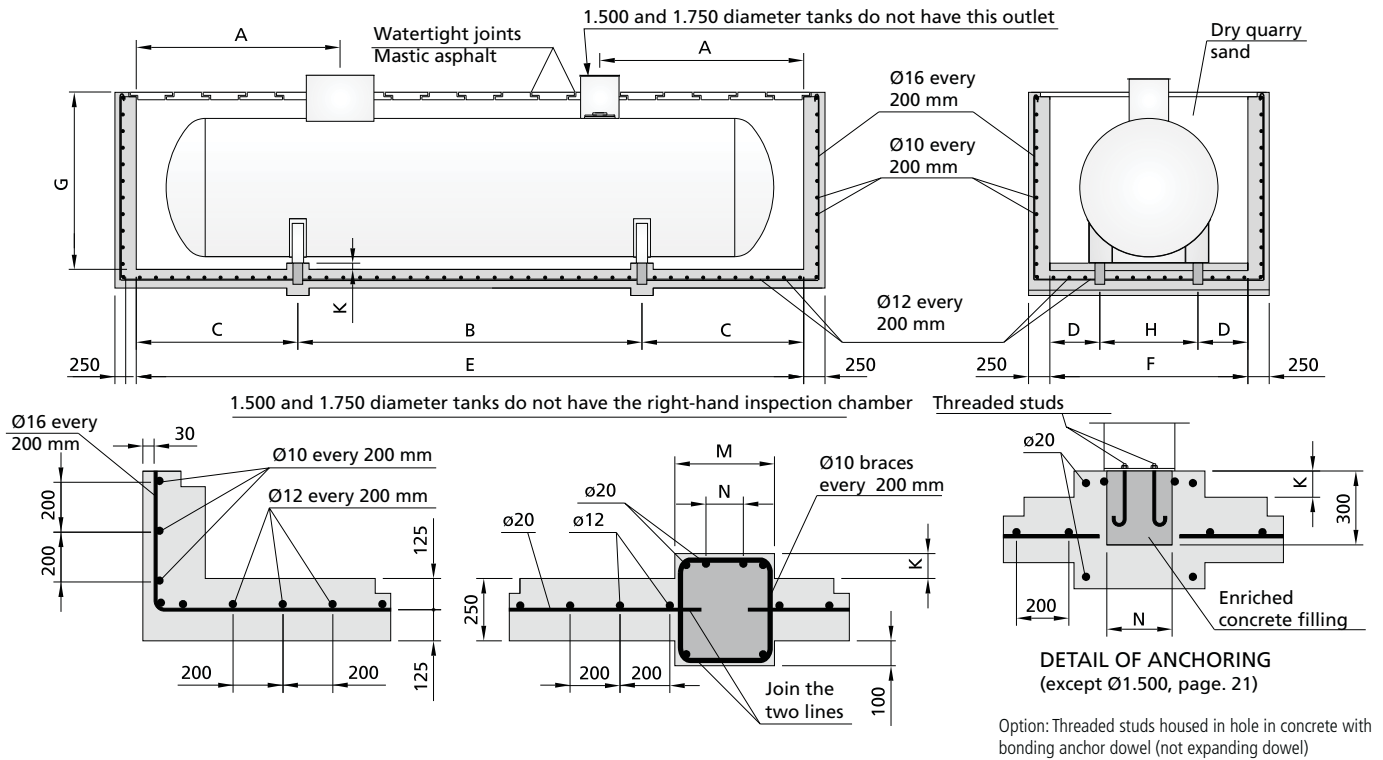
The dimensions indicated in the table are obtained based on a distance of 500 mm from the tank to the pit walls and a distance of 300 mm to the cover. For the "centred outlets" options (1.200, 1.500 and 1.750 mm diameters) dimension A should be corrected in accordance with dimension G1 of the table on page 15.

In addition to the pit shown, other types of pits can be made according to the regulations in force

CHARACTERISTICS TABLE

Model Ref.	Diameter ø	Anchor stud (minimum)	Dimensions (mm)							
			A	B	C	D	E	F	G	H
LP2450*	1.200	M12	1.520	1.500	975	700	3.450	2.200	1.700	800
LP2670*	1.200	M12	1.510	1.500	1.080	700	3.660	2.200	1.700	800
LP4000*	1.200	M14	1.510	2.000	1.420	700	4.840	2.200	1.700	800
LP4440*	1.200	M14	1.510	2.300	1.465	700	5.230	2.200	1.700	800
LP4660*	1.200	M14	1.510	2.400	1.520	700	5.440	2.200	1.700	800
LP4880*	1.200	M14	1.510	2.500	1.575	700	5.650	2.200	1.700	800
LP6430*	1.200	M16	1.510	3.300	1.855	700	7.010	2.200	1.700	800
LP6650*	1.200	M16	1.510	3.400	1.920	700	7.240	2.200	1.700	800
LP6870*	1.200	M16	1.510	3.500	1.965	700	7.430	2.200	1.700	800
LP7090*	1.200	M16	1.510	3.600	2.020	700	7.640	2.200	1.700	800
LP8334*	1.200	M16	1.510	4.200	2.315	700	8.830	2.200	1.700	800
LP4950*	1.500	M16	1.590	1.500	1.320	750	4.140	2.500	2.000	1.000
LP7000*	1.500	M16	1.590	2.300	1.510	750	5.320	2.500	2.000	1.000
LP10*	1.500	M16	1.590	3.500	1.775	750	7.050	2.500	2.000	1.000
LP13*	1.500	M18	1.590	4.300	2.245	750	8.790	2.500	2.000	1.000
LP16*	1.500	M20	1.590	5.100	2.710	750	10.520	2.500	2.000	1.000
LP19*	1.500	M22	1.590	6.200	3.025	750	12.250	2.500	2.000	1.000
LP11*	1.750	M16	1.660	2.600	1.640	775	58.80	2.750	2.250	1.200
LP13*-17	1.750	M16	1.660	3.500	1.675	775	68.50	2.750	2.250	1.200
LP15*	1.750	M20	1.660	3.500	2.160	775	78.20	2.750	2.250	1.200
LP20*	1.750	M22	1.660	4.500	2.630	775	97.60	2.750	2.250	1.200

PITS FOR UNDERGROUND TANKS GREATER THAN 20 m³

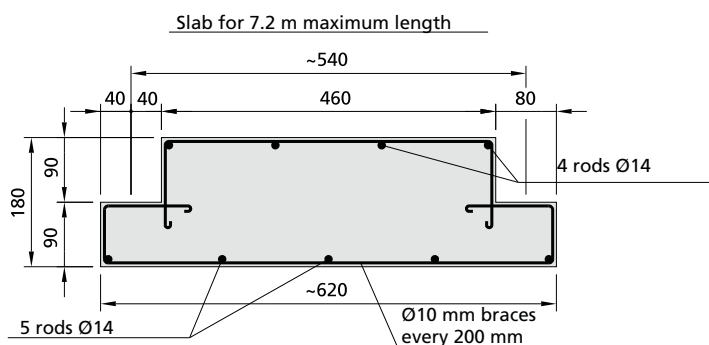
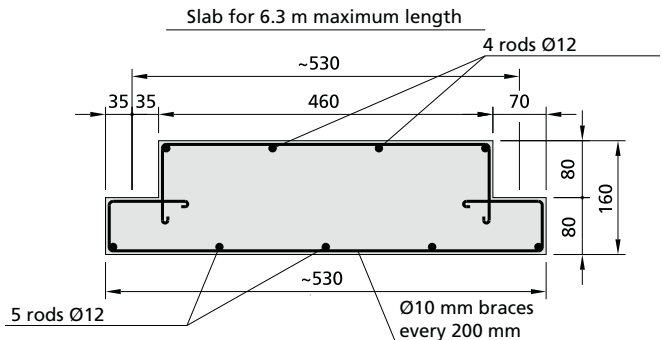
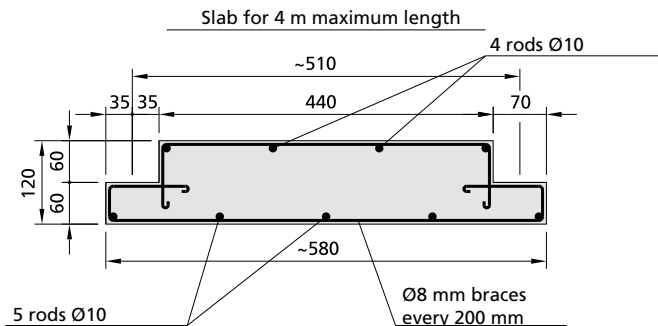
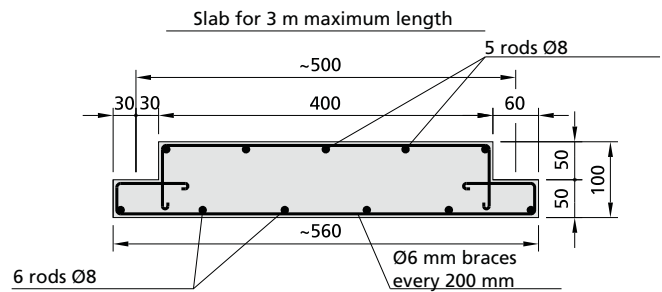
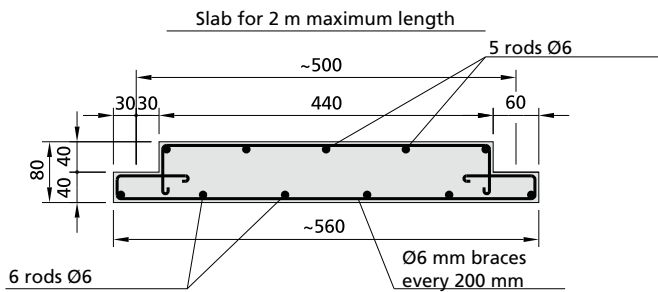
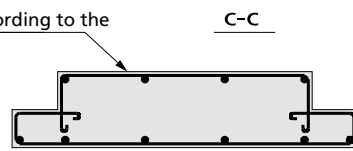
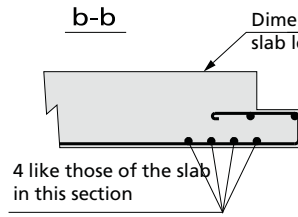
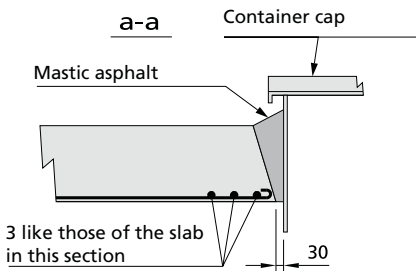
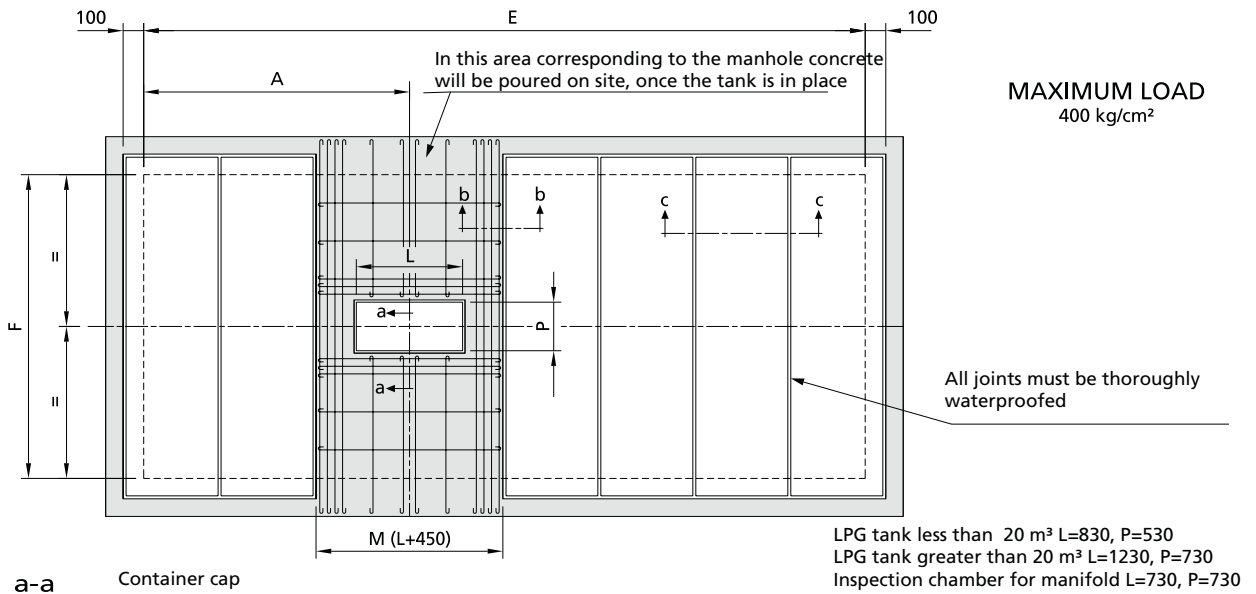


The dimensions indicated in the table are obtained based on a distance of 500 mm from the tank to the pit walls and a distance of 300 mm to the cover. For the "centred outlets" options (1.500 and 1.750 mm diameters) dimension A should be corrected in accordance with dimension G1 of the table on page 15. In addition to the pit shown, other types of pits can be made according to the regulations in force.

CHARACTERISTICS TABLE

Model Ref.	Diameter ø	Anchor stud (minimum)	Dimensions (mm)										
			A	B	C	D	E	F	G	H	K	M	N
LP22E	1.500	M24	1.980	7.100	3.460	750	14.020	2.500	2.600	1.000		400	150
LP24E	1.750	M20	2.050	5.600	3.055	775	11.710	2.750	2.850	1.200		400	150
LP29E	1.750	M20	2.050	6.900	3.380	775	13.660	2.750	2.850	1.200		400	150
LP34E	1.750	M20	2.050	8.000	3.800	775	15.600	2.750	2.850	1.200		400	150
LP38E	1.750	M22	2.050	9.100	4.220	775	17.540	2.750	2.850	1.200		400	150
LP23E-22	2.200	M20	1.920	2.300	2.645	820	7.590	3.200	2.710	1.560	110	475	225
LP26E-22	2.200	M20	2.320	4.300	2.090	820	8.480	3.200	2.710	1.560	110	475	225
LP28E-22	2.200	M20	2.570	4.300	2.315	820	8.930	3.200	2.710	1.560	110	475	225
LP30E-22	2.200	M22	2.470	4.800	2.285	820	9.370	3.200	2.710	1.560	110	475	225
LP33E-22	2.200	M24	3.020	5.500	2.380	820	10.260	3.200	2.710	1.560	110	475	225
LP36E-22	2.200	M24	3.020	5.500	2.830	820	11.160	3.200	2.710	1.560	110	475	225
LP38E-22	2.200	M24	3.020	6.000	2.800	820	11.600	3.200	2.710	1.560	110	475	225
LP40E-22	2.200	M24	3.020	6.700	2.675	820	12.050	3.200	2.710	1.560	110	475	225
LP43E-22	2.200	M24	4.520	6.700	3.120	820	12.940	3.200	2.710	1.560	110	475	225
LP46E-22	2.200	M24	5.020	7.100	3.365	820	13.830	3.200	2.710	1.560	110	475	225
LP48E-22	2.200	M24	5.020	8.600	2.835	820	14.270	3.200	2.710	1.560	110	475	225
LP50E-22	2.200	M24	5.020	8.600	3.060	820	14.720	3.200	2.710	1.560	110	475	225
LP53E-22	2.200	M24	5.720	8.900	3.355	820	15.610	3.200	2.710	1.560	110	475	225
LP56E-22	2.200	M24	5.720	9.700	3.400	820	16.500	3.200	2.710	1.560	110	475	225
LP58E-22	2.200	M24	5.720	10.200	3.375	820	16.950	3.200	2.710	1.560	110	475	225
LP59E-22	2.200	M24	5.720	10.600	3.395	820	17.390	3.200	2.710	1.560	110	475	225
LP23E-24	2.450	M24	1.710	3.180	1.585	855	6.350	3.450	2.960	1.740	110	520	270
LP25E-24	2.450	M24	1.730	2.450	2.195	855	6.840	3.450	2.960	1.740	110	520	270
LP27E-24	2.450	M24	1.940	2.450	2.445	855	7.340	3.450	2.960	1.740	110	520	270
LP32E-24	2.450	M24	2.440	3.700	2.315	855	8.330	3.450	2.960	1.740	110	520	270
LP36E-24	2.450	M24	2.940	3.700	2.810	855	9.320	3.450	2.960	1.740	110	520	270
LP39E-24	2.450	M24	3.190	5.000	2.410	855	9.820	3.450	2.960	1.740	110	520	270
LP41E-24	2.450	M24	3.440	5.000	2.655	855	10.310	3.450	2.960	1.740	110	520	270
LP46E-24	2.450	M24	3.440	6.700	2.300	855	11.300	3.450	2.960	1.740	110	520	270
LP50E-24	2.450	M24	3.440	6.700	2.795	855	12.290	3.450	2.960	1.740	110	520	270
LP52E-24	2.450	M24	4.690	6.700	3.045	855	12.790	3.450	2.960	1.740	110	520	270
LP55E-24	2.450	M24	4.890	6.700	3.295	855	13.290	3.450	2.960	1.740	110	520	270
LP59E-24	2.450	M24	5.390	6.700	3.790	855	14.280	3.450	2.960	1.740	110	520	270

