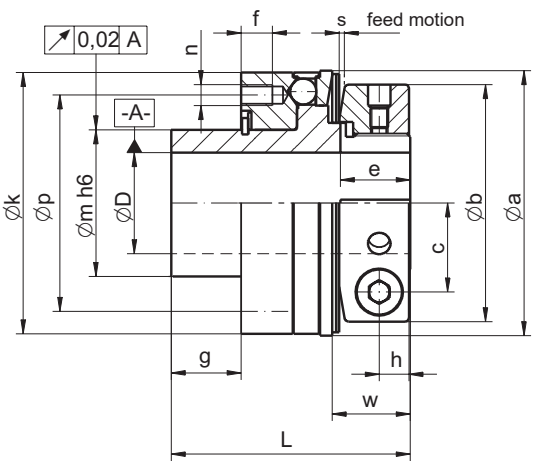
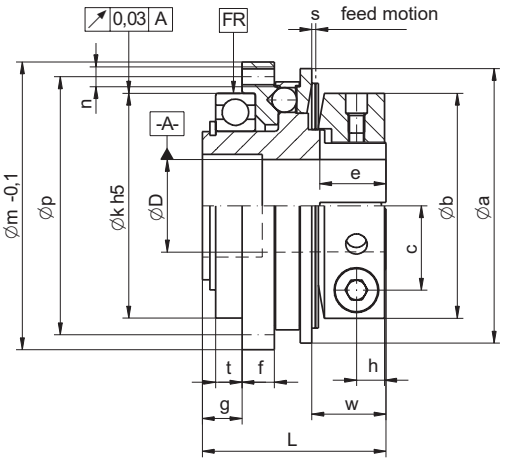
Operating Manual Torque Limiters
ECK, ECU, ECOL und ECP

Contents

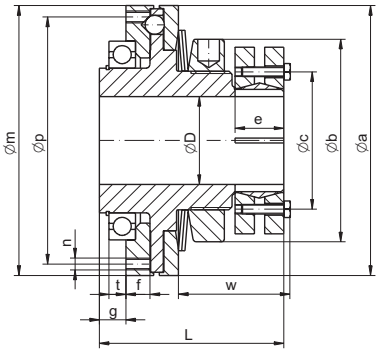
1. Assembly drawings



torque limiter ECOL

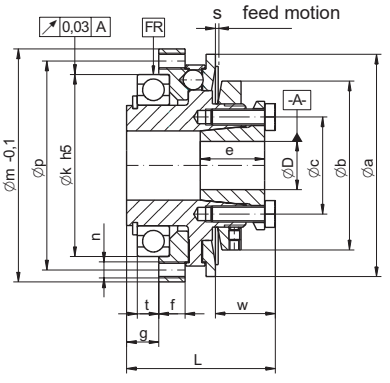


torque limiter ECP

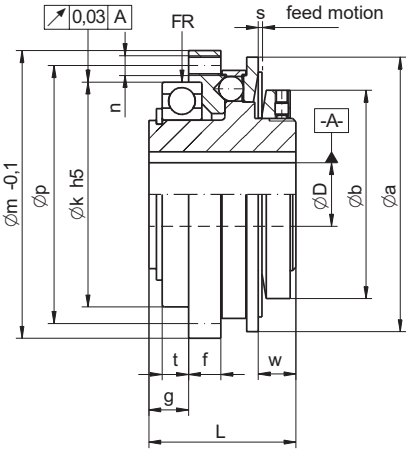


from size 150-3000 with shrink disc clamping

torque limiter ECK



standard version



torque limiter ECU

ENEMAC torque limiters are NO safety devices to protect persons from moving parts!

2. Construction and function

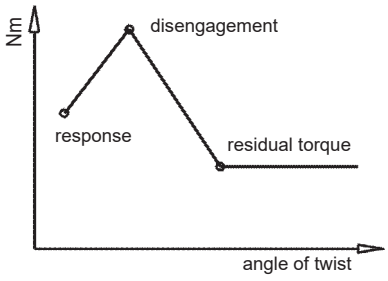
2.1 function

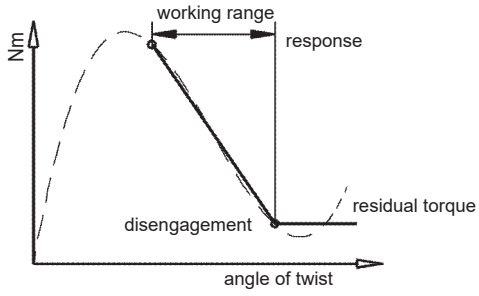
During normal operation of the machine, the balls are pressed into the recesses of the flange ring by the disc spring and thus transfers clearance-free the force or torque from the hub onto the flange ring and vice versa. In case of an overload, the hub distorts against the flange ring and pushes the balls from their indentations against the disc spring - the torque limiter ratchets over - (1 x per revolution as standard) and actuates the proximity switch which has to cut off the drive immediately.

The torque limiter is only designed for short-term clicks! After the disruption has been eliminated, the torque limiter gets turned - at low speed or by hand - (no direction of rotation) and automatically locks in the synchronous position (audible). It is now ready for operation, the adjusted torque active again.

