



BMK COMPACT CALIPER BRAKE

The Nexen BMK is a compact air engaged, spring released caliper brake used in combination with a disc-hub. The disc-hub is configured to customer shafting specifications.



The Nexen BMK Compact Caliper Brake Advantage

The BMK's compact design allows them to be used in places other caliper brakes won't fit. Flexible configuration of the disc-hub to match customer shafting specifications ensures the right fit for many applications. BMK caliper brakes can even be used in linear braking applications.

- **High Braking Force**

The Nexen BMK 3000 has 3000 N of dynamic braking force at 0.6 MPa.
[674 lbf] [87 PSI]

- **High Braking Torque**

Up to 321 Nm of dynamic braking torque for a BMK3000 caliper brake paired with a 250 mm disc-hub.
[2841 in-lbs] [9.84 in]

- **Adjustable & Consistent Braking Force**

Braking force increases consistently and linearly with air pressure input to the BMK caliper brake.

- **Ease of Installation**

A single mounting screw and locating pin can mount a BMK caliper brake.
The brake may be mounted in any orientation.

- **Flexible Disc-Hub Sizing**

150 mm and 250 mm disc-hubs can be used with both BMK caliper brakes. Flexible configuration of the disc-hub bore, keyway, and set screws can be done to match customer shafting specifications which ensures the right fit for many applications.

- **Lubrication Free Operation**

No lubrication is required throughout the life of the friction facings.

- **Consistent Braking Torque Throughout Life of the Brake**

Braking torque does not decrease as the friction facings wear.

- **Easy User Maintenance**

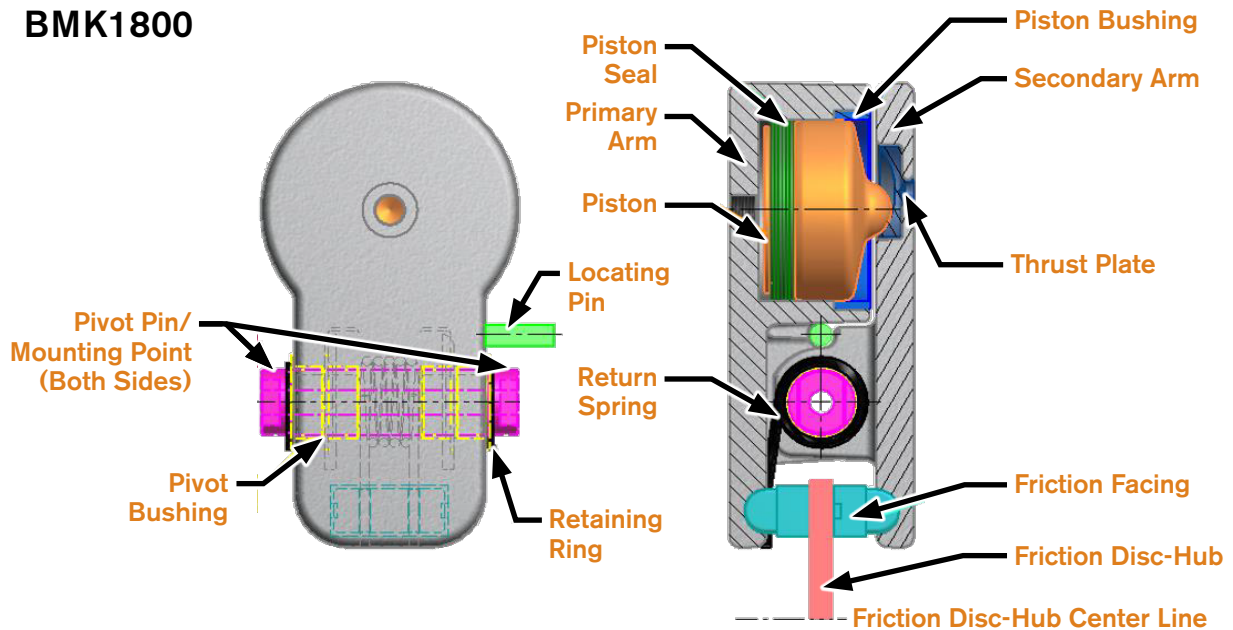
The User Manual details the rebuild and facing replacement procedure.



