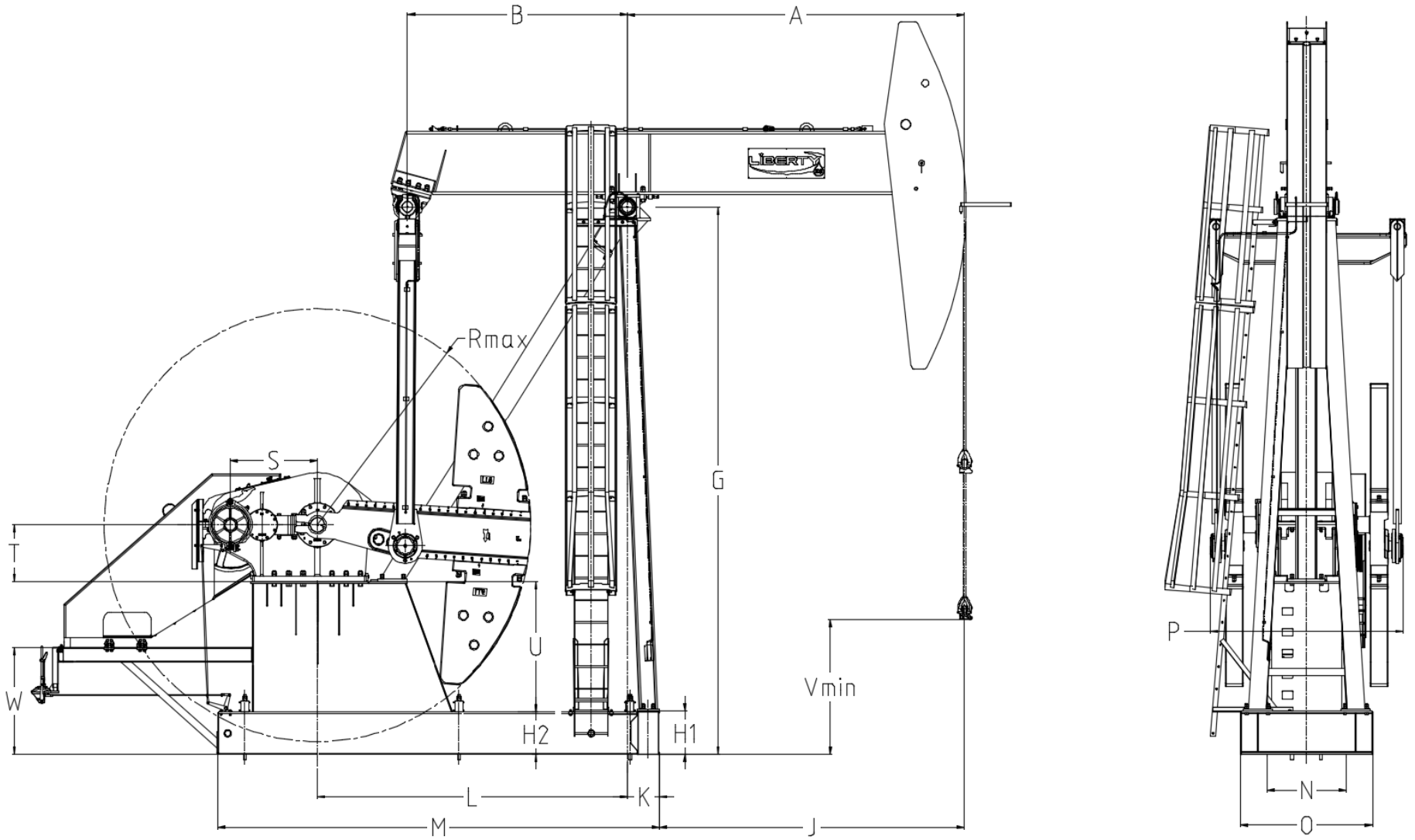
LIBERTY LIFT EG PUMPING UNIT



UNIT	A	B	G	H1	H2	J	K	L	M	N	O	P	R	S	T	U	V	W
1280-427-216	17'-7 1/2"	10'-0 5/8"	27'-1 1/4"	27 1/2"	27 1/2"	16'-4"	1'-3 3/8"	14'-4"	19'-5 1/4"	3'-10 3/4"	6'-5 1/4"	9'-9 3/8"	125"	54.917"	32.874"	5'-8 7/8"	4'-10 3/16"	4'-11 7/8"

