

TorqMax

Advanced geometry pumping unit

The TorqMax* pumping unit is an advanced geometry alternative to a conventional pumping unit. For certain rod pump applications, it can help reduce torque and lower prime mover horsepower requirements, thus reducing lifting costs.

The primary differences between the TorqMax and conventional geometry units are as follows:

- The structure of the TorqMax unit is shifted forward from the gear reducer toward the wellhead, whereas on the conventional geometry unit the center of the equalizer bearing shaft sits directly over the center of the slow-speed shaft of the gear reducer.

- The crankpin holes are placed at an offset angle on the crank arm of the TorqMax unit but run parallel to the crank arm on a conventional geometry unit.
- To maximize the effect of the advanced geometry, the TorqMax unit must always rotate clockwise, while a conventional unit can run in either direction of rotation.

Contact a Schlumberger rod lift representative for more information about this advanced geometry unit.

Main Specifications

		Model				
		TM456D-365-120	TM456D-305-144	TM640-365-144TH	TM640-427-144TH	
Basic Parameters	Rated Polished Rod Capacity (lbm)	36,500	30,500	36,500	42,700	
	Stroke Length (in)	120	144	144	144	
	Max. Stroke Frequency (r/min)	15	12	12	12	
	Balanced Type	Crank balanced				
	Crank Direction	Clockwise				
Gear Reducer	Rated Torque (in.lbf)	456,000	456,000	640,000	640,000	
	Model	456D	456D	640D	640D	
	Double Circular Arc (DCA) Reducer	Gear Type	DCA	DCA	DCA	DCA
		Gear Ratio	28.25	28.25	28.36	28.36
		Center Range (in)	39.37	39.37	41.34	41.34
		Center Height (in)	25.59	25.59	25.98	25.98
	Involute (INV) Reducer	Gear Type	INV	INV	INV	INV
		Gear Ratio	28.84	28.84	29.32	29.32
		Center Range (in)	39.41	39.41	41.32	41.32
		Center Height (in)	25.59	25.59	25.98	25.98
	Oil Storage Quantity (galUS)	110	110	106	106	
	Lubricant	ISO VG 150 gear lubricant in winter, ISO VG 200 gear lubricant oil in summer				
	Sheave Diameter (in)	44	44	50	50	
Sheave Groove Type	6C	6C	6C	6C		
Balance Assembly	Weight of Crank (lbm)	5,651 x 2	5,651 x 2	6,404 x 2	6,404 x 2	
	Wrist Pin Bore Position (in)	Stroke 1	38.98	38.98	45.00	45.00
		Stroke 2	31.38	31.38	36.54	36.54
		Stroke 3	23.78	23.78	28.07	28.07
	Stroke Lengths (in)	Stroke 1	120.21	143.95	144.02	144.02
		Stroke 2	94.17	112.77	113.79	113.79
		Stroke 3	70.16	83.98	85.93	85.93

