

TORQUE LIMITERS

Safety Couplings

Overload Clutches

selection acc. your application

Mounting a Flange

ECOL **NEW!** with slide bearing + clamping hub

ECB parts are separately centered to the shaft

ECE axially short version

Toothed Belt Drives

ECP **NEW!** ball bearing + clamping hub

ECA with ball bearing

ECI with bearing for extra-wide pulleys



Chain Drives

ECH with integrated sprocket

ECG with small bearing for drive element

Shaft- to Shaft- Connections

ECPB **NEW!** metall bellow + clamping hub

ECPD **NEW!** elastomer attachment

ECC with metal bellow + cone bushings

Stainless Steel

ECR all parts stainless steel

STAINLESS

ENEMAC Operating instructions Safety couplings types ECA ECB ECC

mode of function

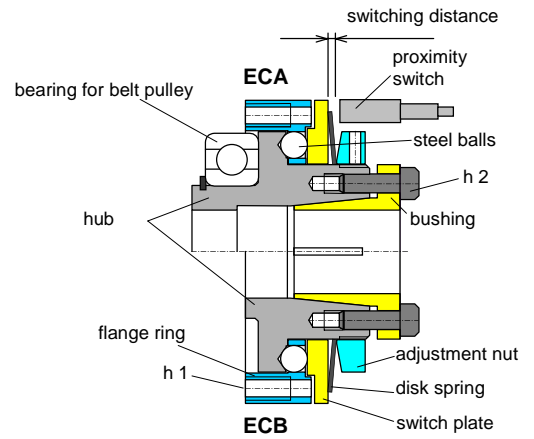
When the machine is operating normally the steel balls are pressed by the disk spring into the cupped recesses located in the flange ring, thereby transmitting the torque from the hub to the flange ring and vice-versa.

overload

In the event of overloading the hub turns round in relation to the flange ring and presses the balls out of the recesses back against the disk spring
 - the coupling clicks over - (once per revolution in case of fixed point switching)
 and actuates the proximity switch, which has to shut off the drive immediately.
 The coupling is only designed to click over for a short period !

engage

After elimination of the disturbance, the coupling has to be rotated
 - with low rotational speed or by hand -
 and reengages automatically (audible) in the fixed point position.
 The coupling now is operational, the adjusted disengagement torque is effective.



technical data

ECA	1	3	6	16	25	40	63	75	100	130	250	400
ECB + ECC		3	6	16	25	40	63		100		250	400
torque range (adjustable)												
TA max (Nm)	0,9	3	6	16	25	45	75	75	130	130	250	400
TA min (Nm)	0,5	1,2	2,5	6	10	20	30	30	50	50	100	160
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	3000	2500	2500	2500	2500	2000	2000
thread of screws h 2 6x	M3	M4	M4	M4	M5	M5	M6	M6	M6	M6	M8	M8
torque of hub screws h 2 (Nm)	1	1,5	1,5	2,5	3	4	6	6	8	8	12	14
thread of flange ring h 1 6x	M3	M4	M4	M4	M6	M6	M6	M6	M6	M6	M8	M8
max. screw position i (mm)	6	8	8	10	12	12	12	12	12	12	16	16
metal bellows data type ECC												
max. shaft misalignment												
lateral (mm)		0,27	0,27	0,2	0,2	0,2	0,2		0,2		0,2	0,2
axial ± (mm)		0,8	0,8	0,8	0,9	0,9	1,3		1,2		1,2	1,0
torsion resistance (10 ³ Nm/Rad)		5	5	21	33	33	54		66		108	164
lateral spring rate (N/mm)		29	29	189	262	262	218		401		503	692

The torque data are valid for the *tightening screws h 2* of the bushing only.

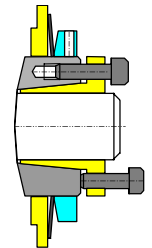
The *screws h 1* for the pulley must be tightened with the usual torque !

Please take notice of the *max. screw position i* (into the flange ring)

installation instructions

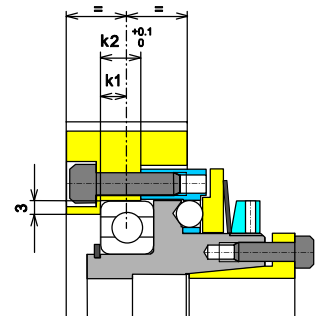
general remarks

- The kind of fit between bushing and shaft must be a sliding fit (e. g. H7/j6 or G7/k6).
The frictional connection will not be impaired by existing keyways.
- During delivery the screws of the bushing are slightly tightened. To enable the hub slipping on the shaft, the bushing and it's screws have to be loosened.
- The screws must be tightened cross-wise to avoid axial run-out of the coupling. Especially with type ECB a severe wobble will cause tilting of the pulley and seizing up on the shaft end. In case of collision the pulley cannot rotate and the coupling cannot disengage.
Tightening torque of screws see *Technical data*.
- dismounting
After unscrewing the 6 tightening screws the bushing is released from the hub by means of 3 draw-off screws (see illustration to the right). If axial space is restrictive it is advisable to screw in the draw-off screws before mounting the coupling and to counter check them against the hub.
- emergency switching
In case of overload the drive must be turned off immediately by means of an emergency switching. A proximity switch can be activated by the axial motion of the switch plate of the coupling and initiate the machine stop.
All couplings are designed for 250 overload cycles.
- mounting in vertical axes of CNC machine tools
It must be taken in consideration that after disengagement the EC-coupling has a residual torque so low that in most of cases it is insufficient to prevent the descending of the machine axle.



for safety couplings type ECA

- The axial center lines of the belt pulley and the ball bearing of type ECA should be in alignment, to prop the traction of the belt directly by the bearing (see illustration to the right).
- The kind of fit between pulley and bearing must be a sliding fit (H7/h5).
Dimension k2 must be machined *within 0 trough +0.1 mm*. The stop collar at left of the outer race of the bearing must at least have 3 mm to guarantee the plane rest of both parts (see illustration to the right).



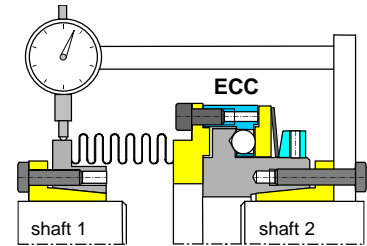
for safety couplings type ECB

- A pulley to be attached to type ECB must have *a complete plane surface on the side of the coupling*.
As well the ECB as the pulley are separately centered to the shaft thus an additional centering between both is in no way tolerable.

ENEMAC Operating instructions Safety couplings types ECA ECB ECC

for safety couplings type ECC

10. **ATTENTION!** The metal bellows of the ECC's are made of thin stainless steel thus being susceptible to shocks. Damage to bellows can result in an unserviceable coupling !
11. The ECC can compensate for shaft misalignments within certain limits (= max. lateral shaft misalignment see *Technical data*).



It must be acted upon the following instructions to obtain the actual lateral shaft misalignment:

The set-up of the dial gauge is shown by the picture, i. e. fastening of the gauge to one side (*shaft 2*) of the already mounted coupling and zero adjustment of the caliper. A 360° turn of the complete measuring system and observation of the maximum reading. The lateral shaft misalignment is half of this reading.

In case of a set-up without a mounted ECC the dial gauge has to be fastened to *shaft 2* and the caliper adjusted to *shaft 1*. Turning *shaft 2* by 360° the maximum reading will include the amount of defect of form (=out of round), but this deviation can be neglected in nearly all cases.

The complete 360° turn of the measuring system is essential !

12. Mounting of the ECC-coupling
The first step is to position the coupling loose on both shaft ends and then to tighten it to *shaft 2*. Possible axial tension of the bellows must be released by turning one shaft end while stopping the other one. The bushing of *shaft 1* may not be tightened before completing this tension release. During mounting the bellows shall not be deformed too much. Permitted are 0.6 mm lateral and ± 1 mm axial. Under operation conditions however the values of *Technical data* are valid.

adjustment of disengagement torque T_A

The disengagement torque T_A is continuously adjustable (without change the disk spring) ! Special torque ranges on request. The couplings are pre-set by the manufacturer on assembly at about 70% of the maximum torque.

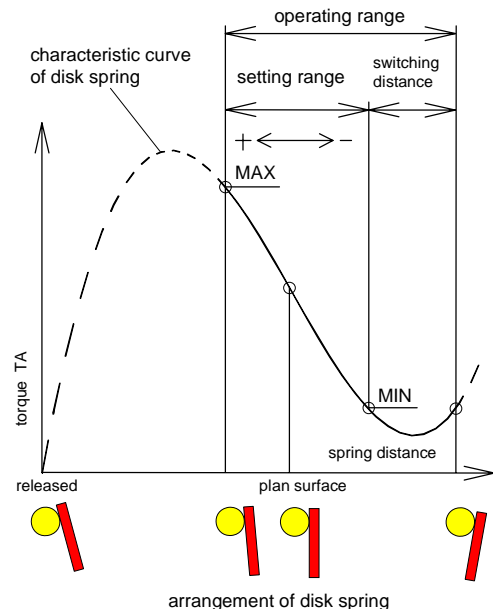
The torque can be subsequently adjusted by turning the adjustment nut with a sickle spanner. Loosen the Allen set screws beforehand !

IMPORTANT ! The characteristic curve of the disk spring is diminishing within the setting range !

Opposite to the common practice this results in the effect, that turning the adjustment nut

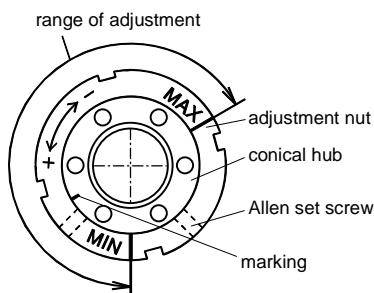
- clockwise $\Rightarrow T_A$ decreases
- counter-clockwise $\Rightarrow T_A$ increases

(see illustration to the right and foot)



The really effective T_A can only be measured precise, if

- ◆ coupling and belt-pulley or intermediate flange are assembled or
- ◆ the measuring device simulates this assembly and
- ◆ points 7 through 9 of the *Installation instructions* are taken into consideration



The marking on the hub (see illustration to the left) must be between MIN and MAX in the adjustment range (=greater part of the circumference of the adjustment nut). By no means adjust torque below MIN, because in that case the disk spring will be blocked during disengagement, and the coupling will not operate. After adjustment the nut has to be fixed against turning by means of the Allen set screws (fixed with LOCTITE 222 or similar).

