Maximizer® Surface Pumping Units

Delivers reliable, rod-lift performance and superior efficiency for any well

Applications

- Virtually any well including deviated, horizontal, vertical, high-viscosity, heavy-oil, and gaseous
- Low- to medium-volume lift wells
- Virtually all land and remote environments

Features and Benefits

- Manufactured to API size specifications from 114 through 1824 to match wide-ranging well applications and challenges
- Exceeds latest API design Specification 11E and backed by API Specification Q1 Quality Assurance Program for universal confidence
- All units include lifting hooks, crank guards, belt guards, caged ladders, and ground-level lubrication for highest flexibility and safety
- Gear reducers designed with two-piece case and gears in accordance with API Specification 11E for reliability and easy maintenance
- Class I working geometry operates in either direction for equalized gear wear and extended reducer life
- Three-legged Sampson post with rear-leg mounted high in pedestal base for added upper-structure stability while equalizing surface loads
- Bolt-on crank arms allow for easy field removal without the use of hydraulic press or special tools
- Quick-release retainer pin expedites horsehead removal for well service
- High-capacity structural bearings designed for easy maintenance
- High-efficiency roller bearings ensure long-lasting, efficient operation
- Crank-pin assemblies feature tapered pin with self-aligning spherical bearings and simplified inspection cover for easy maintenance
- High-capacity center bearings provide excellent load characteristics and infinite L10 life with proper maintenance
- Equalizer bearings for the 114 and 160 units incorporate self-aligning, spherical roller bearings for simplified movement
- Larger units feature rugged, double-tapered roller assembly for added strength

Maximizer surface pumping units provide rugged reliability and consistent performance for maximized uptime and increased efficiency.

Weatherford®

Maximizer® Surface Pumping Units

Tool Description

Weatherford Maximizer surface pumping units are powerful reciprocating rod-lift systems that increase uptime and reduce lifting costs. Their rugged, serviceable equipment is available in a range of sizes from 114 to 1824 and exceed API specification 11E. Each unit is also backed by the API Specification Q1 Quality Assurance Program.

Maximizer surface pumping units adapt to changing well conditions when paired with optional variable-speed drive or ForeSite® Edge controller that optimizes each stroke.

Standard Features

Maximizer surface pumping units include the following equipment:

- T-frame base
- High-mount package
- Sampson post ladder with ring
- Brake assembly
- Crank pin and weight wrenches
- Wireline assembly
- Adjustable motor rails
- Reducer sheave
- Crank guards
- Gear oil
- Belt guard
- Ground-level lubrication system

Maximizer® Surface Pumping Units

Complementary Equipment

Maximizer pumping units are compatible with the following Weatherford technologies:

- Premium sucker rods for enhanced run life
- COROD® and semielliptical COROD continuous rods for reduced rod-string weight and deeper lift
- Sand-tolerant pump, for increased run life in solids-bearing wells
- ForeSite® production-optimization platform for increased production, uptime, and personnel efficiency
- ForeSite Edge for high-frequency data, instant IoT alerts, and autonomous well control

Optional Equipment

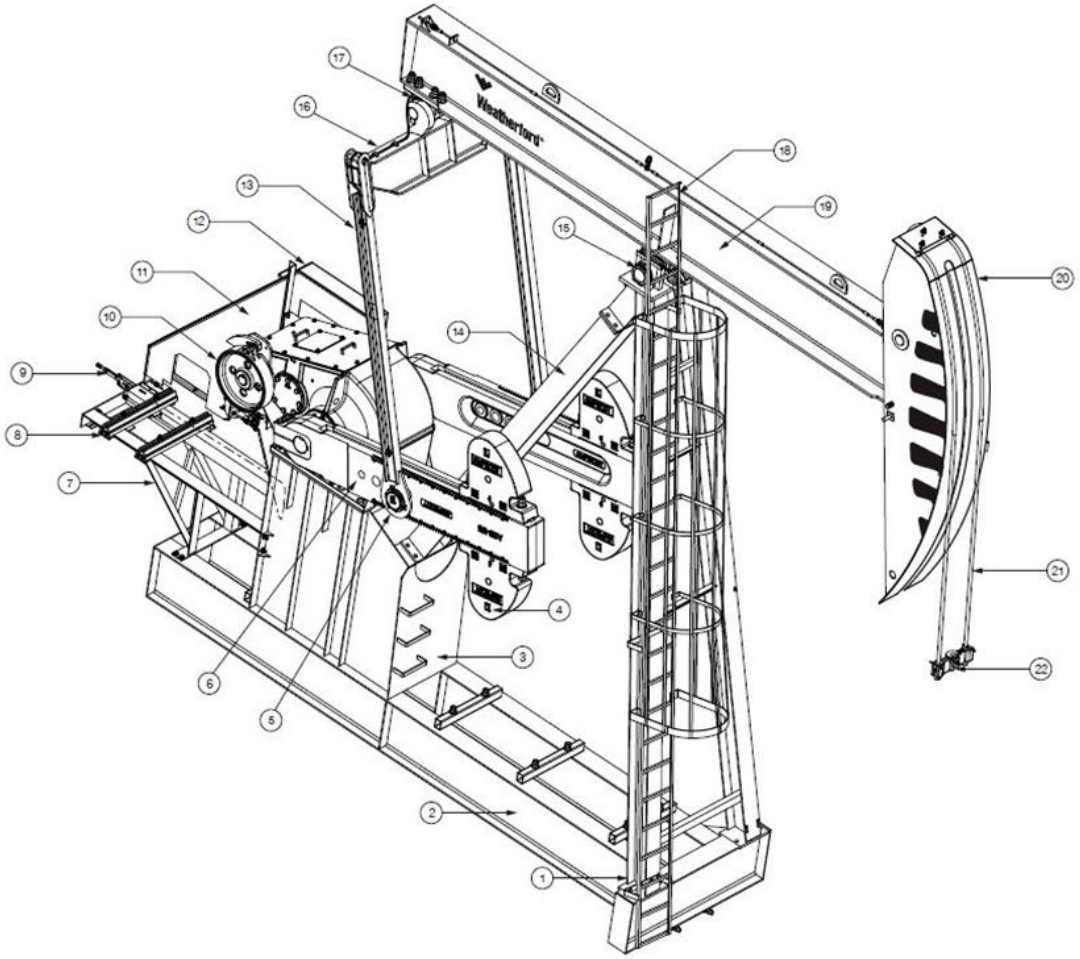
Maximizer surface pumping units can be optionally equipped with the following:

