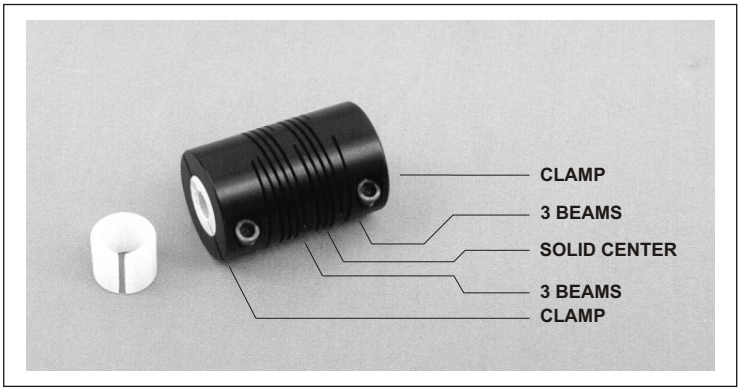
F SERIES

Precision Flexible Shaft Coupling

The F Series is a highly accurate coupling used to connect encoders to machinery. The F Series design provides both extremely high accuracy and long life. Some provide female coupling to smaller shafts, others provide pilot bore coupling to large shafts.



DESCRIPTION:

The "F Series" - one piece multi-overlapping curved beam flexible coupling is the patented result of years of testing. Tests were made on combinations from one long beam up to two sets of six beams. The results showed that two sets of three beams with three point suspension delivered superior performance under all misaligned conditions at high and low speeds with minimum windup, rotary oscillation and no hysteresis.

The beams are cut with precision jeweler's saws to form six double tapered compound curved beams having sufficient column strength to resist buckling when in compression and avoid elongation while in extension. The space between the beams is calculated and cut to allow the beams to flex without restraint.

The design is continually self compensating, with the torque being continually averaged between each of the three beams, velocity remaining constant and with windup and rotary frequency held to a minimum regardless of misalignment.

Each new design is tested in excess of MIL-HDBK-5A, rotating beam, fatigue data for 2024T4 QQA-225/6. This military specification indicates that if a beam is flexed though a controlled arc (our maximum misalignment rating) for six million cycles, it had reached a point on the infinity curve which indicates the coupling will have infinite life. The coupling life is dependent upon using it within its ratings and installation procedures. Dimensional checks and destructive static test are performed at fixed intervals during production.

Our goal is to produce a flexible coupling that will give each of our customers and their products the added trouble-free life that is required in the high technology and ever increasing accuracy of today's market.

PART NUMBER	BORE SIZES	Dia. +.000 -.010	Length ± .020	MAXIMUM MISALIGNMENT			CLAMP SCREW (see notes 2 & 6)	PEAK TORQUE (see note 3) in. lb.	WIND UP min. per in. oz. (see note 4)
				Angular	Parallel	Axial Motion			
F1	.250” to .250”	1.00”	1.50”	7°	.025”	.040”	6-32	45	.40
F2	.375” to .375”	1.00”	1.50”	7°	.025”	.040”	6-32	45	.40
F3	.3125” to .3125”	1.00”	1.50”	7°	.025”	.040”	6-32	45	.40
F4	1/4”, 5/16”, 3/8” to 1/4”, 5/16”, 3/8”. Diameters must be different (see note 8)	1.00”	1.50”	7°	.025”	.040”	6-32	45	.40
F5	1/4” pilot bore to 1/4”, 5/16”, or 3/8” encoder shaft (see note 9)	1.00”	1.80”	7°	.025”	.040”	6-32	45	.40
F6	3/8” pilot bore to 1/4”, 5/16”, or 3/8” encoder shaft (see note 9)	1.00”	1.80”	7°	.025”	.040”	6-32	45	.40

Note 1: THRU BORE - The flexible beams have an inside relief to prevent the shafts from touching at the maximum misalignment.

Note 2: CLAMPS are an integral part of the coupling and cannot be removed. When the screws are properly tightened, the clamp will hold to the torque rating of the coupling.

Note 3: PEAK TORQUE is the maximum torque rating. The correct dynamic torque safety factor should be determined by the customer in accordance with the acceleration, deceleration, reversals and / or sudden stop loads, etc.

Note 4: TORQUE RATING is in inch pounds, and WIND UP is in minutes per inch ounces and they are at maximum misalignment.

Note 5: COUPLING MATERIAL is 2024-T3.5 QQA225/6 aluminum with MIL A8625 Type II black anodize.

Note 6: CAP SCREWS are hex socket, steel, black oxide finish.

Note 7: CAUTION - Remove oil from the shafts.

Note 8: F4 COUPLING comes with a .250", a .375" and a .3125" insert to allow coupling of two different diameter shafts with one kit.

Note 9: See SDOC-110-040 for more information, photos, and drawings on F5 and F6 couplings.

FSI Encoders Controls Sensors

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