

UNI-LAT® cardan couplings



General

Backlash-free up to 10^8 revolutions

Accepts large shaft misalignment

Low damping properties

Flex-free operation -

no increasing bearing loads

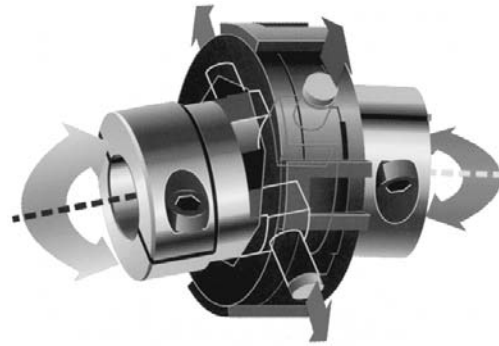
Non-magnetic [with special screws]

Electrically insulating

Low moment of inertia

Bore diameter 3 - 16 mm

Shock torque 0.3 - 3.5 Nm



UNI-LAT® cardan coupling

A unique property of UNI-LAT® couplings is their resistance to axial movement. This makes the coupling suitable for light tension/compression requirements and for locating axially unsecured shafts.

General

UNI-LAT® cardan couplings are well suited to reversing operation and tolerate torsional and axial shock loads. The couplings are suitable for transmitting rotary motion from light servo and stepper motors, encoders, resolvers and tachogenerators, as well as for general applications in measurement and control technology.

The coupling transmits rotation via two injection-moulded hubs, each with two integrated radial pins. During each revolution of the coupling, the light acetal rings align themselves with each hub, compensating angular and parallel misalignment without causing material fatigue.

Since parallel shaft misalignment is absorbed by lateral displacement of the hubs, even relatively large alignment errors can be compensated within confined installation spaces. This is a valuable feature in all inaccessible assemblies comprising many elements, where shaft alignment is difficult to check and correct. A large alignment error may accelerate the loss of bearing preload, but does not cause total failure.

Angular velocity constant

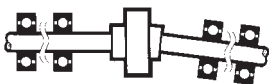
Under parallel misalignment conditions, the coupling exhibits a constant angular velocity ratio. Angular misalignment leads to sinusoidal deviations in the angular velocity output, although these are barely perceptible at small angles. For example, an angular misalignment of $1/4^\circ$ causes deviations of $\pm 0.001\%$, corresponding to ± 0.22 arc minutes. The corresponding values for $1/2^\circ$ are $\pm 0.004\%$ and ± 0.86 arc minutes. The angular velocity deviations are predictable and vary between:

$$\omega = \cos \alpha \text{ and } \sec \alpha$$

where ω = angular velocity
and α = operating angle

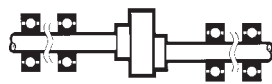
For high-resolution applications, it is recommended that parallel shaft misalignment should not exceed 0.13 mm and angular misalignment should not exceed $1/4^\circ$.

Installation



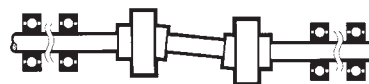
Correct

Up to 10° angular misalignment, depending on version



Correct

Up to 1 mm radial misalignment for extreme misalignment



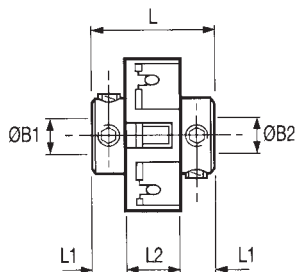
Incorrect

Uni-Lat® couplings in the standard version cannot be used in pairs. Special versions for this installation situation are available on request.

UNI-LAT® cardan couplings

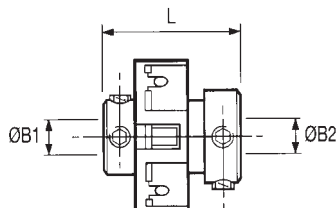
Set screw series

2 set screws per hub, offset by 90°

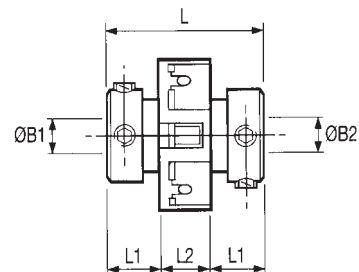


Type A

Hubs for small bores, consisting of 2 A hubs



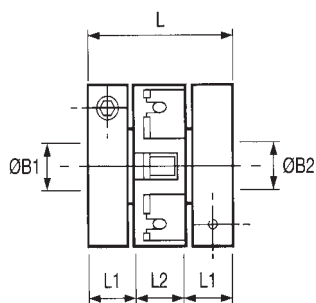
Type AB: combination of Type A and Type B, consisting of one A hub and one B hub [not listed in the main table]



Type B

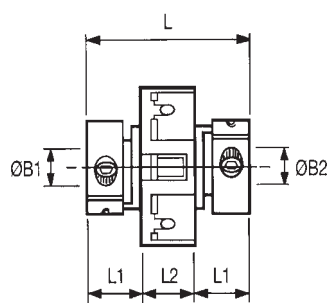
Hubs for large bores, consisting of 2 B hubs

