

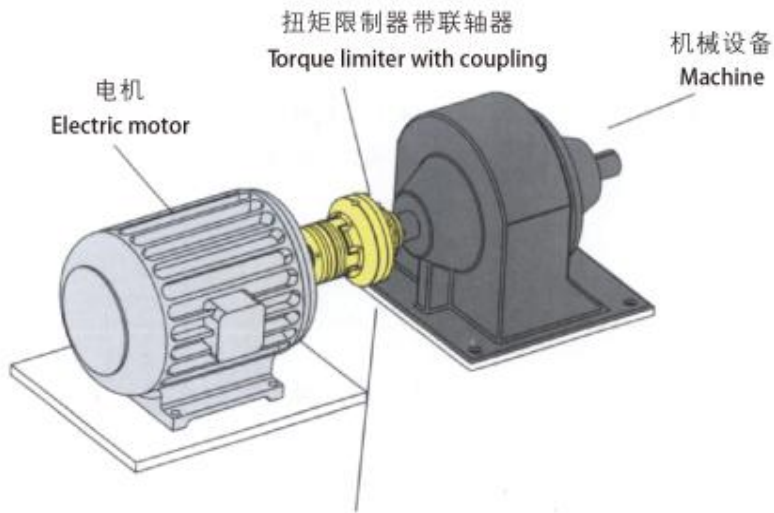
扭力限制器



直接和间接驱动的过载保护-扭矩限制器

OVERLOAD PROTECTION FOR DIRECT AND INDIRECT DRIVES

◇ 直接驱动 Direct drives



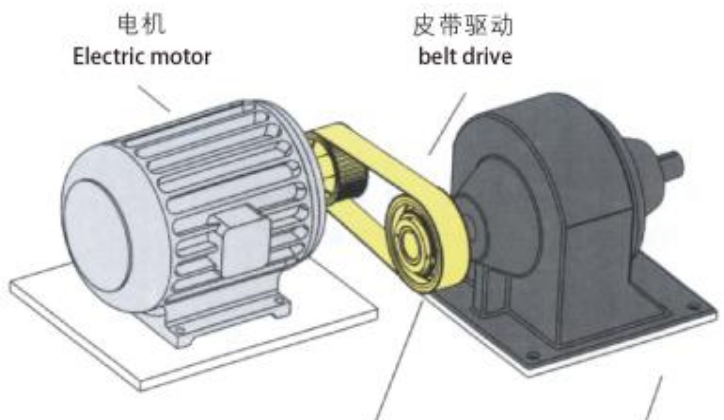
应用在轴-轴的传动
例如:

- 滚珠丝杠
- 轴向驱动
- 电机与齿轮箱之间的连接

shaft-to-shaft connection,
for example:

- ball spindles
- axle drives
- between motor and gearbox

◇ 间接驱动 Indirect drives



应用在轴-法兰的传动
例如:

- 链轮
- 皮带传动
- 曲柄转动装置

Shaft-to-flange connection,
for example:

- Sprockets
- Belt drives
- Crank gears

AQL 扭矩限制器带联轴器 Torque limiter with coupling



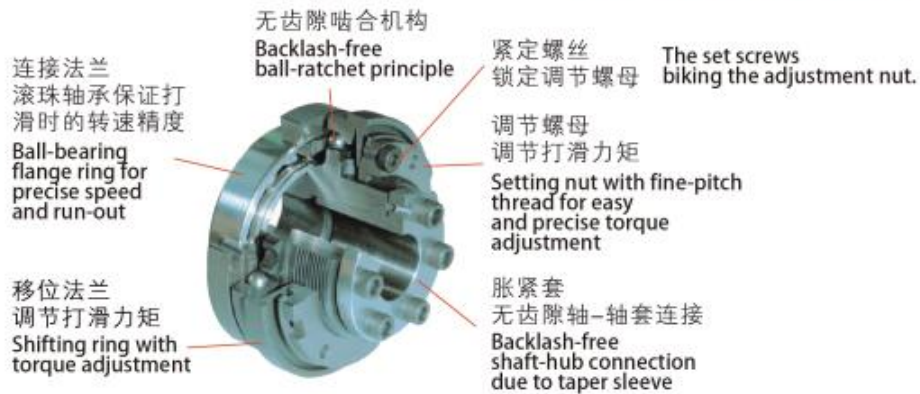
CTL 扭矩限制器带链轮 Torque limiter with sprocket



AQ 扭矩限制器带安装法兰 Ball-Type Torque limiter with mounting flange



钢球式扭矩限制器 TYPE BALL TORQUE LIMITER



过载时，钢球离开了凹坑，使主动端部件和从动端部件之间产生打滑，从而避免了因过载而引起的损坏。移动环作“S”形的轴向移动，使安装的限位开关或接近开关发出信号，这个信号可用来控制或切断动力源。我们建议用一个绕过限位开关和传感器的旁路电路来快速重新启动动力设备。

过载消除后，钢球在保持架旋转过程中转动一个角度在下一个凹坑中自动复位，这样主动端和从动端部件在相互旋转一个角度后恢复正常转动。

AQ型钢球式扭矩限制器以高精度、高动态和高安全性满足了现代电子驱动的要求，可以绝对无间隙的传递扭矩。

In case of overload the ratchet parts balls leave their indentations, and a relative motion between the driving and driven side is produced. In this way damages due to overload are avoided. The shift ring makes an axial motion to the shifting way "S" and activates the limit switch or proximity initiator. The signal can be used for control functions or for disconnection of the drive. For the restart we would recommend to electrically bypass the limit switch or proximity initiator for a short time.

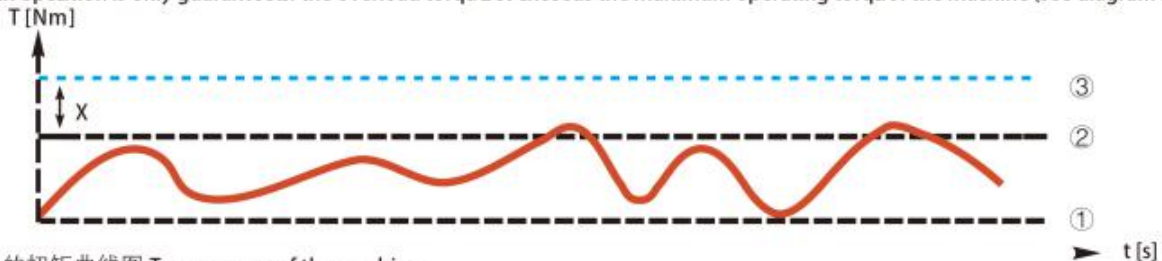
After the overload eliminated. The ball which was rotating in the keeping rotating veset automatically in the next indontainon then the drive and drive side was nesuming normal rotation with an mutual rotating angle.

◇ 影响扭矩限制器选型的重要因素:

Important factors for the selection of torque limiters:

为保证设备的平稳运行，过载扭矩的设定值必须大于设备的最大工作力矩。(见下图)

A smooth operation is only guaranteed if the overload torque set exceeds the maximum operating torque of the machine (see diagram below).



① 设备的扭矩曲线图 Torque curve of the machine

② 设备的最大工作力矩 Maximum operating torque of the machine

③ 扭矩限制器设定的打滑力矩 Torque of the coupling set

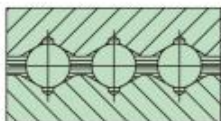
X 在②和③之间的安全余量 (打滑力矩必须大于最大工作力矩的30%)

X Safety margin between ② and ③

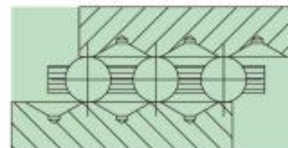
(Should be at least 30% of the maximum operating torque of the machine).

◇ 动作原理 Act principle:

正常运行时没有信号
No signal in case of normal operation

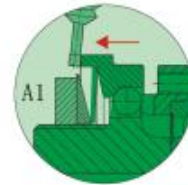


啮合
Engaged



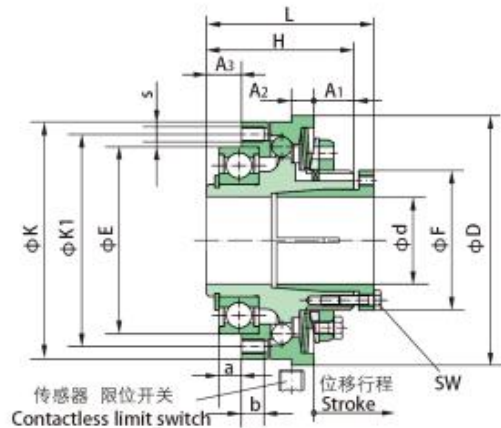
打滑
Disengaged

过载时发出信号
Signal in case of overload



AQ4.0型钢球式扭矩限制器 TYPE AQ4 0 BALL TORQUE LIMITER

◇ 轴-法兰连接
shaft-to-ring connection



AQ4.0型带胀紧套
Design AQ4.0 with clamping connection

◇ AQ4.0型钢球式扭矩限制器参数 Parameter of AQ4.0 Torque Limiter

AQ4.0 型号 Model	扭矩范围 Torque Range (Nm)				最高转速 Max speed unbalanced rpm	过载发生 止推位移 Thrust washer stroke on overload mm	转动惯量 Mass moments of inertial		锁紧螺栓 φd及拧紧扭矩 Clamping screws and tightening torques for φd		重量 Weight kg
	X型 Type X	L型 Type L	M型 Type M	H型 Type H			轴毂端 Hub-side Kgm ²	法兰端 Flexible-side Kgm ²	mm	Nm	
01	5-12.5	10-25	20-50	25-62.5	4000	1.2	0.000211	0.000093	4xM4	4	0.68
02	10-25	20-50	40-100	50-125	3000	1.5	0.000531	0.000234	6xM4	4	1.14
03	20-50	40-100	80-200	100-250	2500	1.8	0.001388	0.000643	8xM4	4	1.98
04	40-100	80-200	160-400	200-500	2000	2.0	0.002846	0.001306	8xM5	8	2.88
05	70-175	140-350	280-700	380-875	1200	2.2	0.006858	0.002649	8xM6	12	4.59
06	120-300	240-600	480-1200	600-1500	800	2.5	0.029432	0.006690	8xM8	15	10.63

