

# CPL Flexible Shaft Couplings

- Maximum mechanical, thermal, and electrical protection for encoder shaft connections
- Three-beam helical design restricts torque "windup"
- Clamp attachment. No setscrews to score or pit shafts
- Full range of models designed to match specific encoders are supplied with shaft size adaptors



## APPLICATION/INDUSTRY

CPL Series couplings are carefully matched to the requirements of our encoders and are an excellent, low cost way to protect your investment and avoid equipment downtime.

## DESCRIPTION

The method of coupling rotational input to an encoder is an important consideration.

Excessive shaft loading and poor environmental isolation are the leading causes of encoder failure and operational errors.

Even the most carefully designed machinery will produce shaft forces due to inherent thrusts, and eccentricities. Since encoder shafts and bearings must be engineered to have very restricted axial and radial play, using a Dynapar brand CPL Series coupling affords maximum protection against these common hazards.

A unique 3-beam design divides the coupling's helix into three segments.

This feature maintains transfer accuracy by restricting windup during torque, yet retains full protective flexibility.

In addition to controlling mechanical shaft and bearing loads, the coupling further protects the encoder by providing a high degree of electrical and thermal isolation between coupled shafts. This is accomplished with a phenolic insulator-insert that blocks passage of potentially damaging heat, electrical currents and static charges.

Each CPL Series coupling is supplied with two insulator-inserts (three for metric models) that allow it to fit standard shaft diameters (see Models table, Secondary Bore).

Attachment at both ends is via integral 360 clamps that firmly grip the encoder shaft and input shaft, remaining slip-free to the rated torque of the coupling.

## SPECIFICATIONS

### STANDARD OPERATING CHARACTERISTICS

Predicted life: Tested in accordance with MIL-HDBK-5A for infinite life.

Material: 2024-T3.5 QQA225/6 aluminum with MIL A8625 Type II black anodize.

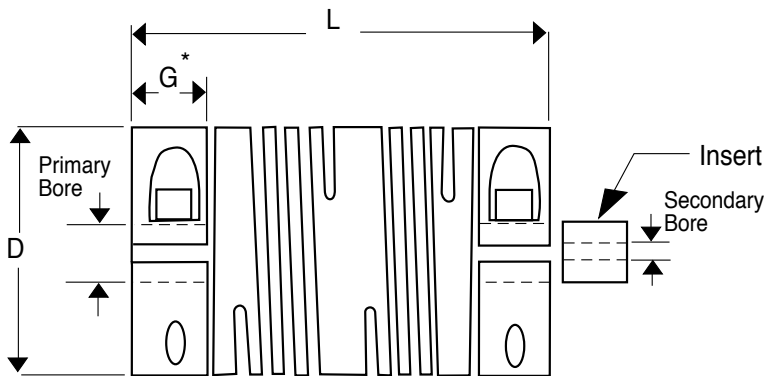
Insert/insulator: G10 glass filled phenolic. Sizes provided per Models table, Secondary Bore

Clamps: Integral at each end, with black oxide finish hex socket cap screws. Grip is secure to peak torque rating of the coupling per Models table, Peak Torque

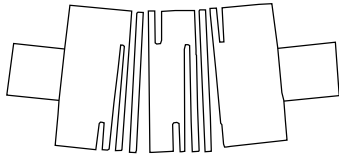
Peak Torque: Per Models table, Peak Torque. Safety factor should be determined considering acceleration and deceleration loads, etc.

### APPROXIMATE DIMENSIONS

Refer to Models Table for dimensions of specific models.



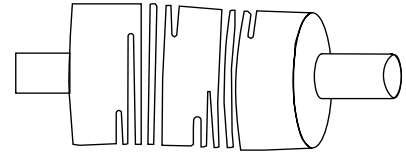
\*Shafts may extend beyond the clamp-grip-area to within the flexure area, but must not butt.



**Angular Misalignment**

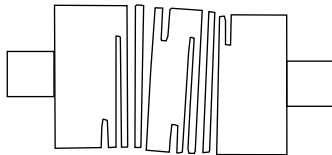
When the center lines of the shafts extend and form an obtuse angle. The intersection of this obtuse angle should be at the center of the flexible beam area.

