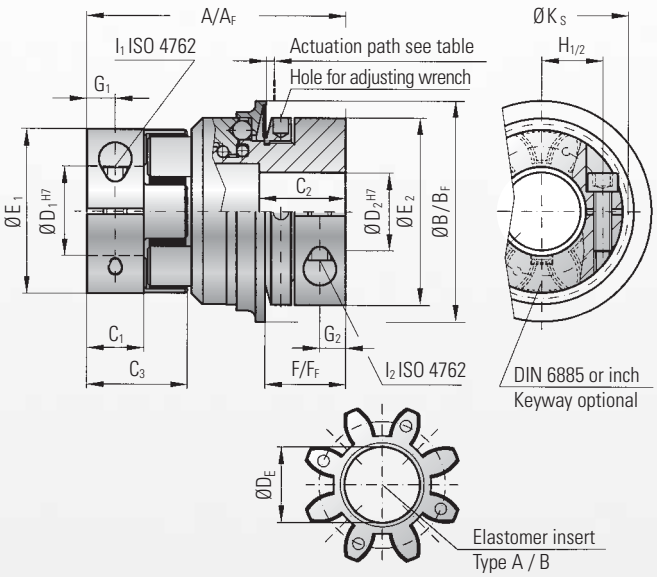
optional stainless steel

MODEL **ES2**

BACKLASH FREE TORQUE LIMITERS

with clamping hubs



Properties:

- reliable torque overload protection
- short compact design
- backlash-free due to patented R+W design
- disengagement within msecs.
- large actuatuion path when disengaging
- electrically insulating
- press-fit design

Material:

Torque limiter: high strength hardened steel with rust protected surface (oxidized)
Clamping hub D_1: up to series 450 high strength aluminum, from series 800 and up steel
Clamping hub D_2: up to series 60 high strength aluminum, from series 150 and up steel
Elastomer insert: precision molded, wear resistant, and thermally stable polymer

Design:

Two coupling hubs are concentrically machined with concave driving jaws
One side with an integrated torque limiter
The torque limiter is available in single position, multi position or full-disengagement versions.

Tolerance:

On the hub/shaft connection 0.01 to 0.05 mm

For table see right page.

W = single position re-engagement

- After the overload has been eliminated, the coupling will automatically reengage precisely 360° from the original disengagement position
- Achivement of the precise synchronus re-engagement due to patented R+W design
- Signal at overload with mechanical switch or proximity sensor

D = Multi position re-engagement

- Coupling re-engages at multiple set angular intervals.
- Immediate availability of the machine as soon as the overload has been eliminated.
- Signal at overload with mechanical switch or proximity sensor
- Standard engagement every 60°
- Engagement at 30, 45, 90 and 120 degrees are optional.

F = Full disengagement

- Permanent separation of drive and driven loads in the event of a torque overload.
- No residual friction
- Signal at overload
- Rotating elements slow down freely
- Coupling can be re-engaged manually (Engagement every 60°)

Ordering example

ES2 / 10 / A / W / 14 /12.7/ 8 /4-12 / XX

- Model
- Series
- Type Elastomer insert
- Function system (see page 14)
- Bore Ø D1 H7
- Bore Ø D2 H7
- Disengagement torque
- Adjustable range
- Non standard e.g. VA-Material

All data is subject to change without notice.

The selection of torque limiters

In general the torque limiters are sized according to the necessary disengagement torque. This torque must exceed the nominal torque of the application.

For more information see page 22.

