

General Notes and Data

Consult SEPAC Engineering prior to making final selection.

- All dimensions are in inches.
- Standard bore and keyway tolerances are in accordance with ANSI 9002-A86-1995. Bores are Class 1 clearance fit and keyways are commercial fit. Special tolerances can be supplied at added cost. Standard Metric bores per ANSI B4.2-1978 and keyways per BS 4235-1972 are available at no added cost. Maximum bore dimensions are based on using a standard key height.
- Standard stationary field model anti-rotation hole location is 30° clockwise from the leads when viewed from the magnet body end. Other holes and locations can be provided to meet specific customer requirements.
- Standard leads – 18AWG stranded conductor, UL 1180 (200 Deg. C, 300 Volt), 18" long. Conduit connectors and other leads and terminations available.
- Single and multiple engagement position clutches and brakes available as standard per the following chart: (Spring engaged and high torque versions are different — Consult SEPAC Engineering)

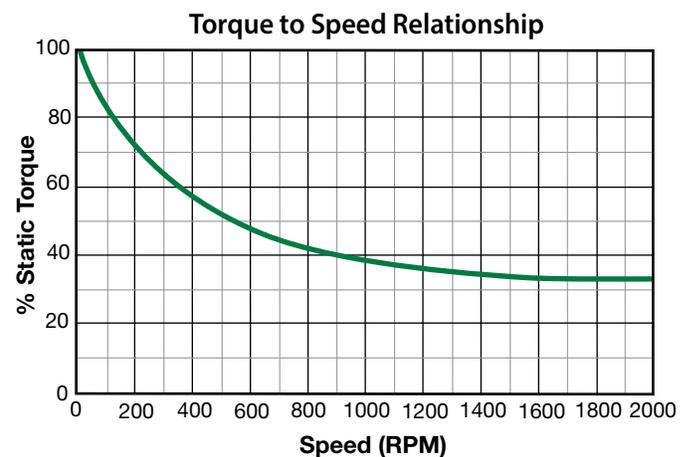
Size	# of Positions Available in Standard Units
240	1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
320	1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96
375	1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120
450	1, 2, 3, 4, 6, 11, 12, 22, 33, 44, 66, 132
525	1, 2, 3, 4, 6, 12, 13, 26, 39, 52, 78, 156
630	1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 64, 96, 192
760	1, 2, 3, 4, 6, 11, 12, 22, 33, 44, 66, 132
895	1, 2, 3, 4, 6, 12, 13, 26, 39, 52, 78, 156
1065	1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 18, 20, 30, 45, 60, 90, 180

- Dowel holes in adapters are drilled approximately 0.015 undersized to allow for reaming at installation.

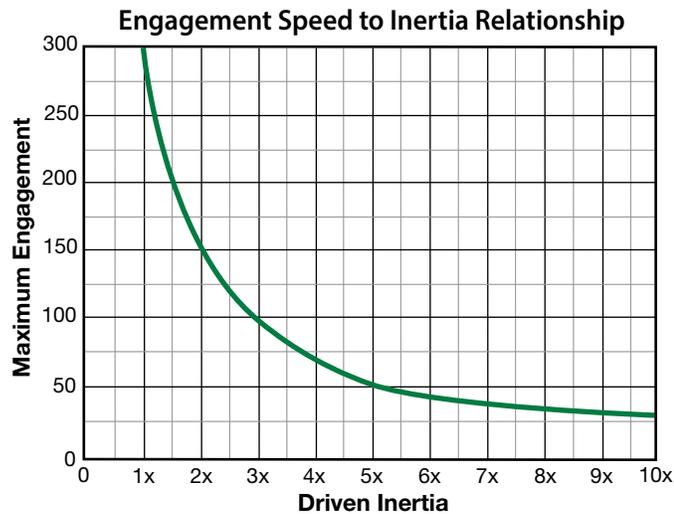
- Units are available with varying degrees of backlash, as shown by the grade options below:
 - Grade 1:** 1 degree max (standard)
 - Grade 2:** 40 minutes max
 - Grade 3:** 6 minutes max
 - Grade 4:** 2 minutes max
 - Grade 5:** 30 minutes max (for high speed applications)

Radial alignment of the clutch becomes more critical as the backlash is reduced. Standard backlash requires the clutch or brake components to be aligned within 0.003. Low backlash requires alignment better than 0.003 depending on grade.