◇ AQ4.0型钢球式扭矩限制器主要尺寸 Dimension of AQ4.0 Torque Limiter

尺寸: (mm)
Dimensions in mm

AQ4.0 型号 Model	d _{min}	d _{max}	D	F	E (h6)	K	K ₁	L	H	A ₁	A ₂	A ₃	a	b	S	SW
01	10	20	70	38	47	65	56	47	40	12	7	8	5	6	8xM4	7
02	15	25	85	44	62	80	71	56	48	13.5	8	11	7	7	8xM5	7
03	22	35	100	56	75	95	85	67	59	16	9	14	9	9	8xM6	7
04	32	44	115	70	90	110	100	73	64	17	10	16	10	10	8xM6	8
05	35	55	135	84	100	130	116	86	75	20.5	12	18	10	12	8xM8	10
06	40	65	166	100	130	166	150	130	115	46	16	21	12	15	8xM10	13

- 1) 其他更大或更小扭矩范围产品请来电咨询; 1) further sizes for smaller and larger torques available on request.
- 2) 更大或更小的孔径请来电咨询; 2) smaller bores for low torques available on request.
- 3) 内孔公差适用H8; 3) tolerance user-side H8.

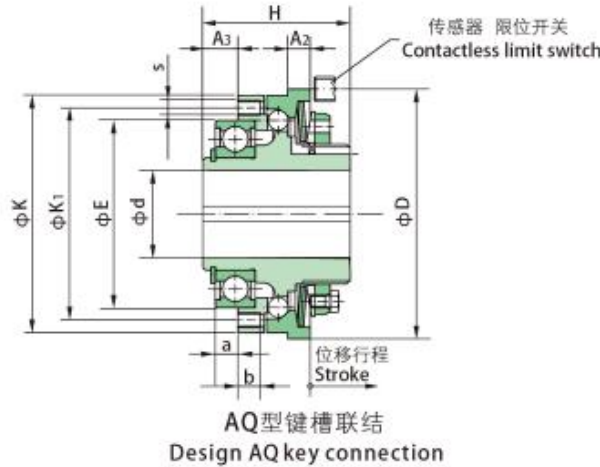
◇ 订货描述示例:

Order form:

AQ4.0-03	L	φ22	AQ4.0-φ22胀紧套联结 AQ4.0-φ22 clamping
规格与型号 Size/type	扭矩范围 Torque Range (Nm)	d成品孔径 Finish bore (H8)	成品孔径 (H8) 按JB/T7934-1999标准 Finish bore (H8) to JB/T7934-1999

AQ型钢球式扭矩限制器 TYPE AQ BALL TORQUE LIMITER

◇ 轴-法兰连接
shaft-to-ring connection



◇ AQ型钢球式扭矩限制器参数 Parameter of AQ Torque Limiter

AQ 型号 Model	扭矩范围 Torque Range (Nm)				最高转速 Max speed unbalanced rpm	过载发生 止推位移 Thrust washer stroke on overload mm	转动惯量 Mass moments of inertial		锁紧螺栓 φd 及拧紧扭矩 Clamping screws and tightening torques for φd	重量 Weight	
	X型 Type X	L型 Type L	M型 Type M	H型 Type H			轴毂端 Hub-side Kgm ²	法兰端 Flexible-side Kgm ²			mm
01	5-12.5	10-25	20-50	25-62.5	4000	1.2	0.000205	0.000093	4xM4	4	0.63
02	10-25	20-50	40-100	50-125	3000	1.5	0.000505	0.000234	6xM4	4	1.02
03	20-50	40-100	80-200	100-250	2500	1.8	0.001302	0.000643	8xM4	4	1.75
04	40-100	80-200	160-400	200-500	2000	2.0	0.002630	0.001306	8xM5	8	2.55
05	70-175	140-350	280-700	380-875	1200	2.2	0.006329	0.002649	8xM6	12	4.07
06	120-300	240-600	480-1200	600-1500	800	2.5	0.028443	0.006690	8xM8	15	10.06

◇ AQ型钢球式扭矩限制器主要尺寸 Dimension of AQ Torque Limiter

尺寸: (mm)
Dimensions in mm

AQ 型号 Model	d	D	E (h6)	K	K ₁	H	A ₂	A ₃	a	b	S
01	12-20	70	47	65	56	40	7	8	5	6	8xM4
02	15-25	85	62	80	71	48	8	11	7	7	8xM5
03	22-30	100	75	95	85	59	9	14	9	9	8XM6
04	28-40	115	90	110	100	64	10	16	10	10	8XM6
05	32-50	135	100	130	116	75	12	18	10	12	8XM8
06	40-65	166	130	166	150	115	16	21	12	15	8XM10

- | | |
|------------------------|---|
| 1) 其他更大或更小扭矩范围产品请来电咨询; | 1) further sizes for smaller and larger torques available on request. |
| 2) 更大或更小的孔径请来电咨询; | 2) smaller bores for low torques available on request. |
| 3) 内孔公差适用H7; | 3) tolerance user-side H7. |

◇ 订货描述示例:
Order form:

AQ03	L	φ22	φ22键槽 φ22key way
规格与型号 Size/type	扭矩范围 Torque Range (Nm)	d成品孔径 Finish bore (H7)	成品孔径 (H7) 键槽按GB/T3852-1997(JS 9)标准 Finish bore (H7) to GB/T3852-1997(JS 9)

AQL型扭力限制型联轴器

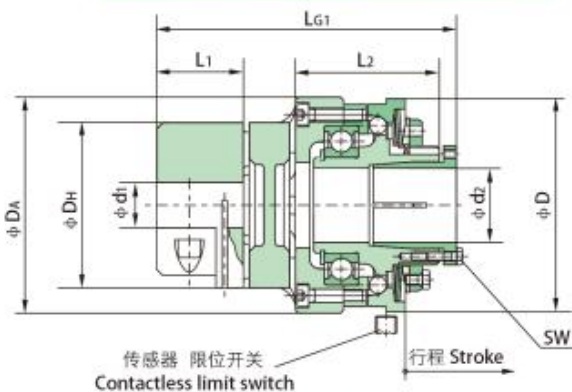
TYPE AQL TORQUE LIMITER COUPLING

◇ 轴-轴连接

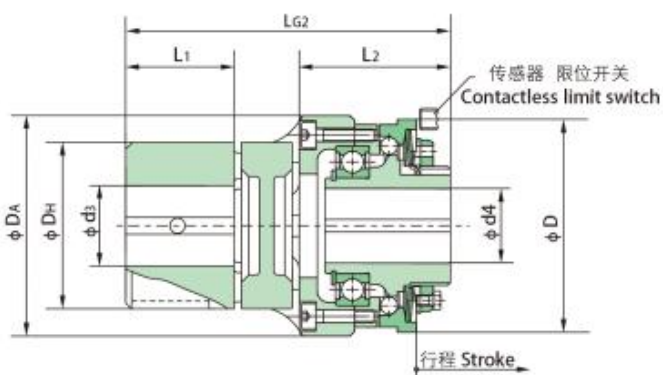
Shaft-to-shaft connection



- 轴-轴连接的AQL型扭矩限制器
AQL safety clutch as a shaft-to-shaft connection
- 轴向插入，安装方便
Axial plug-in, installation easy.
- 可装在设备上上进行力矩设定
Torque setting possible while in place



AQL-4.0型胀套联结
Design AQL-4.0 with clamping connection



AQL键槽联结
Design AQL key connection

◇ AQL型钢球式扭矩限制器参数

Parameter of AQL Torque Limiter

AQL 规格	扭距范围 Torque Range (Nm)				最高转速 Max. speed unbalanced rpm	过载发生止推位移 Thrust washer stroke on overload mm
	X型	L型	M型	H型		
01	5-12.5	10-25	20-50	25-62.5	4000	1.2
02	10-25	20-50	40-100	50-125	3000	1.5
03	20-50	40-100	80-200	100-250	2500	1.8
04	40-100	80-200	160-400	200-500	2000	2.0
05	70-175	140-350	280-700	380-875	1200	2.2
06	120-300	240-600	480-1200	600-1500	800	2.5

◇ AQL型钢球式扭矩限制器主要尺寸

Dimension of AQL Torque Limiter

AQL 规格	φd ₁	φd ₂	φd ₃	φd ₄	D _A	D _H	D	L _{G1}	L _{G2}	L ₁	L ₂
01	15-28	10-20	8-28	10-20	70	55	70	102	95	30	47
02	19-35	15-25	10-38	15-25	85	65	85	120	112	35	57
03	20-45	20-35	12-45	20-30	100	80	100	146	138	45	69
04	28-45	30-45	14-55	30-40	115	95	115	159	150	50	74
05	35-55	35-55	20-60	35-50	135	105	135	182	171	56	87
06	45-80	40-65	35-80	40-65	175	135	166	255	240	75	130

◇ 订货描述示例:

Order form:

AQL03	L	φ 20	φ 20	φ 20键槽 φ 20keyway或 φ 20-4.0 φ 20-4.0 claping
规格与型号 Size/type of joint	扭距范围 Torque Range (Nm)	d ₁ 成品孔径 Finish bore (H7)	d ₂ 成品孔径 Finish bore (H7)	成品孔径(H7)键槽按GB/T3852-1997(JS 9)标准 Keyway toGB/T3852 sheet 1997 (Js9)