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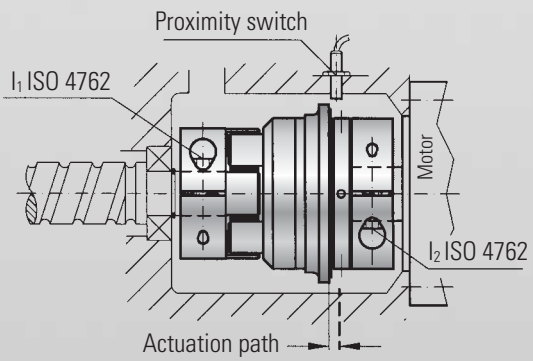
Model ES 2		Series						
		10	20	60	150	300	450	800
Adjustment range possible from -to (approx. values) (Nm)	T_{KN}	2 - 6 or 4 - 12	10 - 25 or 20 - 40	10 - 30 or 25 - 80	20-70 45-150 80-180	100 - 200 150 - 240 200 - 320	80 - 200 200 - 350 300 - 500	400 - 650 500 - 800 600 - 900
Adjustment range (full disengagement) possible from -to (approx. values) (Nm)	T_{KN}^F	2-5 or 5-10	8 - 20 or 16 - 30	20 - 40 or 30 - 60	20-60 40-80 80-150	120 - 180 or 180 - 300	60 - 150 100 - 300 250 - 500	200 - 400 or 450 - 800
Overall length (mm)	A	60	86	96	106	140	164	179
Overall length (full disengagement) (mm)	A_F	60	86	96	108	143	168	190
Outer diameter of actuation ring (mm)	B	45	65	73	92	120	135	152
Outer diameter of actuation ring (mm)	B_F	51.5	70	83	98	132	155	177
Fit length (mm)	C_1	10.3	17	20	21	31	34	46
Fit length (mm)	C_2	16	27	31	35	42	51	45
Length of hub (mm)	C_3	20.7	31	36	39	52	57	74
Inner diameter from Ø to Ø H7 (mm)	D_1	5 - 16	8 - 25	12 - 32	19 - 36	20 - 45	28 - 60	35 - 80
Inner diameter from Ø to Ø H7 (mm)	D_2	6 - 20	12 - 30	15 - 32	19 - 42	30 - 60	35 - 60	40 - 75
Diameter of the hub (mm)	E_1	32	42	56	66.5	82	102	136.5
Diameter of the hub (mm)	E_2	40	55	66	81	110	123	132
Distance (mm)	F	17	24	30	31	35	45	50
Distance full disengagement (mm)	F_F	16	22	29	30	35	43	54
Distance (mm)	G_1	5	8.5	10	11	15	17.5	23
Distance (mm)	G_2	5	7.5	9.5	11	13	17	18
Distance between centers (mm)	H_1	10.5	15	21	24	29	38	50.5
Screws (ISO 4762/12.9)	I_1	M4	M5	M6	M8	M10	M12	M16
Tightening torque of the mounting screw (Nm)	I_1	4	8	15	35	70	120	290
Distance between centers SK-side (mm)	H_2	15	19	23	27	39	41	48
Screws (ISO 4762/12.9)	I_2	M4	M6	M8	M10	M12	M16	2x M16
Tightening torque of the mounting screw (Nm)	I_2	4.5	15	40	70	130	200	250
Diameter with screwhead (mm)	K_S	32	44.5	57	68	85	105	139
Approx. weight (kg)		0.3	0.6	1.0	2.4	5.8	9.3	14.3
Moment of inertia (10^{-3} kgm^2)	J_{ges}	0.06	0.25	0.7	2.3	11	22	33.5
Actuation path (mm)		1.2	1.5	1.7	1.9	2.2	2.2	2.2
Type (Elastomer insert)		A B	A B	A B	A B	A B	A B	A B
Inner diameter (Elastomer insert) (mm)	D_E	14.2	19.2	27.2	30.2	38.2	46.2	60.5

Information about static and dynamic torsional stiffness as well as max. possible misalignment see page 5

1 Nm = 8.85 in lbs

Mounting instructions



Mounting: Slide the coupling on the shaft ends to the proper axial position. Using a torque wrench, tighten the clamp screws to the correct tightening torque as indicated (in the table page 12)

CAUTION! Both clamping hubs have different screws and different tightening torques.

Dismounting: Simply loosen the clamp screw I1, I2 and remove the safety coupling.

Emergency cut off: The axial path of the actuation ring activates the mechanical switch or the proximity sensor .

CAUTION! Upon assembly, it is absolutely necessary to test the function of the switch 100%

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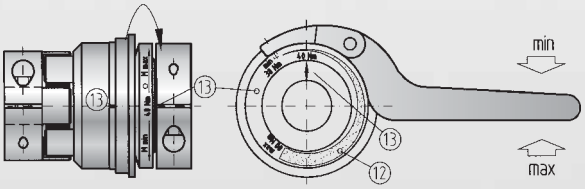
FUNCTION SYSTEMS ES2

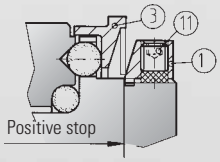
R+W torque limiting couplings are ball detent style overload couplings. They protect drive and driven mechanical components from damage associated with torque overloads.