LIBERTY LIFT SOLUTIONS

TORQUE FACTOR TABLE

UNIT DESIGNATION 1280-427-216 Enhanced Geometry

Cranks : CR064

Position of Crank degrees	Polished Rod Position Length of Stroke, inches			Torque Factor Length of Stroke, inches		
	216.367	178.814	144.800	216.367	178.814	144.800
0	0.0188	0.0176	0.0166	-31.234	-24.999	-19.540
15	0.0000	0.0000	0.0001	0.738	1.351	1.504
30	0.0213	0.0219	0.0222	34.255	28.387	22.748
45	0.0814	0.0817	0.0810	64.165	52.484	41.717
60	0.1731	0.1725	0.1703	85.552	70.332	56.219
75	0.2842	0.2838	0.2809	96.416	80.402	65.111
90	0.4027	0.4045	0.4024	98.180	83.289	68.509
105	0.5193	0.5251	0.5259	93.914	80.816	67.374
120	0.6287	0.6394	0.6440	86.436	74.881	62.870
135	0.7279	0.7433	0.7517	77.476	66.771	55.892
150	0.8158	0.8341	0.8449	67.613	56.966	46.862
165	0.8910	0.9092	0.9199	56.354	45.159	35.734
180	0.9510	0.9649	0.9726	41.990	30.347	22.147
195	0.9901	0.9959	0.9983	21.325	11.203	5.795
210	0.9986	0.9953	0.9921	-9.069	-12.717	-12.928
225	0.9651	0.9574	0.9511	-46.640	-39.040	-32.365
240	0.8876	0.8823	0.8762	-79.606	-62.718	-49.909
255	0.7777	0.7771	0.7732	-99.993	-79.676	-63.265
270	0.6502	0.6528	0.6507	-109.058	-88.985	-71.353
285	0.5169	0.5199	0.5184	-110.160	-91.524	-74.113
300	0.3860	0.3876	0.3857	-105.314	-88.311	-71.887
315	0.2642	0.2638	0.2613	-95.202	-79.908	-65.012
330	0.1578	0.1560	0.1533	-79.712	-66.471	-53.740
345	0.0736	0.0716	0.0694	-58.424	-48.040	-38.373

1.) The position of the crank is the angular displacement measured clockwise from the 12 o'clock position View with the well head to the right.

2.) Position is expressed as a fraction of stroke above lowermost position

3.) Torque factor = T/P_R, where T = torque on pumping unit reducer due to polished rod load P_R.

Strctural Unbalance = -2255

A =	211.500
C =	120.630
G =	129.331
H =	325.315
K =	260.736
I =	171.969
P =	207.938
R1 =	55.625
R2 =	47.375
R3 =	39.125

LIBERTY LIFT SOLUTIONS

EFFECTIVE COUNTERBALANCE TABLE

Unit Designation 1280-427-216 Enhanced Geometry

CRANK : CR064

Stroke Length, inches	216.367		178.814		144.800	
Cranks Only, pounds	5714		7139		9166	
Description	Max	Min	Max	Min	Max	Min
Cranks and 4 each LL3	18944	8856	22734	10842	28126	13668
Cranks w/2-LL3 & 2-LL4	20749	9484	24862	11583	30712	14568
Cranks and 4 each LL4	22554	10112	26989	12323	33298	15468
Cranks w/2-LL4 & 2-LL5	24012	10657	28708	12965	35388	16249
Cranks and 4 each LL5	25469	11201	30426	13607	37477	17029
Cranks w/2-LL5 & 2-LL6	27800	12465	33173	15097	40817	18840
Cranks and 4 each LL6	30130	13728	35920	16586	44156	20650
Cranks w/2-LL6 & 2-LL7	31783	14915	37868	17985	46524	22352
Cranks and 4 each LL7	33435	16102	39816	19384	48892	24053