TORQUE ADJUSTMENT EXPLANATION

AQ型扭矩限制器以通过调整其调节螺母的刻度比例来设定扭矩，这种操作使得扭矩的调整变得更加简单方便。扭矩的调整是通过调节螺母（1）及锁紧螺钉（4）来调整的。

调整螺母（1）上有40%到100%的刻度比例，计算方法： $\frac{\text{所需扭矩}}{\text{本规格最高扭矩}} \times 100 = \text{得出所需扭矩的百分比}$

例如：AQ03-X型，扭矩范围20~50N.m(图1所示)，需要调节到30N.m,通过计算公式得出 $\frac{30}{50} \times 100 = 60\%$ ，使用月牙扳手

或者其它扳手将60%的刻度线调节至原点位置，将紧定螺钉4拧紧，扭矩设定完毕。如果客户没有特殊要求，扭矩的设定一般为其扭矩最大值的70%，以方便用户调节。

安装好的碟形弹簧（3）特性曲线范围的路径如(图2所示)，越强的预紧力会导致弹簧压力的减小，

当顺时针方向调整调节螺母(1)后，弹簧压力会减小，扭矩会减小，

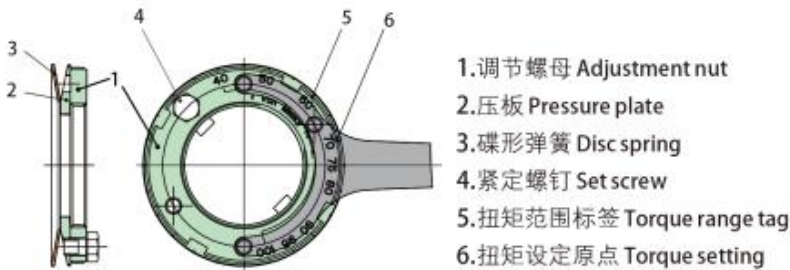
当逆时针调节，弹簧压力会增大,扭矩会增大。

AQ ball type torque limiter was setted the torque by adjusting the scale of the adjusting nut, which make the adjustment of the torque become more convenient and easy. Adjusting nut (1) have the scale from 40% to 100% of torque, calculation formula: required torque / maximum torque X 100 = the percent of required torque. E.g. AQ03-X type, torque range 20~50N.m, if the required torque is 30N.m, then we can calculate $30/50 \times 100 = 60\%$, Adjust the 60% of scale line to origin location by crescent wrench or other kind of wrench, tight the set screw 4, then the torque setting was completed. If no other torque adjustment is requested customer side, normally the torque setting only reach 70% of the respective maximum torque for convenience purpose. Adjust the torque by adjust its adjustment nut (1) and set screw (4).

Assemble the disc spring (3), the graph 2 shows the path of the characteristic range, the stronger pre-tension produces a decrease in spring force.

Turning the adjusting nut or the set screw therefore produces a decrease in spring force. Turning it anti-clockwise produces an increase in torque.

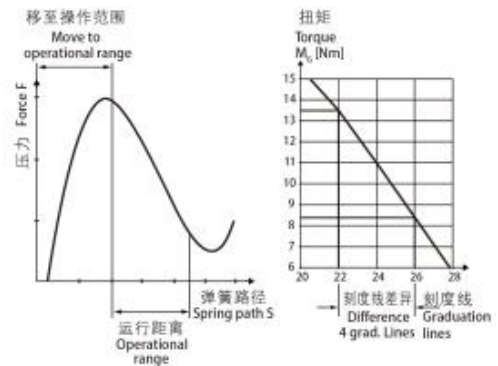
图1



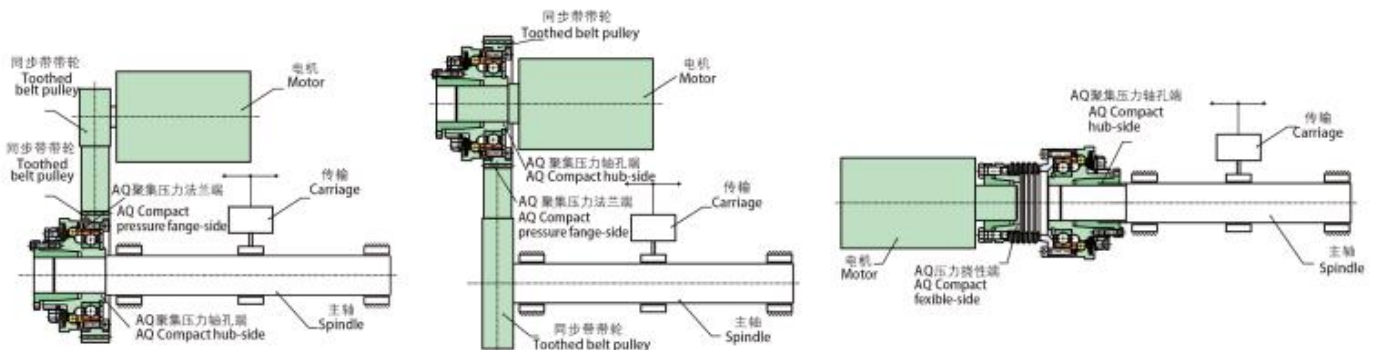
AQ 型预压式扭矩限制器

AQ ratchetting and synchronous clutch

图2 碟形弹簧的压力曲线
 Graph of spring characteristic curve



◇ AQ型扭矩限制器应用举例：
 AQ Torque Limiter applications



MGB型扭矩保护器 TYPE MGB TORQUE GUARD

MGB型扭矩保护器是一种扭矩超载保护装置。它能在超载时通过限位开关或传感器控制立刻停止机器。通过扭矩数值指示器,能很容易的重新调整和设定扭矩。钢球的非对称安装允许只有一个复位位置。一经超载消失,它旋转一圈后自动恢复运行。它能保护你防止机器因过载受损而且可以避免昂贵的停工时间。

MGB type Torque Guard is the ball detent type overload protection device. It can stop machine immediately When overload by using noncontact micro switch. By the Torque meter and Indicator, desired torque can easily be set or adjusted. The non-symmetric arrangement of balls and pockets allow only one engagement position. Once the overload removed, it re-engages automatically by jogging a driving member. MGB Torque Guard can protect you from the machine damage and eliminate costly downtime.



微型扭矩保护器
Min Size Torque Guard MGB08~16



扭矩保护器
Torque Guard



扭矩保护联轴器
Torque Guard Coupling

◇ MGB 型扭矩保护器的规格参数

Specifications of Type MGB Torque Guard and Torque Guard Coupling

尺寸: mm
Dimensions in mm

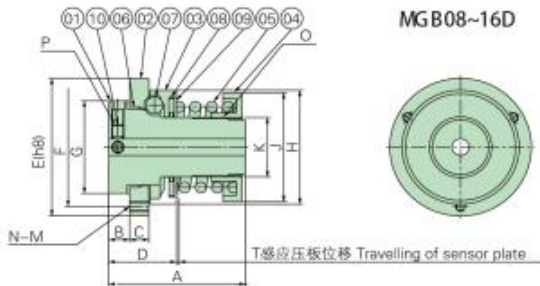
规格 Model	扭矩范围 Torque Range (Nm)	最高转速 Max. Running Speed (r/min)	成型孔径 Pilot Bore	最大孔径 Max. Bore
MGB 08	L (C)	0.294~1.470	5	8
	M (C)	0.784~2.156		
	H (C)	1.176~2.940		
MGB 12	L (C)	0.686~2.940	6	12
	M (C)	1.960~4.900		
	H (C)	2.940~5.880		
MGB 16	L (C)	1.470~4.900	7	16
	M (C)	2.940~7.840		
	H (C)	5.880~11.76		
MGB 20	H (C)	9.800~44	8	20
MGB 30	L (C)	20~54	12	30
	H (C)	54~167		
MGB 50	L (C)	69~147	22	50
	M (C)	137~412		
	H (C)	196~539		
MGB 70	H (C)	294~1080	32	70
MGB 90	L (C)	441~1323	42	90
	H (C)	931~3136		
MGB110	L (C)	686~1960	52	110
	H (C)	1568~5096		
MGB130	L (C)	1176~3038	60	130
	H (C)	2646~7154		

◇ 订货描述示例:

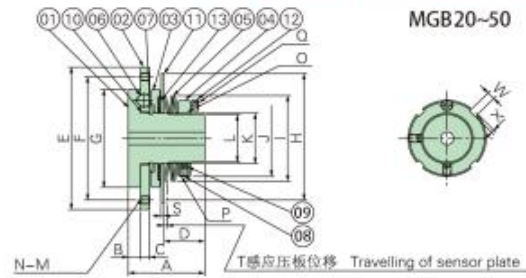
Order form:

MGB50	L(C)	φ 22	φ 22键槽按DIN标准 φ 22keyway DIN
规格与型号 Size/type of joint	扭矩范围 Torque Range	成品孔径 Finish bore (H7)	成品孔径 (H7) 键槽按DIN6885-1 (JS 9) 标准 Finish bore (H7) Keyway to DIN 6885 sheet 1 (Js9)

