

UltraMotors

Black Diamond's UltraMotors set the industry standard for cost-efficient, reliable, and resilient directional drilling operations in the most challenging environments ensuring unparalleled performance at every deployment. Designed with patented technology for reliability Black Diamond's UltraMotors incorporate the latest developments in high torque – high speed power sections to provide users with an exemplary tool for delivering superior performance in aggressive wells. With a focus on reliability, ease of use, and optimized cost efficiency, UltraMotors empower your operations with unwavering precision and durability, allowing you to conquer any drilling challenges with confidence.

Features and Benefits

UltraMotors offer the flexibility needed to meet the wide range of applications in which they are deployed. Utilizing patented driveline technology, maximized thru-bore and bypass ports, and enhanced geometry, the M Series gives you a tool you can count on for superior performance. Each of the three M-Series motors can be trusted to perform in any section of the well but are also recognized for their specific designs which are proven to succeed in the most challenging operations:

- **M5** - Compact oil-sealed assembly delivers reliable torque transmission and high load capacity in 5 7/8 - 7 7/8 holes.
- **M40** - A standard bit-to-bend length makes this high performance motor the choice for the drilling of high precision curves. The M40+ features an extended bit-to-bend.
- **M41** - A longer bit-to-bend and increased WOB and overpull capacities make this the standard solution for laterals and shallow tangents.
- **M42** - Designed specifically for motor assisted RSS operations. >30% reduction in fluid bypass ensures maximum flow reaches the RSS. The tool is often deployed in a pin-down configuration.

Market Leading Flex-Shaft Drivelines

WK5 - The legendary Maxi-Torque WK5 Hybrid Flex Driveline features a superior lower universal and single-piece upper connection. The single articulating CV joint features surface hardening and provides over 100% more contact area to keys.

ST1 - The ST1 Hybrid Flex Driveline features a two-component articulating joint, significantly reducing wear and tear. Designed for higher torsional and shear stress capacity, its advanced hybrid design minimizes vibration, maximizes torque transfer, and promotes smoother operations.



Solid Steel Pin x Pin Flex Shaft - Designed for applications where maximum durability and torque capacity are required. Particularly well suited to RSS operations where dogleg severity is limited, it eliminates the contact points associated with conventional driveshaft assemblies, significantly extending service life and reducing replacement and rework costs. The increased durability makes it an ideal solution for extended reach laterals, while its higher torque capacity complements high-output power sections and aggressive bit designs. By eliminating the booted lower assembly, the design removes the risk of seal failure and subsequent mud invasion, making it well suited to high-solids and high-temperature drilling environments.

Proven Bearing Technology

Our industry proven thrust and radial bearings are custom designed for mud lubricated applications, delivering superior, uniform and consistent load distribution and maximized WOB capacity. This is all achieved with our proprietary compact design.

Housing and Mandrel Connections

The UltraMotor housing connections feature increased thread root radii, which enables more effective cold working of threads and reduces stress applied to connections for improved fatigue life under increased side loads. Additionally, our new mandrel boasts a larger OD that substantially increases torque capacity and rigidity.



