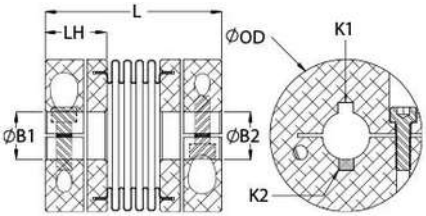
# MBCK51-24-16-A

Ruland MBCK51-24-16-A, 24mm x 16mm Bellows Coupling with Keyways, High Stiffness, Aluminum, 50.8mm, OD 61.3mm Length








## Description

Ruland MBCK51-24-16-A is a high stiffness bellows coupling with 24mm x 16mm bores, 50.8mm OD, 61.3mm length, and 8mm x 5mm 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. MBCK51-24-16-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. MBCK51-24-16-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. MBCK51-24-16-A is RoHS3, REACH, and Conflict Minerals compliant.

## Product Specifications

| | | | |
|---|---|---|---|
| **Bore (B1)** | 24 mm | **Small Bore (B2)** | 16 mm |
| **Keyway (K1)** | 8 mm | **Keyway (K2)** | 5 mm |
| **B1 Max Shaft Penetration** | 27.9 mm | **B2 Max Shaft Penetration** | 27.9 mm |
| **Outer Diameter (OD)** | 2.000 in (50.8 mm) | **Bore Tolerance** | +0.03 mm / -0.00 mm |
| **Length (L)** | 2.413 in (61.3 mm) | **Length Tolerance** | +/- 0.76 mm |
| **Hub Width (LH)** | 20.55 mm | **Recommended Shaft Tolerance** | +0.000 mm / -0.013 mm |
| **Key Width (K1)** | 8 mm | **Key Width (K2)** | 5 mm |
| **Key Height (K1)** | 7 mm | **Key Height (K2)** | 5 mm |
| **Keyway 1 Height (T1)** | 27.3 mm | **Keyway 2 Height (T2)** | 18.3 mm |
| **Keyway 1 Width Tolerance** | +0.018 mm / -0.018 mm | **Keyway 1 Height Tolerance** | +0.2 mm / 0 mm |
| **Keyway 2 Width Tolerance** | +0.015 mm / -0.015 mm | **Keyway 2 Height Tolerance** | +0.1 mm / 0 mm |
| **Forged Clamp Screw** | M5 | **Screw Material** | Alloy Steel |
| **Hex Wrench Size** | 4.0 mm | **Screw Finish** | Black Oxide |
| **Seating Torque** | 9.5 Nm | **Number of Screws** | 2 ea |
| **Dynamic Torque Reversing** | 11.30 Nm | **Angular Misalignment** | 2.0° |
| **Dynamic Torque Non-Reversing** | 22.60 Nm | **Parallel Misalignment** | 0.25 mm |
| **Static Torque** | 45.2 Nm | **Axial Motion** | 0.50 mm |
| **Torsional Stiffness** | 108 Nm/Deg | **Moment of Inertia** | 8.005 x $10^{-5}$ kg-$m^2$ |
| **Maximum Speed** | 10,000 RPM | **Full Bearing Support Required?** | Yes |
| **Average Load at Max Parallel Offset** | 84.26 N | **Average Slope** | 351.4 N/mm |
| **Zero-Backlash?** | Yes | **Balanced Design** | Yes |
| **Torque Wrench** | TW:BT-4C-3/8-86 | **Recommended Hex Key** | Metric Hex Keys |
| **Material Specification** | Hubs: 2024-T351 Aluminum Bar<br>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 | **Bellows Attachment Method** | Epoxy |

| | | | |
|---|---|---|---|
| | Black Anodize | | |
| **Manufacturer** | Ruland Manufacturing | **Country of Origin** | USA |
| **Weight (lbs)** | 0.447300 | **UPC** | 634529168103 |
| **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. 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 MBCK51-24-16-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:* 2.0°, *Parallel Misalignment*: 0.25 mm, *Axial Motion*: 0.50 mm)
2. Fully tighten the M5 screw on the first hub to the recommended seating torque of 9.5 Nm using a 4.0 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 27.9 mm.