- Backlash free torque transmission is accomplished by a series of steel balls (4) nested in hardened detents (5).
- Disc springs push against an actuation ring (3) keeping the balls nested.
- The disengagement torque is adjustable by means of an adjustment nut (1).
- In the event of an overload, the actuation ring (3) moves axially allowing the balls to come of the detents separating the drive and driven elements.
- The movement of the actuation ring (3) can be sensed by means of a mechanical switch or proximity sensor (6) triggering the drive to shut down.

Disengagement torque setting



On ES 2 couplings, the slot of the clamping hub serves as a reference point (13).

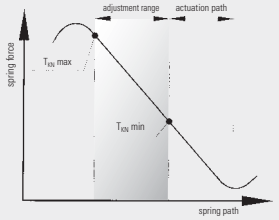


1 adjustment nut
11 locking screw
3 steel actuation ring
12 adjustment range
13 marking

R+W torque limiters are factory set to the customer specified disengagement torque, which is marked on the coupling. The adjustment range (min/max) is also marked on the adjustment nut (1).
The customer can adjust the disengagement torque as long as it is in the range (12) indicated on the adjustment nut.

The adjustment range must not be exceeded while re-adjusting.

To adjust the disengagement torque, loosen the locking screws (11) and rotate the adjustment ring using a spanner wrench to the desired new setting. Tighten the 3 locking screws (11) and test the coupling.

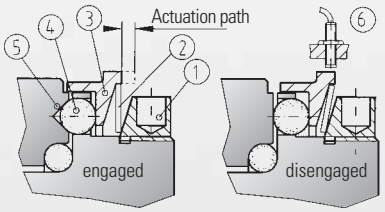


CAUTION:

R+W torque limiters incorporate disc springs that exhibit a special spring characteristic. It is important to stay in the max-min range of the coupling.

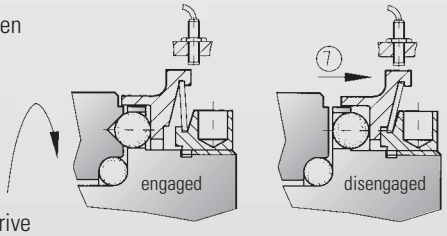
Single-position / Multi-position

In a torque overload, with the single-position design (standard) and multi-position design, the spring disengages to allow the balls to come out of their detents, separating the drive and driven elements. Very low residual spring pressure remains so that the coupling will re-engage once the torque is reduced below the overload setting.



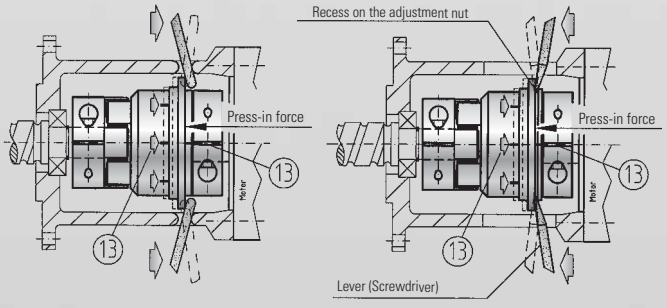
Full-disengage

With this design, when a torque overload is detected, the disc spring completely flips over and places no residual spring pressure on the actuation ring. The drive and driven elements are completely separated.



Re-engagement of the coupling is not automatic and must be performed manually (Picture 3a, 3b).

CAUTION:
Re-engagment should only be performed when the coupling stands still and not rotating!



Picture 3a **Picture 3b**

The R+W full-disengage torque limiting coupling can be re-engaged in six different positions or every 60 degrees with low „press-in" force (E). Marks on the actuation ring and body (13) of the coupling must line up and indicate the re-engagement points.

As of size 150 and up the re-engagement can be done with 2 lever which will be supported at a recess on the adjustment nut (picture 3b). Screwdrivers can be used as a lever.