

# Bibby Turboflex Torque Limiting Overload Protection

Installation Instructions & Setting Manual

P-4075-BB-A4



# Disc Spring Torque Limiters

## Standard Mini



## Heavy Duty ZBC & NBC



## General Selection

Type	Available Functions						Torque Range Nm	Ø mm		Available Forms	Max Speed	Torque Accuracy	Service Life	Moment of Inertia	Surface Plating	Available Stop Switch	Catalog Page
	Zero Backlash	Quick Guard	Synchronous	Continuous	Free Running	Remotely Adjust		Bore + Keyway	Clamping Element								
	①	②	③	④	⑤												
ZBC	X	X	X				3-740	8-50	10-60	H, J, K, L, M, N, P, R, T	High	High	High	Low	Phosphatation. Chemical Nickel upon request	A, B, C	
NBC	X	X	X				.65-440	6 - 45	6 - 50	H, J, K, L	High						
Standard		X	X	X	X		2.5-8200	7 - 110*		A, B, C, D				Medium			
Mini		X	X				2.5-450	7 - 45		E, F, G	See available functions					D	
ZBC Pneumatic	X	X	X		X	X	4-530	8 - 55*	Upon request	V, W	Very high			Low		A, B, C	
Securex							.5-10000	5 - 120		T, C	Low	Low	Low	Medium	Zinc plating		

\* d max with keyway seat according to DIN 6885/3

① Angular Backlash between input and output close to zero.

② Re-engage automatically in a random angular position when the overload is removed. For Medium-High Speed. Quick Guard R for high torque - low speed.

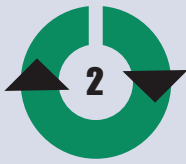
③ Synchronous Re-engage automatically after 360° in the same angular position every time. For medium speed.

④ Continuous In case of overload the switch give a signal without interruption of the torque transmission. For very high speed.

⑤ Free Running In case of overload input and output are disconnected and output runs to idle. For very high speeds. Manual re-engagement.

# Standard Disc Spring Torque Limiters

## Selection Icons



- Very low backlash
- low moment of inertia
- Minimised dimensions & weight
- Reduced wear for longer lifetime
- ZBC for heavy duty
- NBC for light duty



### Quick Guard

1. Disengages at pre-set torque
2. Automatically re-engages as load reduces – 15 degrees of rotation



### Synchronous

1. Re-engages after 360 degrees



### Continuous

1. Drive does not fully disengage to ensure torque transmission is not interrupted
2. Micro-switch is activated
3. Manual/electronic re-set required



### Free Running

1. Drive fully disengages
2. Manual reset required to re-engage drive

During normal running torque is continuously transmitted from the hub to the flange through balls or rollers held in indentations in matching halves of a carrier flange by disc springs. As the torque exceeds a pre-set limit the balls or rollers are forced out of their indentations, allowing the flange sections to rotate separately. At this point the torque being transmitted is negligible and a limit switch is activated to signal emergency stop of the motor. In Quick Guard versions re-engagement is automatic as soon as the torque has fallen below the pre-set value. Synchronous versions also re-engage automatically but after one full revolution has been completed. In the Continuous version, the rollers are prevented from fully disengaging and a switch is activated to signal motor stop. The Free Running version also disengages the drive at a pre-set torque value but must be manually re-set to re-engage the drive.

