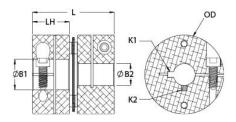




## MDCSK51-24-17-A

Ruland MDCSK51-24-17-A, 24mm x 17mm Single Disc Coupling, Aluminum, Clamp Style With Keyway, 50.8mm OD, 46.1mm Length





## Description

Ruland MDCSK51-24-17-A is a clamp single disc coupling with 24mm x 17mm bores, 50.8mm OD, 46.1mm length, and 8mm x 5mm keyways. It is zero-backlash and has a balanced design for reduced vibration at high speeds. The single disc design is comprised of two anodized aluminum hubs and two sets of thin stainless steel disc springs which can accommodate angular misalignment and axial motion, however does not allow for any parallel misalignment. MDCSK51-24-17-A is lightweight and has low inertia making it well suited for applications with speeds up to 10,000 RPM. Hardware is metric and tests beyond DIN 912 12.9 standards for maximum torque capabilities. Ruland manufactures MDCSK51-24-17-A to be torisionally rigid and an excellent fit for precise positioning stepper servo applications commonly found in semiconductor, solar, printing, machine tool, and test and measurement systems. It is machined from solid bar stock that is sourced exclusively from North American mills and RoHS3 and REACH compliant. MDCSK51-24-17-A is manufactured in our Marlborough, MA factory under strict controls using proprietary processes.