MGB型扭矩保护器 TYPE MGB TORQUE GUARD



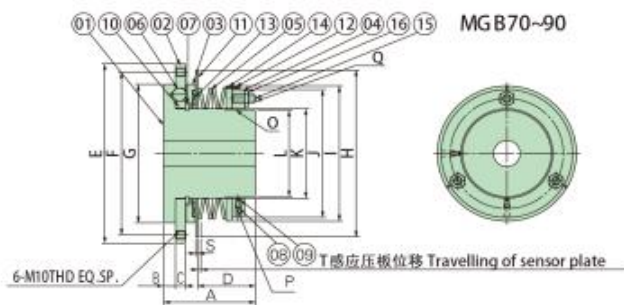
MGB08-16D



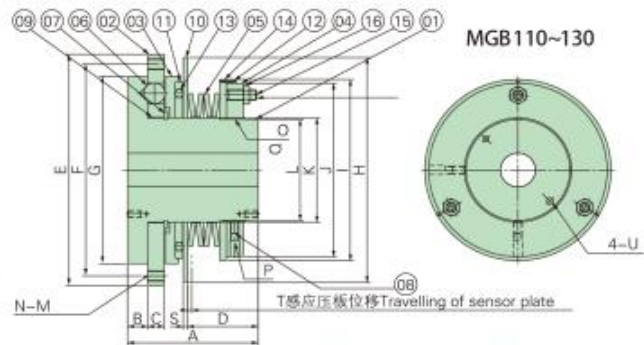
MGB20-50

01 主体 HUB	05 弹簧 COIL SPRING-H	09 压板 PLATE
02 中间板 CENTER FLANGE	06 滑动轴承 PLAIN BEARING	10 限位螺钉 SET SCREW
03 压板 PRESSURE PLATE	07 钢球 STEEL BALL	
04 调节螺母 ADJUSTMENT NUT	08 轴承 BEARING	

01 主体 HUB	05 碟簧 DISC SPRING	09 紧定螺钉 LOCK PLUG	13 轴承 BEARING
02 中间板 CENTER FLANGE	06 钢球 STEEL BALL	10 滑动轴承 PLAIN BEARING	
03 压板 PRESSURE PLATE	07 轴挡圈 SNAP RING (SHAFT)	11 感应压板 SENSOR PLATE	
04 调节螺母 ADJUSTMENT NUT	08 锁紧螺钉 SET SCREW	12 指示器 INDICATOR	



MGB70-90



MGB110-130

01 主体HUB	05 碟簧DISC SPRING	09 紧定螺钉LOCK PLUG	13 轴承 BEARING
02 中心物件CENTER FLANGE	06 钢球STEEL BALL	10 滑动轴承PLAIN BEARING	14 调节压板PILOT PLATE
03 压板PRESSURE PLATE	07 轴挡圈SNAP RING (SHAFT)	11 感应压板SENSOR PLATE	15 调整螺栓ADJUSTMENT BOLT
04 调节螺母ADJUSTMENT NUT	08 限位螺钉SET SCREW	12 指示器INDICATOR	16 锁紧螺母LOCK NUT

01 主体HUB	05 碟簧 DISC SPRING	09 滑动轴承 PLAIN BEARING	13 钢球 STEEL BALL
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MGB型扭矩保护器的尺寸 Dimensions of Type MGB Torque Guard

尺寸: mm
Dimensions in mm

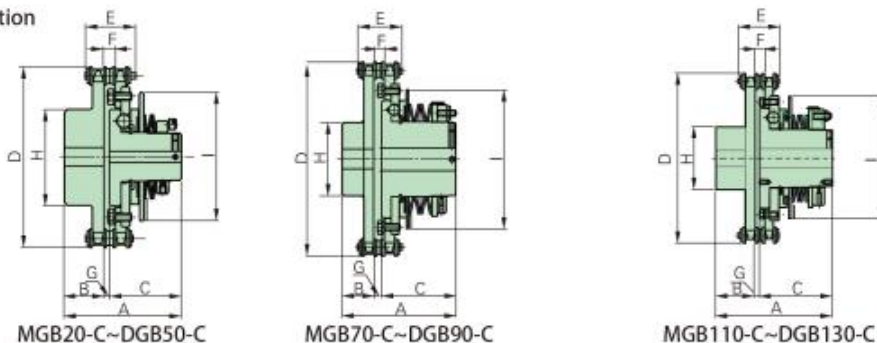
型号 Model	A	B	C	D	E (h7)	F P.C.D.	G	H	I	J	K	L	M	N	O 调节螺母 Adjust Nut	P 锁紧螺钉 Set Screw	Q 调节螺栓 Adjust Bolt
MGB 08	39	6.5	5	20	40	34	26	33		30	15		M3	3	M15×1	M3×4	
MGB 12	46	8	6	23.5	48	40	32	40		35	20		M4	3	M20×1	M4×6	
MGB 16	55	8.5	8	27.7	58	50	39	48		45	25		M4	3	M25×1.5	M5×6	
MGB 20	47	7.5	5.7	25	90	78	62	82	54	48	32	30	M5	4	M32×1.5	M5×6	M4×8
MGB 30	60	9.5	7	33	113	100	82	106	75	65	45	43	M6	6	M45×1.5	M5×6	M4×10
MGB 50	81	15	8.5	44.8	160	142	122	150	117	95	75	70	M8	6	M75×2	M5×10	M4×14
MGB 70	110	15	12	68.5	220	200	170	205	166	157	110	106	M10	6	M110×2	M5×10	M10×28
MGB 90	157	25	22	88.6	295	265	236	290	213	203	130	124	M12	8	M130×2	M10×20	M16×35
MGB110	195	30	25	105	355	325	287	345	278	266	160	155	M16	6	M160×3	M12×20	M16×45
MGB130	230	35	27	130	400	360	319	390	316	304	190	184	M16	8	M190×3	M16×30	M20×45

型号 Model	S	T	U 螺孔深度Thread ×Depth	W	X	Y Snap Ring	质量 Mass (Kg)	瞬间转动惯量Moment of Inertia (×10 ³ Kgm ²)	飞轮距GD (×10 ³ Kgfm ²)
MGB 08		0.9					0.14	0.0025	0.01
MGB 12		1					0.24	0.0065	0.026
MGB 16		1.2					0.44	0.018	0.072
MGB 20	2	1.8		5	2	32	0.9	0.058	0.23
MGB 30	2	2		6	2.5	45	2.0	0.2	0.79
MGB 50	3	2.7		8	3.5	75	5.9	1.21	4.84
MGB 70	3	3.3				110	17.0	6.3	25.2
MGB 90	5.5	5.4	M8×16			130	37.5	33.8	135
MGB110	7	6	M10×20			160	69.6	91	364
MGB130	7	6.6	M12×24			190	102	47	688

MGB型扭矩保护器 TYPE MGB TORQUE GUARD

◇ 轴-轴连接

shaft-to-shaft connection



◇ MGB型扭矩保护器的尺寸

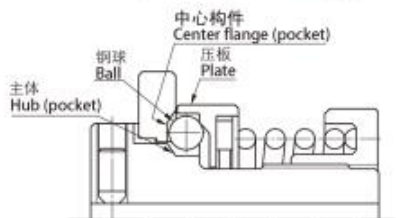
Dimensions of Type MGB Torque Guard

尺寸: mm
Dimensions in mm

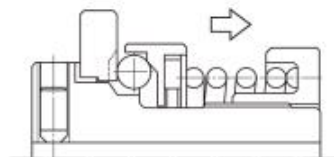
型号 Model	A	B	C	D	E	F	G	H	I	链轮规格 Sprocket size	质量 Mass (Kg)	转动惯量 Moment of Inertia ($\times 10\text{Kg m}^2$)	飞轮矩 G'D ($\times 10\text{Kg fm}^2$)
MGB 20-C	76	25	47	117.4	32.6	7.4	4	63		RS 40-26	2.5	0.313	1.25
MGB 30-C	93	28	60	146.7	40.5	9.7	5	73		RS 50-26	4.8	0.948	3.79
MGB 50-C	126	40	81	200.3	51.0	11.6	5	83		RS 60-30	12.2	4.43	17.7
MGB 70-C	165	45	110	283.2	64.8	15.3	10	107		RS 80-32	32.0	22.43	89.7
MGB 90-C	242	80	157	394.4	78.5	18.2	5	147		RS100-36	71.1	117.32	469.29
MGB110-C	303	100	195	473.4	99.2	21.9	8	157		RS120-36	130.5	314.15	1255.61
MGB130-C	365	120	230	534.2	127.3	29.1	15	197		RS160-30	202.3	632.66	2530.63

MGB08~16

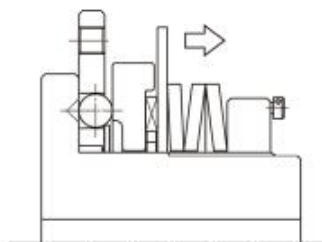
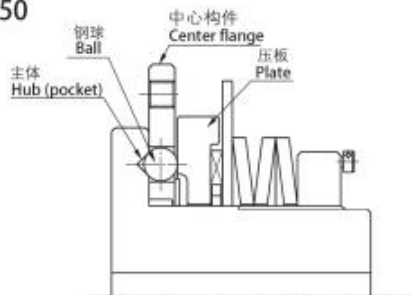
正常运行时 (啮合时)
During normal operation (engagement)



过载时 (脱开)
During overload (trip)



MGB20~50



扭矩传递通过一定数目的钢球来实现。钢球的非对称的排列和凹槽只可允许一个复位位置，这种空间的设计以及钢球和槽之间的压力，实现了无间隙传动。

扭矩传递过程：中心法兰（带槽）-钢球-保持架（带槽）-轴（以及与之相对应的轴）。

Torque transmission is carried out using several balls. The non-symmetric arrangement of the balls and pockets allows only one engagement position. As well, there is no backlash due to non clearance engagement between the retained and pressured balls and pockets.

Torque is transmitted from the center flange (pockets)—balls—hub(pockets)—shaft.(As well as the opposite).

扭矩过载时，钢球弹出中心法兰槽，在压板与中间法兰之间打滑。

When the MGB seriestrips due to overload, the ball pops out of the center flange pocket and it slides between the plate and center flange.

