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 toque 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

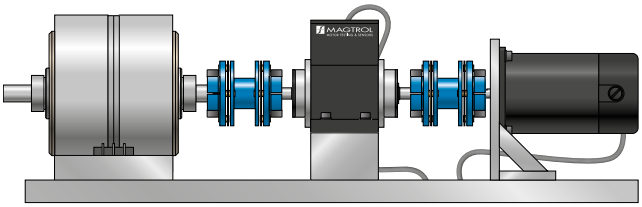


Fig. 2: **Supported installation**
Mandatory for high speed applications; uses MIC-5 double-element couplings.

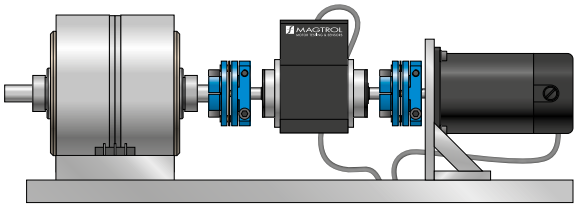


Fig. 3: **Suspended installation**
For low speed applications only; uses MIC-6 single-element couplings to create a shorter drive train.

SPECIFICATIONS

MODEL		MIC-X-0018	MIC-X-0039	MIC-X-0156	MIC-X-0617	MIC-X-2470	MIC-X-3620
RATINGS							
Rated Torque	[N·m]	0.18	0.39	1.56	6.17	24.7 g)	36.2 g)
Maximum Torque	[N·m]	0.26	0.54	2.19	8.64	34.6 g)	50.7 g)
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		G 2.5 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.

g) CAUTION: for small diameters, the torque can be reduced < 40 %. For more information, please contact our sales department.

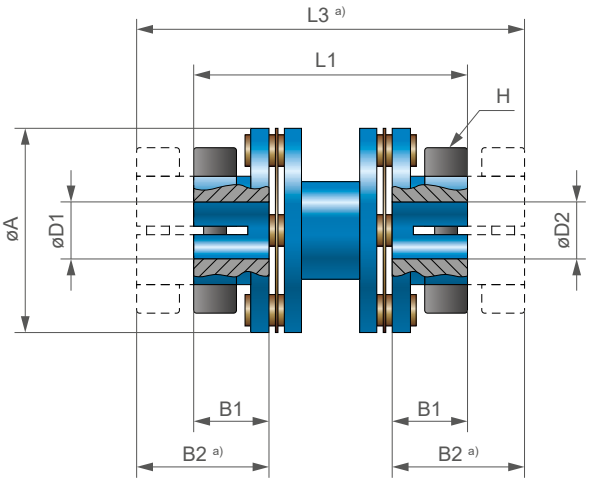
SELECTION TABLE

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 according 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.

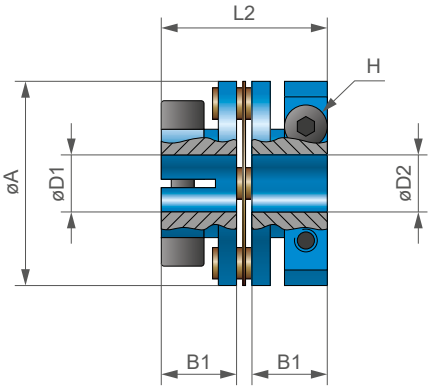
COUPLING	DIAMETER RANGE	TORQUE TRANSDUCER STANDARD MODELS									
			TM 301	TM 302	TM/TMB/ TMHS 303	TM/TMB/ TMHS 304	TM/TMB/ TMHS 305	TM/TMB/ TMHS 306	TM/TMB/ TMHS 307	TM/TMB/ TMHS 308	TM/TMB/ TMHS 309
		TS 100	TS 101	TS 102	TS 103	TS 104	TS 105	TS 106	TS 107		TS 109
MIC-X-0018	2.38 - 7 mm	X									
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					
MIC-6-0018	mm	19.1	7		2.38 - 7	N/A	15.6				- d)
	in	0.752	0.276		0.10 - 0.27						
MIC-5-0039	mm	25.4	9		3 - 10	34	N/A		M3	0.76 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				0.022 kg
	in	1	0.35		0.12 - 0.39		0.79				0.048 lb
MIC-5-0156	mm	35.8	13.2		4 - 14	48.0	N/A		M4	3.05 N·m	0.077 kg
	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				0.062 kg
	in	1.409	0.520		0.16 - 0.55		1.146				0.137 lb
MIC-5-0617	mm	44.5	13.4		6 - 18	54.0	N/A				0.133 kg
	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				0.100 kg
	in	1.752	0.528		0.24 - 0.71		1.197				0.220 lb
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			0.573 lb
MIC-6-2470	mm	57.4	16.1	N/A	8 - 24	N/A	36.6	N/A			0.195 kg
	in	2.260	0.634		0.31 - 0.94		1.441				0.430 lb
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			0.782 lb
MIC-6-3620	mm	64	18	N/A	7.5 - 28	N/A	41	N/A			0.278 kg
	in	2.519	0.708		0.29 - 1.10		1.614				0.613 lb

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/TMHS301, 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: TM 313 & 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 ±10 VDC torque output and an open collector speed output or TTL

TM 300 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 100 Series In-LineTorque Sensors provide extremely accurate torque and speed measurement. Each model has an integrated conditioning electronic module providing 0 VDC to ±5 VDC (±10 VDC), 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 360 ... 5000 PPR* (Pulse Per Revolution) in Tach A, Tach B and Index reference Z (1 PPR). TS 100 Series sensor models are strain gauge-based measuring systems with imbedded telemetry signal transmission. Available torque ranges 0.02 ... 500 N·m. *depending on the model.

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 departement

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ISO 9001 BUREAU VERITAS Certification
MIC SERIES - EN 10/2023