



PROVIDING QUALITY POSITIVE
DISPLACEMENT MOTORS AND
RELATED SUPPORT SERVICES
TO THE DRILLING INDUSTRY



COMPANY PROFILE

BICO Drilling Tools, Inc. is a recognized leader in the design, manufacture and service of downhole drilling motors, drilling jars, shock subs and hole opening equipment used in the oilfield, mining and HDD industries. BICO's success comes from the strength of our products and as equally important, the dedication of our employees. Our management, marketing and engineering team is comprised of seasoned professionals with an average of 20+ years of industry experience in bringing cost effective solutions to our customers' challenges. This innovative approach combined with our extensive range of motors allows BICO to excel in solving real world problems while continually exceeding our client's expectations.



SERVICE IS PRIORITY ONE AT BICO

with certified maintenance facilities strategically located in both domestic and international locations. BICO has the flexibility to meet customers' specific needs regardless of the application. We maintain a large fleet of motors in order to provide quick response support for even the toughest directional, horizontal and performance drilling applications.

BICO IS CUSTOMER DRIVEN

and we work closely with our clients to understand their unique needs. We offer flexible rental, lease, lease-purchase or purchase options. At BICO, we constantly strive to improve the service quality of our motors through continuous engineering, unsurpassed technical support and efficient computerized inventory management.



The Flex Drill downhole motor is a highly rugged and efficient positive displacement motor. The motor converts the drilling fluid's hydraulic energy into mechanical energy in the form of torque and rotational speed. This conversion is accomplished through the use of a spiral rotor that fits into a stator of similar shape, to form a tight seal.

Flex Drill Motors have been the workhorse of the BICO fleet for over a decade and are available in configurations ranging from low-speed / high-torque models to our high-speed performance motors. Tool sizes range from 1-11/16" to 11-1/4" allowing BICO Flex Drill motors to be used for applications that include coiled tubing directional, horizontal and performance motor drilling. All of these tools incorporate features that reduce maintenance costs, lower inventory requirements and ensure reliable performance.



