MBB Flexible Couplings - Bellows Type

WEB Selection Tool | WEB CAD Download | Zero Backlash | High torque | High Rigidity

Structure

● Clamping Type

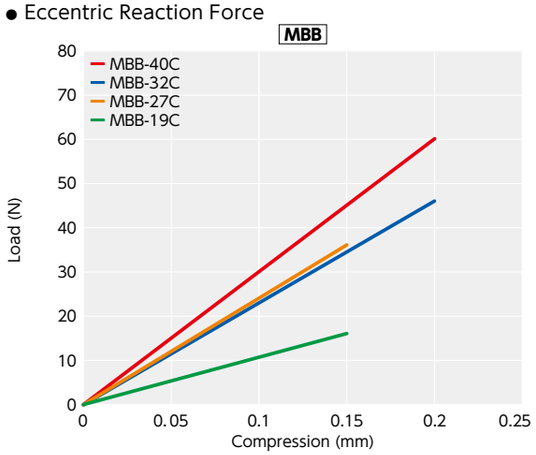
MBB-C Aluminum alloy hub

● Material/Finish

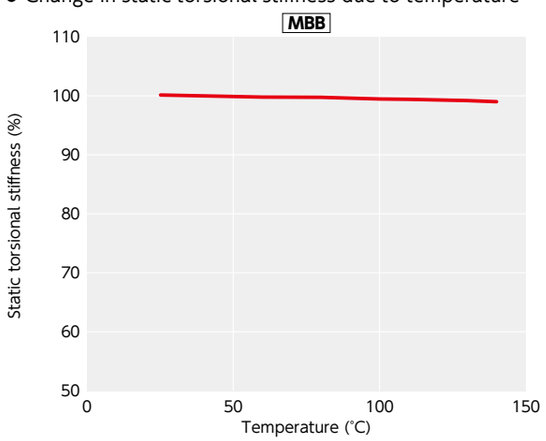
RoHS2 Compliant

	MBB
Hub	A2017 Alumite Treatment
Bellows	SUS304
Hex Socket Head Cap Screw	SCM435 Ferrosoferric Oxide Film (Black)

● Eccentric Reaction Force



● Change in static torsional stiffness due to temperature



● Applicable motors

	MBB
Servomotor	◎
Stepping Motor	◎
General-purpose Motor	–

◎: Excellent ○: Very good

● Property

	MBB
Zero Backlash	◎
Allowable Misalignment	○

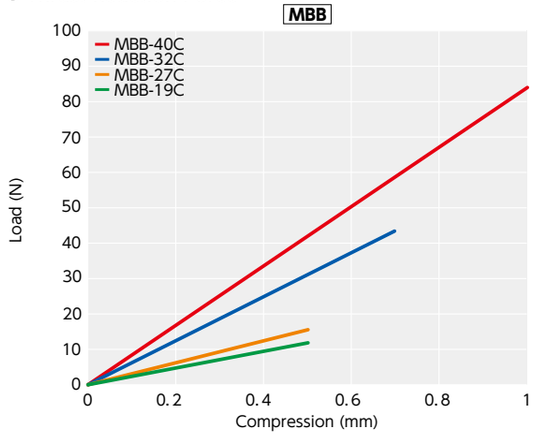
◎: Excellent ○: Very good

- This is a bellows type flexible coupling.
- The bellows allows eccentricity, angular misalignment, and end-play.
- The bellows is stainless steel.

● Application

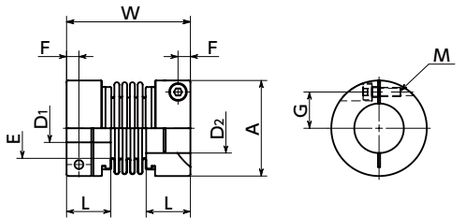
Actuator / High precision XY stage / Semiconductor devices / Encoder

● Thrust Reaction Force



This is a value under the condition where the static torsional stiffness at 20℃ is 100%.
The change of **MBB** in torsional stiffness due to temperature is small and the change in responsiveness is extremely small. If the unit is used under higher temperature, be careful about misalignment due to elongation or deflection of the shaft associated with thermal expansion.