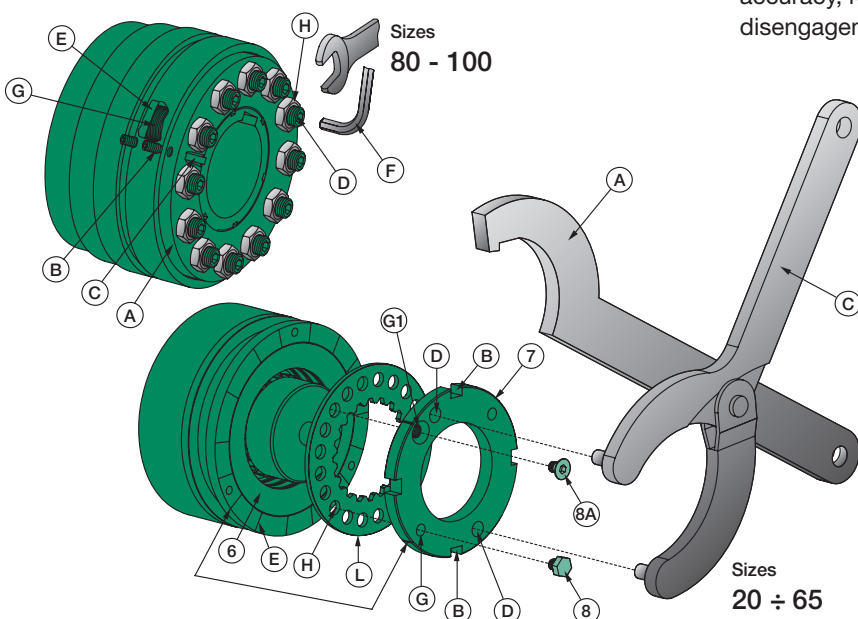
## Torque Adjustment

### Sizes 20 ÷ 65

Manually tighten the nut (7) until contacts the disc springs (6). Insert wrench (A) in to the seats (B) or the wrench (C) in to the holes (D) and tighten the nut clockwise for the number of indents (E) corresponding to the request disengagement torque (according with the torque diagram supplied together with the torque limiter). Tighten the screw (8) or (8a) in the threaded hole (G) or (G1) of the nut (7) in correspondence with one of the holes (H) on the locking washer (L).

### Sizes 80 ÷ 100

Manually turn the nut (A) up to the end of the stroke, then go back anticlockwise until the 3+3 locking screws (B), are aligned to 3 of the 6 splines (C) on the hub. Tighten the 3+3 locking screws (B), to positively secure the nut (A) to the hub. Manually tighten the adjusting screws (D) until they contact the mobile element (E). Insert the wrench (F) and uniformly tighten the adjusting screws (D) at the same level for the number of revolutions corresponding to the requested disengagement torque, according to the torque diagram of the cup springs packs (G). Secure the adjusting screws (D) by means of the lock-nuts (H). To guarantee the optimum accuracy, recheck the preset slip-torque after the first disengagements.



## Torque Adjustment

Stock availability c/w bore H7 and keyway Js9 - DIN 6885/1 (mm)						
Grand Size ø M <sup>H7</sup>	20	25	35	45	55	65
19	X	X				
20	X	X				
24		X				
25		X	X			
30			X			
35			X	X		
40				X		
45				X		
50					X	
55					X	
60						X
70*						X

