ALTRA INDUSTRIAL MOTION

Torque Limiting Overload Protection

Bibby Turboflex®
Altra Industrial Motion

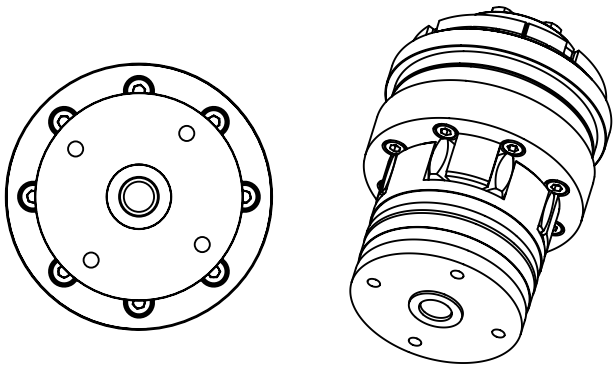
Bibby Turboflex...
a leading innovator in high performance couplings and engineered torque limiting overload protection solutions for over 80 years.

Now part of Altra Industrial Motion, with a reach covering more than 70 countries, our vision continually grows without compromising the values which led to such unrivalled success.

With roots dating back to Dr. James Bibby, inventor of the resilient grid coupling in 1917 and the development of the profile disc coupling in 1958, Bibby Turboflex has continued in the pioneering footsteps of these revolutionary leading lights.

Reliability, safety and accuracy are vital in both new and established models. We strive to increase your return on investment by virtually eliminating downtime and optimizing efficiency.

Our policy of recruiting engineers with excellent customer focus and innovative talent continuously advances our development using proven, state-of-the-art hardware and software to deliver excellence. Firmly committed to remaining ahead of market needs, we listen to customer feedback and pre-empt requirements, a focus that has consistently held Bibby Turboflex head and shoulders above our competitors.



Typical Applications:

- Steel Mill Equipment
- Conveyor Drives
- Twin Screw Extruders
- Wood Grinding Machinery
- Ball Mill Drives
- Water Treatment Equipment
- Tunnel Boring Machines
- Machine Tools
- Woodworking Equipment
- Paper Machinery
- Pumps
- Textile Machinery
- Test Rigs
- Packaging Machinery
- Quarry Machinery
- Post Office Machinery
- Bottling Equipment
- Automatic Furnaces and Ovens
- Bakery Equipment
- Printing Equipment

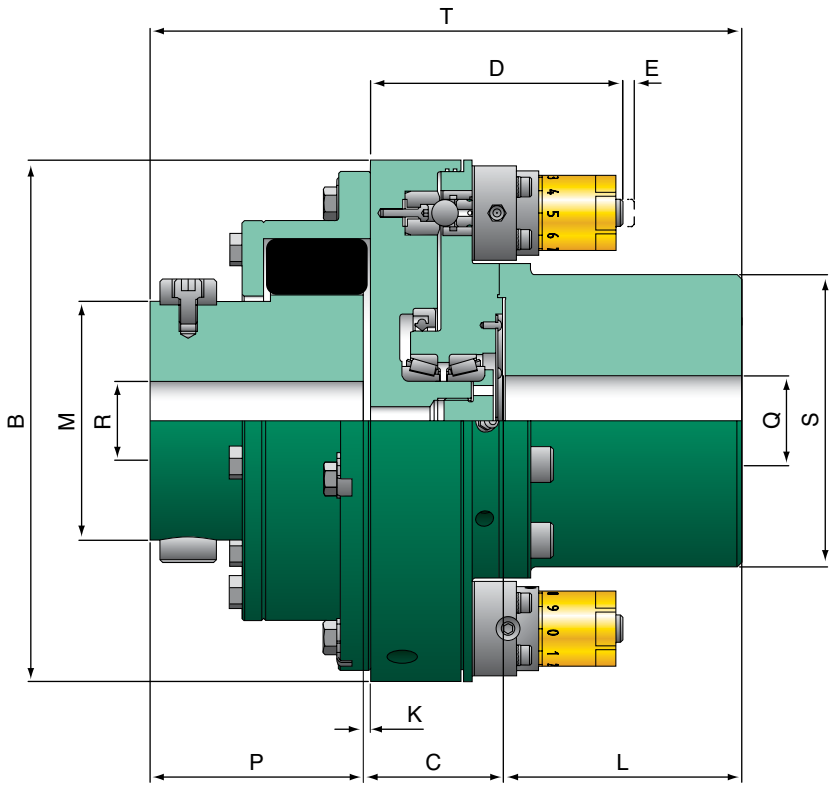
Choose the torque limiting protection that's right for your specific application.

UEP Modular Torque Limiters

Series 2

Bibby Turboflex's extensive experience developed the Ultimate Extruder Protection device affording reliable protection for twin screw extruders.

Based on over 30 years experience in arduous applications particularly in the steel industry has led to the development of the Bibby Modular Torque Limiter which has become the industry standard for twin screw extruder machines.



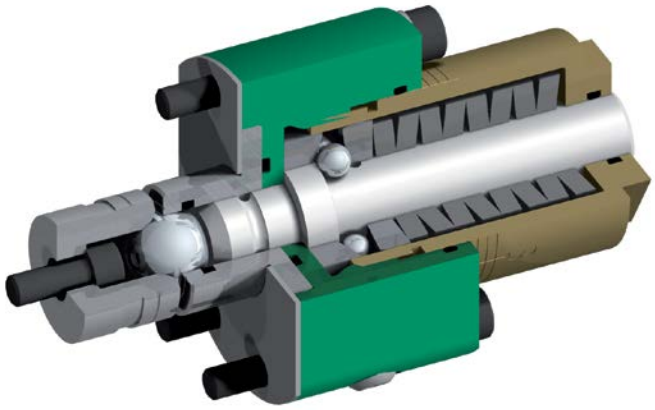
UEP Ratings and Dimensions

Model Number	234A	237A	238A	238B	239B	300C
Maximum Preset Torque Nm	1480	3046	3577	6688	8786	14280
Minimum Preset Torque Nm	148	493	579	1122	1420	2310
Maximum Speed RPM	3000	2800	2800	2500	2500	2200
Coupling Size	0.2RB	0.37RB	0.73RB	0.73RB	1.15RB	2.15RB
Module Size	SE5	SE10	SE10	SE10	SE10	SE10
Quantity of Modules	2	2	2	4	4	6
Dimensions (mm)						
Outside Diameter - B	232	278	317	320	378	467
Distance Between Hub Faces - C	62.3	83.5	83.5	96.7	96.7	111.5
D	112	134	133	138	138	136
E	3	4	4	4	4	4
Overall Length - T	264	325	350	363	407	441
Rigid Hub						
Boss Diameter - S	130	165	165	190	234	234
Hub Length - L	106	121	121	121	140	140
Maximum Bore - Q	90	115	115	135	165	165
Minimum Bore	32	40	40	50	55	55
Flex Coupling						
Gap - K	3.2	3.2	3.2	3.2	3.2	4.8
Boss Diameter - M	106.4	128.6	152.4	152.4	179.4	219
Hub Length - P	95	120	145	145	170	190
Maximum Bore - R	70	85	95	95	115	140
Minimum Bore	35	40	55	55	55	70
Mass Kg	39	70	90	106	163	231
Assembly Inertia KgM^2	0.19	0.48	0.82	0.98	2.02	3.85

Front cover photo courtesy of Coperion GmbH

Externally Adjusted Modules

Features & Benefits
- Accurate release torque repeatability
- Simple fast manual re-engagement
- Low-cost maintenance
- The preferred protection for many extruder manufacturers



Very accurate release torque repeatability with minimal variation between static and dynamic release. Versatile installation allows for the torque limiter centre section to be removed without the need to move the motor or gearbox.

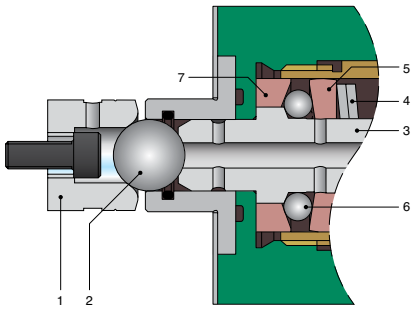
Individual modules are preset to provide the required release torque. Any maintenance of the modules is a straightforward operation. A simple removal operation allows for module recalibration without having to replace the complete unit. Holding spare modules in stock already preset to the required release torque keeps downtime to an absolute minimum.

Manual reset of the torque limiter can only be carried out when the drive is at rest. Resetting is achieved by realigning the two halves of the unit and then lightly tapping each module fitted with a soft mallet.

Lubrication of the unit is via easy access grease nipples. Proximity sensor targets are included to provide the means to switch off the drive after an overload occurs.

While each torque limiter assembly is normally factory preset, if required site adjustments can be carried out, a setting chart with instructions is provided for this purpose. Please note a security key is required and adjustment should only be carried out by an authorized person.

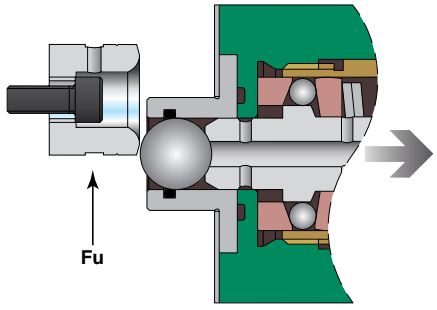
Normal Operation
The flange connection is driven by a large steel ball (2), located in the detent pocket (1), which is retained by a plunger (3). This in turn is retained axially by means of a system of angled races (5,7) biased by pressure from the Belleville springs (4), acting on a circle of balls (6).



Engaged

Disengagement
On overload, relative angular movement between the flanges imparts a tangential force (Fu) on the large steel ball, forcing it clear of the detent pocket back against the plunger. This in turn causes the plunger to be forced through the circle of balls overcoming the spring loading on the angle races. In this position, the balls are resting on the large diameter of the plunger, and once this condition is reached the flanges are completely free to rotate independently. A suitable switch can be incorporated in the assembly to switch off the drive motor or operate a warning device when the Torque Limiting assembly disengages.

After first ensuring that the drive is isolated, resetting is a simple matter of first realigning the flanges and then tapping each module plunger back with a soft mallet to allow the circle of balls to return to their original position and the large steel ball to return to its location in the detent pocket.



Disengaged

UEP Torque Limiters are not classed as machines by the 98/37/EU Directive and 2006/42/EU Machinery Directive. All installations must conform to industry standards.

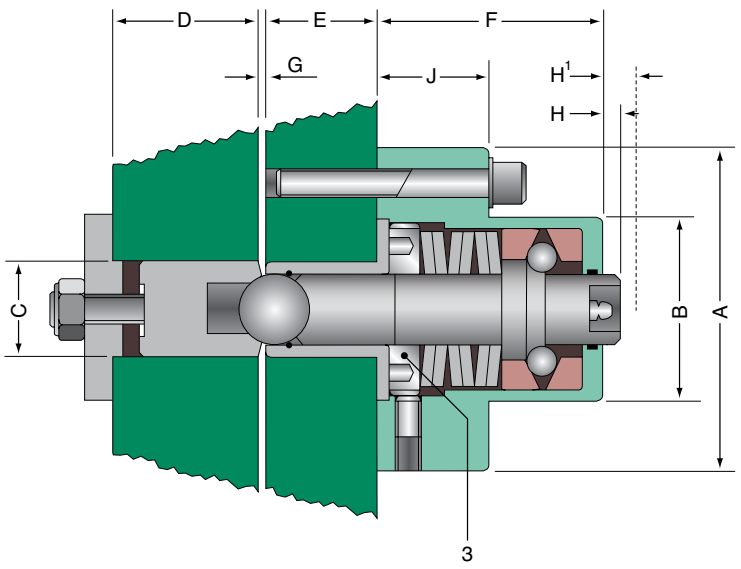
Bibbigard® Torque Limiting Modules

Bibbigard® Internally Adjusted Modules

Adjustment
Adjustment of the tangential force (Fu), can be made by removing the unit from the mounting flange and adjusting the screw (3), so altering the spring force.

This procedure discourages tampering by unauthorised personnel.

Ensure that on assembly any clearance between the driving ball and the detent pocket is eliminated by tightening the adjusting screw located in the plate at the base of the detent pocket.



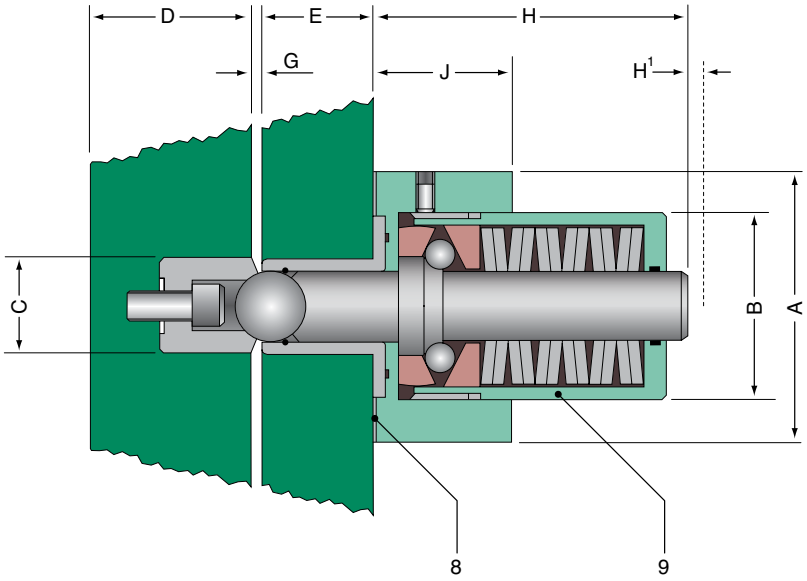
Model Number	Tangential Force Fu		Dimensions (mm)									
	lbf	N	A	B	C	D	E	F	G	H	H1	J
SE5BA	2,250	10,000	56	36	19.5	20	14	44	1.8	2.5	6	19
SE10BA	4,000	17,800	66	40	25	25	16	54.5	1.5	20	24	30
SE20BA	11,000	48,900	105	66	35	45	45	72	2	5	13	35
SE30BA	38,000	169,000	170	120	70	45	45	130	3	9	23	40

Note internal specifications may vary between sizes

Bibbigard® Externally Adjusted Modules

Adjustment
Adjustment of the tangential force (Fu), can be made by adjusting the spring housing (9), so altering the spring force.

Ensure that on assembly any clearance between the driving ball and detent pocket is eliminated by adjusting the quantity of shims (8) under the clamp face of the module.



Model Number	Tangential Force Fu		Dimensions (mm)									
	lbf	N	A	B	C	D	E	F	G	H	H1	J
SE5EA	2,250	10,000	56	50	19.5	15	14	—	1.5	67	3.5	20
SE10EA	4,000	17,000	66	50	24.5	20	16	—	2.5	77	4	37
SE20EA	5,900	26,000	105	69	35	35	45	—	2.5	107	8	15
SE25EA	10,000	45,000	105	74	35	35	45	—	2.5	115	8	10

Note internal specifications may vary between sizes

Bibby Turboflex Torque Limiting Modules have been specifically designed to provide overload protection for applications where very high torques are transmitted, and to extend the range of manual reset Bibbigard Torque Limiters.

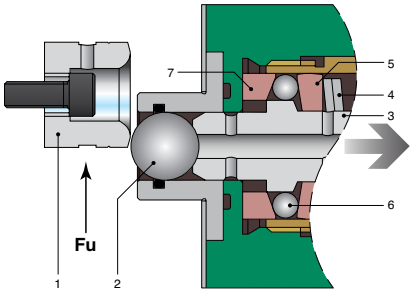
The modular system provides the capability for virtually unlimited torque capacity and lends itself to many transmission applications – chain, belt and gear drives, or shaft-to-shaft gear or flexible coupling drives.

The maximum release torque depends on the number and size of Torque Limiting Modules that can be incorporated, and the size of the unit that can be accommodated within the confines of the installation. Internally and externally adjusted modules provide repeatability better than 5%, however externally adjusted modules are preferred when the application is required to operate with minimal variation between static and dynamic disengagement.

Construction
The Bibbigard Torque Limiting Module is constructed from the finest quality materials. Many of the vital components are made from high quality tool steels, through hardened to Rockwell C62, and precision ground to close tolerances.

Normal Operation
The flange connection is driven by a large steel ball (2), located in the detent pocket (1), which is retained by a plunger (3). This in turn is retained axially by means of a system of angled races (5,7) biased by pressure from the Belleville springs (4), acting on a circle of balls (6).

Disengagement
On overload, relative angular movement between the flanges imparts a tangential force (Fu) on the large steel ball, forcing it clear of the detent pocket back against the plunger. This in turn causes the plunger to be forced through the circle of balls overcoming the spring loading on the angle races. In this position, the balls are resting on the large diameter of the plunger, and



Disengaged

once this condition is reached the flanges are completely free to rotate independently.

A suitable switch can be incorporated in the assembly to switch off the drive motor or operate a warning device when the Torque Limiting assembly disengages.

After first ensuring that the drive is isolated, resetting is a simple matter of first realigning the flanges and then tapping each module plunger back with a soft mallet to allow the circle of balls to return to their original position and the large steel ball to return to its location in the detent pocket.

Detent Pockets
Internally and externally adjusted modules can be through-hole or blind-hole detent fixing (see diagrams on opposite page). The type of detent fixing is dependent upon the design constraints.

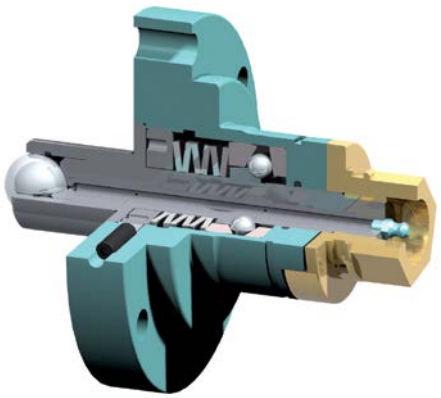
The mechanical clearance in the Module assembly should be eliminated by pre-loading the detent pocket (1) against the driving ball (2). This is achieved for the respective type of detent pocket under Adjustment (on the opposite page).

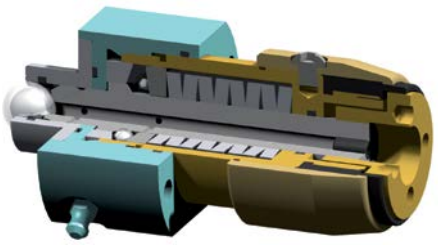
Selection
To apply the modules in the form of a torque limiter it is necessary to determine the quantity of modules needed for the required torque capacity at a specific radius from the axis of rotation.

$$\text{No. of modules} = \frac{\text{Torque (Nm)} \times 1000}{\text{Fu (N)} \times \text{radius (mm)} \times K}$$

K = 0.65 for General Applications
K = 0.5 for Steelwork Applications

Special Designs


Internally Adjusted Cam Disconnect Module


Externally Adjusted Manual Disconnect Tamper Proof Module

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 ①	Quick Guard ②	Synchronous ③	Continuous ④	Free Running ⑤	Remotely Adjust		Bore + Keyway	Clamping Element								
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 Nikel 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.

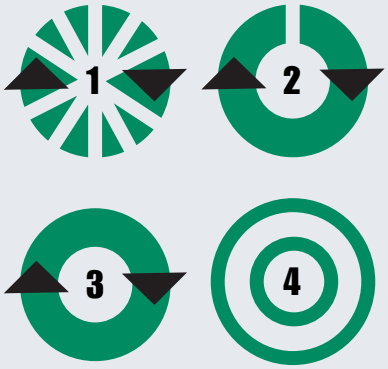
② Re-engage automatically in a random angular position when the overload is removed. For Medium-High Speed. Quick Guard R for high torque - low speed.

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.

