

COUPLICON[®] · MINI

Miniature Coupling Series

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Introduction

The primary purpose of flexible couplings is to transmit torque while allowing for shaft misalignment, but there are many cases in which it simultaneously necessary that the rotation angle is transmitted exactly. In high-speed, precision devices, the need for couplings that can correctly transmit torque and rotation angle has increased dramatically in recent years. To answer this need, NBK has standardized several flexible couplings under the name “Couplicon[®] · Mini.” Here we will introduce our new MJT and MCT couplings.

MJT



Photo 1

The MJT (see Photo 1) is a rubber Jaw-type shaft coupling. Six outer diameters from 14mm to 65mm, four types shaft attachments, as well as three sleeve

hardnesses are standard with all finished bore sizes. The clamping type MJT and its measurement and performance specifications are shown in Figure 1 and Table 1.

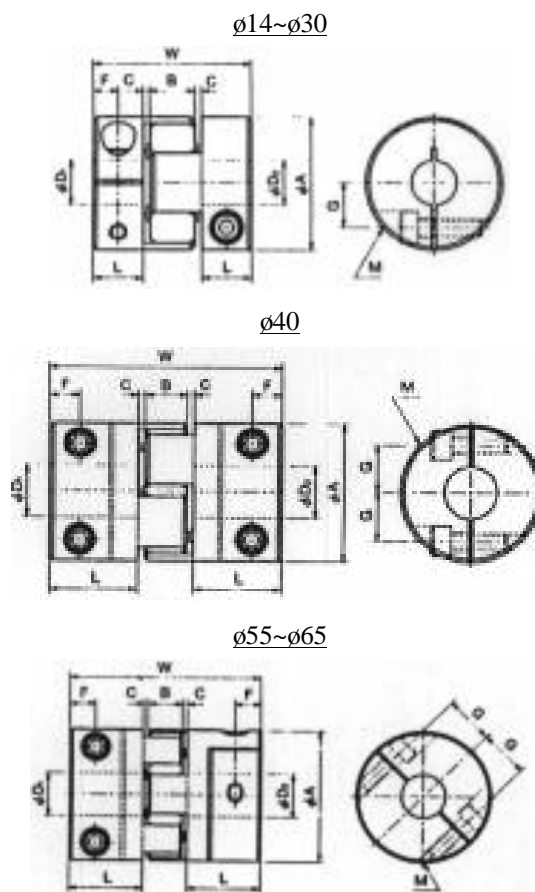


Figure 1

The MJT differs from other rubber Jaw-type shaft couplings. Through its

Table 1

Catalog Number	A	L	W	B	C	F	G	M	Rated Torque	Static Tort. Stiff.	Max. Rot. Freq. (min ⁻¹)	Err. of Ecc. (mm)	Err. of Ang. (°)	Mass (g)
	(mm)								(N·m/rad)					
MJT-14C-BL	14	7	22	6	1	3.5	4	M2	0.7	8	11000	0.15	1.0	6
MJT-14C-WH									1.2	14		0.10		
MJT-14C-RD									2	22		0.10		
MJT-20C-BL	20	10	30	8	1	5	6.5	M2.5	1.8	16	7600	0.20		19
MJT-20C-WH									3	29		0.15		
MJT-20C-RD									5	55		0.10		
MJT-30C-BL	30	11	35	10	1.5	5.5	10	M4	4	46	5100	0.20		50
MJT-30C-WH									7.5	73		0.15		
MJT-30C-RD									12.5	130		0.10		
MJT-40C-BL	40	25	66	12	2	8.5	14	M5	4.9	380	3800	0.15		160
MJT-40C-WH									10	570		0.10		
MJT-40C-RD									17	1200		0.10		
MJT-55C-BL	55	30	78	14	2	10.5	20	M6	17	1400	2800	0.20		330
MJT-55C-WH									35	1600		0.15		
MJT-55C-RD									60	2600		0.10		
MJT-65C-BL	65	35	90	15	2.5	13	24	M8	46	2800	2350	0.20	560	
MJT-65C-WH									95	3000		0.15		
MJT-65C-RD									160	4900		0.10		

BL·WH·RD indicate the color of the sleeve

unique construction with a polyurethane sleeve pressed and assembled between two aluminum hubs, it features that which other couplings do not.

That is, the MJT is a flexible coupling that combines the zero-backlash advantage of metal with the general advantages of rubber.

For this reason, the MJT can be used in applications necessitating rotation angle transmission without backlash or in applications necessitating torque

transmission.

Now, there are three types of sleeve hardnesses. The performance of each varies according to its primary purpose (Table 2):

Zero-backlash transmission. In low-torque applications where rotation angle transmission and control is the primary purpose, the MJT exhibits the zero-backlash quality of metal couplings. However, unlike metal couplings, the MJT absorbs torsional vibration, too.

Table 2

Sleeve		Attachment Type			
Hardness (JIS A)	Color	Setscrew	Clamping	Key	Clamping + Key
80	blue	MJT-**-BL	MJT-**-C-BL	MJT-**-K-BL	MJT-**-CK-BL
92	white	MJT-**-WH	MJT-**-C-WH	MJT-**-K-WH	MJT-**-CK-WH
98	red	MJT-**-RD	MJT-**-C-RD	MJT-**-K-RD	MJT-**-CK-RD

However, zero-backlash transmission is possible only in the pressed-in condition of the sleeve. Thus in the event of large, sleeve-distorting torque, backlash does occur. Therefore, torque values with no backlash are less than rated torque values listed in Table 1.

