

# RULAND

Carefully Made Shaft Collars and Couplings



**ZERO BACKLASH JAW COUPLINGS**

# Introduction



Ruland Manufacturing Co., Inc. has been supplying carefully made products since 1937. We have manufactured everything from bicycle pumps to high pressure valves, including the valve that pressurized the spacesuit of the first American to walk in space. In recent years, all of our expertise has been devoted to making the best shaft collars and couplings available. Zero backlash jaw couplings are a new addition to our expanding line of motion control coupling products.

Zero backlash jaw couplings are three piece couplings comprised of two hubs and an elastic element. The spider, made of an advanced polyurethane material, provides dampening of impulse loads, minimizing shock to the motor and other sensitive equipment. Available in two durometers, these spiders allow the user to customize the jaw coupling's performance. Selecting a soft spider will give the jaw coupling the greatest dampening characteristics, while a hard spider will provide the greatest torsional stiffness and strength. All spiders are press fit onto a curved jaw profile, assuring zero backlash operation. The curved jaw profile concentrates the forces to the center of the spider's limbs, improving the effectiveness of the elastomer material. Raised contact points on the spider limbs help maintain proper spacing between the two hubs, assuring electrical isolation and full angular misalignment capabilities. Jaw couplings are considered fail safe because, even if a spider fails, the jaws of the two hubs interlock allowing direct power transmission, allowing the application to be safely shut down for maintenance.

## **WARRANTY / DISCLAIMER OF UNSTATED WARRANTIES / LIMITATION OF LIABILITY**

**Warranty.** Ruland warrants that the products sold hereunder meet Ruland's size and materials specifications as set forth in this catalog. Products not meeting Ruland's size and material specifications will, at Ruland's option, be replaced or the purchase price refunded.

**Disclaimer of unstated warranties.** THE WARRANTY PRINTED ABOVE IS THE ONLY WARRANTY APPLICABLE TO THESE PRODUCTS. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. It is the responsibility of the user to determine the suitability of Ruland products for a specific application. No person, including employees of Ruland or agents in the company's channels of distribution is authorized to represent on Ruland's behalf, the suitability of Ruland products for a specific purpose.

**Limitation of Liability.** IT IS UNDERSTOOD AND AGREED THAT SELLER'S LIABILITY SHALL NOT EXCEED THE AMOUNT OF THE PURCHASE PRICE. SELLER SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES. THE PRICE STATED FOR THE PRODUCT IS A CONSIDERATION IN LIMITING RULAND'S LIABILITY.

