## **MDCS41-13-12-A**

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Ruland MDCS41-13-12-A, 13mm x 12mm Single Disc Coupling, Aluminum, Clamp Style, 41.3mm OD, 39.7mm Length

OD

## Description

Ruland MDCS41-13-12-A is a clamp single disc coupling with 13mm x 12mm bores, 41.3mm OD, and 39.7mm length. 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. MDCS41-13-12-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 MDCS41-13-12-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. MDCS41-13-12-A is manufactured in our Marlborough, MA factory under strict controls using proprietary processes.

Product	Specif	ications

B1 Max Shaft Penetration   19.2 mm   B2 Max Shaft Penetration   19.2 mm     Outer Diameter (OD)   41.3 mm   Bore Tolerance   +0.03 mm /-0.00 mm     Length (L)   39.7 mm   Hub Width (LH)   18.0 mm     Recommended Shaft Tolerance   +0.000 mm /-0.013 mm   Forged Clamp Screw   M4     Screw Material   Alloy Steel   Hex Wrench Size   3.0 mm     Screw Kinish   Black Oxide   Seating Torque   4.6 Nm     Number of Screws   2 ea   Dynamic Torque Reversing   5.08 Nm     Angular Misalignment   1.0°   Dynamic Torque Non-Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10°5 kg-m²   Maximum Speed   10,000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:B1-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Sulfuric Anodized MIL-A-8625 Typ II, class 2 and ASTM B580 Type B Black Anodize     Manufacturer   Ruland Manuf	Product Specifications				
Outer Diameter (OD)   41.3 mm   Bore Tolerance   +0.03 mm / -0.00 mm     Length (L)   39.7 mm   Hub Width (LH)   18.0 mm     Recommended Shaft Tolerance   +0.000 mm / -0.013 mm   Forged Clamp Screw   M4     Screw Material   Alloy Steel   Hex Wrench Size   3.0 mm     Screw Material   Black Oxide   Seating Torque   4.6 Nm     Number of Screws   2 ea   Dynamic Torque Reversing   5.08 Nm     Angular Misalignment   1.0°   Dynamic Torque Non-Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10 <sup>-5</sup> kg-m <sup>2</sup> Maximum Speed   10,000 RPM     Full Bearing Support Require?   Yes   Torque Wrench   TW/BT-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless Steel     Temperature   -40°F to 200°F (-40°C to 93°C)   Finish Specification   Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type E Black Anodize     Maufacturer   Ruland Manufacturing   Country of Origin <th>Bore (B1)</th> <th>13 mm</th> <th>Small Bore (B2)</th> <th>12 mm</th>	Bore (B1)	13 mm	Small Bore (B2)	12 mm	
Length (L)   39.7 mm   Hub Width (LH)   18.0 mm     Recommended Shaft Tolerance   +0.000 mm / -0.013 mm   Forged Clamp Screw   M4     Screw Material   Alloy Steel   Hex Wrench Size   3.0 mm     Screw Finish   Black Oxide   Seating Torque   4.6 Nm     Number of Screws   2 ea   Dynamic Torque Reversing   5.08 Nm     Angular Misalignment   1.0°   Dynamic Torque Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10 <sup>-6</sup> kg-m <sup>2</sup> Maximum Speed   10.000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:BT-1R-1/4-41.0     Recommended Hex Key   Matric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless Steel     Temperature   -40°F to 200°F (-40°C to 93°C)   Finish Specification   Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type E Black Anodize     Manufacturer   Ruland Manufacturing   Country of Origin   USA <td>B1 Max Shaft Penetration</td> <td>19.2 mm</td> <td>B2 Max Shaft Penetration</td> <td>19.2 mm</td>	B1 Max Shaft Penetration	19.2 mm	B2 Max Shaft Penetration	19.2 mm	
