

TorqMax Enhanced-Geometry Pumping Units



TorqMax Enhanced-Geometry Pumping Units

Main Specifications

		Model		
		TM456D-365-120	TM456D-305-144	
Basic parameters	Rated polished rod capacity, lbf	36,500	30,500	
	Designated stroke length, in	120	144	
	Running speed, rpm	15	12	
	Balance type	Crank balanced	Crank balanced	
	Crank direction	Clockwise	Clockwise	
Gear reducer	Rated torque, lbf.in	456,000	456,000	
	Model	456D	456D	
	Gear type	Involute	Involute	
	Gear ratio	28.25	28.25	
	Center range, in	39.37	39.37	
	Center height, in	25.59	25.59	
	Oil storage quantity, galUS	110	110	
	Lubricant	ISO VG 150 gear lubricant in winter, ISO VG 220 gear lubricant oil in summer		
	Sheave diameter, in	44	44	
	Sheave groove type	6C	6C	
Balance assembly	Weight of crank, lbm	5,651 × 2	5,651 × 2	
	Crank pin bore position, in	Stroke 1	38.98	38.98
		Stroke 2	31.38	31.38
		Stroke 3	23.78	23.78
	Stroke length, in	Stroke 1	120.21	143.95
		Stroke 2	94.17	112.77
Stroke 3		70.16	83.98	
Wireline	Type	34, 6 × 25F EIPS	32, 6 × 25F EIPS	
	Length, in	350	410	
Other	Structural unbalance, lbf	590	-500	
	Overall dimensions length × width × height, in	TH base	451 × 139 × 309	479 × 139 × 321
		TL base	—	579 × 139 × 321
		WL base	—	—

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TorqMax Enhanced-Geometry Pumping Units

Main Specifications

		Model				
		TM640D-365-144	TM640D-427-144	TM640D-365-168	TM640D-427-168	
Basic parameters	Rated polished rod capacity, lbf	36,500	42,700	36,500	42,700	
	Designated stroke length, in	144	144	168	168	
	Running speed, rpm	12	12	12	12	
	Balance type	Crank balanced	Crank balanced	Crank balanced	Crank balanced	
	Crank direction	Clockwise	Clockwise	Clockwise	Clockwise	
Gear reducer	Rated torque, lbf.in	640,000	640,000	640,000	640,000	
	Model	640D	640D	640D	640D	
	Gear type	Involute	Involute	Involute	Involute	
	Gear ratio	27.21	27.21	27.21	27.21	
	Center range, in	41.34	41.34	41.34	41.34	
	Center height, in	25.98	25.98	25.98	25.98	
	Oil storage quantity, galUS	100	100	100	100	
	Lubricant	ISO VG 150 gear lubricant in winter, ISO VG 220 gear lubricant oil in summer				
	Sheave diameter, in	50	50	50	50	
	Sheave groove type	6C	6C	6C	6C	
Balance assembly	Weight of crank, lbm	6,404 × 2	6,489 × 2	6,489 × 2	6,489 × 2	
	Crank pin bore position, in	Stroke 1	45.00	45.00	45.00	45.00
		Stroke 2	36.54	36.54	36.54	36.54
		Stroke 3	28.07	28.07	28.07	28.07
	Stroke length, in	Stroke 1	144.02	144.02	167.81	167.81
		Stroke 2	113.79	113.79	132.57	132.57
Stroke 3		85.93	85.93	100.13	100.13	
Wireline	Type	34, 6 × 25F EIPS	34, 6 × 25F EIPS	34, 6 × 25F EIPS	34, 6 × 25F EIPS	
	Length, in	410	410	460	460	
Other	Structural unbalance, lbf	230	230	-900	-940	
	Overall dimensions length × width × height, in	TH base	502 × 139 × 357	502 × 139 × 357	530 × 139 × 369	530 × 139 × 369
		TL base	—	—	597 × 139 × 369	—
		WL base	—	—	—	—