- Wide-frame base
- Low-mount extension package
- Direct-mount extension package
- Single or dual tiedowns
- Mesh crank guards
- Counterweights
- Concrete base
- Prime mover (electric motor or gas engine)
- Belts and sheave for the prime mover
- Complete software and controller optimization packages
- Caged Sampson post ladder
- Jackshaft assembly
- CT/ATEX Units

Maximizer® Surface Pumping Units

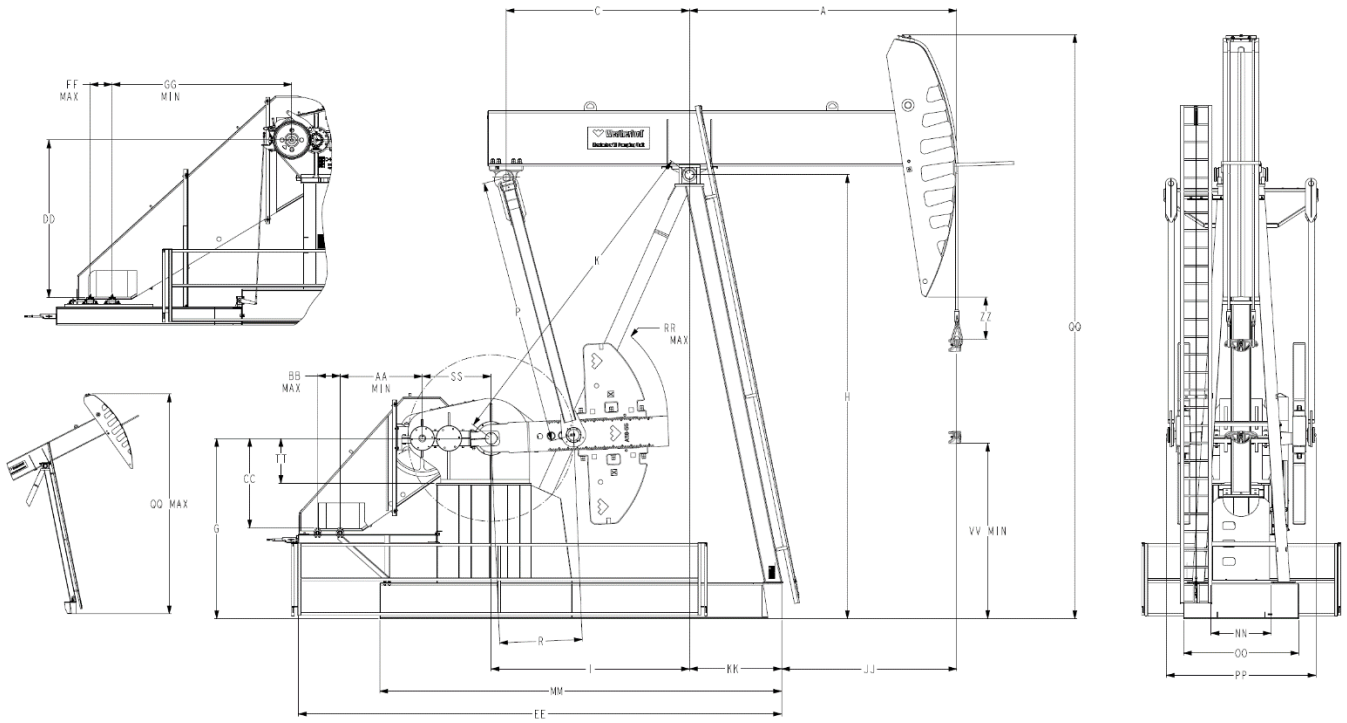
Parts Identification

1	Sampson post A-leg	12	Reducer sheave
2	Main frame	13	Pitman arm
3	Reducer sub-base	14	Sampson post support leg
4	Counterweights	15	Center bearing assembly
5	Crank-pin assembly	16	Equilizer beam
6	Crank	17	Equilizer bearing assembly
7	High-mount base extension	18	Sampson post ladder
8	Motor rails	19	Walking beam
9	Brake lever	20	Horsehead
10	Brake assembly	21	Wireline
11	Gear reducer	22	Polish-rod hanger



