Ideal for encoders, Control-Flex® Couplings are available with clamp-style zero backlash hubs or in a drop-out design for easy flexible disc changeout.

The Control-Flex® Coupling was developed to satisfy today’s higher performance requirements. To meet this goal, Zero-Max engineered a unique Control-Flex® Disc which is based on a parallel linkage system.

Because of this unique design, the reaction forces due to transmission of torque and unavoidable shaft misalignments are considerably smaller when compared with common flexible couplings.

Outstanding Features and Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>High shaft misalignment capacity</td>
<td>Improved set up and installation time.</td>
</tr>
<tr>
<td>Very low reaction loads due to misalignment</td>
<td>Improved performance and life of encoder or instrumentation device.</td>
</tr>
<tr>
<td>Electrically insulating flex element</td>
<td>Added protection from stray currents.</td>
</tr>
<tr>
<td>Zero backlash</td>
<td>No dead band in feedback system.</td>
</tr>
<tr>
<td>Low weight design</td>
<td>Less change to system inertia.</td>
</tr>
<tr>
<td>Clamp style hubs</td>
<td>Prevents damage to the shafting. Positive Zero-Backlash connection between the hub and shaft.</td>
</tr>
</tbody>
</table>
Clamp-Style

The construction of a Control-Flex® Coupling consists of two hubs (to be attached to the shafts) and a center flex member. This flexible element is affixed to the hubs through pins. Clamp-style hubs provide a positive shaft connection. Special modifications are available upon request.

The clamp-style Control-Flex® Couplings are available with a single flex disc for standard torque capacity, or with two flex discs for increased torque capacity and torsional stiffness. The clamp-style hub models come standard without keyways. Keyways are available upon request.

- Ideal for encoder Applications
- Easy Installation
- Space Saving
- Electrically Insulating
- Ultra low reaction loads
- Zero Backlash
- Maintenance Free

---

### Single Disc Couplings

The construction of a Control-Flex® Single Disc Coupling consists of two hubs (to be attached to the shafts) and a center flex member. This flexible element is affixed to the hubs through pins. Clamp-style hubs provide a positive shaft connection. Special modifications are available upon request.

The clamp-style Control-Flex® Single Disc Couplings are available with a single flex disc for standard torque capacity, or with two flex discs for increased torque capacity and torsional stiffness. The clamp-style hub models come standard without keyways. Keyways are available upon request.

- **Ideal for encoder Applications**
- **Easy Installation**
- **Space Saving**
- **Electrically Insulating**
- **Ultra low reaction loads**
- **Zero Backlash**
- **Maintenance Free**