Selection Icons



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

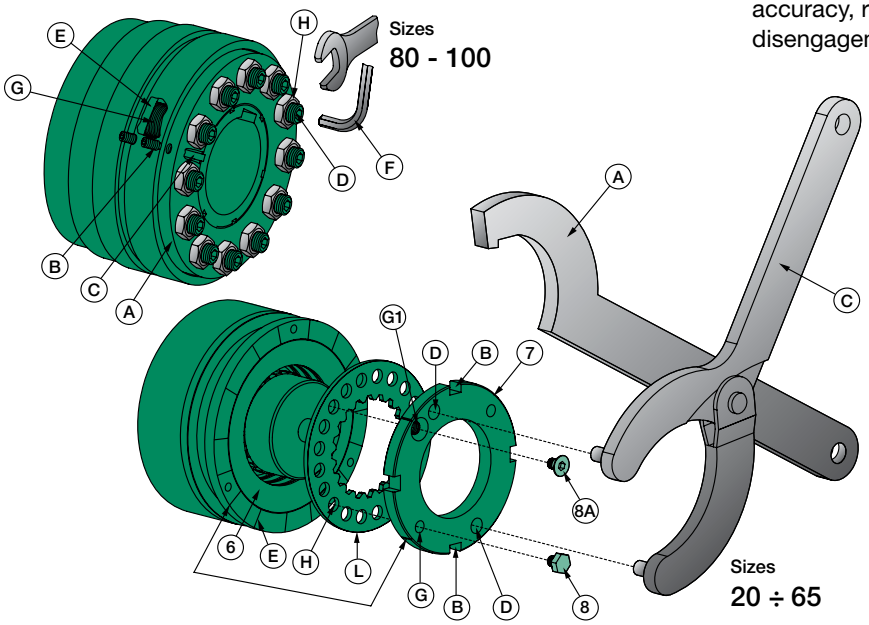
Torque Adjustment

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 stoke, 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

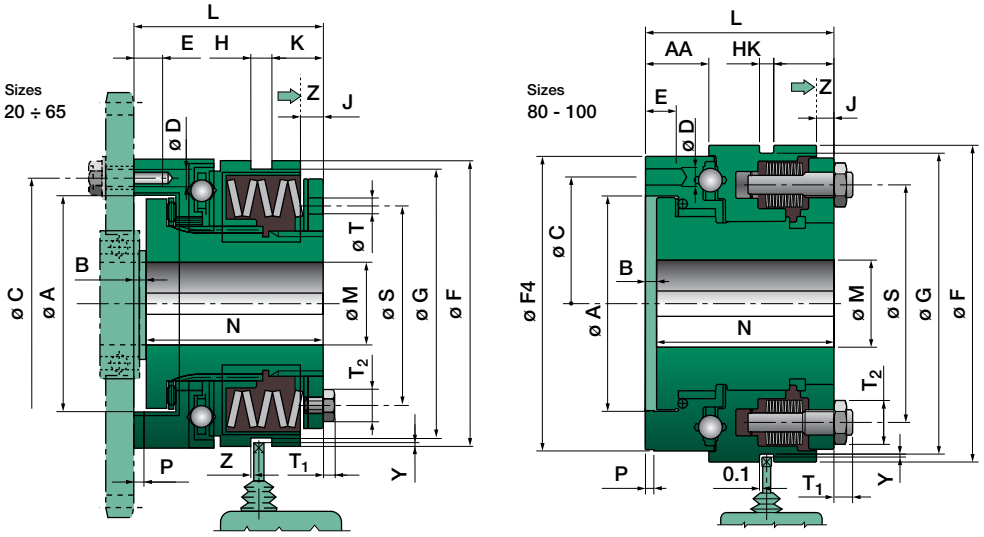
Stock availability c/w bore H7 and keyway Js9 - DIN 6885/1 (mm)						
Grand Size ø M^{H7}	20	25	35	45	55	65
19	X	X				
20	X	X				
24		X				
25		X	X			
30			X			
35			X	X		
40				X		
45				X		
50					X	
55					X	
60						X
70*						X

* Keyway seat acc. to DIN 6885/3

Standard Disc Spring Torque Limiters – Type A

Basic Type

For connection shaft-drive component such as gear or pulley, supported on the shaft



Dimensions

Size	Overall Dimensions																					
	A	B	C	D	E	F	F_4	G	H	K	J	L	M		N	P	S	T	T_1	T_2	Y	AA
													Min	Max								
20	41	4	48	6xM5	6.5	55	—	50	9	7.5	3	38.5	7	20	34.5	3.1	38.5	5	3	7	2	—
25	60	4	70	6xM5	8	82	—	72.5	9	11.5	6	52	10	25	48	3.1	54	6	3.5	8	2	—
35	78	5	89	6xM6	10	100	—	90.5	9	12	5	61	14	35	56	3.6	70	6	4	10	2	—
45	90.5	5	105	6xM8	12	120	—	112	10	21	8.5	78	18	45	73	4.1	84	6	4	10	2	—
55	105	6.5	125	6xM10	15	146	—	140	9	27	11	100	24	55	93.5	4.1	108	7	5.5	13	2	—
65	120.5	6.5	155	6xM12	17	176	—	170	9	33	12	113.5	30	70*	107	4.6	129	10	5.5	13	2	—
80	136	7	160	6xM12	20	200	186	190	9	39④	14④	119④	40	80	112④	5.3	150	—	15	24	2	26
100	168	8	200	6xM16	25	240	231	230	9	46⑤	15⑤	141⑤	50	110*	133⑤	5.8	186	—	21	30	2	30

* Mmax with keyway seat according to DIN 6885/3
① Quick Guard 55R-type D
② Quick Guard 65LL, Synchronous 65L, Continuous 65L, Free Running 65L-type D
③ Quick Guard 65R-type D
④ Free Running 80: K = 53, J = 29, L = 134, N = 127
⑤ Free Running 100: K = 64, J = 33, L = 159, N = 151

How to order:

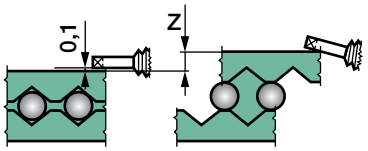
Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

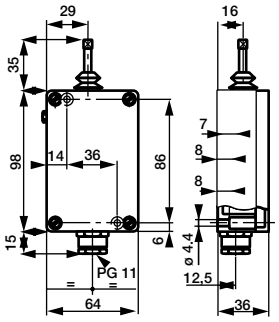
Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

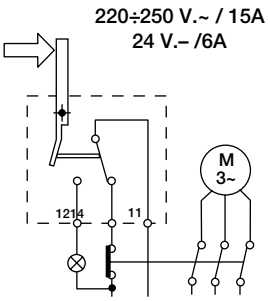
Standard Disc Spring Torque Limiters – Type A

Basic Type

EMERGENCY STOP SWITCH Type A







Arrangement Possibilities

Range	Size	Disc Springs			
		Code	Size	Arrangement	
				Standard A-B-C-D	Free Running A-B-C-D
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20	S-Light	20/65	6 x 1s	2 x 1s
	25		80	3 Packs	3 Packs
	35		100		
	45	M-Medium	20/65	5 x 1m	2 x 1m
	55		80	6 Packs	6 Packs
	65		100		
	80	L-Heavy	20	5 x 1m	2 x 1ℓ
	100		25/65	5 x 1 ℓ	
			80	12 Packs	12 Packs
			100		
		LL-R-Heavy	20	4 x 1ℓ	
			25/65	3 x 2ℓ	
			80	12 Packs	
			100		

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling, E-Mini basic type, F-for large transmissions, G-with elastic coupling

Emergency Stop Switch

Size	Z				
	(1) mm	(2) mm	(3) mm	(4) mm	(5) mm
20	1.4	1.2	0.6	1.6	—
25	2.3	1.8	0.8	2.3	—
35	2.4	2	1.1	3	—
45	2.7	2.2	1.2	3.5	—
55	3.7	2.5	1.2	3.8	2.5
65	4.6	3	1.6	4.5	3
80	5	3.5	2.5	—	3.5
100	5.5	4	2.7	—	4

(1) Quick Guard - (2) Synchronous - (3) Continuous - (4) Free Running - (5) Quick Guard-R

Technical Characteristics

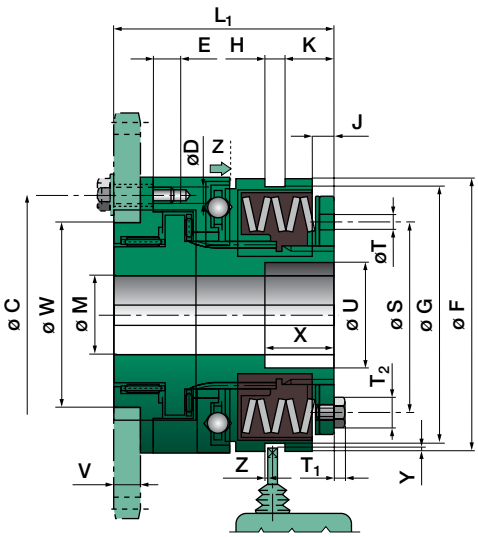
Size	Disengagement Torque							Maximum Speed – Standard A-B-C-D						
	Quick Guard Nm				Synchronous-Continuous-Free Running Nm			Quick Guard n/1'		Synchronous n/1'		Continuous n/1'		Free Running n/1'
	Springs Type							Springs Type						
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L	S-M	L	S-M-L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	3300	1800	1000	500	4000	3000	—
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	2900	1450	950	450	3900	2900	5000
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	2400	1200	800	400	3300	2400	4000
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	2000	1000	650	300	2800	2000	3500
55	50-100	100-200	200-500	400-1000	100-200	200-400	400-800	1600	850	550	250	2300	1600	3000
55R*	—	—	—	800-2000	—	—	800-2000**	—	90	—	90	—	700	—
65	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1400	700	400	150	1800	1400	2300
65R*	—	—	—	1200-3400	—	—	1200-3400**	—	70	—	70	—	600	—
80	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	1200	600	150	80	1500	1000	1600
80R*	—	—	—	2900-5800	—	—	2900-5800**	—	40	—	40	—	400	—
100	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	950	480	100	50	1300	800	1400
100R*	—	—	—	3000-8200	—	—	3000-8200**	—	30	—	30	—	300	—

* The R type need screws quality 12.9 in the connection torque limiter-transmission
** Not available in the Free Running range

Standard Disc Spring Torque Limiters – Type B

with Roller Bearing Flange

With drive centering flange mounted on a roller bearing.
Ready for mounting.



Dimensions

Size	Overall Dimensions																			
	C	D	E	F	G	H	K	J	L_1	M		S	T	T_1	T_2	U	V	W^{h6}	X	Y
										Min	Max									
20	48	6xM5	6.5	55	50	9	7.5	3	51	7	20	38.5	5	3	7	21	8	38	15	2
25	70	6xM5	8	82	72.5	9	11.5	6	70	10	25	54	6	3.5	8	26	10	50	20	2
35	89	6xM6	10	100	90.5	9	12	5	78	14	35	70	6	4	10	36	12	60	25	2
45	105	6xM8	12	120	112	10	21	8.5	96	18	45	84	6	4	10	46	12	80	30	2
55	125	6xM10	15	146	140	9	27	11	124.5	24	55	108	7	5.5	13	56	16	100	30	2
65	155	6xM12	17	176	170	9	33	12	140	30	70*	129	10	5.5	13	66	18	120	30	2
80	160	6xM12	20	200	190	9	39④	14④	150④	40	80	150	—	15	24	82	20	130	25④	2
100	200	6xM16	25	240	230	9	46⑤	15⑤	175⑤	50	110*	186	—	21	30	111	25	160	35⑤	2

* Mmax with keyway seat according to DIN 6885/3
① Quick Guard 55R-type D
② Quick Guard 65LL, Synchronous 65L, Continuous 65L, Free Running 65L-type D
③ Quick Guard 65R-type D
④ Free Running 80: K = 53, J = 29, L1 = 165, X = 40
⑤ Free Running 100: K = 64, J = 33, X = 53

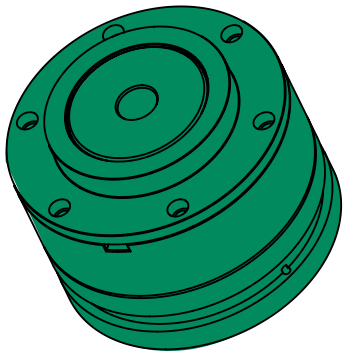
How to order:

Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

Standard Disc Spring Torque Limiters – Type B

with Roller Bearing Flange



Arrangement Possibilities

Range	Size	Disc Springs			
				Arrangement	
		Code	Size	Standard A-B-C-D	Free Running A-B-C-D
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20 25 35 45 55 65 80 100	S-Light	20/65	6 x 1s	2 x 1s
			80 100	3 Packs	3 Packs
		M-Medium	20/65	5 x 1m	2 x 1m
			80 100	6 Packs	6 Packs
		L-Heavy	20	5 x 1m	2 x 1ℓ
			25/65	5 x 1ℓ	
			80 100	12 Packs	12 Packs
		LL-R-Heavy	20	4 x 1ℓ	
			25/65	3 x 2ℓ	
			80 100	12 Packs	

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling, E-Mini basic type, F-for large transmissions, G-with elastic coupling

Technical Characteristics

Size	Disengagement Torque							Maximum Speed – Standard A-B-C-D						
	Quick Guard Nm				Synchronous-Continuous-Free Running Nm			Quick Guard n/1'		Synchronous n/1'		Continuous n/1'		Free Running n/1'
	Springs Type							Springs Type						
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L	S-M	L	S-M-L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	3300	1800	1000	500	4000	3000	—
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	2900	1450	950	450	3900	2900	5000
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	2400	1200	800	400	3300	2400	4000
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	2000	1000	650	300	2800	2000	3500
55	50-100	100-200	200-500	400-1000	100-200	200-400	400-800	1600	850	550	250	2300	1600	3000
55R*	—	—	—	800-2000	—	—	800-2000**	—	90	—	90	—	700	—
65	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1400	700	400	150	1800	1400	2300
65R*	—	—	—	1200-3400	—	—	1200-3400**	—	70	—	70	—	600	—
80	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	1200	600	150	80	1500	1000	1600
80R*	—	—	—	2900-5800	—	—	2900-5800**	—	40	—	40	—	400	—
100	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	950	480	100	50	1300	800	1400
100R*	—	—	—	3000-8200	—	—	3000-8200**	—	30	—	30	—	300	—

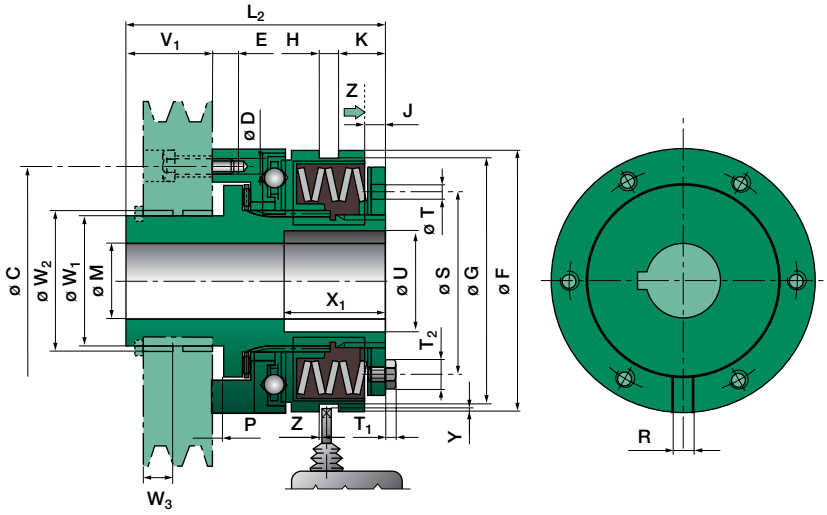
* The R type need screws quality 12.9 in the connection torque limiter-transmission

** Not available in the Free Running range

Standard Disc Spring Torque Limiters – Type C

with Extended Hubs

Bearing or bronze bushes can be mounted on it to support large drive components



Dimensions

Size	Overall Dimensions																							
	C	D	E	F	G	H	K	J	L_2	M		N	P	R	S	T	T_1	T_2	U	V_1	W^{f7}_1	W^{k7}_2	W_3	X_1	Y
										Min	Max														
20	48	6xM5	6.5	55	50	9	7.5	3	66	7	20	34.5	3.1	6	38.5	5	3	7	21	27.5	28	36	10	25.5	2
25	70	6xM5	8	82	72.5	9	11.5	6	85	10	25	48	3.1	6	54	6	3.5	8	26	33	38	45	14	35	2
35	89	6xM6	10	100	90.5	9	12	5	100	14	35	56	3.6	8	70	6	4	10	36	39	52	60	16	45	2
45	105	6xM8	12	120	112	10	21	8.5	125	18	45	73	4.1	10	84	6	4	10	46	47	65	72	21	59	2
55	125	6xM10	15	146	140	9	27	11	152.5	24	55	93.5	4.1	12	108	7	5.5	13	56	52.5	78	85	25	60	2
65	155	6xM12	17	176	170	9	33	12	171	30	70*	107	4.6	14	129	10	5.5	13	66	57.5	90	100	25	60	2
80	160	6xM12	20	200	190	9	39④	14④	183④	40	80	112④	5.3	16	150	—	15	24	82	64	108	—	—	55④	2
100	200	6xM16	25	240	230	9	46⑤	15⑤	213⑤	50	110*	133⑤	5.8	18	186	—	21	30	111	72	135	—	—	70⑤	2

* Mmax with keyway seat according to DIN 6885/3
① Quick Guard 55R-type D
② Quick Guard 65LL, Synchronous 65L, Continuous 65L, Free Running 65L-type D
③ Quick Guard 65R-type D
④ Free Running 80: K = 53, J = 29, L2 = 198, N = 127, X1 = 70
⑤ Free Running 100: K = 64, J = 33, L2 = 231, N = 151, X1 = 88

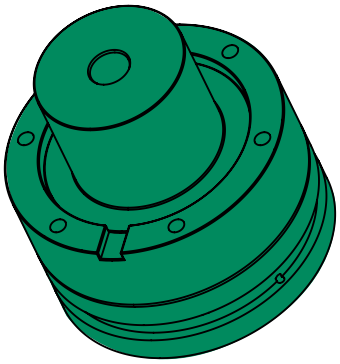
How to order:

Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

Standard Disc Spring Torque Limiters – Type C

with Extended Hubs



Arrangement Possibilities

Range	Size	Disc Springs			
		Code	Size	Arrangement	
				Standard A-B-C-D	Free Running A-B-C-D
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20	S-Light	20/65	6 x 1s	2 x 1s
			80	3 Packs	3 Packs
	25		100		
		M-Medium	20/65	5 x 1m	2 x 1m
	35		80	6 Packs	6 Packs
			100		
	45	L-Heavy	20	5 x 1m	2 x 1ℓ
			25/65	5 x 1ℓ	
	55		80	12 Packs	12 Packs
			100		
	65	LL-R-Heavy	20	4 x 1ℓ	
	80		25/65	3 x 2ℓ	
			80	12 Packs	
	100		100		

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling, E-Mini basic type, F-for large transmissions, G-with elastic coupling

Technical Characteristics

Size	Disengagement Torque							Maximum Speed – Standard A-B-C-D						
	Quick Guard Nm				Synchronous-Continuous-Free Running Nm			Quick Guard n/1'		Synchronous n/1'		Continuous n/1'		Free Running n/1'
	Springs Type							Springs Type						
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L	S-M	L	S-M-L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	3300	1800	1000	500	4000	3000	—
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	2900	1450	950	450	3900	2900	5000
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	2400	1200	800	400	3300	2400	4000
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	2000	1000	650	300	2800	2000	3500
55	50-100	100-200	200-500	400-1000	100-200	200-400	400-800	1600	850	550	250	2300	1600	3000
55R*	—	—	—	800-2000	—	—	800-2000**	—	90	—	90	—	700	—
65	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1400	700	400	150	1800	1400	2300
65R*	—	—	—	1200-3400	—	—	1200-3400**	—	70	—	70	—	600	—
80	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	1200	600	150	80	1500	1000	1600
80R*	—	—	—	2900-5800	—	—	2900-5800**	—	40	—	40	—	400	—
100	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	950	480	100	50	1300	800	1400
100R*	—	—	—	3000-8200	—	—	3000-8200**	—	30	—	30	—	300	—

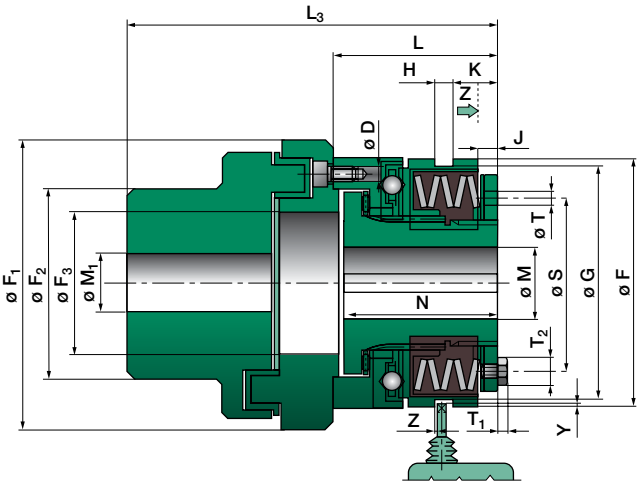
* The R type need screws quality 12.9 in the connection torque limiter-transmission