Maximizer® Surface Pumping Units

Dimension Schematic



Maximizer® Surface Pumping Units

Dimension Schematic Data A

GRP	API Size	Mount	API Dimensional Data (in.)								Dimensional Data (in.)				
			A	C	G	H	I	K	P	R	AA Min.	BB Max.	CC	DD	EE
1A	80-119-64	HM	84	72	56 7/8	143 7/8	77 3/8	116 7/8	91 3/4	26 1/4	25 1/2	22 5/8	33		184
2A	114-119-86	HM	95	82 7/8	82	179	94	135 1/4	102 3/4	36	28	26	50 1/8	N/A	221
	114-119-100	HM	110 5/8	85											235 1/2
		LM									N/A			64 1/2	303 1/8
	114-143-74	LM	84												
	114-173-74	HM									27	25	50 1/8	N/A	235 1/2
	160-143-74														
	160-173-86		95	82 7/8											
	160-173-100		110 5/8	85											
	160-173/ 200-74	HM	84												
		LM									N/A			64 1/2	303 1/8
2	228-173-100	HM	112	84	82	179 1/4	90	132 5/8	99 3/4	36	56	14	29 3/8	N/A	247 3/8
	228-200-74		83 7/8	84 3/4											
	228-213-100		112	84											
3	228-213-120	HM	135 1/2	118	103	243 1/4	126 5/8	188 1/4	142 5/8	50	40 3/8	14	50 1/2		296 3/8
	228-246-86	HM	97 5/8								67 3/4				296 3/4
		LM									N/A			84 5/8	370 3/8
	320-256-144	HM	156 1/8	113 5/8							24	18	50 1/2	N/A	301 1/4
	320-305-100	HM	118	118							37 1/8				
		LM									N/A			84 5/8	370 3/8
	320-305-120	HM	136								37 1/8	18	50 1/5	N/A	301 1/4
		LM									N/A			84 5/8	370 3/8

Maximizer® Surface Pumping Units

Dimension Schematic Data A (continued)

GRP	API Size	Dimensional Data (in.)																
		FF Max.	GG Min.	HH	JJ	KK	MM	NN	OO	PP	QQ	RR Max.	SS	TT	UU	VV Min.	WW	ZZ
1A	80-119-64	N/A		11 3/4	54 1/4	29 3/4	151 7/8	43 1/4	62 1/8	68 7/8	207 3/4	80	24 1/2	16	29	62 1/2	23 3/4	16 1/2
2A	114-119-86	N/A		15 3/4	52 5/8	41 1/2	180	28	72 1/8	70 5/8	259 3/4	80	24 5/8	17 1/8	49	70 3/4	27 3/4	19 3/8
	114-119-100	47 7/8	62 1/8		69						273 7/8					65 1/2	N/A	14 1/4
	114-143-74				42 1/2						249 3/8					71 1/2	27 3/4	23 7/8
	114-173-74	N/A											30 1/4	20	46 1/8			
	160-143-74																	
	160-173-86				53 1/2					68 7/8	258 3/4					72 5/8		19 3/8
	160-173-100				69						274 3/4					64 5/8		14 1/4
	160-173/ 200-74	47 7/8	62 1/8		42 1/2						249 3/8					72 3/8	N/A	23 7/8
2	228-173-100	N/A		15 7/8	70	41 1/2	180	36	72 1/8	76 3/4	270 1/4	80 3/8	33 3/8	24	42 1/8	53 1/8	48 3/8	15 1/2
	228-200-74				42						247 3/4					70 3/4	27 6/8	23 7/8
	228-213-100				70						270 1/4					53 1/8	48 3/8	15 1/2
3	228-213-120	N/A		15 3/4	81 3/4	53 3/8	246 3/4	36	72 1/8	76 3/4	346 3/8	100 3/8	33 1/4	24	63 1/4	89 3/4	48 3/8	29 7/8
	228-246-86				44	53 3/4	247 3/8				322 3/4					75 1/8		62 1/8
		41	93		44 1/4	53 1/4	246 3/4		90 1/2							75 1/4	N/A	
	320-256-144	N/A			102 3/8	50 7/8	247 3/8		72 1/8	84	375		35 5/8			67 5/8	48 1/4	15 1/2
	320-305-100				63 5/8	53 3/4					336 1/2					83		52 1/2
		29	102		64 5/8	53 1/4	246 7/8									72 1/2	N/A	48 5/8
	320-305-120	N/A			82 3/8	53 6/8	247 3/8				350 3/4					84 1/2	48 1/4	29 7/8
		29	102														N/A	

Maximizer® Surface Pumping Units

Dimension Schematic Data B

GRP	API Size	Mount	API Dimensional Data (in.)								Dimensional Data (in.)				
			A	C	G	H	I	K	P	R	AA Min.	BB Max.	CC	DD	EE
4	456-256/ 305-144	HM	155 1/4	124	122 3/4	274 3/8	133	201 3/4	148	55	54 3/4	18	62 3/8	N/A	328 5/8
		LM									N/A			104 3/8	390 7/8
	456-305-168	HM	177 3/4								54 3/4	18	62 3/8	N/A	328 5/8
	640-305-144		155 3/8								34 5/8				334 1/8
5	640-305-168	HM	177 3/4	122	119 7/8	295 1/8	132	219 3/8	176 7/8	55	34 5/8	18	59 1/2		321 1/2
	640-365-168														
	640-365-192		203 1/8												
	912-365-168		177 3/4								32 5/8	20			
	912-365-192		203 1/8												
	912-427-168	HM	177 3/4												
		LM									N/A			102 5/8	391
	912-427-192	HM	203 1/8								32 5/8	20	59 1/2	N/A	321 1/2
6	1280-305-240	HM	230	122	120 1/8	339 3/4	133 3/8	257	219 7/8	60	27 1/4	20	59 3/4		329 3/4
	1280-365-192		203							55					
	1280-365-240		230							60					
	1280-427-192		203							55					
	1824-365-240		230					254 1/2	216 7/8	60	16 1/4	23	62 3/4		329 7/8
	1824-427-216		207												
7	1824-365-300		251			387 3/4		296 1/2	265 3/8	67 1/2					