COVER FOR PIT (underground tanks)



TABLES OF NATURAL VAPORIZATION IN LPG TANKS

The natural vaporization of a tank with propane can be obtained by the expression: $D = aSK (Te-Ti)/q$ where D is the capacity of vaporization of propane in kg/h. The following tables show the vaporization flow for LAPESA models at different working pressures and the values used to prepare these tables are:

- a= percentage of the tank surface area in contact with the liquid. It depends on the percentage filling of tank. For horizontally positioned tanks and a filling percentage of 20%, a=0.336, for a filling percentage of 30%, a=0.397. The values in the tables are calculated for 20% filling of tank so that for to obtain the values for 30% filling, the table values have to be multiplied by 1.18 (only for horizontal tanks).
- S= tank surface area in m².
- K= coefficient of heat exchange with exterior. This depends on several factors. In the tables the values used are K= 12 Kcal./hm²°C (in underground tanks this value is reduced by 30%, K= 8.4 Kcal./hm²°C).
- Te= minimum temperature of environment in which the tank is installed (5°C for underground tanks).
- Ti= propane liquid-gas equilibrium temperature. It depends on the type of mix. The following values are considered:

Mains pressure:	1,25	1,50	1,75	2,00
Internal temp.:	-26	-22	-20	-17
- q= Latent heat from vaporization of propane. A value of: q= 94 Kcal./kg. can be used.

Model Ref.	Rated capacity (l.)	Diam. (mm)	Area (m ²)	NATURAL VAPORIZATION FLOW (Kg. of propane per hour)																															
				Working pressure: 1'25 bar								Working pressure: 1'50 bar								Working pressure: 1'75 bar								Working pressure: 2'00 bar							
				Aboveground tanks				Underground tanks	Aboveground tanks				Underground tanks	Aboveground tanks				Underground tanks	Aboveground tanks				Underground tanks												
				Minimum ext. temp (°C)					Minimum ext. temp (°C)					Minimum ext. temp (°C)					Minimum ext. temp (°C)																
-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10											
LP1000A	1.000	1.000	5,2	3,6	4,7	5,8	6,9	8,0	4,8	2,7	3,8	4,9	6,0	7,1	4,2	2,2	3,3	4,5	5,6	6,7	3,9	1,6	2,7	3,8	4,9	6,0	3,4								
LP1450	1.450	1.200	6,7	4,6	6,0	7,5	8,9	10,3	6,2	3,4	4,9	6,3	7,8	9,2	5,4	2,9	4,3	5,7	7,2	8,6	5,0	2,0	3,4	4,9	6,3	7,8	4,4								
LP1825	1.825	1.200	7,9	5,4	7,1	8,8	10,5	12,2	7,4	4,1	5,8	7,5	9,1	10,8	6,4	3,4	5,1	6,8	8,5	10,2	5,9	2,4	4,1	5,8	7,5	9,1	5,2								
LP2250*	2.250	1.200	9,4	6,5	8,5	10,5	12,5	14,5	8,7	4,8	6,9	8,9	10,9	12,9	7,6	4,0	6,0	8,1	10,1	12,1	7,1	2,8	4,8	6,9	8,9	10,9	6,2								
LP2450*	2.450	1.200	10,1	6,9	9,1	11,3	13,4	15,6	9,4	5,2	7,4	9,5	11,7	13,9	8,2	4,3	6,5	8,7	10,8	13,0	7,6	3,0	5,2	7,4	9,5	11,7	6,7								
LP2670*	2.670	1.200	10,9	7,5	9,8	12,2	14,5	16,8	10,1	5,6	7,9	10,3	12,6	15,0	8,8	4,7	7,0	9,4	11,7	14,0	8,2	3,3	5,6	7,9	10,3	12,6	7,2								
LP4000*	4.000	1.200	15,3	10,5	13,8	17,1	20,3	23,6	14,2	7,9	11,2	14,4	17,7	21,0	12,4	6,6	9,8	13,1	16,4	19,7	11,5	4,6	7,9	11,2	14,4	17,7	10,1								
LP4440*	4.440	1.200	16,8	11,5	15,1	18,7	22,3	25,9	15,6	8,6	12,3	15,9	19,5	23,1	13,6	7,2	10,8	14,4	18,0	21,6	12,6	5,0	8,6	12,3	15,9	19,5	11,1								
LP4660*	4.660	1.200	17,6	12,1	15,9	19,6	23,4	27,2	16,4	9,1	12,8	16,6	20,4	24,2	14,3	7,5	11,3	15,1	18,9	22,6	13,2	5,3	9,1	12,8	16,6	20,4	11,6								
LP4880*	4.880	1.200	18,4	12,6	16,6	20,5	24,5	28,4	17,1	9,5	13,4	17,4	21,3	25,3	14,9	7,9	11,8	15,8	19,7	23,7	13,8	5,5	9,5	13,4	17,4	21,3	12,2								
LP6430*	6.430	1.200	23,5	16,1	21,2	26,2	31,2	36,3	21,9	12,1	17,1	22,2	27,2	32,3	19,1	10,1	15,1	20,2	25,2	30,2	17,6	7,1	12,1	17,1	22,2	27,2	15,5								
LP6650*	6.650	1.200	24,3	16,7	21,9	27,1	32,3	37,5	22,6	12,5	17,7	22,9	28,1	33,4	19,7	10,4	15,6	20,8	26,1	31,3	18,2	7,3	12,5	17,7	22,9	28,1	16,1								
LP6870*	6.870	1.200	25,1	17,2	22,6	28,0	33,4	38,8	23,4	12,9	18,3	23,7	29,1	34,5	20,3	10,8	16,1	21,5	26,9	32,3	18,8	7,5	12,9	18,3	23,7	29,1	16,6								
LP7090*	7.090	1.200	25,9	17,8	23,3	28,9	34,4	40,0	24,1	13,3	18,9	24,4	30,0	35,6	21,0	11,1	16,7	22,2	27,8	33,3	19,4	7,8	13,3	18,9	24,4	30,0	17,1								
LP8334*	8.334	1.200	30,3	20,8	27,3	33,8	40,3	46,8	28,2	15,6	22,1	28,6	35,1	41,6	24,6	13,0	19,5	26,0	32,5	39,0	22,7	9,1	15,6	22,1	28,6	35,1	20,0								
LP1900*	1.900	1.200	8,2	5,6	7,3	9,1	10,8	12,6	7,6	4,2	5,9	7,7	9,4	11,2	6,6	3,5	5,2	7,0	8,7	10,5	6,1	2,4	4,2	5,9	7,7	9,4	5,4								
LP3750*	3.750	1.200	14,6	10,0	13,2	16,3	19,4	22,6	13,6	7,5	10,7	13,8	16,9	20,1	11,8	6,3	9,4	12,5	15,7	18,8	11,0	4,4	7,5	10,7	13,8	16,9	9,7								
LP7500*	7.515	1.200	27,3	18,7	24,6	30,4	36,3	42,2	25,4	14,1	19,9	25,8	31,6	37,5	22,1	11,7	17,6	23,4	29,3	35,1	20,5	8,2	14,1	19,9	25,8	31,6	18,0								
LP4950*	4.950	1.500	16,1	11,0	14,5	18,0	21,4	24,9	15,0	8,3	11,7	15,2	18,6	22,1	13,1	6,9	10,4	13,8	17,3	20,7	12,1	4,8	8,3	11,7	15,2	18,6	10,6								
LP7000*	7.000	1.500	21,7	14,9	19,5	24,2	28,9	33,5	20,2	11,2	15,8	20,5	25,1	29,8	17,6	9,3	14,0	18,6	23,3	27,9	16,3	6,5	11,2	15,8	20,5	25,1	14,3								
LP10*	10.000	1.500	29,9	21	27	33	40	46	28	15	22	28	35	41	24	13	19	26	32	38	22	9	15	22	28	35	20								
LP13*	13.000	1.500	38,1	26	34	42	51	59	35	20	28	36	44	52	31	16	25	33	41	49	29	11	20	28	36	44	25								
LP16*	16.000	1.500	46,2	32	42	52	61	71	43	24	34	44	54	63	37	20	30	40	50	59	35	14	24	34	44	54	31								
LP19*	19.000	1.500	54,4	37	49	61	72	84	51	28	40	51	63	75	44	23	35	47	58	70	41	16	28	40	51	63	36								
LP22*	22.000	1.500	62,6	43	56	70	83	97	58	32	46	59	72	86	51	27	40	54	67	81	47	19	32	46	59	72	41								
LP11*	10.750	1.750	28,6	20	26	32	38	44	27	15	21	27	33	39	23	12	18	25	31	37	21	9	15	21	27	33	19								
LP13*-17	13.000	1.750	34,0	23	31	38	45	53	32	18	25	32	39	47	28	15	22	29	36	44	26	10	18	25	32	39	22								
LP15*	15.300	1.750	39,3	27	35	44	52	61	37	20	29	37	46	54	32	17	25	34	42	51	30	12	20	29	37	46	26								
LP20*	19.900	1.750	50,0	34	45	56	66	77	47	26	36	47	58	69	41	21	32	43	54	64	38	15	26	36	47	58	33								
LP24*	24.450	1.750	60,6	42	55	68	81	94	56	31	44	57	70	83	49	26	39	52	65	78	45	18	31	44	57	70	40								
LP29*	29.000	1.750	71,3	49	64	80	95	110	66	37	52	67	83	98	58	31	46	61	76	92	54	21	37	52	67	83	47								
LP34*	33.600	1.750	82,0	56	74	91	109	127	76	42	60	77	95	113	66	35	53	70	88	106	62	25	42	60	77	95	54								
LP38*	38.200	1.750	92,6	64	83	103	123	143	86	48	68	87	107	127	75	40	60	79	99	119	70	28	48	68	87	107	61								
LP23*-22	23.000	2.200	48,4	33	44	54	64	75	45	25	35	46	56	66	39	21	31	42	52	62	36	15	25	35	46	56	32								
LP26*-22	26.300	2.200	54,5	37	49	61	72	84	51	28	40	51	63	75	44	23	35	47	58	70	41	16	28	40	51	63	36								
LP28*-22	28.000	2.200	57,6	40	52	64	77	89	54	30	42	54	67	79	47	25	37	49	62	74	43	17	30	42	54	67	38								
LP30*-22	29.650	2.200	60,7	42	55	68	81	94	56	31	44	57	70	83	49	26	39	52	65	78	46	18	31	44	57	70	40								
LP33*-22	32.900	2.200	66,8	46	60	74	89	103	62	34	49	63	77	92	54	29	43	57	72	86	50	20	34	49	63	77	44								
LP36*-22	36.200	2.200	73,0	50	66	81	97	113	68	38	53	69	85	100	59	31	47	63	78	94	55	22	38	53	69	85	48								
LP38*-22	37.900	2.200	76,0	52	68	85	101	117	71	39	55	72	88	104	62	33	49	65	81	98	57	23	39	55	72	88	50								
LP40*-22	39.600	2.200	79,1	54	71	88	105	122	74	41	58	75	92	109	64	34	51	68	85	102	59	24	41	58	75	92	52								
LP43*-22	42.900	2.200	85,3	59	77	95	113	132	79	44	62	80	99	117	69	37	55	73	91	110	64	26	44	62	80	99	56								
LP46*-22	46.200	2.200	91,4	63	82	102	122	141	85	47	67	86	106	125	74	39	59	78	98	118	69	27	47	67	86	106	60								
LP48*-22	47.800	2.200	94,5	65	85	105	126	146	88	49	69	89	109	130	77	41	61	81	101	122	71	28	49	69	89	109	62								
LP50*-22	49.500	2.200	97,6	67	88	109	130	151	91	50	71	92	113	134	79	42	63	84	105	126	73	29	50	71	92	113	64								
LP53*-22	52.800	2.200	103,7	71	93	116	138	160	97	53	76	98	120	142	84	44	67	89	111	133	78	31	53	76	98	120	69								
LP56*-22	56.100	2.200	109,9	75	99	123	146	170	102	57	80	104	127	151	89	47	71	94	118	141	82	33	57	80	104	127	73								
LP58*-22	57.700	2.200	113,0	78	102	126	150	174	105	58	82	107	131	155	92	48	73	97	121	145	85	34	58	82	107	131	75								
LP59*-22	59.400	2.200	116,0	80	104	129	154																												

STATIC TANKS FOR STORAGE OF LPG

TECHNICAL INFORMATION

NATURAL VAPORIZATION FLOW (Kg. of propane per hour)

