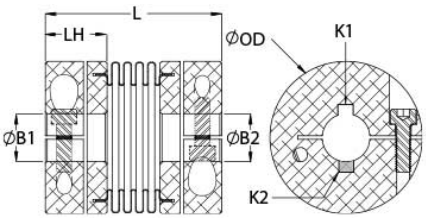
BCK21-1/2"-9MM-A

Ruland BCK21-1/2"-9MM-A, 1/2" x 9mm Bellows Coupling with Keyways, High Stiffness, Aluminum, 1.313" (33.3mm), OD 1.700" (43.2mm) Length





Description

Ruland BCK21-1/2"-9MM-A is a high stiffness bellows coupling with 0.5000" x 9mm bores, 1.313" (33.3mm) OD, 1.700" (43.2mm) length, and 1/8" x 3mm keyways. It has fewer convolutions than comparably sized increased misalignment styles allowing for increased torsional stiffness making it the ideal choice for precision positioning applications. BCK21-1/2"-9MM-A is comprised of two anodized aluminum hubs and a stainless steel bellows for lightweight and low inertia. It is also engineered with a balanced design for reduced vibration at high speeds up to 10,000 RPM. The thin walls of the bellows are able to flex while remaining rigid under torsional loads allowing for the accommodation of all forms of misalignment. Hardware is metric and tests beyond DIN 912 12.9 standards for maximum torque capabilities. BCK21-1/2"-9MM-A is machined from meticulously selected bar stock that is sourced exclusively from North American mills. It is carefully made in our ISO 9001:2015 advanced manufacturing facility in Marlborough, MA under strict controls using proprietary processes. BCK21-1/2"-9MM-A is RoHS3, REACH, and Conflict Minerals compliant.

Product Specifications

Bore (B1)	0.5000 in	**Small Bore (B2)**	9 mm
Keyway (K1)	1/8 in	**Keyway (K2)**	3 mm
B1 Max Shaft Penetration	0.804 in (20.4 mm)	**B2 Max Shaft Penetration**	0.804 in (20.4 mm)
Outer Diameter (OD)	1.313 in (33.3 mm)	**Bore Tolerance**	+0.001 in / -0.000 in (+0.03 mm / -0.00 mm)
Length (L)	1.700 in (43.2 mm)	**Length Tolerance**	+/- 0.030 in (0.76 mm)
Hub Width (LH)	0.590 in (15.00 mm)	**Recommended Shaft Tolerance**	+0.0000 / -0.0005 " (+0.000 / -0.013 mm)
Forged Clamp Screw	M3	**Screw Material**	Alloy Steel
Hex Wrench Size	2.5 mm	**Screw Finish**	Black Oxide
Seating Torque	2.1 Nm	**Number of Screws**	2 ea
Dynamic Torque Reversing	30 lb-in (3.40 Nm)	**Angular Misalignment**	1.5°
Dynamic Torque Non-Reversing	60 lb-in (6.80 Nm)	**Parallel Misalignment**	0.006 in (0.15 mm)
Static Torque	120 lb-in (13.6 Nm)	**Axial Motion**	0.016 in (0.40 mm)
Torsional Stiffness	400 lb-in/Deg (45 Nm/Deg)	**Moment of Inertia**	0.0385 lb-in^2 (1.128 x 10^{-5} kg-m^2)
Maximum Speed	10,000 RPM	**Full Bearing Support Required?**	Yes
Zero-Backlash?	Yes	**Balanced Design**	Yes
Torque Wrench	TW:BT-1R-1/4-18.3	**Recommended Hex Key**	Metric Hex Keys
Material Specification	Hubs: 2024-T351 Aluminum Bar Bellows: Type 321 Stainless Steel	**Temperature**	-40°F to 200°F (-40°C to 93°C)
Finish Specification	Sulfuric Anodized MIL-A-8625 Type II, Class 2 and ASTM B580 Type B Black Anodize	**Bellows Attachment Method**	Epoxy
Manufacturer	Ruland Manufacturing	**Country of Origin**	USA
Weight (lbs)	0.151100	**UPC**	634529164730
Tariff Code	8483.60.8000	**UNSPC**	31163018
Note 1	Stainless steel hubs are available upon request.		
Note 2	Torque ratings are at maximum misalignment.		
Note 3	Performance ratings are for guidance only. The user must determine suitability for a particular application.		
Note 4	Torque ratings for the couplings are based on the physical limitations/failure point of the metal bellows. Under normal/typical conditions the hubs are capable of holding up to the rated torque of the metal bellows. In some		

cases, especially when the smallest standard bores are used or where shafts are undersized, slippage on the shaft is possible below the rated torque of the metal bellows. Keyways are available to provide additional torque capacity in the shaft/hub connection when required. Please consult technical support for more assistance.

Prop 65

⚠**WARNING** This product can expose you to chemicals including Ethylene Thiourea and Nickel (metallic), known to the State of California to cause cancer, and Bisphenol A and Ethylene Thiourea, known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Installation Instructions

1. Align the bores of the BCK21-1/2"-9MM-A bellows coupling on the shafts that are to be joined and determine if the misalignment parameters are within the limits of the coupling. (*Angular Misialignment:* 1.5°, *Parallel Misalignment*: 0.006 in (0.15 mm), *Axial Motion*: 0.016 in (0.40 mm))
2. Fully tighten the M3 screw on the first hub to the recommended seating torque of 2.1 Nm using a 2.5 mm hex torque wrench.
3. Before tightening the screw on the second hub, rotate the coupling by hand to allow it to reach its free length.
4. Tighten the screw on the second hub to the recommended seating torque. Make sure the coupling remains axially relaxed and the misalignment angle remains centered along the length of the coupling.
5. The shafts may extend into the relieved portion of the bore as long as it does not exceed the shaft penetration length of 0.804 in (20.4 mm).