Maximizer® Surface Pumping Units

Dimension Schematic Data B (continued)

GRP	API Size	Dimension Data (in.)																
		FF Max.	GG Min.	HH	JJ	KK	MM	NN	OO	PP	QQ	RR Max.	SS	TT	UU	VV Min.	WW	ZZ
4	456-256/ 305-144	N/A		23 5/8	94	61 1/4	267 3/8	38 3/8	76 3/4	85 1/2	410 1/2	118 1/2	39 7/8	28	71 1/8	99 1/4	56 1/4	21 1/2
		38	97 3/4														N/A	
	456-305-168	N/A			116 1/2						423 3/4					78 3/8	56 1/4	16 1/2
	640-305-144				94					99 1/8	410 3/8		45 3/4	30	69 1/8	98 3/4		21
5	640-305-168	N/A		23 5/8	116 5/8	61 1/4	267 3/8	38 3/8	91	99 1/8	442 3/4	118 1/2	45 3/4	30	66 1/4	75 1/8	56 1/4	40 1/2
	640-365-168								76 3/4									
	640-365-192				141 7/8						463					76 1/4		18
	912-365-168				116 5/8					103 1/2	442 3/4					75 1/8		40 1/2
	912-365-192				141 7/8						463					76 1/4		18
	912-427-168				116 5/8				76 6/8		442 3/4					75 1/8		40 1/2
		38	93														N/A	
	912-427-192	N/A			141 7/8	61 2/8					463					76 1/4	56 1/4	18
6	1280-305-240	N/A		23 5/8	161	68	308 7/8	49 1/2	76 3/8	117 1/8	546 1/2	118	52 1/2	33	63 1/2	83 3/4	56	17 1/2
	1280-365-192				135				76 3/4		509 7/8					131 3/8		23 3/4
	1280-365-240				161				76 3/8		546 1/2					83 3/4		17 1/2
	1280-427-192				135				76 3/4		509 7/8					131 3/8		23 3/4
	1824-365-240				161				76 3/8	131	546 1/2		58 3/4	36		83 3/4		17 1/2
	1824-427-216				139 1/8						524 1/4					89 3/4		25 1/2
7	1824-365-300				183						620 1/2					57 7/8		17 1/2

Maximizer® Surface Pumping Units

Specifications

API Size	Maximum Polished-Rod Capacity (lb)	Standard Strokes to Fourth Stroke (in.) (Optional)	Torque Factor at 90° to Fourth Stroke (in.) (Optional)	Wireline Size (in.)	Wireline Center (in.)
80-119-64	14,300	64, 52, 40, 28	32, 26, 20, 14	1 x 228	11
114-119-086	11,900	86, 73, 61	42, 36, 30	1 × 274	
114-119-100		100, 85, 71	48, 42, 35	1 × 300	
114-143-074	14,300	74, 63, 52, 42	36, 31, 26, 21	1 × 274	
114-143-074	17,300				11
160-143-74	17,300				
160-173-86		86, 77, 68, 58	42, 36, 30		
160-173-100		100, 85, 71, 57	48, 41, 35, 28	1 × 300	
160-173/200-74	17,300/20,000	74, 63, 52, 42	36, 31, 26, 21	1 × 274	11
228-173-100	17,300	100, 85, 71, 57	48, 41, 35, 28	1 x 300	
228-200-74	20,000	74, 63, 52, 42	36, 31, 26, 21	1 x 274	
228-213-100	21,300	100, 85, 71, 57	48, 41, 35, 28	1 x 300	
228-213-120		120, 107, 94, 84	57, 51, 46, 35	1.13 x 360	12
228-246-86	24,600	86, 77, 68, 58	41, 37, 33, 29		
320-256-144	25,600	144, 128, 112, 97	68, 61, 55, 48	1.25 x 408	16
320-305-100	30,500	104, 93, 82, 71	50, 45, 40, 35	1.13 × 360	12
320-305-120		120, 107, 94, 82	57, 52, 46, 35		
456-256/305-144	25,600/30,500	146, 123, 103, 82	67, 58, 49, 40	1.25 x 420	16
456-305-168	30,500	168, 142, 118, 95	78, 67, 57, 46	1.25 x 456	
640-305-144		146, 123, 103, 82	67, 58, 49, 40	1.25 x 420	
640-305-168		168, 143, 119, 95	80, 69, 58, 47	1.38 x 480	
640-365-168	36,500	168, 143, 119, 95			16
640-365-192		191, 163, 136, 109	91, 79, 66, 54	1.38 × 492	
912-365-168	36,500	168, 143, 119, 95	80, 69, 58, 47	1.38 × 480	
912-365-192		191, 163, 136, 109	91, 79, 66, 54	1.38 × 492	
912-427-168	42,700	168, 143, 119, 95	80, 69, 58, 47	1.38 x 480	16
912-427-192		191, 163, 136, 109	91, 79, 67, 54	1.38 x 492	
1280-305-240	36,500	239, 206, 174, 144	113, 99, 85, 71	1.38 x 584	
1280-365-192		191, 163, 136, 109	91, 79, 66, 54	1.38 x 492	
1280-365-240		239, 206, 174, 144	113, 99, 85, 71	1.38 x 584	16
1280-427-192	42,700	191, 163, 136, 109	91, 79, 66, 54	1.38 x 492	
1824-365-240	36,500	239, 206, 174, 144	113, 99, 85, 71	1.38 × 584	
1824-365-300		300, 261, 225, 191, 158	197, 122, 107, 92, 77	1.38X 704	
1824-427-216	42,700	215, 186, 157, 130	101, 89, 76, 63	1.38 × 552	