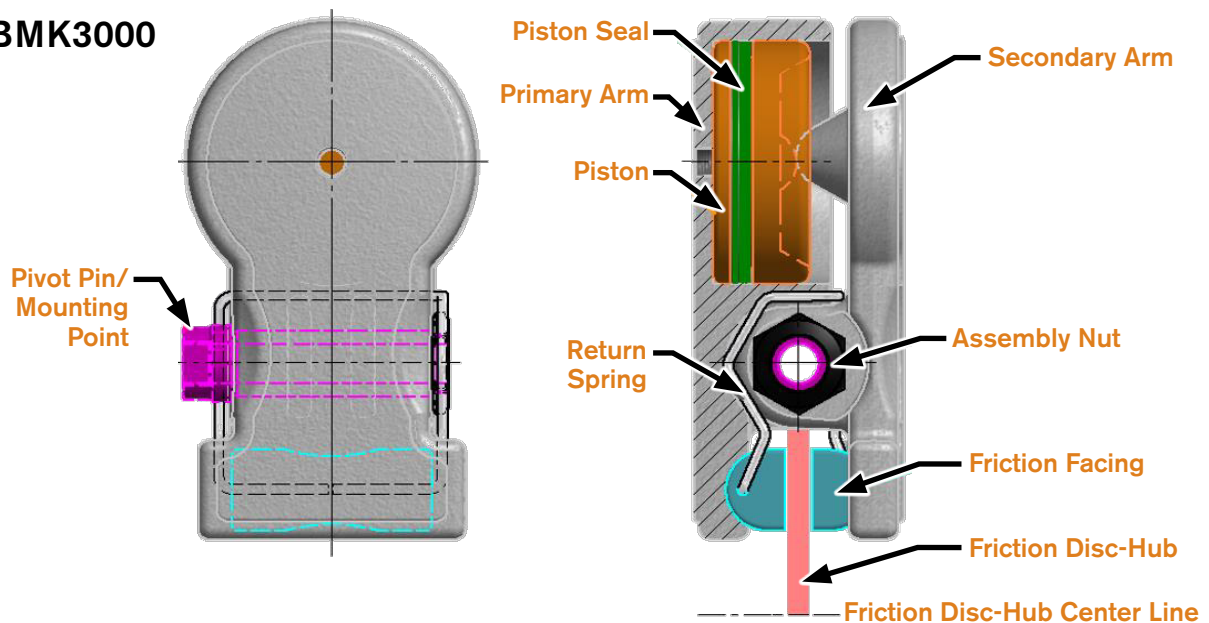
BMK Brake Cutaway

Braking occurs when air pressure is applied to the brake and the piston pushes the arms apart, which forces the friction facings to clamp down on the disc-hub. When the air pressure is exhausted, the brake goes into the released position by the return spring.

BMK1800



BMK3000



BMK Specifications

| | | BMK1800 | BMK3000 |
|---|-----------------------------------|--|--|
| Maximum Speed | with 150mm [5.90in] O.D. Disc-Hub | 3800 RPM | |
| | with 250mm [9.84in] O.D. Disc-Hub | 2200 RPM | |
| Dynamic Braking Torque ¹ | with 150mm [5.90in] O.D. Disc-Hub | 99 Nm [876 lbf-in] | 172 Nm [1522 lbf-in] |
| | with 250mm [9.84in] O.D. Disc-Hub | 172 Nm [1522 lbf-in] | 321 Nm [2841 lbf-in] |
| Dynamic Braking Force | | 1600 N [360 lbs] | 3000 N [674 lbs] |
| Maximum Air Pressure | | 6 bar [87 psi] | |
| Thermal Dissipation | 150mm [5.90in] O.D. Disc-Hub | 0.19 kW [0.25 hp] | |
| | 250mm [9.84in] O.D. Disc-Hub | 0.31 kW [0.41 hp] | |
| Wear Rate | | 1.41 X 10 ⁻⁸ cm ³ / J [0.005 in ³ / hp-hour] | 2.96 X 10 ⁻⁸ cm ³ / J [0.002 in ³ / hp-hour] |
| Approximate Facing Life | | 62 MJ [23 hp-hour] | 400 MJ [149 hp-hour] |
| Allowable Friction Facing Wear Amount | | 1.80 cm ³ [0.11 in ³] | 5.68 cm ³ [0.35 in ³] |
| Air Chamber Volume | New Facings (Minimum) | 4.56 cm ³ [0.28 in ³] | 14.05 cm ³ [0.86 in ³] |
| | Facings Fully Worn (Maximum) | 19.73 cm ³ [1.20 in ³] | 42.15 cm ³ [2.57 in ³] |
| Brake Mass (Average) | | 1.1 kg [2.4 lb] | 1.9 kg [4.2 lb] |
| Disc-Hub Moment of Inertia (Average) | 150mm [5.90in] O.D. Disc-Hub | 0.003 kg*m ² [0.07 lb*ft ²] | |
| | 250mm [9.84in] O.D. Disc-Hub | .02 kg*m ² [0.5 lb*ft ²] | |
| Disc-Hub Mass (Average) ² | 150mm [5.90in] O.D. Disc-Hub | 1.8 kg [4.1 lb] | |
| | 250mm [9.84in] O.D. Disc-Hub | 5.3 kg [11.7 lb] | |
| Brake & Disc-Hub Ambient Temperature | | 0 to 65.5°C [32 to 150°F] | |
| Maximum BMK Disc-Hub Temperature ¹ | | 150°C [302°F] | |

¹ Dynamic Braking Torque Rating is Achieved with Brake Facings and Disc-Hub at 100°C [212°F].
Lower operating temperatures should result in 60 to 70% of Dynamic Braking Torque Rating.