Main Specifications

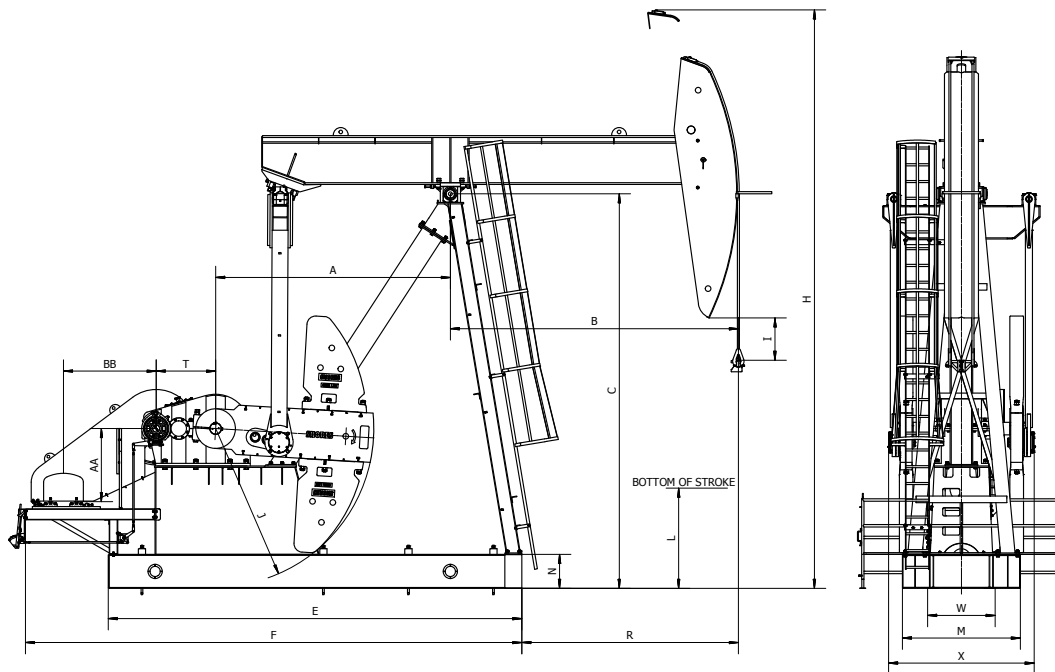
Wire Line	Type		34, 6X37S+IWR 1770	32, 6X37S+IWR 1770	34, 6X37S+IWR 1770	34, 6X37S+IWR 1770	
	Length (in)		350	410	410	410	
Other	Structure Unbalance (lbs)		590	-500	230	230	
	Overall Dimensions Length x Width x Height (in)	TH	451 x 139 x 309	479 x 139 x 321	502 x 139 x 357	502 x 139 x 357	
Model							
TM640D-365-168 TM640-427-168TH TM912D-365-168 TM912-427-168TH							
Basic Parameters	Rated Polished Rod Capacity (lbf)		36,500	42,700	36,500	42,700	
	Stroke Length (in)		168	168	168	168	
	Max. Stroke Frequency (r/min)		12	12	12	12	
	Balanced Type		Crank balanced				
	Crank Direction		Clockwise				
Gear Reducer	Rated Torque (in.lbf)		640,000	640,000	912,000	912,000	
	Model		640D	640D	912D	912D	
	Double Circular Arc (DCA) Reducer	Gear Type		DCA	DCA	DCA	DCA
		Gear Ratio		28.36	28.36	28.79	28.79
		Center Range (in)		41.34	41.34	48.43	48.43
		Center Height (in)		25.98	25.98	30.91	30.91
	Involute (INV) Reducer	Gear Type		INV	INV	INV	INV
		Gear Ratio		29.32	29.32	28.79	28.79
		Center Range (in)		41.32	41.32	48.29	48.29
		Center Height (in)		25.98	25.98	30.91	30.91
	Oil Storage Quantity (galUS)		106	106	180	180	
	Lubricant		ISO VG 150 gear lubricant in winter, ISO VG 200 gear lubricant oil in summer				
	Sheave Diameter (in)		50	50	50	50	
Sheave Groove Type		6C	6C	7C	7C		
Balance Assembly	Weight of Crank (lbf)		6,404 x 2	6,404 x 2	6,404 x 2	6,404 x 2	
	Wrist 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 Lengths (in)	Stroke 1	167.81	167.81	167.81	167.81	
		Stroke 2	132.57	132.57	132.57	132.57	
Stroke 3		100.13	100.13	100.13	100.13		
Wire Line	Type		34, 6X37S+IWR 1770	34, 6X37S+IWR 1771	34, 6X37S+IWR 1770	34, 6X37S+IWR 1772	
	Length (in)		460	460	460	460	
Other	Structure Unbalance (lbf)		-900	-940	-900	-940	
	Overall Dimensions Length x Width x Height (in)	TH	530 x 139 x 369	530 x 139 x 369	538 x 139 x 369	538 x 139 x 369	