Motor Type		Motor Output			Motor Input		Physical Motor Data						
Dia	Model	Bit Speed	Torque	Power	FlowRange	MotorDP	Bit Size	Std Connections	Length- ft (m)		Power Section		
(IN)	-	RPM	FT-LBS (NM)	HP (KW)	GPM (LPM)	PSI (BAR)	(IN)	(BOX)	FIXED	ADJ	STAGES	LOBES	REV/GAL
1-11/16"	P100	190-380	185 (250)	13 (10)	25-45 (95-170)	615 (42)	1-7/8" to 2-3/4"	Top - 1" Reg Btm-1" Reg	7.8 (2.4)	N/A	2.3	5/6	9.09
2-1/8"	P150	170-465	200 (270)	18 (13)	30-70 (114-265)	425 (29)	2-3/16" to 3-1/4"	Top - 1-1/2" Reg Btm - 1-1/2" Reg	8.4 (2.6)	N/A	2.5	5/6	7.69
2-3/8"	P150	170-465	200 (270)	18 (13)	30-70 (114-265)	425 (29)	2-1/2" to 3-1/4"	Top - 1-1/2" Reg Btm - 1-1/2" Reg	8.4 (2.6)	N/A	2.5	5/6	7.69
2-7/8"	P150	60-420	205 (280)	16 (12)	20-80 (75-300)	420 (29)	3-1/2" to 4-1/2"	Top - 2-3/8" Reg	8.9 (2.7)	9.8 (3.0)	3.3	5/6	5.88
	P150XL	60-420	470 (635)	35 (26)	20-80 (75-300)	925 (64)		Btm - 2-3/8" Reg	13.5 (4.1)	14.4 (4.4)	7	5/6	5.56
3-1/8"	P150XL	137-341	720 (976)	47 (35)	80-160 (300-600)	772 (53.2)	4-1/8" to 4-3/4"	Top - 2-3/8" Reg Btm - 2-3/8" Reg	16.6 (5.1)	17.5 (5.3)	4.6	5/6	2.13
3-3/4"	P100	45-115	960 (1300)	21 (16)	80-160 (300-600)	265 (19)	4-1/2" to 5-7/8"	Top - 2-3/8" Reg Btm - 2-7/8" Reg	16.4 (5.0)	17.3 (5.3)	2.3	7/8	0.85
	P100XL	80-270	1200 (1625)	62 (46)	60-180 (225-680)	680 (47)			20.2 (6.2)	21.1 (6.4)	6.7	7/8	1.49
	P100AD	45-115	960 (1300)	21 (16)	300-600 (8.5-17) ¹	265 (19)			16.4 (5.0)	17.3 (5.3)	2.3	7/8	0.22
	P150	90-220	770 (1045)	32 (24)	80-160 (300-600)	415 (29)			16.4 (5.0)	17.3 (5.3)	3.5	4/5	1.59
	P150XL	95-360	1150 (1560)	79 (59)	60-160 (225-600)	1125 (78)			20.8 (6.3)	21.8 (6.6)	8.8	4/5	2.63
	P150SR	170-390	590 (800)	44 (33)	100-200 (380-760)	465 (32)			11.7 (3.6)	N/A	3.8	5/6	2.00
	P300	350-790	625 (850)	92 (69)	70-150 (265-570)	1160 (80)			15.8 (4.8)	16.7 (5.1)	9	3/4	5.56
4-3/4"	P50XL	39-79	3500 (4750)	53 (39)	150-300 (563-1125)	390 (27)	5-3/4" to 6-3/4"	Top - 3-1/2" IF Btm - 3-1/2" Reg	26.5 (8.1)	N/A	2.6	7 4/5	0.26
	P100	35-120	1400 (1900)	32 (24)	100-250 (380-950)	270 (19)			16.9 (5.1)	18.2 (5.6)	2.2	7/8	0.56
	P100XL	65-115	2500 (3390)	55 (41)	150-250 (570-950)	485 (36)			22.8 (6.9)	24.1 (7.3)	3.8	7/8	0.52
	P100AD	35-120	1400 (1900)	32 (24)	375-925 (10.6-26.2) ¹	270 (19)			16.9 (5.1)	18.2 (5.6)	2.2	7/8	0.14
	P150	75-235	1190 (1615)	53 (40)	100-250 (380-950)	450 (31)			16.9 (5.1)	18.2 (5.6)	3.5	4/5	1.05
	P150XL	75-235	2100 (2850)	95 (70)	100-250 (380-950)	770 (53)			22.8 (7.0)	24.1 (7.4)	6	4/5	1.03
	P150SR ²	75-170	650 (880)	21 (16)	100-200 (380-760)	220 (15)			11.9 (3.6)	N/A	2	7/8	1.00
	P300XL	131-586	1522 (2064)	170 (127)	100-300 (380-1135)	995 (69)			25.8 (7.9)	26.2 (8.0)	7.9	2/3	2.27
4-3/4" X 5-1/2"	P100XL	65-115	2500 (3390)	55 (41)	150-250 (570-950)	485 (36)	6-3/4" to 7-7/8"	Top - 3-1/2" IF Btm - 4-1/2" Reg	21.4 (5.8)	22.9 (6.2)	3.8	7/8	0.52

Notes: 1. Air motor units: Flow ranges are in scfm (m3/min), displacements are in scfm/rev.
2. These motor series are not generally in stock, but can be special ordered.