**Proper shaft coupling protects precision encoders from all of these common hazards. Use of a well engineered coupling can save many times its cost by eliminating failures due to excessive shaft loading, electrical leakage, and thermal stress.**



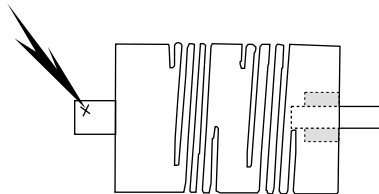
**Skewed Misalignment**

The shafts are not in the same plane. Center line extension is not parallel or intersecting. There can be two obtuse angles of varying degrees. These angles should be centered within the coupling.



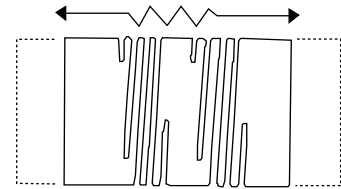
**Parallel Misalignment**

The shaft's center lines are parallel but offset. When the coupling is installed there should be two equal obtuse angles within the coupling.



**Electrical and Thermal Stress**

The supplied insulator insert blocks transfer of static charges, leakage currents, and heat to the encoder. These stresses have been proven to be contributory to bearing damage as well as electrical failures.



**Axial Motion**

Motion in the direction of the center lines of the shafts, such as motor shaft "thrust". Usually created by loose bearings or other elements that do not restrain the motion.

**ORDERING INFORMATION**

Coupling Model Numbers should be selected first by Encoder Application duty, then by specific encoder shaft size and drive shaft size. Most applications will use the Primary Bore as the encoder end, but it is permissible to reverse the coupling to accommodate specific shaft combinations. Each coupling is supplied with Secondary Bore insulator inserts as listed.

Model Number	Primary Bore	Secondary Bore	Dimensions			Maximum Misalignment			Peak Torque (lb. - in.)	Encoder Application (Series)
			D= Dia.	L= Len.	G= Grip	Angular	Parallel	Axial		
CPL00750125	1/8	1/8, 3/16	0.750	0.875	0.230	3°	0.020	0.035	35	Very Light Duty E11, E15,
CPL00750187	3/16	3/16, 1/4								
CPL00750250	1/4	1/8, 1/4								
CPL01000187	3/16	3/16, 1/4	1.000	1.250	0.290	5°	0.025	0.060	45	Light Duty E20, EC80, 523, 42, 525, 21/22, 31/32
CPL01000250	1/4	1/4, 3/8								
CPL01000375	3/8	3/16, 3/8								
CPL01250250	1/4	1/4, 3/8	1.250	1.250	0.348	7°	0.038	0.060	75	Medium Duty 42, 525, 625, 21/22, 60
CPL01250375	3/8	3/8, 1/2								
CPL01250500	1/2	1/4, 1/2								
CPL01500375	3/8	3/8, 1/2	1.500	1.500	0.400	10°	0.035	0.060	100	Heavy Duty 625, EX625, 60, 60P
CPL01500500	1/2	1/2, 5/8								
CPL01500625	5/8	3/8, 5/8								
CPL02000875	7/8	3/8, 5/8	2.000	2.000	0.450	10°	0.040	0.060	300	Extra Heavy Duty 625, 60P
CPL02001000	1	3/8, 5/8								
CPL02001125	1 1/8	3/8, 5/8								
CPLM1000250	1/4	4, 5, 6 mm	1.000	1.250	0.290	5°	0.025	0.060	45	Light Duty E20, EC80, 523, 525, 21/22
CPLM1250375	3/8	6, 8, 10 mm	1.250	1.250	0.348	7°	0.038	0.060	75	Medium Duty 42, 525, 625, 21/22
CPLM1500500	1/2	6, 8, 10 mm	1.500	1.500	0.400	10°	0.035	0.060	100	Heavy Duty 60, 60P

- Note:**
1. For extremely high acceleration rates, consider using the next larger coupling size.
  2. When coupling an encoder to a shaft which is stepped down from a larger size, always use a heavy-duty or extra-heavy-duty coupling.
  3. For maximum life, encoders must be installed and aligned such that the encoder shaft to driving shaft alignment is within the 0.003" TIR NEMA standard despite the maximum misalignment specified.