HUBS

| PART NUMBER |                 | SPECIFICATIONS |                     |                                |                        |                        |             |           |
|-------------|-----------------|----------------|---------------------|--------------------------------|------------------------|------------------------|-------------|-----------|
| CLAMP STYLE | SET SCREW STYLE | BORE (in)      | OUTER DIAM. OD (in) | HUB LENGTH L <sub>H</sub> (in) | COUPLING LENGTH L (in) | SHAFT PENETRATION (in) | CLAMP SCREW | SET SCREW |
| JC10-2-A    | JS10-2-A        | .1250          |                     |                                |                        |                        |             |           |
| JC10-3-A    | JS10-3-A        | .1875          | 0.590               | 0.300                          | 0.860                  | 0.300                  | M2          | M3        |
| JC10-4-A    | JS10-4-A        | .2500          |                     |                                |                        |                        |             |           |
| JC12-3-A    | JS12-3-A        | .1875          |                     |                                |                        |                        |             |           |
| JC12-4-A    | JS12-4-A        | .2500          | 0.750               | 0.385                          | 1.070                  | 0.385                  | M2.5        | M3        |
| JC12-5-A    | JS12-5-A        | .3125          |                     |                                |                        |                        |             |           |
| JC16-4-A    | JS16-4-A        | .2500          |                     |                                |                        |                        |             |           |
| JC16-5-A    | JS16-5-A        | .3125          | 1.000               | 0.467                          | 1.390                  | 0.467                  | M3          | M4        |
| JC16-6-A    | JS16-6-A        | .3750          |                     |                                |                        |                        |             |           |
| JC16-8-A    | JS16-8-A        | .5000          |                     |                                |                        |                        |             |           |
| JC21-5-A    | JS21-5-A        | .3125          |                     |                                |                        |                        |             |           |
| JC21-6-A    | JS21-6-A        | .3750          | 1.313               | 0.590                          | 1.750                  | 0.590                  | M3          | M4        |
| JC21-8-A    | JS21-8-A        | .5000          |                     |                                |                        |                        |             |           |
| JC21-10-A   | JS21-10-A       | .6250          |                     |                                |                        |                        |             |           |
| JC26-6-A    | JS26-6-A        | .3750          |                     |                                |                        |                        |             |           |
| JC26-8-A    | JS26-8-A        | .5000          | 1.625               | 0.710                          | 2.086                  | 0.710                  | M4          | M5        |
| JC26-10-A   | JS26-10-A       | .6250          |                     |                                |                        |                        |             |           |
| JC26-12-A   | JS26-12-A       | .7500          |                     |                                |                        |                        |             |           |
| JC32-8-A    | JS32-8-A        | .5000          |                     |                                |                        |                        |             |           |
| JC32-10-A   | JS32-10-A       | .6250          |                     |                                |                        |                        |             |           |
| JC32-12-A   | JS32-12-A       | .7500          | 2.000               | 0.820                          | 2.400                  | 0.820                  | M5          | M6        |
| JC32-14-A   | JS32-14-A       | .8750          |                     |                                |                        |                        |             |           |
| JC32-16-A   | JS32-16-A       | 1.0000         |                     |                                |                        |                        |             |           |
| JC36-8-A    | JS36-8-A        | .5000          |                     |                                |                        |                        |             |           |
| JC36-10-A   | JS36-10-A       | .6250          |                     |                                |                        |                        |             |           |
| JC36-12-A   | JS36-12-A       | .7500          |                     |                                |                        |                        |             |           |
| JC36-14-A   | JS36-14-A       | .8750          | 2.250               | 1.130                          | 3.150                  | 1.130                  | M6          | M8        |
| JC36-16-A   | JS36-16-A       | 1.0000         |                     |                                |                        |                        |             |           |
| JC36-18-A   | JS36-18-A       | 1.1250         |                     |                                |                        |                        |             |           |
| JC36-20-A   | JS36-20-A       | 1.2500         |                     |                                |                        |                        |             |           |