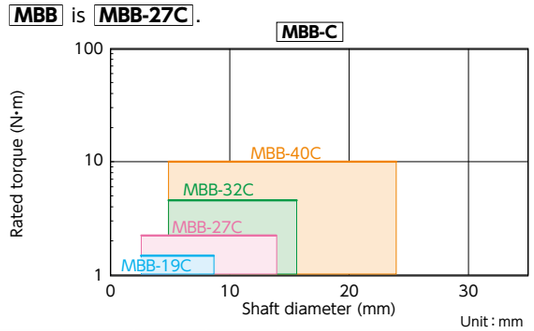
Additional Keyway at Shaft Hole ➡ P.803	Cleanroom Wash & Packaging ➡ P.807	Change to Stainless Steel Screw ➡ P.805
Please feel free to contact us	Not Available	Please feel free to contact us



Selection

● Selection Example

In case of selected parameters of shaft diameter of ϕ 10 and load torque of 2 N・m, the selected size for **MBB** is **MBB-27C**.



Unit : mm

Dimensions

Part Number [1]	Bore Diameter	A	L	W	E	F	G	M	WrenchTorque(N・m)
MBB-19C	3 - 8	19	10.5	30	12	3	6.75	M2	0.5
MBB-27C	3 - 14	27	12.5	35	17	3.5	10.25	M2.5	0.9
MBB-32C	5 - 16	32	15.5	46	22	4.25	12	M3	1.5
MBB-40C	5 - 20	40	16	51	28	5	15	M4	3.5
	22 - 24							M3	1.5

Part Number	Standard Bore Diameter D1・D2 [2]														
	3	4	5	6	8	10	12	14	15	16	17	19	20	22	24
MBB-19C	●	●	●	●	●										
MBB-27C	●	●	●	●	●	●	●	●							
MBB-32C			●	●	●	●	●	●	●	●					
MBB-40C			●	●	●	●	●	●	●	●	●	●	●	●	●

Part Number	Standard Bore Diameter D1・D2 [2]							
	1 / 8	3 / 16	1 / 4	3 / 8	1 / 2	5 / 8	3 / 4	7 / 8
MBB-19C	●	●	●					
MBB-27C	●	●	●	●	●			
MBB-32C			●	●	●	●		
MBB-40C			●	●	●	●	●	●

Performance

Part Number	Max. Bore Diameter (mm)	Rated*1 Torque (N・m)	Max. Rotational Frequency (min^{-1})	Moment*2 of Inertia ($kg \cdot m^2$)	Static Torsional Stiffness (N・m/rad)	Max. Lateral Misalignment (mm)	Max. Angular Misalignment (°)	Max. Axial Misalignment (mm)	Mass*2 (g)
MBB-19C	8	1.5	33000	8.6×10^{-7}	170	0.15	1.5	±0.5	16
MBB-27C	14	2.3	23000	3.6×10^{-6}	800	0.15	1.5	±0.5	32
MBB-32C	16	4.5	19000	1.1×10^{-5}	1600	0.2	1.5	±0.7	68
MBB-40C	24	10	15000	2.8×10^{-5}	2700	0.2	1.5	±1	110

*1: Correction of rated torque due to load fluctuation is not required.
*2: These are values with max. bore diameter.

● Slip Torque

Concerning the sizes shown in the table, please note that the shaft's slip torque is smaller than the rated torque of **MBB-C**.

Unit : N・m

Part Number	Bore Diameter (mm)		
	3	5	6
MBB-19C	0.8		
MBB-32C		2	4.2
MBB-40C		9.8	

- These are test values based on the condition of shaft's dimensional allowance: h7, hardness: from 34 - 40 HRC, and screw tightening torque of the values described in **MBB-C** dimensional table.

● Part number specification

MBB-19C-6-1/4
[1] [2]

Couplicon®

MFB Flexible Coupling - Bellows - type

WEB Selection Tool　WEB CAD Download　Zero Backlash　SUS Stainless steel

Structure

● Set Screw type

MFB Aluminum alloy hub ➡ P.199

MFBS Made of all stainless steel ➡ P.199

● Clamping type

MFB-C Aluminum alloy hub ➡ P.199

MFBS-C Made of all stainless steel ➡ P.199

● Recommended applicable motor

	MFB	MFBS
Servomotor	–	–
Stepping motor	○	○
General-purpose motor	–	–

◎: Excellent ○: Very good △: Available

● Property

	MFB	MFBS
Zero Backlash	◎	◎
Allowable Misalignment	○	○
Corrosion Resistance (All S.S.)	–	◎

◎: Excellent ○: Very good

- This is a bellows type flexible coupling.
- The bellows allow the eccentricity, and angular misalignment, and end-play.
- Even if there is misalignment, the constant revolution is performed.
- There are two types of bellows: phosphor bronze type and stainless steel type.