* Not Recommended

** Maximum recommended ECB for this unit is 34160 in maximum stroke position.

LIBERTY LIFT SOLUTIONS

COUNTERBALANCE MOMENT TABLE

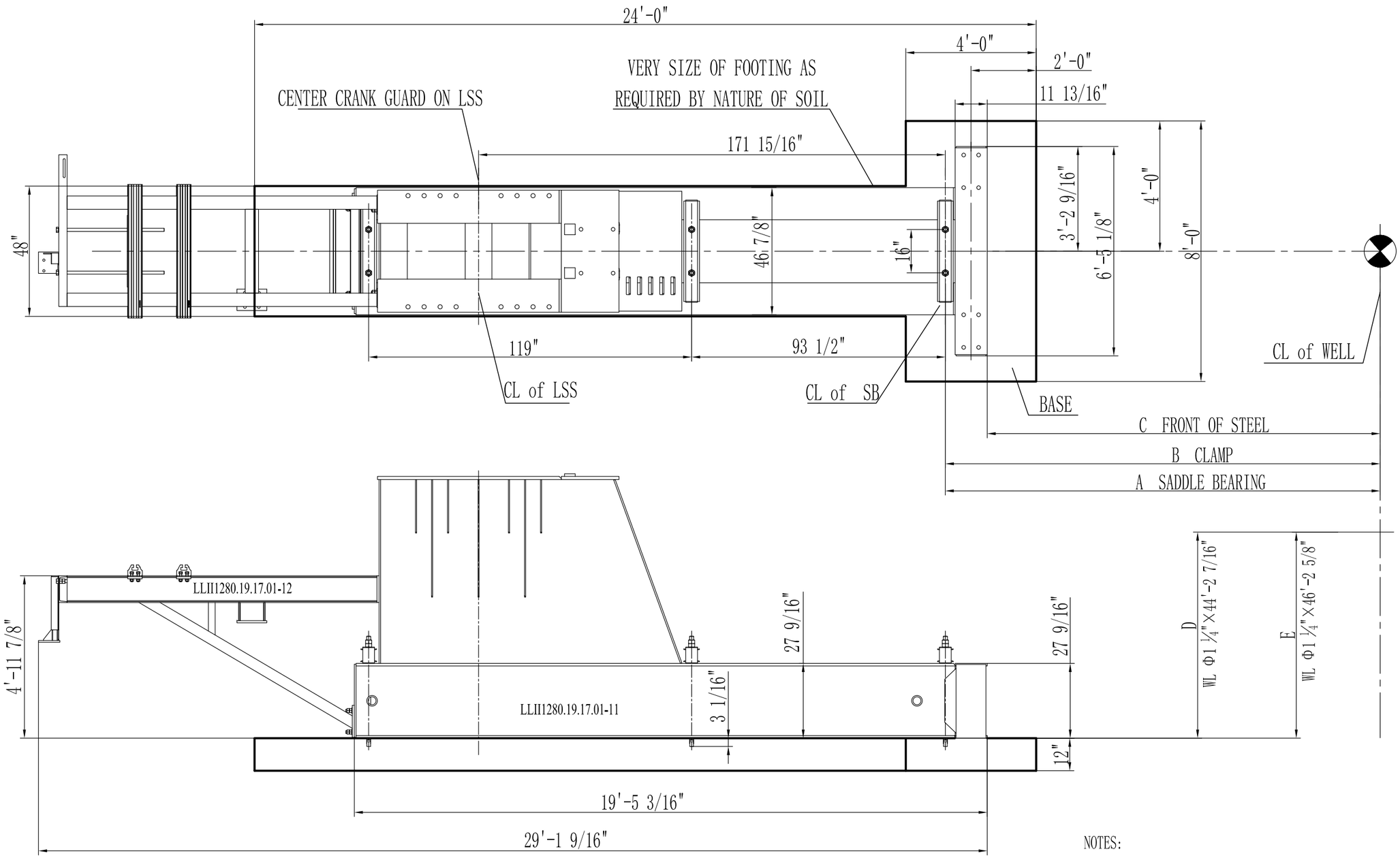
Unit Designation 1280-427-216 Enhanced Geometry

CRANK : CR064

Cranks Only, inch pounds	782422	
Description	Max	Min
Cranks and 4 each LL3	2081379	1090912
Cranks w/2-LL3 & 2-LL4	2258566	1152582
Cranks and 4 each LL4	2435753	1214252
Cranks w/2-LL4 & 2-LL5	2578896	1267715
Cranks and 4 each LL5	2722038	1321178
Cranks w/2-LL5 & 2-LL6	2950827	1445216
Cranks and 4 each LL6	3179616	1569253
Cranks w/2-LL6 & 2-LL7	3341832	1685806
Cranks and 4 each LL7	3504048	1802358

* Not Recommended

** Maximum recommended Moment for this unit is 3662032 inch pounds.



1280 B/G				
DN#	LLII1280.19.17.01-14			
PN#	LL14462			
LLII1280.19.17.01-14 (78.55"-88.22")				
RDCR SHEAVE	PM SHEAVE	OVERALL RATIO	SPM @1160	V-BELT
58 10C	7	244.2	5.1	C285
	12	142.4	8.1	C285
50 10C	7	210.5	5.5	C270
	10.5	140.3	8.3	C270
	7	210.5	5.5	C255
	10.5	140.3	8.3	C255
44 10C	7	185.2	6.3	C255
	9	144.1	8.1	C255

UNIT	A	B	C	D	E	F	CRANK
1280-427-216	17'-7 1/2"	17'-7 7/16"	196.06"	5'-10 5/16"	4'-10 3/16"		CR064

NOTES:

1. INSTALL AND MAINTAIN PUMPING UNIT IN ACCORDANCE WITH API RP 11G. DO NOT USE WOOD OR COMPOSITION MATERIALS BETWEEN UNIT FRAME AND CONCRETE FOUNDATION.
2. USE WITH FOUNDATION CLAMP DN# LLII1280.19.17.01-1601,PN# LL16151.
3. USE WITH UNIVERSAL FOUNDATION CLAMP DN# LLII1280.19.17.01-16B01,PN# LL16923.