PETROLEUM MOTOR OVERVIEW

Motor Type		Motor Output			Motor Input		Physical Motor Data						
Dia	Model	Bit Speed	Torque	Power	Flow Range	MotorDP	Bit Size	Std Connections	Length- ft (m)		Power Section		
(IN)	-	RPM	FT-LBS (NM)	HP (KW)	GPM (LPM)	PSI (BAR)	(IN)	(BOX)	FIXED	ADJ	STAGES	LOBES	REV/GAL
5-1/2"	P150	70-170	1850 (2510)	60 (145)	150-300 (575-1135)	450 (31)	6-3/4" to 7-7/8"	Top - 4-1/2" Reg Btm - 4-1/2" Reg	18.7 (5.7)	20.2 (6.2)	3.5	4/5	0.67
6-1/4"	P100XL	30-130	5800 (7860)	144 (107)	150-450 (565-1700)	690 (48)	7-7/8" to 8-3/4"	Top - 4-1/2" Reg Btm - 4-1/2" Reg	23.9 (7.3)	25.7 (7.8)	4.8	7/8	0.34
6-1/2" 6-3/4"	P50XL	30-67	6100 (8330)	78 (58)	250-500 (950-1890)	320 (22.33)	7-7/8" to 9-7/8"	Top - 4-1/2" Reg Btm - 4-1/2" Reg	28.3 (8.6)	N/A	2.1	7/8	0.13
	P75	40-100	4400 (5965)	84 (62)	300-700 (1135-2650)	215 (15)			20.0 (6.1)	21.5 (6.6)	2	7/8	0.16
	P75AD	40-100	6000 (8135)	115 (85)	1600-3200 (45-90) ¹	325 (22)			20.0 (6.1)	21.5 (6.6)	2	7/8	0.04
	P100	60-145	3800 (5160)	105 (79)	300-600 (1135-2270)	380 (26)			18.8 (5.7)	20.3 (6.2)	3	7/8	0.29
	P100XL	60-145	6700 (9080)	185 (138)	300-600 (1135-2270)	675 (47)			24.6 (7.5)	26.0 (7.9)	5	7/8	0.29
	P110XL	30-145	5325 (7225)	148 (111)	200-600 (755-2270)	480 (33)			20.5 (6.3)	22.0 (6.7)	3.6	6/7	0.28
	P150	80-295	3300 (4475)	185 (138)	200-600 (755-2270)	645 (44)			20.5 (6.3)	22.0 (6.7)	5	4/5	0.54
	P150XL	100-255	5100 (6915)	250 (185)	300-600 (1135-2270)	845 (58)			25.9 (7.9)	27.4 (8.3)	7	4/5	0.50
	P300XL	150-450	2660 (3610)	208 (156)	200-500 (755-1900)	1060 (72)			26.3 (8.0)	27.8 (8.5)	8	2/3	1.00
8"	P100	30-125	7000 (9500)	167 (125)	300-900 (1135-3400)	380 (26)	9-1/2" to 12-1/4"	Top - 6-5/8" Reg Btm - 6-5/8" Reg	23.8 (7.3)	24.9 (7.6)	3	7/8	0.16
	P100XL	66-150	9950 (13490)	231 (172)	400-900 (1510-3410)	600 (41)			27.4 (8.4)	28.5 (8.7)	4	7/8	5.88
	P100AD	30-125	7000 (9500)	167 (125)	1125-3375 (32-95) ¹	380 (26)			23.8 (7.3)	24.9 (7.6)	3	7/8	0.04
	P150	50-180	4380 (5940)	150 (112)	300-800 (1135-3000)	425 (29)			23.0 (7.0)	24.6 (7.5)	3.3	4/5	0.26
	P150XL	50-200	7550 (10250)	285 (215)	300-900 (1135-3400)	640 (44)			29.6 (9.0)	31.1 (9.5)	5.3	4/5	0.25
9-5/8"	P100XL	59 - 128	14000 (18,980)	341 (254)	800-1300 (3028-4921)	650 (45)	11-1/4" to 26"	Top - 7-5/8" Reg Btm - 7-5/8" Reg	33.1 (10.1)	35.4 (10.8)	5	5/6	0.14
	P150	90-270	7680 (10410)	395 (295)	500-1200 (1900-4500)	735 (51)			24.3 (7.4)	26.6 (8.1)	5.6	4/5	0.26
	P150XL	90-270	10450 (14175)	535 (400)	500-1200 (1900-4500)	1000 (69)			28.2 (8.6)	30.5 (9.3)	7.2	4/5	0.26
	P180XL	133-265	11720 (15890)	592 (441)	600-1200 (2270-4540)	900 (62)			29.9 (9.2)	32.1 (9.8)	6	3/4	0.22
11-1/4"	P150 ²	80-145	11200 (15200)	310 (230)	1000-1500 (3785-5675)	450 (31)	14-3/4" to 26"	Top - 7-5/8" Reg Btm - 7-5/8" Reg	27.6 (8.4)	29.9 (9.1)	3.6	3/4	0.12

Notes: 1. Air motor units: Flow ranges are in scfm (m3/min), displacements are in scfm/rev.
2. These motor series are not generally in stock, but can be special ordered.