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Main Specifications

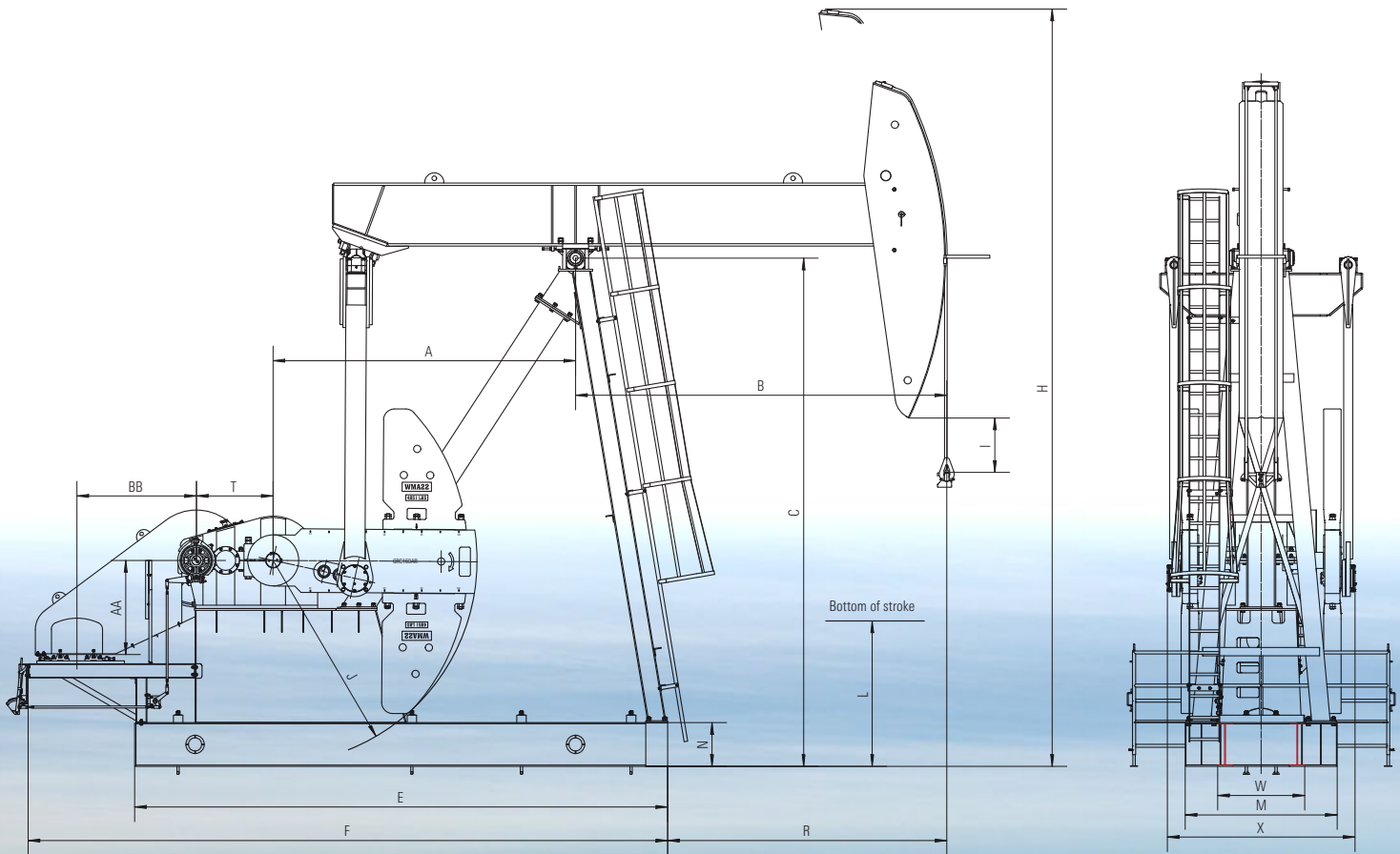
		Model				
		TM912D-365-168	TM912D-427-168	TM912D-427-192	TM1280D-427-192	
Basic parameters	Rated polished rod capacity, lbf	36,500	42,700	42,700	42,700	
	Designated stroke length, in	168	168	192	192	
	Running speed, rpm	12	12	10	10	
	Balance type	Crank balanced	Crank balanced	Crank balanced	Crank balanced	
	Crank direction	Clockwise	Clockwise	Clockwise	Clockwise	
Gear reducer	Rated torque, lbf.in	912,000	912,000	912,000	1,280,000	
	Model	912D	912D	912D	1280D	
	Gear type	Involute	Involute	Involute	Involute	
	Gear ratio	28.79	28.79	28.79	28.67	
	Center range, in	48.43	48.43	48.43	56.69	
	Center height, in	30.91	30.91	30.91	34.25	
	Oil storage quantity, galUS	181	181	181	251	
	Lubricant	ISO VG 150 gear lubricant in winter, ISO VG 220 gear lubricant oil in summer				
	Sheave diameter, in	50	50	50	50	
	Sheave groove type	8C	8C	8C	10C	
Balance assembly	Weight of crank, lbm	6,404 × 2	6,489 × 2	6,489 × 2	6,404 × 2	
	Crank pin bore position, in	Stroke 1	45.00	45.00	45.00	45.00
		Stroke 2	36.54	36.54	36.54	36.54
		Stroke 3	28.07	28.07	28.07	28.07
	Stroke length, in	Stroke 1	167.81	167.81	192.11	192.11
		Stroke 2	132.57	132.57	151.86	151.86
Stroke 3		100.13	100.13	114.72	114.72	
Wireline	Type	34, 6 × 25F EIPS	34, 6 × 25F EIPS	34, 6 × 25F EIPS	34, 6 × 25F EIPS	
	Length, in	460	460	508	508	
Other	Structural unbalance, lbf	-900	-940	-2,700	-2,695	
	Overall dimensions length × width × height, in	TH base	538 × 139 × 369	538 × 139 × 369	566 × 139 × 398	583 × 148 × 398
		TL base	637 × 139 × 369	-	-	-
		WL base	-	-	-	-