---

### Single Flex Disc Clamp-Style

<table>
<thead>
<tr>
<th>Part No.</th>
<th>CPL. Diam (Inch)</th>
<th>Coupling Length (Inch)</th>
<th>Hub Length (Inch)</th>
<th>Minimum Bore (Inch)</th>
<th>Maximum Bore (Inch)</th>
<th>Disc Inside Diam (Inch)</th>
<th>D2</th>
<th>Disc Length (Inch)</th>
<th>L2</th>
<th>Net Weight (Lb)</th>
<th>Inertia WK (Lb-In²)</th>
<th>Max. Peak Torque (In-Lb)</th>
<th>Max. Cont. Peak Torque (In-Lb)</th>
<th>Torsional Stiffness</th>
<th>Max. Speed (RPM)</th>
<th>Par (Inch)</th>
<th>Ang (Deg)</th>
<th>Axial (Inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C008P</td>
<td>0.748</td>
<td>0.62</td>
<td>0.219</td>
<td>0.125</td>
<td>3</td>
<td>0.375</td>
<td>10</td>
<td>0.28</td>
<td>0.19</td>
<td>0.020</td>
<td>0.0014</td>
<td>6</td>
<td>4</td>
<td>2.3</td>
<td>130</td>
<td>0.61</td>
<td>12,000</td>
<td>0.013</td>
</tr>
<tr>
<td>C011P</td>
<td>0.984</td>
<td>1.00</td>
<td>0.374</td>
<td>0.125</td>
<td>4</td>
<td>0.500</td>
<td>12</td>
<td>0.41</td>
<td>0.25</td>
<td>0.057</td>
<td>0.0075</td>
<td>13</td>
<td>9</td>
<td>5.0</td>
<td>285</td>
<td>1.33</td>
<td>11,000</td>
<td>0.019</td>
</tr>
<tr>
<td>C016P</td>
<td>1.457</td>
<td>1.17</td>
<td>0.394</td>
<td>0.125</td>
<td>4</td>
<td>0.750</td>
<td>20</td>
<td>0.56</td>
<td>0.38</td>
<td>0.135</td>
<td>0.038</td>
<td>45</td>
<td>31</td>
<td>16.3</td>
<td>930</td>
<td>4.35</td>
<td>8,000</td>
<td>0.028</td>
</tr>
<tr>
<td>C023P</td>
<td>2.205</td>
<td>1.74</td>
<td>0.591</td>
<td>0.125</td>
<td>8</td>
<td>1.168</td>
<td>30</td>
<td>0.71</td>
<td>0.58</td>
<td>0.450</td>
<td>0.291</td>
<td>152</td>
<td>106</td>
<td>55.0</td>
<td>3,150</td>
<td>14.29</td>
<td>6,000</td>
<td>0.041</td>
</tr>
<tr>
<td>C031P</td>
<td>2.953</td>
<td>2.17</td>
<td>0.709</td>
<td>0.500</td>
<td>12</td>
<td>1.500</td>
<td>40</td>
<td>1.13</td>
<td>0.75</td>
<td>1.060</td>
<td>1.220</td>
<td>361</td>
<td>250</td>
<td>75.0</td>
<td>4,300</td>
<td>20.00</td>
<td>5,000</td>
<td>0.055</td>
</tr>
</tbody>
</table>

1) Maximum speed rating applicable at 50% or less continuous torque rating.
2) As speeds approach the maximum speed rating, some applications may require dynamically balanced couplings.
Clamp-Style

The construction of a Control-Flex® Coupling consists of two hubs (to be attached to the shafts) and a center flex member. This flexible element is affixed to the hubs through pins. Clamp-style hubs provide a positive shaft connection. Special modifications are available upon request.

The clamp-style Control-Flex® Couplings are available with a single flex disc for standard torque capacity, or with two flex discs for increased torque capacity and torsional stiffness. The clamp-style hub models come standard without keyways. Keyways are available upon request.

- Ideal for encoder Applications
- Easy Installation
- Space Saving
- Electrically Insulating
- Ultra low reaction loads
- Zero Backlash
- Maintenance Free

### Double Flex Disc Clamp-Style

<table>
<thead>
<tr>
<th>Part No.</th>
<th>CPL Diam (Inch) D2</th>
<th>Coupling Length (Inch) L</th>
<th>Hub Length (Inch) L1</th>
<th>Minimum Bore (Inch) D4</th>
<th>Max Bore (Inch) D4</th>
<th>Disc Inside Diam (Inch) D2</th>
<th>Disc Length (Inch) L2</th>
<th>Net Weight (Lb)</th>
<th>Inertia WK (Lb-in²)</th>
<th>Max. Peak Torque (In-Lb)</th>
<th>Max. Cont. Peak Torque (In-Lb)</th>
<th>Torsional Stiffness</th>
<th>Max Speed (RPM)</th>
<th>Par (inch)</th>
<th>Ang (Deg)</th>
<th>Axial (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C208P</td>
<td>0.748</td>
<td>0.78</td>
<td>0.219</td>
<td>0.125</td>
<td>3</td>
<td>0.375</td>
<td>0.28</td>
<td>0.021</td>
<td>0.0014</td>
<td>10</td>
<td>7</td>
<td>4.6</td>
<td>260</td>
<td>1.22</td>
<td>0.009</td>
<td>0.007</td>
</tr>
<tr>
<td>C211P</td>
<td>0.984</td>
<td>1.20</td>
<td>0.374</td>
<td>0.125</td>
<td>4</td>
<td>0.500</td>
<td>0.41</td>
<td>0.060</td>
<td>0.0077</td>
<td>24</td>
<td>17</td>
<td>9.9</td>
<td>570</td>
<td>2.63</td>
<td>0.012</td>
<td>0.009</td>
</tr>
<tr>
<td>C216P</td>
<td>1.457</td>
<td>1.48</td>
<td>0.394</td>
<td>0.125</td>
<td>4</td>
<td>0.750</td>
<td>0.56</td>
<td>0.145</td>
<td>0.039</td>
<td>81</td>
<td>57</td>
<td>31.3</td>
<td>1,790</td>
<td>8.33</td>
<td>0.019</td>
<td>0.014</td>
</tr>
<tr>
<td>C223P</td>
<td>2.205</td>
<td>2.20</td>
<td>0.591</td>
<td>0.375</td>
<td>8</td>
<td>1.188</td>
<td>0.71</td>
<td>0.483</td>
<td>0.286</td>
<td>274</td>
<td>192</td>
<td>110.0</td>
<td>6,300</td>
<td>29.41</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td>C231P</td>
<td>2.953</td>
<td>2.79</td>
<td>0.709</td>
<td>0.500</td>
<td>12</td>
<td>1.500</td>
<td>1.13</td>
<td>1.140</td>
<td>1.250</td>
<td>650</td>
<td>435</td>
<td>150.0</td>
<td>8,600</td>
<td>40.00</td>
<td>0.037</td>
<td>0.028</td>
</tr>
</tbody>
</table>