Main Specifications

		Model		
		TM912-427-192TH	TM1280-427-192TH	
Basic Parameters	Rated Polished Rod Capacity (lbf)	42,700	42,700	
	Stroke Length (in)	192	192	
	Max Stroke Frequency (r/min)	10	10	
	Balanced Type	Crank balanced		
	Crank Direction	Clockwise		
Gear Reducer	Rated Torque (in.lbf)	912,000	1,280,000	
	Model	912D	1280D	
	Double Circular Arc (DCA) Reducer	Gear Type	DCA	DCA
		Gear Ratio	28.79	28.672
		Center Range (in)	48.43	56.69
		Center Height (in)	30.91	34.25
	Involute (INV) Reducer	Gear Type	INV	INV
		Gear Ratio	28.79	28.672
		Center Range (in)	48.29	56.69
		Center Height (in)	30.91	34.25
	Oil Storage Quantity (galUS)	180	185	
	Lubricant	ISO VG 150 gear lubricant in winter, ISO VG 200 gear lubricant oil in summer		
	Sheave Diameter (in)	50	50	
	Sheave Groove Type	7C	10C	
Balance Assembly	Weight of Crank (lbf)	6,404 x 2	6,404 x 2	
	Wrist Pin Bore Position (in)	Stroke 1	45.00	45.00
		Stroke 2	36.54	36.54
		Stroke 3	28.07	28.07
	Stroke Lengths (in)	Stroke 1	192.13	192.13
		Stroke 2	151.68	151.68
		Stroke 3	114.5	114.5
Wire Line	Type	34, 6X37S+IWR 1773	34, 6X37S+IWR 1774	
	Length (in)	508	508	
Other	Structure Unbalance (lbf)	-2610	-2510	
	Overall Dimensions TH Length x Width xHeight (in)	576 x 139 x 380	583 x 148 x 380	

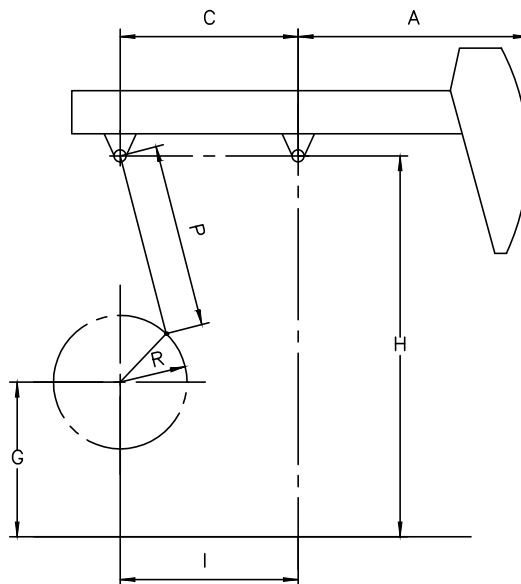
Dimensional Data

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	309.21	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	321.46	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	274.00	287.17	344.65	357.44	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	274.00	287.17	344.65	357.44	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	274.00	287.17	344.65	368.70	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	274.00	287.17	344.65	368.70	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	274.00	295.12	352.60	368.70	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	274.00	295.12	352.60	368.70	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	274.00	295.12	352.60	379.92	27.95	109.84	46.06	86.61	23.62	178.74	48.43	46.85	105.12	50.75	65.20
TM1280-427-192	118.11	228.35	274.00	301.61	352.60	379.92	27.95	109.84	46.06	86.61	23.62	178.74	56.69	46.85	119.29	59.02	63.43