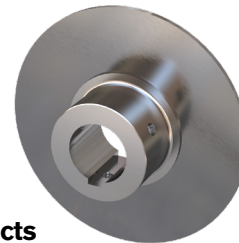
BMK Caliper Brake Product Numbers



BMK Compact Caliper Brake Products

| Product Description | Product Number |
|-------------------------------|----------------|
| BMK1800 Compact Caliper Brake | 835320 |
| BMK3000 Compact Caliper Brake | 835330 |

Note: Both caliper brakes may be used with either size disc-hub.



BMK Disc-Hub Products

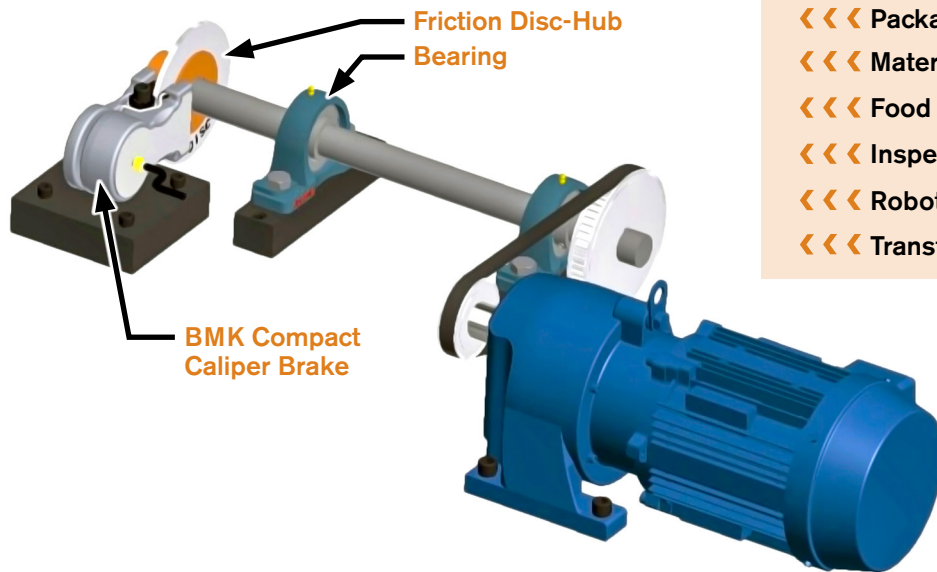
| Product Description | Product Number |
|----------------------|---------------------------------------|
| Disc-Hub, 150mm O.D. | Varies by Bore & Keyway Configuration |
| Disc-Hub, 250mm O.D. | Varies by Bore & Keyway Configuration |

BMK Disc-Hub Bore Configuration Capabilities

| | Disc-Hub, 150mm O.D. | Disc-Hub, 250mm O.D. |
|-----------------------|----------------------------|----------------------------|
| Maximum Bore Diameter | ø 35.00 mm [ø 1.375 in] | ø 60.00 mm [ø 2.375 in] |
| Minimum Bore Diameter | ø 20.00 mm [ø 0.750 in] | ø 38.00 mm [ø 1.500 in] |

Note: Any thru bore diameter and keyway set-up within these limits is configurable to customer specifications.

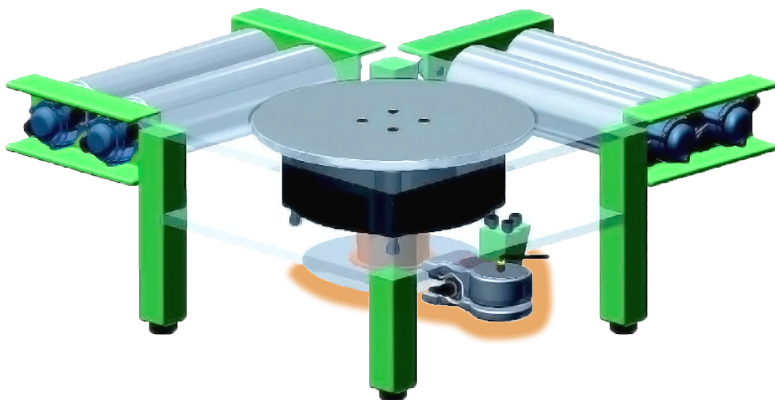
Typical Mounting Arrangement



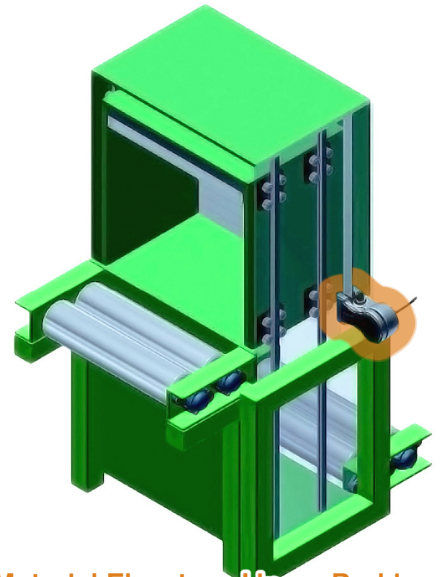
Applications:

- <<< Packaging
- <<< Material Handling
- <<< Food Processing
- <<< Inspection
- <<< Robots
- <<< Transferring/Distribution

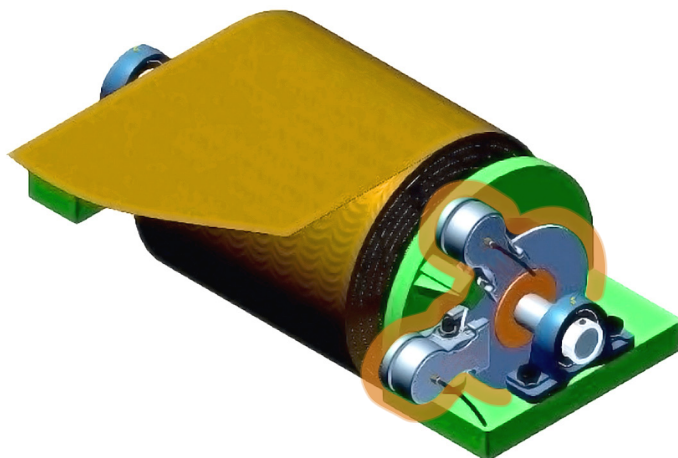
More Application Examples:



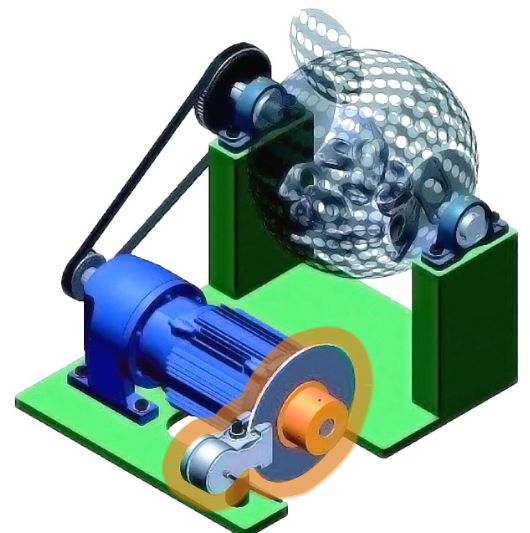
Indexer - Rotary Braking



Small Material Elevator - Linear Braking



Material Roll - Rotary Braking/Tensioning



Material Tumbler - Rotary Braking

BMK Calculating Brake Torque & Force vs. Air Pressure

By varying the air pressure used to engage the brake, up to 0.6 MPa [87 psi], dynamic braking torque can be controlled. Use the following calculations and graphs to achieve the required dynamic braking torque for your application.

BMK1800

K = 2657

P = Air Pressure in MPa

D = Disc **Outside** Diameter in Meters

Dynamic Braking Force in Newtons = $K \times P$

Dynamic Braking Torque in Nm = $K \times (P - 0.05) \times (D \div 2 - 0.007)$

Examples:

$K [2657] \times P [0.4 \text{ MPa}] =$

Dynamic Braking Force [1062.8 N]

$K [2657] \times P [(0.4 \text{ MPa}) - 0.05] \times (D [0.15 \text{ Meters}] \div 2 - 0.007) =$
Dynamic Braking Torque [63.24 Nm]

BMK3000

K = 4952.6

P = Air Pressure in MPa

D = Disc **Outside** Diameter in Meters.

Dynamic Braking Force in Newtons = $K \times P$

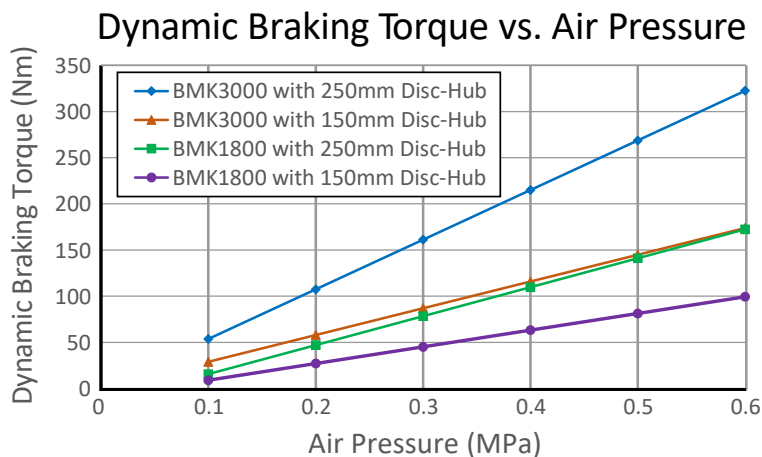
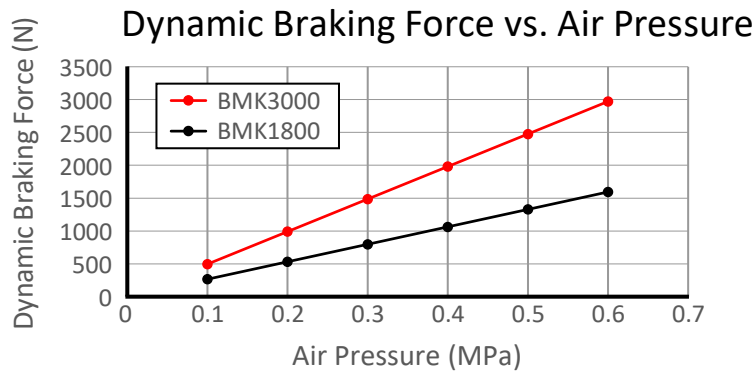
Dynamic Braking Torque in Nm = $K \times P \times (D \div 2 - 0.0165)$