MGB型扭矩保护器 TYPE MGB TORQUE GUARD

MGB 扭矩保护器最低扭矩数值设定在“0”点位置，产品出厂前请确认扭矩指示器被设定在“0”的位置，具体参数设定参照下面各曲线图。
MGB Torque Guard are set at the “0” point (minimum torque value) for delivery. Confirm that the torque indicator is set at “0” when you receive the Torque Guard. (Refer to each size in the graphs below)

对于 MGB70~130，松紧三个六角形的锁紧螺母调整螺栓。(MGB08~50 参照此法调节调整螺母)

For the MGB70~130, loosen the three hexagonal locknuts for adjusting bolts. (The adjusting nuts of MGB08~50 can be turned as is.)

从如下的“螺母旋合-扭矩关系图”，可知调整螺栓或螺母的旋合角度与扭矩数值变化的对应关系。根据预定值将扭矩设定在 60°，然后在机器上安装并进行一次运行检验。均匀地调节以保证扭矩设定在最精准的位置。由于每个产品运行扭转矩不一定总是符合扭矩曲线图中的数值，因此只当做一个粗略的使用指南。

From the “Tightening Amount-Torque Correlation Chart” (below), find the adjusting nut’s (bolt) tightening angle equivalent to the predetermined trip torque. Set at 60° toward the determined tightening value, then install to the machine and conduct a trip test. Gradually tighten and set at optimum trip torque.

Each product’s trip torque does not always correspond with the value listed in the “tightening amount-torque correlation chart”, so use them only as a rough guide.

对于 MGB20~50，松紧一个锁紧螺丝来调整螺帽。对于 MGB70~130，使用一个六角形的螺帽锁住它。(MGB08~16 调整螺帽表面覆尼龙套)

For the MGB20~50, tighten one lock screw for the adjusting nut.

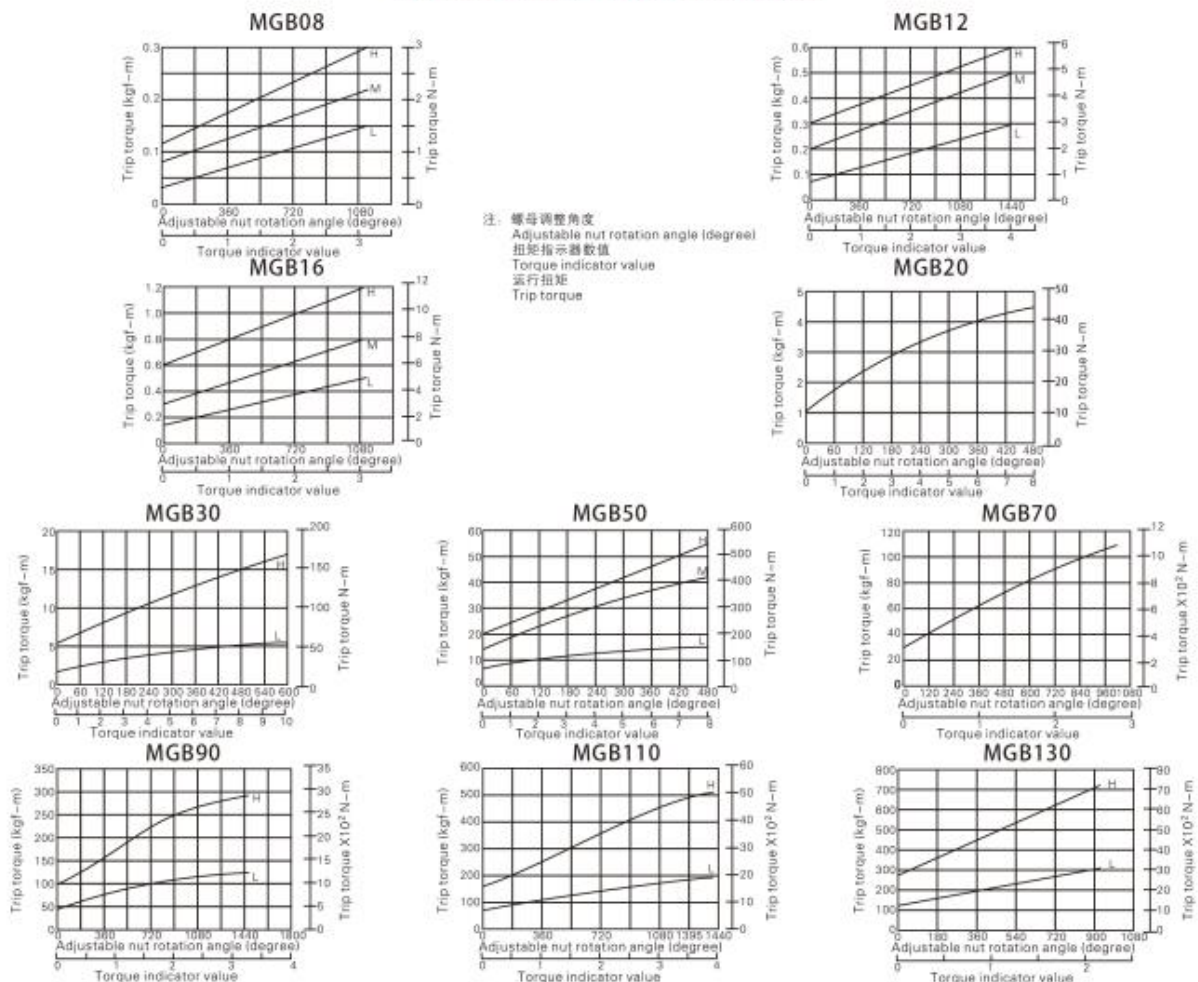
For the MGB70~130, use a hexagonal nut to lock it. (The MGB08~16 adjusting nut is coated with a nylon coating.)

不可将调整螺帽(螺栓)调整到比扭矩指示器最大值还大，这么做将会把它放入一个被锁住的位置。而且碟形弹簧也将失去发生弹性变形的活动余地。(MGB08~16 使用螺旋弹簧)

do not turn the adjusting nut (bolt) more than the torque indicator’s maximum value. Doing so will put it in a locked position. And there will be no leeway for the disk spring to bend. (MGB08~16 uses a coil spring.)

螺母旋合-扭矩关系图

Tightening amount-torque correlation chart



XF、XC 型滚柱、滚珠式扭矩限制器

TYPE XF、XC ROLL BEAD AND ROLL PILLAR TORQUE LIMITER

◇ 规格说明

Specifications

- (M): 扭力调整螺帽内之固定螺丝之孔径及间距。
 (N): 安装螺栓孔深度。
 (S): 预留孔尺寸。
 (U): 最大加工孔径尺寸。
 (X): 当超负载发生时, 侦测压板弹跳距离。
 (Ymax): 扭力调整螺帽锁紧之最大长度。
 (Z): 当弹簧不受力时, 扭力调整螺帽之高度。
 (T): 绊动扭力的调整范围。
 (δ): 最大可容许角度错误之误差。
 (α): 最大可承受连接二个轴心之间隙容许尺寸。
 (ϵ): 最大可容许承受平行(相同)误差。
 (Nmax): 最大可承受转动速度。
 (J): 扭力限制器之惯量力距。
 (W): 重量。

注1. 间隙误差之量是依集合H之尺寸所得

知最大可容许轴力距之尺寸量。

注2. 平行(相同)误差是表示扭力传动钢珠所发生之最大公差量。

注3. 使用于速度超过Nmax值时(RPM), 请洽询本公司。

- M: the diameter and pitch of the set-screw inside the torque adjusting nut.
 N: the depth of mounting taps.
 S: pre-drilled starter hole size.
 U: maximum drilling dimensions(implies that strting hole S can be drilled to maximum dimensions U)
 X: when an overload occurs, the overload detections panel moves X mm.
 Ymax: maximum tightening length
 Z: this demension indicates the height when the spring is free and should be referred to when calculatina tripping torque
 T: adjusting range for tripping torque
 α : maximum allowable clearance error
 ϵ : maximum allowable parallelism error
 Nmax: maximum allowable rotating speed
 J: Inertia moment of torque limiter
 W: weight

Note1. The amount of clearance error a is amount of allowable axial movement based on the assembly dimensions of H.

Note2. Parallelism error e indicates the maximum amount of absorption that occurs at the torque transmitting ball of torque limiter.

Note3. Please consult us for use at speeds that exceed the value of Nmax.

◇ XF 规格表

Table of XF series specifications

Model	T (N.m)	a(N)	b(N)	c (N.m)	Nmax (rpm)	J (Kg.m ²)	W (Kg)
4XF-007S	0.3~0.7	69	392	3.4	2000	0.05 × 10 ⁻³	0.24
4XF-010S	0.4~1.0						
4XF-030S	1.0~3.0						
4XF-045S	1.5~4.5						
5XF-030S	0.8~0.3	108	569	6.9	1600	0.24 × 10 ⁻³	0.50
5XF-060S	1.5~6.0						
5XF-100S	2.0~10.0						
5XF-180S	4.0~18.0						
6XF-07S	2~7	3822	7938	118	800	1.3 × 10 ⁻³	1.5
6XF-1S	3~10						
6XF-3S	10~30						
6XF-5S	15~50						
7XF-7L	22~70	7154	10780	196	600	4.8 × 10 ⁻³	3.4
7XF-12L	40~120						
7XF-25H	80~250						
7XF-40H	120~400						
8XF-12L	50~120	10290	14700	372	400	0.015	6.2
8XF-20L	70~200						
8XF-40H	120~400						
8XF-60H	200~600						
11XF-25L	80~250	14700	22050	666	300	0.035	11.4
11XF-35L	120~350						
11XF-85H	220~850						
11XF-120H	350~1200						
14XF-30L	110~300	23520	28420	1019	250	0.085	20
14XF-45L	150~450						
14XF-120H	420~1200						
14XF-180H	600~1800						
18XF-130L	400~1300	30184	35280	1441	180	0.3	42
18XF-180L	800~1800						
18XF-300H	1500~3000						
18XF-500H	3000~5000						