● Application

Encoder

● Material/Finish

RoHS2 Compliant

	MFB / MFB-C	MFBS / MFBS-C
Hub	A2017 Alumite Treatment	SUS303
Bellows	C5191	SUS316L
Hex Socket Set Screw	SCM435 Ferrosoferric Oxide Film	SUSXM7
Hex Socket Head Cap Screw	SCM435 Ferrosoferric Oxide Film	SUSXM7

● Part number specification

MFB - 20C - 6-8

Product Code　Size　Bore Diameter

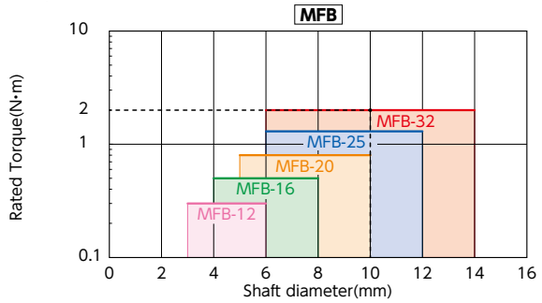
Please refer to dimensional table for part number specification.

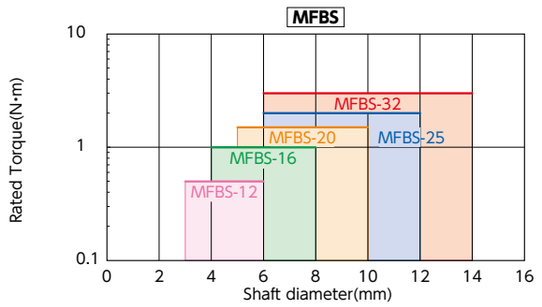
Additional Keyway at Shaft Hole ➡ P.803	Cleanroom Wash & Packaging ➡ P.807	Change to Stainless Steel Screw ➡ P.805
Available / Add'l charge	Available / Add'l charge	Available / Add'l charge

Selection

● **Selection based on shaft diameter and rated torque**

The area bounded by the shaft diameter and rated torque indicates is the selection size.



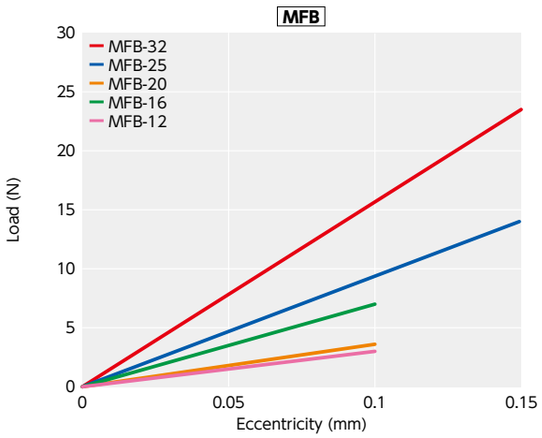


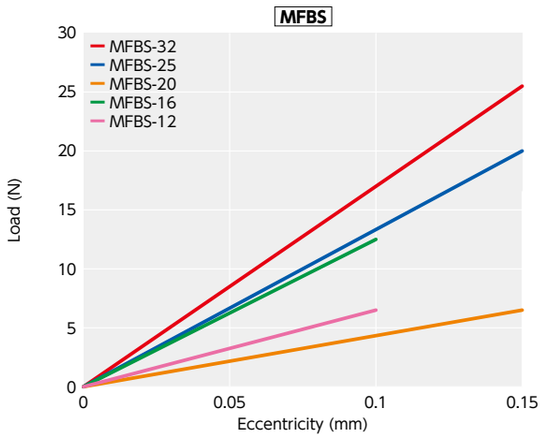
● Selection example

In case of selected parameters of shaft diameter of ϕ 10 and load torque of 2 N・m, the selected size for **MFB** **MFB-32**.