** Not available in the Free Running range

Standard Disc Spring Limiters – Type D

with Elastic Coupling

For connecting two coaxial shafts



Dimensions

Size	Overall Dimensions																			
	D	F	F_1	F_2	F_3	G	H	K	J	L	L_3	M		M_1	N	S	T	T_1	T_2	Y
												Min	Max	Max						
20	6xM5	55	67	46	33	50	9	7.5	3	38.5	86	7	20	30	34.5	38.5	5	3	7	2
25	6xM5	82	112	79	50	72.5	9	11.5	6	52	137.5	10	25	50	48	54	6	3.5	8	2
35	6xM6	100	112	79	60	90.5	9	12	5	61	147	14	35	50	56	70	6	4	10	2
45	6xM8	120	128	90	70	112	10	21	8.5	78	176.5	18	45	60	73	84	6	4	10	2
55	6xM10	146	148①	90①	70①	140	9	27	11	100	211.5①	24	55	60①	93.5	108	7	5.5	13	2
65	6xM12	176	177②③	107②③	90②③	170	9	33	12	113.5	242.5②③	30	70*	70②③	107	129	10	5.5	13	2
80	6xM12	200	225	180	113	190	9	39④	14④	119④	299.5④	40	80	115	112④	150	—	15	24	2
100	6xM16	240	255	200	127	230	9	46⑤	15⑤	141⑤	339⑤	50	110*	125	133⑤	186	—	21	30	2

* Mmax with keyway seat according to DIN 6885/3
① Quick Guard 55R-type D: M1max = 90, F1 = 198, F2 = 140, F3 = 90, L3 = 257
② Quick Guard 65LL, Synchronous 65L, Continuous 65L, Free Running 65L-type D: M1max = 90, F1 = 198, F2 = 140, F3 = 90, L3 = 272
③ Quick Guard 65R-type D: M1max = 115, F1 = 225, F2 = 180, F3 = 113, L3 = 312
④ Free Running 80: K = 53, J = 29, L = 134, L3 = 314.5, N = 127
⑤ Free Running 100: K = 64, J = 33, L = 159, L3 = 357, N = 151

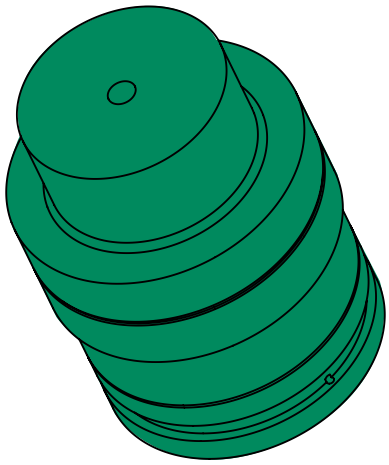
How to order:

Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

Standard Disc Spring Limiters – Type D

with Elastic Coupling



Arrangement Possibilities

Range	Size	Disc Springs			
		Code	Size	Arrangement	
				Standard A-B-C-D	Free Running A-B-C-D
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20	S-Light	20/65	6 x 1s	2 x 1s
			80	3 Packs	3 Packs
	25		100		
		M-Medium	20/65	5 x 1m	2 x 1m
	35		80	6 Packs	6 Packs
			100		
	45	L-Heavy	20	5 x 1m	2 x 1ℓ
			25/65	5 x 1ℓ	
	55		80	12 Packs	12 Packs
			100		
	65				
	80	LL-R-Heavy	20	4 x 1ℓ	
			25/65	3 x 2ℓ	
	100		80	12 Packs	
			100		

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling, E-Mini basic type, F-for large transmissions, G-with elastic coupling

Technical Characteristics

Size	Disengagement Torque							Maximum Speed – Standard A-B-C-D						
	Quick Guard Nm				Synchronous-Continuous-Free Running Nm			Quick Guard n/1'		Synchronous n/1'		Continuous n/1'		Free Running n/1'
	Springs Type							Springs Type						
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L	S-M	L	S-M-L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	3300	1800	1000	500	4000	3000	—
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	2900	1450	950	450	3900	2900	5000
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	2400	1200	800	400	3300	2400	4000
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	2000	1000	650	300	2800	2000	3500
55	50-100	100-200	200-500	400-1000	100-200	200-400	400-800	1600	850	550	250	2300	1600	3000
55R*	—	—	—	800-2000	—	—	800-2000**	—	90	—	90	—	700	—
65	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1400	700	400	150	1800	1400	2300
65R*	—	—	—	1200-3400	—	—	1200-3400**	—	70	—	70	—	600	—
80	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	1200	600	150	80	1500	1000	1600
80R*	—	—	—	2900-5800	—	—	2900-5800**	—	40	—	40	—	400	—
100	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	950	480	100	50	1300	800	1400
100R*	—	—	—	3000-8200	—	—	3000-8200**	—	30	—	30	—	300	—

* The R type need screws quality 12.9 in the connection torque limiter-transmission

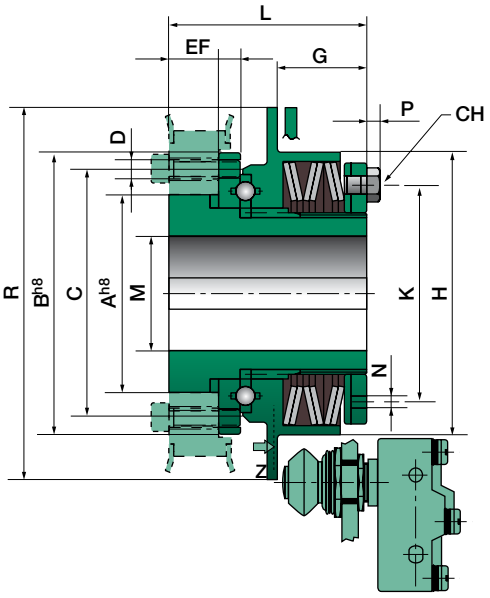
** Not available in the Free Running range

Mini Disc Spring Torque Limiters – Type E

Basic Type Mini

For connection shaft-drive component such as gear or pulley, supported on the shaft

For maximum speed 900 rpm, low radial forces. Axial forces are not admitted. For frequent interventions a bushing should be mounted.



Dimensions

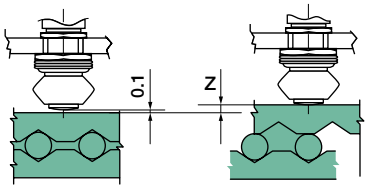
Size	Overall Dimensions															
	A h8	B h8	C	D	E	F	G	H	K	L	M Min	M Max	N	P	R	CH
20	36	55	46	6xM5	11.5	5.5	21.7	50.5	38.5	50	7	20	5	2.8	80	7
25	46	70	59	6xM5	16.5	7	23.2	70.5	54	57	10	25	6	3.5	100	8
35	64	90	80	6xM6	16.5	7	29	88	70	65	14	35	6	4	120	10
45	78	115	100	6xM6	22	8	34.5	110	84	81	18	45	6	4	150	10

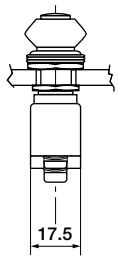
Technical Characteristics

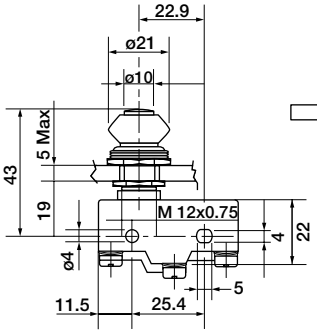
Size	Disengagement Torque							Maximum Speed – Mini E-F-G			
	Quick Guard Nm			Synchronous-Continuous-Free Running Nm				Quick Guard n/1'		Synchronous n/1'	
	Springs Type							Springs Type			
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	800	800	700	500
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	800	700	700	450
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	800	600	700	400
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	800	500	650	300

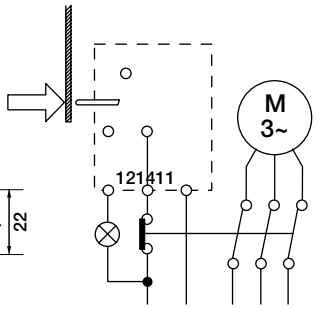
* The R type need screws quality 12.9 in the connection torque limiter-transmission
** Not available in the Free Running range

220÷250 V.~ / 15A
24 V.– /6A









Arrangement Possibilities

Range	Size	Disc Springs		
		Code	Size	Arrangement Mini E-F-G
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20 25 35 45	S-Light	20/65	5 x 1s
			80	
			100	
		M-Medium	20/65	3 x 1m
			80	
			100	
		L-Heavy	20	3 x 1m
			25/65	3 x 1ℓ
			80	
			100	
		LL-R-Heavy	20	3 x 1ℓ
			25/65	3 x 2ℓ
			80	
			100	

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling,
E-Mini basic type, F-for large transmissions, G-with elastic coupling

Emergency Stop Switch

Size	Z	
	(1) mm	(2) mm
20	1.4	1.2
25	1.4	1.2
35	2.4	1.8
45	2.4	2

(1) Quick Guard Mini
(2) Synchronous Mini

How to order:

Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

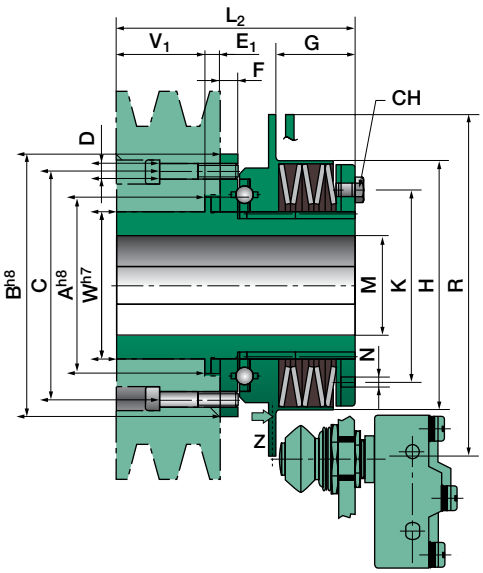
Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

Mini Disc Spring Torque Limiters – Type F

Mini with Extended Hub

For connection shaft-drive component such as gear or pulley, supported on the shaft

For maximum speed 900 rpm, low radial forces. Axial forces are not admitted. For frequent interventions a bushing should be mounted.



Dimensions

Size	Overall Dimensions																
	A^{h8}	B^{h8}	C	D	E_1	F	G	H	K	L_2	M		N	R	V_1	W^{h7}	CH
											Min	Max					
20	36	55	46	6xM5	4.5	5.5	21.7	50.5	38.5	83.5	7	20	5	80	40.5	30	7
25	46	70	59	6xM5	5.5	7	23.2	70.5	54	94	10	25	6	100	48	35	8
35	64	90	80	6xM6	6.5	7	29	88	70	108	14	35	6	120	53	50	10
45	78	115	100	6xM6	8	8	34.5	110	84	127	18	45	6	150	60	65	10

Technical Characteristics

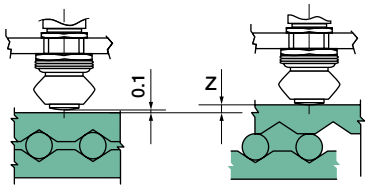
Size	Disengagement Torque							Maximum Speed – Mini E-F-G			
	Quick Guard Nm			Synchronous-Continuous-Free Running Nm				Quick Guard n/1'		Synchronous n/1'	
	Springs Type							Springs Type			
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	800	800	700	500
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	800	700	700	450
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	800	600	700	400
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	800	500	650	300

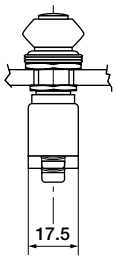
* The R type need screws quality 12.9 in the connection torque limiter-transmission
** Not available in the Free Running range

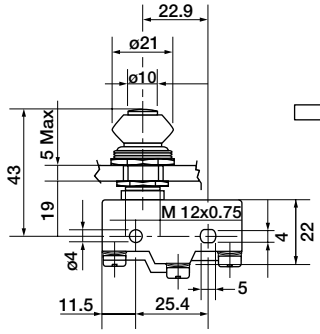
Mini Disc Spring Torque Limiters – Type F

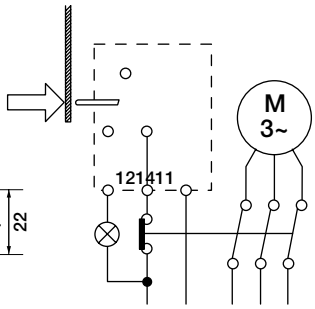
Mini with Extended Hub

220÷250 V.~ / 15A
24 V.– /6A









Arrangement Possibilities

Range	Size	Disc Springs		
		Code	Size	Arrangement Mini E-F-G
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20 25 35 45	S-Light	20/65	5 x 1s
			80	
			100	
		M-Medium	20/65	3 x 1m
			80	
			100	
		L-Heavy	20	3 x 1m
			25/65	3 x 1ℓ
			80	
			100	
		LL-R-Heavy	20	3 x 1ℓ
			25/65	3 x 2ℓ
			80	
			100	

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling, E-Mini basic type, F-for large transmissions, G-with elastic coupling

Emergency Stop Switch

Size	Z	
	(1) mm	(2) mm
20	1.4	1.2
25	1.4	1.2
35	2.4	1.8
45	2.4	2

(1) Quick Guard Mini
(2) Synchronous Mini

How to order:

Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

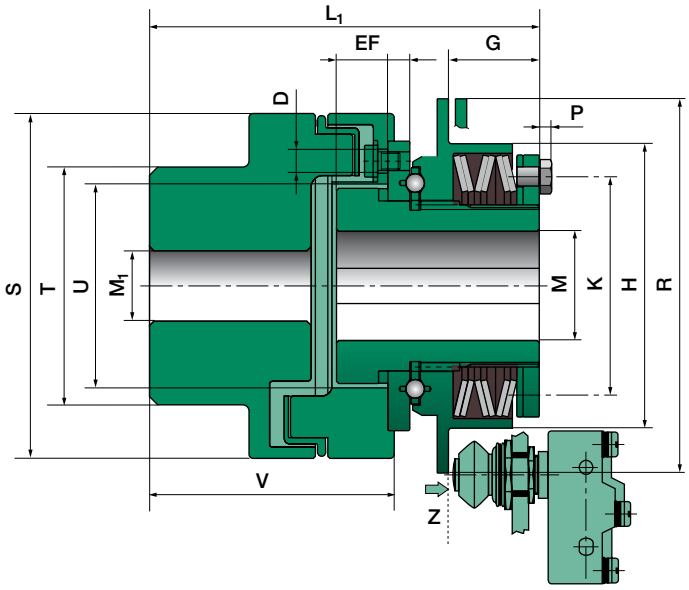
Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

Mini Disc Spring Torque Limiters – Type G

Mini with Elastic Coupling

For connecting two coaxial shafts

For maximum speed 900 rpm, low radial forces. Axial forces are not admitted. For frequent interventions a bushing should be mounted.



Dimensions

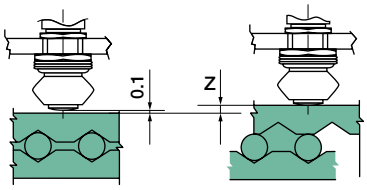
Size	Overall Dimensions															
	D	E	F	G	H	K	L_1	M		M_1	P	R	S	T	U	V
								Min	Max	Max						
20	6xM5	11.5	5.5	21.7	50.5	38.5	84.5	7	20	30	2.8	80	67	46	37	47.5
25	6xM5	16.5	7	23.2	70.5	54	98	10	25	35	3.5	100	82	53	48	59
35	6xM6	16.5	7	29	88	70	132	14	35	50	4	120	112	79	66	85.5
45	6xM6	22	8	34.5	110	84	155.5	18	45	60	4	150	128	90	79	98.5

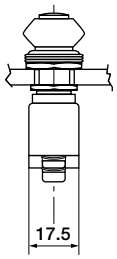
Technical Characteristics

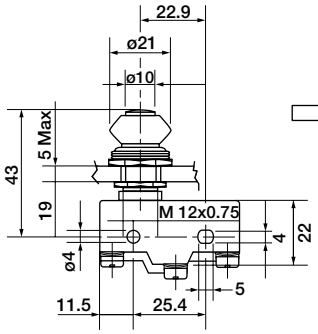
Size	Disengagement Torque							Maximum Speed – Mini E-F-G			
	Quick Guard Nm			Synchronous-Continuous-Free Running Nm				Quick Guard n/1'		Synchronous n/1'	
	Springs Type							Springs Type			
	S	M	L	LL	S	M	L	S-M	L-LL	S-M	L
20	2.5-5	5-10	10-20	20-40	5-10	10-20	20-40	800	800	700	500
25	6-12	12-25	25-55	55-100	12-25	25-50	50-100	800	700	700	450
35	12-25	25-50	50-120	120-200	25-50	50-100	100-200	800	600	700	400
45	25-50	50-100	100-250	200-450	50-100	100-200	200-450	800	500	650	300

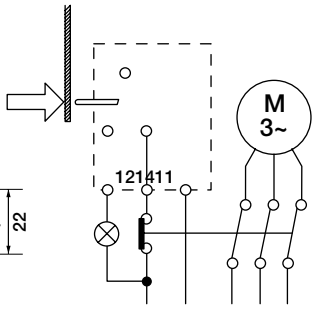
* The R type need screws quality 12.9 in the connection torque limiter-transmission
** Not available in the Free Running range

220÷250 V.~ / 15A
24 V.– /6A









Arrangement Possibilities

Range	Size	Disc Springs		
		Code	Size	Arrangement Mini E-F-G
Quick Guard Quick Guard R Synchronous Continuous* Free Running*	20 25 35 45	S-Light	20/65	5 x 1s
			80	
			100	
		M-Medium	20/65	3 x 1m
			80	
			100	
		L-Heavy	20	3 x 1m
			25/65	3 x 1ℓ
			80	
			100	
		LL-R-Heavy	20	3 x 1ℓ
			25/65	3 x 2ℓ
			80	
			100	

* Available only in the form A, B, C, D

A-basic type, B-with roller bearing flange, C-with extended hub, D-with elastic coupling, E-Mini basic type, F-for large transmissions, G-with elastic coupling

Emergency Stop Switch

Size	Z	
	(1) mm	(2) mm
20	1.4	1.2
25	1.4	1.2
35	2.4	1.8
45	2.4	2

(1) Quick Guard Mini
(2) Synchronous Mini

How to order:

Standard Quick Guard Type D – Size 45 – Springs LL – Ø40 – Ø 45
Order Code: D45LL40B+K

Standard Synchronous Type A – Size 100 – Springs M– Ø90 —
Order Code: A100M90B+K

Zero Backlash Torque Limiters

ZBC Heavy Duty/NBC Light Duty

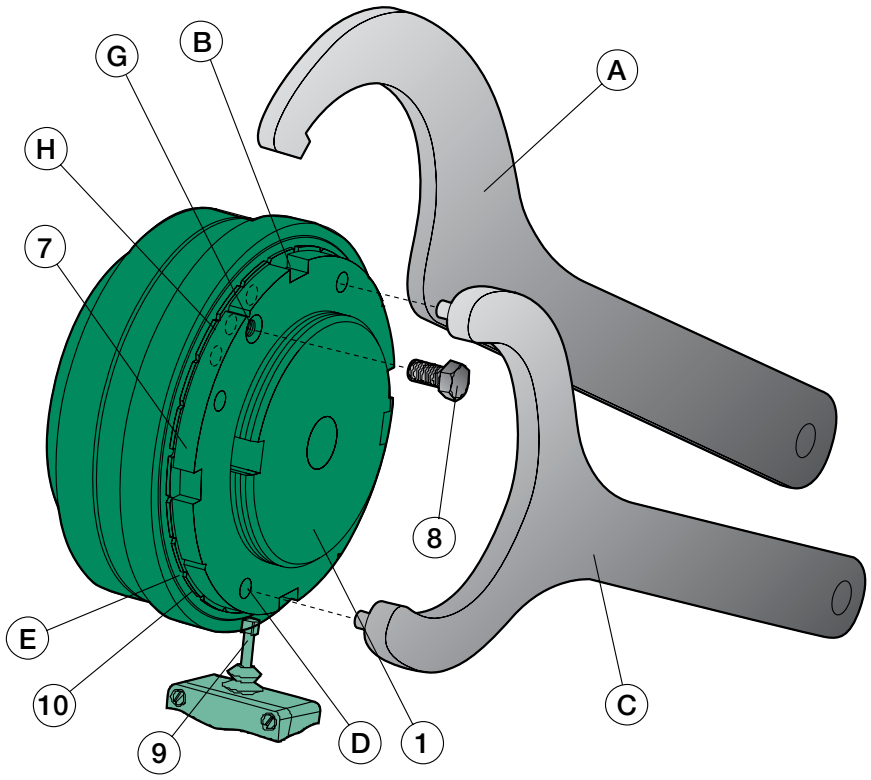
The advantages of the system, compared to the traditional types

- 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 disengangement 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).



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-engangement 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.