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance A*

API Size	Structural Imbalance (lb)	Crank Number	Crank Only	4-B	4-D	4-F	4-H	4-J	4-L
114-143-74	347	A80L-36	3,900	7,010	8,110	9,200	10,180	11,430	12,430
			4,420	8,020	9,290	10,560	11,690	13,140	N/A
			5,150	9,440	10,960	12,460	13,820	N/A	N/A
114-173-74	347	A80L-36	3,610	6,710	7,800	8,880	9,860	11,100	12,100
			4,130	7,710	8,980	10,230	11,360	12,800	13,960
			4,850	9,130	10,630	12,120	13,470	15,190	16,570
114-119-86	125	A80L-36	2,970	5,670	6,620	7,560	8,410	9,500	10,360
			3,420	6,550	7,650	8,740	9,730	10,990	N/A
			4,060	7,790	9,100	10,400	11,570	N/A	N/A
114-119-100	-127	A80L-36	2,290	4,580	5,390	6,190	6,910	7,830	8,570
			2,670	5,320	6,260	7,190	8,030	9,090	9,950
			3,210	6,380	7,500	8,600	9,600	10,870	N/A
160-143-74	340	A80L-36	3,600	6,700	7,790	8,880	9,850	11,100	12,090
			4,120	7,700	8,970	10,230	11,350	12,800	13,950
			4,850	9,110	10,620	12,120	13,460	N/A	N/A
160-173-74	340	A80L-36	3,600	6,700	7,790	8,880	9,850	11,100	12,090
			4,120	7,700	8,970	10,230	11,350	12,800	13,950
			4,850	9,110	10,620	12,120	13,460	15,190	16,560
160-200-74	340	A80L-36	3,590	6,680	7,770	8,850	9,820	11,060	12,050
			4,110	7,680	8,940	10,200	11,320	12,760	13,900
			4,830	9,090	10,600	12,090	13,430	15,140	16,510
160-173-100	-132	A80L-36	2,280	4,580	5,390	6,190	6,910	7,830	8,570
			2,670	5,330	6,260	7,190	8,030	9,090	9,950
			3,210	6,380	7,500	8,600	9,600	10,870	11,890
228-246-86	1530	A100-50	7,670	11,170	12,410	13,680	14,840	16,300	17,490
			8,330	12,190	13,560	14,970	16,250	17,870	19,180
			9,150	13,490	15,020	16,600	18,040	19,850	21,330
			10,230	15,170	16,920	18,720	20,360	22,420	N/A
228-213-100	176	A80-36	3,240	5,570	6,390	7,200	7,930	8,870	9,620
			3,710	6,400	7,350	8,280	9,130	10,210	11,080
			4,380	7,570	8,700	9,810	10,810	12,100	13,130
			5,370	9,320	10,710	12,090	13,330	14,920	16,200
228-256-100	1188	A100-50	6,490	9,500	10,580	11,670	12,670	13,930	14,950
			7,050	10,380	11,580	12,780	13,890	15,280	16,410
			7,770	11,500	12,840	14,190	15,440	17,000	18,270
			8,690	12,950	14,480	16,020	17,440	19,220	20,670

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Weatherford®

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance A (continued)*

API Size	4-N	4-P	4-R	4-S	4-X	4-Y
114-143-74	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
114-173-74	13,980	16,850	N/A	N/A	N/A	N/A
	16,130	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
114-119-86	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
114-119-100	9,970	N/A	N/A	N/A	N/A	N/A
	11,570	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
160-143-74	13,980	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
160-173-74	13,980	16,840	N/A	N/A	N/A	N/A
	16,140	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
160-200-74	13,930	16,790	17,260	N/A	N/A	N/A
	16,080	19,400	N/A	N/A	N/A	N/A
	19,100	N/A	N/A	N/A	N/A	N/A
160-173-100	9,960	12,090	12,440	16,250	N/A	N/A
	11,560	14,030	14,440	N/A	N/A	N/A
	13,810	16,760	N/A	N/A	N/A	N/A
228-246-86	19,800	22,920	23,660	N/A	N/A	N/A
	21,740	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
228-213-100	11,030	13,190	13,540	17,420	N/A	N/A
	12,710	15,200	15,600	20,090	N/A	N/A
	15,070	18,030	18,510	N/A	N/A	N/A
	18,590	N/A	N/A	N/A	N/A	N/A
228-256-100	16,940	19,640	20,270	25,530	N/A	N/A
	18,610	21,600	22,300	N/A	N/A	N/A
	20,740	24,090	N/A	N/A	N/A	N/A
	23,490	N/A	N/A	N/A	N/A	N/A