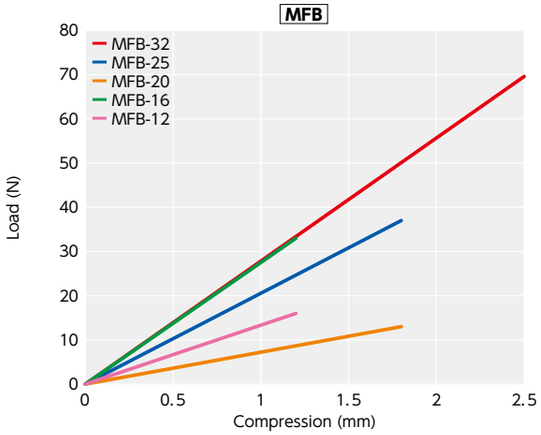
Technical Information

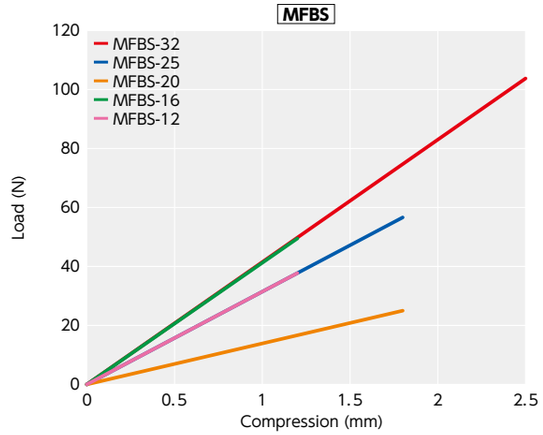
● Eccentric reaction force





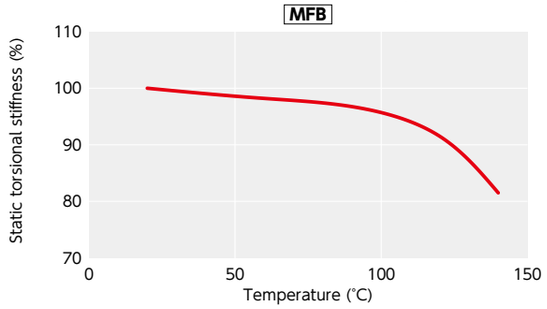
● Thrust Reaction Force (N)

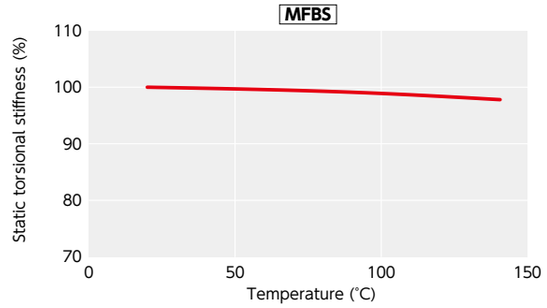




● Change in static torsional stiffness due to temperature

This is a value under the condition where the static torsional stiffness at 20℃ is 100%.
The change of **MFB** **MFBS** in torsional stiffness due to temperature is small and the change in responsiveness is extremely small. However, if the unit is used at higher temperature, be cautious about misalignment due to elongation or deflection of the shaft associated with thermal expansion.





● Slip Torque

Concerning the sizes shown in the following table, please note that the shaft's slip torque is smaller than the rated torque of **MFBS-C**.

Unit : N・m

Part Number	Bore Diameter (mm)	
	4	5
MFBS-12C	0.4	
MFBS-16C		0.9

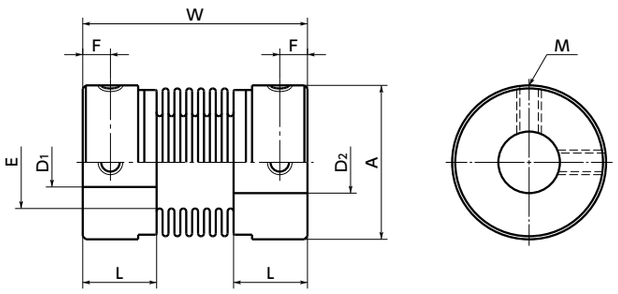
- These are test values based on the condition of shaft's dimensional allowance: h7, hardness: 34 - 40 HRC, and screw tightening torque of the values described in **MFBS-C** Dimension table.