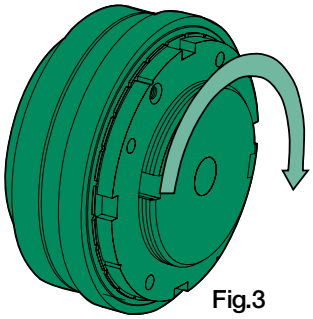


Fig.3

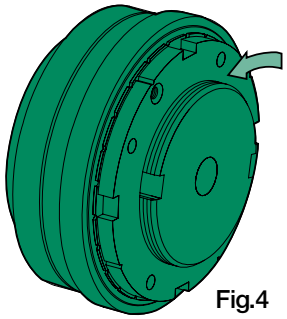


Fig.4

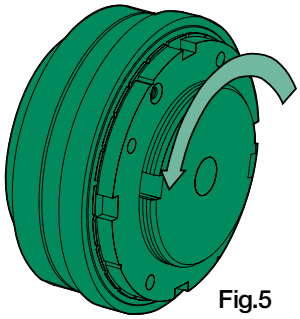


Fig.5

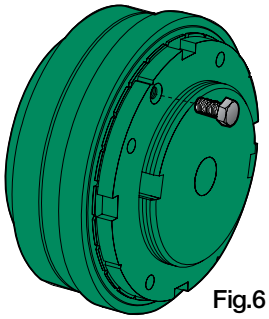


Fig.6

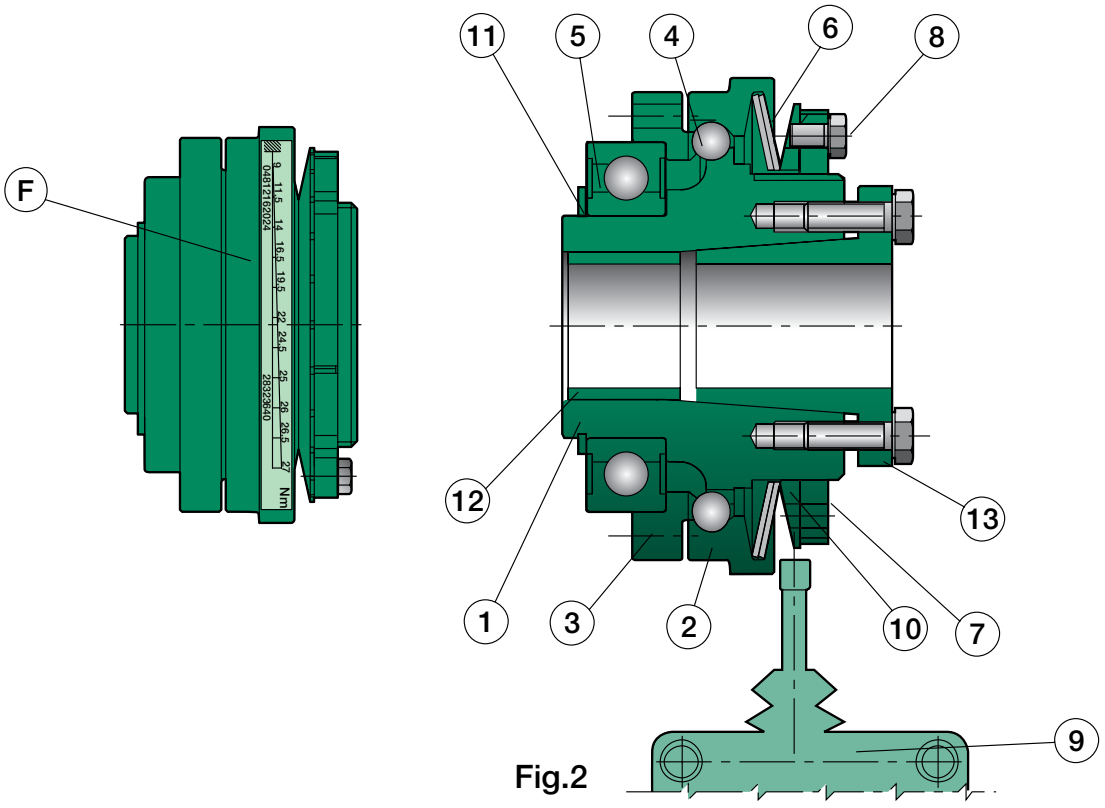
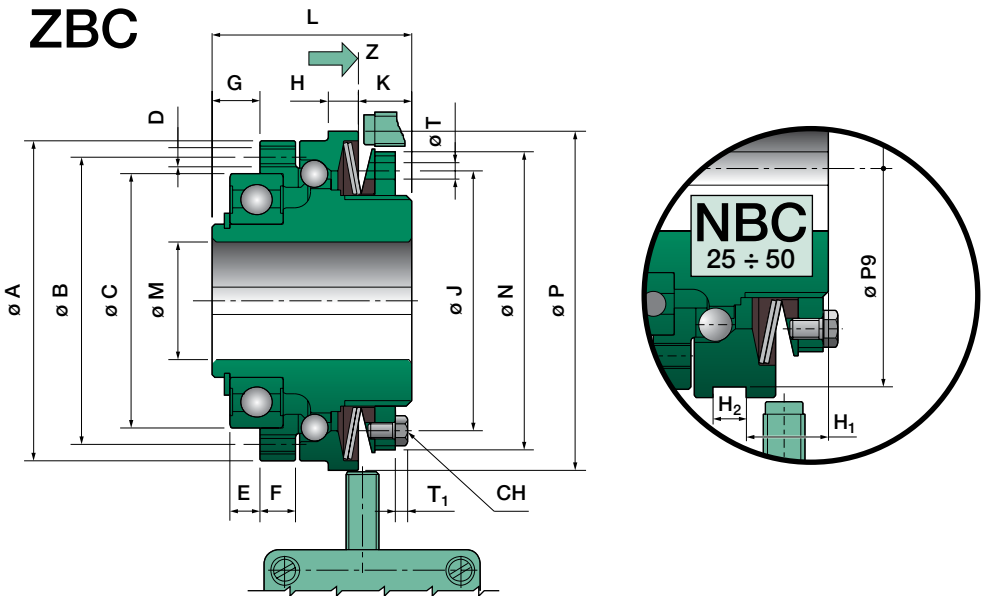


Fig.2

ZBC-NBC Zero Backlash Torque Limiters – Type H

Basic Form Pilot Bored



ZBC Dimensions

Size	Overall Dimensions																		
	A	B	C h5	D	E	F	G	H	K	J	L	M		N	P	T	T_1	CH	Z
												Min	Max						
25	65	56	47	8xM4	5	7.5	8	7	12	54.5	40	8	20	63	70	5	2.8	7	1.2
30	80	71	62	8xM5	7	8	11	8	14	69	48	10	30*	77	85	5	2.8	7	1.5
40	95	85	75	8xM6	9	10.5	14	9	16	77	59	14	35*	88	100	5	3.5	8	1.8
50	110	100	90	8xM6	10	12	16	10	17	87.5	64	18	45*	100	115	6	4	10	2.0
60	130	116	100	8xM8	10	12	18	12	21	106	75	24	50	122	135	7	4	10	2.2

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

NBC Dimensions

Size	Overall Dimensions																				
	A	B	C h5	D	E	F	G	H	H_1	H_2	K, K_1	J	L	M		N	P	P9	T	T_1	CH	Z
														Min	Max							
11	40	35	30	6xM3	2	5	4.5	6	—	—	7	32	24	6	11	39.5	45	—	4	2.1	5.5	0.8
16	47	42	37	6xM3	2	6	5	8	—	—	9.5	36.5	29	8	16*	43	50	—	4	2.1	5.5	1
20	60	53	47	6xM4	3	7	6	9	—	—	9.5	36.5	33	9	20	43	65	—	4	2.1	5.5	1.2
25	77	69	62	6xM5	4	7.5	8	—	14.9	7.5	10.2	54.5	41	12	20	63	80	75	5	2.8	7	1.2
30	90	80	68	6xM6	5	8	10	—	17.4	7.5	11	69	47	15	25	77	95	90	5	2.8	7	1.5
40	106	90	80	6xM6	5	9	10	—	20	8	12.6	77	52	22	35*	88	110	105	5	3.5	8	1.8
50	125	112	100	6xM8	5	11	10	—	23.5	9	14.7	87.5	59	32	45	100	130	125	6	4	10	2.0

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

ZBC-NBC Zero Backlash Torque Limiters – Type H

Basic Form Pilot Bored

Arrangement Possibilities (for larger transmissions)

Arrangement Possibilities				ZBC					NBC				
Range	Type			Size	Disc Springs		Torque Limiter Side (mm)		Size	Disc Springs		Min/Max Bore (mm)	
	Pre-Bored	with Cone Clamping Element	Form		Code	Layout	Min	Max		Code	Layout	Min	Max
ZBC Quick Guard	H	J	Basic Type	25	S-Light	1	8	20	11	S-Light	1	6	11
ZBC Synchronous	K	L	for Large Drives	30			10	30***	16			8	16
NBC* Quick Guard	M**	N**-P**-R**	with Coupling	40	M-Medium	2	12	35***	20	M-Medium	2	9	20
NBC* Synchronous				50			16	45***	25			8	20
				60	LL-Heavy	4	22	50	30	L-Heavy	3	10	30***
									40	LL-Heavy	4	12	35***
									50			16	45***

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Technical Characteristics

ZBC																	NBC						
Disengagement Torque (Nm)				Coupling Type													Disengagement Torque (Nm)					Max Speed	
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									Size	Disc Springs					
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed							
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'		S	M	L	LL	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000	11	0.65-3	1.3-6	2-9	2.6-12	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000	16	2-5	4-10	6-15	8-20	4000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500	20	4-10	8-20	12-30	16-40	4000
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000	25	4-14	8-28	12-42	16-56	4000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200	30	9-35	18-70	27-105	40-140	3000
																		40	19-65	38-130	57-195	78-260	2500
																		50	35-110	80-220	120-330	160-440	2000

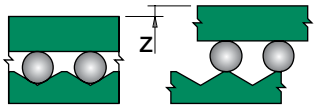
Inertia Moments

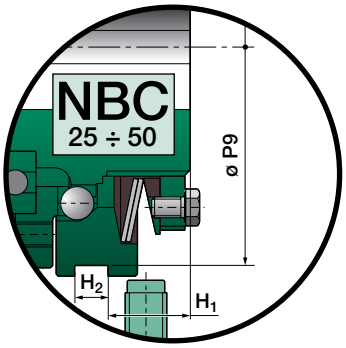
Type	H			
	Hub Side	Flange Side	Hub Side	Flange Side
	ZBC		NBC	
	kg x cm²			
11	—	—	0.27	0.08
16	—	—	0.54	0.2
20	—	—	1.8	0.6
25	2.15	0.945	4.6	1.8
30	5.30	2.351	11.8	3.9
40	13.68	6.446	27	7.7
50	27.62	13.071	61.5	17.3
60	66.45	26.523	—	—

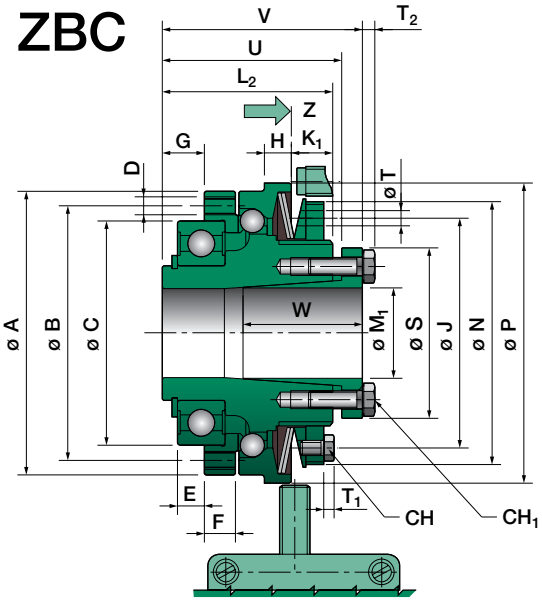
*Corresponding to min. bore

ZBC-NBC Zero Backlash Torque Limiters – Type J

Basic Form with Clamping Elements







ZBC Dimensions

Size	Overall Dimensions																							
	A	B	C h5	D	E	F	G	H	K1	J	L2	M1 Min	M1 Max	N	P	S	T	T1	T2	CH	CH1	U	V	W	Z
25	65	56	47	8xM4	5	7.5	8	7	12	54.5	40	10 19	20 25	63	70	40.5 42	5	2.8	2.8	7	7	42	47	26	1.2
30	80	71	62	8xM5	7	8	11	8	12	69	46	15	30	77	85	57	5	2.8	4	7	10	49	56	31	1.5
40	95	85	75	8xM6	9	10.5	14	9	14	77	57	19 32	30 40	88	100	57 64	5	3.5	4 3.5	8	10 8	60	67	40 31	1.8
50	110	100	90	8xM6	10	12	16	10	16	87.5	63	32	50	100	115	73.5	6	4	4	10	10	66.5	73	29	2.0
60	130	116	100	8xM8	10	12	18	12	21	106	75	32 55	50 60	122	135	73.5 89	7	4	4	10	10	78.5 78	85 86	29 45.5	2.2

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

NBC Dimensions

Size	Overall Dimensions																									
	A	B	C h5	D	E	F	G	H	H1	H2	K, K1	J	L2	M1 Min	M1 Max	N	P	P9	S	T	T1	T2	CH	CH1	V	W	Z
11	40	35	30	6xM3	2	5	4.5	6	—	—	7	32	24	6	12	39.5	45	—	25	4	2.1	2.1	5.5	5.5	29	13	0.8
16	47	42	37	6xM3	2	6	5	8	—	—	9.5	36.5	29	8	16	43	50	—	29.5	4	2.1	2.1	5.5	5.5	34	19	1
20	60	53	47	6xM4	3	7	6	9	—	—	9.5	36.5	33	9	16	43	65	—	29.5	4	2.1	2.1	5.5	5.5	38	19	1.2
25	77	69	62	6xM5	4	7.5	8	—	14.9	7.5	10.2	54.5	41	10 19	20 25	63	80	75	40.5 42	5	2.8	2.8	7	7	46	26	1.2
30	90	80	68	6xM6	5	8	10	—	17.4	7.5	11	69	47	15	30	77	95	90	57	5	2.8	4	7	10	57	31	1.5
40	106	90	80	6xM6	5	9	10	—	20	8	12.6	77	52	19 32	30 40	88	110	105	57 64	5	3.5	4 3.5	8	10 8	62	40 31	1.8
50	125	112	100	6xM8	5	11	10	—	23.5	9	14.7	87.5	59	32	50	100	130	125	73.5	6	4	4	10	10	69	29	2.0

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

How to order:

ZBC Quickquard Type R – Size 50 – Springs LL – Ø40 – Ø 40
Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40
Order Code: J16L14B+K

ZBC-NBC Zero Backlash Torque Limiters – Type J

Basic Form with Clamping Elements

Arrangement Possibilities

Arrangement Possibilities			
Range	Type		
	Pre-Bored	with Cone Clamping Element	Form
ZBC Quick Guard	H	J	Basic Type
ZBC Synchronous	K	L	for Large Drives
NBC* Quick Guard	M**	N**-P**-R**	with Coupling
NBC* Synchronous			

ZBC				
Size	Disc Springs		Torque Limiter Side (mm)	
	Code	Layout	Min	Max
25	S-Light	1	8	20
30			10	30***
40	M-Medium	2	12	35***
50			16	45***
60	LL-Heavy	4	22	50

NBC				
Size	Disc Springs		Min/Max Bore (mm)	
	Code	Layout	Min	Max
11	S-Light	1	6	11
16			8	16
20	M-Medium	2	9	20
25			8	20
30	L-Heavy	3	10	30***
40	LL-Heavy	4	12	35***
50			16	45***

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Inertia Moments

Type	J			
	Hub Side	Flange Side	Hub Side	Flange Side
	ZBC		NBC	
	kg x cm²			
11	—	—	0.25	0.08
16	—	—	0.51	0.2
20	—	—	1.7	0.6
25	2.22	0.945	4.6	1.8
30	5.58	2.351	11.5	3.9
40	14.58	6.446	26.3	7.7
50	29.88	13.071	59.5	17.3
60	72.01	26.523	—	—

*Corresponding to min. bore

Technical Characteristics

ZBC																	NBC					
Disengagement Torque (Nm)				Coupling Type													Disengagement Torque (Nm)					Max Speed
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									Size	Disc Springs				
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed						
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'		S	M	L	LL	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000	11	0.65-3	1.3-6	2-9	2.6-12	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000	16	2-5	4-10	6-15	8-20	4000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500	20	4-10	8-20	12-30	16-40	4000
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000	25	4-14	8-28	12-42	16-56	4000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200	30	9-35	18-70	27-105	40-140	3000
																		40	19-65	38-130	57-195	78-260	2500
																		50	35-110	80-220	120-330	160-440	2000

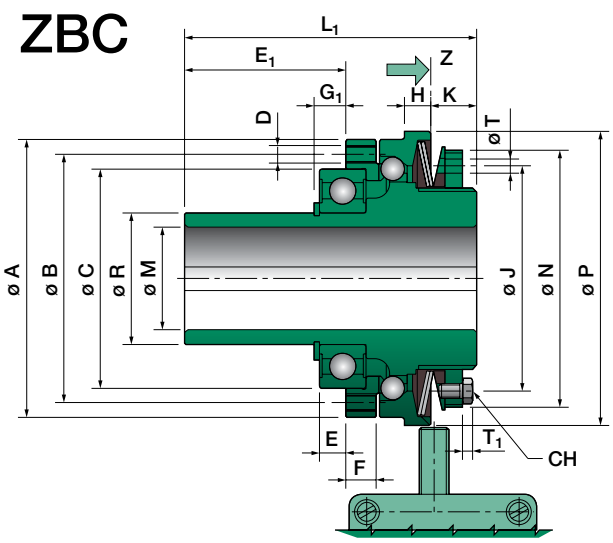
Available Bore Sizes

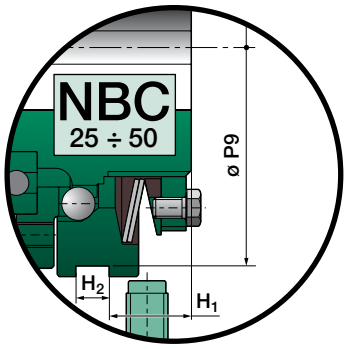
Type J-L		Available Bore Sizes																													Ts Nm
ZBC	NBC	6	8	9	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60			
Size																															
—	11	13	18	20	23	25	28																								2.2*
—	16		28	30	34	37	41	48	51	54																					1.7*
—	20		28	30	34	37	41	48	51	54																					1.7*
25	25				65	70	75	90	95	100	115	120	130	140	150	160															3
30	30								95	100	115	160	180	190	210	220	240	260													10
40	40											240	260	290	310	320	360	390													10
40	40																		440	480	520	550									5.9
50	50																		620	680	730	770	810	870	930	970					10
60	—																		680	700	740	780	820	870	930	970	1070	1160			10

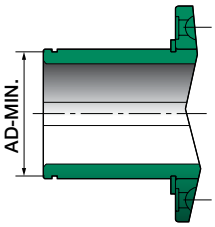
Ts (Nm) Clamping element screws tightening torque * Screws DIN 912 - 12.9

ZBC-NBC Zero Backlash Torque Limiters – Type K

For Large Drives, Pilot Bored







ZBC Dimensions

Size	Overall Dimensions																			
	A	B	C^{h5}	D	E	E_1	F	G_1	H	K	J	L_1	M		N	P	R^{h6}	T	T_1	CH	Z
													Min	Max							
25	65	56	47	8xM4	5	33	7.5	6.5	7	12	54.5	65	8	20	63	70	30	5	2.8	7	1.2
30	80	71	62	8xM5	7	43	8	8.75	8	14	69	80	10	30*	77	85	40	5	2.8	7	1.5
40	95	85	75	8xM6	9	55	10.5	11.5	9	16	77	100	14	35*	88	100	45	5	3.5	8	1.8
50	110	100	90	8xM6	10	67	12	13	10	17	87.5	115	18	45*	100	115	55	6	4	10	2.0
60	130	116	100	8xM8	10	73	12	14	12	21	106	130	24	50	122	135	65	7	4	10	2.2

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

NBC Dimensions

Size	Overall Dimensions																							
	A	B	C^{h5}	D	E	E_1	F	G_1	H	H_1	H_2	K, K_1	J	L_1	M		N	P	P9	R^{h6}	T	T_1	CH	Z
															Min	Max								
11	40	35	30	6xM3	2	20.5	5	3	6	—	—	7	32	40	6	11	39.5	45	—	17	4	2.1	5.5	0.8
16	47	42	37	6xM3	2	25	6	5	8	—	—	9.5	36.5	49	8	16*	43	50	—	25	4	2.1	5.5	1
20	60	53	47	6xM4	3	31	7	5	9	—	—	9.5	36.5	58	9	20	43	65	—	30	4	2.1	5.5	1.2
25	77	69	62	6xM5	4	35	7.5	5.5	—	14.9	7.5	10.2	54.5	68	12	20	63	80	75	35	5	2.8	7	1.2
30	90	80	68	6xM6	5	40	8	6.5	—	17.4	7.5	11	69	77	15	25	77	95	90	40	5	2.8	7	1.5
40	106	90	80	6xM6	5	48	9	7	—	20	8	12.6	77	90	22	35*	88	110	105	50	5	3.5	8	1.8
50	125	112	100	6xM8	5	60	11	7.5	—	23.5	9	14.7	87.5	109	32	45	100	130	125	65	6	4	10	2.0

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

How to order:

ZBC Quickquard Type R – Size 50 – Springs LL – Ø40 – Ø 40
Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40
Order Code: J16L14B+K

ZBC-NBC Zero Backlash Torque Limiters – Type K

For Large Drives, Pilot Bored

Arrangement Possibilities

Arrangement Possibilities			
Range	Type		
	Pre-Bored	with Cone Clamping Element	Form
ZBC Quick Guard	H	J	Basic Type
ZBC Synchronous	K	L	for Large Drives
NBC* Quick Guard	M**	N**-P**-R**	with Coupling
NBC* Synchronous			

ZBC				
Size	Disc Springs		Torque Limiter Side (mm)	
	Code	Layout	Min	Max
25	S-Light	1	8	20
30			10	30***
40	M-Medium	2	12	35***
50			16	45***
60	LL-Heavy	4	22	50

NBC				
Size	Disc Springs		Min/Max Bore (mm)	
	Code	Layout	Min	Max
11	S-Light	1	6	11
16			8	16
20	M-Medium	2	9	20
25			8	20
30	L-Heavy	3	10	30***
40	LL-Heavy	4	12	35***
50			16	45***

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Inertia Moments

Type	K			
	Hub Side	Flange Side	Hub Side	Flange Side
	ZBC		NBC	
	kg x cm2			
11	—	—	0.26	0.08
16	—	—	0.55	0.2
20	—	—	1.8	0.6
25	2.29	0.945	4.8	1.8
30	5.90	2.351	12.1	3.9
40	14.75	6.446	27.6	7.7
50	30.33	13.071	65.3	17.3
60	71.94	26.523	—	—

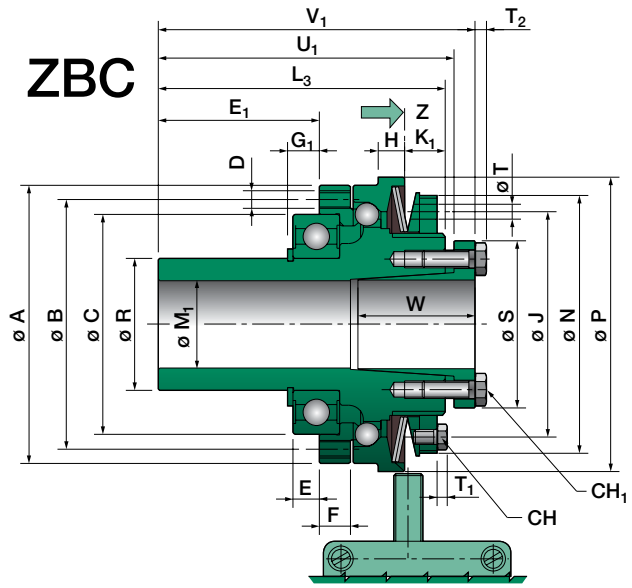
*Corresponding to min. bore

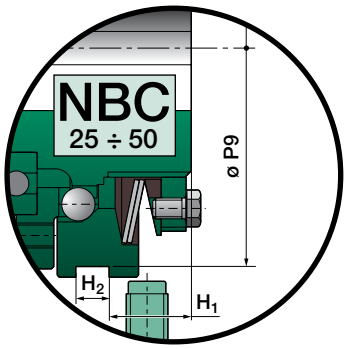
Technical Characteristics

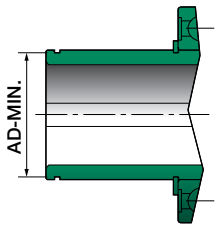
ZBC																	NBC					
Disengagement Torque (Nm)				Coupling Type													Disengagement Torque (Nm)					Max Speed
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									Size	Disc Springs				
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed						
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'		S	M	L	LL	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000	11	0.65-3	1.3-6	2-9	2.6-12	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000	16	2-5	4-10	6-15	8-20	4000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500	20	4-10	8-20	12-30	16-40	4000
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000	25	4-14	8-28	12-42	16-56	4000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200	30	9-35	18-70	27-105	40-140	3000
																		40	19-65	38-130	57-195	78-260	2500
																		50	35-110	80-220	120-330	160-440	2000

ZBC-NBC Zero Backlash Torque Limiters – Type L

For Large Drives, with Clamped Element







ZBC Dimensions

Size	Overall Dimensions																			
	A	B	C h5	D	E1	G1	H	K1	J	L3	M1 Min	M1 Max	N	P	R h6	S	T	T2	U1	V1	W
25	65	56	47	8xM4	33	6.5	7	12	54.5	65	10 19	20 25	63	70	30	40.5 42	5	2.8	67	72	26
30	80	71	62	8xM5	43	8.75	8	12	69	78	15	30	77	85	40	57	5	4	81	88	31
40	95	85	75	8xM6	55	11.5	9	14	77	98	19 32	30 40	88	100	45	57 64	5	4 3.5	101	108	40 31
50	110	100	90	8xM6	67	13	10	16	87.5	114	32	50	100	115	55	73.5	6	4	117.5	124	29
60	130	116	100	8xM8	73	14	12	21	106	130	32 55	50 60	122	135	65	73.5 89	7	4	133.5 133	140 141	29 45.5

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

NBC Dimensions

Size	Overall Dimensions																					
	A	B	C h5	D	E1	G1	H	H1	H2	K, K1	J	L3	M1 Min	M1 Max	N	P	P9	R h6	S	T	T2	V1	W
11	40	35	30	6xM3	20.5	3	6	—	—	7	32	40	6	12	39.5	45	—	17	25	4	2.1	45	13
16	47	42	37	6xM3	25	5	8	—	—	9.5	36.5	49	8	16*	43	50	—	25	29.5	4	2.1	54	19
20	60	53	47	6xM4	31	5	9	—	—	9.5	36.5	58	9	16	43	65	—	30	29.5	4	2.1	63	19
25	77	69	62	6xM5	35	5.5	—	14.9	7.5	10.2	54.5	68	10 19	25	63	80	75	35	40.5 42	5	2.8	75	26
30	90	80	68	6xM6	40	6.5	—	17.4	7.5	11	69	77	15	30	77	95	90	40	57	5	4	87	31
40	106	90	80	6xM6	48	7	—	20	8	12.6	77	90	19 32	30 40	88	110	105	50	57 64	5	4 3.5	100	40 31
50	125	112	100	6xM8	60	7.5	—	23.5	9	14.7	87.5	109	32	50	100	130	125	65	73.5	6	4	119	29

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

How to order:

ZBC Quickquard Type R – Size 50 – Springs LL – Ø40 – Ø 40
Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40
Order Code: J16L14B+K

ZBC-NBC Zero Backlash Torque Limiters – Type L

For Large Drives, with Clamped Element

Arrangement Possibilities

Arrangement Possibilities			
Range	Type		
	Pre-Bored	with Cone Clamping Element	Form
ZBC Quick Guard	H	J	Basic Type
ZBC Synchronous	K	L	for Large Drives
NBC* Quick Guard	M**	N**-P**-R**	with Coupling
NBC* Synchronous			

ZBC					
Size	Disc Springs			Torque Limiter Side (mm)	
	Code		Layout	Min	Max
25	S-Light	1		8	20
30				10	30***
40	M-Medium	2		12	35***
50				16	45***
60	LL-Heavy	4		22	50

NBC					
Size	Disc Springs			Min/Max Bore (mm)	
	Code		Layout	Min	Max
11	S-Light	1		6	11
16				8	16
20	M-Medium	2		9	20
25				8	20
30	L-Heavy	3		10	30***
40	LL-Heavy	4		12	35***
50				16	45***

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Inertia Moments

Type	L			
	Hub Side	Flange Side	Hub Side	Flange Side
	ZBC		NBC	
	kg x cm²			
11	—	—	0.28	0.08
16	—	—	0.58	0.2
20	—	—	1.8	0.6
25	2.36	0.945	4.9	1.8
30	6.17	2.351	12.5	3.9
40	15.66	6.446	28.4	7.7
50	32.60	13.071	67.1	17.3
60	77.18	26.523	—	—

*Corresponding to min. bore

Technical Characteristics

ZBC																	NBC					
Disengagement Torque (Nm)				Coupling Type													Disengagement Torque (Nm)					Max Speed
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									Size	Disc Springs				
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed						
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'		S	M	L	LL	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000	11	0.65-3	1.3-6	2-9	2.6-12	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000	16	2-5	4-10	6-15	8-20	4000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500	20	4-10	8-20	12-30	16-40	4000
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000	25	4-14	8-28	12-42	16-56	4000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200	30	9-35	18-70	27-105	40-140	3000
																		40	19-65	38-130	57-195	78-260	2500
																		50	35-110	80-220	120-330	160-440	2000

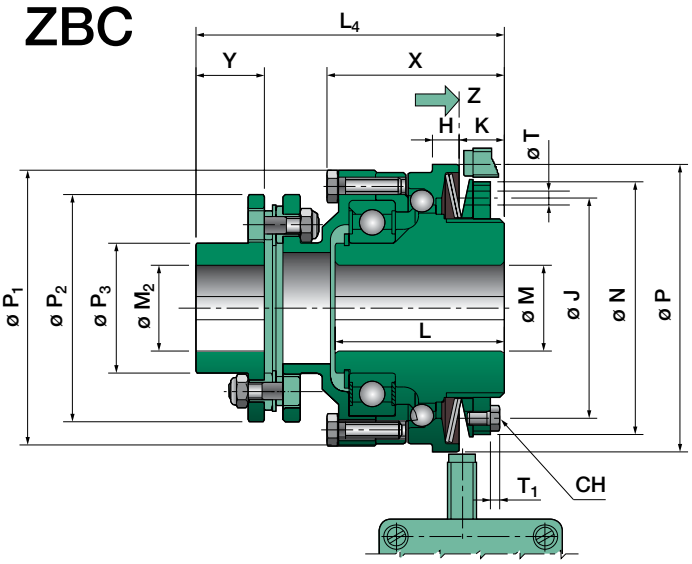
Available Bore Sizes

Type J-L		Available Bore Sizes																													
ZBC	NBC	6	8	9	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	Ts Nm
Size																													
—	11	13	18	20	23	25	28																						2.2*
—	16		28	30	34	37	41	48	51	54																			1.7*
—	20		28	30	34	37	41	48	51	54																			1.7*
25	25				65	70	75	90	95	100	115	120	130	140	150	160													3
30	30								95	100	115	160	180	190	210	220	240	260											10
40	40											240	260	290	310	320	360	390											10
40	40																		440	480	520	550							5.9
50	50																		620	680	730	770	810	870	930	970			10
60	—																		680	700	740	780	820	870	930	970	1070	1160	10

Ts (Nm) Clamping element screws tightening torque * Screws DIN 912 - 12.9

ZBC Zero Backlash Torque Limiters – Type M

with Lamellar Coupling, Pilot Bored



Dimensions

Size	Overall Dimensions																		
	H	K	J	L	L_4	M		M_2		N	P	P_1	P_2	P_3	T	T_1	CH	X	Y	Z
						Min	Max	Min	Max											
25-53	7	12	54.5	40	87.5	8	20	8	25*	63	70	65	53	32.5	5	2.8	7	41.5	24.5	1.2
30-72	8	14	69	48	113	10	30*	11	35	77	85	80	72	47	5	2.8	7	50	39.5	1.5
40-72	9	16	77	59	126.5	14	35*	11	35	88	100	97	72	47	5	3.5	8	62	39.5	1.8
40-89	9	16	77	59	142.5	14	35*	15	50*	88	100	97	89	62.5	5	3.5	8	62	45	1.8
50-89	10	17	87.5	64	145	18	45*	15	50*	100	115	111	89	62.5	6	4	10	66.5	45	2.0
60-118	12	21	106	75	172.5	24	50	16	65	122	135	131	118	82	7	4	10	76.5	55	2.2

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

Available Bore Sizes

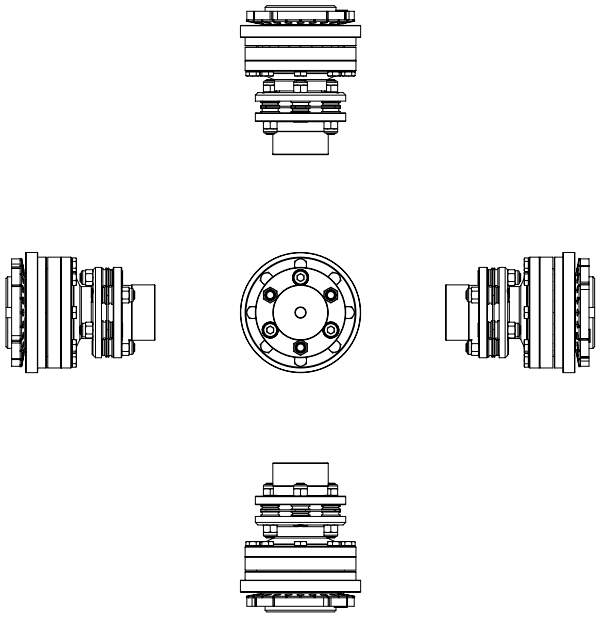
ZBC Type N Torque Limiter Side	Available Bore Sizes/Transmissible Torque (mm/Nm)																									
Size	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	Ts Nm
25	65	70	75	90	95	100	115	120	130	140	150	160													3
30					120	130	150	160	180	190	210	220	240	260											10
40								240	260	290	310	320	360	390											10
40															440	480	520	550							5.9
50															620	680	730	770	810	870	930	970			10
60															680	700	740	780	820	870	930	970	1070	1160	10

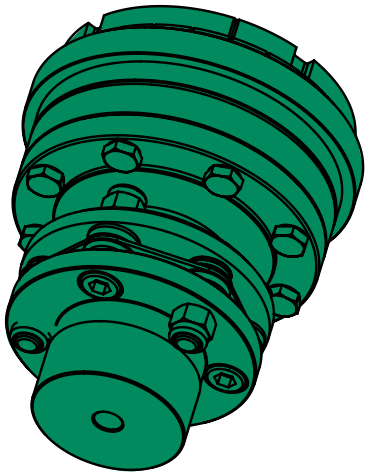
ZBC Type N Coupling Side	Available Bore Sizes/Transmissible Torque Coupling Side (mm/Nm)																									
Size	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	Ts Nm	Tc Nm
25-53	80	87	102	108	116	130	138	145																5	6
30-72				146	155	175	210	220	242	265	276	309	331											17	8
40-72							210	220	242	265	276	309	331											17	8
40-89										529	552	618	662	706	772	839	883	926						17	14
50-89										529	552	618	662	706	772	839	883	926						17	14
60-118														706	772	839	883	926	1026	1094	1140	1250	1370	17	31

*Ts (Nm) Clamping element screws tightening torque
**Tc (Nm) Coupling screws tightening torque

ZBC Zero Backlash Torque Limiters – Type M

with Lamellar Coupling, Pilot Bored





Arrangement Possibilities

Arrangement Possibilities				ZBC															
Range	Type			Size	Disc Springs		Torque Limiter Side (mm)				Coupling Side (mm)								
	Pre-Bored	with Cone Clamping Element	Form		Code	Layout	H-K-M-T		J-L-N-P-R		M		N		P		R		T	
							Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
ZBC Quick Guard	H	J	Basic Type	25	S-Light	1	8	20	10	25	8	25***	10	20	10	28	15	28	8	28
ZBC Synchronous	K	L	for Large Drives	30			10	30***	15	30	11	35	19	30	19	38	19	38	10	38
NBC* Quick Guard	M**	N**-P**-R**	with Coupling	40	M-Medium	2	12	35***	19	40	11	50***	15	42	20	45	20	45	12	45
NBC* Synchronous				50			16	45***	32	50	15	50***	24	42	28	48	28	50	14	55
				60	LL-Heavy	4	22	50	32	60	16	65	32	60	25	55	30	55	15	60

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

Technical Characteristics

ZBC																	
Disengagement Torque (Nm)				Coupling Type													
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200

Inertia Momentum

Type	M	
	Hub Side	Flange Side
	ZBC	
	kg x cm²	
11	—	—
16	—	—
20	—	—
25	2.15	2.42
30	5.30	6.92
40	13.68	16.55
50	27.62	34.03
60	66.45	43.52

*Corresponding to min. bore

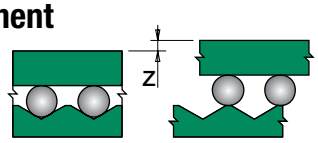
How to order:

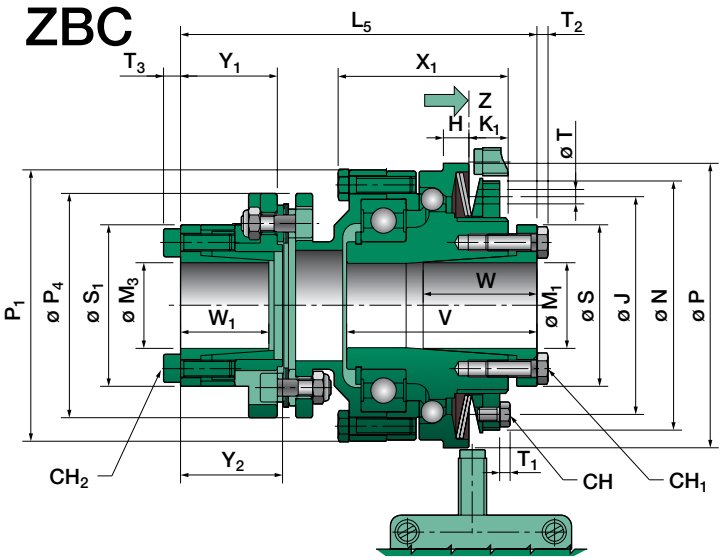
ZBC Quickquard Type R – Size 50 – Springs LL – Ø40 – Ø 40 Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40 Order Code: J16L14B+K

ZBC Zero Backlash Torque Limiters – Type N

with Lamellar Coupling and Clamping Equipment





Dimensions

Size	Overall Dimensions																										
	H	K_1	J	L_5	M_1		M_3		N	P	P_1	P_4	S	S_1	T	T_1	T_2	T_3	CH	CH_1	CH_2	V	W	W1	Y_1	Y_2	Z
					Min	Max	Min	Max																			
25-53	7	12	54.5	95.5	10 19	20 25	10	20	63	70	65	53	40.5 42	42	5	2.8	2.8	4	7	7	3	47	26	26.5	25.5	27.5	1.2
30-72	8	12	69	114.5	15	30	19	30	77	85	80	72	57	58	5	2.8	4	6	7	10	5	56	31	31	33	—	1.5
40-72	9	14	77	128	19	40	19	30	88	100	97	72	57	58	5	3.5	4	6	8	10	5	67	40	31	33	—	1.8
40-89	9	14	77	150	19	40	24	42	88	100	97	89	64	72	5	3.5	3.5	6	8	8	5	67	31	45	44.5	45.5	1.8
50-89	10	16	87.5	153.5	32	50	24	42	100	115	111	89	73.5	72	6	4	4	6	10	10	5	73	29	45	44.5	45.5	2.0
60-118	12	21	106	162.5 172.5	32 55	50 60	32 55	50 60	122	135	131	118	73.5 89	79 92	7	4	4	6	10	10	5	85 86	29 44	29 44	35 44	— 46	2.2

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

Available Bore Sizes

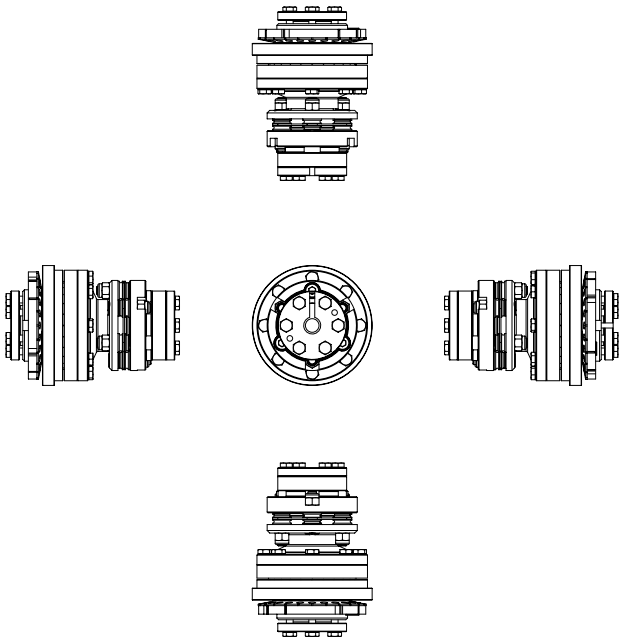
ZBC Type N Torque Limiter Side	Available Bore Sizes/Transmissible Torque (mm/Nm)																									
Size	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	Ts Nm
25	65	70	75	90	95	100	115	120	130	140	150	160													3
30					120	130	150	160	180	190	210	220	240	260											10
40								240	260	290	310	320	360	390											10
40															440	480	520	550							5.9
50															620	680	730	770	810	870	930	970			10
60															680	700	740	780	820	870	930	970	1070	1160	10

