

MIC SERIES

MINIATURE COUPLINGS

FEATURES

- For use with Magtrol TM, TMB, TMHS and new TS In-Line Torque Transducers, as well as HD, WB and PB Dynamometers, and HB Brakes
- High Torsional Stiffness
- Low Inertia
- Low Weight
- High Rotational Speed
- Electrically Isolated Version (available on request)
- Diameter Range: 2.38...28 mm
- Version with Double Clamping Screws (available on request)



Fig. 1: MIC-5 | Double Element Miniature Couplings

DESCRIPTION

MIC Miniature Couplings provide the ideal complement to Magtrol's TM/TMB/TMHS/TS In-Line Torque Transducers, when they are to be mounted in a drive train. They can also be used with any Magtrol Hysteresis (HD Series), Eddy-Current (WB Series), Powder Brake (PB Series) Dynamometer, and Hysteresis Brake (HB Series).

The couplings consist of one (MIC-6) or two (MIC-5) disc packs, two clamping hubs and a spacer. They are both torsionally stiff and flexible in order to compensate for axial and angular misalignment when connecting two shaft ends. The MIC-5 (double-element coupling) also provides compensation for radial misalignment.

On demand, MIC Series coupling are available in electrically isolated version, suitable for temperature up to 100 °C (125 °C max. temperature, short term).

APPLICATIONS

In a drive train installation, double-element miniature couplings are the ideal complement, although single-element couplings can be used for low speed applications in a suspended installation of the torque sensor.

The higher the speed of the application, the more care is required in selecting the coupling and assembling (alignment and balancing) the drive train configuration. Your Magtrol sales representative can assist you in choosing the right coupling for your transducer.

SYSTEM CONFIGURATION

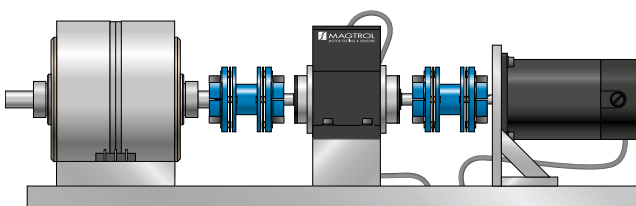


Fig. 2: **Supported installation**
Mandatory for high speed applications; uses MIC-5 double-element couplings.

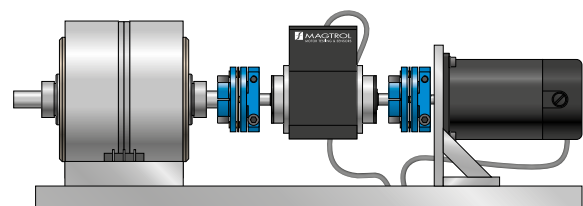


Fig. 3: **Suspended installation**
For low speed applications only; uses MIC-6 single-element couplings to create a shorter drive train.

SPECIFICATIONS

MODEL	MIC-X-0018	MIC-X-0039	MIC-X-0156	MIC-X-0617	MIC-X-2470	MIC-X-3620
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RATINGS

Rated Torque	[N·m]	0.18	0.39	1.56	6.17	24.7	36.2
Maximum Torque	[N·m]	0.26	0.54	2.19	8.64	34.6	50.7
Maximum Speed ^{a)}	[rpm] or [min ⁻¹]	50 000	50 000	50 000	45 000	35 000	30 000
Torsional Spring Rate ^{b)}	[N·m/rad] x 10 ²	1.586	3.89	25.986	39.768	103.5	161.76

MISALIGNMENT

Axial ^{b)}	[mm]	0.4				0.8	
Radial ^{c)}	[mm]	0.36	0.48	0.49	0.41		0.36
Angular ^{b)}	[°]		2	1.5	1		0.7

MOMENT OF INERTIA

MIC-5-xxxx ^{d)}	[kg·m ²] x 10 ⁻⁶	- ^{e)}	2.33	14.01	37.99	104.28	203.55
MIC-6-xxxx ^{d)}	[kg·m ²] x 10 ⁻⁶	- ^{e)}	1.83	11.10	28.56	78.61	159.40

MECHANICAL CHARACTERISTICS

Diameter Range ^{f)}	ø [mm] H7	2.38 - 7	3 - 10	4 - 14	6 - 18	8 - 24	7.5 - 28
Balancing Quality		G2.5 according to ISO 1940					
Weight max.	[g]	- ^{e)}	28	77	133	260	355

- a) The specified maximum speed may require specific balancing. By default, Magtrol delivers couplings without balancing.
- b) Axial and angular misalignments and torsional spring rate refer to single-element coupling (MIC-6-xxxx).
- c) Radial misalignments refer to double element coupling (MIC-5-xxxx).

- d) At maximum bore
- e) Value available on request.
- f) The standard versions are manufactured with integer values; the standard tolerance is H7. All diameters and tolerances are possible, within the defined max. range. Please contact our sales department.