Recommended Shaft Tolerance   +0.000 mm / -0.013 mm   Forged Clamp Screw   M4     Screw Material   Alloy Steel   Hex Wrench Size   3.0 mm     Screw Finish   Black Oxide   Seating Torque   4.6 Nm     Number of Screws   2 ea   Dynamic Torque Reversing   5.08 Nm     Angular Misalignment   1.0°   Dynamic Torque Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10 <sup>5</sup> kg-m <sup>2</sup> Maximum Speed   10.000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW/BT-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Ubics Springs: Type 302 Stainless Steel     Temperature   -40°F to 200°F (-40°C to 93°C)   Finish Specification   Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type E     Manufacturer   Ruland Manufacturing   Country of Origin   USA     Weight (lbs)   0.268500   UPC   634529151976     Tariff Code <t< td=""><td>Outer Diameter (OD)</td><td>41.3 mm</td><td>Bore Tolerance</td><td>+0.03 mm / -0.00 mm</td></t<>	Outer Diameter (OD)	41.3 mm	Bore Tolerance	+0.03 mm / -0.00 mm	
Screw Material   Alloy Steel   Hex Wrench Size   3.0 mm     Screw Finish   Black Oxide   Seating Torque   4.6 Nm     Number of Screws   2 ea   Dynamic Torque Reversing   5.08 Nm     Angular Misalignment   1.0°   Dynamic Torque Row-Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10°5 kg-m²   Maximum Speed   10,000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:BT-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 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 EBack Anodize     Meeight (lbs)   0.268500   UPC   634529151976   Black Anodize     Weight (lbs)   0.268500   UPC   634529151976   Sulfuric Anodize MIL-A-8625 Type II, Class 2 and ASTM B580.500   USPC   31163008 <t< td=""><td>Length (L)</td><td>39.7 mm</td><td>Hub Width (LH)</td><td>18.0 mm</td></t<>	Length (L)	39.7 mm	Hub Width (LH)	18.0 mm	
Screw Finish   Black Oxide   Seating Torque   4.6 Nm     Number of Screws   2 ea   Dynamic Torque Reversing   5.08 Nm     Angular Misalignment   1.0°   Dynamic Torque Non-Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10 <sup>5</sup> kg-m <sup>2</sup> Maximum Speed   10,000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:BT-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless Steel     Temperature   -40°F to 200°F (-40°C to 93°C)   Finish Specification   Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type B Black Anodize     Manufacturer   Ruland Manufacturing   Country of Origin   USA     Weight (Ibs)   0.268500   UPC   634529151976     Tariff Code   8483.60.8000   UNSPC   31163008     Note 1   Stainless steel hubs are available upon request.   Note 2   Torque ratings are at maximum m	Recommended Shaft Tolerance	+0.000 mm / -0.013 mm	Forged Clamp Screw	M4	
Number of Screws     2 ea     Dynamic Torque Reversing     5.08 Nm       Angular Misalignment     1.0°     Dynamic Torque Non-Reversing     10.15 Nm       Parallel Misalignment     0.00 mm     Static Torque     20.3 Nm       Axial Motion     0.25 mm     Torsional Stiffness     70.6 Nm/Deg       Moment of Inertia     2.830 x 10 <sup>-5</sup> kg-m <sup>2</sup> Maximum Speed     10,000 RPM       Full Bearing Support Required?     Yes     Zero-Backlash?     Yes       Balanced Design     Yes     Torque Wrench     TW:BT-1R-1/4-41.0       Recommended Hex Key     Metric Hex Keys     Material Specification     Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless Steel       Temperature     -40°F to 200°F (-40°C to 93°C)     Finish Specification     Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type B Black Anodize       Manufacturer     Ruland Manufacturing     Country of Origin     USA       Weight (Ibs)     0.268500     UPC     634529151976       Tariff Code     8483.60.8000     UNSPC     31163008       Note 1     Stainless steel hubs are available upon request.     Note 3       Note 2     Torque ratings are	Screw Material	Alloy Steel	Hex Wrench Size	3.0 mm	
Angular Misalignment   1.0°   Dynamic Torque Non-Reversing   10.15 Nm     Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10° kg-m²   Maximum Speed   10,000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:BT-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless Steel     Temperature   -40°F to 200°F (-40°C to 93°C)   Finish Specification   Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type E Black Anodize     Maufacturer   Ruland Manufacturing   Country of Origin   USA     Weight (lbs)   0.268500   UPC   634529151976     Tariff Code   8483.60.8000   UNSPC   31163008     Note 1   Stainless steel hubs are available upon request.   Note 3     Note 2   Torque ratings are at maximum misalignment.   Note 3     Note 4   Torque ratings for the couplings are based on the physical limitations/failure point of the disc springs. Under normal/typical condit	Screw Finish	Black Oxide	Seating Torque	4.6 Nm	