Couplicon®

MFB/MFBS/MFB-C/MFBS-C Flexible Coupling - Bellows - type

WEB Selection Tool　WEB CAD Download　Zero Backlash　SUS Stainless steel

MFB Aluminum alloy hub
MFBS Made of all stainless steel



Dimensions

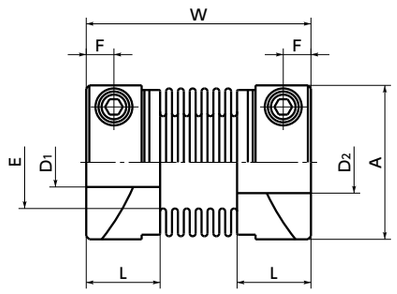
Unit : mm

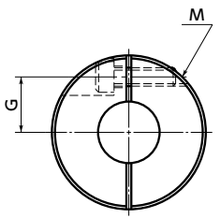
Part Number ◀1	A	L	W	E	F	G	M	Screw Tightening Torque (N・m)	Standard Bore Diameter D1・D2 ◀2							
									3	4	5	6	8	10	12	14
MFB-12	12	7.5	23.5	7	2.5		M2.5	0.5	●	●	●	●				
MFB-16	16	9	26.5	9.5	3		M3	0.7		●	●	●	●			
MFB-20	20	10	33	12.5	3.5		M3	0.7			●	●	●	●		
MFB-25	25	12	36.5	15	4.5		M4	1.7				●	●	●	●	
MFB-32	32	13.5	42	21	5.5		M4	1.7				●	●	●	●	●
MFBS-12	12	7.5	23.5	7	2.5		M2.5	0.5	●	●	●	●				
MFBS-16	16	9	26.5	9.5	3		M3	0.7		●	●	●	●			
MFBS-20	20	10	32	12.5	3.5		M3	0.7			●	●	●	●		
MFBS-25	25	12	36.5	15	4.5		M4	1.7				●	●	●	●	
MFBS-32	32	13.5	42	21	5.5		M4	1.7				●	●	●	●	●
MFB-12C	12	7.5	23.5	7	2.25	4	M2	0.5		●	●					
MFB-16C	16	9	26.5	9.5	3	5	M2.5	1			●	●				
MFB-20C	20	10	33	12.5	3.5	6.5	M2.5	1				●	●			
MFB-25C	25	12	36.5	15	4.5	9	M3	1.5					●	●		
MFB-32C	32	13.5	42	21	5	11	M4	2.5					●	●	●	●
MFBS-12C	12	7.5	23.5	7	2.25	4	M2	0.5		●	●					
MFBS-16C	16	9	26.5	9.5	3	5	M2.5	1			●	●				
MFBS-20C	20	10	32	12.5	3.5	6.5	M2.5	1				●	●			
MFBS-25C	25	12	36.5	15	4.5	9	M3	1.5					●	●		
MFBS-32C	32	13.5	42	21	5	11	M4	2.5					●	●	●	●

- All products are provided with hex socket set screws (**MFB**, **MFBS**) and hex socket head cap screws (**MFB-C**, **MFBS-C**).
- In a case where the bore diameter is ϕ 4 or less, the set screw is used in only one place.
- The dimensional allowance for bore diameter of a set screw type is H8.
- Recommended dimensional allowances of applicable shaft diameter are h6 and h7.
- In case of mounting a clamping type **MFB-C** **MFBS-C** on D-cut shaft, be careful about the position of the D-cut surface of the shaft. ➡ P.258

Additional Keyway at Shaft Hole ➡ P.803	Cleanroom Wash & Packaging ➡ P.807	Change to Stainless Steel Screw ➡ P.805
Available / Add'l charge	Available / Add'l charge	Available / Add'l charge