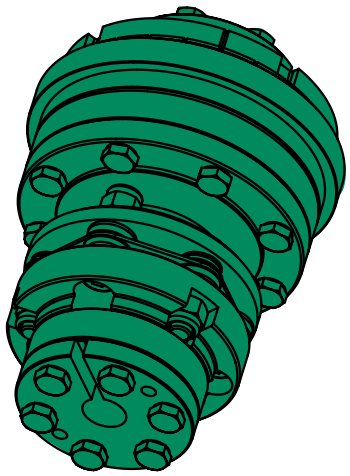
ZBC Type N Coupling Side	Available Bore Sizes/Transmissible Torque Coupling Side (mm/Nm)																									
Size	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	Ts Nm	Tc Nm
25-53	80	87	102	108	116	130	138	145																5	6
30-72				146	155	175	210	220	242	265	276	309	331											17	8
40-72							210	220	242	265	276	309	331											17	8
40-89										529	552	618	662	706	772	839	883	926						17	14
50-89										529	552	618	662	706	772	839	883	926						17	14
60-118														706	772	839	883	926	1026	1094	1140	1250	1370	17	31

*Ts (Nm) Clamping element screws tightening torque **Tc (Nm) Coupling screws tightening torque

ZBC Zero Backlash Torque Limiters – Type N

with Lamellar Coupling and Clamping Equipment





Arrangement Possibilities

Arrangement Possibilities				ZBC																	
Range	Type			Size	Disc Springs		Torque Limiter Side (mm)				Coupling Side (mm)										
	Pre-Bored	with Cone Clamping Element	Form		Code	Layout	H-K-M-T		J-L-N-P-R		M		N		P		R		T		
							Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
ZBC Quick Guard	H	J	Basic Type	25	S-Light	1	8	20	10	25	8	25***	10	20	10	28	15	28	8	28	
ZBC Synchronous	K	L	for Large Drives	30			10	30***	15	30	11	35	19	30	19	38	19	38	10	38	
NBC* Quick Guard	M**	N**-P**-R**	with Coupling	40	M-Medium	2	12	35***	19	40	11	50***	15	42	20	45	20	45	12	45	
NBC* Synchronous				50			16	45***	32	50	15	50***	24	42	28	48	28	50	14	55	
				60	LL-Heavy	4	22	50	32	60	16	65	32	60	25	55	30	55	15	60	

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

Technical Characteristics

ZBC																	
Disengagement Torque (Nm)				Coupling Type													
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200

Inertia Momentum

Type	N	
	Hub Side	Flange Side
	ZBC	
	kg x cm²	
11	—	—
16	—	—
20	—	—
25	2.22	2.47
30	5.58	7.06
40	14.58	16.88 26.12
50	29.88	34.71
60	72.01	44.39

*Corresponding to min. bore

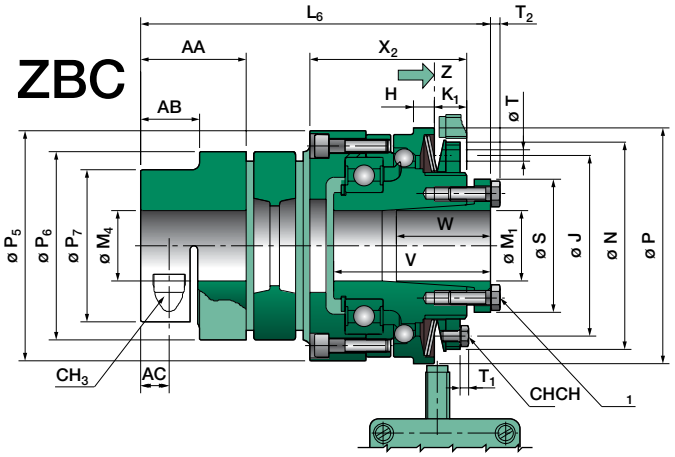
How to order:

ZBC Quickguard Type R – Size 50 – Springs LL – Ø40 – Ø 40 Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40 Order Code: J16L14B+K

ZBC Zero Backlash Torque Limiters – Type P

with Flexible Coupling and Clamping Hub



Dimensions

Size	Overall Dimensions																								
	H	K_1	J	L_6	M_1		M_4		N	P_5	P_6	P_7	S	T	T_1	T_2	CH	CH_1	CH_3	V	W	X_2	Z	AA	AB	AC
					Min	Max	Min	Max																		
25	7	12	54.5	102	10 19	20 25	10	28	63	70	55	—	40.5 42	5	2.8	2.8	7	7	5	47	26	47	1.2	30	—	10.5
30	8	12	69	119.5	15	30	14	38	77	85	65	—	57	5	2.8	4	7	10	6	56	31	54.5	1.5	35	—	11.5
40	9	14	77	146	19 32	30 40	15	45	88	100	80	—	57 64	5	3.5	4 3.5	8	10 8	6	67	40 31	67	1.8	45	—	15.5
50	10	16	87.5	159	32	50	20	48	100	115	95	85	73.5	6	4	4	10	10	8	73	29	73	2	50	28	18
60	12	21	106	181 182	32 55	50 60	25	55	122	135	105	95	73.5 89	7	4	4	10	10	10	85 86	29 45.5	87	2.2	56	32	21

Available Bore Sizes

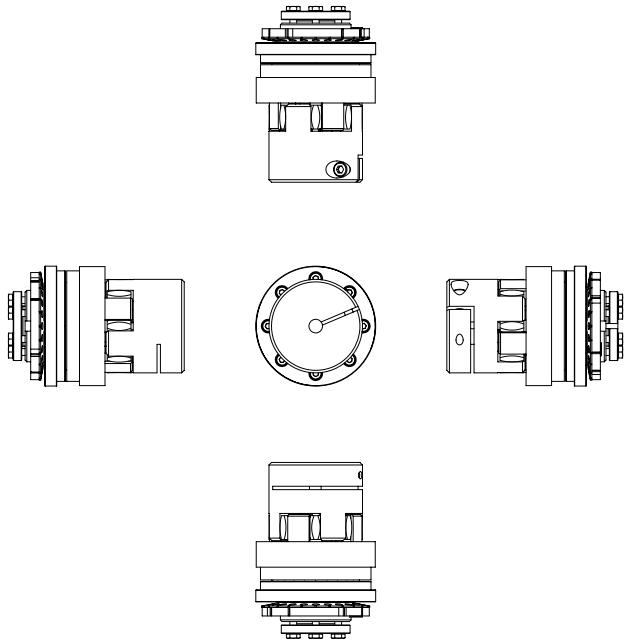
ZBC Type P-R Torque Limiter Side / Size	Available Bore Sizes/Transmissible Torque (mm/Nm)																								Ts Nm
	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	
25	65	70	75	90	95	100	115	120	130	140	150	160													3
30					120	130	150	160	180	190	210	220	240	260											10
40								240	260	290	310	320	360	390											10
40															440	480	520	550							5.9
50															620	680	730	770	810	870	930	970			10
60															680	700	740	780	820	870	930	970	1070	1160	10

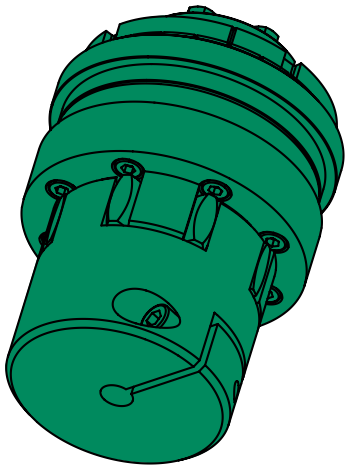
ZBC Type P Coupling Side / Size	Available Bore Sizes/Transmissible Torque Coupling Side (mm/Nm)																							Ts Nm
	8	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	
25		34	35	36	38	39	39	41	43	45	46													10.5
30				80	81	81	85	87	91	92	97	99	102	105	109									25
40					92	94	98	99	104	105	109	112	113	118	122	123	126	130						25
50								232	244	246	255	260	266	274	283	288	294	301	309					69
60										393	405	413	421	434	445	454	462	473	486	494	514			120

*Ts (Nm) Clamping hub screw tightening torque

ZBC Zero Backlash Torque Limiters – Type P

with Flexible Coupling and Clamping Hub





Arrangement Possibilities

Arrangement Possibilities				ZBC															
Range	Type			Size	Disc Springs		Torque Limiter Side (mm)				Coupling Side (mm)									
	Pre-Bored	with Cone Clamping Element	Form		Code	Layout	H-K-M-T		J-L-N-P-R		M		N		P		R		T	
							Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
ZBC Quick Guard	H	J	Basic Type	25	S-Light	1	8	20	10	25	8	25***	10	20	10	28	15	28	8	28
ZBC Synchronous	K	L	for Large Drives	30			10	30***	15	30	11	35	19	30	19	38	19	38	10	38
NBC* Quick Guard	M**	N**-P**-R**	with Coupling	40	M-Medium	2	12	35***	19	40	11	50***	15	42	20	45	20	45	12	45
NBC* Synchronous				50			16	45***	32	50	15	50***	24	42	28	48	28	50	14	55
				60	LL-Heavy	4	22	50	32	60	16	65	32	60	25	55	30	55	15	60

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

Technical Characteristics

ZBC																	
Disengagement Torque (Nm)				Coupling Type													
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200

Inertia Momentum

Type	P	
	Hub Side	Flange Side
	ZBC	
	kg x cm²	
11	—	—
16	—	—
20	—	—
25	2.22	4
30	5.58	10
40	14.58	20
50	29.88	50
60	72.01	114

*Corresponding to min. bore

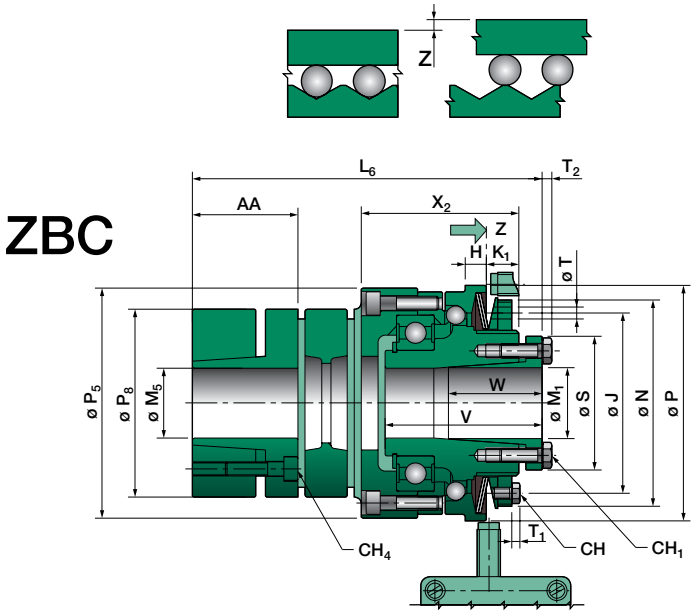
How to order:

ZBC Quickquard Type R – Size 50 – Springs LL – Ø40 – Ø 40 Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40 Order Code: J16L14B+K

ZBC Zero Backlash Torque Limiters – Type R

with Flexible Coupling and Shrink Disc



Dimensions

Size	Overall Dimensions																					
	H	K_1	J	L_6	M_1		M_5		N	P	P_5	P_8	S	T_1	T_2	CH	CH_1	CH_4	V	W	X_2	Z	AA
					Min	Max	Min	Max															
25	7	12	54.5	102	10 19	20 25	15	28	63	70	70	55	40.5 42	2.8	2.8	7	7	4	47	26	47	1.2	30
30	8	12	69	119.5	15	30	19	38	77	85	85	65	57	2.8	4	7	10	4	56	31	54.5	1.5	35
40	9	14	77	146	19 32	30 40	20	45	88	100	100	80	57 64	3.5	4 3.5	8	10 8	5	67	40 31	67	1.8	45
50	10	16	87.5	159	32	50	28	50	100	115	115	95	73.5	4	4	10	10	6	73	29	73	2	50
60	12	21	106	181 182	32 55	50 60	30	55	122	135	135	105	73.5 89	4	4	10	10	8	85 86	29 45.5	87	2.2	56

Available Bore Sizes

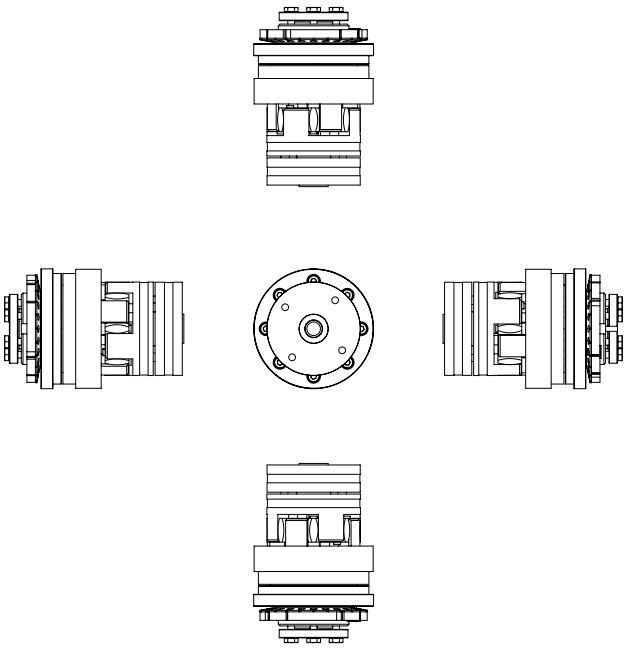
ZBC Type P-R Torque Limiter Side / Size	Available Bore Sizes/Transmissible Torque (mm/Nm)																									Ts Nm
	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60		
25	65	70	75	90	95	100	115	120	130	140	150	160														3
30					120	130	150	160	180	190	210	220	240	260												10
40								240	260	290	310	320	360	390												10
40															440	480	520	550								5.9
50															620	680	730	770	810	870	930	970				10
60															680	700	740	780	820	870	930	970	1070	1160		10

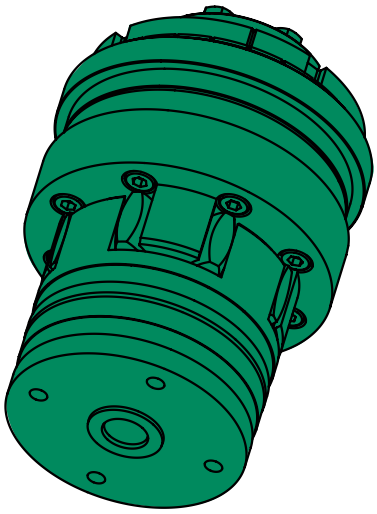
ZBC Type R Coupling Side / Size	Available Bore Sizes/Transmissible Torque Coupling Side (mm/Nm)																							Ts Nm
	6	8	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45	48	50	55		
25				48	67	74	72	90	97	112	120	143												6
30						142	154	189	188	237	250	280	307	310	353	389								6
40									269	337	356	398	436	442	501	533	572	585	644					10
50											399	445	506	470	566	581	630	647	728	836	858			35
60													775	819	955	999	1090	1091	1230	1334	1381	1540		69

*Ts (Nm) Shrink disc screws tightening torque

ZBC Zero Backlash Torque Limiters – Type R

with Flexible Coupling and Shrink Disc





Arrangement Possibilities

Arrangement Possibilities				ZBC																	
Range	Type			Size	Disc Springs		Torque Limiter Side (mm)				Coupling Side (mm)										
	Pre-Bored	with Cone Clamping Element	Form		Code	Layout	H-K-M-T		J-L-N-P-R		M		N		P		R		T		
							Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
ZBC Quick Guard	H	J	Basic Type	25	S-Light	1	8	20	10	25	8	25***	10	20	10	28	15	28	8	28	
ZBC Synchronous	K	L	for Large Drives	30			10	30***	15	30	11	35	19	30	19	38	19	38	10	38	
NBC* Quick Guard	M**	N**-P**-R**	with Coupling	40	M-Medium	2	12	35***	19	40	11	50***	15	42	20	45	20	45	12	45	
NBC* Synchronous				50			16	45***	32	50	15	50***	24	42	28	48	28	50	14	55	
				60	LL-Heavy	4	22	50	32	60	16	65	32	60	25	55	30	55	15	60	

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Stop Switch

Stop Swtich	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

Technical Characteristics

ZBC																	
Disengagement Torque (Nm)				Coupling Type													
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed
	S	M	L		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200

Inertia Momentum

Type	R	
	Hub Side	Flange Side
	ZBC	
	kg x cm²	
11	—	—
16	—	—
20	—	—
25	2.22	4
30	5.58	10
40	14.58	20
50	29.88	50
60	72.01	114

*Corresponding to min. bore

How to order:

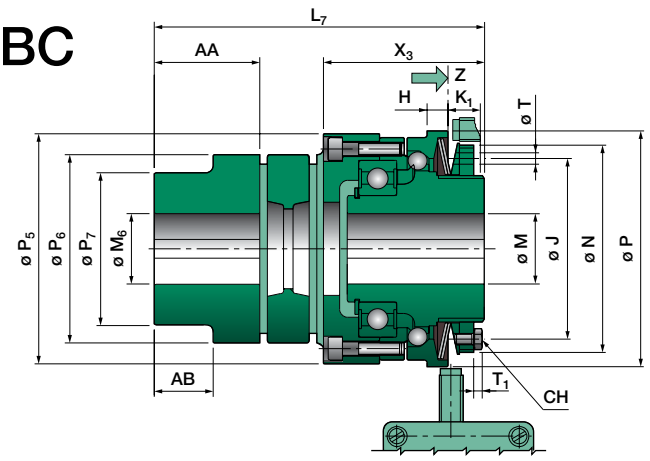
ZBC Quickguard Type R – Size 50 – Springs LL – Ø40 – Ø 40 Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40 Order Code: J16L14B+K

ZBC Zero Backlash Torque Limiters – Type T

with Flexible Coupling, Pilot Bored

ZBC



Dimensions

Size	Overall Dimensions																		
	H	K_1	J	L_7	M_1		M_6		N	P	P_5	P_6	P_7	T	T_1	CH	X_3	Z	AA	AB
					Min	Max	Min	Max												
25	7	12	54.5	95	10 19	20 25	8	28	63	70	70	55	—	5	2.8	7	47	1.2	30	—
30	8	12	69	111.5	15	30	10	38	77	85	85	65	—	5	2.8	7	56.5	1.5	35	—
40	9	14	77	138	19 32	30 40	12	45	88	100	100	80	—	5	3.5	8	69	1.8	45	—
50	10	16	87.5	150	32	50	14	55	100	115	115	95	85	6	4	10	74	2	50	28
60	12	21	106	171	32 55	50 60	15	60	122	135	135	105	95	7	4	10	87	2.2	56	32

Available Bore Sizes

ZBC Type P-R Torque Limiter Side / Size	Available Bore Sizes/Transmissible Torque (mm/Nm)																								Ts Nm
	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	
25	65	70	75	90	95	100	115	120	130	140	150	160													3
30					120	130	150	160	180	190	210	220	240	260											10
40								240	260	290	310	320	360	390											10
40															440	480	520	550							5.9
50															620	680	730	770	810	870	930	970			10
60															680	700	740	780	820	870	930	970	1070	1160	10

ZBC Type P Coupling Side / Size	Available Bore Sizes/Transmissible Torque Coupling Side (mm/Nm)																							Ts Nm
	8	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	
25		34	35	36	38	39	39	41	43	45	46													10.5
30				80	81	81	85	87	91	92	97	99	102	105	109									25
40					92	94	98	99	104	105	109	112	113	118	122	123	126	130						25
50								232	244	246	255	260	266	274	283	288	294	301	309					69
60										393	405	413	421	434	445	454	462	473	486	494	514			120

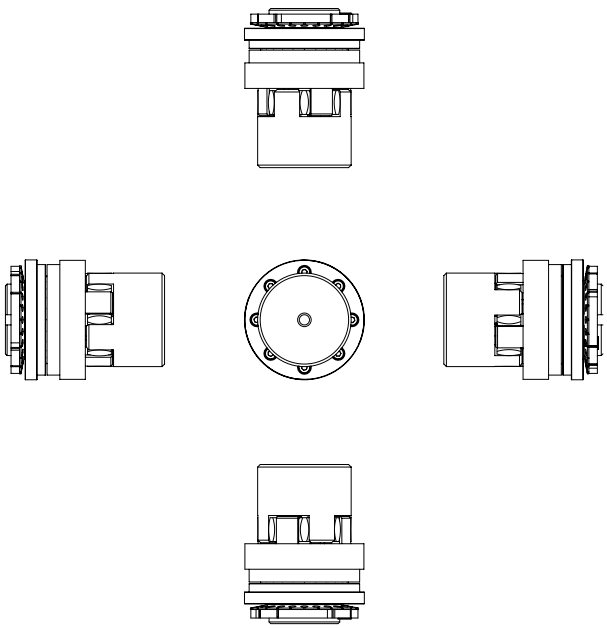
*Ts (Nm) Clamping hub screw tightening torque