◇ XC 规格表

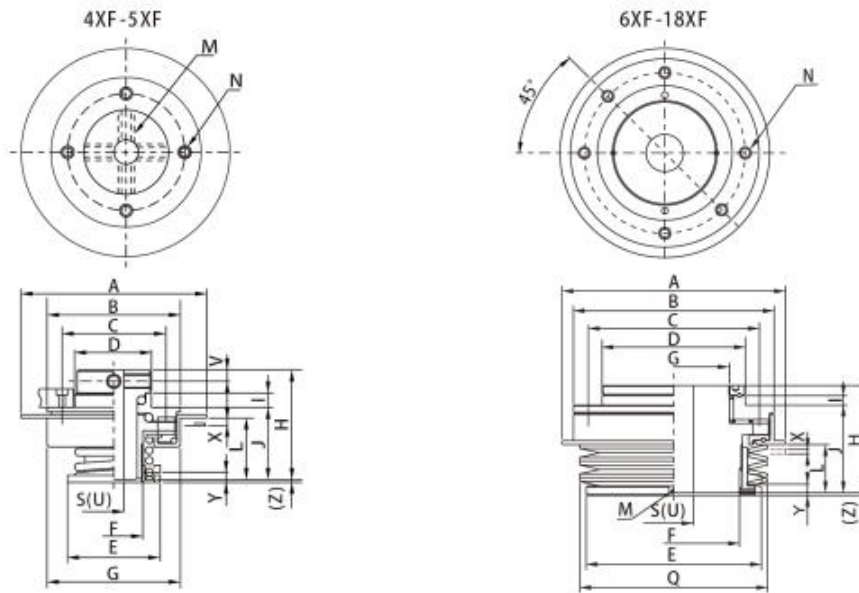
Table of XC series specifications

Model	T (N.m)	δ (deg)	α (mm)	ϵ (mm)	Nmax (rpm)	J (Kg.m ²)	W (Kg)
4XC-007S	0.3~0.7	1	±1.0	0.05	2000	0.09 × 10 ⁻³	0.25
4XC-010S	0.4~1.0						
4XC-030S	1.0~3.0						
4XC-045S	1.5~4.5						
5XC-030S	0.8~0.3	1	±1.0	0.05	1600	0.4 × 10 ⁻³	0.68
5XC-060S	1.5~6.0						
5XC-100S	2.0~10.0						
5XC-180S	4.0~18.0						
6XC-06S	2~6	1.5	±1.5	0.05	1000	1.7 × 10 ⁻³	1.5
6XC-1S	3~10						
6XC-3S	8~30						
6XC-5S	15~50						
7XC-6L	20~60	1.2	±1.8	0.1	700	5.8 × 10 ⁻³	3.2
7XC-10L	30~100						
7XC-20H	60~200						
7XC-35H	100~350						
8XC-12L	40~120	1.2	±2	0.1	500	0.014	5.3
8XC-15L	60~150						
8XC-35H	100~350						
8XC-45H	120~450						
11XC-20L	70~120	1	±2.5	0.1	400	0.035	10.8
11XC-35L	100~350						
11XC-65H	200~650						
11XC-100H	300~1000						
14XC-30L	100~300	0.7	±3.5	0.1	300	0.093	20
14XC-45L	150~450						
14XC-130H	500~1300						
14XC-200H	800~2000						
18XC-160L	700~1600	0.5	±3.5	0.1	200	0.4	45
18XC-250L	1000~2500						
18XC-380H	1600~3800						
18XC-500H	3000~5000						

XF型滚柱式扭矩 limiter

TYPE XF ROLL PILLAR TORQUE LIMITER

◇ 规格说明 Specifications



◇ XF尺寸表

Table of XF series dimensions

单位: (mm)
(Unit: mm)

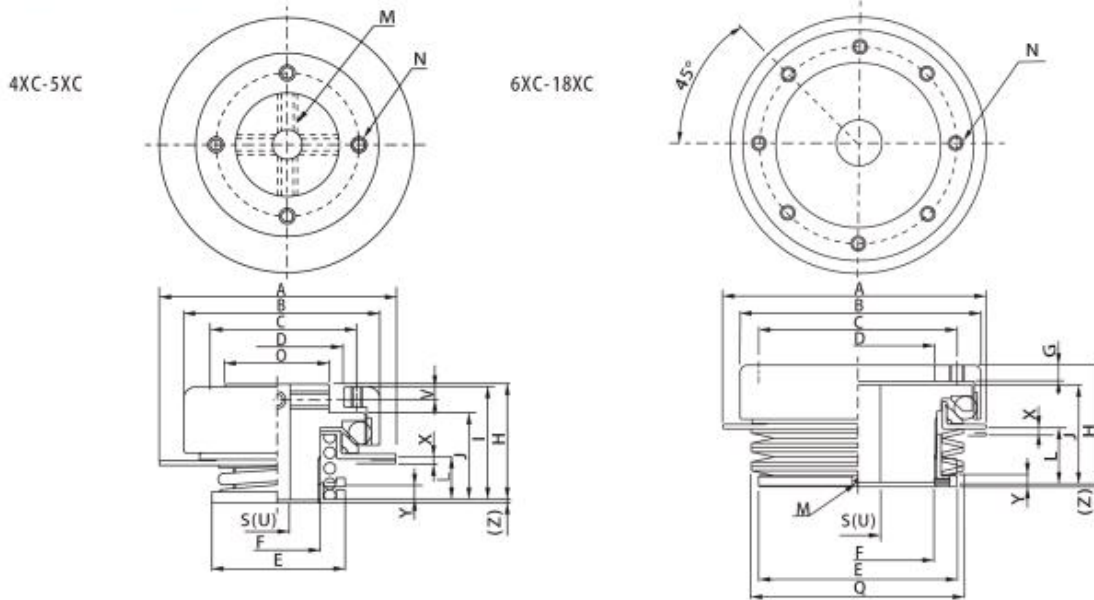
Model	A	B	C	D	E	F	G	H	I	J	L	M	N	Q	S	U	V	X	Y _{max}	(Z)
4XF-007S	64	46	PCD 36	26h7	32	M20 P1	46	38	4.7	25	21.2	4-M5 P0.8	4-M4 P0.7 DP4.7	—	7	12	4	1.1	2.2	0.7
4XF-010S											21.4							1.3	2.4	0.5
4XF-030S											21.2							1.1	2.5	0.7
4XF-045S											21.4							1.3	3.3	0.5
5XF-030S	82	63	PCD 50	35h7	45	M30 P1.5	63	50	4.7	34	29.0	4-M6 P0.8	4-M4 P0.7 DP5.7	—	9	20	6	0.9	5.6	1.3
5XF-060S											29.5							1.4	5.0	0.8
5XF-100S											29.0							0.9	7.5	1.3
5XF-180S											29.5							1.4	6.4	0.8
6XF-07S	88	88	PCD 75	60h7	58	M40 P1.5	M40 P1.5	60	5	48	25.0	2-M5 P0.8	6-M6 P1 DP7	—	12.5	30	—	1.3	9.0	3.9
6XF-1S											25.5							2.0	7.6	3.2
6XF-3S											25.0							1.3	9.5	3.9
6XF-5S											25.5							2.0	9.8	3.2
7XF-7L	128	113	PCD 95	75h7	88	M55 P2	M52 P1.5	70	6.6	55	30.0	2-M5 P0.8	6-M6 P1.25 DP9	102	16.5	40	—	1.6	5.3	1.7
7XF-12L											31.0							2.5	4.9	0.9
7XF-25H											30.0							1.6	6.2	1.4
7XF-40H											31.0							2.5	6.2	0.6
8XF-12L	164	138	PCD 120	100h7	108	M75 P2	M72 P1.5	82	7.6	65	37.5	2-M5 P0.8	6-M8 P1.25 DP11	130	16.5	52	—	1.6	6.2	0
8XF-20L											38.5							2.5	6.2	-0.8
8XF-40H											37.5							1.6	7.5	-0.7
8XF-60H											38.5							2.5	7.0	-1.5
11XF-25L	198	170	PCD 148	120h7	134	M96 P2	M90 P1.5	95	9.6	75	42.0	2-M5 P0.8	6-M10 P1.5 DP13	160	27	68	—	2.0	7.3	2.0
11XF-35L											43.0							3.0	5.0	1.0
11XF-85H											42.0							2.0	7.7	-0.5
11XF-120H											43.0							3.0	7.4	-1.5
14XF-30L	236	206	PCD 180	150h7	158	M120 P2	M120 P1.5	105	10.4	85	43.5	2-M6 P1	6-M12 P1.75 DP15	186	27	90	—	2.2	6.4	4.2
14XF-45L											44.5							3.5	5.5	2.9
14XF-120H											43.5							2.2	9.0	3.2
14XF-180H											44.5							3.5	8.6	1.9
18XF-130L	280	252	PCD 215	180h7	220	M165 P3	M140 P2	135	12	110	59.0	2-M6 P1	6-M16 P2 DP20	236	50	110	—	3.3	10.7	5.0
18XF-180L											60.5							5.0	7.7	3.3
18XF-300H											59.0							3.3	8.8	5.2
18XF-500H											60.5							5.0	7.7	3.5