TorqMax Enhanced-Geometry Pumping Units

Dimensional Data

Model	A	B	C	E	F	H	I	J	L	M	N	R	T	W	X	AA	BB
TM456D-365-120	141.93	144.49	237.99	255.75	313.15	351.97	27.36	95.08	81.10	81.89	23.62	102.95	39.37	46.85	104.02	35.79	63.94
TM456D-305-144	141.93	173.03	237.99	255.75	313.15	372.05	26.77	95.08	57.87	81.89	23.62	131.50	39.37	46.85	104.02	35.79	63.94
TM640D-365-144	118.11	171.65	274.02	287.17	344.65	407.87	26.57	109.84	94.09	81.89	23.62	122.05	41.34	46.85	101.14	50.75	64.33
TM640D-427-144	118.11	171.65	274.02	287.17	344.65	407.87	26.57	109.84	94.09	81.89	23.62	122.05	41.34	46.85	101.14	50.75	64.33
TM640D-365-168	118.11	200.00	274.02	287.17	344.65	430.51	27.17	109.84	69.68	81.89	23.62	150.39	41.34	46.85	101.14	50.75	64.33
TM640D-427-168	118.11	200.00	274.02	287.17	344.65	430.51	27.17	109.84	69.68	81.89	23.62	150.39	41.34	46.85	101.14	50.75	64.33
TM912D-365-168	118.11	200.00	274.02	295.12	352.60	430.51	27.17	109.84	69.68	81.89	23.62	150.39	48.43	46.85	105.12	50.75	65.20
TM912D-427-168	118.11	200.00	274.02	295.12	352.60	430.51	27.17	109.84	69.68	81.89	23.62	150.39	48.43	46.85	105.12	50.75	65.20
TM912D-427-192	118.11	228.35	299.61	295.12	352.60	475.98	28.98	109.84	70.79	86.61	23.62	178.74	48.43	46.85	105.12	50.75	65.20
TM1280D-427-192	118.11	228.35	299.61	301.61	352.60	475.98	28.98	109.84	70.79	86.61	23.62	178.74	56.69	46.85	119.29	59.02	63.43