MFB-C Aluminum alloy hub
MFBS-C Made of all stainless steel





Performance

Part Number	Max. Bore Diameter (mm)	Rated*1 torque (N・m)	Max. Rotational Frequency (min^{-1})	Moment*2 of Inertia ($kg \cdot m^2$)	Static Torsional Stiffness (N・m/rad)	Max. Lateral Misalignment (mm)	Max. Angular Misalignment (°)	Max. Axial Misalignment (mm)	Mass*2 (g)
MFB-12	6.35	0.3	52000	9.0×10^{-8}	82	0.1	1.5	$^{+0.4}_{-1.2}$	4.1
MFB-16	8	0.5	39000	3.5×10^{-7}	110	0.1	1.5	$^{+0.4}_{-1.2}$	9
MFB-20	10	0.8	31000	9.9×10^{-7}	180	0.15	2	$^{+0.6}_{-1.8}$	16
MFB-25	12	1.3	25000	3.1×10^{-6}	240	0.15	2	$^{+0.6}_{-1.8}$	32
MFB-32	16	2	19000	9.2×10^{-6}	330	0.2	2	$^{+0.8}_{-2.5}$	57
MFBS-12	6.35	0.5	52000	2.1×10^{-7}	100	0.1	1.5	$^{+0.4}_{-1.2}$	9.1
MFBS-16	8	1	39000	8.0×10^{-7}	150	0.1	1.5	$^{+0.4}_{-1.2}$	20
MFBS-20	10	1.5	31000	2.3×10^{-6}	220	0.15	2	$^{+0.6}_{-1.8}$	37
MFBS-25	12	2	25000	7.0×10^{-6}	330	0.15	2	$^{+0.6}_{-1.8}$	73
MFBS-32	16	3	19000	2.1×10^{-5}	490	0.2	2	$^{+0.8}_{-2.5}$	130
MFB-12C	5	0.3	52000	9.7×10^{-8}	82	0.1	1.5	$^{+0.4}_{-1.2}$	3.8
MFB-16C	6.35	0.5	39000	3.7×10^{-7}	110	0.1	1.5	$^{+0.4}_{-1.2}$	9.8
MFB-20C	8	0.8	31000	1.0×10^{-6}	180	0.15	2	$^{+0.6}_{-1.8}$	16
MFB-25C	10	1.3	25000	3.1×10^{-6}	240	0.15	2	$^{+0.6}_{-1.8}$	32
MFB-32C	14	2	19000	9.6×10^{-6}	330	0.2	2	$^{+0.8}_{-2.5}$	58
MFBS-12C	5	0.5	52000	2.1×10^{-7}	100	0.1	1.5	$^{+0.4}_{-1.2}$	9.2
MFBS-16C	6.35	1	39000	8.1×10^{-7}	150	0.1	1.5	$^{+0.4}_{-1.2}$	22
MFBS-20C	8	1.5	31000	2.3×10^{-6}	220	0.15	2	$^{+0.6}_{-1.8}$	38
MFBS-25C	10	2	25000	6.9×10^{-6}	330	0.15	2	$^{+0.6}_{-1.8}$	74
MFBS-32C	14	3	19000	2.1×10^{-5}	490	0.2	2	$^{+0.8}_{-2.5}$	130

*1 : Correction of rated torque due to load fluctuation is not required.
*2 : These are values with max. bore diameter.

- Part number specification

MFB-12C - 4-5
◀1 ◀2

Couplicon®

MWBS Flexible coupling - Bellows - type (high precision welding)

WEB Selection Tool | WEB CAD Download | Zero Backlash | High Allowable Misalignment | SUS Stainless steel

Structure

● Set Screw type

MWBS ➡ P.203

● Property

	MWBS
Zero Backlash	◎
Allowable Misalignment	◎
Corrosion Resistance (All S.S.)	◎

◎: Excellent ○: Very good

- This is a bellows type flexible coupling.
- The crest and root of the bellows are bonded by special high precision welding.
- Thin metal plate molded with high precision allows higher misalignment to be accepted.
- Even if there is misalignment, the constant revolution is performed.

● Application

Measurement equipment/Control device/Encoder

● Material/Finish

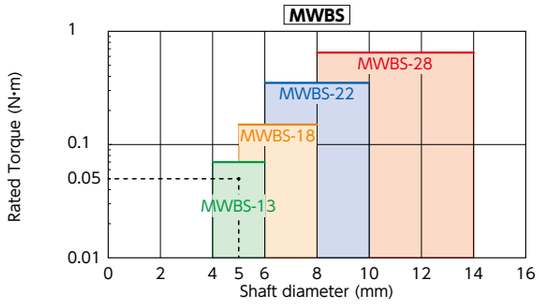
RoHS2 Compliant

	MWBS
Hub	SUS304
Bellows	SUS316L
Hex Socket Set Screw	SUSXM7

Selection

● Selection based on shaft diameter and rated torque

The area bounded by the shaft diameter and rated torque indicates is the selection size.