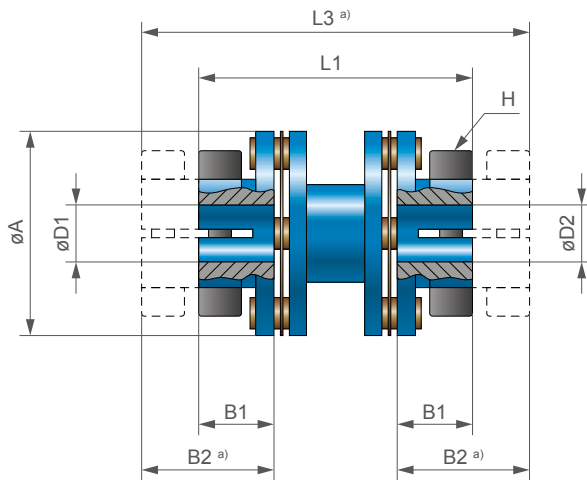
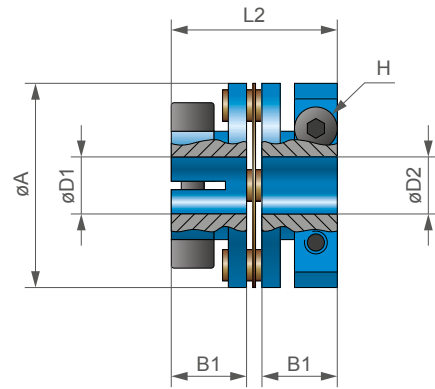
SELECTION TABLE

In order to ensure a sufficient safety margin, Magtrol recommends that couplings be sized according to the maximum torque supported by the torque transducer. It is strongly recommended to protect all rotating machine parts accord-

ing to Safety Machine Norms for avoiding injuries. For further information, please contact our sales network who will be able to provide you with personal advice.

COUPLING	DIAMETER RANGE	TORQUE TRANSDUCER STANDARD MODELS										
			TM 301	TM 302	TM/TMB / TMHS 303	TM/TMB / TMHS 304	TM/TMB / TMHS 305	TM/TMB / TMHS 306	TM/TMB / TMHS 307	TM/TMB / TMHS 308	TM/TMB / TMHS 309	
		TS 100	TS 101	TS 102	TS 103	TS 104	TS 105	TS 106	TS 107		TS 109	
MIC-X-0018	2.38 - 7 mm	X										
MIC-X-0039	3 - 10 mm		X	X								
MIC-X-0156	4 - 14 mm		X	X	X							
MIC-X-0617	6 - 18 mm					X	X					
MIC-X-2470	8 - 24 mm							X	X	X ^{a)}		
MIC-X-3620	7.5 - 28 mm									X ^{a)}	X	

- a) To avoid slipping on TM 308 (20 Nm / ø10 mm / smooth shaft), Magtrol recommends the use of special couplings with double clamping screws on each side (please contact our sales representative)

DIMENSIONS

MIC-5-xxxx
(Double-element coupling)

MIC-6-xxxx
(Single-element coupling)

NOTE: Original dimensions are in metric units. Dimensions converted to imperial units have been rounded up to 3 decimal places.

MODEL	UNITS	øA	B1	B2 ^{a)}	øD1 or øD2 min - max ^{b)}	L1	L2	L3 ^{a)}	H	FASTENING TORQUE ^{c)}	WEIGHT	
MIC-5-0018	mm	19.1	7	N/A	2.38 - 7	26	N/A	N/A	M2.5	N/D ^{c)}	- ^{d)}	
	in	0.752	0.276		0.10 - 0.27	1.024						15.6
MIC-6-0018	mm	19.1	7		2.38 - 7	N/A	M3				0.76 N·m	
	in	0.752	0.276		0.10 - 0.27	N/A						
MIC-5-0039	mm	25.4	9		3 - 10	34	N/A		M4	3.05 N·m	0.028 kg	
	in	1	0.35		0.12 - 0.39	1.34						0.062 lb
MIC-6-0039	mm	25.4	9		3 - 10	N/A	20.2		0.79	M5	6.05 N·m	
	in	1	0.35		0.12 - 0.39	N/A						1.146
MIC-5-0156	mm	35.8	13.2		4 - 14	48.0	N/A		N/A	M6	10.5 N·m	
	in	1.409	0.520		0.16 - 0.55	1.890						0.170 lb
MIC-6-0156	mm	35.8	13.2		4 - 14	N/A	29.1		1.146	M5	6.05 N·m	
	in	1.409	0.520		0.16 - 0.55	N/A						1.441
MIC-5-0617	mm	44.5	13.4		6 - 18	54.0	N/A		N/A	M6	10.5 N·m	
	in	1.752	0.528		0.24 - 0.71	2.126						0.293 lb
MIC-6-0617	mm	44.5	13.4		6 - 18	N/A	30.4		1.197	M5	6.05 N·m	
	in	1.752	0.528		0.24 - 0.71	N/A						1.614
MIC-5-2470	mm	57.4	16.1	26.1	8 - 24	66.0	N/A	86	M5	6.05 N·m	0.260 kg	
	in	2.260	0.634	1.028	0.31 - 0.94	2.598						3.386
MIC-6-2470	mm	57.4	16.1	N/A	8 - 24	N/A	36.6	N/A	M6	10.5 N·m	0.195 kg	
	in	2.260	0.634	N/A	0.31 - 0.94	N/A						1.441
MIC-5-3620	mm	64	18	28	7.5 - 28	71	N/A	91	M6	10.5 N·m	0.355 kg	
	in	2.519	0.708	1.102	0.29 - 1.10	2.795						3.583
MIC-6-3620	mm	64	18	N/A	7.5 - 28	N/A	41	N/A	M6	10.5 N·m	0.278 kg	
	in	2.519	0.708	N/A	0.29 - 1.10	N/A						1.614