ENEMAC Operating instructions Torque Limiters types ECE ECG ECH ECI ECR

mode of function

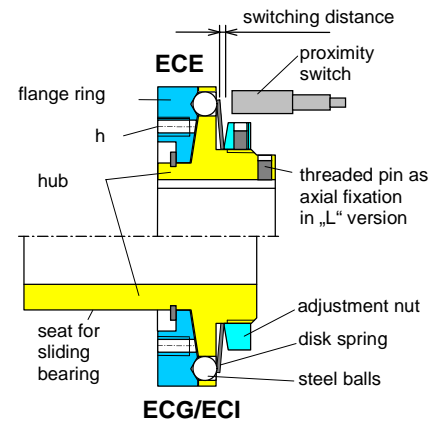
When the machine is operating normally the steel balls are pressed by the disk spring into the cupped recesses located in the flange ring, thereby transmitting the torque from the hub to the flange ring and vice-versa.

overload

In the event of overloading the hub turns round in relation to the flange ring and presses the balls out of the recesses back against the disk spring - the clutch clicks over - (once per revolution in case of fixed point switching) and actuates the proximity switch, which has to shut off the drive immediately. The clutch is only designed to click over for a short period !

engage

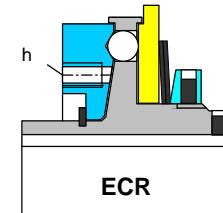
After elimination of the disturbance, the clutch has to be rotated - with low rotational speed or by hand - and reengages automatically (audible) in the fixed point position. The clutch now is operational, the adjusted disengagement torque is effective.



technical data

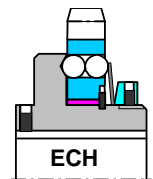
ECE ECG	5	10	16	25	40	63	100	200	315		630		1100	2000
ECI	5	10	16	25	40	63	100	200		315		630		
torque range (adjustable)														
TA max (Nm)	5	10	16	25	40	63	100	200	315	315	630	630	1100	2000
TA min (Nm)	2	4	7	10	16	25	40	80	120	120	250	250	450	800
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	3000	2500	2500	1800	1800	1800	1800	1000	800
thread of flange ring h	6x M5	M5	M6	M6	M6	M6	M6	M6	M8	M10	M8	M10	M16	M16
max. screw position i (mm)	6	6	8	8	8	8	12	12	15	15	15	15	24	24

ECR (stainless steel)	50	100	160	240
torque range (adjustable)				
TA max (Nm)	50	100	160	240
TA min (Nm)	15	40	60	100
max. rotational speed (min ⁻¹)	3000	3000	2500	2500
thread of flange ring h	6x M6	M6	M8	M8
max. screw position i (mm)	8	8	12	12



The screws *h* for the drive element must be tightened with the usual torque ! Please take notice of the max. screw position *i* (into the flange ring).

ECH (chain wheel integrated)	5	16	25	40	63	80	140	200	400	630
torque range (adjustable)										
TA max (Nm)	5	16	25	40	63	80	140	200	400	630
TA min (Nm)	2	6	10	16	25	32	56	80	160	250
max. rotational speed (min ⁻¹)	3000	3000	3000	2800	2800	2500	2500	2000	2000	1500



installation instructions

general remarks

- The fit between the hub and shaft should be chosen as close sliding fit (e. g. H7/j6 or G7/k6). Keyway according to DIN 6885 sheet 1.
- For axial fixation (against displacement on the shaft) threaded pins are provided that clamp the hubs against the keyways. An exception is the version „K“ in the types ECE/ECG and ECI, which are for example fixed by a stop collar and washer.
- The maximum rotational speeds specified in the *Technical data* refer only to the respective clutch by itself. If drive elements are incorporated that permit lower rotational speeds, these are obviously decisive, (e. g. the maximum permissible chain speed).
- Emergency switching
In order to protect the machine and clutch, the drive must be shut off in the event of overloading !
Normally the disk spring of the clutch activates, via the switching distance, a proximity switch arranged in axial direction and which disconnects the motor power circuit.

for types ECE, ECG, ECI and ECR:

- The drive element (e. g. pulley) is simply bolted onto the clutch, the torque being transmitted by friction.
- ECE and pulley are both centred on the shaft and must not be additionally centred relative to one another by a fit bearing.
- With type ECE the drive element (e. g. pulley) must have its own sliding bearing on the shaft, which supports the tractive force of the belt. The clutch cannot absorb this force.
- Points 6 and 7 apply as appropriate to types ECG, ECI and ECR. In this case the drive element is centred and mounted directly on the clutch bearing instead of on the shaft. In order to have a lower sliding speed in the event of overloading, the sliding bearing is incorporated in the drive element (is therefore not included in the delivery specification of the ECG, ECI or ECR).
- The slide bearing clearance has to be < 0,03 mm.
For the types ECG, ECI and ECR we recommend the installation of the slide bearing SKF type GLYCODUR F.
The tolerance *f 7* of the bearing is matched to these slide bearings.
- With type ECE an adapter flange enables also small pulleys or chain wheels to be installed.

adjustment of disengagement torque T_A

The disengagement torque T_A is continuously adjustable (without change the disk spring) !
 Special torque ranges on request.
 The couplings are pre-set by the manufacturer on assembly at about 70% of the maximum torque.

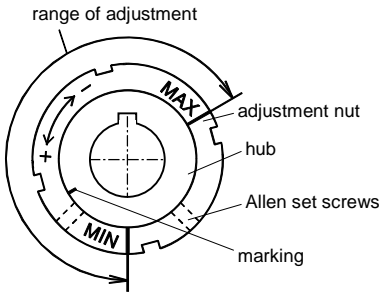
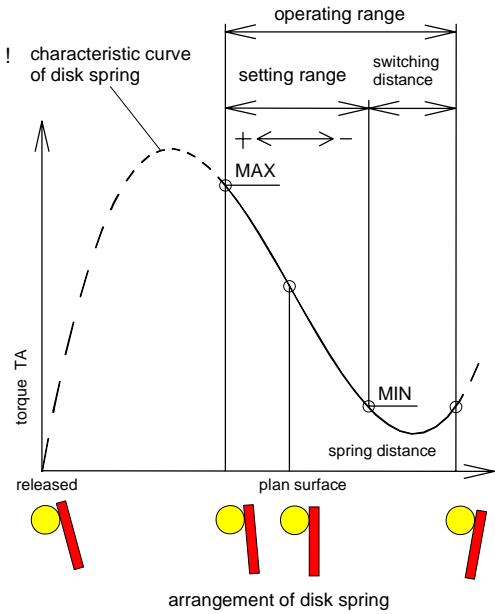
The torque can be subsequently adjusted by turning the adjustment nut with a sickle spanner. Loosen the Allen set screws beforehand !

IMPORTANT ! The characteristic curve of the disk spring is diminishing within the setting range !

Opposite to the common practice this results in the effect, that turning the adjustment nut ...

- clockwise $\Rightarrow T_A$ decreases
- counter-clockwise $\Rightarrow T_A$ increases

(see illustration to the right and foot)



The marking on the hub (see illustration to the left) must be between MIN and MAX in the adjustment range (=greater part of the circumference of the adjustment nut).
 By no means adjust torque below MIN, because in that case the disk spring will be blocked during disengagement, and the coupling will not operate.
 After adjustment the nut has to be fixed against turning by means of the Allen set screws (fixed with LOCTITE 222 or similar).

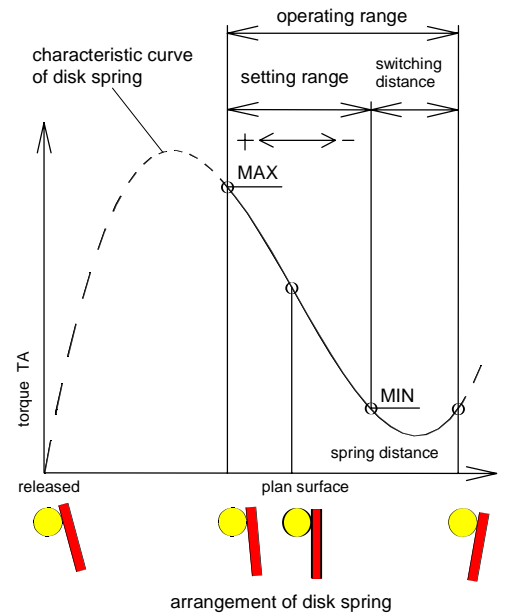
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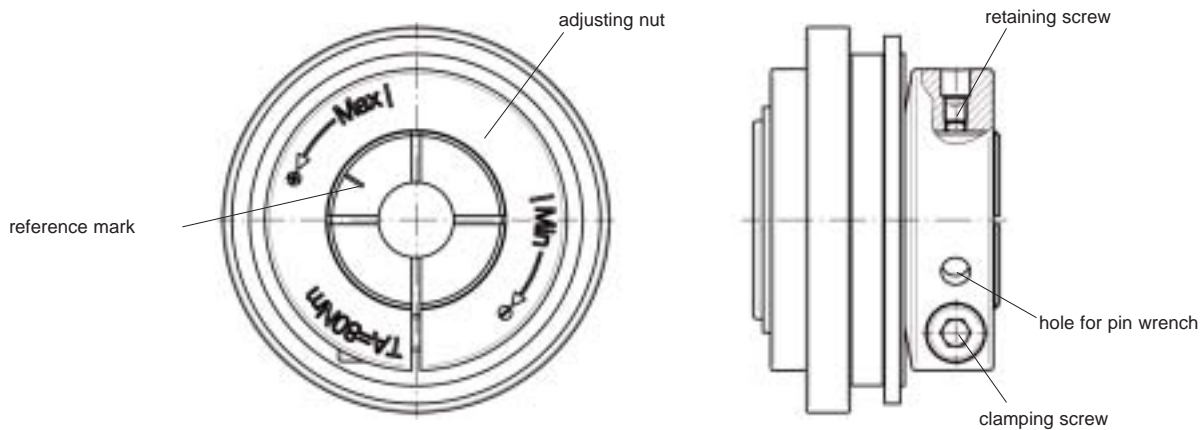
Torque Limiters type ECOL, ECP, ECPB, ECPD, ECAG Setting the disengagement torque TA

The disengagement torque is generally between approx. 40% and 100% of the nominal torque of the coupling and is stepless adjustable. If the customer does not specify a setting value, the setting is done at the maximum torque (nominal torque). The set static disengagement torque can be adjusted (on the machine) if necessary at a later date by turning the adjusting nut with a pin wrench. Adjusting nuts are provided with a user friendly scale; the disengagement torque, and the reference marks for TA min and TA max, are engraved on the face side of the adjusting nut to facilitate setting. Disengagement torques greater than TA max are possible (on request); a stronger wear of the disengagement mechanic is resulted.