Examples:

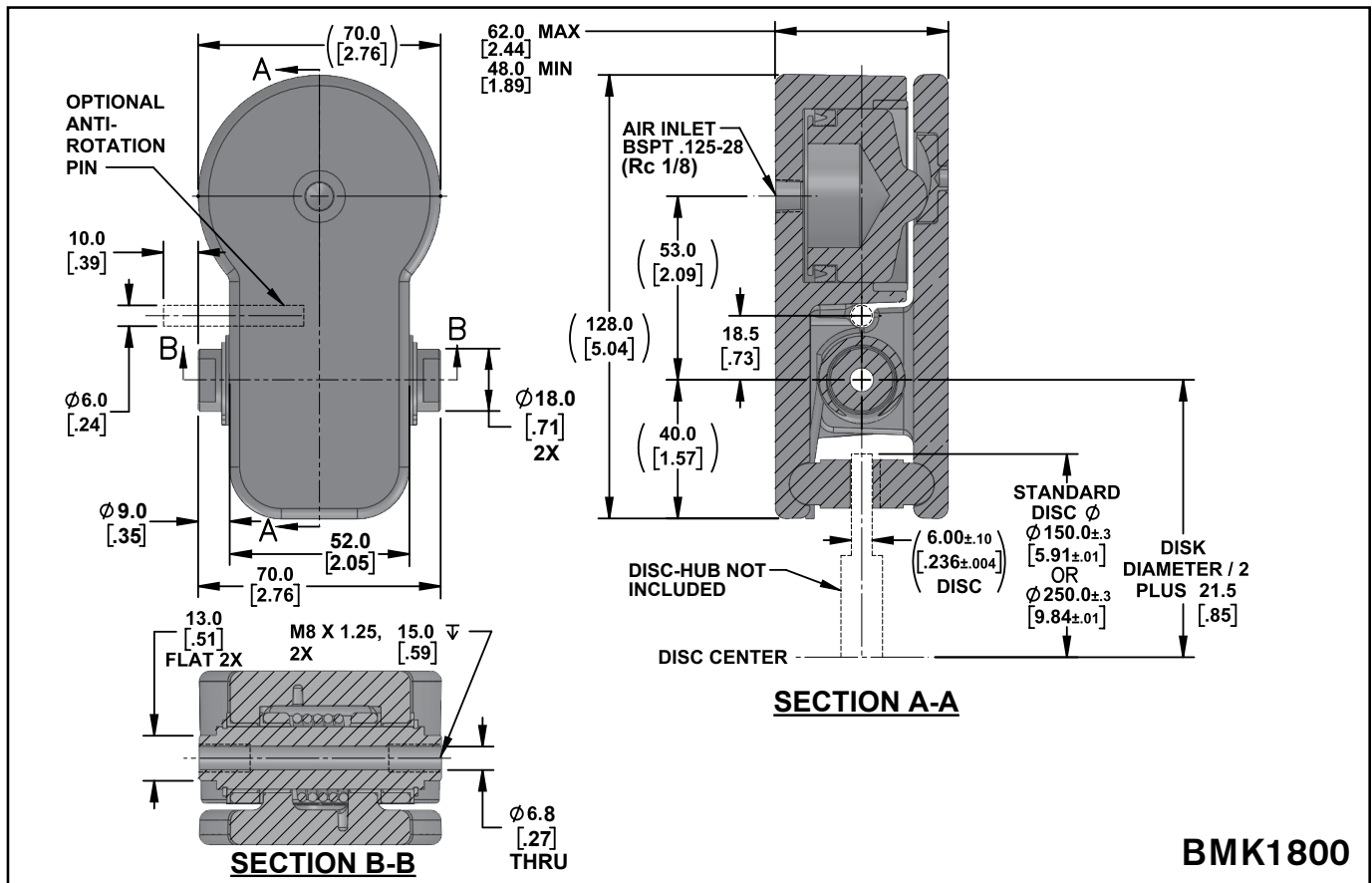
$K [4952.6] \times P [0.4 \text{ MPa}] =$