\* Keyway seat acc. to DIN 6885/3

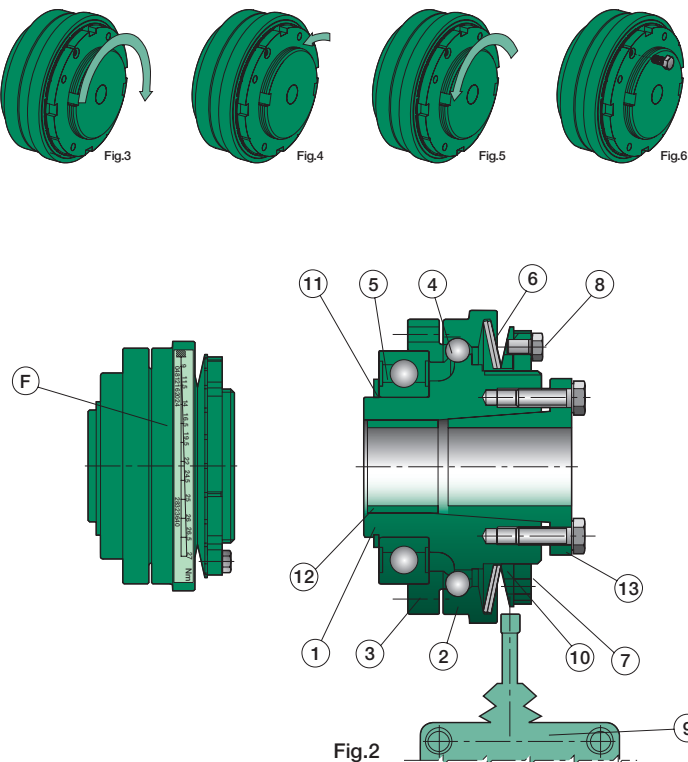
# Zero Backlash Torque Limiters

## ZBC Heavy Duty/NBC Light Duty

### How they work

During normal operations the ZBC Heavy Duty - NBC Light Duty torque limiter (fig.2) transmits the torque from the hub (1) to the flange (3) through a ball crown (4) forced by the pressure of the disc springs (6) on the moving flange (2) into the seats on the two parts (1) and (3). In case of overload, when the torque demand exceeds the pre-set value, both the parts (1) and (3) are disengaged and they transmit only a small residual torque: the balls are pressed out of the indentations of the flange (3), thus pushing the moving part (2) axially against the force of the disc springs (6), and activating the emergency stop switch of the motor (9). The re-engagement is automatic at the pre-set torque when the torque demand drops. The synchronous type re-engages once per revolution at a reference point and keep the hub (1) and the flange (3) of the torque limiter synchronised. The disc springs are working only in the negative area of their characteristics (fig.1), so the adjustment nut (7), when tightened anticlockwise, provides an increasing axial load to the disc springs (6) and a higher disengaging torque: when the pre-set torque level is reached the nut (7) is locked in position by means of the locking screw (8).

ZBC holds 8 fixing threaded holes and a heavy duty bearing, NBC 6 fixing threaded holes and a light duty bearing.



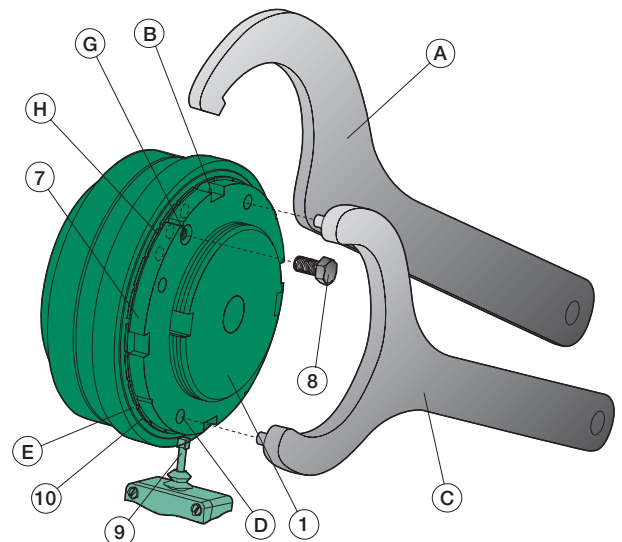
### The advantages of the system, compared to the traditional types

- Torque limiters with backlash close to zero
  - ZBC is the heavy duty series
  - NBC is the light duty series
- Lower moment of inertia, reduced dimensions and weight
- Longer lifetime, reduced wear

### TORQUE ADJUSTMENT

Insert wrench (A) into the seats (B) or the wrench (C) into the holes (D) and turn the nut clockwise up to the end of the stroke (fig.3). Then go back anticlockwise (fig.4) for only one indent (E) to avoid the blocking between the disc springs (6) and the hub (1): this is the "zero indent", corresponding to the minimum torque. Starting from the "zero indent", turn the nut anticlockwise (fig.5) for a number of indents (E) corresponding to the requested disengagement torque, according to the diagram on the label (F) on the outer diameter of the ZBC - NBC torque limiter.

Put soft Loctite on the securing screw (8) and tighten it (fig.6) in the threaded hole (G) of the nut (7), in correspondence to one of the holes (H) on the locking washer (10).



**Bibby Turboflex**  
Cannon Way, Dewsbury  
West Yorkshire, WF13 1EH – United Kingdom  
+ 44(0) 1924 460801 • Fax: + 44(0) 1924 45766  
[www.wichitaclutch.com](http://www.wichitaclutch.com)

**Bibby Turboflex**  
Unit 11, Middle Park, Cnr. Craig & Dormehl Roads  
Anderbolt, Boksburg, P.O. Box 16524  
Atlasville, 1465 South Africa  
+27(0) 11 918-4270 • Fax: +27(0) 11 918-4240