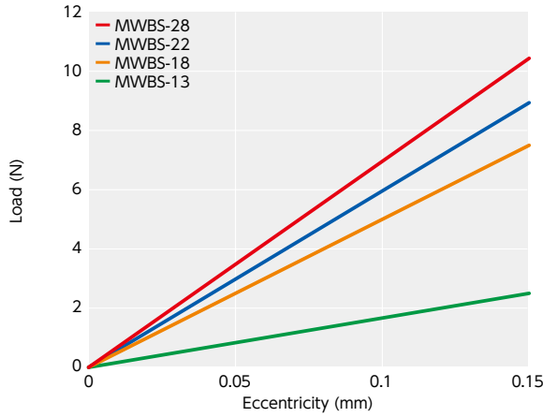


● Selection example

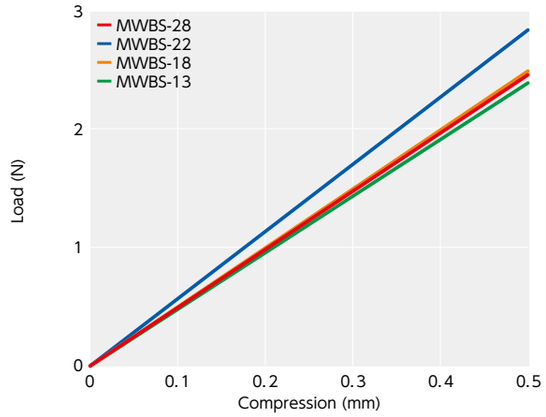
In case of selected parameters of shaft diameter of ϕ 5 and load torque of 0.05 N·m, the selected size for MWBS is MWBS-13.

● Technical Information

● Eccentric reaction force



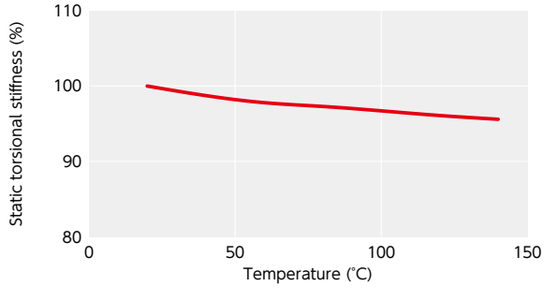
● Thrust Reaction Force



● Change in static torsional stiffness due to temperature

This is a value under the condition where the static torsional stiffness at 20℃ is 100%.

MWBS 's change in torsional stiffness due to temperature is small and the change in responsiveness is extremely small. However, if the unit is used under higher temperature, be careful about misalignment due to elongation or deflection of the shaft associated with thermal expansion.



● Related Products

Completely custom-made super bellows coupling with high precision welded bellows can be manufactured.
➡ P.204

● Part number specification

MWBS - 22 - 6-8

Product Code	Size	Bore Diameter

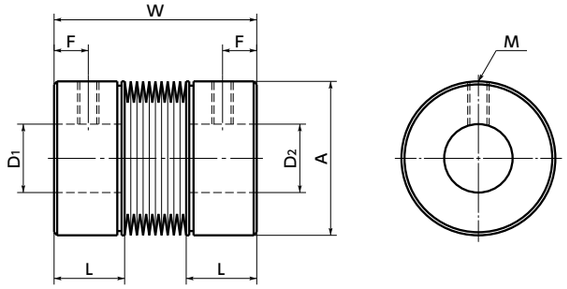
Additional Keyway at Shaft Hole ➡ P.803	Cleanroom Wash & Packaging ➡ P.807	Change to Stainless Steel Screw ➡ P.805
Please feel free to contact us	Available / Add'l charge	Changed to the S.S. screw

Couplicon®

MWBS Flexible coupling - Bellows - type (high precision welding)

WEB Selection Tool　WEB CAD Download　Zero Backlash　High Allowable Misalignment　SUS Stainless steel