1) Maximum speed rating applicable at 50% or less continuous torque rating.
2) As speeds approach the maximum speed rating, some applications may require dynamically balanced couplings.
Bolted-Style

The construction of a Control-Flex® Coupling consists of two hubs (to be attached to the shafts) and a center flex member. This flexible element is affixed to the hubs through shoulder bolts. The Bolted-Style hubs incorporate keyway and setscrew shaft attachment. Flex discs are bolted for drop-out capability. Special modifications are available upon request.

- Easy Installation
- Space Saving
- Electrically Insulating
- Large Misalignment Capacity
- Zero Backlash
- Maintenance Free

The above drawing is valid for C030P, C060P and C075P. C045P will still use the triangular style hubs. Consult factory if necessary.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>CPL. Diam (Inch)</th>
<th>Coupling Length (Inch)</th>
<th>Hub Length (Inch)</th>
<th>Minimum Bore</th>
<th>Max Bore</th>
<th>Disc Inside Dia. (Inch)</th>
<th>Disc Diameter (Inch)</th>
<th>Net Weight (Lb)</th>
<th>Inertia Wk (Lb-In²)</th>
<th>Max. Peak Torque (In-Lb)</th>
<th>Max. Cont. Peak Torque (In-Lb)</th>
<th>Torsional Stiffness</th>
<th>Max Speed (RPM)</th>
<th>Par (Inch)</th>
<th>Ang (Deg)</th>
<th>Axial (Inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C030P</td>
<td>3.00</td>
<td>2.750</td>
<td>1.00</td>
<td>0.375</td>
<td>10</td>
<td>1.000</td>
<td>1.125</td>
<td>0.750</td>
<td>0.78</td>
<td>0.346</td>
<td>361</td>
<td>250</td>
<td>75.0</td>
<td>4,300</td>
<td>0.055</td>
<td>1.5</td>
</tr>
<tr>
<td>C045P</td>
<td>4.50</td>
<td>4.125</td>
<td>1.50</td>
<td>0.375</td>
<td>10</td>
<td>1.500</td>
<td>1.687</td>
<td>1.125</td>
<td>2.63</td>
<td>2.62</td>
<td>1,218</td>
<td>2,62</td>
<td>850</td>
<td>4,200</td>
<td>0.083</td>
<td>1.5</td>
</tr>
<tr>
<td>C060P</td>
<td>6.00</td>
<td>5.500</td>
<td>2.00</td>
<td>0.625</td>
<td>16</td>
<td>2.000</td>
<td>2.250</td>
<td>1,500</td>
<td>6.24</td>
<td>11.03</td>
<td>2,887</td>
<td>2,000</td>
<td>515.0</td>
<td>29,500</td>
<td>0.111</td>
<td>1.5</td>
</tr>
<tr>
<td>C075P</td>
<td>7.50</td>
<td>6.875</td>
<td>2.50</td>
<td>1.000</td>
<td>24</td>
<td>2.500</td>
<td>2,812</td>
<td>1,875</td>
<td>12.18</td>
<td>33.86</td>
<td>5,638</td>
<td>3,900</td>
<td>1,529.0</td>
<td>87,600</td>
<td>0.139</td>
<td>1.5</td>
</tr>
</tbody>
</table>

