ESL

WITH KEYWAY MOUNTING

1 - 150 Nm

ABOUT

MATERIAL

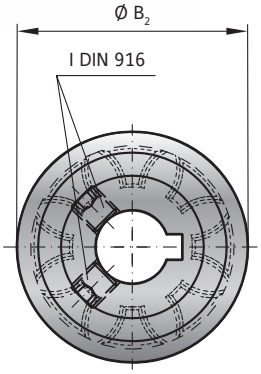
- **Clutch system:** high strength steel, drive balls made from hardened steel
- **Hubs:** high strength aluminum
- **Elastomer insert:** wear resistant, thermally stable TPU

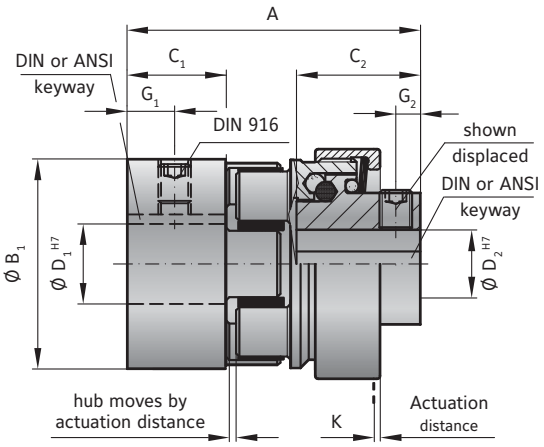
DESIGN

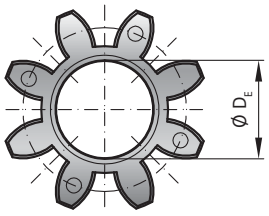
Two hubs, each with keyway, set screw, and concave driving jaws. Backlash free, vibration damping, electrically isolating elastomer insert press fit into the jaw sets. The clutch system is integrated into one of the hubs. All couplings have a multi-position function system due to the spring loaded, interlocking ball system.

DISENGAGEMENT SPEED

Negligible wear at up to 200 rpm. Contact R+W for higher speed applications.







elastomer insert type A / B

MODEL ESL

Size			5		10		20		60		150	
Type (Elastomer insert)			A	B	A	B	A	B	A	B	A	B
Rated torque	(Nm)	T_{Kn}	9	12	12.5	16	17	21	60	75	160	200
Torque setting possible* from - to	(Nm)	T_{Kn}	1-6		1-12		3-19		5-60		20-150	
Overall length	(mm)	A	34		45		64		80		90	
Diameter of the hub	(mm)	B_1	25		32		42		56		66.5	
Diameter of the hub	(mm)	B_2	29		32		46		59		75	
Clamping fit length	(mm)	C_1	12.5		12		25		30		35	
Clamping fit length	(mm)	C_2	11.5		20		22		31		35	
Inside diameter from Ø to Ø H7	(mm)	D_1	6-15		6-18		8-25		12-32		19-38	
Inside diameter from Ø to Ø H7	(mm)	D_2	6-10		6-12		8-19		12-24		19-32	
Inside diameter max. (elastomer)	(mm)	D_E	10.5		14.2		19.2		26.2		29.2	
Distance	(mm)	G_1	5		6		9		11		12	
Distance	(mm)	G_2	2.5		3.5		4		4		4	
Screws DIN 916**		I	depending on bore diameter see below table									
Approx. weight	(kg)		0.05		0.15		0.2		0.5		1	
Moment of inertia	(10^{-3} kgm²)	J_1/J_2	0.01		0.02		0.08		0.15		0.5	
Actuation distance	(mm)	K	0.6		0.6		0.7		1.1		1.4	

* Disengagement torque is permanently set at the factory. For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts see page 105.

ORDERING EXAMPLE	ESL	10	A	14	12	10	XX
Model	●						Special designation only (e.g. special bore tolerance).
Size		●					
Elastomer insert type			●				
Bore D1 H7 includes standard keyway				●			
Bore D2 H7 includes standard keyway					●		
Disengagement torque Nm (not adjustable)						●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. ESL / 10 / A / 14 / 12 / 10 / XX; XX=stainless steel)

FIXED DISENGAGEMENT TORQUE

The ESL coupling is unlike other R+W safety couplings in that the disengagement torque is permanently set and tamper proof.