MWBS Made of all stainless steel



Dimensions

Unit : mm

Part Number	A 1	L	W	F	M	Screw Tightening Torque (N・m)	Standard Bore Diameter (dimensional allowance H8) D1・D2 2							
							4	5	6	8	10	11	12	14
MWBS-13	13	6	16.5	3	M2	0.5	●	●	●					
MWBS-18	18	8	22	4	M2.5	1		●	●	●				
MWBS-22	22	10	27	5	M3	1.5			●	●	●			
MWBS-28	28	14	37	7	M4	2.5				●	●	●	●	●

- All products are provided with hex socket set screw.
- Recommended dimensional allowances of applicable shaft diameter are h6 and h7.

Performance

Part Number	Max. Bore Diameter (mm)	Rated*1 torque (N・m)	Max. Rotational Frequency (min^{-1})	Moment*2 of Inertia ($kg \cdot m^2$)	Static Torsional Stiffness (N・m/rad)	Max. Lateral Misalignment (mm)	Max. Angular Misalignment (°)	Max. Axial Misalignment (mm)	Mass*2 (g)
MWBS-13	6	0.07	10000	2.5×10^{-7}	30	0.15	3.5	0.5	9.8
MWBS-18	8	0.15	10000	1.2×10^{-6}	40	0.15	5	0.5	25
MWBS-22	10	0.35	10000	3.4×10^{-6}	200	0.15	4	0.5	48
MWBS-28	14	0.65	10000	1.4×10^{-5}	900	0.15	4.5	0.5	110

*1 : Correction of rated torque due to load fluctuation is not required.
*2 : These are values with max. bore diameter.

- Part number specification

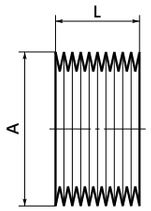
MWBS - 22 - 6-8

Product Code　1　2

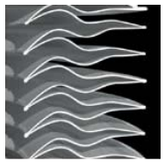
Additional Keyway at Shaft Hole ➡ P.803 — Please feel free to contact us
Cleanroom Wash & Packaging ➡ P.807 — Available / Add'l charge
Change to Stainless Steel Screw ➡ P.805 — Changed to the S.S. screw

Couplicon®

Super bellows Custom - made coupling



Single bellows



Double bellows

- Completely Custom-made super bellows coupling with high precision welded bellows can be designed and manufactured.
- The following table shows part of the performance that the super bellows coupling achieves. The performance depends on the type, outside diameter, threads per inch, and plate thickness of the bellows to use.

Dimensions・Performance

Type	A (mm)	Threads per inch	L (mm)	Plate thickness (mm)	Rated torque (N・m)	Max. torque (N・m)	Max. Lateral Misalignment (mm)	Max. Angular Misalignment (°)	Max. Axial Misalignment (mm)
Single bellows	13	10	4.5	0.05 - 0.1	0.07	0.15	0.15	3.5	±0.5
		20	9				0.3	6.5	±1
		30	13.5				0.45	10	±1.5
	18	10	6	0.05 - 0.1	0.15	0.3	0.15	5	±0.5
		20	12				0.3	9.5	±1
		30	18				0.45	14.5	±1.5
	22	10	7	0.06 - 0.1	0.35	0.7	0.2	4	±0.5
		20	14				0.4	8	±1
		30	21				0.6	12	±1.5
	28	10	9	0.1 - 0.15	0.65	1.3	0.25	6.5	±0.5
		20	18				0.5	9	±1
		30	27				0.75	14	±1.5
Double bellows	13	10	6	0.05 - 0.1	0.15	0.3	0.15	3.6	±0.5
		20	12				0.3	7.2	±1
		30	18				0.45	10	±1.5
	18	10	8	0.05 - 0.1	0.7	1.4	0.15	5.7	±0.5
		20	16				0.3	11.5	±1
		30	24				0.45	17.2	±1.5
	22	10	8	0.06 - 0.1	1.25	2.5	0.2	4.7	±0.5
		20	16				0.4	9.4	±1
		30	24				0.6	14	±1.5
	28	10	11	0.1 - 0.15	1.3	2.6	0.25	3.7	±0.5
		20	22				0.5	7.4	±1
		30	33				0.75	11	±1.5