1) Maximum speed rating applicable at 50% or less continuous torque rating.
2) As speeds approach the maximum speed rating, some applications may require dynamically balanced couplings.
Schmidt Flexible Couplings provide precision for slightly misaligned shafts and are designed to adapt to various drive conditions. This coupling uses precision sintered parts for the hubs which are connected to the shafts. The molded flexible center disc is preloaded on the precision shafts of the end disc which give the coupling a zero backlash condition. Different configurations of the coupling and the choice of three durometers (soft, standard, stiff) of the center disc result in the ability of this coupling to be adapted to various drive conditions.

The Flexible Coupling may be built into a floating shaft design by including one coupling at each end of an intermediate shaft.

- Easy Installation
- Electrically Insulating
- Zero Backlash

Among the many applications where the Flexible Couplings are used include collators, printing machines, packaging machines and pumps.

### Schmidt Flexible Couplings

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Coupling Dimensions</th>
<th>Performance Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hub Diam (Inch) D</td>
<td>Coupling Length (Inch) B</td>
</tr>
<tr>
<td>Single Disc</td>
<td>F008A 0.750</td>
<td>0.812</td>
</tr>
<tr>
<td></td>
<td>F011A 1.125</td>
<td>1.375</td>
</tr>
<tr>
<td></td>
<td>F019A 1.900</td>
<td>2.250</td>
</tr>
<tr>
<td></td>
<td>F028A 2.812</td>
<td>2.812</td>
</tr>
<tr>
<td>Double Disc</td>
<td>F008B 0.750</td>
<td>0.837</td>
</tr>
<tr>
<td></td>
<td>F011B 1.125</td>
<td>1.688</td>
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<tr>
<td></td>
<td>F019B 1.900</td>
<td>2.875</td>
</tr>
<tr>
<td></td>
<td>F028B 2.812</td>
<td>3.375</td>
</tr>
<tr>
<td>Double Disc Spacer</td>
<td>F011C 1.125</td>
<td>2.125</td>
</tr>
<tr>
<td></td>
<td>F019C 1.900</td>
<td>3.500</td>
</tr>
</tbody>
</table>

Performance Data is based on couplings using standard durometer flex disks. Please contact the factory for performance data and availability of couplings using non-standard durometers.
Here's how:

The basic performance ratings listed in the table are maximum values. The graph below must be used to determine the coupling’s suitability in each application.

To see if a coupling is suitable for an application, see the selection procedure on this page.

When calculating torque requirements, see the service factor table provided on this page.

For special designs or requirements, consult the factory.

Selection Procedure:

To select the proper Control-Flex® coupling size, identify the application’s requirements for torque, misalignment, and service factor. Tentatively select a coupling based on these requirements. Find the selected coupling’s maximum rated torque and misalignment.

Compute the misalignment ratio by dividing the required parallel misalignment by the maximum rated parallel misalignment. If either angular or axial misalignment are required, multiply the existing misalignment ratio by 1.2. If both angular and axial misalignment are required, multiply the misalignment ratio by 1.4.

Next, compute the torque ratio. Divide the required torque including service factor by the maximum rated peak torque of the selected coupling. The actual running torque should never exceed the maximum continuous rated torque. Occasional torque spikes in the system should never exceed the maximum peak torque rating.

Now that the torque and misalignment ratios are known, their effect on the coupling can be compared to the couplings operating envelope. (See Chart)

If the lines representing the two performance ratios meet to the left of the shaded area, the selected coupling is appropriate for the application.

If the lines meet in the shaded area, the selected coupling is not appropriate for the application, and a larger coupling size must be selected.