2. 2 Disengagement characteristics

For conventional spring-loaded torque limiters, the torque continues to increase by a certain amount until the safety coupling is disengaged. This can lead to undesirable vibrations at overload moments between „response“ and „disengagement“. ENEMAC couplings have a negative spring characteristic, i.e. the spring force decreases with increasing deflection. This reduces the torque immediately after the „response“ and the torque limiter mandatorily disengages.



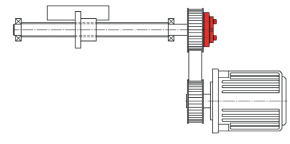


3. Construction of the torque limiter

3.1 Choosing the right torque limiter

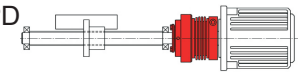
3.1.1 Indirect drives

Various output elements, such as chain wheels or chopper discs, can be attached to the torque limiters for torque transmission.



3.1.2 Direct drives

For direct drives, ENEMAC GmbH offers different types, depending on the requirements you receive the above mentioned torque limiters with different bellows or elastomer attachments. By default, we carry the types: ECKB, ECKH, ECPB, ECPH, ECUB, ECUH, ECKD, ECKE, ECPD and ECUD.



The ENEMAC Product Guide helps you choose the right type:
https://compass.enemac.de/home

3.2 Dimensioning of the torque

$$T_K\ (Nm) = \frac{9550 \times P \times K\ (kW)}{n\ (min^{-1})}$$

Explanations:

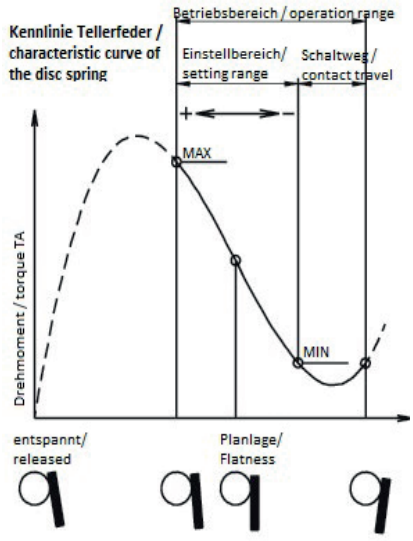
P = engine output
n = engine speed
K = coefficient of impact
T_K = torque of the coupling
T_A = disengagement torque

3.3 Dimensioning of the bore size

The fitting between hub and the shaft is to be designed as a transitional fit, at which the bore of the hub is having an H7 fit.
Keyways according to DIN 6885 page 1.

4. Adjustment of the disengagement torque

ATTENTION! The characteristic curve of the disc spring is declining in the setting range.



position of the disc spring

This means, <u>against usual habits</u> when turning the adjustment nut

clockwise	=>	TA decreases
anti-clockwise	=>	TA increases

(See directional arrows on the clamping ring or the adjustment nut)

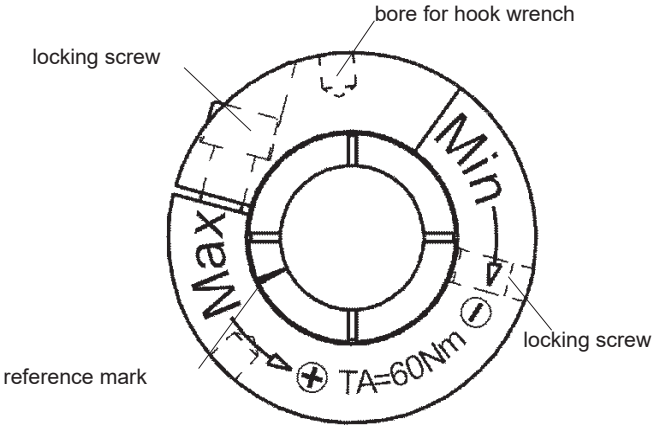
4.1 With clamping hubs

Loosen the locking screw, turn the adjustment nut with an hook wrench (observe the direction of rotation and the reference mark), then retighten the locking screw by hand. When assembled, the clamping screw has to be loosened from the clamping hub before the adjustment and afterwards tightened again.

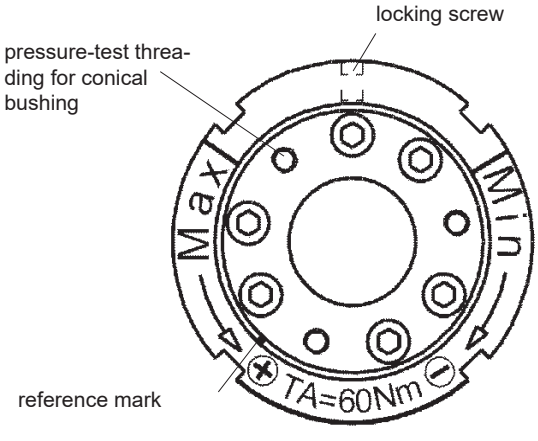
4.2 With keyways and conical bushings

Unscrew the locking screw completely, turn the adjustment nut with the hook wrench (observe the reference mark). After adjustment, secure the adjustment nut by twisting the locking screw and possibly by bending it against twisting.

clamping hub



keyway and conical bushing



5. Supplyment of disc springs as spare parts

In principle, our torque limiters have to be returned to our factory for repair or conversion. Only for couplings which have been rebuilt or repaired by ENEMAC GmbH, a functional guarantee can be applied.