## **Product Specifications**

| Length (L)46.1 mmHub Width (LH)20.55 mmRecommended Shaft Tolerance+0.000 mm / -0.013 mmForged Clamp ScrewM5Screw MaterialAlloy SteelHex Wrench Size4.0 mmScrew FinishBlack OxideSeating Torque9.5 NmNumber of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>5</sup> kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AlDisc Springs: Type 3SteelSteelSteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | 0115           | ouuci specifications        |   |                              |  |
|--|----------------|-----------------------------|---|------------------------------|--|
| B1 Max Shaft Penetration       22.2 mm       B2 Max Shaft Penetration       22.2 mm         Outer Diameter (OD)       50.8 mm       Bore Tolerance       +0.03 mm /-0.00 mm         Length (L)       46.1 mm       Hub Width (LH)       20.55 mm         Recommended Shaft Tolerance       +0.000 mm /-0.013 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       9.90 Nm         Angular Misalignment       1.0°       Dynamic Torque Non-Reversing       9.80 Nm         Axial Motion       0.32 mm       Torsional Stiffness       98.0 Nm/Deg         Moment of Inertia       7.281 x 10 <sup>-5</sup> kg-m <sup>2</sup> Maximum Speed       10,000 RPM         Zero-Backlash?       Yes       Balanced Design       Yes         Torque Wrench       TW:BT-4C-3/8-86       Recommended Hex Key       Metric Hex Keys         Full Bearing Support Required?       Yes       Material Specification       Hubs: 2024-T351 Al Disc Springs: Type is Steel         Temperature       -40°F to 200°F (-40°C to 93°C)       Finish Specification       Licax Anodize         Manufacturer       Ruland Manufactur | 24 m           | re (B1)                     | 24 mm   | Small Bore (B2)              | 17 mm  |
| Outer Diameter (OD)50.8 mmBore Tolerance+0.03 mm / -0.00 mmLength (L)46.1 mmHub Width (LH)20.55 mmRecommended Shaft Tolerance+0.000 mm / -0.013 mmForged Clamp ScrewM5Screw MaterialAlloy SteelHex Wrench Size4.0 mmScrew FinishBlack OxideSeating Torque9.5 NmNumber of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>5</sup> kg-m²Maximum Speed10.000 RPMZero-Backlash?YesBlanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetrici Hex KeysFull Bearing Support Required?YesMaterial SpecificationIll cias 2 and ASTI<br>Black AnodizeTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationUSAWeight (Ibs)0.427400UPC634529204504Tariff Code848.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula   | 8 mm           | yway (K1)                   | 8 mm  | Keyway (K2)                  | 5 mm   |
| Length (L)46.1 mmHub Width (LH)20.55 mmRecommended Shaft Tolerance+0.000 mm / -0.013 mmForged Clamp ScrewM5Screw MaterialAlloy SteelHex Wrench Size4.0 mmScrew FinishBlack OxideSeating Torque9.5 NmNumber of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>5</sup> kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW.BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 Al<br>Disc Springs: Type SiteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTT<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are for guidance only. The user must determine suitability for a particulaNote 3Performance ratings are for guidance only. The user must determine suitability for a particula  | on 22.2        | Max Shaft Penetration       | 22.2 mm   | B2 Max Shaft Penetration     | 22.2 mm  |
| Recommended Shaft Tolerance+0.000 mm / -0.013 mmForged Clamp ScrewM5Screw MaterialAlloy SteelHex Wrench Size4.0 mmScrew FinishBlack OxideSeating Torque9.5 NmNumber of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque Non-Reversing98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>5</sup> kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 Al<br>Disc Springs: Type 3<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTT<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula   | 50.8           | ter Diameter (OD)           | 50.8 mm   | Bore Tolerance               | +0.03 mm / -0.00 mm  |
| Screw MaterialAlloy SteelHex Wrench Size4.0 mmScrew FinishBlack OxideSeating Torque9.5 NmNumber of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10°5 kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AlDisc Springs: Type SteelYesSteelSteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTT<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | 46.1           | ngth (L)                    | 46.1 mm   | Hub Width (LH)               | 20.55 mm   |
| Screw FinishBlack OxideSeating Torque9.5 NmNumber of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>-5</sup> kg-m <sup>2</sup> Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 Al<br>Disc Springs: Type S<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are for guidance only. The user must determine suitability for a particulaNote 3Performance ratings are for guidance only. The user must determine suitability for a particula  | olerance +0.00 | commended Shaft Tolerance   | +0.000 mm / -0.013 mm   | Forged Clamp Screw           | M5   |
| Number of Screws2 eaDynamic Torque Reversing9.90 NmAngular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>5</sup> kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AI<br>Disc Springs: Type S<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationUlfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula   | Alloy          | ew Material                 | Alloy Steel   | Hex Wrench Size              | 4.0 mm   |
| Angular Misalignment1.0°Dynamic Torque Non-Reversing19.80 NmParallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10-5 kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 Al<br>Disc Springs: Type S<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | Black          | ew Finish                   | Black Oxide   | Seating Torque               | 9.5 Nm   |
| Parallel Misalignment0.00 mmStatic Torque39.6 NmAxial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10 <sup>-5</sup> kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AIDisc Springs: Type 3<br>Steel-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula   | 2 ea           | mber of Screws              | 2 ea  | Dynamic Torque Reversing     | 9.90 Nm  |