a) The MIC-5-2470 and MIC-5-3620 models are also available in a version with 4 clamping screws for higher torque transmission. (specifically recommended for TM308)

b) The standard versions are manufactured with integer values; the standard tolerance is H7. All diameters and tolerances are possible, within the defined max. range. Please contact our sales department.

c) For small range torque sensors (TM/TMB/TMHS 301, 302, 303), tightening of coupling should be done with caution, in order to not damage the measuring section of sensor.

OPTIONS & ACCESSORIES

TS & TM SERIES IN-LINE TORQUE SENSOR



Fig. 4: TM313 & TS 106
In-line Torque Sensor

Magtrol's In-Line Torque Transducers deliver precise torque and speed measurement over a very broad range. Each model has an integrated conditioning electronic module providing 0 to ±10VDC torque output and an open collector speed output or TTL

TM Series Torque Transducers are very reliable, providing high overload protection, excellent long term stability and high noise immunity. All transducer models employ our unique non-contact differential transformer torque measuring technology. This measuring technology offers many benefits, most notably that no electronic components rotate during operation. To provide customers with several price/performance options, Magtrol offers three torque transducer models: basic model (TMB Series), high accuracy (TM Series) and high speed with high accuracy (TMHS). The integrated electronic circuit, supplied by single DC voltage, provides torque and speed signals without any additional amplifier. The transducer is a stand-alone measuring chain.

TS Series In-Line Torque Sensors provide extremely accurate torque and speed measurement. Each model has an integrated conditioning electronic module providing 0VDC to ±5VDC (±10VDC), as well as a USB interface which can be directly connected to a computer. The sensor is delivered with software allowing easy connection and data acquisition. A speed encoder provides 360PPR (Pulse Per Revolution) in Tach A, Tach B and Index reference Z (1PPR). TS Series sensor models are strain gauge-based measuring systems with imbedded telemetry signal transmission. Available torque ranges from 0.05N·m to 10N·m. Higher torque ranges will be available soon.

CUSTOM MOTOR TEST SYSTEMS



Fig. 5: Custom Motor Test Bench for Automotive Industry

For many years, Magtrol has specialized in the production of customized test benches (CMTS). Designed to test a multitude of motors such as electric, pump, gear motors or any other device in various environments and test conditions (temperature, production, laboratory,...), Magtrol offers a wide range of solutions from a simple mechanical assembly to a turnkey system integrating the mechanical elements and also all the electronic components necessary to perform the test (including software).

With more than 60 years of experience, Magtrol is a world leader in the production of test benches for automotive components, 2Q (2 Quadrant) or 4Q (4 Quadrant) test systems, drive torque measurement, surgical or dental instruments and medical devices.

ORDERING INFORMATION

ORDERING NUMBER	MIC	-	-	-	-	-	-	/	-	-	-
5 : Double-element coupling											
6 : Single-element coupling											
0018, 0039, 0156,, 3620 : coupling models											
XX : øD1 diameter in mm ^{a)}											
H7, XX : Tolérance for øD1 ^{b)}											
XX : øD2 diameter in mm ^{a)}											
H7, XX : Tolérance for øD2 ^{b)}											

- a) Standard diameters are expressed in whole numbers and must be contained within the diameter range. For other diameters, please contact our sales department.
- b) The standard bore tolerance is H7 (ISO tolerance system). For other tolerances, please contact our sales department.

Example: MIC Series Coupling, double-element, model 0039, ø10 H7 and ø12 H7 would be ordered as follows:
MIC-5-0039-10H7/12H7

MIC Series coupling, single-element, model 2470, ø9.4 H7 and ø7.5 JS6:
please contact our sales department