SPIDERS

| PART NUMBER | OUTER DIAM. OD |      | DUROMETER  | TORSIONAL STIFFNESS |          | NOMINAL TORQUE |      | PEAK TORQUE |      | ANGULAR MISALIGNMENT | PARALLEL MISALIGNMENT |      | AXIAL MOTION |      |
|-------------|----------------|------|------------|---------------------|----------|----------------|------|-------------|------|----------------------|-----------------------|------|--------------|------|
|             | (in)           | (mm) |            | (Deg/lb-in)         | (Deg/Nm) | (lb-in)        | (Nm) | (lb-in)     | (Nm) | (Deg)                | (in)                  | (mm) | (in)         | (mm) |
| JD10/15-98R | 0.590          | 15.0 | 98 Shore A | .121                | 1.068    | 8              | 0.9  | 16          | 1.8  | 0.8                  | 0.002                 | 0.05 | 0.020        | 0.51 |
| JD12/19-98R | 0.750          | 19.1 | 98 Shore A | .114                | 1.007    | 15             | 1.7  | 30          | 3.4  | 0.8                  | 0.003                 | 0.08 | 0.020        | 0.51 |
| JD16/25-98R | 1.000          | 25.4 | 98 Shore A | .024                | 0.212    | 75             | 8.5  | 150         | 17.0 | 0.8                  | 0.003                 | 0.08 | 0.030        | 0.76 |
| JD21/33-98R | 1.313          | 33.3 | 98 Shore A | .012                | 0.106    | 87             | 9.9  | 174         | 19.7 | 0.8                  | 0.003                 | 0.08 | 0.030        | 0.76 |
| JD26/41-98R | 1.625          | 41.3 | 98 Shore A | .006                | 0.053    | 165            | 18.7 | 330         | 37.4 | 0.8                  | 0.004                 | 0.10 | 0.050        | 1.27 |
| JD32/51-98R | 2.000          | 50.8 | 98 Shore A | .004                | 0.035    | 275            | 31.2 | 550         | 62.3 | 0.8                  | 0.005                 | 0.13 | 0.050        | 1.27 |
| JD36/57-98R | 2.250          | 57.2 | 98 Shore A | .003                | 0.026    | 410            | 46.5 | 820         | 92.9 | 0.8                  | 0.004                 | 0.10 | 0.050        | 1.27 |
| JD10/15-92Y | 0.590          | 15.0 | 92 Shore A | .270                | 2.384    | 5              | 0.6  | 10          | 1.1  | 0.9                  | 0.004                 | 0.10 | 0.020        | 0.51 |
| JD12/19-92Y | 0.750          | 19.1 | 92 Shore A | .257                | 2.269    | 9              | 1.0  | 18          | 2.0  | 0.9                  | 0.004                 | 0.10 | 0.020        | 0.51 |
| JD16/25-92Y | 1.000          | 25.4 | 92 Shore A | .067                | 0.592    | 29             | 3.3  | 58          | 6.6  | 0.9                  | 0.005                 | 0.13 | 0.030        | 0.76 |
| JD21/33-92Y | 1.313          | 33.3 | 92 Shore A | .045                | 0.397    | 35             | 4.0  | 70          | 7.9  | 0.9                  | 0.005                 | 0.13 | 0.030        | 0.76 |
| JD26/41-92Y | 1.625          | 41.3 | 92 Shore A | .012                | 0.106    | 97             | 11.0 | 194         | 22.0 | 0.9                  | 0.006                 | 0.15 | 0.050        | 1.27 |
| JD32/51-92Y | 2.000          | 50.8 | 92 Shore A | .005                | 0.044    | 220            | 24.9 | 440         | 49.8 | 0.9                  | 0.006                 | 0.15 | 0.050        | 1.27 |
| JD36/57-92Y | 2.250          | 57.2 | 92 Shore A | .004                | 0.035    | 285            | 32.3 | 570         | 64.6 | 0.9                  | 0.005                 | 0.13 | 0.050        | 1.27 |
| JD10/15-85B | 0.590          | 15.0 | 85 Shore A | .450                | 3.972    | 2.4            | 0.3  | 4.8         | 0.5  | 1                    | 0.005                 | 0.13 | 0.020        | 0.51 |
| JD12/19-85B | 0.750          | 19.1 | 85 Shore A | .406                | 3.583    | 5              | 0.6  | 10          | 1.1  | 1                    | 0.005                 | 0.13 | 0.020        | 0.51 |
| JD16/25-85B | 1.000          | 25.4 | 85 Shore A | .108                | 0.953    | 15             | 1.7  | 30          | 3.4  | 1                    | 0.006                 | 0.15 | 0.030        | 0.76 |
| JD21/33-85B | 1.313          | 33.3 | 85 Shore A | .075                | 0.662    | 18             | 2.0  | 36          | 4.1  | 1                    | 0.006                 | 0.15 | 0.030        | 0.76 |
| JD26/41-85B | 1.625          | 41.3 | 85 Shore A | .021                | 0.185    | 49             | 5.6  | 98          | 11.1 | 1                    | 0.006                 | 0.15 | 0.050        | 1.27 |
| JD32/51-85B | 2.000          | 50.8 | 85 Shore A | .008                | 0.071    | 108            | 12.2 | 216         | 24.5 | 1                    | 0.006                 | 0.15 | 0.050        | 1.27 |
| JD36/57-85B | 2.250          | 57.2 | 85 Shore A | .007                | 0.062    | 139            | 15.8 | 278         | 31.5 | 1                    | 0.006                 | 0.15 | 0.050        | 1.27 |

**Note 1** Hardware is alloy steel with black oxide finish. Parts JS10, JS12, MJS15 and MJS19 have one set screw on each end. JS16, JS21, JS26, JS32, JS36, MJS25, MJS33, MJS41, MJS51 and MJS57 have two set screws 90° apart.