- Units can be used in oil or dry.
- Units can be mounted in horizontal or vertical positions.
- Smaller and larger sizes can be made, as well as different configurations to suit customer application requirements.
- Torque transmitting capability is derated as a function of speed per the following chart. This derating is due to misaligned and vibration normally encountered in various applications. If no such conditions exist the actual torque transmitted capacity will be higher than shown.



12. Engagement speed for standard tooth clutch and brake designs is generally limited to 300 RPM max. with inertia equal to the the armature/adaptor assembly. As the engagement speed is reduced the amount of inertia that can be engaged increases as an inverse proportion of the speed decrease. The chart below shows that relationship.



13. Special tooth forms and clutch configurations can be provided to allow for higher engagement speeds and for engaging high inertia. They can also be made to provide higher torque transmitting capacity. These features, however, sometimes require trade-offs against other features.

FAQs

What if I don't see a brake/clutch in the catalog that fits my needs?

Our team regularly modifies product designs from the catalog or creates new products from the ground up to fit our customer's needs. Contact our engineering department to see if we have a product that is not listed in our catalog that will fit your needs, if there are modifications that can be made to an existing product design, or if we can make a completely unique design.

Can a brake/clutch be designed for use in my exotic environment?

Most likely – yes. At SEPAC, we have designed products to be used in almost every environment imaginable. Contact us to discuss your specific environment.

Can we purchase a clutch/brake from your catalog with different mounting, or integration into our product?

Yes. Design for custom mounting and space/cost saving integrations are very common.

Which style of brake/clutch will have the highest torque-to-size ratio?

A tooth brake/clutch typically has 2-5 times more torque capacity for a given size than any other style of brake/clutch.

Can a brake/clutch be designed with a higher torque capacity than what is listed in the catalog?

Absolutely. Our engineering department can find a number of tradeoffs that will allow a brake/clutch of a certain size to have a higher torque capacity. Some common changes include the use of self-locking teeth for tooth units, increasing the number of friction discs for friction disc units, increasing spring force on spring engaged units, and magnetic force on magnetically engaged units.

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What happens if a tooth brake/clutch is engaged with the teeth clocked so that they are tip-to-tip?

This is very common. In this scenario, rotational motion will be allowed until the teeth are tip-to-root, and then the clutch/brake will engage properly, and no more rotation will occur.

How can I reduce power required and/or heat generated?

The current required to hold a spring engaged brake/clutch is often much lower than the current required to engage the unit. A two-step power supply can often be used to drastically reduce power consumption and heat generation.

Can a tooth brake/clutch be used to stop a rotating load (dynamic stop)?

Tooth brakes/clutches can occasionally be used to stop low inertia, low speed loads, but generally, the load should be static before a tooth brake/clutch is engaged. Units can have modified designs with tooth profiles to allow for more dynamic stopping.

How much over the rated torque capacity will a brake/clutch continue to hold?

There are so many variables involved in the actual load at which a brake or clutch can no longer hold torque, that it can be anywhere from not far over the rated capacity, to several times the rated capacity. If you would like a clutch or brake with a maximum holding capacity that is close to the minimum holding capacity, there are design changes that we can make that will allow this.

Can a sensor be integrated with a brake/clutch to be sure that it has engaged or disengaged?

Yes. Many customers find it acceptable to sense that a clutch/brake is engaged or disengaged by sensing if the load is being transmitted or not. For those projects which require an extra level of assurance, we can add a sensor (usually an inductive proximity switch) to sense full engagement, full disengagement, or both.

Will back-EMF be generated when the coil de-energized?

Yes. A simple arc-suppression circuit is recommended for most applications.