CAUTION! Due to the degressive spring characteristic within the setting range, a turning back (counter-clockwise) of the adjusting nut means an increase, or a turning in clockwise direction means a reduction of the disengagement torque! (see direction arrow at clamping nut).

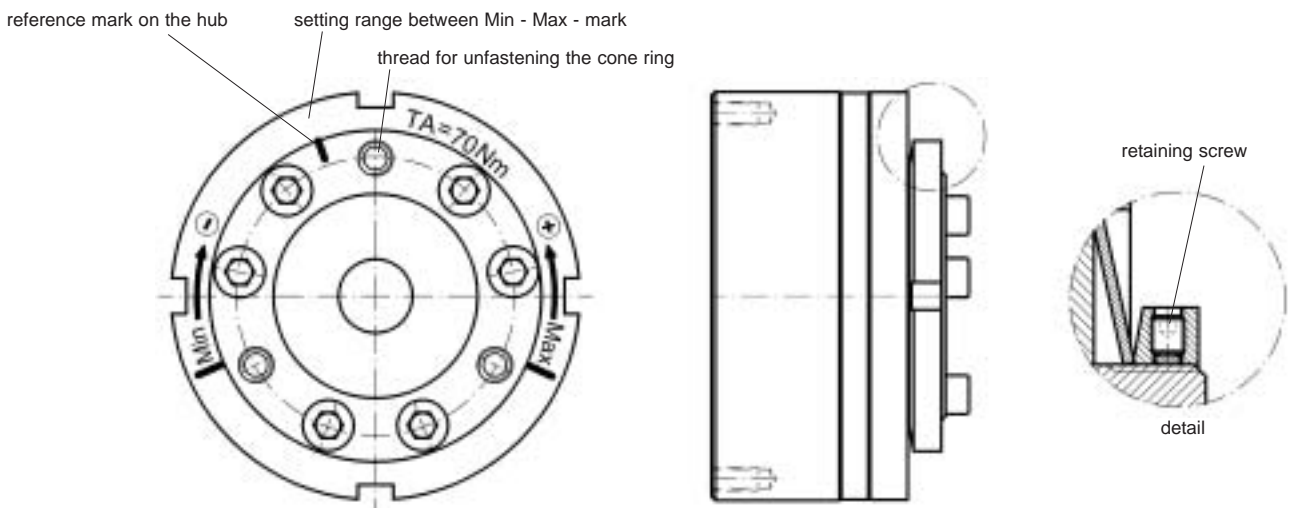


setting marking by ECOL / ECP / ECPB / ECPD



Release retaining screw. Turn adjusting nut with pin wrench (note reference mark). Tighten retaining screw after setting the required disengagement torque. Setting can be done by turning the adjusting nut with scale till the torque value to be set is in line with the reference mark. In mounted status the clamping screw must be released and after setting the disengagement torque it has to be fastened again.

setting marking by ECAG

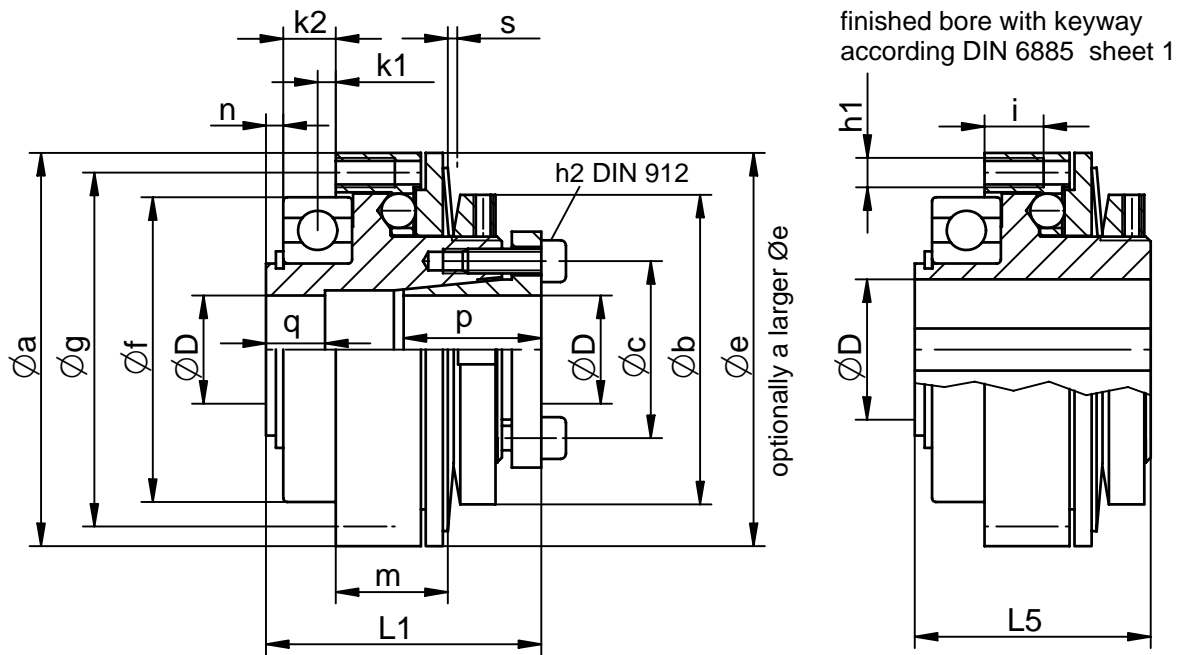


Unscrew retaining screw (see detail) completely; turn adjusting nut with pin wrench; after adjustment secure the adjustment nut against turning by drilling and tightening the self tapping screw.

ENEMAC safety coupling type ECA

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with built-in bearing for direct mounting of a pulley onto the coupling. This results in a compact and axially short unit, requiring nearly no additional space, mountable during assembling. Model ECA is of particular interest for machine tools under development.



* the disengagement torque TA is continuously adjustable. Special adjustment on request.
 Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.
 torque of hubscrews h2 are valid for the tightening screws of the bushing only.

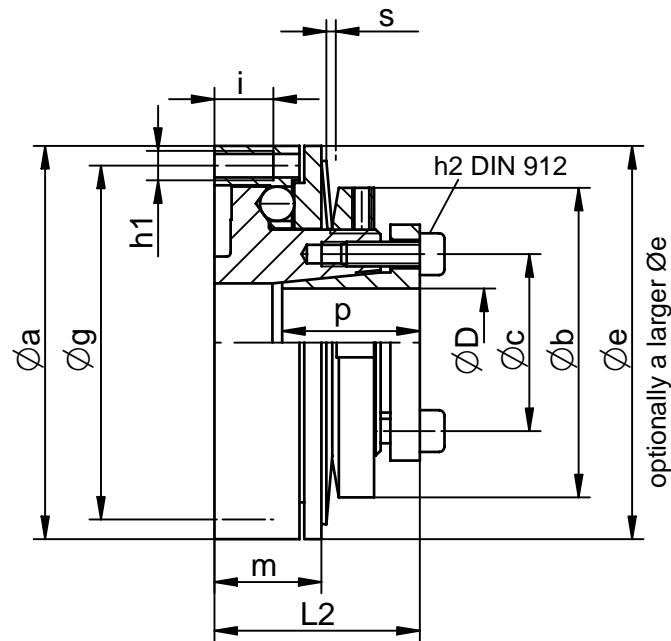
technical data + dimensions (mm)		we reserves the right to make alterations										
ECA	1	3	6	16	25	40	63	75	100	130	250	400
torque range *	0,9	3	6	16	25	45	75	75	130	130	250	400
TA max (Nm)	0,5	1,2	2,5	6	10	20	30	30	50	50	100	160
TA min (Nm)												
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	3000	2500	2500	2500	2500	2000	2000
moment of inertia (10 ⁻³ kgm ²)	0,03	0,17	0,17	0,36	0,85	0,85	2,9	2,8	2,9	2,8	12,1	12,4
Masse (kg)	0,15	0,4	0,4	0,65	1,1	1,1	2,3	2,2	2,3	2,2	5,5	5,6
torque of hub screws h2 (Nm)	1	1,5	1,5	2,5	3	4	6	6	8	8	12	14
Ø a	40	59	59	67	80	80	103	103	103	103	140	140
Ø b	33	45	45	52	63	63	85	85	85	85	105	105
Ø c	19	27	27	32	36	36	50	50	50	50	62	62
Ø e	43	59	59	67	79,5	79,5	103	103	103	103	134	134
Ø f h5	30	47	47	55	62	62	85	80	85	80	110	110
Ø g	35	53	53	61	72	72	95	95	95	95	127	127
6x h1	M3	M4	M4	M4	M6	M6	M6	M6	M6	M6	M8	M8
6x h2	M3	M4	M4	M4	M5	M5	M6	M6	M6	M6	M8	M8
i	6	8	8	10	12	12	12	12	12	12	16	16
k1	3,5	6	6	6,5	7	7	5	8	5	8	10	10
k2	4	9,2	9,2	9,4	10,7	10,7	6,6	12,6	6,6	12,6	18,1	18,1
L1	30	39,5	39,5	46,5	55	55	60	66	60	66	87	87
L5	25	33,5	33,5	39,5	47	47	51	57	51	57	77	77
m	12,9	14	14	18	23	23	27	27	27	27	34	36
n	2,5	3	3	3,5	3,5	3,5	4,5	4,5	4,5	4,5	5,5	5,5
p	15	19	19	22	28	28	29	29	29	29	37,5	37,5
q	8	10	10	10	12	12	14,5	14,5	14,5	14,5	18	18
s (switching distance)	0,7	1,0	1,0	1,2	1,4	1,4	1,7	1,7	1,7	1,7	2,4	2,4
D max	12	16	16	20	24	24	35	35	35	35	42	42
D min	6	10	10	12	16	16	20	20	20	20	28	30
D max keyway	12	17	17	21	24	24	50	35	50	35	54	54

ordering example: ECA 63 D=28G7 TA=50Nm or ECA 63 D=28G7 with keyway 8P9 TA=50Nm KW04/08

ENEMAC safety coupling type ECB

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can be attached to existing pulleys (with built-in shaft bearing). By means of an intermediate flange even an assembly with small pulleys is possible.