**Note 2** Performance ratings are for guidance only. The user must determine suitability for a particular application.

## HUBS

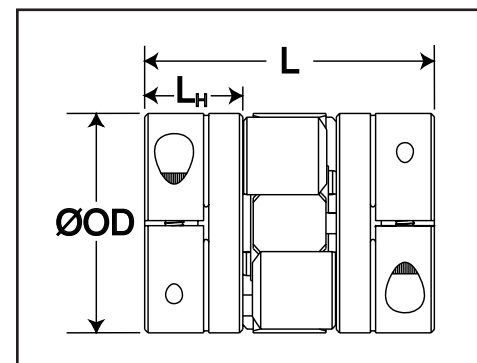
| PART NUMBER |                 | SPECIFICATIONS |                     |                                |                        |                        |             |           |
|-------------|-----------------|----------------|---------------------|--------------------------------|------------------------|------------------------|-------------|-----------|
| CLAMP STYLE | SET SCREW STYLE | BORE (mm)      | OUTER DIAM. OD (mm) | HUB LENGTH L <sub>H</sub> (mm) | COUPLING LENGTH L (mm) | SHAFT PENETRATION (mm) | CLAMP SCREW | SET SCREW |
| MJC15-3-A   | MJS15-3-A       | 3              |                     |                                |                        |                        |             |           |
| MJC15-4-A   | MJS15-4-A       | 4              | 15.0                | 7.6                            | 21.8                   | 7.6                    | M2          | M3        |
| MJC15-5-A   | MJS15-5-A       | 5              |                     |                                |                        |                        |             |           |
| MJC15-6-A   | MJS15-6-A       | 6              |                     |                                |                        |                        |             |           |
| MJC19-4-A   | MJS19-4-A       | 4              |                     |                                |                        |                        |             |           |
| MJC19-5-A   | MJS19-5-A       | 5              | 19.1                | 9.8                            | 27.2                   | 9.8                    | M2.5        | M3        |
| MJC19-6-A   | MJS19-6-A       | 6              |                     |                                |                        |                        |             |           |
| MJC19-8-A   | MJS19-8-A       | 8              |                     |                                |                        |                        |             |           |
| MJC25-6-A   | MJS25-6-A       | 6              |                     |                                |                        |                        |             |           |
| MJC25-8-A   | MJS25-8-A       | 8              | 25.4                | 11.9                           | 35.3                   | 11.9                   | M3          | M4        |
| MJC25-10-A  | MJS25-10-A      | 10             |                     |                                |                        |                        |             |           |
| MJC25-12-A  | MJS25-12-A      | 12             |                     |                                |                        |                        |             |           |
| MJC33-8-A   | MJS33-8-A       | 8              |                     |                                |                        |                        |             |           |
| MJC33-10-A  | MJS33-10-A      | 10             |                     |                                |                        |                        |             |           |
| MJC33-12-A  | MJS33-12-A      | 12             | 33.3                | 15.0                           | 44.5                   | 15.0                   | M3          | M4        |
| MJC33-14-A  | MJS33-14-A      | 14             |                     |                                |                        |                        |             |           |
| MJC33-15-A  | MJS33-15-A      | 15             |                     |                                |                        |                        |             |           |
| MJC33-16-A  | MJS33-16-A      | 16             |                     |                                |                        |                        |             |           |
| MJC41-10-A  | MJS41-10-A      | 10             |                     |                                |                        |                        |             |           |
| MJC41-12-A  | MJS41-12-A      | 12             |                     |                                |                        |                        |             |           |
| MJC41-14-A  | MJS41-14-A      | 14             | 41.3                | 18.0                           | 53.0                   | 18.0                   | M4          | M5        |
| MJC41-15-A  | MJS41-15-A      | 15             |                     |                                |                        |                        |             |           |
| MJC41-16-A  | MJS41-16-A      | 16             |                     |                                |                        |                        |             |           |
| MJC41-20-A  | MJS41-20-A      | 20             |                     |                                |                        |                        |             |           |
| MJC51-12-A  | MJS51-12-A      | 12             |                     |                                |                        |                        |             |           |
| MJC51-14-A  | MJS51-14-A      | 14             |                     |                                |                        |                        |             |           |
| MJC51-15-A  | MJS51-15-A      | 15             | 50.8                | 20.8                           | 61.0                   | 20.8                   | M5          | M6        |
| MJC51-16-A  | MJS51-16-A      | 16             |                     |                                |                        |                        |             |           |
| MJC51-20-A  | MJS51-20-A      | 20             |                     |                                |                        |                        |             |           |
| MJC51-25-A  | MJS51-25-A      | 25             |                     |                                |                        |                        |             |           |
| MJC57-14-A  | MJS57-14-A      | 14             |                     |                                |                        |                        |             |           |
| MJC57-15-A  | MJS57-15-A      | 15             |                     |                                |                        |                        |             |           |
| MJC57-16-A  | MJS57-16-A      | 16             | 57.2                | 28.7                           | 80.0                   | 28.7                   | M6          | M8        |
| MJC57-20-A  | MJS57-20-A      | 20             |                     |                                |                        |                        |             |           |
| MJC57-25-A  | MJS57-25-A      | 25             |                     |                                |                        |                        |             |           |
| MJC57-30-A  | MJS57-30-A      | 30             |                     |                                |                        |                        |             |           |