** SET SCREWS					
D1/D2	- Ø 10	Ø 11-12	Ø 13-30	Ø 31-58	Ø 59-80
I	M3	M4	M5	M8	M10

Bores <6mm made without keyway.

DESCRIPTION OF THE ELASTOMER TYPES

Design	Shore hardness	Color	Material	Relative damping (μ)	Temperature range	Features
A	98 Sh A	red	TPU	0.4 - 0.5	-30°C to +100°C	high damping
B	64 Sh D	green	TPU	0.3 - 0.45	-30°C to +120°C	high torsional stiffness
D	65 Sh D	black	TPU	0.3 - 0.45	-10°C to + 70°C	electrically conductive

The values of the relative damping were determined at 10 Hz and +20° C.

ES2 | ESL

SIZE			5		10		20		60		150		300		450		800		1500	
Elastomer type			A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Static torsional stiffness	(Nm/rad)	C_T	150	350	260	600	1140	2500	3290	9750	4970	10600	12400	18000	15100	27000	41300	66080	87600	109000
Dynamic torsional stiffness	(Nm/rad)	C_{Tdyn}	300	700	541	1650	2540	4440	7940	11900	13400	29300	23700	40400	55400	81200	82600	180150	17500	216000
Lateral	± (mm)	Max. values	0.08	0.06	0.1	0.08	0.1	0.08	0.12	0.1	0.15	0.12	0.18	0.14	0.2	0.18	0.25	0.2	0.5	0.3
Angular	± (Degree)		1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1	0.8	1.5	1
Axial	± (mm)		± 1		± 1		± 2		± 2		± 2		± 2		± 2		± 2		± 3	

Static torsional stiffness at 50% T_{KN} Dynamic torsional stiffness at T_{KN}

SLE

SIZE			30		60		150		300	
Elastomer type			A	B	A	B	A	B	A	B
Static torsional stiffness	(Nm/rad)	C_T	3290	9750	4970	10600	12400	18000	15100	27000
Dynamic torsional stiffness	(Nm/rad)	C_{Tdyn}	7940	11900	13400	29300	23700	40400	55400	81200
Lateral	± (mm)	Max. values	0.12	0.1	0.15	0.12	0.18	0.14	0.2	0.18
Angular	± (Degree)		1	0.8	1	0.8	1	0.8	1	0.8
Axial	± (mm)		± 2		± 2		± 2		± 2	

Static torsional stiffness at 50% T_{KN} Dynamic torsional stiffness at T_{KN}

ES2 | MAXIMUM TRANSMITTABLE TORQUE (Nm) OF THE CLAMPING HUB DEPENDS ON THE BORE DIAMETER (mm)

Size	Ø 4	Ø 5	Ø 8	Ø 16	Ø 19	Ø 25	Ø 30	Ø 32	Ø 35	Ø 45	Ø 50	Ø 55	Ø 60	Ø 65	Ø 70	Ø 75	Ø 80	Ø 85	Ø 90
5	1.5	2	8																
10		4	12	32															
20			20	35	45	60													
60				50	80	100	110	120											
150					120	160	180	200	220										
300					200	230	300	350	380	420									
450							420	480	510	600	660	750	850						
800									700	750	800	835	865	900	925	950	1,000		
1500									1,900	2,600	2,900	3,200	35,00	3,800	4,000	4,300	4,600	4,900	5,200

Higher torque possible with keyways

SLE | MAXIMUM TRANSMITTABLE TORQUE (Nm) OF THE CLAMPING HUB DEPENDS ON THE BORE DIAMETER (mm)

Size	Ø 12	Ø 15	Ø 20	Ø 25	Ø 30	Ø 35	Ø 40	Ø 45	Ø 50	Ø 55	Ø 60
30	30	55	80	110	130						
60		80	120	160	200	220					
150			200	250	300	350	400	450			
300				350	430	510	590	670	750	830	910

ORDERING EXAMPLE	SLE | ES2	60	A	W	30	19.05	80	40-100	XX
Model	●								Special designation only (e.g. special bore tolerance).
Size		●							
Elastomer insert type			●						
Function system				●					
Bore D1 H7					●				
Bore D2 H7						●			
Disengagement torque Nm							●		
Torque adjustment range Nm								●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. SLE / 60 / A / W / 30 / 19.05 / 80 / 40-100 / XX; XX=anodized aluminum)