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lika®

Smart encoders & actuators

Flexible and rigid couplings for motion control

COUPLINGS

Encoder couplings

						
	PAN	**PGF**	**PGFPLUS**	**MSF**	**MSX**	**MST / MSTS**
Description	• Helical coupling in aluminium.	• Polymer coupling with metal sleeves for big misalignments.	• Polymer coupling with metal sleeves for big misalignments.	• Serration type flexible coupling with metal hubs.	• Metal spring coupling with screw or collar fixing. • Compact size.	• Metal spring coupling with screw or collar fixing. • Standard size. • Aluminium or steel version.
Application	encoders, small motors	encoders	encoders, general purpose motors	encoders, general purpose motors	actuators, XY precision stages, stepping motors, servo motors	encoders, stepping motors
Bore - Ø (mm)	6 - 12	6 - 10	10 - 18	3 - 14	5 - 16	2 - 18
Keyway	-	-	-	optional	optional	✓
Misalignment	good	excellent	excellent	normal	-	normal
Max. torque (Nm)	1	0,5	5	6	9	35
Stiffness	20	3,2	43	-	excellent	normal
Zero backlash	normal	-	-	-	excellent	excellent
Electric insulation	-	✓	✓	✓	-	-

					
	MWS / MWSS	**MFB / MFBS**	**MOS**	**MOL**	**MOR**
Description	• Metal spring coupling with screw or collar fixing. • Compact size. • Aluminium or steel version.	• Bellows type flexible coupling with screw or collar fixing. • Copper or steel bellow.	• Compact Oldham type flexible coupling with screw or collar fixing.	• Oldham type flexible coupling with screw or collar fixing.	• Oldham type flexible coupling with screw or collar fixing.
Application	stepping motors, servomotors, XY stages	encoders	encoders, general-purpose motors	encoders, general-purpose motors	general-purpose motors, stepping motors
Bore - Ø (mm)	2 - 14	3 - 14	0 - 14	3 - 25	1 - 38
Keyway	optional	optional	optional	optional	✓
Misalignment	-	normal	excellent	excellent	excellent
Max. torque (Nm)	4	3	5,6	72	160
Stiffness	normal	normal	-	-	-
Zero backlash	excellent	excellent	-	-	-
Electric insulation	-	-	✓	✓	✓

COUPLINGS

Motors couplings

						
	XGS / XGS2	**XGT / XGT2**	**XGL / XGL2**	**XHW / XHW-L**	**XHS**	**XBWS / XBSS**
Description	• Compact high-gain flexible rubber coupling with screw or collar fixing. • Vibration absorbing.	• High-gain flexible rubber coupling with screw or collar fixing, optimized for actuators. • Vibration absorbing.	• Long/type high-gain flexible rubber coupling with screw or collar fixing. • Vibration absorbing.	• High precision disk-type flexible coupling with collar fixing.	• Compact high precision disk-type flexible coupling with collar fixing.	• Stainless-steel high precision disk-type flexible coupling with collar fixing.
Application	servomotors, stepping motors, XY precision stages	actuators, servo motors, stepping motors	actuators, servo motors, stepping motors	servomotors, stepping motors, actuators, precision index tables	servomotors, stepping motors, actuators, precision index tables	servomotors, stepping motors, actuators, precision index tables
Bore - Ø (mm)	3 - 20	3 - 25	3 - 19	3 - 28	3 - 50	3 - 28
Keyway	optional	optional	optional	optional	optional	optional
Misalignment	normal	normal	normal	normal	normal	normal
Max. torque (Nm)	7	70	13,5	280	280	14
Stiffness (Nm/rad)	normal/good	normal/good	normal/good	excellent	excellent	good
Zero backlash	good	good	good	✓	✓	✓
Electric insulation	✓	✓	✓	-	-	-

						
	XUT	**MJC**	**MJS**	**MOM**	**MDW / MDS**	**MHW / MHS**
Description	• Cross joint-type flexible coupling with collar fixing.	• Jaw type flexible coupling with screw or collar fixing.	• Jaw type flexible coupling with screw or collar fixing.	• Oldham type flexible coupling with screw or collar fixing. • Lubricated, metal version.	• Aluminium disk type flexible coupling with collar fixing.	• Aluminium disk type flexible coupling with collar fixing.
Application	servomotors, actuators, precision index tables, XY stages	servomotors, stepping motors, general-purpose motors	servomotors, stepping motors, general-purpose motors	High speed motors, general-purpose motors, grinders	servomotors, stepping motors, general-purpose motors, actuators	stepping motors, general-purpose motors, actuators
Bore - Ø (mm)	3 - 20	3 - 55	8 - 38	3 - 42	4 - 30	6 - 25
Keyway	optional	✓	✓	✓	optional	optional
Misalignment	normal	normal	normal	normal	normal	normal
Max. torque (Nm)	6	1120	400	352	12.5	10
Stiffness (Nm/rad)	good	-	-	excellent	-	-
Zero backlash	normal	normal	normal	-	good	good
Electric insulation	-	✓	✓	-	-	-