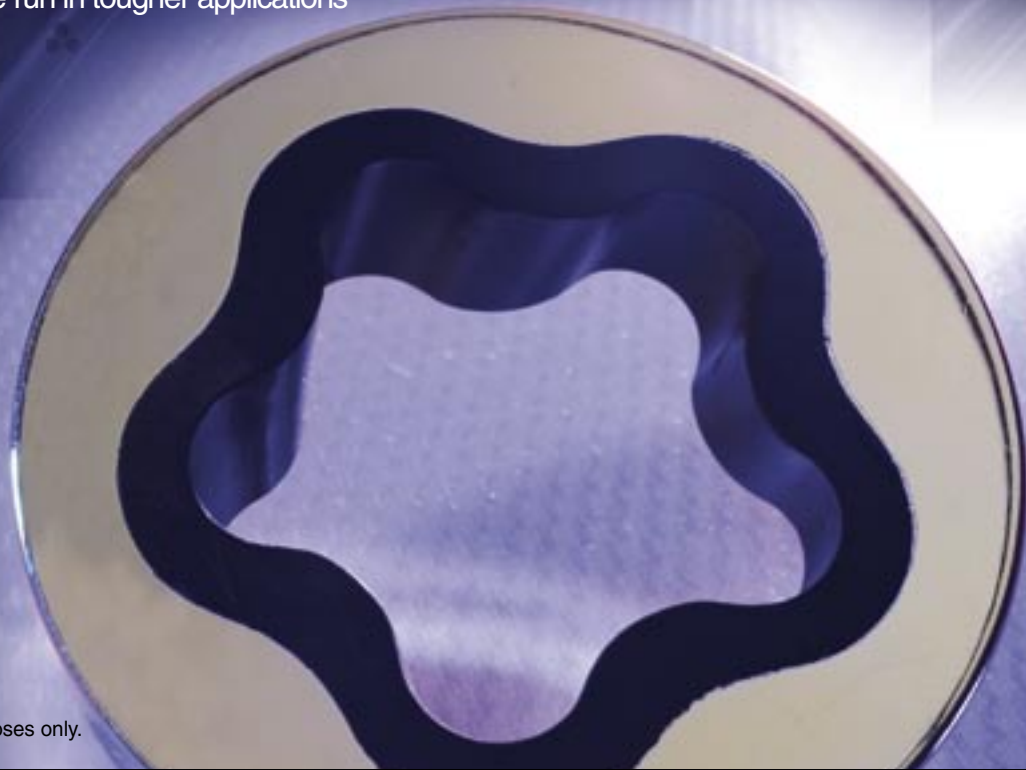
WITH UNIFORM WALL ADVANTAGE

BICO's new SpiroStar Stators provide unparalleled strength as a result of our unique uniform rubber thickness. This revolutionary design doubles the power while virtually eliminating hysteresis. Traditionally, hysteresis has been the primary failure mechanism for power section failures.

The unique SpiroStar Stator experiences less swelling due to temperature and mud chemistry thus permitting it to be run in tougher applications

than traditional tools. SpiroStar's ability to withstand higher temperatures will continue to push the performance envelope and redefine where positive displacement motors can be run.

Strength, durability and increased power output make SpiroStar Stators the smart choice for optimum performance in today's ever-changing and harsher environments.



For illustrative purposes only.

Motor Type		Motor Output			Motor Input		Physical Motor Data			
Dia	Model	Bit Speed	Torque	Power	Flow Range	Motor DP	Bit Size	Power Section		
(IN)	-	RPM	FT-LBS (NM)	HP (KW)	GPM (LPM)	PSI (BAR)	(IN)	STAGES	LOBES	REV/GAL
1-11/16"	SS100	190-380	168 (227)	10 (7.5)	20-40 (76-151)	575 (40)	1-7/8" to 2-3/4"	2.3	5/6	9.5
2-7/8"	SS150	315-630	436 (591)	49 (37)	60-120 (225-450)	875 (60)	3-1/4" to 4"	3.5	5/6	5.25
3-3/4"	SS150SR	128-320	1020 (1383)	61 (45)	80-200 (300-760)	550 (38)	4-1/8" to 5-1/2"	2.2	4/5	1.60
	SS150	128-320	1995 (2710)	101 (75)	80-200 (300-760)	1075 (75)		4.3	4/5	1.60
4-3/4"	SS300	230-680	3020 (4095)	390 (290)	100-300 (379-1136)	1975 (136)	5-3/4" to 6 3/4"	7.9	2/3	2.27
	SS100	78-130	4280 (5813)	94 (70)	150-250 (568-946)	825 (57)		3.3	7/8	0.52
	SS170	150-300	3600 (4880)	197 (147)	150-300 (570-1135)	1350 (93)		5.4	5/6	1.00
6-1/4"	SS100	50-130	7770 (10535)	185 (138)	150-400 (586-1514)	975 (67)	7-7/8" to 8-3/4"	3.9	7/8	0.33
6-3/4"	SS110	57-171	10000 (13558)	286 (213)	200-600 (757-2271)	900 (62)	8-1/4" to 9-7/8"	3.6	6/7	0.29
	SS150	150-300	10100 (13694)	500 (373)	300-600 (1136-2271)	1750 (121)		7.0	4/5	0.50
8"	SS100	66-149	16590 (22490)	470 (350)	400-900 (1510-3410)	1000 (69)	12-1/4" to 26"	4.0	7/8	0.166



HYDROMECHANICAL DRILLING JAR

BICO Hevi-Hitter Jars are hydromechanical jars that are extremely cost effective tools. They can help free stuck drill strings and therefore eliminate expensive fishing operations in many applications.