UltraMotor Options

Bearing Assembly	5-1/4 M40				5-1/4 M42 Reduced Bypass Motor				5-1/2 M5				5-1/2 M40			
Bit to Bend Fixed / Adjustable	40° / N/A				N/A / N/A				NA / 61°				43° / N/A			
Top Sub Options ¹	NC38 (3-1/2 IF), XT-39, DS42, NC40				NC38 (3-1/2 IF), XT-39, DS42				NC38 (3-1/2 IF), XT-39, DS42, NC40				NC38 (3-1/2 IF), XT-39, DS42			
Bit Box Options ¹	3-1/2 Reg, NC40 (4 FH), XT-39 Pin Down				XT-39 Pin Down				3-1/2 Reg, NC40 (4 FH), XT-39 Pin Down				3-1/2 Reg, NC40 (4 FH), XT-39 Pin Down			
Powers Size Configuration RPG Flow Range	525	5/6 9.9	0.700	250-450	525	5/6 9.9	0.700	250-450	475	7/8 2.6	0.263	150-300	550	7/8 8.5	0.500	240-440
	525	7/8 8.3	0.480	200-400	525	7/8 8.3	0.480	200-400	475	7/8 3.8	0.521	150-250				
Fixed Bend Options	Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38				Straight				N/A				Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38			
Adjustable Bend Options	N/A				N/A				0.00 - 3.00				N/A			
Stabilization Options	True Slick Integrated Integral Blade Stab.				True Slick Integrated Integral Blade Stab.				True Slick				True Slick Integrated Integral Blade Stab.			
	5-3/4 M40				6-1/2 M40				6-1/2 M40+				7-1/4 M40			
Bit to Bend Fixed / Adjustable	47° / 58°				51° / N/A				60° / N/A				45° / 57°			
Top Sub Options ¹	NC38 (3-1/2 IF), XT-39, DS42				NC50 (5 XH, 4-1/2 IF), NC46 (4 IF, 4-1/2 XH)				NC50 (5 XH, 4-1/2 IF), NC46 (4 IF, 4-1/2 XH)				NC50 (5 XH, 4-1/2 IF), NC46 (4 IF, 4-1/2 XH)			
Bit Box Options ¹	3-1/2 Reg, NC40 (4 FH), XT-39 Pin Down				4-1/2 Reg, 4-1/2 IF Pin Down				4-1/2 Reg, 4-1/2 IF Pin Down				4-1/2 Reg, 4-1/2 IF Pin Down			
Powers Size Configuration RPG Flow Range	575	6/7 10.6	0.600	300-500	625	7/8 3.0	0.196	300-600	625	7/8 3.0	0.196	300-600	675	7/8 5.7	0.242	300-650
					650	7/8 6.0	0.288	300-650	650	7/8 6.0	0.288	300-650	700	5/6 9.5	0.344	450-750
					650	7/8 3.0	0.155	300-600	650	7/8 3.0	0.155	300-600	700	6/7 4.6	0.150	400-800
					663	5/6 9.5	0.340	450-750	663	5/6 9.5	0.340	450-750	700	6/7 10.1	0.400	300-800
					675	7/8 6.4	0.288	300-650	675	7/8 6.4	0.288	300-650	700	6/7 11.1	0.400	300-800
					675	7/8 5.7	0.242	300-650	675	7/8 5.7	0.242	300-650	700	6/7 12.1	0.400	300-800
													700 ²	6/7 12.1	0.400	300-800
													700	7/8 8.5	0.240	400-750
													725	6/7 10.1	0.400	300-800
													725	6/7 11.1	0.400	300-800
													725	6/7 12.1	0.400	300-800
Fixed Bend Options	Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38				Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38				Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38				Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38			
Adjustable Bend Options	0.00 - 3.00				N/A				0.00 - 3.00				0.00 - 3.00			
Stabilization Options	True Slick Integrated Integral Blade Stab.				True Slick Slick Sleeve Screw-On Stabilizer Integrated Integral Blade Stab.				True Slick Slick Sleeve Screw-On Stabilizer Integrated Integral Blade Stab.				True Slick Integrated Integral Blade Stab.			
	7-1/4 M41				7-1/4 M42 Reduced Bypass Motor				8-1/4 M40				9-5/8 M40			
Bit to Bend Fixed / Adjustable	60° / 72°				N/A / N/A				52° / 66°				78° / 94°			
Top Sub Options ¹	NC50 (5 XH, 4-1/2 IF), NC46 (4 IF, 4-1/2 XH)				NC50 (5 XH, 4-1/2 IF), NC46 (4 IF, 4-1/2 XH)				6-5/8 IF				6-5/8 IF			
Bit Box Options ¹	4-1/2 Reg, 4-1/2 IF Pin Down				4-1/2 IF Pin Down				6-5/8 Reg, 7-5/8 Reg, 6-5/8 Reg Pin Down				6-5/8 Reg, 7-5/8 Reg			
Powers Size Configuration RPG Flow Range	675	7/8 5.7	0.242	300-650	675	7/8 5.7	0.242	300-650	800	7/8 3.4	0.089	400-900	962	5/6 4.0	0.108	600-1200
	700	5/6 9.5	0.344	450-750	700	5/6 9.5	0.344	450-750	800	7/8 4.0	0.166	400-900	800	7/8 3.4	0.089	400-900
	700	6/7 4.6	0.150	400-800	700	6/7 4.6	0.150	400-800	825	7/8 6.2	0.156	400-900	800	7/8 4.0	0.166	400-900
	700	6/7 10.1	0.400	300-800	700	6/7 10.1	0.400	300-800	825	7/8 7.0	0.166	400-1000	825	7/8 7.0	0.156	400-1000
	700	6/7 11.1	0.400	300-800	700	6/7 11.1	0.400	300-800								
	700	6/7 12.1	0.400	300-800	700	6/7 12.1	0.400	300-800								
	700 ²	6/7 12.1	0.400	300-800	700 ²	6/7 12.1	0.400	300-800								
	700	7/8 8.5	0.240	400-750	700	7/8 8.5	0.240	400-750								
	725	6/7 10.1	0.400	300-800	725	6/7 10.1	0.400	300-800								
	725	6/7 11.1	0.400	300-800	725	6/7 11.1	0.400	300-800								
	725	6/7 12.1	0.400	300-800	725	6/7 12.1	0.400	300-800								
Fixed Bend Options	Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38				Straight				Straight, 150, 175, 183, 2.00, 2.12, 2.25, 2.38				Adjustable Housing 0.00 - 3.00			
Adjustable Bend Options	0.00 - 3.00				N/A				0.00 - 3.00				0.00 - 3.00			
Stabilization Options	True Slick Integrated Integral Blade Stab.				True Slick Integrated Integral Blade Stab.				True Slick Slick Sleeve Screw-On Stabilizer Integrated Integral Blade Stab.				Slick Sleeve Screw-On Stab.			

¹ other options are available on request ² DynaMic Fit

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