XC型钢球式扭力限制器

TYPE XC ROLL BEAD TORQUE LIMITER

◇ 轴-法兰连接

Shaft-to-ring connection



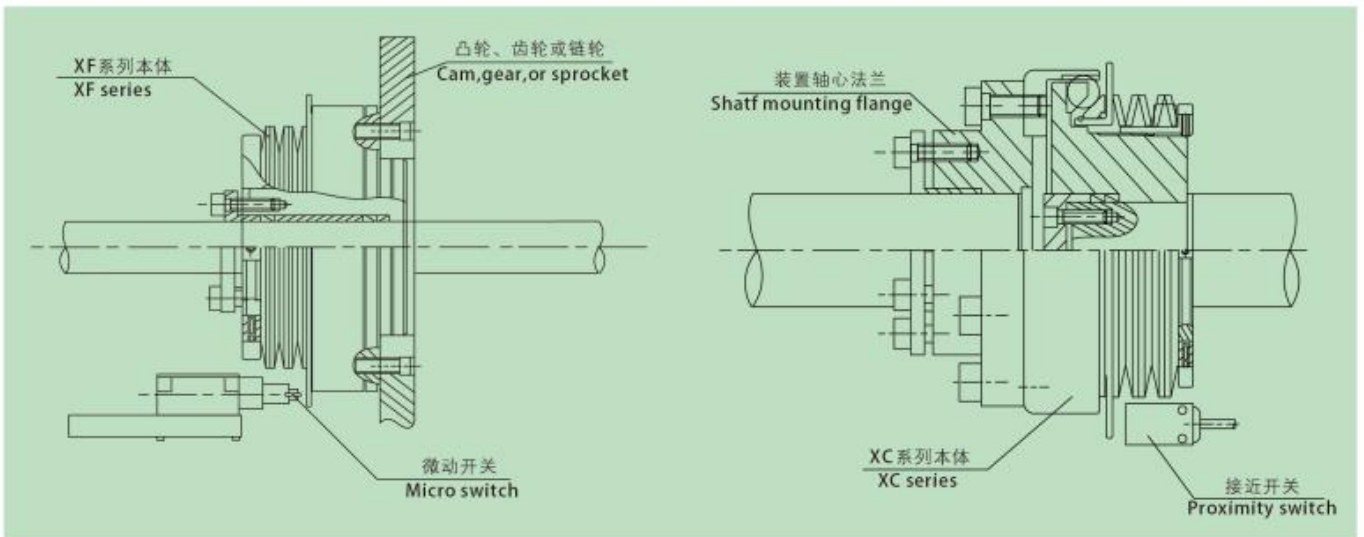
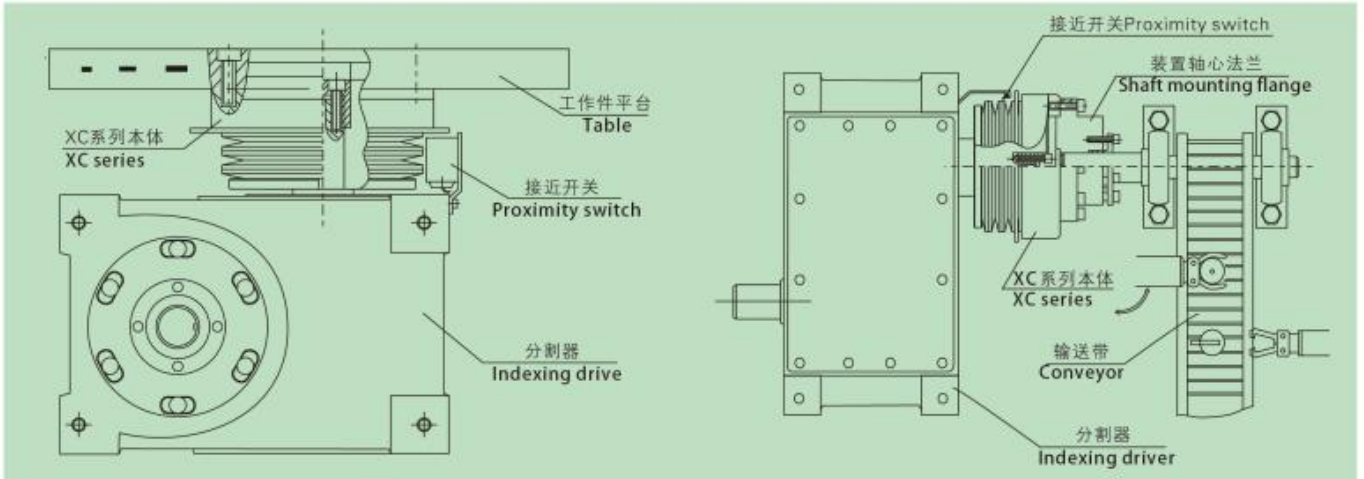
◇ XC 尺寸表 Table of XC series dimensions

尺寸: (mm)
Dimensions in mm

型号 Model	A	B	C	D	E	F	G	H	I	J	L	M	N	Q	S	U	O	V	X	Ymax	(Z)
4XC-007S	64	52	PCD 40	34 H7	32	M20 P1	5	28	27	20.5	7.6	4-M5 P0.8	4-M5 P0.7 DP.5	-	7	15	27	4.5	0.7	2.7	0.6
4XC-010S											8.0								1.1	3.0	0.2
4XC-030S											7.6								0.7	3.3	0.6
4XC-045S											8.0								1.1	4.0	0.2
5XC-030S	82	71	PCD 55	46 H7	45	M30 P1.5	7	40	39	30	13.1	4-M6 P0.8	4-M4 P0.7 DP.7	-	9	22	36	5.5	0.6	5.4	0.3
5XC-060S											13.7								1.2	6.5	-0.3
5XC-100S											13.1								0.6	7.6	0.3
5XC-180S											13.7								1.2	8.0	-0.3
6XC-06S	93	95	PCD 70	50 H7	58	M40 P1.5	9	52	-	40	18.5	2-M5 P0.8	8-M6 P1 DP.9	-	12.5	30	-	-	1.4	8.7	3.2
6XC-1S											19.0								2.2	5.7	2.8
6XC-3S											18.5								1.4	10.0	3.2
6XC-5S											19.0								2.2	9.6	2.8
7XC-6L	128	116	PCD 90	70 H7	88	M55 P2	10	65	-	52	30.0	2-M5 P0.8	8-M8 P1.25 DP.10	102	16.5	40	-	-	1.6	6.4	2.0
7XC-10L											31.0								2.6	7.1	0.9
7XC-20H											30.0								1.6	6.4	1.7
7XC-35H											31.0								2.6	6.2	0.6
8XC-12L	164	142	PCD 110	90 H7	108	M75 P2	12	75	-	60	35.0	2-M5 P0.8	8-M8 P1.25 DP.12	130	16.5	52	-	-	1.7	10.8	2.5
8XC-15L											36.0								2.7	5.9	1.6
8XC-35H											35.0								1.7	6.9	1.8
8XC-45H											36.0								2.7	5.7	0.9
11XC-20L	198	176	PCD 130	110 H7	134	M96 P2	16	90	-	70	41.5	2-M5 P0.8	8-M10 P1.5 DP.16	160	27	68	-	-	2.0	10.8	2.4
11XC-35L											43.0								3.2	11.2	1.0
11XC-65H											41.5								2.0	7.4	-0.1
11XC-100L											43.0								3.2	6.7	-1.5
14XC-30L	236	208	PCD 160	130 H7	158	M120 P2	16	100	-	80	44.0	2-M6 P1	8-M12 P1.75 DP.16	186	27	90	-	-	2.1	7.5	4.5
14XC-45L											44.0								3.7	6.0	4.5
14XC-130H											44.0								2.1	10.0	3.5
14XC-200H											44.0								3.7	10.2	3.5
18XC-160L	285	285	PCD 220	170 H7	220	M170 P3	18	130	-	108	59.0	2-M6 P1	8-M16 P2 DP.18	236	50	130	-	-	3.7	12.5	4.8
18XC-250L											59.0								6.2	8.3	5.0
18XC-380H											59.0								3.7	8.0	5.0
18XC-500H											59.0								6.2	6.5	5.2

XF、XC型钢球式扭力限制器 TYPE XF、XC BALL TORQUE LIMITER

◇ 实体应用范例 Actual applications



◇ 订货描述示例: Order form:

14XC	130H	$\phi 27$	$\phi 27$ 键槽 $\phi 27$ key way
规格与型号 Size/type of joint	扭矩范围 Torque Range (Nm)	d ₂ 成品孔径 Finish bore (H7)	成品孔径 (H7) 键槽按GB/T3852-1997 (JS9) 标准 Finish bore (H7) to GB/T3852-1997 (JS9)

力矩限制器

THE TORQUE LIMITER

提供过载保护

● 打滑力矩可达8200Nm

● 有各种结构型式，适用于不同的场合

● 有步进式、同步式和失效保护式

● 降低力矩峰值

● 即使长期使用，多次打滑，设定力矩的重复精度仍然很高

● 过载时切断动力源

● 自动离合

● 安装和调节力矩都很容易

● 免维护

● 对油和油脂不敏感

● 选用高性能的材料，延长了使用寿命

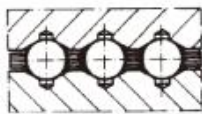
● 轴与轴套连结无间隙



(3) 过载时，滚珠或滚柱离开了凹坑，使主动端部件和从动端部件之间产生打滑，从而避免了因过载而损坏传动系统。滚珠或滚柱在凹坑内作“S”形的轴向移动，使安装的限位开关或接近开关发出信号。这个信号可用于控制或切断动力源。我们建议用一个绕过限位开关和传感器的旁路电路来快速重新启动动力设备。