Dynamic Braking Force [1,981.04 N]

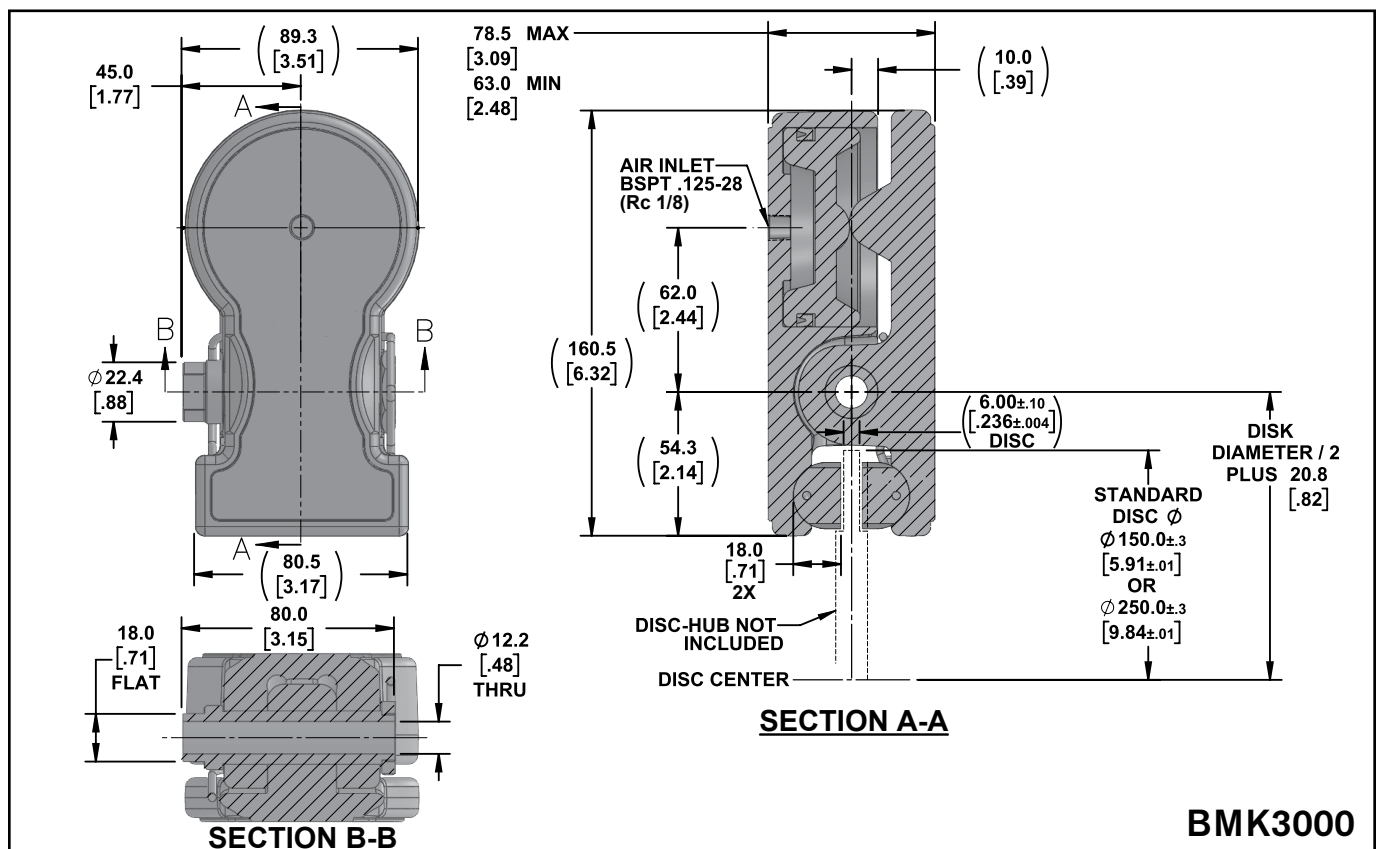
$K [4952.6] \times P [0.4 \text{ MPa}] \times (D [0.25 \text{ Meters}] \div 2 - 0.0165) =$
Dynamic Braking Torque [214.94 Nm]