* the disengagement torque TA is continuously adjustable. Special adjustment on request.
 Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.
 torque of hubscrews h2 are valid for the tightening screws of the bushing only.

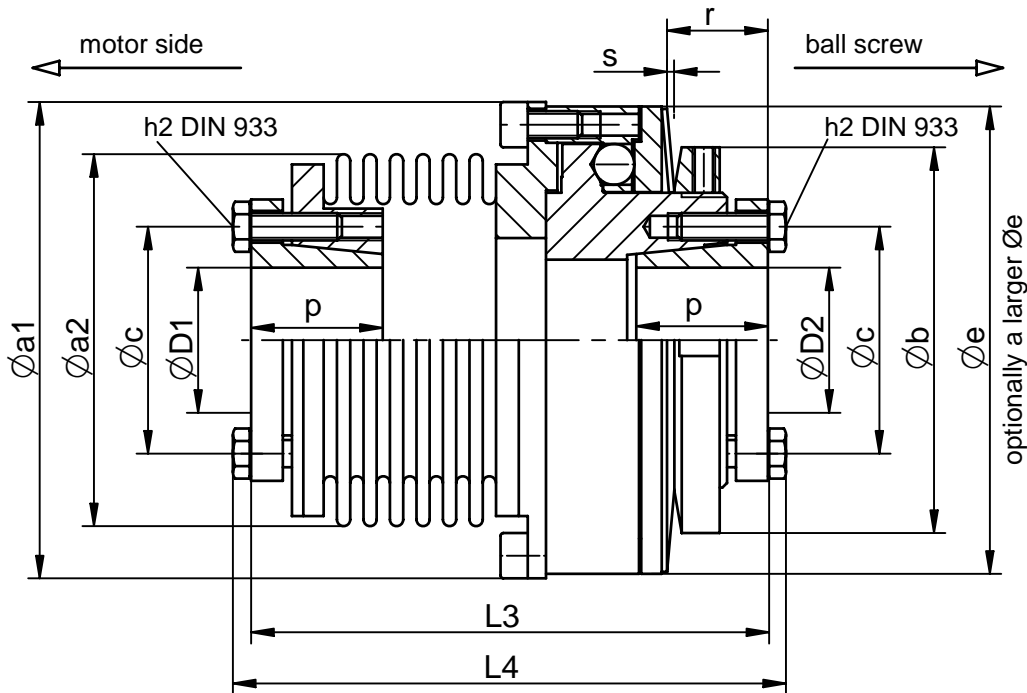
technical data + dimensions (mm) we reserves the righth to make alterations									
ECB	3	6	16	25	40	63	100	250	400
torque range *									
TA max (Nm)	3	6	16	25	45	75	130	250	400
TA min (Nm)	1,2	2,5	6	10	20	30	50	100	160
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	2500	2500	2000	2000
moment of inertia (10 ⁻³ kgm ²)	0,14	0,14	0,3	0,7	0,7	2,5	2,5	10,4	10,8
mass (kg)	0,3	0,3	0,5	0,9	0,9	1,9	1,9	4,3	4,4
torque of hub screws h2 (Nm)	1,5	1,5	2,5	3	4	6	8	12	14
Ø a	59	59	67	80	80	103	103	140	140
Ø b	45	45	52	63	63	85	85	105	105
Ø c	27	27	32	36	36	50	50	62	62
Ø e	59	59	67	79,5	79,5	103	103	134	134
Ø g	53	53	61	72	72	95	95	127	127
6x h1	M4	M4	M4	M6	M6	M6	M6	M8	M8
6x h2	M4	M4	M4	M5	M5	M6	M6	M8	M8
i	8	8	10	12	12	12	12	16	16
L2	27,5	27,5	34	41	41	49	49	64	64
m	14	14	18	23	23	27	27	34	36
p	19	19	22	28	28	29	29	37,5	37,5
s (switching distance)	1,0	1,0	1,2	1,4	1,4	1,7	1,7	2,4	2,4
D max	16	16	20	24	24	35	35	42	42
D min	10	10	12	16	16	20	20	28	30

ordering example: ECB 63 D=28G7 TA=50Nm

ENEMAC Safety Coupling type ECC

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for torsion resistant but flexible shaft to shaft connection with torque limitation. This model combines model ECB with a metal bellows coupling to compensate for shaft misalignment.



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 torque of hubscrews h2 are valid for the tightening screws of the bushing only.

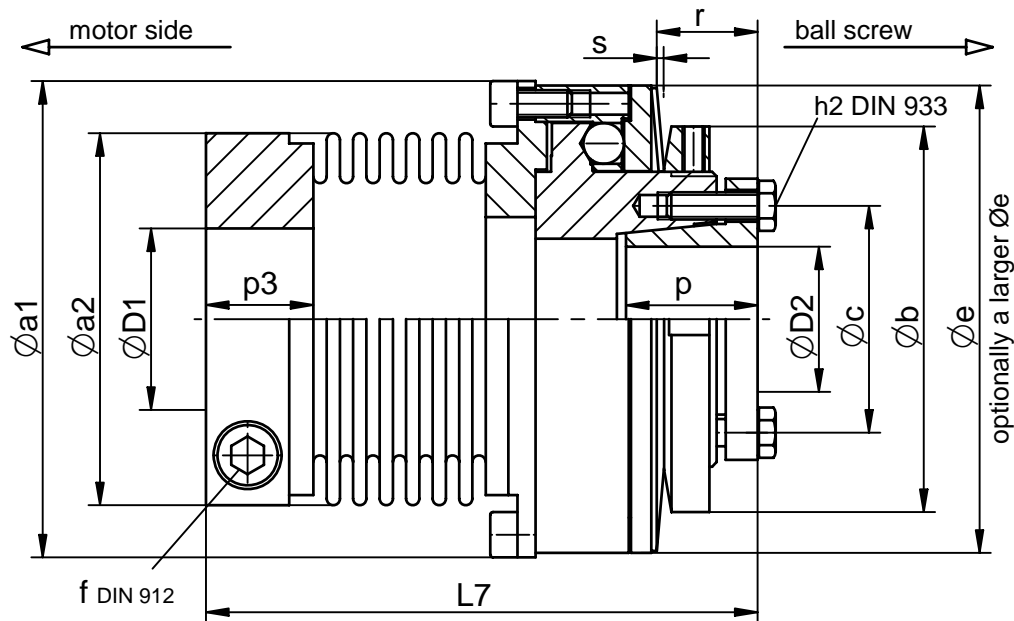
technical data + dimensions (mm)		we reserves the righth to make alterations								
ECC	3	6	16	25	40	63	100	250	400	
torque range *										
TA max (Nm)	3	6	16	25	45	75	130	250	400	
TA min (Nm)	1,2	2,5	6	10	20	30	50	100	160	
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	2500	2500	2000	2000	
moment of inertia (10 ⁻³ kgm ²)	0,2	0,2	0,4	1,1	1,1	3,7	3,7	14,4	15	
max. misalignment	axial ± (mm)	0,8	0,8	0,8	0,9	0,9	1,3	1,2	1,2	1,0
	lateral (mm)	0,25	0,25	0,25	0,3	0,3	0,2	0,2	0,2	0,2
torsion resistance (10 ³ Nm/Rad)	5	5	19	30	30	49	59	109	155	
axial spring rate (N/mm)	16	16	51	49	49	48	80	70	100	
radial spring rate (N/mm)	24	24	190	260	260	220	400	450	640	
mass (kg)	0,6	0,6	1,0	1,8	1,8	3,4	3,4	7,2	7,5	
torque of hub screws h2 (Nm)	1,5	1,5	2,5	3	4	6	8	12	14	
Ø a1	60	60	68	82	82	105	105	140	140	
Ø a2	40	40	56	66	66	82	82	101	101	
Ø b	45	45	52	63	63	85	85	105	105	
Ø c	27	27	32	36	36	50	50	62	62	
Ø e	59	59	67	79,5	79,5	103	103	134	134	
6x h2	M4	M4	M4	M5	M5	M6	M6	M8	M8	
L3	77	77	88	98	98	114	116	140	146	
L4	82,5	82,5	94	105	105	122	124	151	157	
p	19	19	22	28	28	29	29	37,5	37,5	
r	13,5	13,5	16	18	18	22	22	32	30	
s (switching distance)	1,0	1,0	1,2	1,4	1,4	1,7	1,7	2,4	2,4	
D1/D2 max	16	16	20	24	24	35	35	42	42	
D1/D2 min	10	10	12	16	16	20	20	28	30	

ordering example: ECC 63 D1=32G7 D2=28G7 TA=50Nm

ENEMAC Safety Coupling type ECC with clamping hub

www.enemac.de

For torsion resistant but flexible shaft to shaft connection with torque limitation. This model combines model ECB with a metal bellows coupling to compensate for shaft misalignment. With radially actuated clamping hub on the side of the metal bellows.



* the disengagement torque TA is continuously adjustable. Special adjustment on request.
Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.
torque of hubscrews h2 are valid for the tightening screws of the bushing only.

technical data + dimensions(mm)		we reserves the righth to make alterations							
ECC	3	6	16	25	40	63	100	250	400
torque range *	3	6	16	25	45	75	130	250	400
TA max (Nm)	1,2	2,5	6	10	20	30	50	100	160
TA min (Nm)									
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	2500	2500	2000	2000
moment of inertia (10 ⁻³ kgm ²)	0,2	0,2	0,4	1,1	1,1	3,5	3,5	13,7	14,2
max. axial ± (mm)	0,8	0,8	0,8	0,9	0,9	1,3	1,2	1,2	1,0
misalignment lateral (mm)	0,25	0,25	0,25	0,3	0,3	0,2	0,2	0,2	0,2
torsion resistance (10 ³ Nm/Rad)	5	5	19	30	30	49	59	109	155
axial spring rate (N/mm)	16	16	51	49	49	48	80	70	100
radial spring rate (N/mm)	24	24	190	260	260	220	400	450	640
mass (kg)	0,5	0,5	0,8	1,4	1,4	2,7	2,7	6,0	6,3
torque of hub screws h2 (Nm)	1,5	1,5	2,5	3	4	6	8	12	14
Ø a1	60	60	68	82	82	105	105	140	140
Ø a2	40	40	56	66	66	82	82	101	101
Ø b	45	45	52	63	63	85	85	105	105
Ø c	27	27	32	36	36	50	50	62	62
Ø e	59	59	67	79,5	79,5	103	103	134	134
f DIN 912	M5	M5	M6	M8	M8	M10	M10	M12	M12
torque of screws f (Nm)	7	7	14	34	34	65	65	115	115
6x h2	M4	M4	M4	M5	M5	M6	M6	M8	M8
L7	80	80	94	105	105	124	126	149	155
p	19	19	22	28	28	29	29	37,5	37,5
p3	16	16	20	22	22	26	26	29	29
r	13,5	13,5	16	18	18	22	22	32	30
s (switching distance)	1,0	1,0	1,2	1,4	1,4	1,7	1,7	2,4	2,4
D1 max	19	19	30	34	34	43	43	55	55
D1 min	6	6	9	18	18	17	22	27	34
D2 max	16	16	20	24	24	35	35	42	42
D2 min	10	10	12	16	16	20	20	28	30