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Weatherford®

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance B*

API Size	Structural Imbalance	Crank Number	Crank Only	4-B	4-D	4-F	4-H	4-J	4-L
228-213-120	400	A100-50	4,820	7,340	8,240	9,150	9,980	11,040	11,900
			5,290	8,070	9,070	10,080	10,990	12,170	13,120
			5,890	9,010	10,120	11,250	12,280	13,600	14,660
			6,660	10,220	11,490	12,780	13,950	15,450	16,670
320-305-100	1165	A100-50	6,260	9,150	10,180	11,220	12,180	13,380	14,370
			6,800	9,990	11,130	12,280	13,350	14,670	15,770
			7,490	11,070	12,340	13,640	14,830	16,320	17,550
			8,370	12,460	13,910	15,390	16,750	18,440	19,850
320-256-120	638	A100-50	5,070	7,570	8,470	9,380	10,200	11,250	12,100
			5,540	8,300	9,300	10,300	11,210	12,370	13,310
			6,130	9,230	10,350	11,480	12,490	13,800	14,850
			6,900	10,430	11,710	13,000	14,160	15,650	16,850
320-305-120	638	A100-50	5,070	7,570	8,470	9,380	10,200	11,250	12,100
			5,540	8,300	9,300	10,300	11,210	12,370	13,310
			6,130	9,230	10,350	11,480	12,490	13,800	14,850
			6,900	10,430	11,710	13,000	14,160	15,650	16,850
320-256-144	332	A100-50	3,570	5,650	6,400	7,150	7,840	8,710	9,430
			3,960	6,270	7,100	7,930	8,690	9,660	10,450
			4,460	7,050	7,980	8,920	9,780	10,860	11,750
			5,110	8,070	9,130	10,200	11,180	12,410	13,440
456-305-144	-81	A118-55	7,390	9,950	10,870	11,820	12,690	13,780	14,680
			8,510	11,440	12,490	13,580	14,580	15,840	16,870
			10,060	13,520	14,760	16,050	17,230	18,710	19,930
			12,350	16,590	18,120	19,700	21,140	22,950	24,450
456-305-168	-400	A118-55	6,120	8,350	9,150	9,980	10,740	11,690	12,480
			7,090	9,650	10,560	11,520	12,390	13,480	14,390
			8,440	11,460	12,550	13,670	14,700	15,990	17,060
			10,440	14,140	15,470	16,850	18,110	19,690	21,000
640-305-144	-210	A118-55	7,360	9,950	10,880	11,840	12,720	13,830	14,740
			8,480	11,450	12,520	13,620	14,630	15,910	16,950
			10,050	13,550	14,810	16,110	17,310	18,810	20,040
			12,370	16,660	18,200	19,790	21,260	23,100	24,610
640-365-168	-434	A118-55	5,890	8,050	8,830	9,630	10,360	11,290	12,050
			6,860	9,340	10,240	11,160	12,010	13,080	13,950
			8,200	11,140	12,210	13,300	14,300	15,570	16,610
			10,180	13,800	15,110	16,450	17,670	19,230	20,510

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Weatherford®

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance B (continued)*

API Size	4-N	4-P	4-R	4-S	4-X	4-Y	4-Z	4-ZJ
228-213-120	13,550	15,800	16,340	20,720	N/A	N/A	N/A	N/A
	14,940	17,430	18,030	N/A	N/A	N/A	N/A	N/A
	16,710	19,500	20,170	N/A	N/A	N/A	N/A	N/A
	19,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
320-305-100	16,270	18,850	19,460	24,490	N/A	N/A	N/A	N/A
	17,870	20,730	21,400	26,970	N/A	N/A	N/A	N/A
	19,900	23,110	23,860	30,110	N/A	N/A	N/A	N/A
	22,540	26,190	27,050	N/A	N/A	N/A	N/A	N/A
320-256-120	13,750	15,990	16,520	20,890	23,080	N/A	N/A	N/A
	15,140	17,620	18,200	23,040	N/A	N/A	N/A	N/A
	16,900	19,680	20,340	N/A	N/A	N/A	N/A	N/A
	19,180	22,360	23,110	N/A	N/A	N/A	N/A	N/A
320-305-120	13,750	15,990	16,520	20,890	23,390	26,990	N/A	N/A
	15,140	17,620	18,200	23,040	25,810	29,790	N/A	N/A
	16,900	19,680	20,340	25,760	28,870	N/A	N/A	N/A
	19,180	22,360	23,110	29,290	N/A	N/A	N/A	N/A
320-256-144	10,800	12,670	13,110	16,740	18,830	21,830	N/A	N/A
	11,970	14,040	14,530	18,550	20,870	24,190	N/A	N/A
	13,460	15,790	16,330	20,850	23,450	N/A	N/A	N/A
	15,380	18,040	18,670	23,820	N/A	N/A	N/A	N/A
456-305-144	16,440	18,680	19,310	23,880	26,570	N/A	N/A	N/A
	18,890	21,460	22,190	27,440	N/A	N/A	N/A	N/A
	22,320	25,360	26,210	N/A	N/A	N/A	N/A	N/A
	27,370	N/A	N/A	N/A	N/A	N/A	N/A	N/A
456-305-168	14,010	15,970	16,510	20,500	26,350	N/A	N/A	N/A
	16,150	18,400	19,020	23,600	N/A	N/A	N/A	N/A
	19,140	21,790	22,530	27,940	N/A	N/A	N/A	N/A
	23,550	26,810	27,700	N/A	N/A	N/A	N/A	N/A
640-305-144	16,530	18,790	19,430	24,060	26,780	N/A	N/A	N/A
	19,010	21,600	22,340	27,650	N/A	N/A	N/A	N/A
	22,470	25,530	26,400	N/A	N/A	N/A	N/A	N/A
	27,580	N/A	N/A	N/A	N/A	N/A	N/A	N/A
640-365-168	13,540	15,430	15,960	19,830	22,100	25,500	31,020	35,180
	15,670	17,850	18,460	22,920	25,540	29,460	35,830	N/A
	18,640	21,220	21,940	27,230	30,330	34,970	**N/A**	N/A
	23,010	26,180	27,070	33,560	N/A	N/A	N/A	N/A