BMK Compact Caliper Brake Dimensions



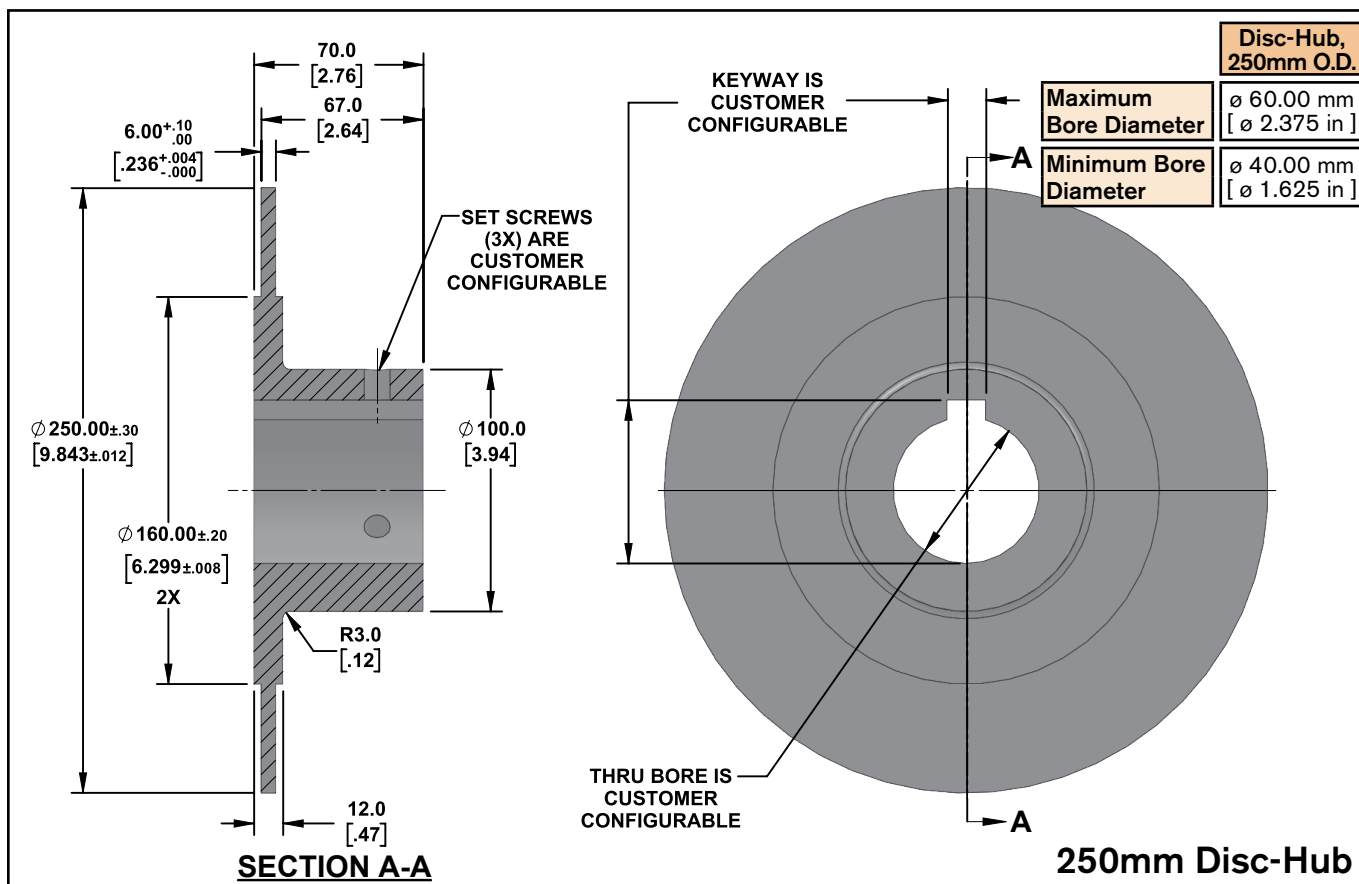
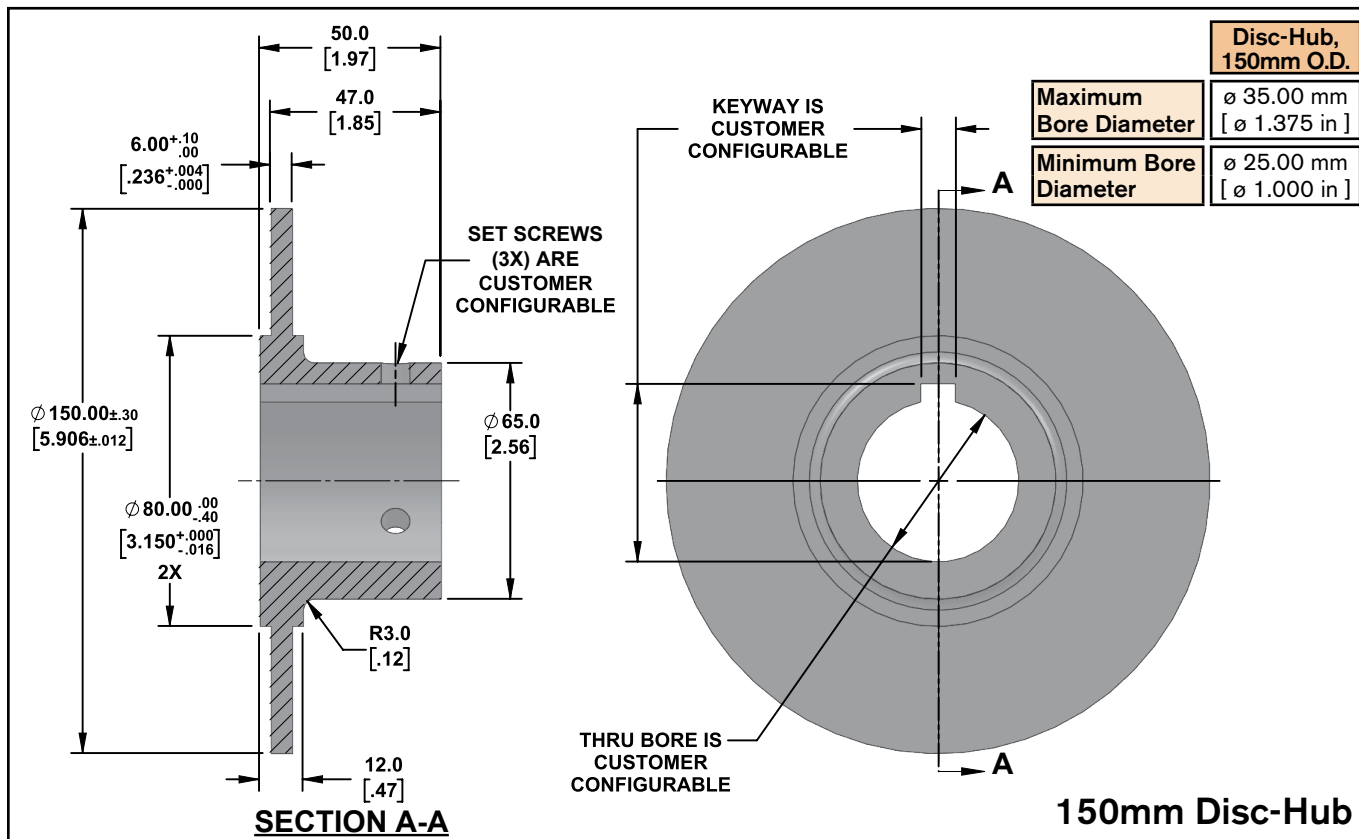
BMK1800