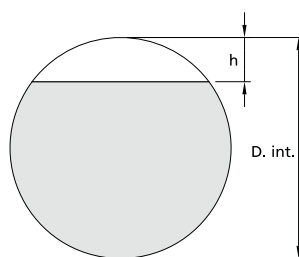
Model Ref.	Rated capacity (l.)	Diam. (mm)	Area (m ²)	Working pressure: 1'25 bar																							
				Aboveground tanks												Underground tanks											
				Minimum ext. temp (°C)												Minimum ext. temp (°C)											
				-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5	10	-10	-5	0	5
LP23*-24	22.600	2.450	44,7	31	40	50	59	69	42	23	33	42	52	61	36	19	29	38	48	58	34	13	23	33	42	52	30
LP25*-24	24.900	2.450	48,5	33	44	54	64	75	45	25	35	46	56	67	39	21	31	42	52	62	36	15	25	35	46	56	32
LP27*-24	27.200	2.450	52,3	36	47	58	70	81	49	27	38	49	61	72	42	22	34	45	56	67	39	16	27	38	49	61	35
LP32*-24	31.800	2.450	59,9	41	54	67	80	92	56	31	44	57	69	82	49	26	39	51	64	77	45	18	31	44	57	69	40
LP36*-24	36.300	2.450	67,5	46	61	75	90	104	63	35	49	64	78	93	55	29	43	58	72	87	51	20	35	49	64	78	45
LP39*-24	38.600	2.450	71,3	49	64	80	95	110	66	37	52	67	83	98	58	31	46	61	76	92	54	21	37	52	67	83	47
LP41*-24	40.900	2.450	75,1	52	68	84	100	116	70	39	55	71	87	103	61	32	48	64	81	97	56	23	39	55	71	87	50
LP46*-24	45.500	2.450	82,8	57	75	92	110	128	77	43	60	78	96	114	67	36	53	71	89	107	62	25	43	60	78	96	55
LP50*-24	50.000	2.450	90,4	62	81	101	120	140	84	47	66	85	105	124	73	39	58	78	97	116	68	27	47	66	85	105	60
LP52*-24	52.300	2.450	94,2	65	85	105	125	145	88	48	69	89	109	129	76	40	61	81	101	121	71	28	48	69	89	109	62
LP55*-24	54.600	2.450	98,0	67	88	109	130	151	91	50	71	92	113	135	79	42	63	84	105	126	74	29	50	71	92	113	65
LP59*-24	59.200	2.450	105,6	72	95	118	140	163	98	54	77	100	122	145	86	45	68	91	113	136	79	32	54	77	100	122	70
LP64*-24	63.700	2.450	113,2	78	102	126	151	175	105	58	83	107	131	155	92	49	73	97	121	146	85	34	58	83	107	131	75
LP66*-24	66.000	2.450	117,1	80	105	131	156	181	109	60	85	111	136	161	95	50	75	100	126	151	88	35	60	85	111	136	77
LP68*-24	68.300	2.450	120,9	83	109	135	161	187	113	62	88	114	140	166	98	52	78	104	130	156	91	36	62	88	114	140	80
LP73*-24	72.800	2.450	128,5	88	116	143	171	198	120	66	94	121	149	176	104	55	83	110	138	165	96	39	66	94	121	149	85
LP77*-24	77.400	2.450	136,1	93	123	152	181	210	127	70	99	128	158	187	110	58	88	117	146	175	102	41	70	99	128	158	90
LP80*-24	79.700	2.450	139,9	96	126	156	186	216	130	72	102	132	162	192	113	60	90	120	150	180	105	42	72	102	132	162	92
LP82*-24	82.000	2.450	143,7	99	129	160	191	222	134	74	105	136	166	197	116	62	92	123	154	185	108	43	74	105	136	166	95
LP87*-24	86.500	2.450	151,4	104	136	169	201	234	141	78	110	143	175	208	123	65	97	130	162	195	114	45	78	110	143	175	100
LP91*-24	91.100	2.450	159,0	109	143	177	211	246	148	82	116	150	184	218	129	68	102	136	171	205	119	48	82	116	150	184	105
LP93*-24	93.400	2.450	162,8	112	147	182	216	251	152	84	119	154	189	223	132	70	105	140	175	209	122	49	84	119	154	189	108
LP96*-24	95.700	2.450	166,6	114	150	186	222	257	155	86	121	157	193	229	135	71	107	143	179	214	125	50	86	121	157	193	110
LP100*-24	100.200	2.450	174,2	120	157	194	232	269	162	90	127	164	202	239	141	75	112	149	187	224	131	52	90	127	164	202	115
LP105*-24	104.800	2.450	181,8	125	164	203	242	281	169	94	133	172	211	250	147	78	117	156	195	234	136	55	94	133	172	211	120
LP107*-24	107.100	2.450	185,6	127	167	207	247	287	173	96	135	175	215	255	150	80	119	159	199	239	139	56	96	135	175	215	123
LP110*-24	109.400	2.450	189,4	130	171	211	252	292	176	97	138	179	219	260	154	81	122	162	203	244	142	57	97	138	179	219	125
LP114*-24	113.900	2.450	197,1	135	178	220	262	304	183	101	144	186	228	271	160	85	127	169	211	254	148	59	101	144	186	228	130
LP1000AV	990	1.000	5,2	2,8	3,6	4,5	5,4	6,2	--	2,1	2,9	3,8	4,7	5,5	--	1,7	2,6	3,5	4,3	5,2	--	1,2	2,1	2,9	3,8	4,7	--
LP2450AV	2.450	1.200	10,1	5,4	7,0	8,7	10,4	12,1	--	4,0	5,7	7,4	9,1	10,7	--	3,4	5,0	6,7	8,4	10,1	--	2,3	4,0	5,7	7,4	9,1	--
LP5000AV-17	4.990	1.750	15,2	8,1	10,6	13,1	15,6	18,2	--	6,1	8,6	11,1	13,6	16,1	--	5,0	7,6	10,1	12,6	15,1	--	3,5	6,1	8,6	11,1	13,6	--
LP8400V-17	8.400	1.750	23,2	12,3	16,2	20,0	23,9	27,7	--	9,2	13,1	17,0	20,8	24,7	--	7,7	11,6	15,4	19,3	23,1	--	5,4	9,2	13,1	17,0	20,8	--
LP13AV-17	13.000	1.750	34,0	18,1	23,7	29,3	35,0	40,6	--	13,5	19,2	24,8	30,5	36,1	--	11,3	16,9	22,6	28,2	33,9	--	7,9	13,5	19,2	24,8	30,5	--
LP20V	19.900	1.750	50,0	26,6	34,9	43,1	51,4	59,7	--	19,9	28,2	36,5	44,8	53,1	--	16,6	24,9	33,2	41,5	49,8	--	11,6	19,9	28,2	36,5	44,8	--
LP32V	31.800	2.450	59,9	31,8	41,8	51,7	61,6	71,6	--	23,9	33,8	43,7	53,7	63,6	--	19,9	29,8	39,8	49,7	59,6	--	13,9	23,9	33,8	43,7	53,7	--
LP50V	50.000	2.450	90,4	48,0	63,0	78,0	93,0	108,0	--	36,0	51,0	66,0	81,0	96,0	--	30,0	45,0	60,0	75,0	90,0	--	21,0	36,0	51,0	66,0	81,0	--
LP1000AV	990	1.000	5,2	3,5	4,6	5,7	6,8	7,9	--	2,6	3,7	4,8	5,9	7,0	--	2,2	3,3	4,4	5,5	6,6	--	1,5	2,6	3,7	4,8	5,9	--
LP2450AV	2.450	1.200	10,1	6,8	8,9	11,1	13,2	15,3	--	5,1	7,2	9,4	11,5	13,6	--	4,3	6,4	8,5	10,6	12,8	--	3,0	5,1	7,2	9,4	11,5	--
LP5000AV-17	4.990	1.750	15,2	10,2	13,4	16,6	19,9	23,1	--	7,7	10,9	14,1	17,3	20,5	--	6,4	9,6	12,8	16,0	19,2	--	4,5	7,7	10,9	14,1	17,3	--
LP8400V-17	8.400	1.750	23,2	15,7	20,5	25,4	30,3	35,2	--	11,7	16,6	21,5	26,4	31,3	--	9,8	14,7	19,6	24,5	29,3	--	6,8	11,7	16,6	21,5	26,4	--
LP13AV-17	13.000	1.750	34,0	22,9	30,1	37,2	44,4	51,6	--	17,2	24,3	31,5	38,7	45,8	--	14,3	21,5	28,6	35,8	43,0	--	10,0	17,2	24,3	31,5	38,7	--
LP20V	19.900	1.750	50,0	33,7	44,2	54,8	65,3	75,8	--	25,3	35,8	46,3	56,9	67,4	--	21,1	31,6	42,1	52,7	63,2	--	14,7	25,3	35,8	46,3	56,9	--
LP32V	31.800	2.450	59,9	40,4	53,0	65,6	78,2	90,8	--	30,3	42,9	55,5	68,1	80,8	--	25,2	37,9	50,5	63,1	75,7	--	17,7	30,3	42,9	55,5	68,1	--
LP50V	50.000	2.450	90,4	60,9	80,0	99,0	118,1	137,1	--	45,7	64,7	83,8	102,8	121,9	--	38,1	57,1	76,2	95,2	114,3	--	26,7	45,7	64,7	83,8	102,8	--

Vertical tanks
20% filling

Vertical tanks
30% filling

MAX. DEGREE OF FILLING

The maximum degree of filling specified in regulations is 85%. The height of the liquid-free part depends on the ratio: $h \sim 0.21 \text{ int. D}$



Ext. D	h
1.200	249
1.500	311
1.750	363
2.200	457
2.450	509
3.000	623
3.500	727
3.800	790
4.000	830
4.200	872

(Measurements indicated are approximate.)

Valve tubes indicating maximum degree of filling (high point) should be cut taking into account the height and the part of the tube that is inserted in the valve.

LPG PRESSURES

The following table shows the LPG pressure depending on the mix and the temperature:

Temperature °C	Pure propane 100%	Commercial mixes % propane / % butane				
		85% / 15%	60% / 40%	40% / 60%	15% / 85%	0% / 100%
45	14,3 bar	12,7 bar	9,9 bar	7,7 bar	5,0 bar	3,3 bar
50	16,1 bar	14,3 bar	11,2 bar	8,8 bar	5,8 bar	4,0 bar
55	18,0 bar	16,0 bar	12,7 bar	10,0 bar	6,6 bar	4,6 bar

The default pressure for the tanks in this catalogue is a design pressure of 20 bar.

FORCED VAPORIZATION

- Tanks with internal vaporizer
- Tanks with atmospheric vaporizers
- **"FEED OUT"** vaporizers
- Modular vaporization units
- Modular heating units

These systems add forced vaporization to the natural vaporization capacity of the tank, for installations with high consumption and space restrictions.



Tanks with internal vaporizer:

Tanks with removable heat exchanger built into the bottom part of the tank for forced LPG vaporization, for connection to water heating circuit via a heating boiler.

Optionally the tank can be supplied with the valve equipment already fitted, pneumatically tested and with nitrogen inerting of the tank. At the customer's request the tanks can be supplied with a gas train to regulate consumption in a stainless cabinet or on a support frame.

Tanks with atmospheric vaporizer:

Tanks with external water-air heat exchanger.

Modular heating units for tanks with internal vaporizer:

Complete heating modules ready for connection to the LPG tank internal vaporizer. These units comprise a wall-hung condensation boiler and electrical control and protection cabinet, totally installed in a metal booth with all of the necessary valves and pipes for connection and start-up.

Modular vaporizers:

Own design LPG "Feed-out" vaporizers. Vaporization capacities from 500 to 5.000 Kg/h.

Modular vaporization units:

Equipment with complete modular vaporizer installed inside metal booth, with the necessary valves and pipes for connection to the heating module and consumption system.

Heating control units for modular vaporizers:

Complete heating modules, ready to be connected to the modular vaporization units.

They comprise a heating boiler and electrical control and protection cabinet, fully installed in a metal booth with the pumps, valves and pipes required for connection and start-up.

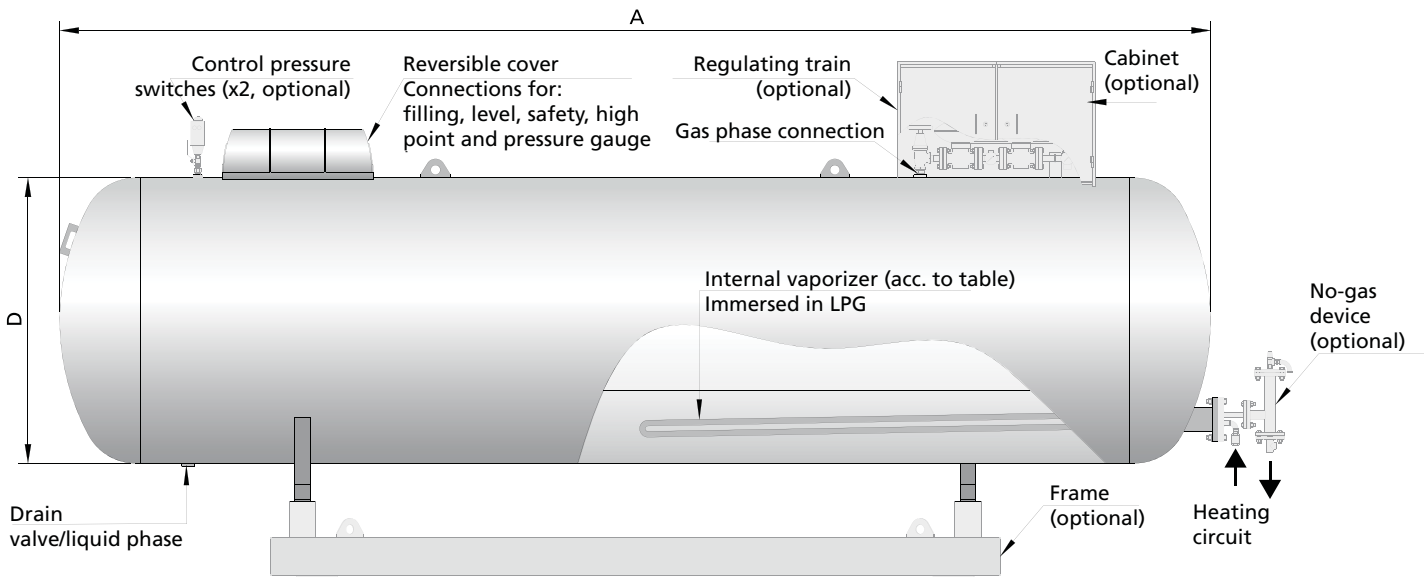
lapesa
Solutions



**ABOVEGROUND
 TANKS WITH
 REMOVABLE
 INTERNAL
 VAPORIZER**

- Vessels according to Lapesa’s standard models, with removable internal vaporizer. Different vaporization capacities for each volume (see table)
- Heat provided via heating circuit.
- Lapesa has heating modules for installation with this unit (see page 34).
- This unit incorporates the benefits of a **FEED BACK system** and takes advantage of the natural vaporization of the tank.
- The tank’s safety valves must be capable of discharging both natural and forced vaporization, which means they may vary between models from those of a standard tank without an internal vaporizer.
- The rated vaporization values indicated in the tables are only valid for tanks with 20% minimum degree of filling, which guarantees that the vaporizer is submerged in LPG.
- **OPTIONAL ITEMS:**
 - Frame for tank.
 - NO-GAS device. Prevents gas input to heating circuit in the event of a connection between the two.
 - Gas control line.
 - Other options.





Drawing of aboveground tank. Models according to table (Example: LPVI 4880A+VIA300)

CHARACTERISTICS TABLE

Basic LP ⁽¹⁾ model	Volume	D (ø)	Vaporizer model					
			VIA 150	VIA 300	VIB 500	VIC 1000	VIC 1500	VIC 2000
			Vaporization capacity (Kg/h)					
			150	300	500	1000	1500	2000
			Minimum boiler power (KW)					
			17.5	35	58	117	175	233
LPVI 4000A	4.000	1.200	X					
LPVI 4880A	4.880	1.200	X	X	X			
LPVI 6650A	6.650	1.200	X	X	X			
LPVI 8334A	8.334	1.200	X	X	X			
LPVI 10A	10.000	1.500	X	X	X	X	X	
LPVI 13A	13.000	1.500	X	X	X	X	X	X
LPVI 16A	16.000	1.500	X	X	X	X	X	X
LPVI 19A	19.000	1.500	X	X	X	X	X	X
LPVI 22A	22.000	1.500	X	X	X	X	X	X
LPVI 20A	19.900	1.750	X	X	X	X	X	X
LPVI 24A	24.450	1.750	X	X	X	X	X	X
LPVI 34A	33.600	1.750	X	X	X	X	X	X
LPVI 33A-22	32.900	2.200	X	X	X	X	X	X
LPVI 50A-22	49.500	2.200	X	X	X	X	X	X
LPVI 59A-22	59.400	2.200	X	X	X	X	X	X
LPVI 50A-24	50.000	2.450	X	X	X	X	X	X
LPVI 59A-24	59.200	2.450	X	X	X	X	X	X

(1) (Rest of data like std. models)

NOTES

- For details of natural vaporization with different tanks: please consult pages 26 and 27.
- Data valid for commercial propane only.
- Vaporization capacity decreases for gas delivery pressures of more than 3 bar (please consult)
- For ambient temperatures of less than -10°C, boiler power must be increased.
- Other volumes and capacities can be configured (please consult).
- Units for underground installation can be designed and manufactured upon request. (Please consult).

ABOVEGROUND TANKS WITH **ATMOSPHERIC** VAPORIZER

Storage tanks according to Lapesa standard models, with atmospheric vaporizer.