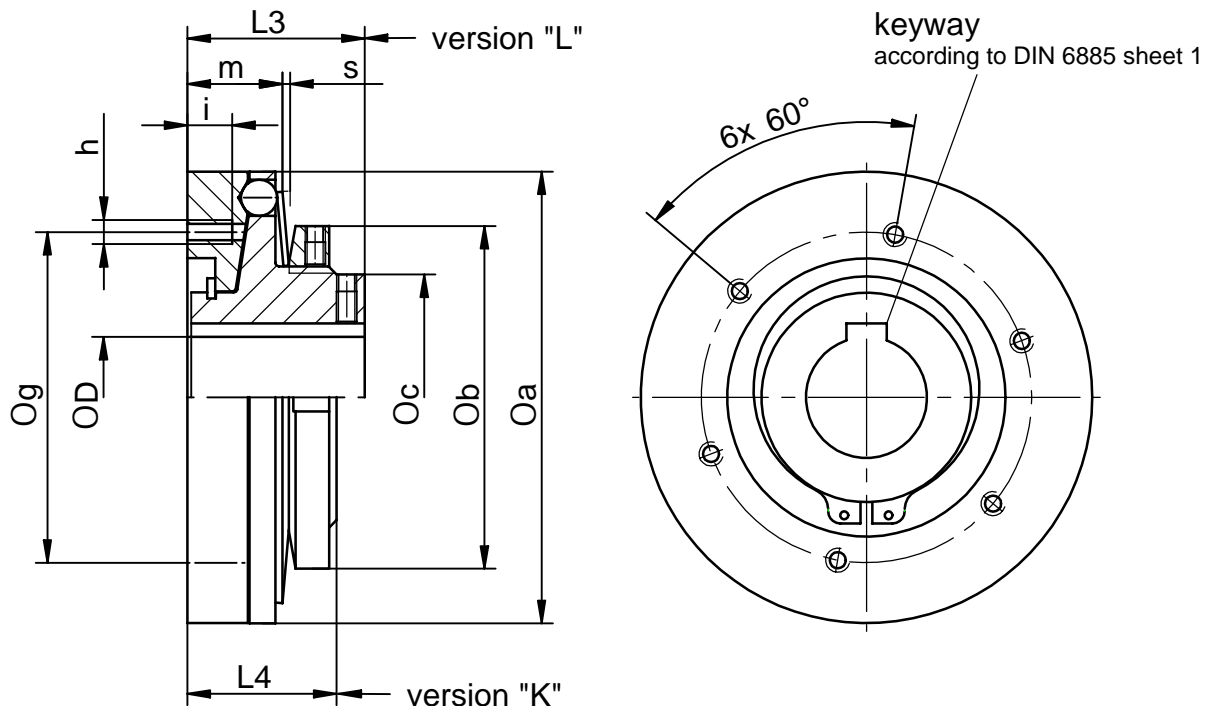
ordering example: ECC 63 D1=32G7 with clamping hub D2=28G7 TA=50Nm

KW04/08

ENEMAC torque limiter type ECE

www.enemac.de

The drive element (e.g. pulley) must have its own bearing on the shaft, which supports the tractive force of the belt. In contrast to type ECG the drive element is, however, not connected to the clutch as regards width and diameter of the bearing. Special versions (a few of reengagement points per revolution, different adjustment ranges and dimensions) are possible, please ask for.



on request
STAINLESS STEEL

* the disengagement torque TA is continuously adjustable. Special adjustment on request. Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.

technical data + dimensions (mm)				we reserves the right to make alterations								
ECE	5	10	16	25	40	63	100	200	315	630	1000	1600
torque range *												
TA max (Nm)	5	10	16	25	40	63	100	200	315	630	1000	1600
TA min (Nm)	2	4	6	10	16	25	40	80	120	250	400	600
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	3000	2500	2500	1800	1800	1000	800
moment of inertia (10 ⁻³ kgm ²)	0,16	0,16	0,36	0,36	0,66	0,66	2,9	2,9	11,9	12,3	58,7	66
mass (kg)	0,35	0,35	0,58	0,58	0,8	0,8	1,9	1,9	4,3	4,4	11,1	11,6
Ø a	64	64	73	73	82	82	112	112	148	148	202	205
Ø b	45	45	52	52	63	63	85	85	105	105	150	150
Ø c	32	32	38	38	43	43	61	61	76	76	108	108
Ø D min	10	10	12	12	16	16	20	25	30	35	45	55
Ø D max	17	17	20	20	30	30	42	42	50	50	75	85
Ø g	47	47	53	53	62	62	82	82	102	102	140	148
6x h	M5	M5	M6	M6	M6	M6	M6	M6	M8	M8/M10*	M12	M16
i	6	6	8	8	8	8	12	12	15	15	22	24
L3	26	26	31	31	38	38	44	44	54	54	75	81
L4	20	20	25	25	31	31	37	37	47	47	67	73
m	12	12	15	15	19	19	23	23	31	33	41	49
s (switching distance)	1,0	1,0	1,2	1,2	1,4	1,4	1,7	1,7	2,4	2,4	2,8	3,3

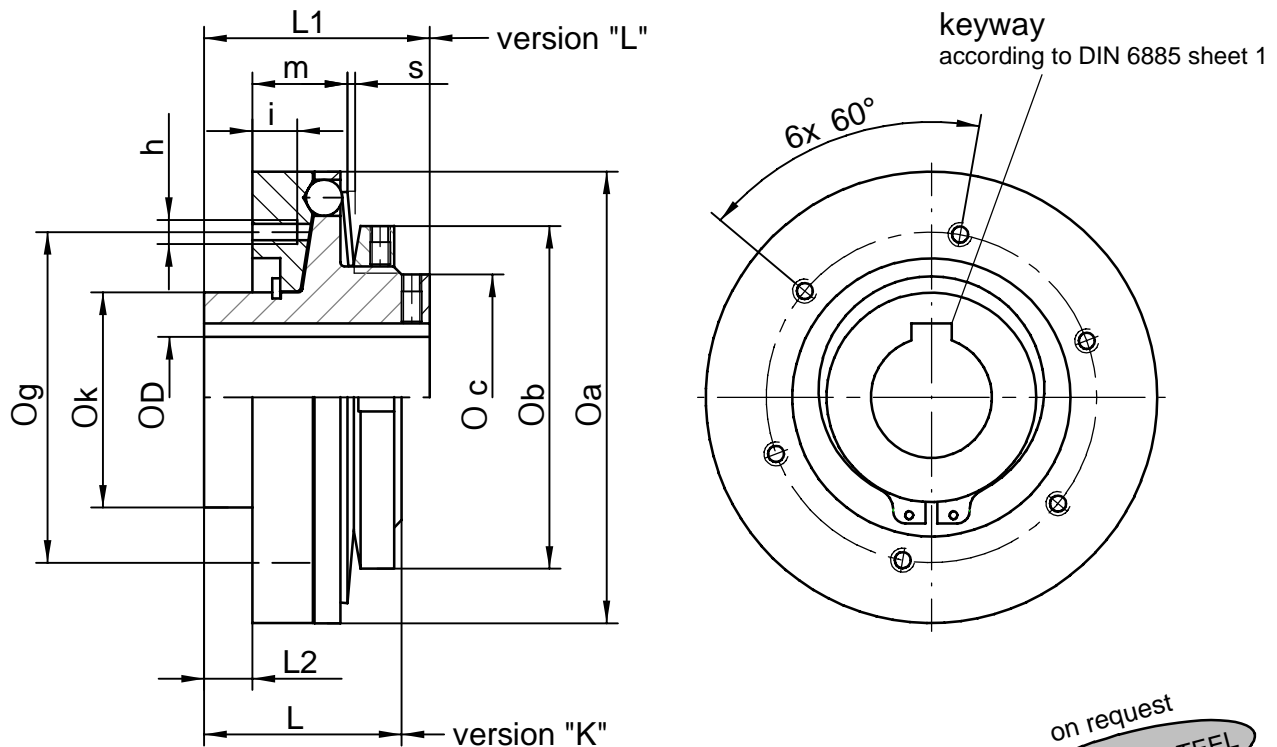
* 6x M10 on version STAINLESS STEEL

ordering example: ECE 63 L D=28G7 with keyway 8P9 TA=50Nm

ENEMAC Torque Limiter type ECG

www.enemac.de

With bearing for chain wheels (also pulleys, cardan shafts, parts with connection flange). The combination with chain wheel in particular provides a compact and axially short unit that can be assembled before hand and then only has to be mounted on the machine shaft. A sliding bearing must be incorporated in the drive element by the customer. Special versions (a few of reengagement points per revolution, different adjustment ranges and dimensions) are possible, please ask for.