Clamping hub series



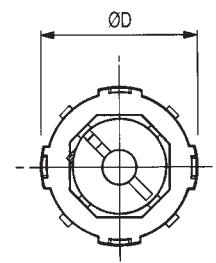
Type C

Sizes 18 + 27, consisting of 2 C hubs with clamping bushes and clamping rings



Type D

Sizes 34 + 41, consisting of 2 D hubs with integrated clamping hubs



Materials

Hubs/radial pins	
Sizes 18 + 27	Brass
Sizes 34 + 41	Aluminium alloy
Clamping rings	
Sizes 18 + 27	Aluminium alloy
Torque rings	
All sizes	Acetal polymer
Screws	Heat-treated steel, black-oxide finished

Operating factors

Uni-Lat® couplings

Maximum torques refer to drives without misalignment and, in the case of Oldham couplings, without misalignment or axial movement. Multiply the load torques by the operating factors as explained, e.g.

Load torque of the application = 1 Nm

Operating factor = 2

Required torque = 2 Nm

Select a coupling whose maximum torque is greater than 2 Nm.

Please note that the factors refer to the actual cumulative load times and not to the machine's switch-on times.

Load duration	Betriebs-faktor
short-term load	1
1 hour per day	1.5
8 hours per day	3
12 hours per day	4

Operating temperature

The couplings can be used in a temperature range from -40°C to +85°C.

UNI-LAT® cardan couplings



Note

The couplings are supplied assembled. The plastic parts are allocated automatically. For Type A/B, the dimensions of the respective half apply.

UNI-LAT® cardan coupling

Sizes, dimensions and technical data

Order no.*	Dimensions		Bore B1 + B2*			Screws		Shock torque Nm	Stat. break. Nm	Max. Axial load N	Tors. spring stiffn. Nm/rad	Axial stiffn. N/mm	J Kgm ² x10 ⁻⁸	Wt. g	Max. misalignme	
	ØD	L	Ø min	Ø max	L ₁	Ø	M _A Nm								Angle ±°	Radial ±mm
18 A	18.0	14.2	3.00	5.00	4.6	M 3	0.94	0.3	0.9	19	25	155	20	7	2	0.20
18 B	18.0	19.1	6.00	6.35	7.0	M 3	0.94	0.3	0.9	19	25	155	20	7	2	0.20
18 C	19.1	19.1	3.00	6.35	7.0	M 4	2.33	0.3	0.9	19	25	155	55	11	2	0.20
27 A	28.0	19.1	3.00	8.00	6.1	M 3	0.94	1.7	5.0	31	92	350	91	16	2	0.20
27 B	28.0	25.4	9.25	10.00	9.3	M 3	0.94	1.7	5.0	31	92	350	91	16	2	0.20
27 C	28.0	25.4	5.00	10.00	9.3	M 3	2.43	1.7	5.0	31	92	350	220	26	2	0.20
34 A	33.7	25.2	6.00	10.00	8.1	M 4	2.27	2.5	7.5	34	146	300	165	17	2	0.25
34 B	33.7	30.7	12.00	12.70	10.9	M 4	2.27	2.5	7.5	34	146	300	165	17	2	0.25
34 D	33.7	30.7	6.00	10.00	10.9	M 4	2.33	2.5	7.5	34	146	300	183	20	2	0.25
41 A	41.4	28.4	6.00	12.00	8.6	M 4	2.27	3.5	10.5	39	299	250	476	30	2	0.25
41 B	41.4	38.1	14.00	16.00	13.5	M 5	4.62	3.5	10.5	39	299	250	476	30	2	0.25
41 D	41.4	38.1	6.00	12.70	13.5	M 4	5.66	3.5	10.5	39	299	250	550	40	2	0.25

*When ordering, state the bores for both halves according to the table!

Series with standard bores up to 16 mm

Order no.	mm inch	2.00 -	2.38 3/32	3.00 -	3.18 1/8	4.00 -	4.76 3/16	5.00 -	6.00 -	6.35 1/4	7.00 -	7.94 5/16	8.00 -	8.73 11/32	9.00 -	9.53 3/8	10.00 -	11.00 7/16	11.11 -	12.00 -	12.70 1/2	14.00 -	14.29 9/16	15.00 -	15.88 5/8	16.00 -
18 A				■	■	■	■	■																		
18 B									■	■																
18 C				■	■	■	■	■	■	■																
27 A				■	■	■	■	■	■	■		■	■													
27 B																■	■									
27 C								■	■	■			■			■	■									
34 A									■	■			■			■	■									
34 B																				■	■					
34 D									■	■		■	■			■	■									
41 A									■	■		■	■			■	■									
41 B																						■			■	■
41 D									■	■		■	■			■	■			■	■					

Special bores on request

Note

Ø If required, B1 + B2 can be reduced using reducing bushes. [Reducing bushes see page 42]

Order example

You require:	5 couplings 18 A	The order reads:
	Bore B1 3 Ø	5 coupling halves 18 A - 3
	Bore B2 6 Ø	5 coupling halves 18 A - 6