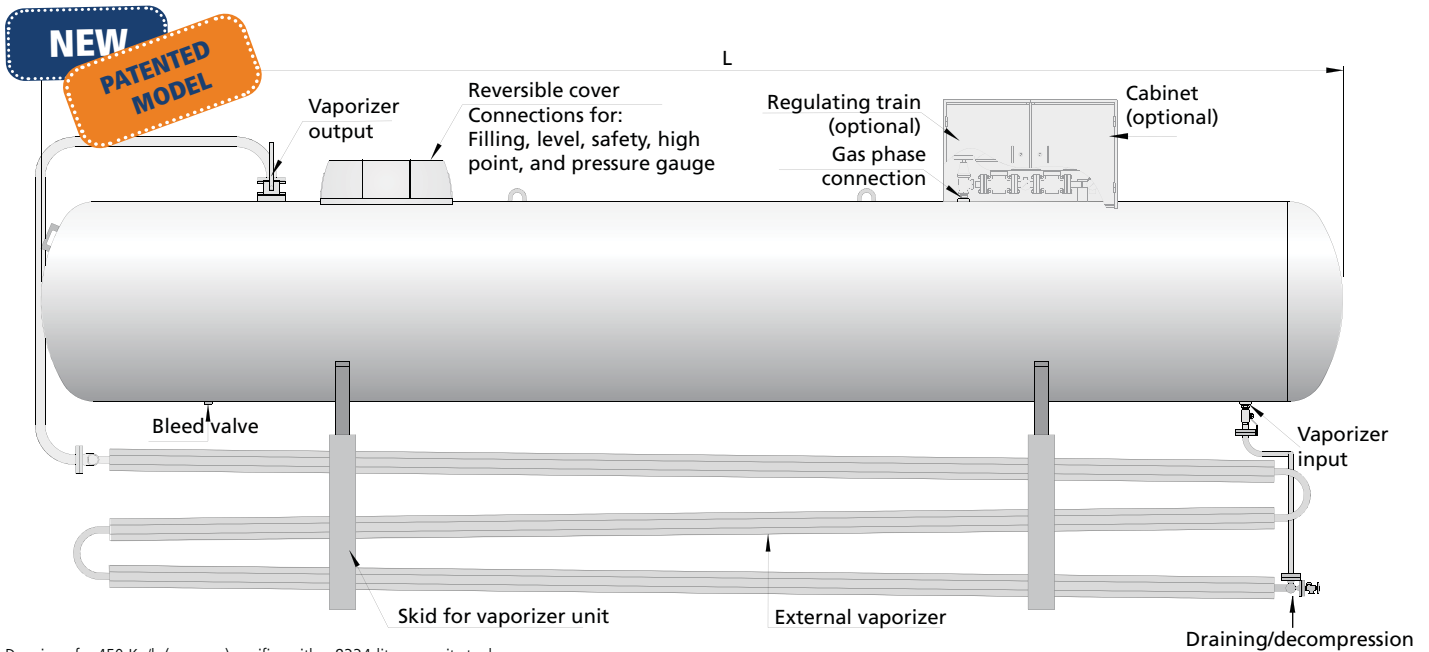
CHARACTERISTICS

- Propane tank that incorporates external vaporizer.
- This system increases the natural vaporization capacity of tanks.
- Vaporization is obtained by heat exchange with the ambient.
- Includes all the advantages of a feed-back system.

ADVANTAGES WITH RESPECT TO FORCED VAPORIZATION

- Savings:
 - Simple and economical installation.
 - Maintenance free.
 - No additional consumption (electricity, gas, etc.)
- Safety:
 - No additional pieces which could break down.
 - No electrical material used, neither boilers with flames.
- Installation time is greatly reduced.
- Environment-friendly: energy consumption 100% renewable.





Drawing of a 450 Kg/h (propane) gasifier with a 8334-litre capacity tank.

ATMOSPHERIC VAPORIZER

Model	Nominal vaporization (kg/h) ⁽¹⁾	Approx. length (mm)	Approx. height (mm)
VA50	50	3.000	250
VA150	150	7.400	400
VA300	300	7.400	750
VA450	450	7.400	1.000

(1) Nominal vaporization corresponds to the nominal working conditions:
 - Service pressure 1,5 bar
 - Ambient temperature 10° C
 - LPG: 80% propane, 20% butane

VAPORIZATION DATA

EXTERNAL VAPORIZER MODEL VA 50 (Propane flow rate kg/hr)

		Ambient temperature (°C)						
		Eventual temperatures						
		-10	-5	0	5	10	15	20
Service pressure (barg)	1	18	28	39	50	62	73	85
	1,25	12	22	33	44	55	67	79
	1,5	7	16	27	38	49	60	72
	1,75	1	10	21	31	42	54	66
	2	-	7	17	27	38	50	61

EXTERNAL VAPORIZER MODEL 150 (Propane flow rate kg/hr)

		Ambient temperature (°C)						
		Eventual temperatures						
		-10	-5	0	5	10	15	20
Service pressure (barg)	1	58	91	125	161	197	234	272
	1,25	39	71	105	140	177	214	251
	1,5	21	52	85	120	156	193	231
	1,75	4	33	66	100	136	172	210
	2	-	21	53	87	122	159	196

EXTERNAL VAPORIZER MODEL VA 300 (Propane flow rate kg/hr)

		Ambient temperature (°C)						
		Eventual temperatures						
		-10	-5	0	5	10	15	20
Service pressure (barg)	1	115	181	250	321	394	468	544
	1,25	78	142	210	281	353	427	503
	1,5	42	104	171	241	312	386	462
	1,75	9	67	132	200	272	345	420
	2	-	43	106	173	244	317	392

EXTERNAL VAPORIZER MODEL VA 450 (Propane flow rate kg/hr)

		Ambient temperature (°C)						
		Eventual temperatures						
		-10	-5	0	5	10	15	20
Service pressure (barg)	1	173	272	375	482	591	702	816
	1,25	117	214	316	421	530	641	754
	1,5	63	156	256	361	469	579	692
	1,75	13	100	197	300	407	517	630
	2	-	64	159	260	366	476	588

SOME FACTORS MAY MODIFY THE VAPORIZATION CAPACITY:

- Continuous consumption (see table with correction coefficients to be applied in continuous operation)
- Adverse environmental conditions (low temperature and high humidity)
- Installations that prevent an adequate ventilation
- Different LPG mixture than the nominal one

To minimize these effects, different solutions can be applied (please consult)

CORRECTION COEFFICIENTS⁽²⁾ FOR CONTINUOUS OPERATION:

Hours/day	Efficiency Fh
≤4	1
8	0,8
16	0,5
24	0,4

(2) Multiply the vaporization values of the tables by the correction coefficient

NOTE

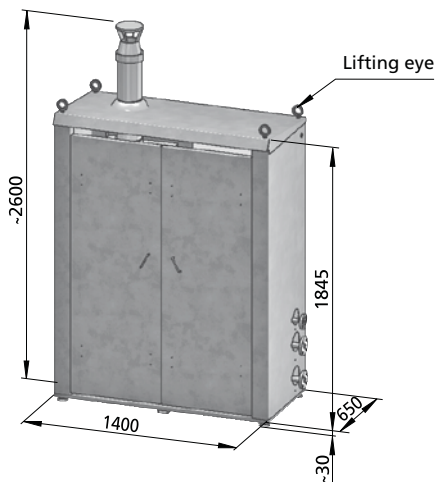
Depending on the tank and vaporizer sizes, the unit can be sent completely mounted, including the piping between both elements. Otherwise, the elements will be mounted on site.

COMPACT HEATING UNITS FOR TANKS WITH INTERNAL VAPORIZER

Comprised by a sealed wall-mounted condensing boiler prepared for propane gas operation, an electrical cabinet and all the pipes and valves necessary for its connection with the LPG vaporization equipment. All this housed and prepared for connection and commissioning. Ideal to install together with internal vaporizers.

CHARACTERISTICS TABLE

Model	Boiler power (kW)	Weight (Kg.)	For internal vaporizers	
VPC30C	45	265	VIA 300	VIA 150
VPC60C	65	275	VIA 500	

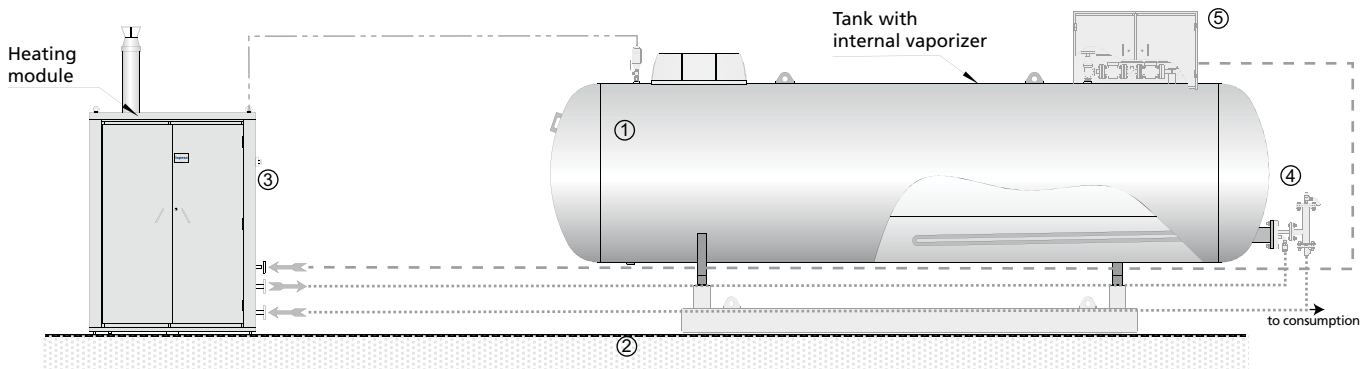


- 1.- Smoke outlet
- 2.- Boiler
- 3.- Adjustable feet
- 4.- Electrical control cabinet
- 5.- Gas supply to boiler (DN15 / PN10)
- 6.- Water outlet (DN25 / PN10)
- 7.- Water return (DN25 / PN10)



TANK WITH INTERNAL VAPORIZER + MODULAR HEATING UNIT

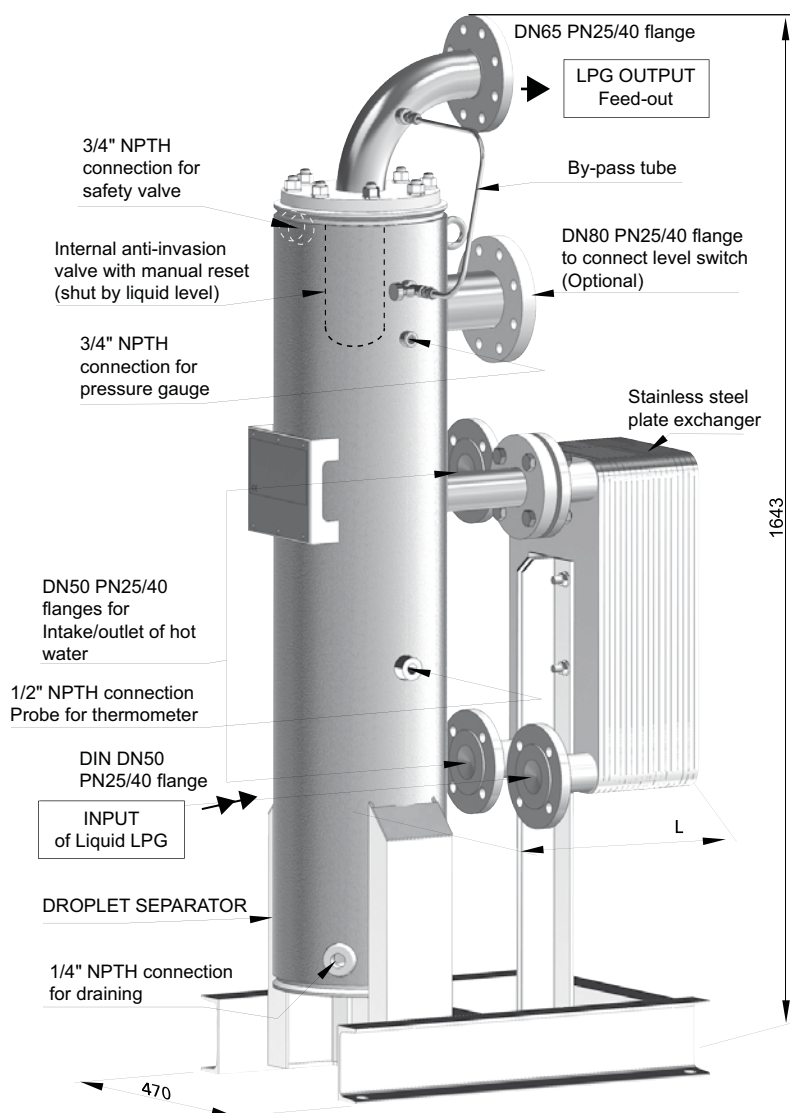
- Set comprising:
- 1- Tank with internal vaporizer with full valve equipment and control train to consumption.
 - 2- Support frame.
 - 3- Heating module.
 - 4- No-gas device.
 - 5- Gas control line.



Installation to be carried out at destination site:

- Control cable (flameproof)
- - - - - Propane: boiler supply
- Water: heating circuit internal vaporizer

Compact unit model	Tank (l.)	Vaporization (Kg/h)	Heating module model
LPVI4880A+VIA150+VPC30C	4.880	150	VPC30C
LPVI4880A+VIA300+VPC30C	4.880	300	VPC30C
LPVI4880A+VIB500+VPC60C	4.880	500	VPC60C
LPVI110A+VIA150+VPC30C	10.000	150	VPC30C
LPVI110A+VIA300+VPC30C	10.000	300	VPC30C
LPVI110A+VIB500+VPC60C	10.000	500	VPC60C
LPVI113A+VIA150+VPC30C	13.000	150	VPC30C
LPVI113A+VIA300+VPC30C	13.000	300	VPC30C
LPVI113A+VIB500+VPC60C	13.000	500	VPC60C



MODULAR FEED-OUT VAPORIZERS

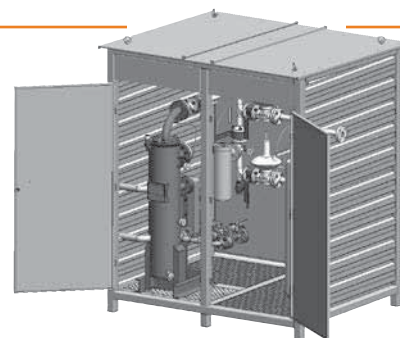
- The system allows the vaporization capacity to be increased by easy replacement of the plate exchanger.
- Vaporization capacities of 500 to 5.000 kg/h.
- Design pressure: 20 bar.
- Rated operating conditions:
Water input temperature: 55°C.
Input-output temperature: 20 °C.
Vaporization pressure: 4 bar.