COUPLINGS

Special couplings

						
	MSXP	**MOHS**	**MOP**	**MSXP-C-W-SP**	**XSTS**	**XWSS**
Description	• Spring type coupling in PEEK. • Low outgassing.	• Oldham type flexible coupling with VESPEL insert. • Low outgassing.	• Oldham type flexible coupling with PEEK insert. • Low outgassing.	• Long-size spring type coupling in PEEK.	• Stainless steel spring coupling with collar fixing. • Long-size version.	• Stainless steel spring coupling with collar fixing. • Short-size version.
Application	cleanroom, vacuum, high temperature, semiconductor machines.	cleanroom, vacuum, high temperature, semiconductor machines.	cleanroom, vacuum, high temperature, semiconductor machines.	variable capacitors, vacuum, high temperature.	FPD manufacturing device, semi-con machines, offshore instruments.	FPD manufacturing device, semi-con machines, offshore instruments.
Bore - Ø (mm)	6 - 15	5 - 14	5 - 14	6 - 15	5 - 30	5 - 30
Keyway	optional	optional	optional	optional	optional	optional
Misalignment	normal	good	good	normal	normal	-
Max. torque (Nm)	1,5	4,4	5,6	2,6	35	3,5
Stiffness (Nm/rad)	-	-	-	-	-	-
Zero backlash	good	-	-	good	good	good
Electric insulation	✓	✓	✓	✓	-	-

Rigid couplings

			
	XRP	**MRG / MRGS**	**MLR / MLRS**
Description	• High precision rigid coupling with collar fixing.	• Aluminium or stainless steel rigid coupling with screw or collar fixing.	• Aluminium or stainless steel, long-type rigid coupling with screw or collar fixing.
Application	high precision measurement devices, XY stages.	high precision measurement devices, cleaning equipment.	cleaning equipment, shaft extension.
Bore - Ø (mm)	5 - 15	3 - 32	5 -15
Keyway	optional	optional	optional
Misalignment	-	-	-
Max. torque (Nm)	10	35	10
Stiffness (Nm/rad)	good	good	good
Zero backlash	good	good	good
Electric insulation	-	✓	✓

Select based on motor

Servomotor and Stepping motor

High-gain rubber type coupling **XGT2, XGL2, XGS2** are superior in vibration absorption and are the most appropriate for the combination in particular with servomotor.


XGT2


XGS2


XGL2

XHW and **XHS** have high rigidity.
Also applicable to servomotors with instantaneous max. torque of 350%.


XHW


XHS

General-purpose motor

These are couplings suitable to the combination with general-purpose motor.


MJC


MOR


MOM


MSF

Selection based on the rated output of servomotor

	Servomotor specifications			Recommended coupling size				
Rated output (W)	**Diameter of motor shaft (mm)**	**Rated torque (Nm)**	**Instantaneous max. torque (Nm)**	 **XGT2 • XGL2**	 **XHW**	 **MSX**	 **MJC-RD**	 **XUT**
10	5 - 6	0.032	0.096	15C	19C	16C	14C	15C
20	5 - 6	0.064	0.19	15C	19C	16C	14C	15C
30	5 - 7	0.096	0.29	19C	19C	19C	14C	20C
50	6 - 8	0.16	0.48	19C	19C	19C	20C	20C
100	8	0.32	0.95	19C	19C	19C	20C	25C
200	9 - 14	0.64	1.9	30C	27C	29C	30C	30C
400	14	1.3	3.8	30C	34C	39C	30C	35C
750	16 -19	2.4	7.2	39C	39C	44C	40C	-

For the specifications of each product, please refer to the corrisponding product pages on www.lika.it/eng/products/couplings
Motors specifications are based on general values. For details, please refer to catalogs of motor manufacturers.
Recommended sizes are for the cases where reduction gears are not used.

Explanation of terminology

Rated torque

This is a torque value that can be continuously transmitted by coupling. This is a value with load variation during operation considered and does not require correction of the rated torque at the time of selection (Except for oldham couplings). Select the coupling so that the load torque generated by continuous operation may not be more than the rated torque.

Max. torque

This is a torque value that can be instantaneously transmitted by coupling.

Misalignment

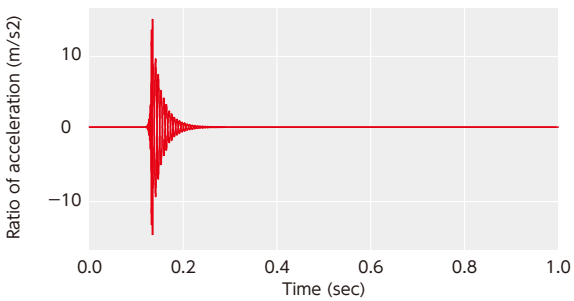
This is a shaft center error.
There are three types of misalignment: eccentricity, argument, and end-play.