### ORDERING INFORMATION

For a complete coupling, order two hubs and one spider.

For example: order JC16-4-A, JC16-6-A, and JD16/25-98R to form a complete coupling with a 1" OD, .250" and .375" bores and a 98 Shore A durometer spider.



FOR ENGINEERING AND WARRANTY INFORMATION SEE [WWW.RULAND.COM](http://WWW.RULAND.COM)

# Technical Information

## Materials

Spiders: Polyurethane  
 Hubs: 2024 T351 or 7075 T651 Extruded and Drawn Aluminum Bar

## Surface Finish

Hubs: Bright Finish

## Hardware

Socket Head Cap Screws: Alloy steel, heat treated. Meet or exceed ASA specification B18.3. Metric hardware meets or exceeds ASA specifications B18.3.1M and ASTM A574M property class 12.9

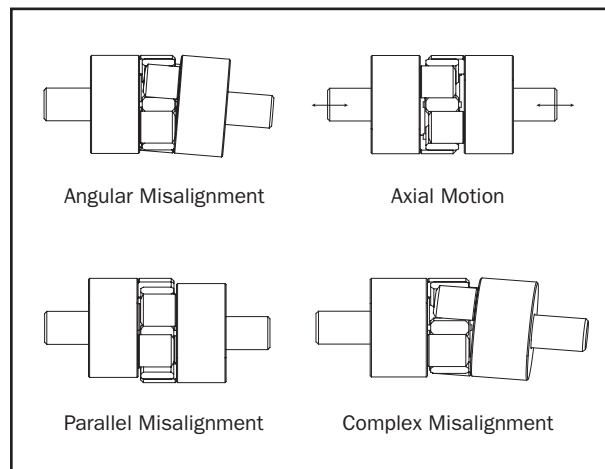
Forged Socket Set Screws: Alloy steel, heat treated, cup point. Meet or exceed ASA specification B18.3