| Axial Motion0.32 mmTorsional Stiffness98.0 Nm/DegMoment of Inertia7.281 x 10° kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AI<br>Disc Springs: Type 3<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 1Note 2Torque ratings are at maximum misalignment.Performance ratings are for guidance only. The user must determine suitability for a particula   | 1.0°           | gular Misalignment          | 1.0°  | Dynamic Torque Non-Reversing | 19.80 Nm   |
| Moment of Inertia7.281 x 10 <sup>-5</sup> kg-m²Maximum Speed10,000 RPMZero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AI<br>Disc Springs: Type 3<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 1Note 2Torque ratings are at maximum misalignment.Note 3Note 3Performance ratings are for guidance only. The user must determine suitability for a particula   | 0.00           | allel Misalignment          | 0.00 mm   | Static Torque                | 39.6 Nm  |
| Zero-Backlash?YesBalanced DesignYesTorque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AI<br>Disc Springs: Type S<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTT<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.31163008Note 2Torque ratings are at maximum misalignment.Performance ratings are for guidance only. The user must determine suitability for a particula   | 0.32           | al Motion                   | 0.32 mm   | Torsional Stiffness          | 98.0 Nm/Deg  |
| Torque WrenchTW:BT-4C-3/8-86Recommended Hex KeyMetric Hex KeysFull Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 AI<br>Disc Springs: Type 3<br>SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Stainless steel hubs are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | 7.281          | ment of Inertia             | 7.281 x 10 <sup>-5</sup> kg-m <sup>2</sup>  | Maximum Speed                | 10,000 RPM   |
| Full Bearing Support Required?YesMaterial SpecificationHubs: 2024-T351 Al<br>Disc Springs: Type SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Stainless steel hubs are at maximum misalignment.Note 2Torque ratings are at maximum misalignment.Performance ratings are for guidance only. The user must determine suitability for a particular   | Yes            | o-Backlash?                 | Yes   | Balanced Design              | Yes  |
| Temperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized M<br>II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.31163008Note 2Torque ratings are at maximum misalignment.Verify for a particularNote 3Performance ratings are for guidance only. The user must determine suitability for a particular  | TW:E           | que Wrench                  | TW:BT-4C-3/8-86   | Recommended Hex Key          | Metric Hex Keys  |
| II, Class 2 and ASTI<br>Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Torque ratings are at maximum misalignment.Note 2Torque ratings are for guidance only. The user must determine suitability for a particular  | equired? Yes   | I Bearing Support Required? | Yes   | Material Specification       | Hubs: 2024-T351 Aluminum Bar,<br>Disc Springs: Type 302 Stainless<br>Steel             |
| Weight (lbs)0.427400UPC634529204504Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Torque ratings are at maximum misalignment.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particular   | -40°F          | nperature                   | -40°F to 200°F (-40°C to 93°C)  | Finish Specification         | Sulfuric Anodized MIL-A-8625 Type<br>II, Class 2 and ASTM B580 Type B<br>Black Anodize |
| Tariff Code8483.60.8000UNSPC31163008Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | Rular          | nufacturer                  | Ruland Manufacturing  | Country of Origin            | USA  |
| Note 1Stainless steel hubs are available upon request.Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | 0.427          | ight (lbs)                  | 0.427400  | UPC                          | 634529204504   |
| Note 2Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particula  | 8483           | iff Code                    | 8483.60.8000  | UNSPC                        | 31163008   |
| Note 3 Performance ratings are for guidance only. The user must determine suitability for a particula  | Stain          | te 1                        | Stainless steel hubs are available upon request.  |                              |  |
|  | Torqu          | te 2                        | Torque ratings are at maximum misalignment.   |                              |  |
| Note 4 Torque ratings for the couplings are based on the physical limitations/failure point of the disc  | Perfo          | te 3                        | Performance ratings are for guidance only. The user must determine suitability for a particular application.  |                              |  |
| cases, especially when the smallest standard bores are used or where shafts are undersized   | norm           | te 4                        | Torque ratings for the couplings are based on the physical limitations/failure point of the disc springs. Under normal/typical conditions the hubs are capable of holding up to the rated torque of the disc springs. 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 disc springs. Keyways are available to provide additional |                              |  |

|                           | torque capacity in the shaft/hub connection when required. Please consult technical support for more assistance.  |  |  |  |
|---------------------------|---|--|--|--|
| Prop 65                   | <b>WARNING</b> This product can expose you to chemicals including Ethylene Thiourea and Nickel (metallic), known to the State of California to cause cancer, and Ethylene Thiourea known to the State of California to cause birth defects or other reproductive harm. For more information go to <u>www.P65Warnings.ca.gov</u> .   |  |  |  |
| Installation Instructions |   |  |  |  |
|                           | <ol> <li>Align the bores of the MDCSK51-24-17-A single disc coupling on the shafts that are to be joined and determine if the misalignment parameters are within the limits of the coupling. (<i>Angular Misialignment:</i> 1.0°, <i>Parallel Misalignment:</i> 0.00 mm, <i>Axial Motion:</i> 0.32 mm)</li> <li>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.</li> <li>Before tightening the screw on the second hub, rotate the coupling by hand to allow it to reach its free length.</li> <li>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.</li> <li>The shafts may extend into the relieved portion of the bore as long as it does not exceed the shaft penetration length of 22.2 mm.</li> </ol> |  |  |  |