**When Selection is Based on Motor**

1. Please select appropriate coupling type based on the motor type and the application in which it is to be used.
   - Motor type and Coupling type are not limited to the following combinations. Select after confirming each product page.
   - When selection is by torque, select from 2.

   **Coupling Easy Selection Chart**

<table>
<thead>
<tr>
<th>Type</th>
<th>Zero Backlash</th>
<th>High Torque</th>
<th>Servo Stepping Motor</th>
<th>Compact Servo</th>
<th>General Purpose Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>External</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Calculate the compensation torque applied to coupling

   **Connection with Servo Motors / Stepping Motors**

   Calculate the Compensation Torque by multiplying Compensation Factor with the Motor's Peak Torque. For Compensation Factor, please refer to product page. Choose a coupling with the torque capacity (shaft slip torque) higher than the calculated compensation torque.

   **Compensation Torque + Motor's Peak Torque + Compensation Factor**

   **Connection with General-purpose Motor**

   Calculate the load torque, and the compensation torque should be 1/3 to 1/4 of the load torque. Choose a coupling with the load torque capacity (shaft slip torque) higher than the calculated compensation torque.

   **Transmission Power (kW)**

   Compensated Torque + Load Torque (kW) = 1_x_1/8

3. Check coupling tolerance

   Check the Tolerance Range and select angular and linear misalignments. Make sure to check the clearance of the device.

4. Select shaft bore

   Check if the outer diameter of the coupling bore is included in the inner diameter range of the coupling. If the bore diameter is not included, select a larger size.

5. Select shaft connection method

   Select in accordance with the clamp, flange coupling, keyless clamping applications.

6. Final confirmation

   Refer to the above Coupling Easy Selection Chart, and select.

**How to Create Coupling Part Number**

Ex) TYPE: GCPS When D=33

```
<table>
<thead>
<tr>
<th>Part Number (Type, D)</th>
<th>I.D. 1 (d1)</th>
<th>I.D. 2 (d2)</th>
<th>d1/d2</th>
</tr>
</thead>
<tbody>
<tr>
<td>GCPS33-10-11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**Selection Example**

Select the basis of the following Example.

1. Select Coupling Type
   - Refer to the above Coupling Easy Selection Chart, and select.
   - Coupling Type: GCPS / GCPSW / GCPW / GCPW39

2. Calculate the compensation torque applied to coupling
   - Conditions: Servo Motor's Peak Torque: 3.0N
   - Servo Motor's Rated Torque: 1.0N
   - Allowable Lateral Misalignment: 0.1mm
   - Allowable Angular Misalignment: 1°
   - Axial Misalignment: 0.1mm

3. Check coupling tolerance
   - Allowable Lateral Misalignment: 0.2mm
   - Allowable Angular Misalignment: 1°
   - Allowable Axial Misalignment: 0.1mm
   - Allowable Peak Torque: 1000N
   - Allowable Rotational Speed: 1000rpm

4. Select shaft bore
   - Check if the bore size and shaft size can be selected in GCPS39.
   - 4mm and 5mm shafts can be selected under the category of D=39 in GCPS39.

5. Selecting the method to fasten coupling
   - Choose a coupling with high-strength clamping applications.

6. Check the tightening torque
   - Check if the tightening torque is met.

7. Final assembly
   - Adjust the shaft insertion as per the dimensions given in the catalogue.
   - Do not fasten the prescribed torque at once. Alternate between left and right clamping and tighten it two or three times.

---

**Terminology for Couplings·Assembly Procedure**

- **Allowable Torque**
  - A torque that a coupling can continuously transmit. Select a allowable torque according to selection method given on P.1061 which would ensure that using load torque is less than the allowable torque of the coupling.

- **Slip Torque**
  - A torque which spins the fastened shaft and coupling, and slides out. Select the shaft slip torque when it is less than the allowable torque according to the selection method given on P.1061, such that the load torque is less than the shaft slip torque of the coupling.

- **Misalignment**
  - An error between 2 coupling shaft centers. Misalignments are Angular Misalignment, Lateral Misalignment and Axial Misalignment. Aligning the shafts to ensure that misalignment between two shafts is less than the mentioned allowable misalignment. When two or more misalignments are combined, the allowable value for respective misalignments is 1/2. (Explanation regarding misalignment is as follows)

  - **Angular Misalignment**
    - Error between two coupling shafts.

  - **Lateral Misalignment**
    - Error between two coupling shafts.

  - **Axial Misalignment**
    - Error between two coupling shafts.

- **Static Torsional Spring Constant (Torsional Rigidity)**
  - Torsional rigidity of the coupling. It shows the phase difference between the rotating direction of input shaft and output shaft, when torque is applied to the coupling. The value given in the catalogue indicates the torsional rigidity for the whole coupling. The responsiveness increases as this value increases, and highly-precise rotation control becomes possible.

- **Max. Rotational Speed**
  - Highest available rotational speed. Balancing is necessary when using for high speed rotation, as dynamic balance is not considered in this value.

- **Moment of Inertia**
  - Inertia moment of the coupling. Rotatory inertia increases in respect to increase in the value of inertia moment.

- **Zero Backlash**
  - A torque which spins the fastened shaft and coupling, and slides out. Select the allowable torque when it is less than the allowable torque of the coupling.

- **Tightening Torque**
  - A bolt tightening torque to fasten the coupling to the shaft. Use torque wrench to tighten the coupling to prescribed torque.

- **Temperature Compensation Factor**
  - Select coupling types such as Throne or Jew Types have allowable torque values that vary depending on the operating temperature. Select coupling by multiplying coupling Allowable Torque, Max. Rotational Speed, etc. by Temperature Compensation Factor in the right hand table.

**Assembly Procedure**

1. Confirm the torque tightening applications, are loosened, and wipe clean the inner bore and shaft surfaces off dust and oils.
2. Insert the shaft into the coupling while taking care not to apply excessive compressive/tenso forces on the disc section.
3. Adjust the coupling in left-right hub concentration in precise manner, using the jigs. Quickly check the angular and lateral misalignment using coupling as a base.
4. Fasten the coupling in left-right hub concentration in precise manner, using the jigs. Quickly check the angular and lateral misalignment using coupling as a base.
5. 3-Quick Lateral Misalignment Check (Fig. 4): Slide the coupling in axial direction while the bolts are loosened and check that it is moving smoothly. Center the coupling properly as the single type coupling does not allow lateral misalignment.
6. 3-2Quick Angular Misalignment Check (Fig. 5): Rotate the coupling shaft and usually check for smooth and even movement.
7. 4Fasten coupling using the torque wrench. Do not fasten the prescribed torque at once. Alternate between left and right clamping and tighten it two or three times.

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**Footnotes**

* MT - Mini Type
* Mini Type and Coupling type are not limited to the following combinations. Select after confirming each product page.
* When selection is by torque, select from 2.