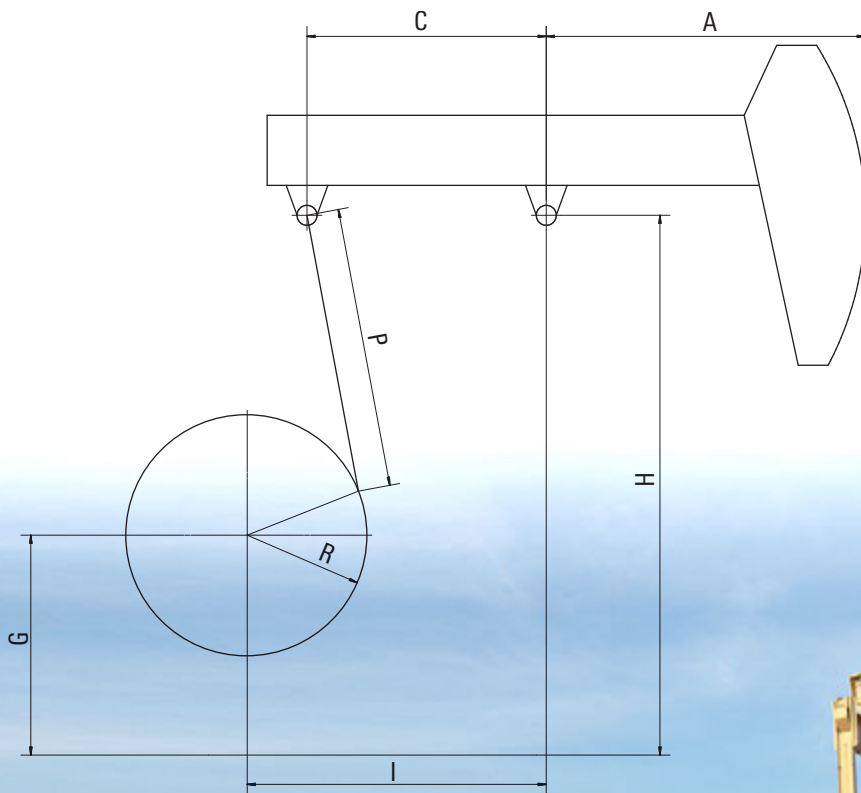
Note: All dimensions stated in inches



TorqMax Enhanced-Geometry Pumping Units

API Geometry Dimensions and Torque Factors

Model	A, in	C, in	I, in	P, in	H, in	G, in	R1, in	R2, in	R3, in	Phase Angle (PA), °	Structural Unbalance, lbf	Torque Factor at (90°-PA), in		
												Stroke 1	Stroke 2	Stroke 3
TM456D-365-120	144.49	102.95	141.93	149.02	237.99	96.06	38.98	31.38	23.78	-12	590	53.58	43.58	33.34
TM456D-305-144	173.03	102.95	141.93	149.02	237.99	96.06	38.98	31.38	23.78	-12	-500	64.16	52.19	39.92
TM640D-365-144	171.65	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-9	230	64.62	52.83	40.85
TM640D-427-144	171.65	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-12	230	64.06	52.53	40.73
TM640D-365-168	200.00	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-12	-900	74.60	61.20	47.50
TM640D-427-168	200.00	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-12	-940	74.60	61.20	47.50
TM912D-365-168	200.00	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-9	-900	75.29	61.56	47.60
TM912D-427-168	200.00	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-12	-940	74.60	61.20	47.50
TM912D-427-192	228.35	118.11	162.99	190.95	299.61	111.02	45.00	36.54	28.07	-12	-2,700	85.37	70.03	54.33
TM1280D-427-192	228.35	118.11	162.99	190.95	299.61	111.02	45.00	36.54	28.07	-9	-2,695	86.05	70.41	54.50



TorqMax Enhanced-Geometry Pumping Units

Structural Data

Model	Polished Rod Capacity, lbf	Stroke Lengths, in			Wireline Hanger, in	Cranks	Crank Pin Bearing	Equalizer Bearing	Center Bearing
		Stroke 1	Stroke 2	Stroke 3					
TM456D-365-120	36,500	120.21	94.17	70.16	1 $\frac{3}{8}$ × 12 centers	GRC150L/GRC150R	WAS110	EAS110	SAS110
TM456D-305-144	30,500	143.95	112.77	83.98	1 $\frac{1}{4}$ × 16 centers	GRC150L/GRC150R	WAS110	EAS110	SAS110
TM640D-365-144	36,500	144.02	113.79	85.93	1 $\frac{3}{8}$ × 16 centers	GRC160L/GRC160R	WAS100	EAS100	SAS100
TM640D-427-144	42,700	144.02	113.79	85.93	1 $\frac{3}{8}$ × 16 centers	GRC160AL/GRC160AR	WAS100	EAS100	SAS100
TM640D-365-168	36,500	167.81	132.57	100.13	1 $\frac{3}{8}$ × 16 centers	GRC160AL/GRC160AR	WAS100	EAS100	SAS100
TM640D-427-168	42,700	167.81	132.57	100.13	1 $\frac{3}{8}$ × 16 centers	GRC160AL/GRC160AR	WAS100	EAS100	SAS100
TM912D-365-168	36,500	167.81	132.57	100.13	1 $\frac{3}{8}$ × 16 centers	GRC160L/GRC160R	WAS100	EAS100	SAS100
TM912D-427-168	42,700	167.81	132.57	100.13	1 $\frac{3}{8}$ × 16 centers	GRC160AL/GRC160AR	WAS100	EAS100	SAS100
TM912D-427-192	42,700	192.11	151.86	114.72	1 $\frac{3}{8}$ × 16 centers	GRC160AL/GRC160AR	WAS100	EAS100	SAS100
TM1280D-427-192	42,700	192.11	151.86	114.72	1 $\frac{3}{8}$ × 16 centers	GRC160BL/GRC160BR	WAS100	EAS100	SAS100