* the disengagement torque TA is continuously adjustable. Special adjustment on request. Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.

on request
STAINLESS STEEL

technical data + dimensions (mm)												we reserves the righth to make alterations
ECG	5	10	16	25	40	63	100	200	315	630	1000	1600
torque range *												
TA max (Nm)	5	10	16	25	40	63	100	200	315	630	1000	1600
TA min (Nm)	2	4	7	10	16	25	40	80	120	250	400	600
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	3000	2500	2500	1800	1800	1000	800
moment of inertia (10 ⁻³ kgm ²)	0,17	0,17	0,36	0,37	0,67	0,68	3,0	3,0	12,0	12,4	59,5	67,3
mass (kg)	0,37	0,37	0,6	0,6	0,83	0,83	2,0	2,0	4,5	4,6	11,6	12,2
Ø a	64	64	73	73	82	82	112	112	148	148	202	205
Ø b	45	45	52	52	63	63	85	85	105	105	150	150
Ø c	32	32	38	38	43	43	61	61	76	76	108	108
Ø D min	10	10	12	12	16	16	20	20	30	35	40	48
Ø D max	17	17	20	20	30	30	42	42	50	50	75	85
Ø g	47	47	53	53	62	62	82	82	102	102	140	148
6x h	M5	M5	M6	M6	M6	M6	M6	M6	M8	M8/M10*	M12	M16
i	6	6	8	8	8	8	12	12	15	15	22	24
Ø k h6	25	25	30	30	40	40	55	55	65	65	95	105
L	26	26	33	33	41	41	49	49	64	64	88	98
L1	32	32	39	39	48	48	56	56	71	71	96	106
L2	6	6	8	8	10	10	12	12	16,5	16,5	21	25
m	12	12	15	15	19	19	23	23	31	33	41	49
s (switching distance)	1,0	1,0	1,2	1,2	1,4	1,4	1,7	1,7	2,4	2,4	2,8	3,3

* 6x M10 on version STAINLESS STEEL

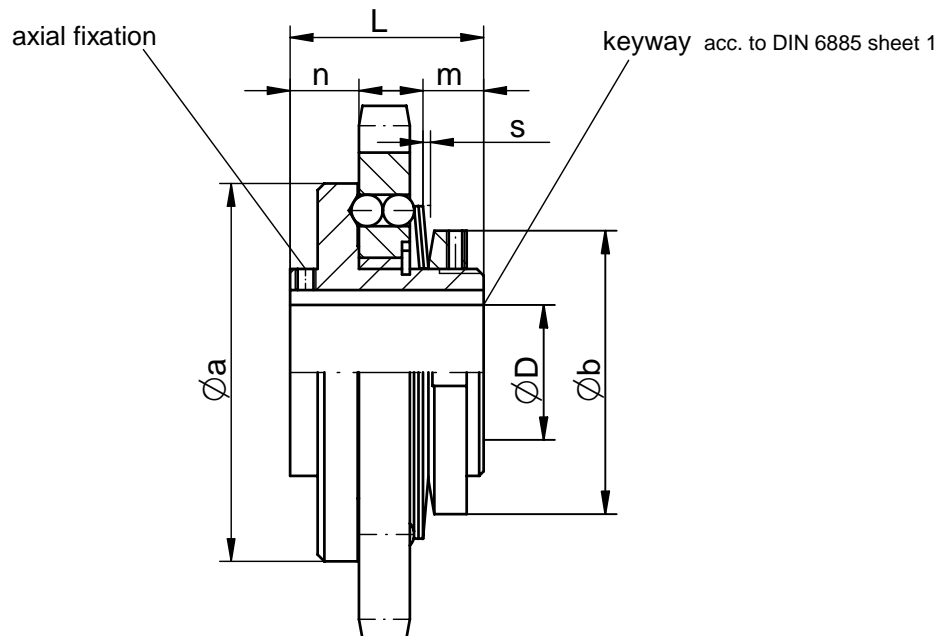
ordering example: ECG 63 L D=28G7 with keyway 8P9 TA=50Nm

ENEMAC torque limiter type ECH

www.enemac.de

with integrated chain wheel, very compact, axially short unit

These clutches are a low-cost alternative to conventional slip clutches and are interchangeable with the latter at the same or smaller external dimensions. They avoid the known problems of slip clutches, such as inaccurate disengagement torque, sensitivity to oil and moisture, large development of heat during slipping, and wear of the friction coatings. In contrast to ECE or ECG torque limiters, the drive element is not flange-mounted, but is integrated as a chain wheel, thus providing a very compact and axially short unit.



* the disengagement torque TA is continuously adjustable. Special adjustment on request.
Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.

n*) the value »n« applies to simple chain wheels, please ask for further information of wider chain wheels.

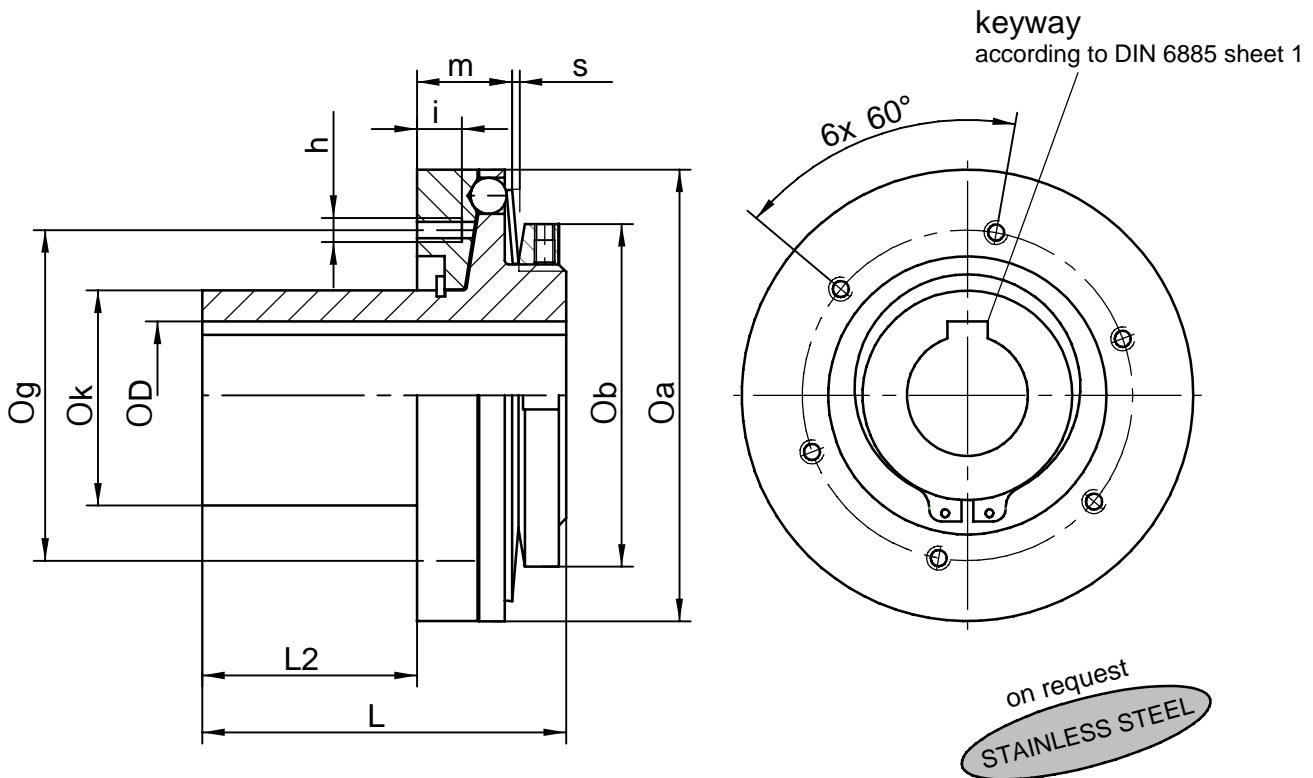
technical data + dimensions (mm)		we reserves the righth to make alterations								
ECH	5	16	25	40	63	80	140	200	400	630
torque range *	5	16	25	40	63	80	140	200	400	630
TA max (Nm)	2	6	10	16	25	32	56	80	160	250
TA min (Nm)										
max. rotational speed (min ⁻¹)	3000	3000	3000	2800	2800	2500	2500	2000	2000	1500
moment of inertia (10 ⁻³ kgm ²)	0,15	0,16	0,16	0,29	0,30	0,52	0,54	2,54	2,64	10,9
mass (kg)	0,35	0,35	0,36	0,5	0,5	0,7	0,7	1,6	1,7	4,0
Ø a	64	64	64	72	72	82	82	110	110	148
Ø b	45	45	45	52	52	63	63	85	85	105
Ø D min	10	12	14	16	18	18	20	22	26	30
Ø D max	22	22	22	28	28	32	32	50	50	60
L	33	33	33	36	36	43	43	57	57	75
m	10,9	10,3	9,7	9,9	9,1	13,6	12,6	14,2	12,8	18,9
n*	14	14	14	16	16	16,5	16,5	22	22	29,5
s (switching distance)	1,0	1,0	1,0	1,2	1,2	1,4	1,4	1,7	1,7	2,4
smallest possible chain wheels (simple)										
pitch p	number of teeth z									
3/8"	25	25	25	28	28	31	31			
1/2" x 5/16"	20	20	20	22	22	24	24	32	32	
5/8"	16	16	16	18	18	20	20	26	26	34
3/4"				15	15	17	17	22	22	28
1"						14	14	17	17	22
1 1/4"								15	15	18
1 1/2"										

ordering example: ECH 140 D=30H7 with keyway 8P9 with chain wheel p=1/2" z=25 TA=100Nm

ENEMAC Torque Limiter type ECI

www.enemac.de

With an extra-wide bearing for pulleys. The combination with chain wheel in particular provides a compact and axially short unit that can be assembled before hand and then only has to be mounted on the machine shaft. A sliding bearing must be incorporated in the drive element by the customer. Special versions (a few of reengagement points per revolution, different adjustment ranges and dimensions) are possible, please ask for.



* the disengagement torque TA is continuously adjustable. Special adjustment on request. Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.

