

# LINEAR MOTION CONTROL

Technical Data Sheet

# **Ball Screw Brake**

The Nexen Ball Screw Brake is a hightorque, spring-engaged brake acting on the machined end of a ball screw. It serves as a primary or redundant safety brake to prevent back driving if a power loss or mechanical defect occurs in the driveline.

The low backlash and coupling combination provides a high degree of accuracy for holding ball screw position. An expanding shaft/clamping hub coupling connects the brake shaft to the end of the ball screw. This coupling comes with an elastomer insert with high torsional stiffness.



**>>>** 

## **Features**

- Low backlash for precision holding
- Spring engaged, air released
- Low inertia
- · High torsional rigidity
- Bi-directional braking
- Fast engagement
- · Meets IP67 dust and waterproof standards
- Operates in vertical and horizontal applications
- · Allows thermal expansion of ball screw

#### **Brake Dimensions**

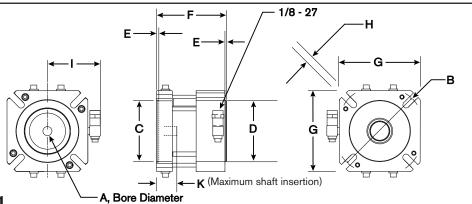


Figure 1

(Select from Coupling Table)

Model Size	Product Numbers	<b>A</b> (Bore Range)	В	с	D	E	F	G	н	I	к
BSB	964640	5-12,7	63-91,5	52	50	3,50	74,5	74,2	6,3	56	12
2		[0.197-0.50]	[2.48-3.60]	[2.047]	[1.97]	[0.14]	[2.93]	[2.92]	[0.24]	[2.20]	[0.5]
BSB	964745	7-16	95-108	50	50	5,00	77,7	92	7	65	18.5
3	9647401	[0.275-0.63]	[3.74-4.25]	[1.97]	[1.97]	[0.20]	[3.06]	[3.62]	[0.28]	[2.56]	[0.73]
BSB	964840	16-32	115-150	96	95	3,50	105,7	125	10	82	24.2
4		[0.63-1.26]	[4.53-5.91]	[3.78]	[3.74]	[0.14]	[4.16]	[4.92]	[0.39]	[3.23]	[0.95]
BSB	964940	16-32	165-186	130	130	6,15	132,5	150,4	12	95	25.5
5		[0.63-1.26]	[6.49-7.32]	[5.12]	[5.12]	[0.24]	[5.22]	[5.92]	[0.47]	[3.74]	[1.00]
BSB	965040	20-35	215	130	130	3,50	105,8	192	15*	113	29.1
7		[0.787-1.38]	[8.47]	[5.12]	[5.12]	[0.14]	[4.17]	[7.56]	[0.59]	[4.45]	[1.14]

<sup>1</sup> Torque = 5 Nm (44 in-lbs)

\* Clearance Hole Diameter

NOTE: When selecting a brake, a coupling must also be selected. See the coupling chart on the next page.

## **Brake Specifications**

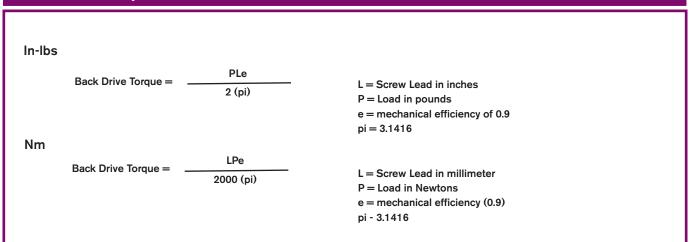
Model Size	Minimum Holding Torque	Release Pressure	Maximum Speed (RPM)	Inertia / Coupling <sub>kg.m</sub> 2 [lbs-ft <sup>2</sup> ]	Torsional Rigidity Nm/radian [lb-ft/radian]	Weight
BSB	2 Nm	5.5 bar	10,000	0,00002	6180	1,3 kg
2	[20 in-lbs]	[80 psi]		[0.0005]	[4550]	[2.9 lbs]
BSB	8 Nm	5.5 bar	10,000	0,00006	9613	1,6 kg
3	[70 in-lbs]	[80 psi]		[0.0014]	[7090]	[3.5 lbs]
BSB	22 Nm	5.5 bar	10,000	0,00031	23796	3,4 kg
4	[200 in-lbs]	[80 psi]		[0.00736]	[17550]	[7.6 lbs]
BSB	45 Nm	5.5bar	10,000	0,00114	36184	6,6 kg
5	[400 in-lbs]	[80 psi]		[0.0271]	[26688]	[14.6 lbs]
BSB	125 Nm	5.5 bar	5,000	0,00394	54772	14,7 kg
7	[1100 in-lbs]	[80 psi]		[0.0935]	[40390]	[32.4 lbs]

# **Coupling Specifications**

BSB Brake Model	Coupling Product Number	Bore (H7)	Coupling Bore Range	Axial Misalignment	Torsional Rigidity Nm/radian [ft-lb/radian]
BSB2	964641	8 mm	5-12.7 mm (0.197-0.500")	+/- 1 mm (+/- 0.04")	350 (258)
BSB2	964642	0.406	5-12.7 mm (0.197-0.500")	+/- 1 mm (+/- 0.04")	350 (258)
BSB3	964741	14 mm	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB3	964742	0.500	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB3	964743	0.312	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB3	964744	0.625	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB4 and BSB5	964841	20 mm	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964847	20 mm, keyed	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964868	0.875	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964854	1.000	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964859	23 mm	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964862	19 mm	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964863	1.125	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB7	965041	30 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965042	35 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965043	1.000	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965044	20 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965045	25 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965046	1.375	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)

Note: Select a coupling with a bore matching the machined end of the ball screw. Custom bores available on request; see Bore Range. Keyed bores optional.

#### **Back Drive Torque Formula**



Note: Select a Ball Screw Brake with holding torque that exceeds the back-drive torque by 20-30%.

3-Way Valve, Air Inlet Mount			
Product Number	964650		
Valve	Normally Closed		
Effective Orifices	0.062 Body 0.089 Exhaust Port		
Port Size	1/8-27 NPT Male		
Voltage	24VDC		
DIN Connector	Included		
Power Consumption	25 Watts		

In accordance with Nexen's established policy of constant product improvement, the specifications contained in this document are subject to change without notice. Technical data listed in this document are based on the latest information available at the time of printing and are also subject to change without notice. For current information, please consult www.nexengroup.com



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