CHARACTERISTICS TABLE

Vaporization capacity (Kg./h.)	Model Ref.	Approx. tare. (Kg.)	L (mm)
500	VPM 500	170	625
1.000	VPM 1000	175	660
1.500	VPM 1500	185	695
2.000	VPM 2000	195	745
3.000	VPM 3000	215	845
5.000	VPM 5000	240	935

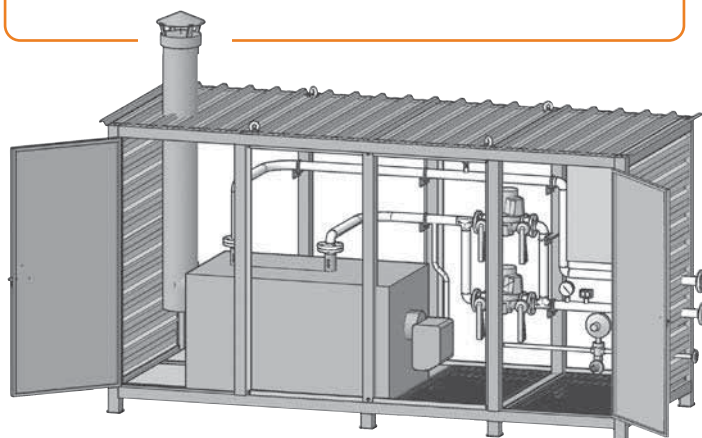
MODULAR VAPORIZATION UNITS EMV models

- They allow direct use of tank gas when consumption is small.
Gas supply to boiler.
Complete unit comprising:
- Modular vaporizer
 - Condensate separators
 - Control train
 - Valves and safety elements



MODULAR HEATING UNITS. EMC models

- Complete unit comprising:
- Heating boiler
 - Pump
 - Regulators, pressure switches, etc.
 - Electric control panel (for boiler module and vaporization module)
 - Gas detection alarm system



MODULAR HEATING-VAPORIZATION SETS

- This is a set formed by the following elements:
- 1 - Vaporization module with EMV modular vaporizer
 - 2 - MC heating module.

On-site installation consists of connecting the gas and heating pipes between the modules (tank to vaporization module and this module to the heating module) and wiring up between booths.

CHARACTERISTICS TABLE

Modular unit model	Vaporizer (Kg./h.)	Rated boiler power (Mcal./h.)
EMV0500+EMC060C	500	60
EMV1000+EMC120C	1000	120
EMV1500+EMC180C	1500	180
EMV2000+EMC240C	2000	240
EMV3000+EMC360C	3000	360

AUTOGAS SKIDS

Horizontal aboveground SKID

Vertical aboveground SKID

Underground SKID

- Stand-alone LPG storage units with pumping equipment and dispenser incorporated in a frame.
- Includes transfer equipment to allow the supply of gas in liquid phase to vehicles, with the maximum guarantee of safety.

- Simplified installation: only requires connection of power supply to the unit and anchoring to the ground (with earth connection).



	MODELS	DIRECTIVES	NORMS
HORIZONTAL TANK	<ul style="list-style-type: none"> • LPUA^{**}: with filling column • LPUA^{**S}: with dispenser • LPUA^{**P}: without dispenser or filling column • LPUA^{**E}: for underground installation with various pump types 	<ul style="list-style-type: none"> • Pressure equipment: 2014/68/UE • Machinery: 2006/42/CE • ATEX: 2014/34/UE • Low voltage: 2014/35/UE • Electromagnetic compatibility: 2014/30/UE 	<ul style="list-style-type: none"> • EN14678 • UNE60630
VERTICAL TANK	<ul style="list-style-type: none"> • LPUA^{**V}: with filling column • LPUAV^{**S}: with dispenser • LPUAV^{**P}: without dispenser or filling column 		

COMPOSITION

LPG STORAGE TANK:

Standard Lapesa tank with a design pressure of 20 bar and special connections for transfer unit.

FRAME:

A support structure that houses the complete installed unit.

LPG TRANSFER LINES:

- Liquid phase outlet line: Includes limiter, shutoff valve and filter for liquid LPG placed before the pump.
- Return line to tank (protects the pump from overpressure) with a by-pass valve.
- Pump-to-dispenser transfer line: Includes safety valve and pressure gauge (LPUA types include shutoff valve with the supply column, in LPUAS model the shutoff valve is integrated in the dispenser).

LPG TRANSFER PUMP:

Specific for LPG in liquid phase.

Nominal values for standard pumps:

- Aboveground skids: 40 l/min (5 bar differential pressure).
- Underground skids LPUA**E-BME: 114 l/min (10 bar differential pressure).
- Underground skids LPUA**E-BMS: 90 l/min (10 bar differential pressure).

SUPPLY UNIT:

- Hose specific for LPG, compliant with EN14678-1 and EN1762.
- Break away included in hose.
- European nozzle according to EN13760.
- Distances to supply unit allow the placement of fencing in the storage area.
- Tanks with filling column: Include hose with nozzle, break-away, start/stop button ("dead man" type), push-button for emergency stop, housing for nozzle. Equipment designed for use with own truck fleet, where commercial transactions are not performed and where number of liters exchanged is not required.

- Tanks with dispenser: Besides the usual items of a dispenser, it also includes totalizers of liters and euros. Equipment designed for installation in service stations, or for consumption control in own truck fleet.
- Units for underground use: Supplied without supply unit (filling column or dispenser). They are ready for use with dispenser.

ELECTRICAL INSTALLATION:

Skids are supplied with electrical installation mounted. Complies with spanish low voltage electrotechnical regulation.

Electrical installation complies with the Spanish norm for low voltage installations and its annex ETB026 (areas with risk of explosion).

Includes:

- Hoses with mechanical protection, length 30 meters, connected at both ends. Three types of hoses are present:
 - Between pump and cabinet.
 - Between supply unit and cabinet.
 - Between pump and supply unit.
- Electrical cabinet complete will necessary items (limiter, differential, motor-saver). It must be installed in safe zone (outside of ATEX zone). Installation designed for triphasic electrical connection.

ELECTRICAL ACTUATOR (OPTIONAL):

Electrical actuator on liquid phase outlet. This device closes flow when emergency stop is pressed or when the electric supply is down. Specially recommended for skids without filling column nor dispenser (LPUASP**)

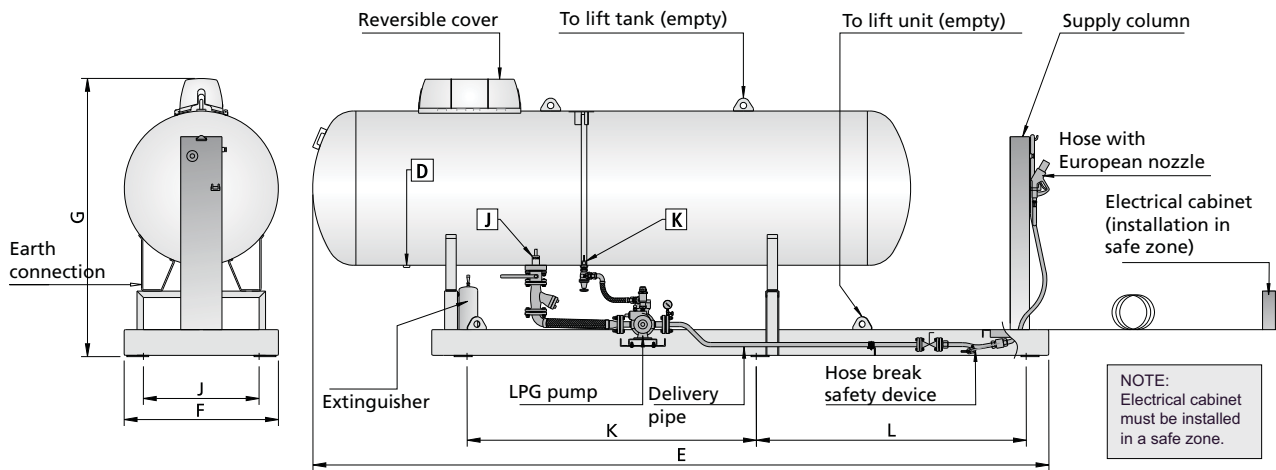
BREAKAWAY COUPLINGS (OPTIONAL):

In the case of dispenser (not filling column), excess flow valves with breakway couplings, to avoid an LPG leakage if a vehicle hits the dispenser.

PREVENTION/SAFETY:

Dry-powder fire extinguishers according to LPG tank size, incorporated in the frame unit. The electrical cabinet should be located in a safe zone.





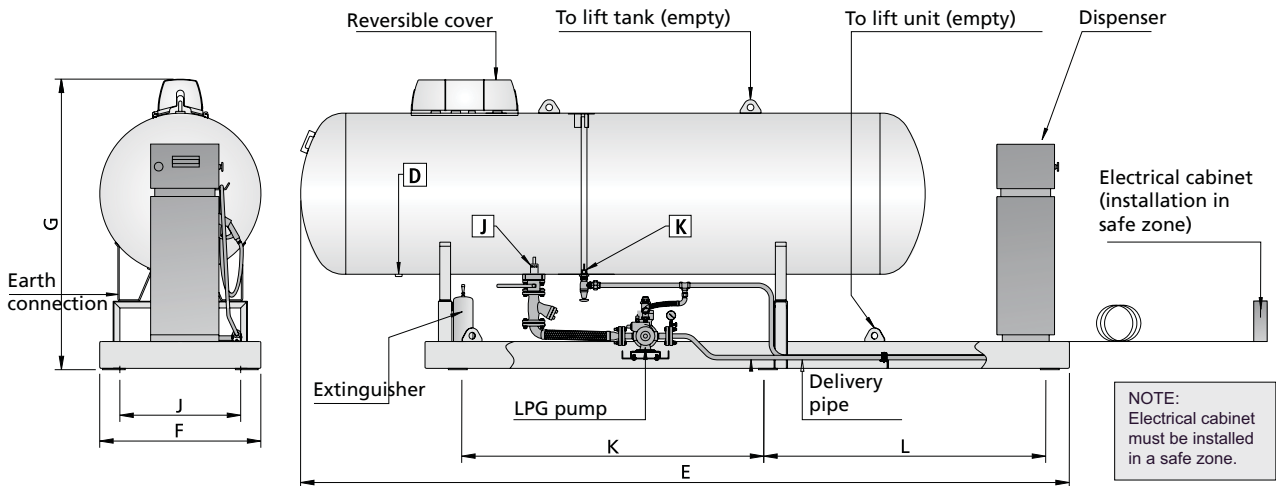
LPUA**

Stand-alone units with filling column (supply hose, "deadman" button and emergency pushbutton). Ideal for in-house consumption, where no commercial transactions are carried out and the litres supplied do not need to be recorded. Supplied with electrical installation.

CHARACTERISTICS TABLE

Model Ref.	Approx. empty weight. (Kg.)	Dimensions (mm) of unit			Dimensions (mm) of anchors			Function	TANK CONNECTIONS			
		E	F	G	J	K	L		D1200	D1500	D1750	Thread
LPUA1000	590	2.080	1.470	1.650	600	1.400	-	Filling	1-1/4"	1-1/4"	1-1/4"	NPT-H
LPUA2450	1.115	4.425	1.200	2.165	900	1.250	2.450	High point and diameter	3/4"	3/4"	3/4"	NPT-H
LPUA4880	1.585	6.540	1.200	2.165	900	2.250	2.915	Drain	3/4"	1-1/4"	1-1/4"	NPT-H
LPUA6650	2.010	8.135	1.200	2.165	900	3.150	3.265	Magnetic level	Rochester Junior	Rochester Junior	Rochester Junior	--
LPUA8334	2.390	9.715	1.200	2.165	900	3.950	3.650					
LPUA10	2.865	7.940	1.500	2.470	1.200	3.210	3.135	Safety	1-1/4"	1-1/4"	2"	NPT-H
LPUA13	3.505	9.680	1.500	2.470	1.200	4.010	3.605					
LPUA20	5.120	10.560	1.700	2.625	1.400	4.210	4.075					

TANK CONNECTIONS



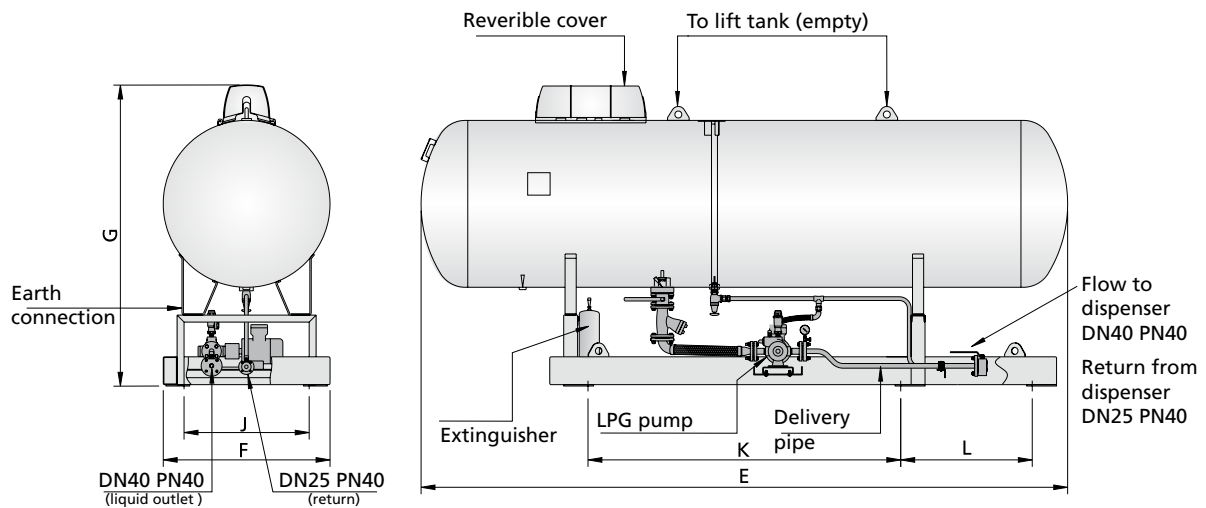
LPUAS**

Stand-alone units with dispenser (incorporating litre and price totalizer and other items). Supplied with electrical installation.

CHARACTERISTICS TABLE

Model Ref.	Approx. empty weight. (Kg.)	Dimensions (mm) of unit			Dimensions (mm) of anchors			Function	TANK CONNECTIONS			
		E	F	G	J	K	L		D1200	D1500	D1750	Thread
LPUAS2450	1.200	4.425	1.200	2.165	900	1.250	2.450	Filling	1-1/4"	1-1/4"	1-1/4"	NPT-H
LPUAS4880	1.690	6.540	1.200	2.165	900	2.250	2.915	High point and diameter	3/4"	3/4"	3/4"	NPT-H
LPUAS6650	2.100	8.135	1.200	2.165	900	3.150	3.265	Drain	3/4"	1-1/4"	1-1/4"	NPT-H
LPUAS8334	2.500	9.715	1.200	2.165	900	3.950	3.650	Magnetic level	Rochester Junior	Rochester Junior	Rochester Junior	--
LPUAS10	2.960	7.940	1.500	2.470	1.200	3.210	3.135					
LPUAS13	3.600	9.680	1.500	2.470	1.200	4.010	3.605	Safety	1-1/4"	1-1/4"	2"	NPT-H
LPUAS20	5.180	10.560	1.700	2.625	1.400	4.210	4.075					

TANK CONNECTIONS



LPUASP**

Stand-alone units without filling column or dispenser. The dispenser is to be installed in a separate booth or alongside the rest of the dispensers at the petrol station.