Selection Formula:

\[ \text{HP/100 RPM} = \frac{\text{Required HP} \times \text{Service Factor}}{\text{RPM}} \times 100 \]

Recommended Service Factor

- No Shock Load . . . . . . 1.0
- Light Shock Load . . . . . 1.5
- Medium Shock Load . . . . 2.0
- Heavy Shock Load . . . . . 2.5
- Reversing Shock Load . . . 3.0

Zero-Max Configurable 3D CAD Downloads

New Zero-Max Configurable 3D CAD Downloads.

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ServoClass® Couplings
Designed for demanding servomotor applications. Zero backlash, high torsional stiffness coupling. Features flexible metal discs and keyless clamp-type mounting hubs. Couplings are RoHS compliant.

CD® Couplings
These high performance couplings outlast bellows and steel disc design couplings. The unique design of the composite disc enables the CD Couplings to withstand punishing applications and deliver high precision performance.

Schmidt® Offset Couplings
Schmidt® Offset Couplings are designed to handle high amounts of parallel offset up to 17.00". Standard models with torque capacities up to 459,000 in-lbs.

Overload Safety Couplings
Torq-Tender® Couplings provide reliable overload protection in any mechanical power transmission system. Torque ranges from 2 to 3000 in-lbs.

Control-Flex® Couplings
Control-Flex® Couplings are zero backlash couplings designed for encoder and instrumentation type applications.

ETP® Shaft Locking Connections
Designed for quick, easy and accurate assembly of mounted shaft components. Both inch and metric bore connections are available from stock.

Roh’lix® Linear Actuators
Roh’lix® Linear Actuators convert rotary motion into precise linear motion. Available in five models. Roh’lix® actuators have thrust ratings from 5 to 200 lbs. All models feature built in overload protection.

Adjustable Speed Drives
Easy to install and maintenance free. Zero-Max Drives offer infinitely variable speeds from 0 rpm to 1/4 of input rpm. 5 models with torque ranges from 12 in-lbs to 200 in-lbs.

Crown® Gear Drives
Crown® Gear Drives are available with 1:1 and 2:1 ratios. High quality AGMA class 10 spiral bevel gears. Stainless steel shafts and aluminum housings are standard on all Crown® Gear Drives.

OHLA® Overhung Load Adapters
OHLA® Overhung Load Adapters are designed to eliminate radial and axial loads from a hydraulic pump or motor. 11 models available for mounts from SAE A to SAE F.

Warranty. Zero-Max, Inc. the manufacturer, warrants that for a period of 12 months from date of shipment it will repair, or at its option, replace any new apparatus which proves defective in material or workmanship, or which does not conform to applicable drawings and specifications approved by the manufacturer. All repairs and replacements shall be F.O.B. factory. All claims must be made in writing to the manufacturer. • In no event and under no circumstances shall manufacturer be liable for (a) damages in shipment; (b) failures or damages due to misuse, abuse, improper installation or abnormal conditions of temperature, dirt, water or corrosives; (c) failures due to operation, intentional or otherwise, above rated capacities, and (d) non-authorized expenses for removal, inspection, transportation, repair or rework. Nor shall manufacturer ever be liable for consequential and incidental damages, or in any amount greater than the purchase price of the apparatus. • Zero Max, Inc. reserves the right to discontinue models or to change specifications at any time without notice. No discontinuance or change shall create any liability on the part of Zero-Max, Inc. in respect to its products in the hands of customers or products on order not incorporating such changes even though delivered after any such change. • This warranty is in lieu of all other warranties, express or implied, including (but not limited to) any implied warranties of merchantability or fitness for a particular purpose. The terms of this warranty constitute all buyer’s or user’s sole and exclusive remedy, and are in lieu of any right to recover for negligence, breach of warranty, strict tort liability or upon any other theory.

Any legal proceedings arising out of the sale or use of this apparatus must be commenced within 18 months of the date of purchase. • CAUTION: Rotating equipment must be guarded. Also refer to OSHA specifications and recommendations. • Zero-Max®, CD®, ETP®, ServoClass®, Torq-Tender®, Control-Flex®, Posi-Lok®, Roh’lix®, Crown®, Schmidt® and OHLA® are registered trademarks of Zero-Max, Inc. in U.S.A.

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