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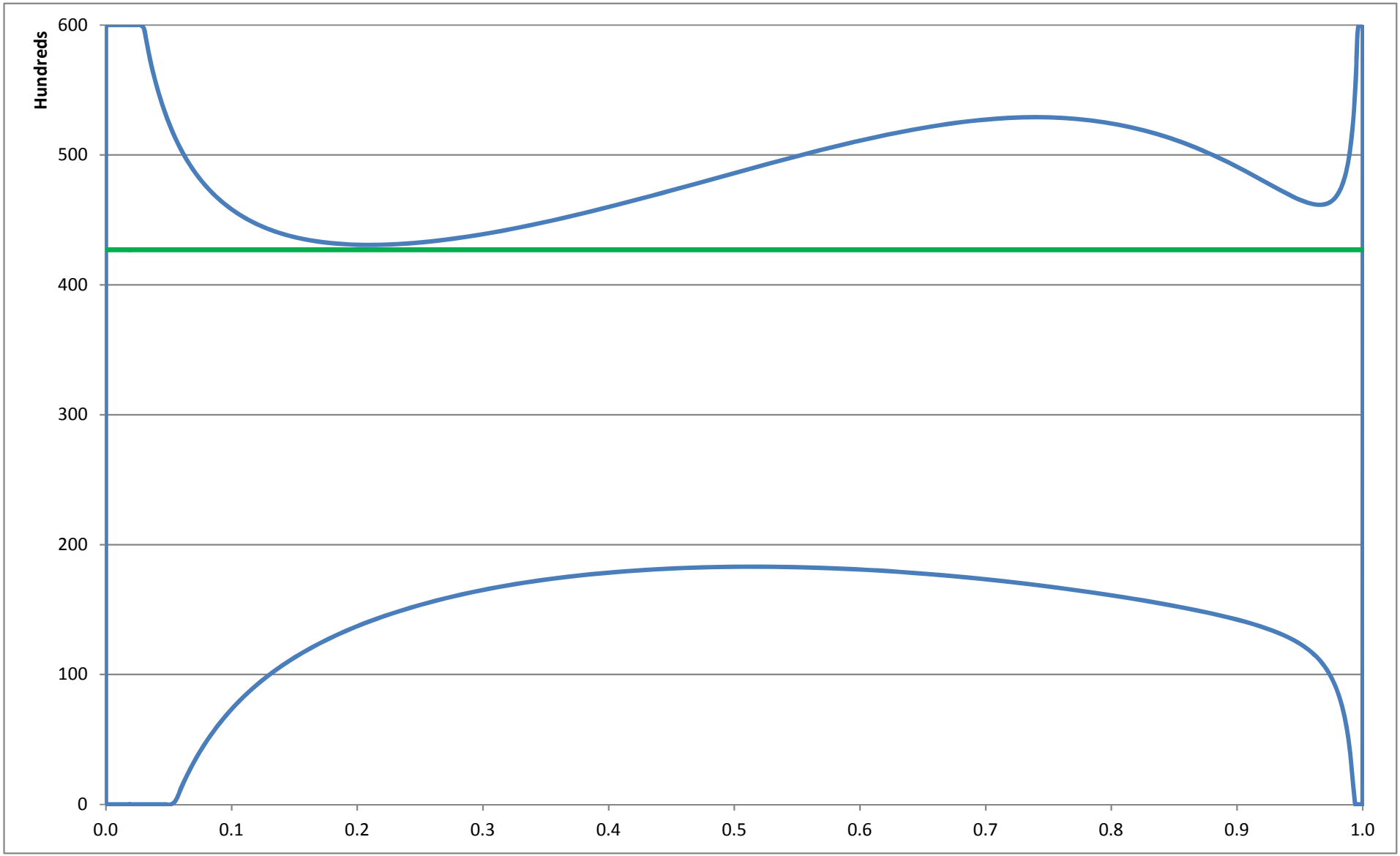
LIBERTY LIFT

1250 Wood Branch Park Dr
Suite 250
Houston, TX 77079

TOLERANCES:
a. X.X: ±3
b. X.XX: ±1
c. X.XXX: ±0.25
d. ANGULAR: ±1°

SURFACE FINISH:
a. X.X: 25
b. X.XX: 6.3
c. X.XXX: 3.2

DRAWN		STANDARD	
CHECKED		APPROVAL	
DATE			

PART NUMBER CHINA	LL50060	DRAWING NUMBER US		REV
TITLE	FOUNDATION, EG, HP		WEIGHT	
MATERIAL	ASSEMBLY		SCALE	1:38
DRAWING NUMBER CHINA	LLB1.22		REV	0

1280-427-216 Enhanced Geometry
Calculated Permissible Load with 3548019 in-lb Moment