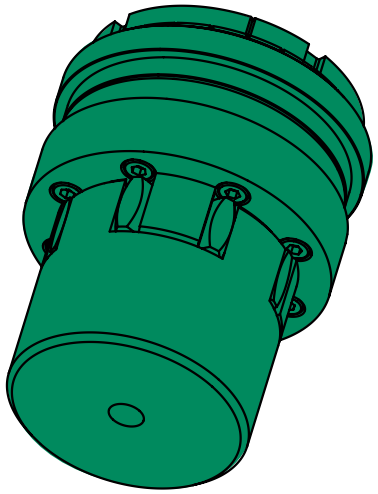
ZBC Type R Coupling Side / Size	Available Bore Sizes/Transmissible Torque Coupling Side (mm/Nm)																						Ts Nm
	6	8	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45	48	50	55	
25				48	67	74	72	90	97	112	120	143											6
30						142	154	189	188	237	250	280	307	310	353	389							6
40									269	337	356	398	436	442	501	533	572	585	644				10
50											399	445	506	470	566	581	630	647	728	836	858		35
60													775	819	955	999	1090	1091	1230	1334	1381	1540	69

*Ts (Nm) Shrink disc screws tightening torque

ZBC Zero Backlash Torque Limiters – Type T

with Flexible Coupling, Pilot Bored





Arrangement Possibilities

Arrangement Possibilities				ZBC																	
Range	Type			Size	Disc Springs		Torque Limiter Side (mm)				Coupling Side (mm)										
	Pre-Bored	with Cone Clamping Element	Form		Code	Layout	H-K-M-T		J-L-N-P-R		M		N		P		R		T		
							Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
ZBC Quick Guard	H	J	Basic Type	25	S-Light	1	8	20	10	25	8	25***	10	20	10	28	15	28	8	28	
ZBC Synchronous	K	L	for Large Drives	30			10	30***	15	30	11	35	19	30	19	38	19	38	10	38	
NBC* Quick Guard	M**	N**-P**-R**	with Coupling	40	M-Medium	2	12	35***	19	40	11	50***	15	42	20	45	20	45	12	45	
NBC* Synchronous				50			16	45***	32	50	15	50***	24	42	28	48	28	50	14	55	
				60	LL-Heavy	4	22	50	32	60	16	65	32	60	25	55	30	55	15	60	

*Only in the form H-K-J-L
** Only in the range ZBC
*** d max with keyway seat according to DIN 6885/3

Stop Switch

Stop Switch	
Type	Description
A	Mechanical
B	Proximity sensor
C	Proximity sensor ext. transmitt

Technical Characteristics

ZBC																	
Disengagement Torque (Nm)				Coupling Type													
Size	Disc Springs			Size	Couplings Nominal Torque			Misalignments									
					M-N	P-R 92 Shore A	P-R 98 Shore A	M-N			P-R 92 Shore A			P-R 98 Shore A			Max Speed
	S	M	LL		Nm	Nm	Nm	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	Δ ax mm	Δ rad mm	Δ ang (°)	n/1'
25	3-14	6-28	13-56	53	70	70	120	0.4	—	1	1.4	0.14	1	1.4	0.10	0.90	4000
30	9-35	18-70	40-140	72	180	190	320	0.5	—	1	1.5	0.15	1	1.5	0.11	0.90	3000
40	19-65	38-130	78-260	72 89	180 360	380	650	0.5 0.6	—	1	1.8	0.17	1	1.8	0.12	0.90	2500
50	35-110	80-220	160-440	89	430	530	900	0.6	—	1	2.0	0.19	1	2.0	0.14	0.90	2000
60	80-185	160-370	320-740	118	790	620	1050	0.8	—	1	2.1	0.23	1	2.1	0.16	0.90	1200

How to order:

ZBC Quickquard Type R – Size 50 – Springs LL – Ø40 – Ø 40 Order Code: R50LL40B+K

NBC Sychron Type J – Size 16 – Springs L – Ø40 – Ø 40 Order Code: J16L14B+K

Bibbigard® Torque Limiters

Bibbigard® Torque Limiter

Bibbigard® Torque Limiters eliminate the problems associated with slow reaction electrical overload devices, shear pins which give a wide release torque variation, or slip clutches which may rapidly overheat.

Bibbigard® products can save you money – the initial cost is frequently more than covered by the saving in down-time even on the first overload.

- Protect plant and transmission against overload.
- Full bi-directional operation in any plane.
- All metal totally-enclosed construction.
- Virtually no maintenance.
- Provide years of trouble-free service.
- Competitive first cost.

Many of our torque limiters have been purpose designed and manufactured to meet customers' specific operating requirements. If you have any specific requirements please contact Bibby Turboflex for assistance.

Boring and Keywaying
Standard bores and keyways are manufactured to H8 and Js9 tolerances to BS4500: 1969, both in Metric and Imperial dimensions.

Maintenance
During assembly all units are packed with a 3% Molybdenum Disulphide (Mo S_2) grease BP Energrease L21 M. Because of their uniquely fully enclosed design all units need only be stripped and re-packed with grease every two years. However, under extremely adverse conditions of environment and duty please consult Bibby Turboflex.

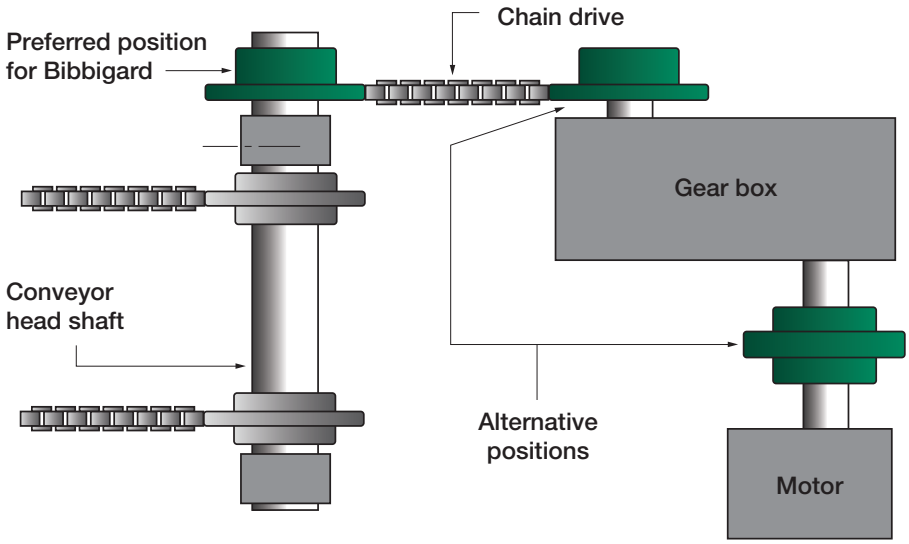
Running in Oil
All Bibbigard units can be run in oil if required without affecting performance.

Typical Applications

Manual Reset
Type A: Conveyors, machine tools, woodworking and paper machinery, pumps, textile machinery, test rigs, packaging machinery, quarrying plant, Post Office machinery, extruders, automatic furnaces and ovens.

Automatic Reset
Type B & C: Conveyors, bakery equipment, indexing drives, packaging, bottling and labeling machines, printing presses and special-purpose machines.

Power Take-Off Protection
Type FV: Vane, lobe, screw and centrifugal pumps. Vane and lobe blowers, please contact Bibby Turboflex for further details.



Torque Limiter Selection

Types A, B, & C
For release torques up to 5500Nm
Decide on manual or automatic reset. Choose a position as near as possible to the expected overload (see diagram).

Calculate the torque setting required at that position. This can be determined from the motor power, r.p.m. and gearing ratio – the driven load – or from the maximum permissible torque for drive components such as crushing stress on keys. **It is the weakest component that requires protection.** Make allowance for motor starting torques (generally twice normal running torque).

Having calculated an approximate setting for the release torque, final adjustments can be made on site.

Check from tables that shaft, sprocket or pulley, etc. can be accommodated.

Selection Example

Model 1000 Type AF

This specifies:

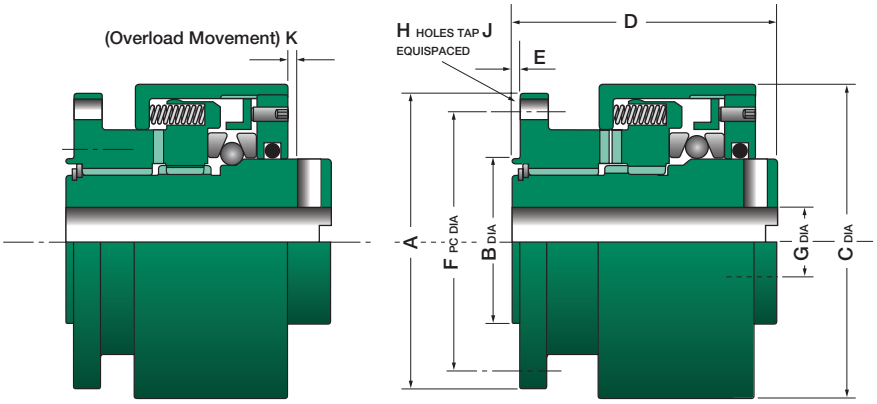
Manual reset clutch. Capable of 1000 lbf ft torque complete with flexible coupling for shaft-to-shaft application.

To enable us to deal efficiently with your enquiry, we ask you to supply the following facts:

- **Type of application and environment conditions**
- **R.P.M. of drive**
- **Release torque required**
- **Length and diameters of shafts**
- **Space available between shaft ends**
- **Overall space available – length and diameter limitations**
- **Types and sizes of accessories, i.e. sprocket, pullet, etc.**
- **Any special requirements such as shifter flange, neoprene seals, etc.**

Bibbigard® Type AB – Manual Reset

Release Torque:
14 to 5500Nm, 10 to 4000 lbf ft



Engaged Disengaged

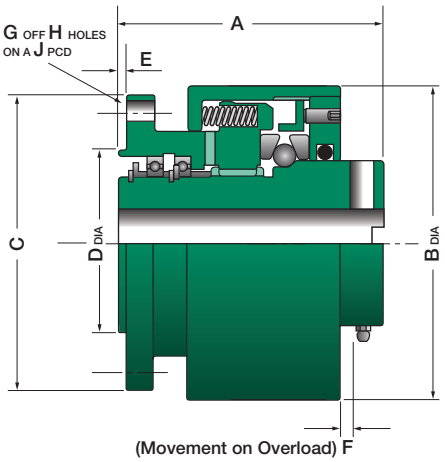
Dimensions

Model	Release Torque		⑤	Dimensions in mm and (inches)											Weight
	Min ① Nm (lbf ft)	Max Nm (lbf ft)	Max Speed rpm	A	③ B	C	D	E	F	G max	② G min	H	J	K	kg (lb)
100AB	14 (10)	140 (100)	1500	90 (3.54)	55 (2.16)	93.5 (3.68)	85 (3.35)	3 (0.118)	75 (2.95)	25.4 (1.00)	12.7 (0.50)	6	M8	6.35 (0.25)	2.95 (6.5)
500AB	70 (50)	700 (500)	1500	135 (5.31)	80 (3.15)	123.8 (4.875)	90 (3.54)	3 (0.118)	100 (3.94)	40 (1.57)	19.05 (0.75)	6	M10	6.35 (0.25)	5.59 (12.3)
1000AB	475 (350)	1356 (1000)	1500	180 (7.09)	110 (4.33)	177.8 (7.00)	150 (5.91)	3 (0.118)	150 (5.91)	57 (2.24)	31.75 (1.25)	6	M12	6.35 (0.25)	17 (37)
2000AB	610 (450)	2712 (2000)	1500	235 (9.25)	150 (5.91)	228.6 (9)	150 (5.91)	3 (0.118)	195 (7.68)	77 (3.03)	38.1 (1.50)	6	M16	6.35 (0.25)	30 (66)
4000AB	815 (600)	5500 (4000)	1000	305 (12)	200 (7.874)	305 (12)	205 (8.07)	3 (0.118)	270 (10.63)	102 (4.00)	50.8 (2.00)	6	M20	8.13 (0.32)	84 (185)

① Lower release torques can be achieved. Consult Bibby Turboflex.
② Dimensions G mm. and axial movement on overload also apply to Types AR, AF, AS and AP.
③ Tolerance on spigot diameter B is f7 to BS 4500:1969.
④ Standard tolerances on keyways is Js9 and on bores H8 to BS 4500:1969.
⑤ Applicable to all variants except AP Type.

Bibbigard® Type AB/BM

Type AB with ball bearing mounting

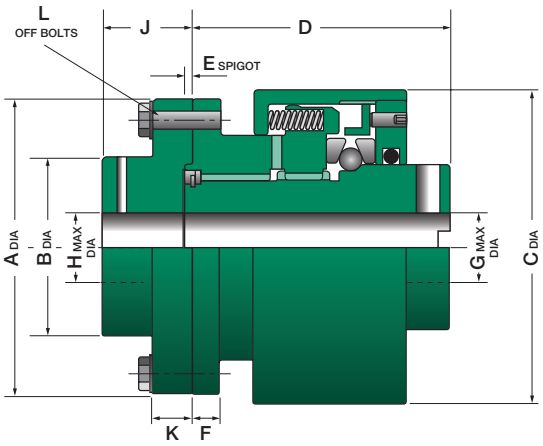


Dimensions

Model	Max Bore	⑤ Max Speed rpm	Dimensions in mm								
			A	B	C	D	E	F	G	H	J
100AB/BM	25	4500	85	94	90	54.97/54.94	3	6.35	6	M8	75
500AB/BM	40	3600	90	124	120	79.97/79.94	3	6.35	6	M10	100
1000AB/BM	57	2400	150	178	180	109.96/109.93	3	6.35	6	M12	150
2000AB/BM	79	1800	150	229	235	149.96/149.92	3	6.35	6	M16	195

Bibbigard® Type AR

Type AB combined with rigid coupling

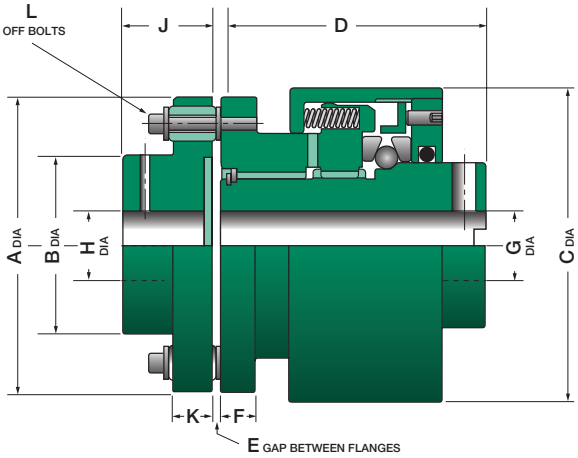


Dimensions

Model	Release Torque		Dimensions in mm and (inches)											Weight kg (lb)
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	D	E	F	G	H	J	K	L	
100AR	14 (10)	140 (100)	90 (3.54)	60 (2.36)	93.5 (3.68)	85 (3.35)	3 (0.118)	10 (0.39)	25.4 (1.00)	40 (1.57)	40 (1.57)	15 (0.59)	6	5.7 (12.5)
500AR	70 (50)	700 (500)	120 (4.72)	75 (2.95)	123.8 (4.875)	90 (3.54)	3 (0.118)	13 (0.51)	40 (1.57)	50 (1.97)	40 (1.57)	15 (0.59)	6	10 (22)
1000AR	475 (350)	1356 (1000)	180 (7.09)	125 (4.92)	177.8 (7.00)	150 (5.91)	3 (0.118)	22 (0.87)	57 (2.24)	85 (3.35)	65 (2.56)	25 (0.98)	6	25 (54)
2000AR	610 (450)	2712 (2000)	235 (9.25)	165 (6.50)	228.6 (9.00)	150 (5.91)	3 (0.118)	22 (0.87)	77 (3.03)	110 (4.33)	95 (3.74)	25 (0.98)	6	49 (108)
4000AR	815 (600)	5500 (4000)	305 (12)	215 (8.46)	305 (12)	205 (8.07)	3 (0.118)	25 (0.98)	102 (4.00)	140 (5.51)	115 (4.53)	30 (1.18)	6	125 (275)

Bibbigard® Type AF

Type AB combined with Bibby Eflex flexible coupling



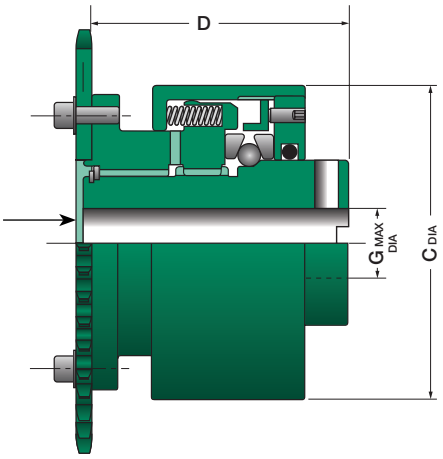
Dimensions

Model	Release Torque		Dimensions in mm and (inches)												Weight kg (lb)
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	D	E	F	G	H max	H min	J	K	L	
100AF	14 (10)	140 (100)	145 (3.54)	80 (3.15)	93.5 (3.68)	85 (3.35)	5 (0.20)	15 (0.59)	25.4 (1.00)	58 (1.38)	16 (0.63)	45 (1.77)	25 (0.98)	3	4.12 (9.17)
500AF	70 (50)	700 (500)	195 (5.70)	120 (4.72)	123.8 (4.875)	95 (3.74)	5 (0.20)	20 (0.79)	40 (1.57)	90 (2.28)	32 (0.63)	70 (2.76)	30 (1.18)	3	10.4 (23)
1000AF	475 (350)	1356 (1000)	195 (7.68)	120 (4.72)	177.8 (7.00)	150 (5.90)	5 (0.20)	25 (0.98)	57 (2.24)	90 (3.54)	32 (1.26)	70 (2.76)	30 (1.18)	6	33 (73)
2000AF	610 (450)	2712 (2000)	240 (9.45)	150 (5.90)	228.6 (9.00)	150 (5.90)	5 (0.20)	25 (0.98)	77 (3.03)	110 (4.33)	42 (1.65)	85 (3.39)	35 (1.38)	8	58 (127)
4000AF	815 (600)	5500 (4000)	320 (11.42)	180 (7.09)	305 (12)	205 (8.07)	6 (0.24)	40 (1.57)	102 (4.00)	130 (5.12)	60 (2.36)	120 (4.72)	50 (1.97)	8	102 (227)

Bibbigard® Type AS

Type AB combined with chainwheel

Duplex and Triplex sprockets will usually be supplied bushed to run on customer's shaft for additional support.

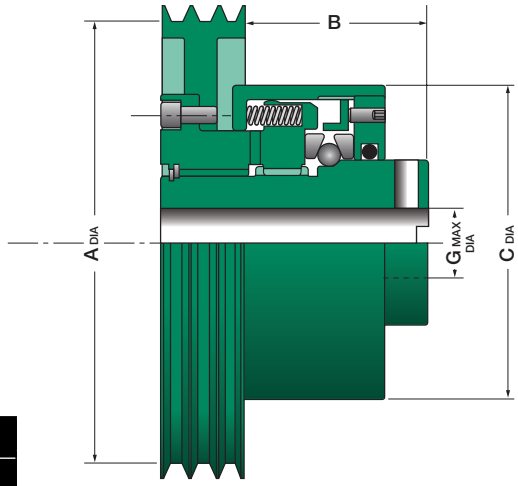


Dimensions

Model	Release Torque		Dimensions in mm and (inches)			Smallest Standard Sprocket (number of teeth)				
	Min Nm (lbf ft)	Max Nm (lbf ft)	C	D	G	3/8" pitch	1/2" pitch	5/8" pitch	3/4" pitch	1" pitch
100AS	14 (10)	140 (100)	93.5 (3.68)	82 (3.23)	25.4 (1.00)	38	26	21	18	15
500AS	70 (50)	700 (500)	123.8 (4.875)	87 (3.43)	40 (1.57)	57	33	27	23	18
1000AS	475 (350)	1356 (1000)	177.8 (7.00)	147 (5.79)	57 (2.24)		48	39	38	26
2000AS	610 (450)	2712 (2000)	228.6 (9.00)	147 (5.79)	77 (3.03)			50	57	38
4000AS	815 (600)	5500 (4000)	305 (12)	202 (7.95)	102 (4.00)				57	57

Bibbigard® Type AP

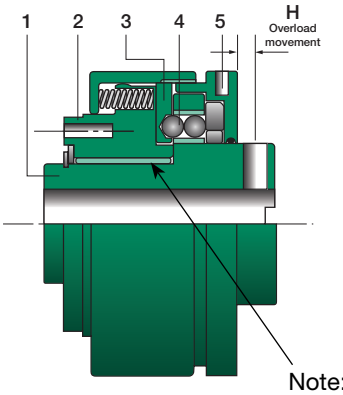
Type AB combined with pulley

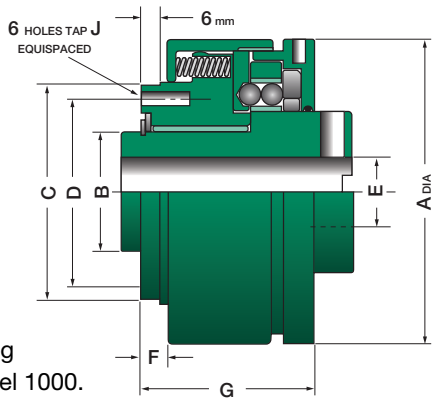


Dimensions

Model	Release Torque		Max Speed	Dimensions in mm and (inches)			
	Min Nm (lbf ft)	Max Nm (lbf ft)		A	B	C	G
100AP	14 (10)	140 (100)	Dependant upon Pulley Diameter	115 (4.53)	Dimension to suit Customers Pulley Requirements	93.5 (3.68)	25.4 (1.00)
500AP	70 (50)	700 (500)		155 (6.10)		123.8 (4.875)	40 (1.57)
1000AP	475 (350)	1356 (1000)		210 (8.27)		177.8 (7.00)	57 (2.24)
2000AP	610 (450)	2712 (2000)		270 (10.63)		228.6 (9.00)	77 (3.03)

Release Torque:
70 to 1356Nm, 50 to 1000 lbf ft





Note: Ball bearing standard on model 1000. Ball bearing or bronze bush on model 550 depending on applicaton requirement.