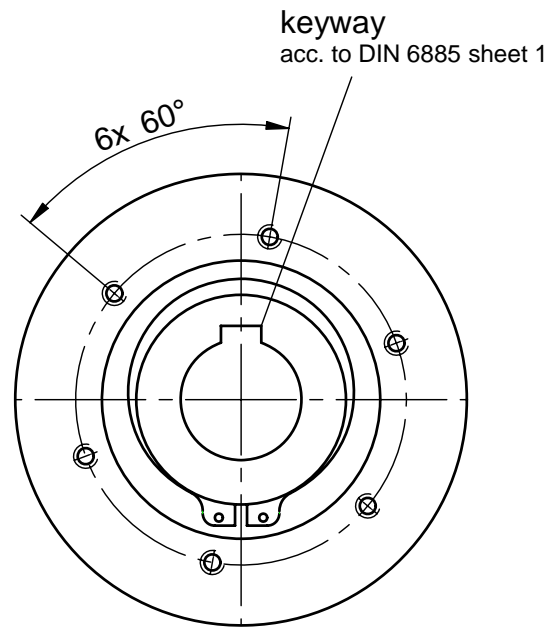
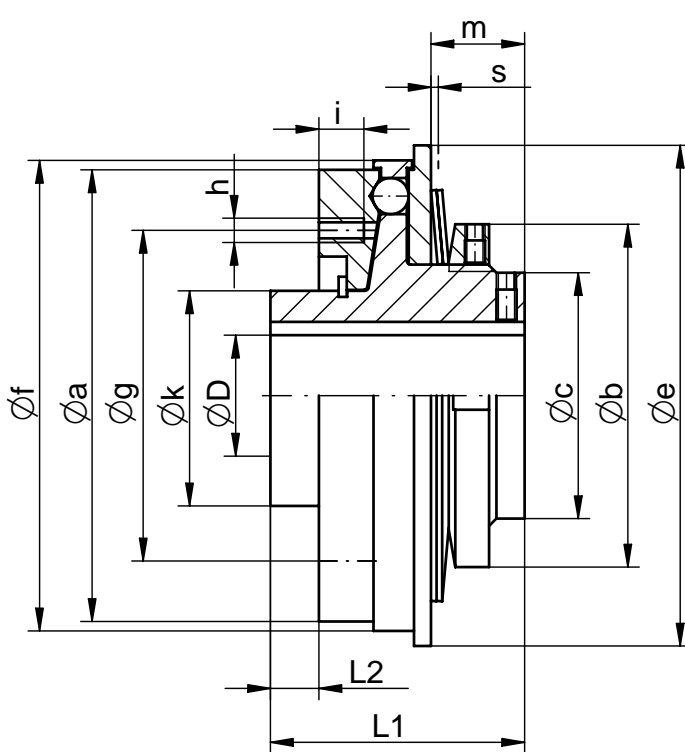
technical data + dimension (mm)		we reserves the right to make alterations								
ECI	5	10	16	25	40	63	100	200	315	630
torque range *										
TA max (Nm)	5	10	16	25	40	63	100	200	315	630
TA min (Nm)	2	4	7	10	16	25	40	80	120	250
max. rotational speed (min ⁻¹)	3000	3000	3000	3000	3000	3000	2500	2500	1800	1800
moment of inertia (10 ⁻³ kgm ²)	0,17	0,17	0,37	0,37	0,74	0,74	3,2	3,3	12,3	12,7
mass (kg)	0,38	0,38	0,63	0,64	0,95	0,95	2,3	2,3	4,8	4,9
Ø a	64	64	73	73	82	82	112	112	148	148
Ø b	45	45	52	52	63	63	85	85	105	105
Ø D min	10	10	12	12	16	16	20	20	30	35
Ø D max	17	17	20	20	30	30	42	42	50	50
Ø g	47	47	53	53	62	62	82	82	102	102
6x h	M5	M5	M6	M6	M6	M6	M6	M6	M10	M10
i	6	6	8	8	8	8	12	12	15	15
Ø k h6	25	25	30	30	40	40	55	55	65	65
L	45	45	55	55	71	71	87	87	107,5	107,5
L2	25	25	30	30	40	40	50	50	60	60
m	12	12	15	15	19	19	23	23	31	33
s (switching distance)	1,0	1,0	1,2	1,2	1,4	1,4	1,7	1,7	2,4	2,4

ordering example: ECI 63 D=28G7 with keyway 8P9 TA=50Nm

ENEMAC torque limiter type ECR

www.enemac.de

incl bearing for chain wheels (also pulleys, cardan shafts, parts with connection flange). The type ECR is a further development of the type ECG. All parts of the clutch (including the disk springs) are made of STAINLESS STEEL.



STAINLESS STEEL

* the disengagement torque TA is continuously adjustable. Special adjustment on request. Unless otherwise specified by the customer, TA is preset to approx. 70% of TA max.

technical data + dimensions (mm)					we reserves the right to make alterations
ECR	50	100	160	240	
torque range *					
TA max (Nm)	50	100	160	240	
TA min (Nm)	15	40	60	100	
max. rotational speed (min ⁻¹)	3000	3000	2500	2500	
moment of inertia (10 ⁻³ kgm ²)	1,2	1,2	3,9	4,0	
mass (kg)	1,3	1,3	2,3	2,4	
Ø a	82	82	112	112	
Ø b	75	75	75	75	
Ø c	52	52	52	52	
Ø D min	16	16	20	20	
Ø D max	30	30	40	40	
Ø e	90	90	123	123	
Ø f	85	85	116	116	
Ø g	62	62	82	82	
6x h	M6	M6	M8	M8	
i	8	8	12	12	
Ø k h6	40	40	55	55	
L1	55	55	63	63	
L2	10	10	12	12	
m	22	22	22,7	22,7	
s (switching distance)	1,4	1,4	1,7	1,7	

ordering example: ECR 100 D=28G7 with keyway 8P9 TA=50Nm

Torque Limiter type ECOL

with radial clamping hub for simple installation
with longer bearing journal for integrated slide bearing
with small centric diameter for attachment of small size pulleys, gear wheels, sprockets

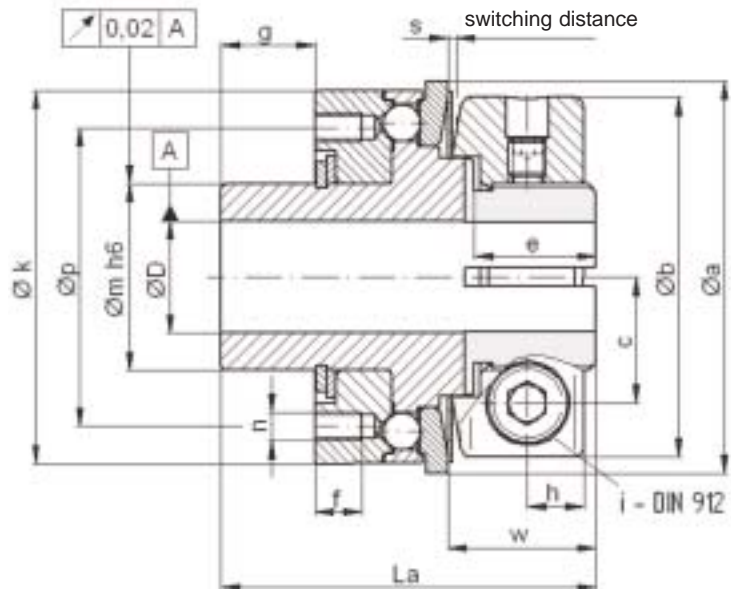
NEW!

technical data:

ECOL	static disengagement torque TA [Nm] < setting range >	moment of inertia [10 ⁻³ kgm ²]	mass approx. [kg]	tightening torque of screw " i " [Nm]	prebored	bore diameters ØD	
						min	max
25 - 6	2 - 6	0,05	0,25	M 5 / 10	6	7	16
25 - 12	6 - 12					11	16
35 - 15	8 - 15	0,25	0,65	M 6 / 18	10	11	25,4
35 - 30	13 - 30					15	25,4
35 - 45	22 - 45	0,95	1,5	M 8 / 40	17	18	25,4
46 - 60	25 - 60					18	35
46 - 100	40 - 100	3,34	3	M 10 / 80	21	22	35
46 - 150	60 - 150					26	35
65 - 230	80 - 230	10,70	6	M 14 / 220	27	25	42
65 - 330	130 - 330					32	42
80 - 500	200 - 500	6	6	M 14 / 220	27	35	58
80 - 800	350 - 800					42	58



material: heat treated steel



dimensions: (mm) length dimensions according to DIN ISO 2768 mH

ECOL	Ø a (Øa*)	Ø b	c	e	f	g**	h	Ø k	Ø m h ₆	Ø p	La	6xn	s	w
25 - 6/12	42 (48)	38,5	13,5	13	5	10	6	40	20	32	46	M3	0,9	15,8
35 - 15/30/45	60 (66)	53	19,5	15	7	15	7,5	58	30	46	52	M4	1,2	18,6
46 - 60/100/150	76 (83)	68	25,5	18,5	9	20	8,5	75	42	62	69	M6	1,6	22,4
65 - 230/330	104 (109)	87	32	21	12	25	10,5	98	50	74	84	M8	1,8	26,7
80 - 500/800	132 -	115	42	30	14	30	13,5	120	65	92	104	M10	2,5	37

*note: - bigger outer diameters of the switch plate are available if required

** - alternative bearing length are possible on request

ordering example: **ECOL 46-150 D=28 H7 TA=120 Nm**

Torque Limiter type ECP

with integrated ball bearing
 simple installation with clamping hub
 for high radial load, compact performance

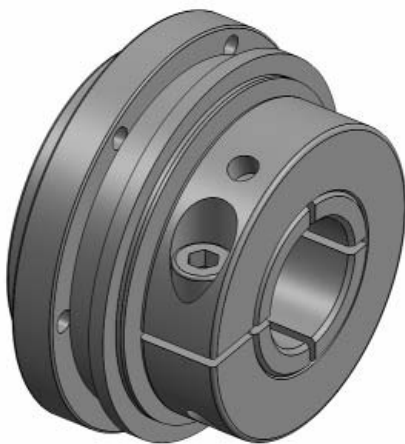


technical data:

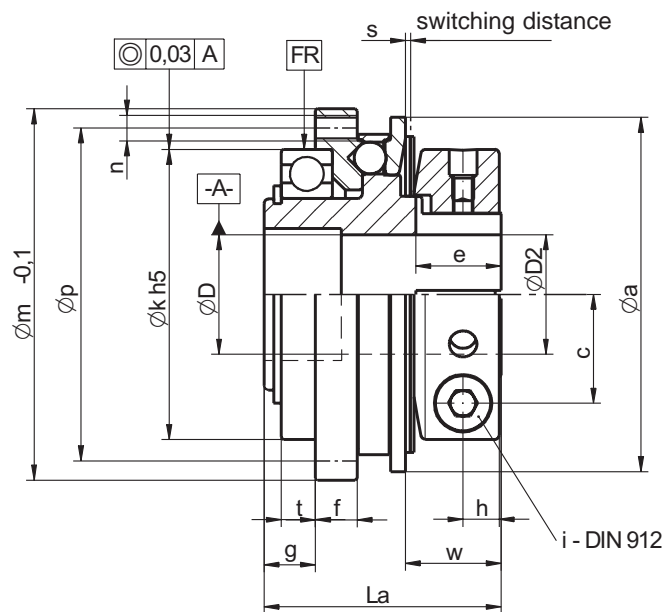
ECP	disengagement torque TA [Nm] <setting range>	moment of inertia [10 ⁻³ kgm ²]	mass approx. [kg]	tightening torque of screw "i" [Nm]	max. radial load FR [N]	bore diameters ØD		
						prebored	min	max
25 - 6	* 3,6 - 6	0,09	0,36	M 5 / 10	5.000	6	6 / 16	
25 - 12	7 - 12						8 / 16	
35 - 15	* 8 - 15	0,36	0,80	M 6 / 18	8.000	10	10 / 25,4	
35 - 30	13 - 30						12 / 25,4	
35 - 45	22 - 45					4 / 25,4		
46 - 60	* 25 - 60					18 / 35		
46 - 100	40 - 100	1,10	1,50	M 8 / 40	9.500	17	18 / 35	
46 - 150	60 - 150						24 / 35	
65 - 230	* 80 - 230	4,20	3,30	M 10 / 80	23.000	21	24 / 44	
65 - 330	130 - 330						32 / 44	
80 - 500	200 - 500	12,20	6,20	M 14 / 220	30.000	27	28 / 58	
80 - 800	350 - 800						40 / 58	
115 - 1000	500 - 1000					42 / 100		
115 - 2000	800 - 2000	76	20	2x M 16 / 290	50.000	38	48 / 100	
115 - 3000	1500 - 3000						60 / 100	

the disengagement torque TA is continuously adjustable, unless otherwise specified by the customer, TA is preset to TA max. !