Durable by design, BICO Hevi-Hitter Jars provide outstanding performance features that insure speed and ease of operation. Our mechanical latch does away with the need to open the jar before running in the hole. They effectively eliminate unexpected firing while tripping in and out of the hole. An axial visco jet provides consistent hydraulic delays by compensating for hydraulic fluid viscosity changes caused by temperature variance. Our rugged spline system is built tough for reliable power transfer. BICO Hevi-Hitter Jars can be run in tension or compression within the limits of the latch release setting.

Available in a variety of sizes, BICO Hevi-Hitter hydromechanical drilling jars truly are cost effective insurance for drilling programs.



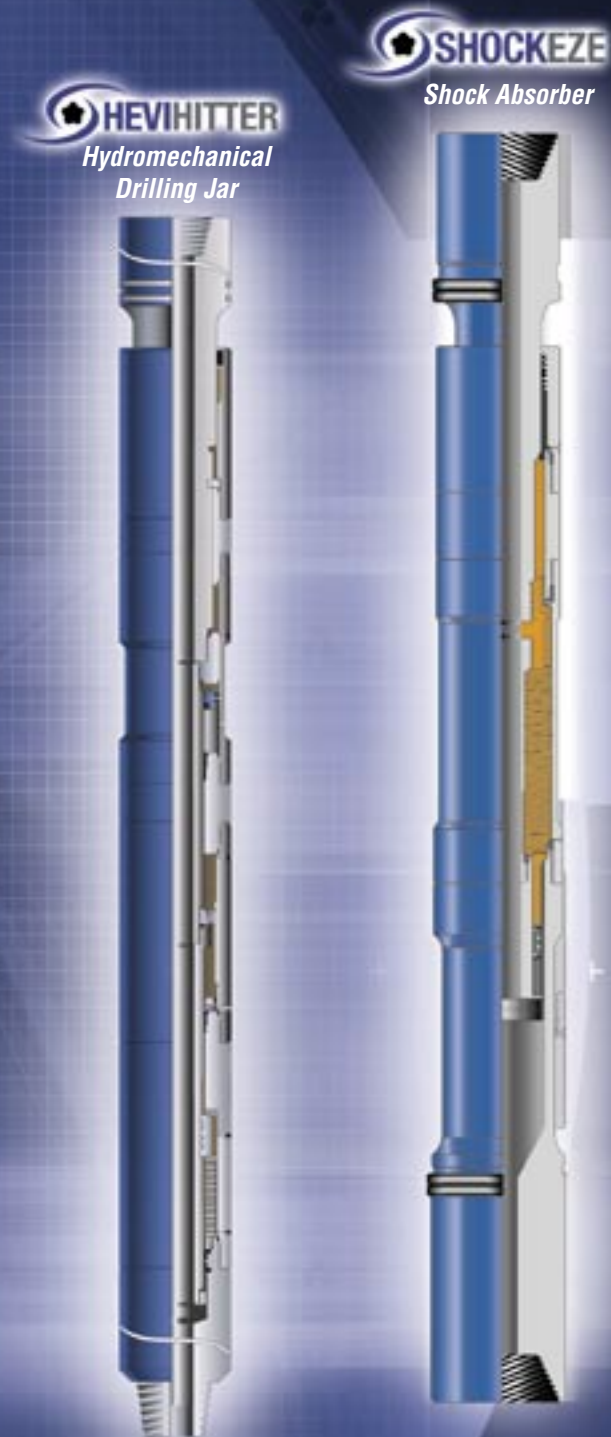
SHOCK ABSORBER

BICO Shock-EZE shock absorbers are used to greatly reduce shock loads and to dampen vibration in drilling applications. They enhance performance and provide a much smoother drilling operation.

The specially designed, oil bathed disc springs absorb and dampen both natural and induced vibrations. Penetration rates can improve because bouncing is reduced and the bit stays in constant contact with the formation. Cutter and bearing life is often increased by minimizing the

chipping of cutters/inserts and by the reduction of peak loading on bearings. The reduced axial vibration loads to increased life for the drill string and other rig components, which can include downhole electronic instrumentation such as MWD tools.

BICO Shock-EZE shock absorbers are available in a variety of sizes and they can be specifically configured to accommodate either low weight on bit, as would be encountered with a PDC bit, high weight on the bit that you encounter with traditional rock bits.





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**BICO products can be rented, leased,
lease-purchased or purchased, and
serviced in any of our approved
maintenance facilities worldwide.**

For more information call or visit us on the web.

www.bicodrilling.com