Technical Features

- Instant release at pre-set torque
- Smooth hold-out for one revolution
- Means for motor switch-off
- Automatic self-engagement on restart without loss of phasing
- Also available fitted with Pulley (BP)
- Rigid coupling (BR)

Dimensions

Model	Release Torque		①	Dimensions in mm and (inches)										Weight
	Min Nm (lbf ft)	Max Nm (lbf ft)	Max Speed rpm	A	B	C	D	E max	E min	F	G	① H	J	kg (lb)
550B	68 (50)	745 (550)	500	145 (5.70)	67 (2.63)	106f7 (4.25)	95 (3.74)	44 (1.75)	19 (0.75)	15 (0.59)	100 (3.93)	3 (0.12)	M8	8 (17.6)
1000B	338 (250)	1356 (1000)	500	205 (8.07)	85 (3.34)	142f7 (5.66)	125 (4.92)	57 (2.25)	32 (1.25)	20 (0.78)	150 (5.9)	4 (0.16)	M12	25 (55)

① Applicable to all variants

Note: Type B clutches should always be used with a limit switch to bring the drive to rest within a few revolutions thus preventing possible damage by continual releasing and resetting.

Normal Running

The drive is transmitted between the hub flange (1) and the drive flange (2) by the balls (4), spring-loaded into the pockets on the ball detent ring (3) secured by dowels.

Disengagement

On overload, the balls are displaced axially through the hub flange, further compressing the springs. Once out of their pockets, the balls roll on the face of the hub flange for one revolution before re-engaging and synchronising the drive.

Torque Adjustment

The release torque is set by tightening nut (5) thus increasing the spring pressure. After setting, the nut is locked by grub screw.

Installation

Clutches can be supplied pilot bored or may be finish bored and keywayed. The hub may be fitted to either shaft and should be axially constrained against a shoulder to resist the resetting force and locked by means of a grubscrew onto the shafts key. The drive flange may be connected to a flexible coupling or can carry a sprocket or pulley.

Application

This type of protection is ideally suited to drives where it is essential to restart in the correct sequence and where access for manual resetting is not available.

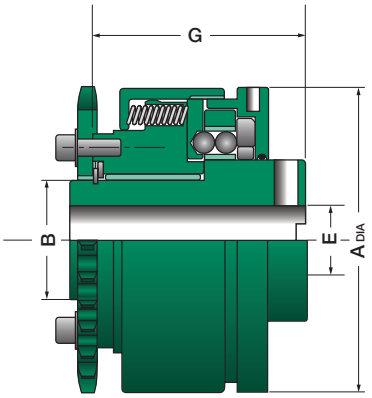
Bibbigard® Type BS

Type B combined with chainwheel

Ball bearing standard on Model 1000. Ball bearing or bronze bush on Model 550 depending on application requirement.

Duplex and Triplex sprockets will usually be supplied bushed to run on customer's shaft for additional support.

For sprockets smaller than listed, an adaptor is used. Details on request.

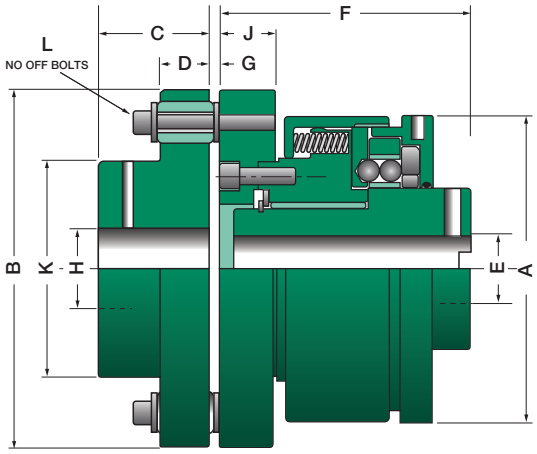


Dimensions

Model	Release Torque		Dimensions in mm and (inches)					Smallest Standard Sprocket (number of teeth)				
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	E max	E min	G	3/8" pitch	1/2" pitch	5/8" pitch	3/4" pitch	1" pitch
550BS	68 (50)	745 (550)	145 (5.70)	67 (2.63)	44 (1.75)	19 (0.75)	85 (3.34)	40	31	26	22	18
1000BS	338 (250)	1356 (1000)	205 (8.07)	80 (3.14)	57 (2.25)	32 (1.25)	130 (5.11)	51	40	32	28	22

Bibbigard® Type BF

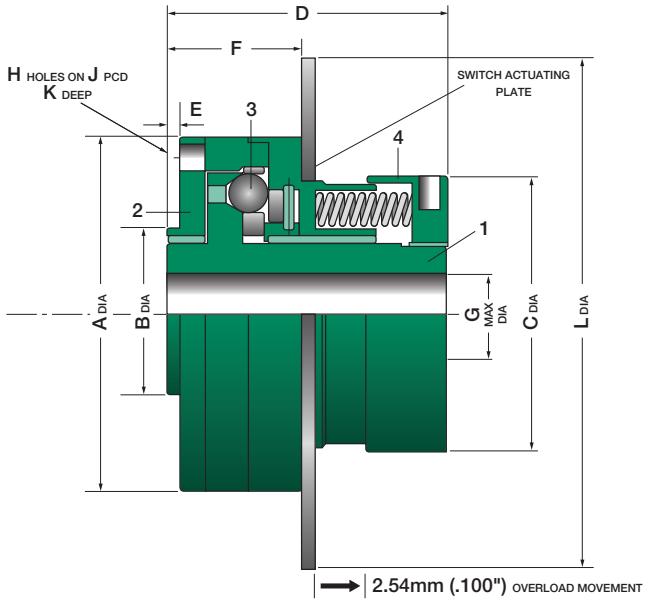
Type AB combined with Bibby Eflex flexible coupling



Dimensions

Model	Release Torque		Dimensions in mm and (inches)													Weight kg (lb)
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	D	E max	E min	F	G	H max	H min	J	K	L	
550BF	68 (50)	745 (550)	195 (7.67)	145 (5.70)	70 (2.76)	25 (0.98)	44 (1.75)	19 (0.75)	105 (4.13)	5 (0.19)	58 (2.28)	16 (0.63)	22 (0.87)	120 (4.72)	4	23 (51)
1000BF	338 (250)	1356 (1000)	205 (8.07)	195 (7.67)	65 (2.56)	30 (1.18)	57 (2.25)	32 (1.25)	155 (6.10)	5 (0.19)	90 (3.54)	32 (1.26)	25 (1.0)	120 (4.72)	6	40 (88)

Automatic Reset Release Torque:
14 to 210Nm, 10 to 150 lbf ft



Technical Features

- Instant release at pre-set torque
- Smooth hold-out for one revolution
- Means for motor switch-off
- Automatic self-engagement on restart without loss of phasing

Dimensions

Model	① Release Torque		⑤	Dimensions in mm and inches											Weight
	Min Nm (lbf ft)	Max Nm (lbf ft)	Max Speed rpm	A	② B	C	D	E	F	G	H	J	K	L	kg (lb)
20CB	14 (10)	48 (35)	250	76 (2.98)	35 (1.38)	60 (2.37)	62 (2.44)	2.5 (0.098)	31 (1.23)	16 (0.63)	3-M6	66 (2.60)	8 (0.31)	120 (4.72)	1.36 (3)
150CB	42 (30)	210 (150)	250	94 (3.70)	54 (2.13)	87 (3.44)	66 (2.60)	3 (0.118)	34 (1.33)	28 (1.13)	6-M6	84 (3.31)	11 (0.44)	130 (5.11)	2.80 (6.20)

① Lower release torques can be achieved. Consult Bibby Turboflex.
② Tolerance on spigot diameter B is f7 to BS 4500:1969.
③ For higher release torques use Type B on page 47.
④ Standard tolerances on keyways is Js9 and on bores H8 to B5 4500:1969.
⑤ Applicable to all variants.

Normal Running
The drive is transmitted between the hub flange (1) and the housing (2) by the balls (3), spring-loaded into the pockets on the flange face.

Disengagement
On overload, the balls are displaced axially through the housing, further compressing the springs. Once out of their pockets, the balls roll on the face of the hub flange for one revolution before re-engaging and synchronising the drive.

Torque Adjustment
The release torque is set by tightening nut (4) thus increasing the spring pressure. After setting, the nut is locked with a grub screw and plug.

Installation
Clutches can be supplied pilot bored or finish bored and keywayed. The hub may be fitted to either shaft and should be located against a shoulder to resist the resetting spring force and locked by means of grub screw in the hub flange. The drive flange may be replaced by a sprocket, pulley, etc., or connected to a coupling.

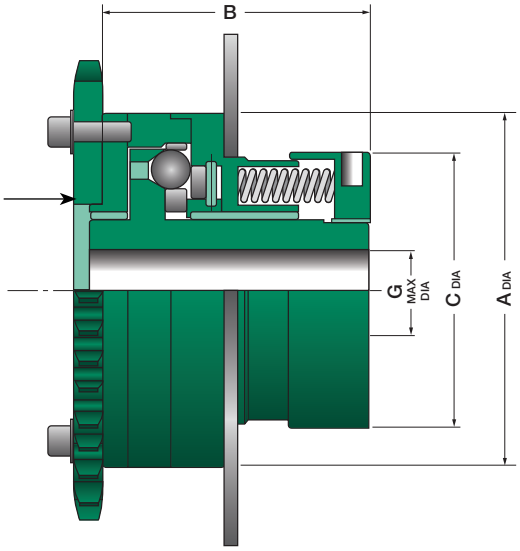
Application
This type of protection is ideally suited to drives such as wrapping and packing machinery where it is essential to restart in the correct sequence and where access for manual resetting is not available.

Type C clutches should always be used with a limit switch to bring the drive to rest within a few revolutions thus preventing possible damage by continual releasing and resetting.

Bibbigard® Type CS

Type CB combined with sprocket

Duplex and Triplex sprockets will usually be supplied bushed to run on customer's shaft for additional support.



For sprockets smaller than listed, an adaptor is used. Details on request.

Dimensions

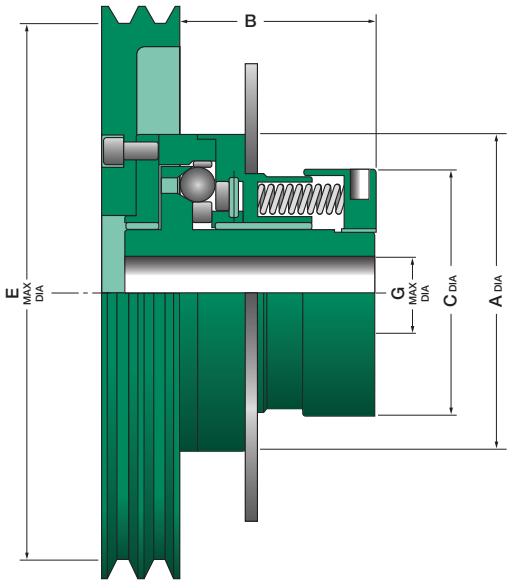
Model	Release Torque		Dimensions in mm and (inches)				Smallest Standard Sprocket (number of teeth)				
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	G max	3/8" pitch	1/2" pitch	5/8" pitch	3/4" pitch	1" pitch
20CS	14 (10)	48 (35)	76 (2.98)	59.5 (2.34)	60 (2.37)	16 (0.625)	30	22	19	17	14
150CS	42 (30)	210 (150)	94 (3.70)	63 (2.48)	87 (3.44)	28 (1.125)	38	28	23	20	15

Bibbigard® Type CP

Type CB combined with pulley

Pulleys to suit the following belts can also be supplied:- standard 'V section, flat, poly, 'V', and timing or toothed.

For pulleys smaller than listed, an adaptor is used. Details available on request.

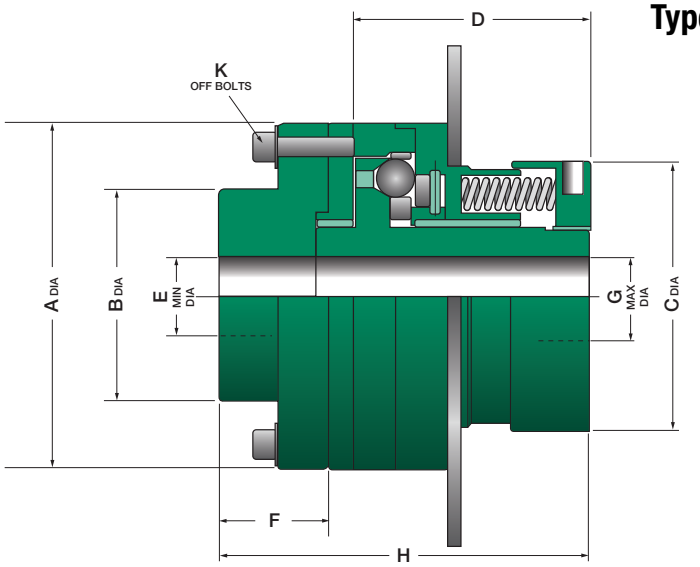


Dimensions

Model	Release Torque		Dimensions in mm and (inches)				
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	E	G
20CP	14 (10)	48 (35)	76 (2.98)	to suit	60 (2.37)	102 (4.00)	16 (0.625)
150CP	42 (30)	210 (150)	94 (3.70)	to suit	87 (3.44)	124 (4.875)	28 (1.125)

Bibbigard® Type CR

Type CB combined with rigid coupling



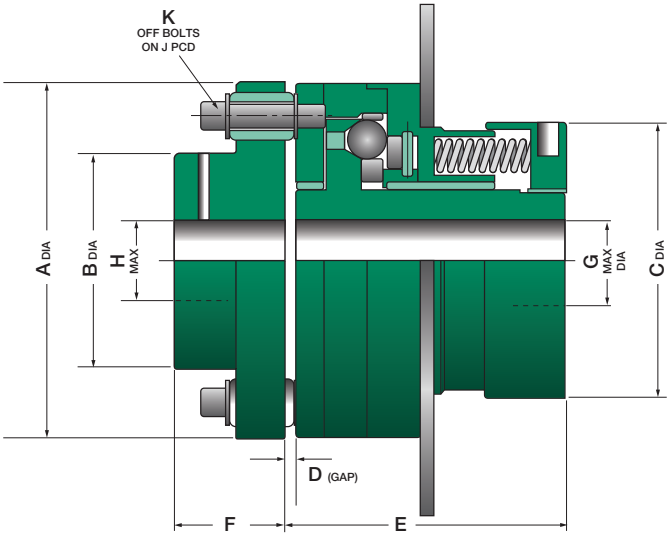
This arrangement will not accommodate any misalignment.

Dimensions

Model	Release Torque		Dimensions in mm and (inches)									Weight kg (lb)
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	D	E	F	G	H	K	
20CR	14 (10)	48 (35)	76 (2.99)	55 (2.17)	60 (2.37)	62 (2.44)	35 (1.38)	38 (1.50)	16 (0.63)	98 (3.85)	3	2 (4.5)
150CR	42 (30)	210 (150)	94 (3.70)	71 (2.80)	87 (3.44)	66 (2.60)	44 (1.73)	51 (2.00)	28 (1.10)	114 (4.48)	6	4.3 (9.5)

Bibbigard® Type CF

Type CB combined with Bibby Eflex flexible coupling



Dimensions

Model	Release Torque		Dimensions in mm and (inches)										Weight kg (lb)
	Min Nm (lbf ft)	Max Nm (lbf ft)	A	B	C	D	E	F	G	H	J	K	
20CF	14 (10)	48 (35)	76 (2.99)	35 (1.38)	60 (2.36)	2 (0.08)	62 (2.44)	29 (1.14)	16 (0.63)	20 (0.79)	72 (2.83)	2	2.52 (5.54)
150CF	42 (30)	210 (150)	94 (3.70)	48 (1.89)	87 (3.43)	3 (0.12)	66 (2.60)	40 (1.57)	28 (1.10)	28 (1.10)	90 (3.54)	4	5.18 (11.39)

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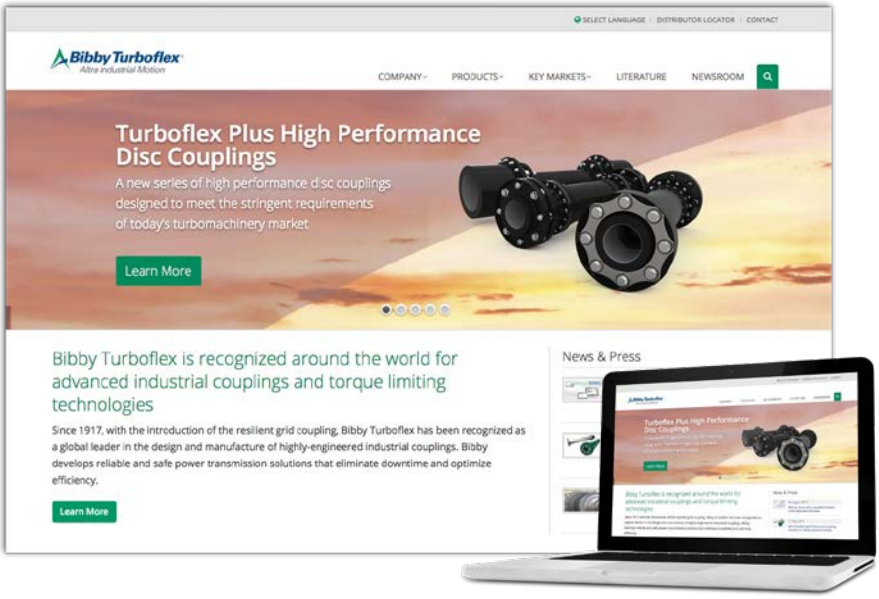

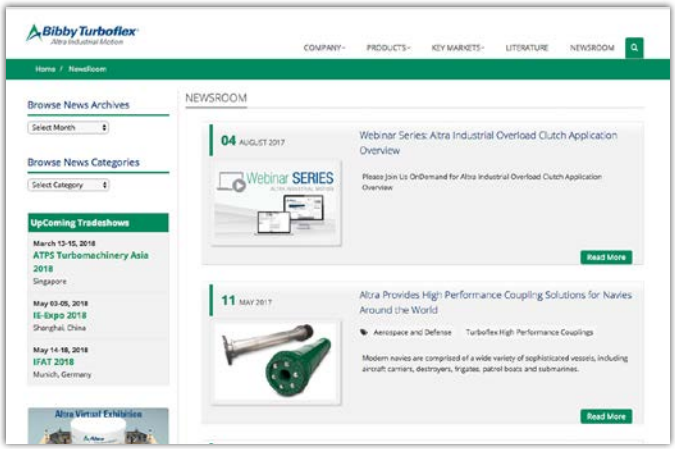

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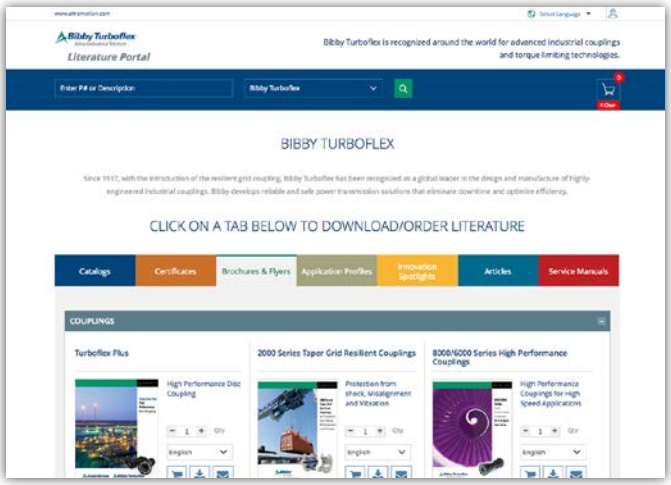

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