CHARACTERISTICS TABLE

TANK CONNECTIONS

Model Ref.	Approx. empty weight. (Kg.)	Dimensions (mm) of unit			Dimensions (mm) of anchors			Function	Tank diameter			
		E	F	G	J	K	L		D1200	D1500	D1750	Thread
LPUASP2450	1.010	2.900	1.200	2.165	900	1.250	875	Filling	1-1/4"	1-1/4"	1-1/4"	NPT-H
LPUASP4880	1.530	4.650	1.200	2.165	900	2.250	945	High point and diameter	3/4"	3/4"	3/4"	NPT-H
LPUASP6650	1.950	6.240	1.200	2.165	900	3.150	1.290	Drain	3/4"	1-1/4"	1-1/4"	NPT-H
LPUASP8334	2.330	7.825	1.200	2.165	900	3.950	1.685					
LPUASP10	2.790	6.050	1.500	2.470	1.200	3.210	1.165	Magnetic level	Rochester Junior	Rochester Junior	Rochester Junior	--
LPUASP13	3.450	7.785	1.500	2.470	1.200	4.010	1.635					
LPUASP20	4.980	8.760	1.700	2.625	1.400	4.210	4.075	Safety	1-1/4"	1-1/4"	2"	NPT-H

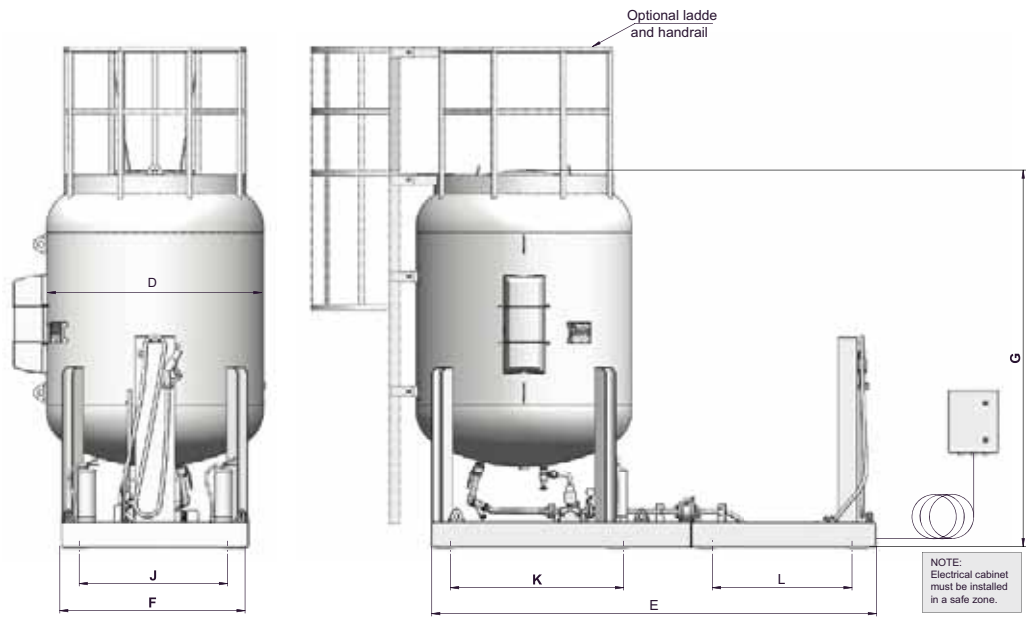


SPECIAL DESIGNS "L" SHAPE

for installation in placed with reduced space or to facilitate access to vehicles (please consult)

LPUAV**

Stand-alone units with filling column (supply hose, "deadman" button and emergency pushbutton). Supplied with electrical installation. Ideal for in-house consumption, where no commercial transactions are carried out and the litres supplied do not need to be recorded. Due to their large dimensions, for transport purposes the skid is supplied loose, to be mounted to tank at destination, except for LPUA2450V and LPUA5000V models.



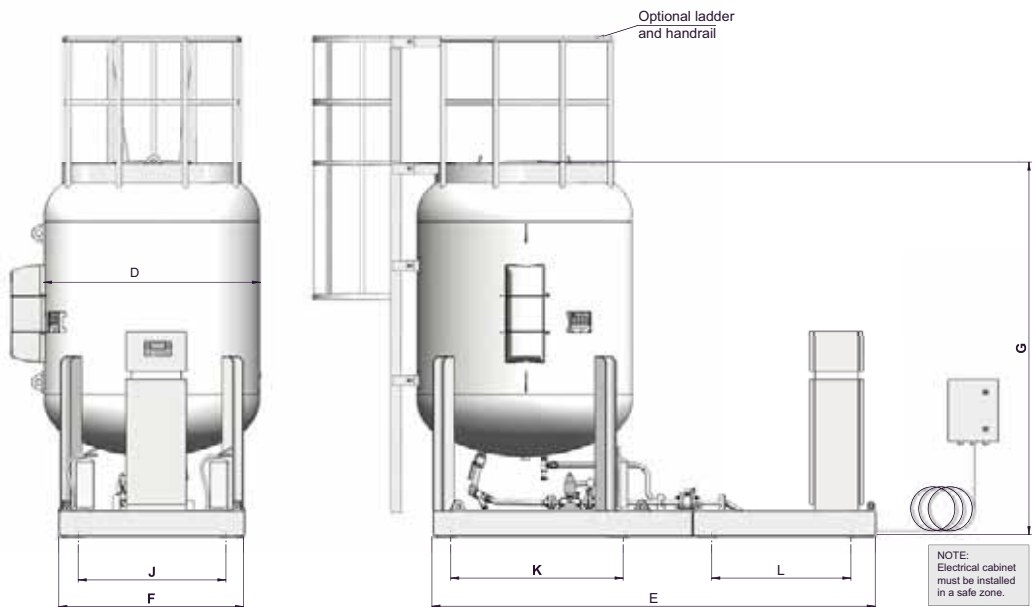
CHARACTERISTICS TABLE

Model Ref.	weight. (Kg.)	Dimensions (mm)							Connection	Size	Thread
		D	E	F	G	J	K	L			
LPUA2450V	1.262	1.200	3.600	1.360	3.050	1.130	1.140	--	Filling	1-1/4"	NPT-H
LPUA5000V	1.820	1.750	3.600	1.500	3.100	1.230	1.400	--	High point and diameter	3/4"	NPT-H
LPUA6650V	2.368	1.750	5.300	1.500	3.840	1.230	1.400	2.875	Drain	1-1/4"	NPT-H
LPUA8400V	2.958	1.750	5.400	1.500	4.570	1.230	1.400	2.975	Magnetic level	Rochester Junior	--
LPUA13V	4.188	1.750	5.760	1.500	6.510	1.230	1.400	3.335	Safety	1-1/4"	NPT-H

TANK CONNECTIONS

LPUASV**

Stand-alone units with dispenser (incorporating litre and price totalizer and other items). Supplied with electrical installation. Due to their large dimensions, for transport purposes the skid is supplied loose, to be mounted to tank at destination, except for LPUAS2450V and LPUAS5000V models.



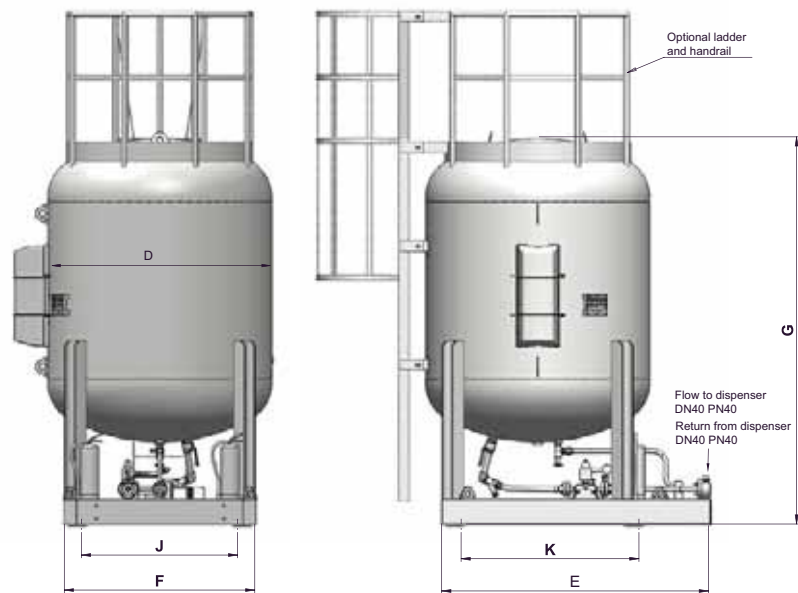
CHARACTERISTICS TABLE

Model Ref.	weight. (Kg.)	Dimensions (mm)							Connection	Size	Thread
		D	E	F	G	J	K	L			
LPUAS2450V	1.341	1.200	3.600	1.360	3.050	1.130	1.140	--	Filling	1-1/4"	NPT-H
LPUAS5000V	1.890	1.750	3.600	1.500	3.100	1.230	1.400	--	High point and diameter	3/4"	NPT-H
LPUAS6650V	2.447	1.750	5.300	1.500	3.840	1.230	1.400	2.875	Drain	1-1/4"	NPT-H
LPUAS8400V	3.037	1.450	5.400	1.500	4.570	1.230	1.400	2.975	Magnetic level	Rochester Junior	--
LPUAS13V	4.267	1.750	5.760	1.500	6.510	1.230	1.400	3.335	Safety	1-1/4"	NPT-H

TANK CONNECTIONS

LPUASPV**

Stand-alone units without filling column or dispenser.
The filling column or dispenser must be installed at the required distance away from this unit.
Supplied with electrical installation.



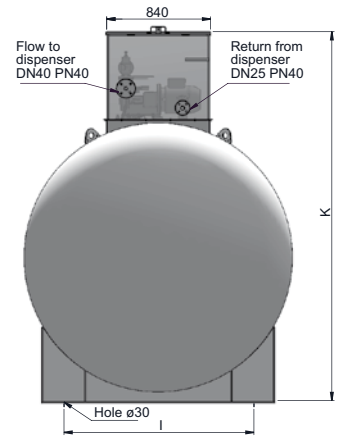
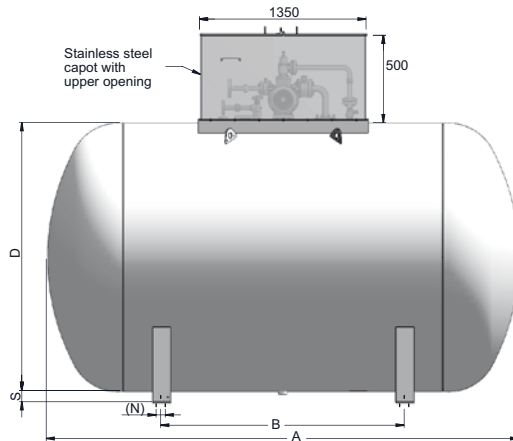
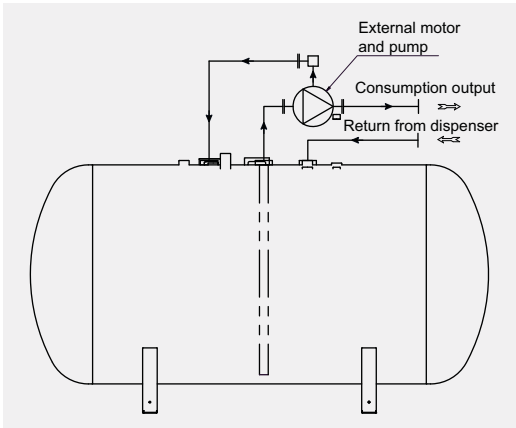
CHARACTERISTICS TABLE

Model Ref.	weight. (Kg.)	Dimensions (mm)					
		D	E	F	G	J	K
LPUASP2450V	875	1.200	1.660	1.360	3.050	1.130	1.140
LPUASP5000V	1.680	1.750	2.230	1.500	3.100	1.230	1.400
LPUASP6650V	2.160	1.750	2.230	1.500	3.840	1.230	1.400
LPUASP8400V	2.750	1.750	2.230	1.500	4.570	1.230	1.400
LPUASP13V	3.980	1.750	2.230	1.500	6.510	1.230	1.400

TANK CONNECTIONS

Connection	Size	Thread
Filling	1-1/4"	NPT-H
High point and diameter	3/4"	NPT-H
Drain	1-1/4"	NPT-H
Magnetic level	Rochester Junior	--
Safety	1-1/4"	NPT-H





LPUAE-BME**

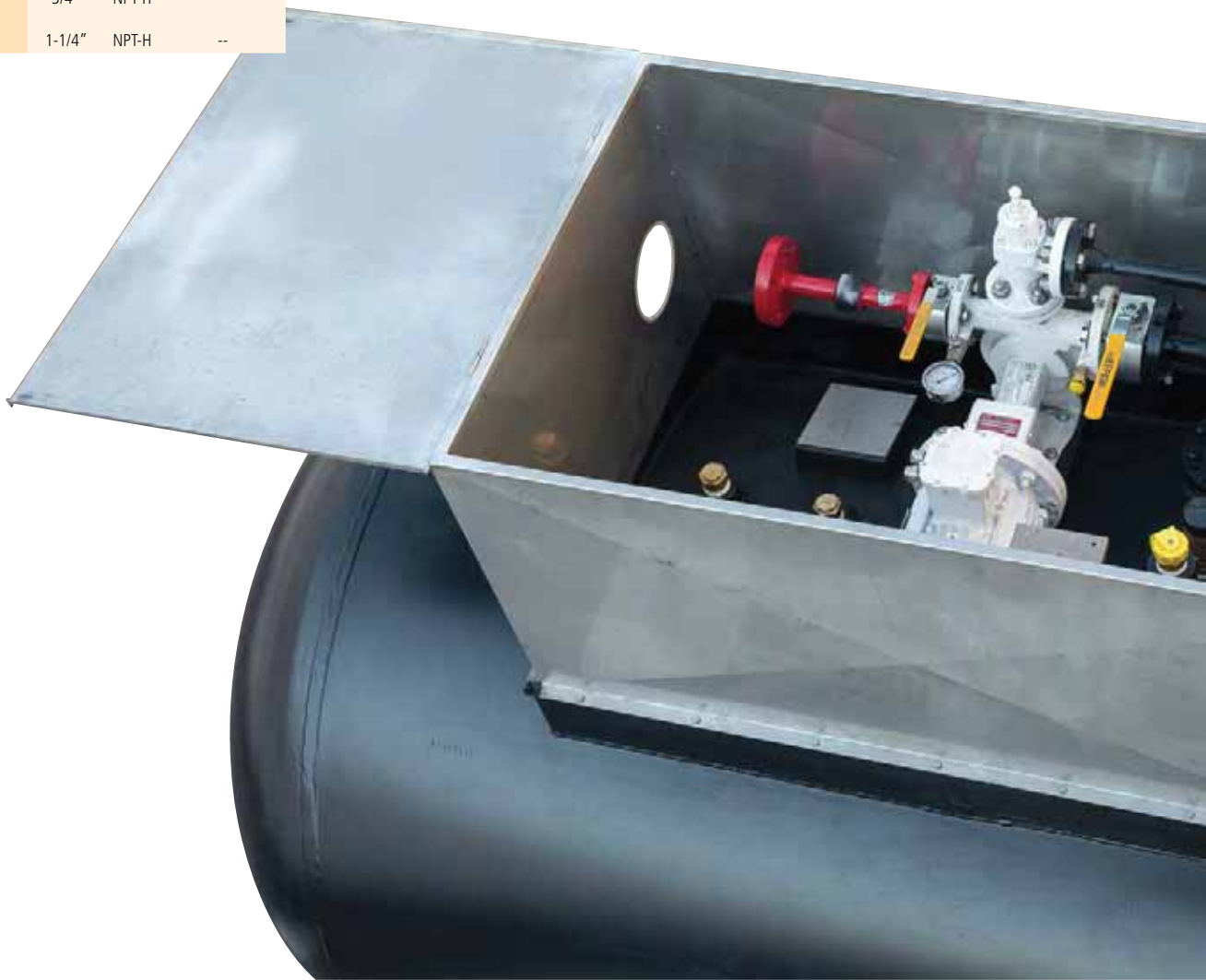
Group motor-pump installed out of the tank, inside the capot, which allows for easy maintenance.
Unit designed for installation in areas WITHOUT TRANSIT over the capot.