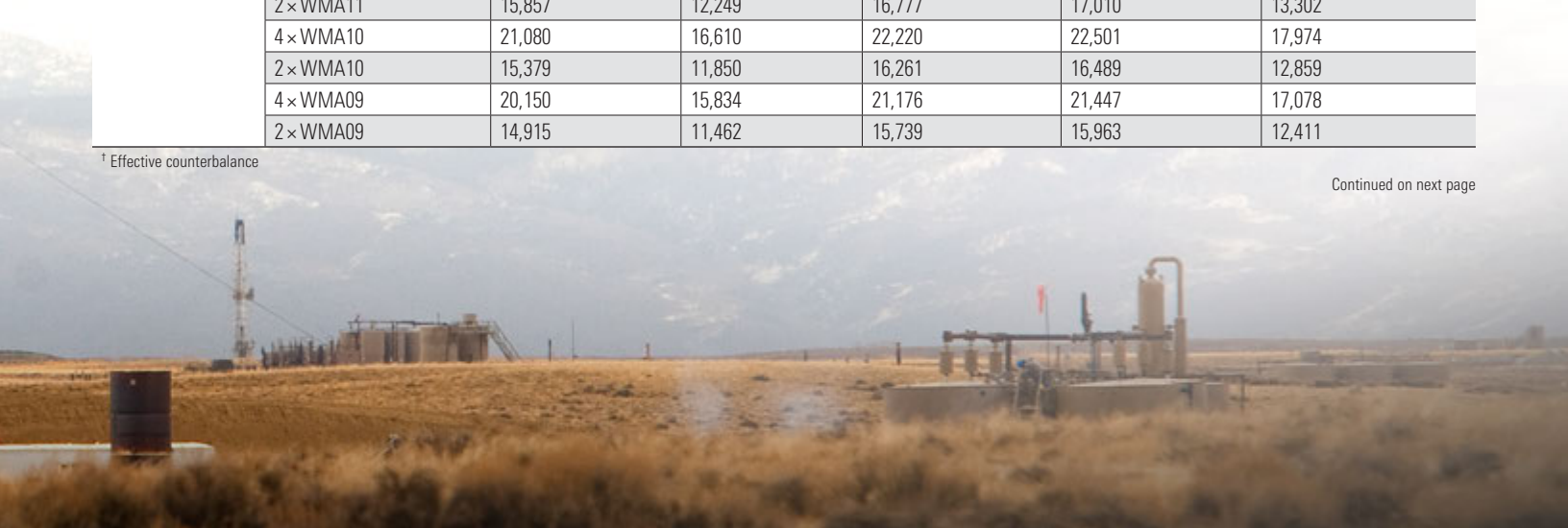
TorqMax Enhanced-Geometry Pumping Units

Counterbalance Data

		Model				
		TM456D-365-120	TM456D-305-144	TM640D-365-144	TM640D-427-144	TM912D-365-168
Maximum stroke, in		120	144	144	144	168
Structural unbalance, lbf		590	-500	230	230	-900
Crank		GRC150L and GRC150R	GRC150L and GRC150R	GRC160AL and GRC160AR	GRC160AL and GRC160AR	GRC160AL and GRC161AR
Phase angle, °		-12	-12	-9	-12	-9
ECB [†] (cranks only), lbf		9,679	7,090	10,302	10,478	7,745
Total ECB, lbf	4 × WMA30 + 4 × WAX08	-	-	-	-	-
	2 × WMA30 + 2 × WAX08	-	-	-	-	-
	4 × WMA30 + 4 × WAX05	-	-	-	-	-
	2 × WMA30 + 2 × WAX05	-	-	-	-	-
	4 × WMA30 + 4 × WAX03	-	-	-	-	-
	2 × WMA30 + 2 × WAX03	-	-	-	-	-
	4 × WMA30	-	-	-	-	-
	2 × WMA30	-	-	-	-	-
	4 × WMA28	-	-	-	-	31,525
	2 × WMA28	-	-	-	-	19,635
	4 × WMA27	-	-	-	-	30,880
	2 × WMA27	-	-	-	-	19,312
	4 × WMA25	30,020	24,076	-	36,100	29,544
	2 × WMA25	19,850	15,583	-	23,289	18,645
	4 × WMA23	28,987	23,213	-	34,549	28,225
	2 × WMA23	19,333	15,152	-	22,513	17,985
	4 × WMA22	28,410	22,731	-	33,721	27,520
	2 × WMA22	19,045	14,911	-	22,100	17,633
	4 × WMA20	25,773	20,529	31,060	31,417	25,560
	2 × WMA20	17,726	13,810	20,681	20,947	16,653
	4 × WMA18	25,952	20,678	29,586	29,931	24,295
	2 × WMA18	17,815	13,884	19,944	20,204	16,020
	4 × WMA16	24,495	19,462	27,774	28,103	22,741
	2 × WMA16	17,087	13,276	19,038	19,291	15,243
	4 × WMA14	23,093	18,291	25,736	26,047	20,991
	2 × WMA14	16,386	12,690	18,019	18,262	14,368
	4 × WMA12	22,865	18,101	24,244	24,542	19,710
	2 × WMA12	16,272	12,596	17,273	17,510	13,728
	4 × WMA11	22,035	17,408	23,253	23,542	18,860
	2 × WMA11	15,857	12,249	16,777	17,010	13,302
	4 × WMA10	21,080	16,610	22,220	22,501	17,974
	2 × WMA10	15,379	11,850	16,261	16,489	12,859
4 × WMA09	20,150	15,834	21,176	21,447	17,078	
2 × WMA09	14,915	11,462	15,739	15,963	12,411	