Max. rotational frequency

This is a maximum rotational frequency available for coupling. A value calculated based on peripheral speed 33 m/s is described and we have confirmed that this frequency does not damage the unit by a test.
(Except for MOM, MOHS, MWBS).

Damping ratio

This is a parameter that represents the damping property of vibration amplitude.
XGT2, XGL2, XGS2 have a large damping ratio, thus enabling the servomotor gain to be raised.

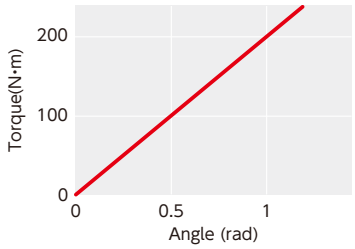


Moment of Inertia

This is a value that indicates the rotational difficulty of coupling. Smaller moment of inertia reduces the load torque at the time of start and stop.

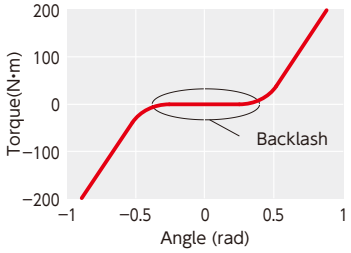
Static Torsional Stiffness

This is rigidity against torsion of coupling and the inclination shown in the graph indicates the static torsional stiffness. Static torsional stiffness for the entire coupling including not only deflection part but also hub is described here.



Backlash

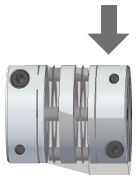
This is a backlash against the rotational direction of coupling.
When high precision positioning is required, select a coupling with zero backlash.

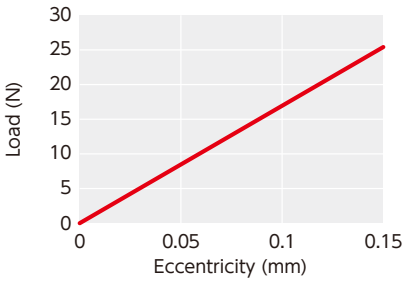


Explanation of terminology

Eccentric reaction force

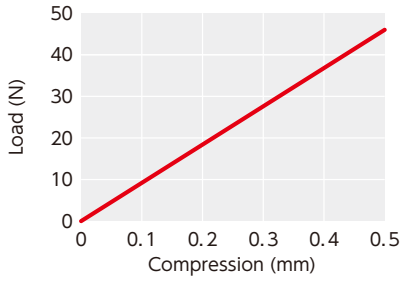
This is a force generated when making coupling in eccentric condition.
As the eccentric reaction force becomes smaller, the force acting on the shaft bearing also becomes smaller.





Thrust Reaction Force

This is a force generated when compressing coupling in the shaft direction.
As the thrust reaction force becomes smaller, the force acting on the motor also becomes smaller.



Electrical insulation

This is insulation against electricity between both hubs of coupling.
The electrical insulation value of coupling with rubber/resin used between both hubs is not less than 2MΩ.

Constant velocity

This is speed unevenness for one rotation of coupling. In general, the higher the misalignment is, the lower the constant velocity becomes.
MFB and MWBS are superior in constant velocity even when misalignment exists and is appropriate for detection devices such as encoder.

Allowable operating temperature

This is a temperature available for coupling.
The allowable operating temperature for rubber/resin-used goupling is as shown in the following table.

Product code	Allowable operating temp.
XGT2 - XGL2 - XGS2	-10°C +120°C
XGT - XGL - XGS	-20°C +80°C
MJT - MJS - MJB	-20°C +60°C
MOR - MOL - MOS	-20°C +80°C
MOHS	-20°C +200°C
MOP	-20°C +120°C
MSXP	-20°C +80°C
MSF	-20°C +60°C

Temperature correction factor

This is a factor multiplied to the rated torque and max. torque depending on the operating temperature of coupling. In **XGT2, XGL2, XGS2, XGT, XGL, XGS, MJC, MJS, MJB, MOR, MOL, MOS, MSF,** the rated torque and max. torque vary.
If ambient temperature exceeds 30°C, be sure to correct the rated torque and max. torque with correction factor shown in the following table.
MOHS, MOP, MSXP are superior in heat resistance and the rated torque and max. torque do not vary depending on the operating temperature.
Correction by temperature correction factor is not required.

Ambient temperature	Temperature correction factor
-20°C +30°C	1.00
+30°C +40°C	0.80
+40°C +60°C	0.70
+60°C +120°C	0.55

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