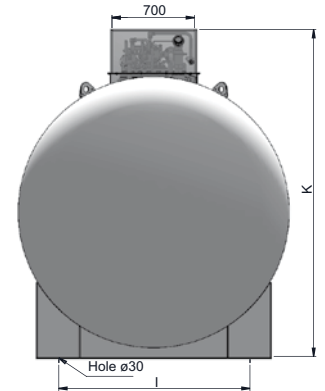
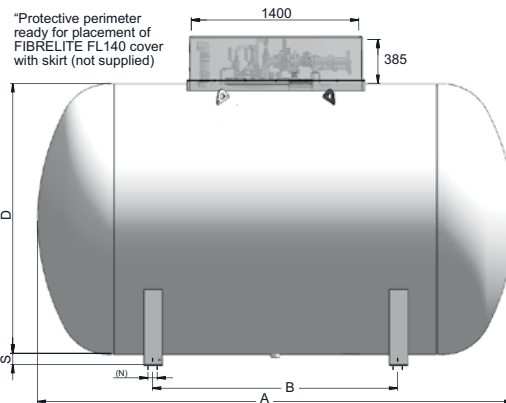
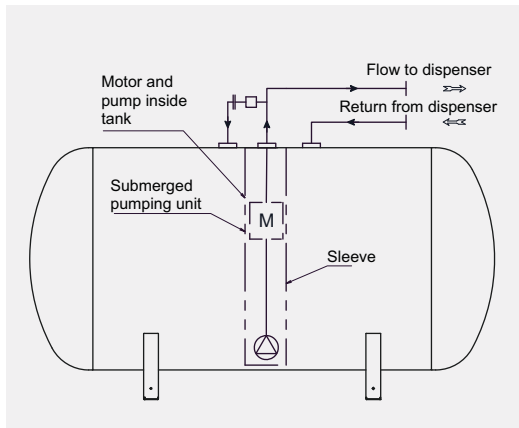
TANK CONNECTIONS

Connection	Size	Thread	Coupling acc. to
Filling	1-1/4"	NPT-H	--
Flow to dispenser	DN40	--	EN 1092-1 PN40
Return from dispenser	DN25	--	EN 1092-1 PN40
Magnetic level	Rochester	--	--
Safety	1-1/4"	NPT-H	--
Drain (with dip pipe)	1-1/4"	NPT-H	--
Manometer and high point Magnetic level	3/4"	NPT-H	--
Reserve connection	1-1/4"	NPT-H	--

CHARACTERISTICS TABLE

Model Ref.	weight. (Kg.)	Dimensions (mm)										
		D	A	B	I	K	S	N	P			
LPUA4950E-BME	1.380	1.500	3.140	1.500	1.000	2.200	200	--	1			
LPUA10E-BME	2.440	1.500	6.050	3.500	1.000	2.200	200	--	1			
LPUA13E-22-BME	3.400	2.200	3.880	2.000	1.560	2.930	93	75	2			
LPUA33E-BME	7.600	2.200	9.260	5.500	1.560	2.930	100	75	2			





*Protective perimeter ready for placement of FIBRELITE FL140 cover with skirt (not supplied)

LPUAE-BMS**

Group motor-pump submerged inside the tank, inside inner sleeve, which can be unmounted without needing to empty the tank. Unit designed for installation in areas WITH TRANSIT over the capot

CHARACTERISTICS TABLE

Model Ref.	weight. (Kg.)	Dimensions (mm)							
		D	A	B	I	K	S	N	P
LPUA4950E-BMS	1.470	1.500	3.140	1.500	1.000	2.085	200	--	1
LPUA10E-BMS	2.530	1.500	6.050	3.500	1.000	2.085	200	--	1
LPUA13E-22-BMS	3.480	2.200	3.880	2.000	1.560	2.680	93	75	2
LPUA33E-BMS	7.600	2.200	9.260	5.500	1.560	2.680	100	75	2

TANK CONNECTIONS

Connection	Size	Thread	Coupling acc. to
Filling	1-1/4"	NPT-H	--
Flow to dispenser	DN50	--	EN 1092-1 PN40
Return from dispenser	DN25	--	EN 1092-1 PN40
Magnetic level	Rochester	--	--
Safety	2"	NPT-H	--
Drain (with dip pipe)	1-1/4"	NPT-H	--
Manometer and high point	3/4"	NPT-H	--
Magnetic level	3/4"	NPT-H	--
Reserve connection	1-1/4"	NPT-H	--
Boca de hombre	DN420	--	--



TRANSPORTABLE TANK FOR LPG

Tank for storage and transport of LPG.

Its design and homologation allow it to be used as static tank (2014/68/UE) as well as transportable tank (99/36/CE), it includes two CE conformity declarations.

Equipment designed for vertical handling and use.

LPG storage with minimum safety distances.

TRANSPORTABLE TANK: LT1000V

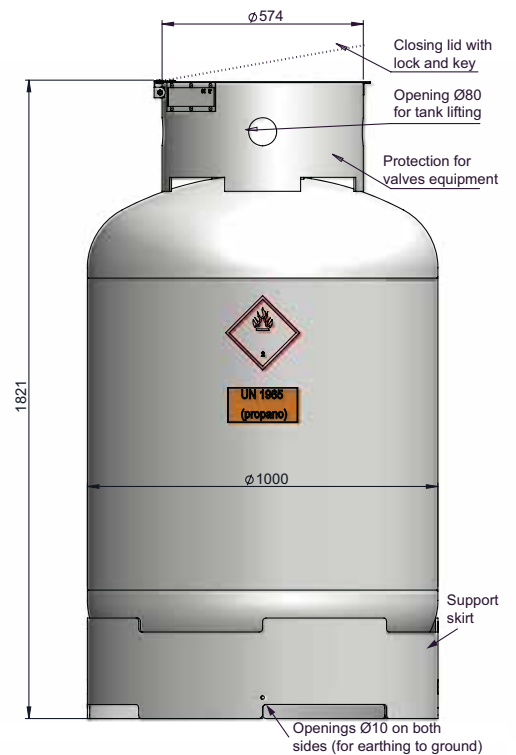
NOMINAL CAPACITY: 990 liters

MAXIMUM OPERATING PRESSURE: 20 bar

TARE (APPROX.): 390 kg

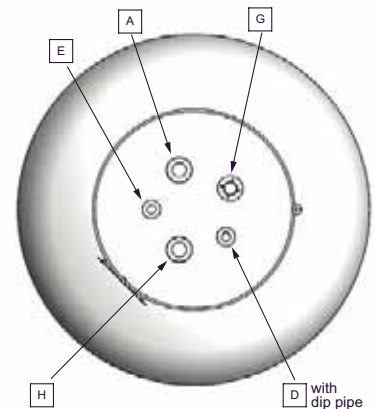
TWIN STAMP:

- Static equipment **CE** (2014/68/UE)
- Transportable equipment **π** (99/36/CE-ADR)



TANK CONNECTIONS

Ref.	Function	Size	Thread
A	Filling	1-1/4"	NPT-F
D	Drain	3/4"	NPT-F
E	Multivalve	3/4"	NPT-F
G	Level	Rochester Junior	--
H	Safety	1-1/4"	NPT-F



TANK CONTAINERS

20, 30 and 40-ft tank containers for transporting LPG overland (road or rail) and by sea.

High-strength steel cylindrical container with breakwater plates inside and korbogen type dished ends, built in reinforced steel ISO-container structure.

(The characteristics of the tank containers described below are for Lapesa type models. Any adaptation of a design to a customer's specific requirements shall involve a new project and the corresponding type-approval).

General/standard characteristics

- Tank-container for the transport of ADR class 2 liquefied gas under pressure, Type 1AA container according to ISO 668.
- Built according to ADR, ISO, CSC, IMDG code
- Product to be contained: LPG (UN 1965), commercial propane and butane.
- ADR design pressure: 27 bar.
- Maximum working pressure: 20.77 bar.
- Test pressure: 27 bar.
- Design temperature: -20 +50°C.

Controls and tests

- Inspections as per design code.
- 100% weld x-raying.
- Hydraulic test at 27 bar.
- Valve tightness test.
- ISO load tests on prototype container.
- ISO, CSC tests.

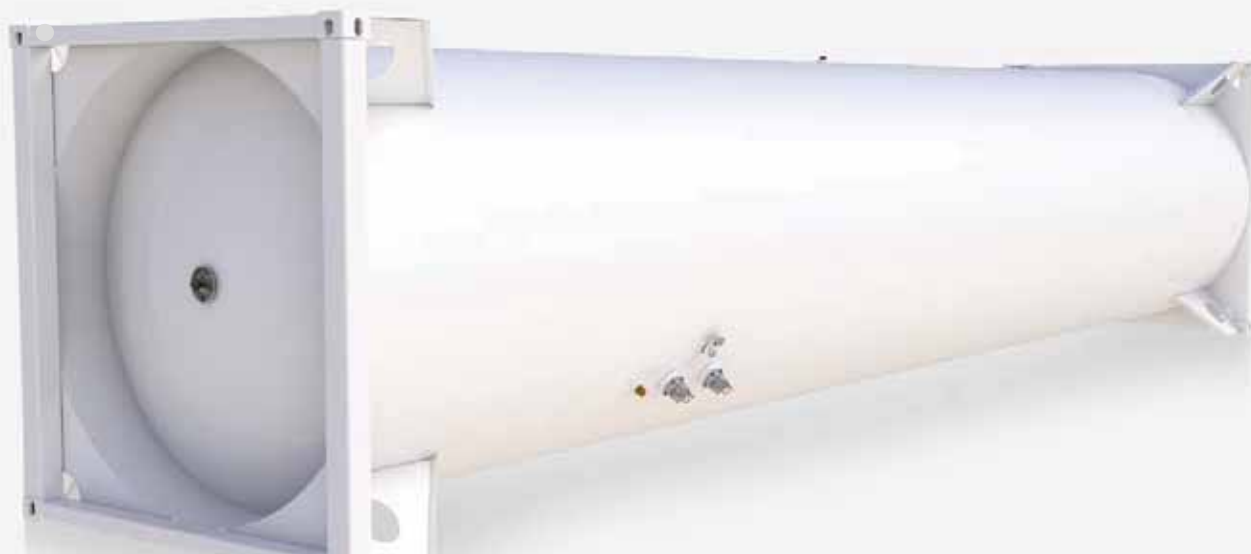
Equipment

- Background internal valves with flow limiter and opening via automatic return lever, for connections to liquid phase and gas phase, with "fire-safe" type ball valve, sealable with blind cap.
- Valve with pressure gauge and high point indicator.
- Rotating level.
- Background drain valve.
- Internal overpressure safety valve.
- DN500 manhole located on rear head.
- Side metal cabinet for valves.

External finish

- Shot-blasting of unit SA 2 1/2.
- Anti-corrosion protection of surface with coat of polyamide epoxy (60 microns).
- Top coat of white polyurethane (60 microns).

Model CONTAINER-TANK		LTC52-GLP	LTC38-GLP	LTC25-GLP
Container-tank size	'	40'	30'	20'
Nominal volume	m ³	52,0	38,3	24,5
Total length	mm	12.192	9.125	6.058
Total width	mm	2.438	2.438	2.438
Total height	mm	2.591	2.591	2.591
Tank Diameter	mm	2.400	2.400	2.400
Inner breakwaters	n°	3	2	2
Empty weight	mt	10,15	8,05	6,1
Load LPG	mt	21,85	16,1	10,3



**SEMI-TRAILER
TANKER**

for transport
and distribution
of **LPG**

Tanker type features:

- Products to be transported, liquid gases class 2 (ADR): propane, butane, isobutane, mixtures, etc.
- Manufactured under applicable European Directives: 2010/35/UE (π marking), 2008/68/CE.
- Applicable regulations: ADR, EN12493, IMO8 (optional).
- Maximum working pressure: 19,2 bar.
- Design and test pressure: 25 bar.
- Inspections and controls according to ADR.
- Anticorrosive primer finish (high strength cataphoresis for the frame) and white polyurethane finish (blue chassis).



OVERALL DIMENSIONS FOR A 44 TON SET

- Nominal capacity: 52 m³
- Approximate tare: 14 Ton
- LPG load: 21,8 Ton

INCLUDED ELEMENTS IN A BASIC TANKER

- Internal baffles inside for transport with partial filling.
- Aluminum sunshade in the upper area of the cylinder.
- DN500 inspection manhole.
- Loading cabinet in the central area, with access from both sides.
- Distribution cabinet in the central area, right side.
- Rolling set with the following characteristics:
 - Complete frame, for better distribution of loads, and long life.
 - SAF axes or similar.
 - Aluminum wheels.
 - ADR electrical installation.
 - Parking brake by 2-axis pneumatic actuators.
 - EBS 2S / 2M. Disc 430 x 45.
 - Shaft elevator.
 - Mud wing set, wheel wrenches, aluminum bumpers, tooldrawer, two fire extinguishers with box ...

LPG EQUIPMENT

- Pneumatic operated bottom valves, REGO or similar.
- Manual stopvalves, ball type, with stainless steel sphere.
- Blackmer 3" type pump. With hydraulic motor. With Blackmer 1-1 / 2" bypass.
- Liquid Control type volumetric counter with temperature compensator. Electronic head. Printer in separate cabinet.
- Hose 1-1/4" (28 meters), in winder with pneumatic/hydraulic reel.
- Connections to gas or liquid phase, finished in flange.
- Optionally, the terminal will be placed according to the customer needs.
- All pipe sections are protected by relief valves, either manual or automatic.
- Other tank valves:
 - REGO type rotating level.
 - Internal safety valves, REGO type (IMO case).
 - High point indicator and pressure gauge.
 - Temperature indicator.

lapesa
Solutions



We adapt our products to the needs of our clients (truck, capacity, equipment, sunshade, etc.). An example of a tanker is shown in this catalog. Check with us your requirements.

EMERGENCY/SAFETY SYSTEMS

- The tanker includes **6 emergency pushbuttons** in various tanker locations. When manually activated, they close the tanker stopvalves and the pump switches to stop mode.
- **Detector for closed cabinet:** When valves cabinet is closed (no intention for LPG transfer), this detector closes the tanker stop valves and the pump switches to stop mode.
- **Parking brake:** Tanker stop valves can only be opened when the parking brake is activated.
- **Anti-start system:** In case the truck tries to be started with the valves cabinet open, this safety system acts on the truck brakes, leaving them constantly activated. To avoid a possible wrong contact during truck driving, that could cause a sudden break on road, this system only acts when speed is below 5 km/h (when starting the truck).

HYDRAULIC INSTALLATION:

- For the correct operation of the hydraulic circuit that moves the LPG pump, the tractor unit must have a power intake, hydraulic pump, oil tank, cooler...

FINAL DOCUMENTATION

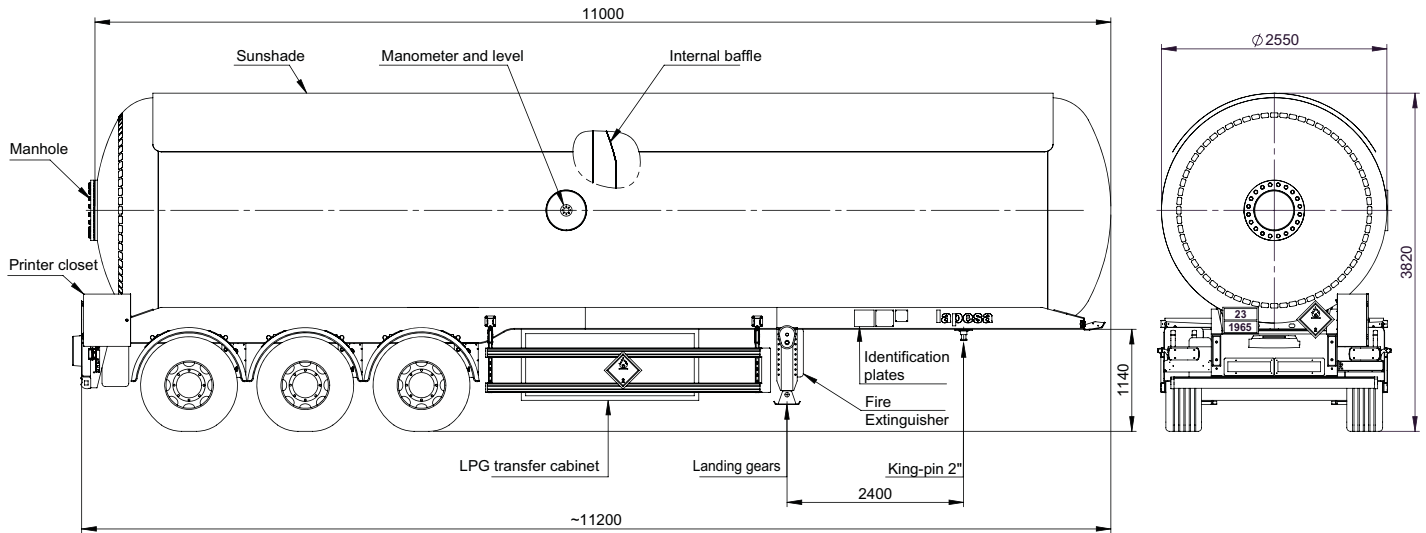
- Manufacturing dossier.
- ADR documentation.
- Instructions manual.
- Technical drawing
- Complete documentation of vehicle homologation.