[†] Effective counterbalance

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Counterbalance Data

		Model				
		TM640D-365-168	TM640D-427-168	TM912D-427-168	TM912D-427-192	TM1280D-427-192
Maximum stroke, in		168	168	168	192	192
Structural unbalance, lbf		-900	-940	-940	-2,700	-2,695
Crank		GRC160AL and GRC161AR	GRC160AL and GRC160AR	GRC160AL and GRC160AR	GRC160AL and GRC160AR	GRC160BL and GRC160BR
Phase angle, °		-12	-12	-12	-12	-9
ECB [†] (cranks only), lbf		7,900	7,892	7,892	4,990	4,869
Total ECB, lbf	4 × WMA30 + 4 × WAX08	–	–	–	–	31,760
	2 × WMA30 + 2 × WAX08	–	–	–	–	18,314
	4 × WMA30 + 4 × WAX05	–	36,463	36,463	29,957	29,638
	2 × WMA30 + 2 × WAX05	–	22,178	22,178	17,473	17,254
	4 × WMA30 + 4 × WAX03	–	34,831	34,831	28,530	28,223
	2 × WMA30 + 2 × WAX03	–	21,361	21,361	16,760	16,546
	4 × WMA30	–	32,380	32,380	26,389	26,098
	2 × WMA30	–	20,136	20,136	15,689	15,484
	4 × WMA28	–	31,893	31,893	25,925	25,639
	2 × WMA28	–	19,892	19,892	15,458	15,254
	4 × WMA27	31,250	31,242	31,242	25,394	25,112
	2 × WMA27	19,575	19,567	19,567	15,192	14,990
	4 × WMA25	29,902	29,894	29,894	24,216	23,943
	2 × WMA25	18,901	18,893	18,893	14,603	14,406
	4 × WMA23	28,570	28,562	28,562	23,052	22,789
	2 × WMA23	18,235	18,227	18,227	14,021	13,829
	4 × WMA22	27,859	27,851	27,851	22,431	22,172
	2 × WMA22	17,880	17,872	17,872	13,711	13,521
	4 × WMA20	25,881	25,873	25,873	20,702	20,457
	2 × WMA20	16,890	16,882	16,882	12,846	12,663
	4 × WMA18	24,604	24,596	24,596	19,587	19,350
	2 × WMA18	16,252	16,244	16,244	12,288	12,110
	4 × WMA16	23,035	23,027	23,027	18,216	17,990
	2 × WMA16	15,467	15,459	15,459	11,603	11,430
	4 × WMA14	21,269	21,261	21,261	16,673	16,459
	2 × WMA14	14,585	14,577	14,577	10,831	10,664
	4 × WMA12	19,977	19,969	19,969	15,543	15,339
	2 × WMA12	13,938	13,930	13,930	10,267	10,104
	4 × WMA11	19,118	19,110	19,110	14,793	14,594
	2 × WMA11	13,509	13,501	13,501	9,891	9,732
	4 × WMA10	18,224	18,216	18,216	14,011	13,819
	2 × WMA10	13,062	13,054	13,054	9,501	9,344
4 × WMA09	17,319	17,311	17,311	13,221	13,035	
2 × WMA09	12,610	12,602	12,602	9,106	8,952	

[†] Effective counterbalance