Disc springs may only be delivered as a spare part if a return of the relevant torque limiter is not possible and the customer expressly rejects the delivery of an exchange clutch.

In this case our warranty obligation expires!

6. Precautionary measures

Before assembly, it is important to ensure that the characteristics and specifications of the coupling are appropriate and suitable for the intended use. Sufficient space for installation and future maintenance has to be provided. Make sure that the device can not cause dangerous situations for people and / or property and always work under current safety regulations.

With regard to the current EU machinery directive, our products are no machines. Therefore, the operation is subject to all requirements of the machine in which the device is installed. If the instructions are carried out incorrectly, this will release the manufacturer from any liability.

ENEMAC torque limiters are mechanical components and protect endproducts against damage in case of a sudden overload during normal use.

The maximum speeds specified in the technical data refer only to the respective torque limiter. If drive elements are being installed which permit lower speed, of course the lowest speed indication is decisive (eg the maximum permissible chain speed).

For questions which can‘t be answered by this manual, or for special applications, please always contact ENEMAC GmbH.

7. Preparation, mounting and dismounting

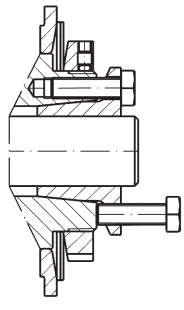
7.1 Torque limiters with keyways and clamping hubs (ECU, ECOL und ECP)

The fitting between hub and shaft is to be selected as a sliding seat.
For example H7 / j6 or G7 / k6. Keyways according to DIN 6885 page 1.

7.2 Torque limiters with conical bushings (ECK)

The fitting between the conical bushing and the shaft is to be selected as a sliding seat. For example H7/j6 or G7/k6. The function of the non-positive connection is not affected by keyways in the shaft.

When couplings with tapered bushings are delivered, their screws are slightly tightened. Before installing, loosen the screws and the tapered bushing so the coupling can be pushed easily onto the shaft.

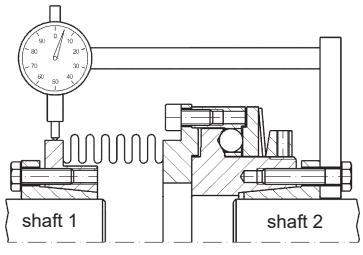


When mounting, tighten the conical bushings evenly crosswise to avoid tilting.

When disassembling, loosen the fastening screws and detach the cone bush from the hub with the three pressure-test threading, see image.

7.3 Torque limiters with attachment (jaw or metal bellows)

The specified lateral offset has to be observed; it can be measured as follows: Fasten the dial gauge to shaft 2 and adjust the key button to shaft 1 of the finished coupling. Then rotate the entire measuring arrangement by 360 ° and read the deviation, the lateral offset is half the value.



8. Maintenance

Maintenance work on the torque limiter is required to restore the disengagement torque of the coupling, as the discs will fade with frequent stress. To do this, adjust the adjusting nut by turning it. (See point 5 of the operating instructions)

Repairs may only be carried out by ENEMAC GmbH, or the guarantee will expire!

8.1 Warning:

Regardless to the speed of rotation, the torque limiter has to be re-engaged as soon as possible. This can be ensured by using an proximity switch or electronic switch. .

9. Supplements

9.1 Warranty

The warranty period is 12 months starting with date of delivery when used in the intended one-shift operation, or max. 250 shutdowns. The warranty does not cover damage caused by improper operation. Any warranty claims are determined by repair or intervention, carried out by unauthorized persons and the use of utilities and spare parts, which aren‘t matching our torque limiters.

9.2 Safety regulations

Regardless of the instructions listed in this manual, the german statutory safety and accident prevention regulations are valid. Any person who is responsible for the operation, maintenance and repair of the torque limiter must have read and understood the operating instructions before commissioning. Repairer of the torque limiters are basically responsible for workplace safety. Following all valid safety and regulatory instructions is an requirement to prevent damages to persons and the product during maintenance and repair work. Proper repair of ENEMAC products assumes accordingly trained staff. The duty of training is up to the operator or repairer. It is to ensure that the operator and future repairer are properly trained for the product.

9.3 Copy right

9.4 Spare parts

Only spare parts, which correspond to the requierements specified by ENEMAC GmbH or supplier are allowed. This is always guaranteed with original spare parts. Improper repairs, as well as incorrect spare parts lead to the exclusion of product liability or warranty. When ordering spare parts it is essential to specify type, size and the identification number of the torque limiter to avoid incorrect deliveries.

9.5 Proviso

We reserve the right for technical changes. Changes, errors and misprints shall not justify any titles of indemnity.