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance C*

API Size	Structural Imbalance	Crank Number	Crank Only	4-B	4-D	4-F	4-H	4-J	4-L
912-365-168	-434	A118-55	5,890	8,050	8,830	9,630	10,360	11,290	12,050
			6,860	9,340	10,240	11,160	12,010	13,080	13,950
			8,200	11,140	12,210	13,300	14,300	15,570	16,610
			10,180	13,800	15,110	16,450	17,670	19,230	20,510
912-427-168	-921	A118-55	5,400	7,560	8,340	9,140	9,880	10,800	11,560
			6,370	8,850	9,750	10,670	11,530	12,590	13,460
			7,710	10,650	11,720	12,810	13,820	15,080	16,120
			9,690	13,300	14,610	15,960	17,200	18,740	20,020
912-427-192	-1723	A118-55	3,810	5,700	6,380	7,090	7,730	8,540	9,210
			4,660	6,830	7,610	8,430	9,170	10,100	10,880
			5,830	8,410	9,340	10,300	11,180	12,280	13,200
			7,570	10,730	11,870	13,060	14,130	15,490	16,620
1280-365-192	-1434	A118-55	4,570	6,450	7,130	7,840	8,480	9,290	9,950
			5,420	7,590	8,380	9,200	9,940	10,870	11,630
			6,600	9,180	10,110	11,080	11,960	13,060	13,970
			8,340	11,500	12,650	13,840	14,920	16,280	17,390
1280-427-192	-1340	A118-55	4,190	4,190	6,070	6,750	7,460	8,100	8,910
			5,040	7,210	8,000	8,820	9,560	10,490	9,570
			6,220	8,800	9,730	10,700	11,580	12,680	11,250
			7,960	11,120	12,270	13,460	14,540	15,900	17,010
1280-305-240	-2688	A118-60	1,790	3,320	3,880	4,440	4,970	5,620	6,160
			2,420	4,150	4,790	5,430	6,030	6,770	7,380
			3,250	5,270	6,010	6,760	7,460	8,320	9,040
			4,430	6,850	7,740	8,630	9,470	10,500	11,360
1280-365-240	-2552	A118-60	1,930	3,460	4,010	4,580	5,100	5,760	6,300
			2,550	4,290	4,920	5,570	6,160	6,910	7,520
			3,390	5,410	6,140	6,900	7,590	8,460	9,180
			4,570	6,990	7,860	8,770	9,600	10,640	11,500
1824-427-216	-2300	A118-60	2,670	4,360	4,980	5,610	6,180	6,910	7,510
			3,360	5,280	5,990	6,700	7,350	8,180	8,870
			4,290	6,520	7,340	8,180	8,940	9,900	10,700
			5,590	8,270	9,260	10,260	11,160	12,320	13,270
1824-365-240	-2552	A118-60	1,930	3,460	4,010	4,580	5,100	5,760	6,300
			2,550	4,290	4,920	5,570	6,160	6,910	7,520
			3,390	5,410	6,140	6,900	7,590	8,460	9,180
			4,570	6,990	7,860	8,770	9,600	10,640	11,500

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance C (continued)*

API Size	4-N	4-P	4-R	4-S	4-X	4-Y	4-Z	4-ZJ	4-1ZJ
912-365-168	13,540	15,430	15,960	19,830	22,100	25,500	31,020	35,180	N/A
	15,670	17,850	18,460	22,920	25,540	29,460	35,830	N/A	N/A
	18,640	21,220	21,940	27,230	30,330	34,970	N/A	N/A	N/A
	23,010	26,180	27,070	33,560	N/A	N/A	N/A	N/A	N/A
912-427-168	13,050	14,950	15,480	19,350	21,620	25,010	30,530	34,690	39,220
	15,180	17,370	17,980	22,440	25,060	28,970	35,330	40,130	N/A
	18,150	20,740	21,470	26,750	29,850	34,480	N/A	N/A	N/A
	22,520	25,710	26,590	33,090	36,900	N/A	N/A	N/A	N/A
912-427-192	10,510	12,170	12,630	16,020	18,010	20,980	25,810	29,450	33,410
	12,380	14,290	14,820	18,730	21,020	24,450	30,020	34,210	38,780
	14,970	17,240	17,870	22,500	25,210	29,270	35,860	40,830	N/A
	18,800	21,580	22,360	28,040	31,380	36,370	N/A	N/A	N/A
1280-365-192	11,260	12,910	13,370	16,760	18,740	21,710	26,540	30,170	34,120
	13,150	15,050	15,580	19,500	21,780	25,210	30,790	34,980	N/A
	15,760	18,020	18,650	23,290	26,000	30,060	N/A	N/A	N/A
	19,600	22,380	23,150	28,850	32,190	N/A	N/A	N/A	N/A
1280-427-192	10,880	12,530	12,990	16,380	18,360	21,330	26,160	29,790	33,740
	12,770	14,670	15,200	19,120	21,400	24,830	30,410	34,600	39,160
	13,590	15,380	17,640	18,270	22,910	25,620	29,680	36,300	N/A
	19,220	22,000	22,770	28,470	31,810	36,800	N/A	N/A	N/A
1280-305-240	7,220	8,560	8,940	11,680	13,290	15,700	19,610	22,560	25,770
	8,590	10,120	10,550	13,670	15,500	18,250	22,700	26,060	29,720
	10,440	12,220	12,720	16,350	18,490	21,680	26,860	N/A	N/A
	13,040	15,170	15,770	20,090	22,680	26,510	N/A	N/A	N/A
1280-365-240	7,350	8,700	9,070	11,820	13,430	15,830	19,750	22,690	25,900
	8,720	10,260	10,680	13,810	15,640	18,380	22,840	26,190	29,850
	10,570	12,360	12,850	16,490	18,630	21,810	27,000	30,900	N/A
	13,170	15,310	15,900	20,270	22,820	26,640	32,860	N/A	N/A
1824-427-216	8,680	10,170	10,590	13,630	15,410	18,080	22,420	25,680	29,240
	10,200	11,900	12,380	15,840	17,870	20,910	25,850	29,560	33,620
	12,250	14,220	14,780	18,810	21,170	24,710	30,460	34,780	N/A
	15,130	17,500	18,170	22,990	25,820	30,060	36,950	N/A	N/A
1824-365-240	7,350	8,700	9,070	11,820	13,430	15,830	19,750	22,690	25,900
	8,720	10,260	10,680	13,810	15,640	18,380	22,840	26,190	29,850
	10,570	12,360	12,850	16,490	18,630	21,810	27,000	30,900	N/A
	13,170	15,310	15,900	20,270	22,820	26,640	32,860	N/A	N/A