* smaller torque range possible on request



material: heat-treated steel



dimensions: (mm) length dimensions according to DIN ISO 2768 mH

ECP	Øa (Øa*)	Øb	c	e	f	g	h	Øk h5	Øm	Øp	La	n	s	t	w
25 - 6/12	48 (42)	38,5	13,5	13	8	9,8	6	42	52	47	41	6xM3	0,9	7	15,8
35 - 15/30/45	66 (60)	53	19,5	15	9	11,5	7,5	55	69	62	48	6xM4	1,2	8	18,5
46 - 60/100/150	83 (76)	68	25,5	18,5	9	12	8,5	68	87	78	55,5	6xM6	1,6	8	22,4
65 - 230/330	109 (104)	87	32	21	14	16,5	10,5	90	113	102	71,5	6xM8	1,8	12	25,6
80 - 500/800	132 -	115	42	30	15	17	13,5	110	136	124	87,5	8xM8	2,5	12	37
115 - 1000-3000	185 -	172	69	76	16	28	17/30	140	181	165	142±2	12xM10	3,7	22,5	77

* note: smaller outer diameters of the switch plate are possible (see values in brackets)

ordering example: **ECP 35-30 D=24 H7 TA=25Nm**

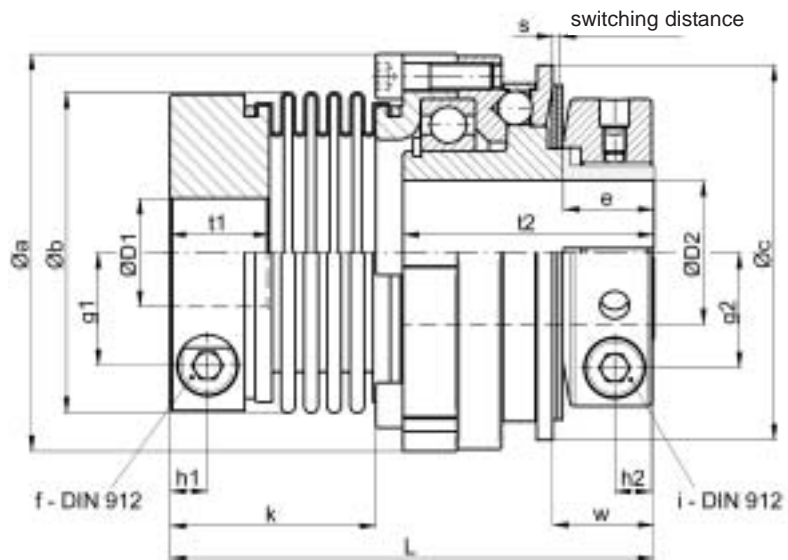
Torque Limiter type ECPB

for shaft- to shaft- connections, with bellow attachment
with radial clamping hub on both sides
compensations of misalignments - low restoring forces

NEW!

technical data:

ECPB	static disengagement torque TA [Nm] < setting range >	moment of inertia [10 ⁻³ kgm ²]	mass approx. [kg]	torsional stiffness [Nm/arcmin]	max. shaft displacement [mm]		tightening torque of screws "f" [Nm] "i" [Nm]		Ø D1		Ø D2	
					axial ±	lateral	"f" [Nm]	"i" [Nm]	min	max	min	max
25 - 6	2 - 6								6 / 21	7 / 16		
25 - 12	6 - 12	0,13	0,45	2,6	0,4	0,15	M 5 [7]	M 5 [10]	8 / 21	11 / 16		
35 - 15	8 - 15								9 / 30	11 / 25,4		
35 - 30	13 - 30	0,22	1,0	9	0,5	0,2	M 6 [14]	M 6 [18]	12 / 30	15 / 25,4		
35 - 45	22 - 45								16 / 30	18 / 25,4		
46 - 60	25 - 60								15 / 38	18 / 35		
46 - 100	40 - 100	1,5	1,9	20	0,6	0,2	M 8 [35]	M 8 [40]	20 / 38	22 / 35		
46 - 150	60 - 150								25 / 38	26 / 35		
65 - 230	80 - 230	5,5	4	28	0,8	0,2	M 10 [65]	M 10 [80]	25 / 43	25 / 44		
35 - 330	130 - 330								32 / 43	32 / 44		
80 - 500	200 - 500	14,0	7,5	52	0,8	0,2	M 12 [115]	M 14 [220]	35 / 55	35 / 58		
80 - 800	350 - 800	16,0	8	106	0,7	0,2			42 / 75	42 / 58		



material:

- safety part: heat treated steel
- hub: high tensile aluminium
- bellow: stainless steel
- screws: nickel plated

dimensions (mm) length dimensions according to DIN ISO 2768 mH

ECPB	Ø a	Ø b	Ø c	e	g1	g2	h1	h2	k*	L ±1	s	t1	t2	w
25 - 6/12	52,5	44,5	48	14	13	13,5	6	6	36,6	81	0,9	16,5	41	16
35 - 15/30/45	69	56	66	16	19	19,5	7,5	7,5	43	94,5	1,2	20	48	18,5
46 - 60/100/150	88	71	83	20	25	25,5	8,5	8,5	45,5	107	1,6	22	55,5	22
65 - 230/330	115	82	109	23	28,5	32	10,5	10,5	52	132	1,8	26	72	26
80 - 500	137	101	132	32	35	42	12	13,5	56,5	152,5	2,5	29	87,5	37
80 - 800	137	122	132	32	45,5	42	12,5	13,5	70,5	167	2,5	30	87,5	37

note: - alternative length of bellows are possible on request

ordering example: **ECPB 35-30 D1 = 28 G7 D2 = 24 H7 TA = 25Nm**

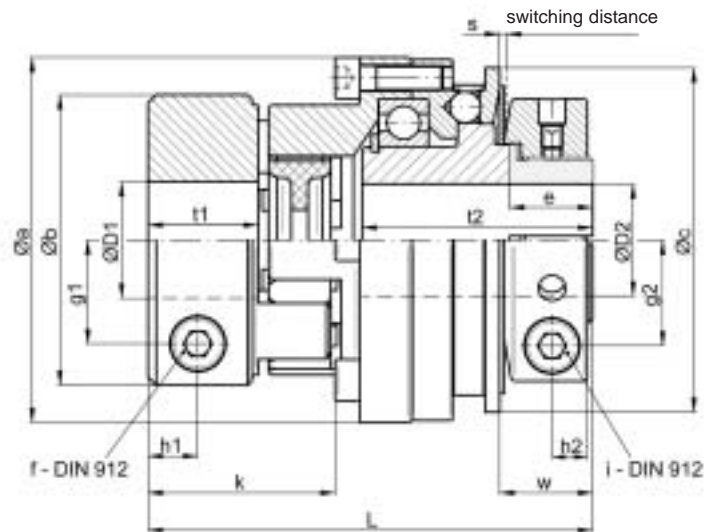
Torque Limiter type ECPD

for shaft- to shaft- connections, with elastomer attachment
with radial clamping hub on both sides
plug in, backlash free, flexible, robust, oscillation dampening

NEW!

technical data:

ECPD	static disengagement torque TA [Nm]	moment of inertia of inertia $[10^{-3}kgm^2]$	mass approx. [kg]	torsional stiffness [Nm/arcmin]	max. shaft displacement [mm]	tightening torque of screws		Ø D1		Ø D2	
	< setting range >				axial ± lateral	"f"[Nm]	"i"[Nm]	min	max	min	max
25 - 6	2 - 6							8	20	7	16
25 - 12	6 - 12	0,13	0,44	0,24	0,5	0,1	M 5 [8]	M 5 [10]	8	20	11 / 16
35 - 15	8 - 15							12	32	11 / 25,4	
35 - 30	13 - 30	0,5	1	0,61	0,5	0,1	M 6 [14]	M 6 [18]	12	32	15 / 25,4
35 - 45	22 - 45							14	32	18 / 25,4	
46 - 60	25 - 60							16	33	18 / 35	
46 - 100	40 - 100	1,5	2	1,05	1	0,1	M 8 [35]	M 8 [40]	19	33	22 / 35
46 - 150	60 - 150							22	33	26 / 35	
65 - 230	80 - 230	5,6	4,2	2,0	1	0,12	M 10 [70]	M 10 [80]	24	42	25 / 44
65 - 330	130 - 330							32	42	32 / 44	
80 - 500	200 - 500	17,0	8,6	8,0	1	0,15	M 14 [185]	M 14 [220]	30	70	35 / 58
80 - 800	350 - 800							42	70	42 / 58	



- material:
- safety part: heat treated steel
 - hub: high tensile aluminium
 - elastomer spider: polyurethane - 98 Shore-A
 - screws: nickel plated

dimensions: (mm) length dimensions according to DIN ISO 2768 mH

ECPD	Ø a	Ø b	Ø c	e	g1	g2	h1	h2	k	L±1	s	t1	t2	w
25 - 6/12	52,5	40	48	14	13,5	13,5	8	6	36,6	77	0,9	17	41	16
35 - 15/30/45	69	55	66	16	19,5	19,5	10	7,5	43	91,5	1,2	21	48	18,5
46 - 60/100/150	88	70	83	20	23	25,5	12	8,5	45,5	107	1,6	26,5	55,5	22
65 - 230/330	115	85	109	23	30	32	14	10,5	52	134	1,8	31	72	26
80 - 500/800	137	120	132	32	44	42	18	13,5	56,5	167,5	2,5	38	87,5	37

note: - other shore hardness of the elastomer spider are possible on request

ordering example: **ECPD 35-45 D1 = 28 G7 D2 = 24 H7 TA = 35Nm**