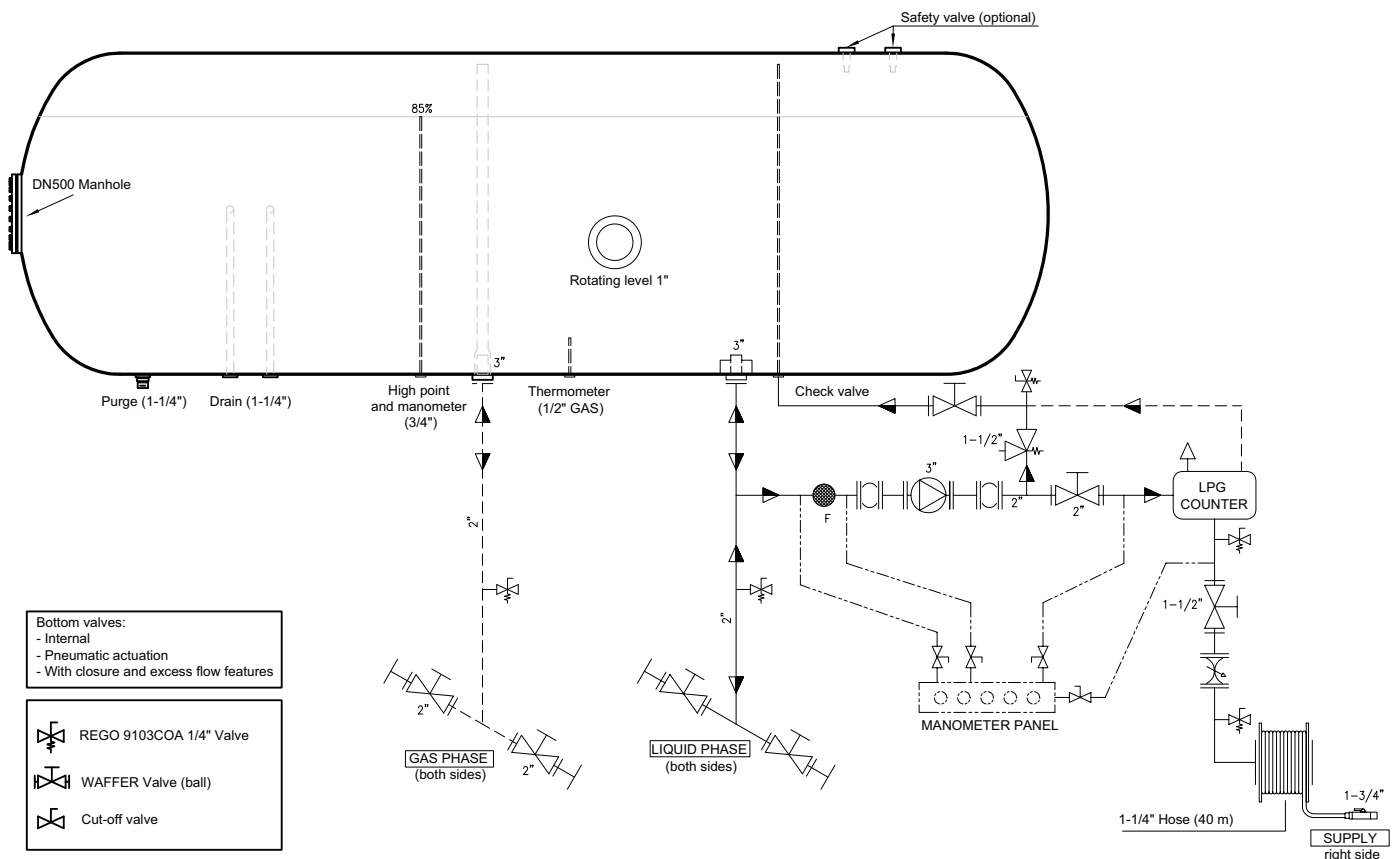
SOME EXAMPLES OF OPTIONAL ELEMENTS:

- Loading connections in the rear area.
- Auto-filling equipment, which allows the pump to be used to fill the tank
- Tank inertization.
- Thermal treatment.
- IMO8 (allows to transport the tanker by ship, for short distances).
- Finished with customer image, logos...
- Different brands for transfer equipment.
- Stainless steel pipes.
- Fire Safe Valves.
- Specific connections to gas phase and liquid phase.
- Extras in rolling unit:
 - Polished wheels.
 - Third autodirectional axis.
 - Integral LED lights.
 - Load distributor ... and many more.





PIPING AND INSTRUMENTATION (P&ID) LTT52



TANKER TRUCK

for transport and distribution of **LPG**

Tank type features:

- Products to be transported, liquid gases class 2 (ADR): propane, butane, isobutane, mixtures, etc.
- Manufactured under applicable European Directives: 2010/35/UE (π marking), 2008/68/CE.
- Applicable regulations: ADR, EN12493, IMO8 (optional).
- Maximum working pressure: 19,2 bar.
- Design and test pressure: 25 bar.
- Inspections and controls according to ADR.
- Anticorrosive primer finish (high strength cataphoresis for the frame) and white polyurethane finish (blue chassis).





OVERALL DIMENSIONS FOR A 3 AXLE TRUCK (26 TONS)

- Nominal capacity: 28 m³.
- Estimated tare weight of the truck without tank: 7.4 Ton.
- Approximate tare of the set: 14 Ton.
- LPG load: 12 Ton.

INCLUDED ELEMENTS IN A BASIC TANKER

- Internal baffles inside for transport with partial filling.
- Aluminum sunshade in the upper area of the cylinder.
- DN500 inspection manhole.
- Loading cabinet in the central area, with access from both sides.
- Distribution cabinet in the central area, right side.
- Other: ADR plates, fire extinguishers.

EMERGENCY/SAFETY SYSTEMS

- The tanker includes **6 emergency pushbuttons** in various tanker locations. When manually activated, they close the tanker stopvalves and the pump switches to stop mode.
- **Detector for closed cabinet:** When valves cabinet is closed (no intention for LPG transfer), this detector closes the tanker stop valves and the pump switches to stop mode.
- **Parking brake:** Tanker stop valves can only be opened when the parking brake is activated. Option to be specified (in coordination with the truck supplier).
- **Anti-start system:** In case the truck tries to be started with the valves cabinet open, this safety system acts on the truck brakes, leaving them constantly activated. To avoid a possible wrong contact during truck driving, that could cause a sudden break on road, this system only acts when speed is below 5 km/h (when starting the truck). Option to be specified (in coordination with the truck supplier).

lapesa
Solutions

We adapt our products to the needs of our clients (truck, capacity, equipment, sunshade, etc.). An example of a tanker is shown in this catalog. Check with us your requirements.

LPG EQUIPMENT

- Pneumatic operated bottom valves, REGO or similar.
- Manual stopvalves, ball type, with stainless steel sphere.
- Blackmer 3" type pump. With hydraulic motor. With Blackmer 1-1 / 2" bypass.
- Liquid Control type volumetric counter with temperature compensator. Electronic head. Printer in separate cabinet.
- Hose 1-1/4" (28 meters), In winder with pneumatic / hydraulic reel.
- Connections to gas or liquid phase, finished in flange. Optionally, the terminal will be placed according to the customer needs.
- All pipe sections are protected by relief valves, either manual or automatic.
- Other tank valves:
 - REGO type rotating level.
 - Internal safety valves, REGO type (IMO case).
 - High point indicator and pressure gauge.
 - Temperature indicator.

HYDRAULIC INSTALLATION:

- Under customer specifications, complete hydraulic equipment is included: hydraulic pump, oil tank, cooling circuit, etc.

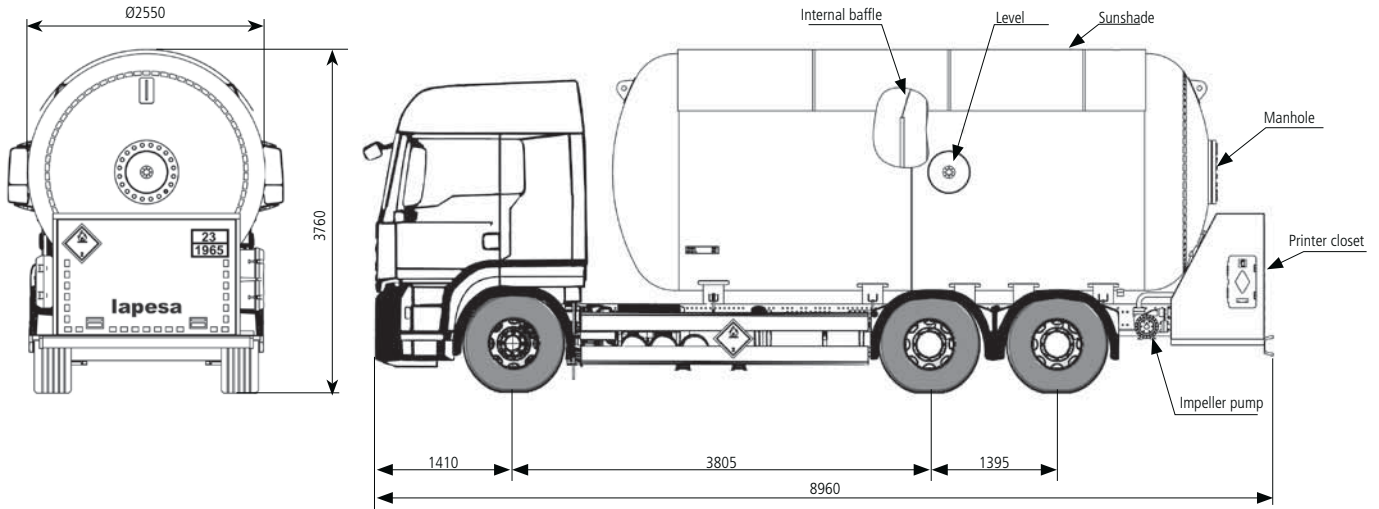
FINAL DOCUMENTATION

- Manufacturing dossier.
- ADR documentation.
- Instructions manual.
- Technical drawing.
- Complete documentation of vehicle homologation.

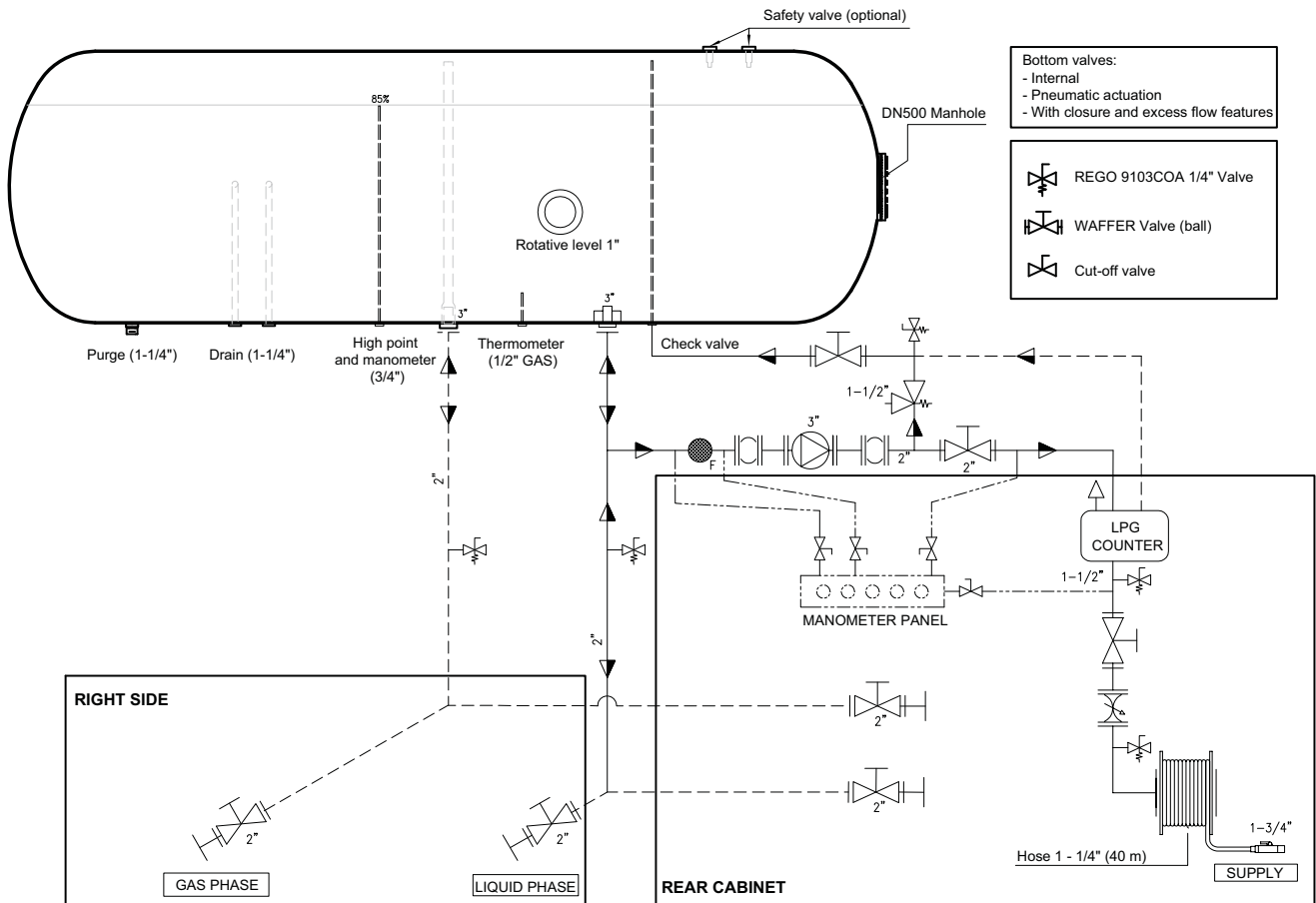
SOME EXAMPLES OF OPTIONAL ELEMENTS

- Loading connections in the rear area.
- Auto-filling equipment, which allows the pump to be used to fill the tank
- Tank inertization.
- Thermal treatment.
- IMO8 (allows to transport the tanker by ship, for short distances).
- Finished with customer image, logos...
- Different brands for transfer equipment.
- Stainless steel pipes.
- Fire Safe Valves.
- Specific connections to gas phase and liquid phase.





PIPING AND INSTRUMENTATION (P&ID) LTT28



MARKETS WORLDWIDE PROJECTS

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ANDORRA
GERMANY
ARMENIA
AUSTRIA
BELGIUM
BULGARIA
FINLAND
FRANCE
HOLLAND
IRELAND
ITALY
NORWAY
POLAND
PORTUGAL
UNITED KINGDOM
RUSSIA
SLOVENIA
SPAIN
SWITZERLAND

AMERICA

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MOROCCO
MAURITANIA
NAMIBIA
NIGER
NIGERIA
SOUTHAFRICA
TANZANIA
TUNISIA

MIDDLE EAST

EMIRATES
JORDANIA
KUWAIT
LEBANON
OMAN
QATAR
SAUDI ARABIA

ASIA

BANGLADESH
MONGOLIA
SRI LANKA
VIETNAM

OCEANIA

AUSTRALIA
NEW ZELAND

SOUTH POLE

ANTARCTICA



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