API Geometry Dimensions in, TF in

MODEL	A	C	I	P	H	G	R1	R2	R3	PHASE ANGLE	S.U.	TF(90°-PA) STROKE1	TF(90°-PA) STROKE2	TF(90°-PA) STROKE3
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	-9	230	64.62	52.83	40.85
TM640D-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
TM640D-427-168	200.00	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-9	-940	75.29	61.56	47.60
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	-9	-940	75.29	61.56	47.60
TM912D-427-192	228.35	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-9	-2610	85.96	70.30	54.37
TM1280-427-192	228.35	118.11	162.99	170.98	274.02	111.02	45.00	36.54	28.07	-9	-2510	85.96	70.30	54.37



Structural Data

Model	Capacity (lbm)	Polished Rod Stroke Lengths (in)			Wiring Hanger (in)		Crank	Crank Pin Bearing	Equalizer Bearing	Center Bearing
		Stroke1	Stroke2	Stroke3						
TM456D-365-120	36,500	120.21	94.17	70.16	1-3/8x	12 CTRS	GRC150	WAS110	EAS110	SAS110
TM456D-305-144	30,500	143.95	112.77	83.98	1-1/4x	16 CTRS	GRC150	WAS110	EAS110	SAS110
TM640D-365-144	36,500	144.02	113.79	85.93	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM640D-427-144	42,700	144.02	113.79	85.93	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM640D-365-168	36,500	167.81	132.57	100.13	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM640D-427-168	42,700	167.81	132.57	100.13	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM912D-365-168	36,500	167.81	132.57	100.13	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM912D-427-168	42,700	167.81	132.57	100.13	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM912D-427-192	42,700	192.13	151.68	114.5	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100
TM1280D-427-192	42,700	192.13	151.68	114.5	1-3/8x	16 CTRS	GRC160	WAS100	EAS100	SAS100

Counterbalance Data

	Model			
	TM456D-365-120	TM456D-305-144	TM640D-365-144 TM640D-427-144	TM640D-365-168 TM912D-365-168
Maximum Stroke	120	144	144	168
Structural Unbalance	590	-500	230	-900
Cranks	GRC150	GRC150	GRC160	GRC160
ECB Cranks only	9679	7090	10302	7745
4xWMA25	30020	24076	35702	29544
2xWMA25	19850	15583	23002	18645
4xWMA23	28987	23213	34164	28225
2xWMA23	19333	15152	22233	17985
4xWMA22	28410	22731	33344	27520
2xWMA22	19045	14911	21823	17633
4xWMA20	25773	20529	31060	25560
2xWMA20	17726	13810	20681	16653
4xWMA18	25952	20678	29586	24295
2xWMA18	17815	13884	19944	16020
4xWMA16	24495	19462	27774	22741
2xWMA16	17087	13276	19038	15243
4xWMA12	22865	18101	24244	19710
2xWMA12	16272	12596	17273	13728
4xWMA10	21080	16610	22220	17974
2xWMA10	15379	11850	16261	12859
4xWMA09	20150	15834	21176	17078
2xWMA09	14915	11462	15739	12411

Counterbalance Data

	Model		
	TM640D-427-168 TM912D-427-168	TM912D-427-192	TM1280D-427-192
Maximum Stroke	168	192	192
Structural Unbalance	-940	-2610	-2510
Cranks	GRC160	GRC160	GRC160
ECB Cranks only	7705	4962	5062
4xWMA25	29504	24056	24516
2xWMA25	18605	14509	14609
4xWMA23	28185	22900	23000
2xWMA23	17945	13931	14031
4xWMA22	27480	22283	22383
2xWMA22	17593	13623	13723
4xWMA20	25520	20566	20666
2xWMA20	16613	12764	12864
4xWMA18	24255	19459	19559
2xWMA18	15980	12210	12310
4xWMA16	22701	18097	18197
2xWMA16	15203	11529	11629
4xWMA12	19670	15443	15543
2xWMA12	13688	10202	10302
4xWMA10	17934	13922	14022
2xWMA10	12819	9442	9542
4xWMA09	17038	13137	13237
2xWMA09	12371	9049	9149