Parallel Misalignment   0.00 mm   Static Torque   20.3 Nm     Axial Motion   0.25 mm   Torsional Stiffness   70.6 Nm/Deg     Moment of Inertia   2.830 x 10 <sup>-5</sup> kg-m <sup>2</sup> Maximum Speed   10,000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:BT-IR-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless Steel     Temperature   -40°F to 200°F (-40°C to 93°C)   Finish Specification   Sulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type B Black Anodize     Maunfacturer   Ruland Manufacturing   Country of Origin   USA     Weight (Ibs)   0.268500   UPC   634529151976     Tariff Code   8483.60.8000   UNSPC   31163008     Note 1   Stainless steel hubs are available upon request.   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 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 b	Number of Screws	2 ea	Dynamic Torque Reversing	5.08 Nm	
Axial Motion0.25 mmTorsional Stiffness70.6 Nm/DegMoment of Inertia2.830 x 10-5 kg-m²Maximum Speed10,000 RPMFull Bearing Support Required?YesZero-Backlash?YesBalanced DesignYesTorque WrenchTW.BT-1R-1/4-41.0Recommended Hex KeyMetric Hex KeysMaterial SpecificationHubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 Stainless SteelTemperature-40°F to 200°F (-40°C to 93°C)Finish SpecificationSulfuric Anodized MIL-A-8625 Typ II, Class 2 and ASTM B580 Type Black AnodizeManufacturerRuland ManufacturingCountry of OriginUSAWeight (Ibs)0.268500UPC634529151976Tariff Code8483.60.8000UNSPC31163008Note 1Stainless are at maximum misalignment.Torque ratings are at maximum misalignment.Note 3Performance ratings are for guidance only. The user must determine suitability for a particular application.Note 4Torque 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 torque capacity in the shaft/hub connection when required. Please consult technical support for more	Angular Misalignment	1.0°	Dynamic Torque Non-Reversing	10.15 Nm	
Moment of Inertia   2.830 x 10 <sup>5</sup> kg-m <sup>2</sup> Maximum Speed   10,000 RPM     Full Bearing Support Required?   Yes   Zero-Backlash?   Yes     Balanced Design   Yes   Torque Wrench   TW:BT-1R-1/4-41.0     Recommended Hex Key   Metric Hex Keys   Material Specification   Hubs: 2024-T351 Aluminum Bar, Disc Springs: Type 302 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 E Black Anodize     Manufacturer   Ruland Manufacturing   Country of Origin   USA     Weight (Ibs)   0.268500   UPC   634529151976     Tariff Code   8483.60.8000   UNSPC   31163008     Note 1   Stainless steel hubs are available upon request.   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 disc springs. Inoeme cases, especially when the smallest standard bores are used or where shafts are undersized, slippage on th shaft is possible below the rated torque of the disc springs. Lippage on th shaft is possible below the rated torque of the disc springs. Ispage on the shaft/hub connection when required. Please consult technical support for more	Parallel Misalignment	0.00 mm	Static Torque	20.3 Nm	
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**WARNING** 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

- Align the bores of the MDCS41-13-12-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. (*Angular Misialignment:* 1.0°, *Parallel Misalignment:* 0.00 mm, *Axial Motion:* 0.25 mm)
- 2. Fully tighten the M4 screw on the first hub to the recommended seating torque of 4.6 Nm using a 3.0 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.
- 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 19.2 mm.