## Temperature Range

-10° F to 180° F

## Maximum Speed

8,000 rpm



## Hardware Torque Charts

### TORQUE RATINGS—CLAMP SCREW

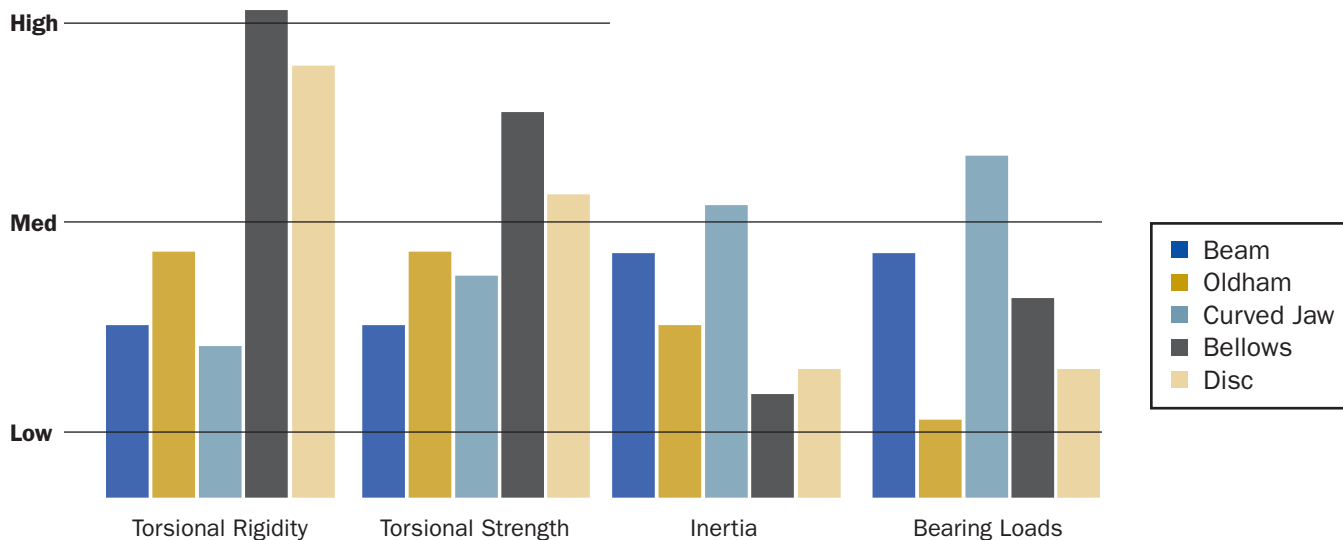
| METRIC<br>Clamp Screw | Seating Torque (Nm) |                 |
|-----------------------|---------------------|-----------------|
|                       | ALLOY               | STAINLESS STEEL |
| M2                    | 0.60                | 0.36            |
| M2.5                  | 1.21                | 0.73            |
| M3                    | 2.10                | 1.10            |
| M4                    | 4.60                | 2.50            |
| M5                    | 9.50                | 5.40            |
| M6                    | 16.00               | 9.60            |

### TORQUE RATINGS—SET SCREW

| METRIC<br>Set Screw | Seating Torque (Nm) |                 |
|---------------------|---------------------|-----------------|
|                     | ALLOY               | STAINLESS STEEL |
| M3                  | 0.92                | 0.73            |
| M4                  | 2.20                | 1.76            |
| M5                  | 4.00                | 3.20            |
| M6                  | 7.20                | 5.76            |
| M8                  | 17.00               | 13.60           |

## Installation Instructions

1. Assure that the misalignment between shafts is within the coupling's ratings.
2. Slide a hub onto each shaft to be joined with the drive tenons facing each other.
3. Fully tighten the screw(s) on the first hub to the recommended seating torque (see charts above).
4. Insert a spider into the jaws of one hub until the raised points contact the base of the hub.
5. Insert the jaws of the second hub into the spider openings until the raised points contact the base of the second hub. Some force will be required to insert the second hub. This is normal.
6. Assure that a gap is maintained between the two hubs so there is no metal to metal contact. Fully tighten the screw(s) on the second hub to the recommended seating torque (see charts above).





We are committed to have the largest variety of sizes and styles in the industry. In addition to the items listed below, we can manufacture an extensive variety of special designs. Please contact us with your custom needs.

## OLDHAM COUPLING

Clamp and  
set screw  
styles.



## BELLOWS COUPLING

Clamp and  
set screw  
styles.



## BEAM COUPLING

Clamp and  
set screw  
styles.



## JAW COUPLING

Clamp and  
set screw  
styles.



## QUICK-CLAMP COLLAR

One-piece  
integral  
lever style.



## SHAFT COLLAR

One- and  
two-piece  
styles.



## DISC COUPLING

Clamp and  
set screw  
styles.



## RIGID COUPLING

One- and  
two-piece  
styles.