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Weatherford®

Maximizer® Surface Pumping Units

Maximum Effective Counterbalance D*

API Size	Structural Imbalance	Crank Number	Crank Only	4-B	4-D	4-F	4-H	4-J	4-L
1824-365-300	0	A118-60	3,660	4,920	5,370	5,830	6,260	6,790	7,240
			4,110	5,510	6,010	6,530	7,010	7,610	8,110
			4,680	6,280	6,860	7,440	7,990	8,670	9,250
			5,450	7,310	7,980	8,670	9,310	10,090	10,760
			6,530	8,760	9,570	10,380	11,150	12,100	12,900

Maximum Effective Counterbalance D (continued)*

API Size	4-N	4-P	4-R	4-S	4-X	4-Y	4-Z	4-ZJ	4-1ZJ
1824-365-300	8,100	9,200	9,510	11,750	13,070	15,030	18,230	20,640	23,270
	9,080	10,310	10,660	13,170	14,650	16,840	20,430	23,130	26,080
	10,340	11,750	12,150	15,010	16,690	19,200	23,290	26,370	29,730
	12,040	13,680	14,140	17,470	19,440	22,350	27,110	30,700	N/A
	14,430	16,390	16,940	20,930	23,290	26,780	32,480	N/A	N/A

*Table indicates theoretical (not actual) results. Calculate ECB for other crank arm positions using the Effective Counterbalance Chart.
When selecting counterweights, the value in the table must be equal to or greater than the required counterbalance.
All figures measured in pounds at the polished rod maximum stroke.

Weatherford®

Maximizer® Surface Pumping Units

Maximizer Gear Reducers

Model Size	Torque Rating (in.-lb)	Gear Ratio	Crank Shaft Diameter Maximizer (in.)	Sheave Bore Diameter (in.)	Sheave Size Belt Section/Pitch Diameter (in.)	Oil Capacity (gal)
114	114,000	29.2837:1	5.5	2.25	3C/33	16
160	160,000	29.21:1	6	2.94	3C/36	22
228	228,000	30.227:1	6	3.13	3C/36	43
320	320,000	30.72:1	7.75	3.5	4C/44	48
456	456,000	28.396:1	7.75	3.62	5C/50	80
640	640,000	31.49:1	7.75	4.25	6C/50	111
912	912,000	31.49:1	7.75	4.25	8C/50	121
1280	1,280,000	28.05:1	9.25	5.0	10C/50	141
1824	1,824,000	28.333:1	9	5.5	12C/58	173

Effective Counterbalance Chart

Crank Number	CBTC (2 cranks/in.-lb)
A55L	62,300
A80L	120,600
A80	151,000
A100	265,200
A118, Group 4	492,700
A118, Group 5	495,200
A118, Group 6	495,200

$$CBTW = [(\text{Crank No.}) - (X + G)] \times W$$

$$ECB = \frac{CBTC + CBTW}{TF} + SU^*$$

To determine X:

$A = [(\text{Crank No.}) - G]$

$B = (ECB - SU)$

$C = (B \times TF)$

$D = \frac{(C - CBTC)}{W}$

$X = A - D$

Counter-Balance ID	Weight (lb)	G (in.)
B	400	10.625
D	550	11.8125
F	715	14
H	870	15.75
J	1,060	16.75
L	1,225	18
N	1,560	20.5
P	1,875	16.81
R	2,041	19.875
S	2,850	20.75
X	3,375	22.5
Y	4,265	26.6
Z	5,600	28.8
ZJ	6,336	26.125
1ZJ	7,630	29.92

Effective Counterbalance Chart Key

CBTC	Counterbalance torque of cranks (in.-lb)
CBTW	Counterbalance torque of counterweights (in.-lb)
ECB	Effective counterbalance at polish rod (lb)
W	Total weight of counterweights used on two cranks (lb)
X	Distance of counterweights from the end of crank (in.)
G	Distance of center of gravity from counterweight bottom (in.)
TF	Torque factor at 90°, from catalog (in.)
SU	Structural imbalance at polish rod, from catalog (lb)
CG	Center of gravity