Also, regarding the need for exact rotation angle transmission, efficiency increases with the hardness of the sleeve. The MJT has three standard sleeve hardnesses available, according to your device characteristics.

Torque transmission. Due to the MJT's rubber-coupling characteristic of transmitting torque by compressing the sleeve, higher torque—even compared to metal couplings—is possible. Therefore, it can be applied in pumps and general production machinery where zero backlash is necessary.

In the case of torque transmission as the primary purpose, the differences in the three types of sleeve show the following characteristics.

The rated and maximum torque increases with the hardness of the sleeve (from blue to red). However, the allowance of misalignment is the opposite, decreasing with the hardness of the sleeve.

As mentioned above, the MJT also has four standard shaft attachment types (Table 2). The easy-to-attach setscrew and clamping types are best for low torque, zero-backlash applications. In

large torque applications, the key and clamping + key types ensure proper transmission.

The MJT outlined above is more than just a torque-transmitting rubber coupling. Meeting the increasing demand of recent years, it is an epoch-making coupling that can transmit rotation angle in servomotors and stepping motors.

MCT



Photo 2

The MCT (see Photo 2) is the universal joint coupling. Four outer diameters from $\varnothing 25\text{mm}$ to $\varnothing 50\text{mm}$ as well as two attachment types are standard with all finished bore sizes.

The MCT is made up of two hubs and one spacer. The structure consists of four pins pressed into the spacer, with these pins slipping inside the dry bearing bushes (Figure 2, Table 3).

In the event of misalignment, the spacer absorbs it by moving with respect to the two hubs. Because the spacer pins move smoothly in the bushes, the misalignment-induced reaction force towards the shaft very small compared to other couplings. Therefore, the MCT

can accommodate large misalignment values.

Now, a little backlash occurs from the gap between the spacer pins and the hub bushes, but the torsional stiffness is sufficient to be used as control coupling.

Conclusion

Above, we have introduced a portion of NBK’s Couplicon® · Mini line. Because of space, it is regrettable that I cannot introduce a few interesting couplings. So that we can offer couplings that meet more needs in the future, we would like to continue creating superior products.

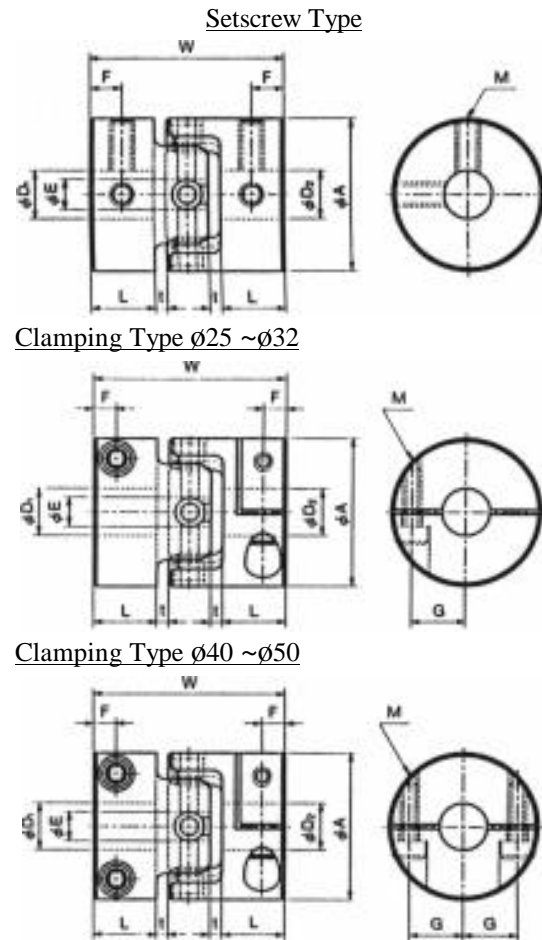


Figure 2

Table 3

Catalog Number	A	L	W	t	E	F	G	M	Rated Torque	Static Tort. Stiff.	Max. Rot. Freq. (min ⁻¹)	Err. of Ecc. (mm)	Err. of Ang. (°)	Mass (g)
	(mm)							(N·m/rad)						
MCT-25	25	10.5	32	2	5	5.3	-	M4	1	490	6100	0.5	3	33
MCT-32	32	13.5	40		8	6.8	-	M4	2	820	4800			68
MCT-40	40	16	47		10	8	-	M5	5	1000	3800			130
MCT-50	50	21.5	60		14	10.8	-	M6	10	2000	3100			250
MCT-25C	25	10.5	32		5	5.3	9	M4	1	490	6100			32
MCT-32C	32	13.5	40		8	6.8	11	M4	2	820	4800			68
MCT-40C	40	16	47		10	8	13	M5	5	1000	3800			130
MCT-50C	50	21.5	60		14	10.8	16	M6	10	2000	3100			260