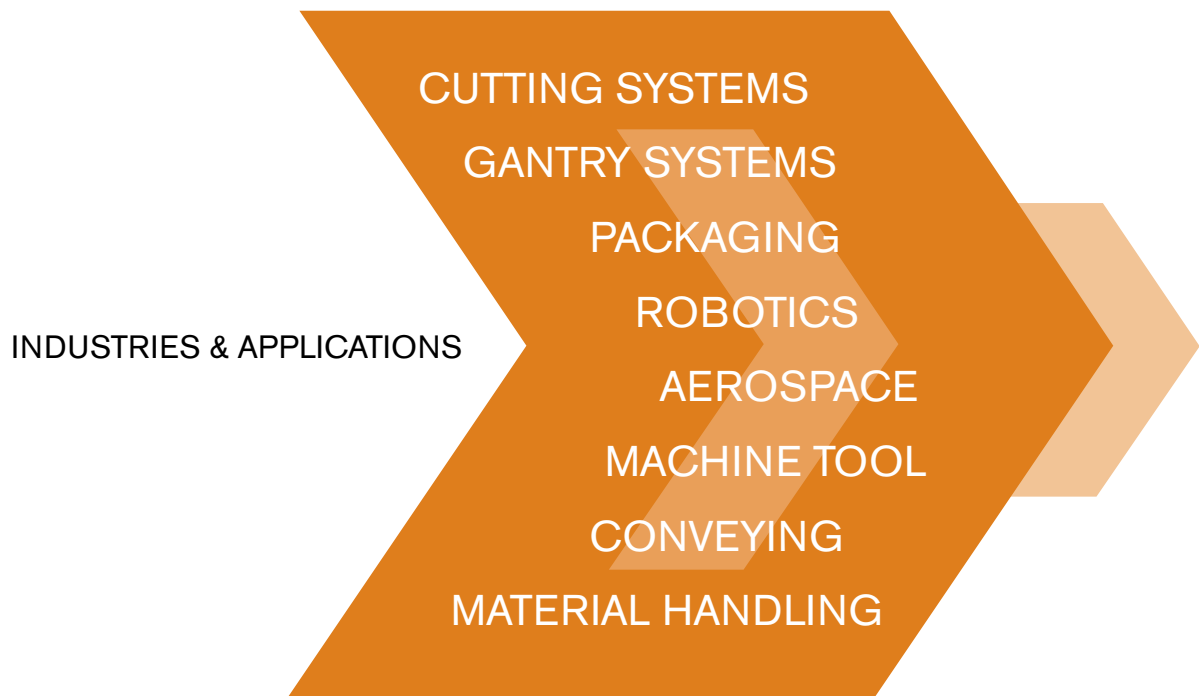
BMK3000

NOTE: Basic dimensions shown for selection purposes only and subject to change. Visit www.nexengroup.com for detailed drawings and CAD models before designing into your system.

BMK Disc-Hub Dimensions



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www.nexengroup.com

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