正常运行是没有信号

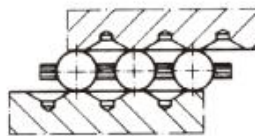
过载是发出信号



啮合



限位开关



打滑



限位开关

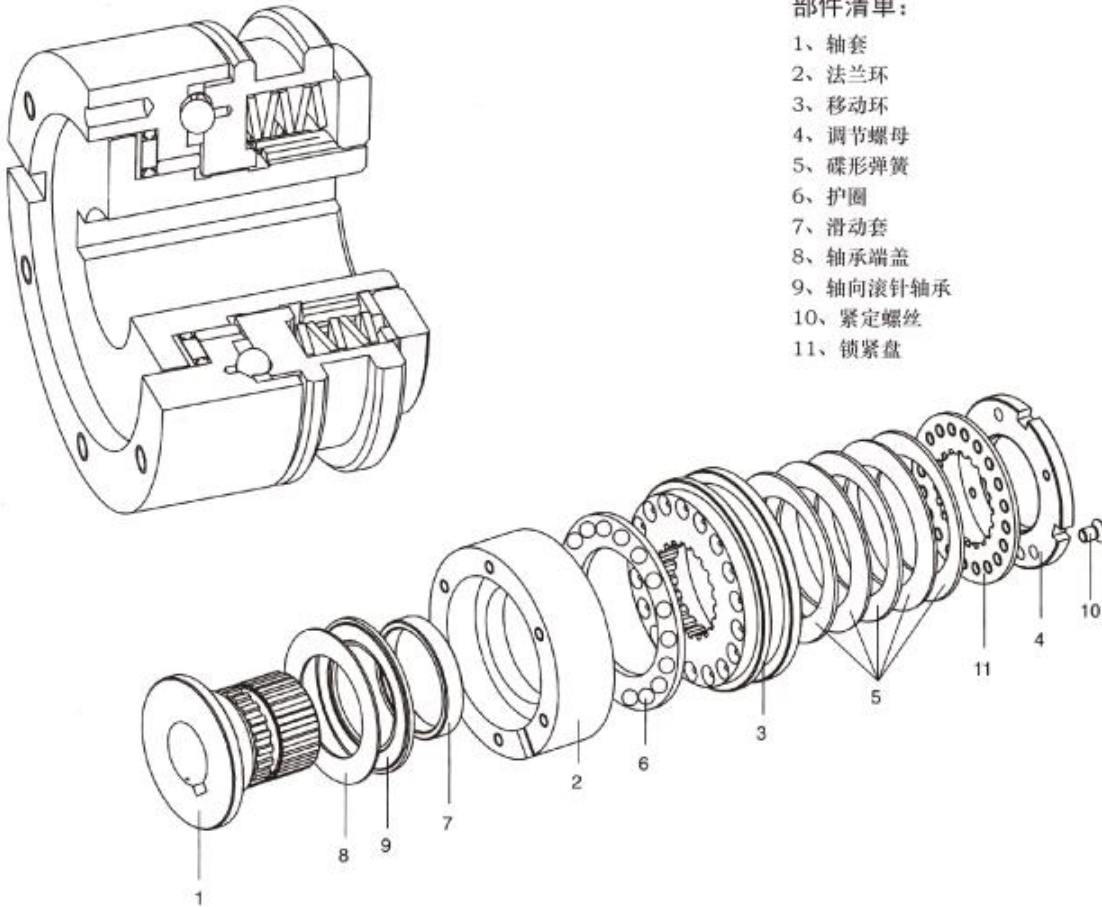
AQ8.0力矩限制器

TYPE AQ8.0 OF TORQUE LIMITER

模块化设计使用于不同场合

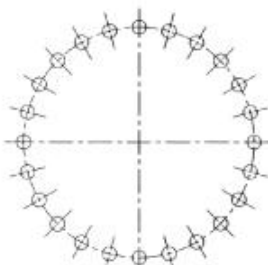
部件清单:

- 1、轴套
- 2、法兰环
- 3、移动环
- 4、调节螺母
- 5、碟形弹簧
- 6、护圈
- 7、滑动套
- 8、轴承端盖
- 9、轴向滚针轴承
- 10、紧定螺丝
- 11、锁紧盘



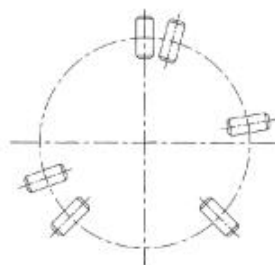
三种不同复位形式力矩限制器的工作原理

步进式BJ



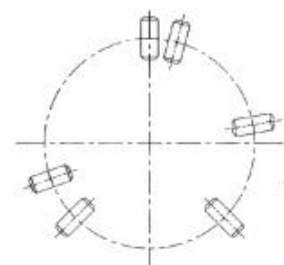
过载消除后，钢球转过一个角度后在下个凹槽中自动复位

同步式TB



过载消除后，滚子在旋转360°后自动复位，主动端部件和从动端部件的相对位置保持不变。（也可根据要求改成其他角度如180°）

失效保护式SBH



失效保护式是一种纯粹的扭矩测量功能，没有任何步进动作。
当过载发生时，限位开关发出一个信号，但主动端部件和从动段部件不打滑不脱离。

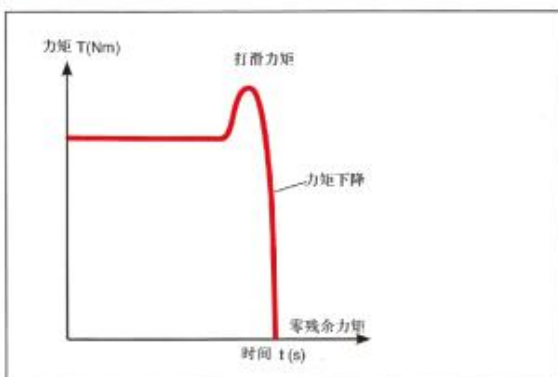
AQ8.0力矩限制器

TYPE AQ8.0 OF TORQUE LIMITER

打滑空转力矩限制器（过载打滑后零残余力矩）

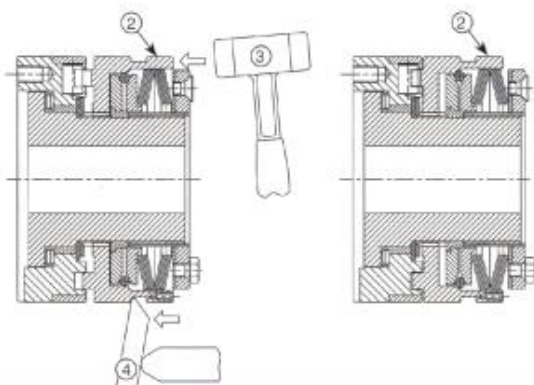


- 打滑力矩最大可达1800Nm
- 允许最大转速为5000rpm（详见下表）
- 驱动端与从动端过载后可保持完全脱开状态
- 打滑后重新啮合需手工操作
- 打滑时可用限位开关或电子传感器发出信号
- 带弹性联轴器AQ8.0可用于轴对轴连接
- 安装与调试简便



打滑空转力矩限制器的工作原理：

- 过载达到所设定的打滑力矩时，立即发生打滑
- 驱动端与从动端可保持完全脱开状态
- 重新啮合可用手工或机械来操作



重新啮合操作说明：

打滑空转力矩限制器打滑后重新啮合只需在移动环（2）上施加一个轴向力即可。使用下列不同的方式都可完成复位操作：

- 用橡皮榔头（3）直接轴向敲击移动环（见左图）
- 使用一个杠杆（4）
- 使用气动或液压啮合装置（自动啮合）

力矩			
规格	力矩 (Nm)		
	蝶形弹簧排列		
	T1	T2	T3
1	12-25	25-50	50-100
2	25-50	50-100	100-200
3	50-100	100-200	200-450
4	100-200	200-400	400-800
5	170-450	350-900	600-1800

最高速度	
最高速度 (min^{-1})	
规格	n_{max}
1	5000
2	4000
3	3500
4	3000
5	2300

标准尺寸参见下一页的BJ、TB和SBH形式

订货描述示例：

MSK-S1	2	BJ	MT	T2	Ø20	40Nm
力矩限制器型式	规格	复位形式	结构	蝶形弹簧排列	孔径	设定力矩

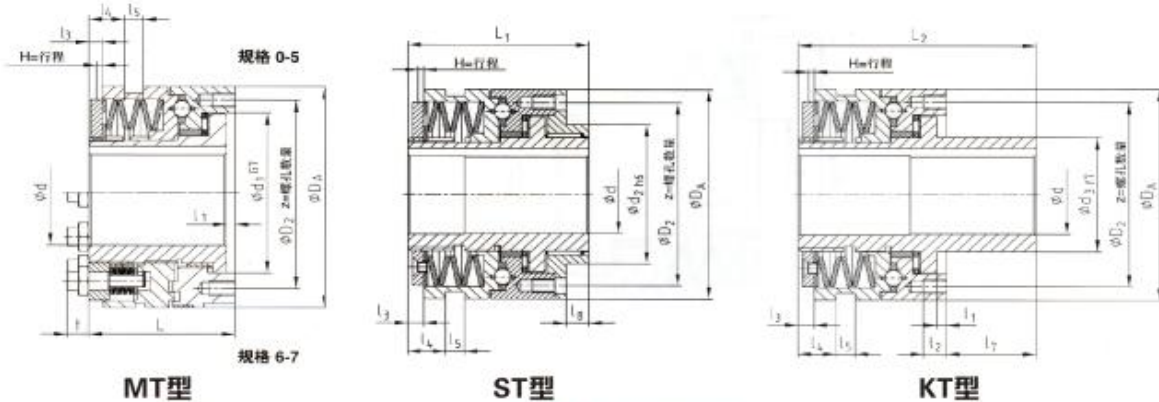
AQ8.0力矩限制器

TYPE AQ8.0 OF TORQUE LIMITER

MT型, ST型和KT型



- 标准的AQ8.0力矩限制器打滑力矩可达8,200Nm
- 非标设计可达2万N.M
- 可直接安装客户的传动部件
- 有三种复位型式, 步进式, 同步式和失效保护式
- 可安装在设备上进行力矩设定
- 成品孔径公差按照ISO标准为H7, 键槽宽公差按照标准DIN 6885/1为JS9
- 表面经过磷化处理



技术参数-力矩, 重量									
规格	力矩 (Nm)								最大孔径时的重量 Kg
	蝶形弹簧BJ型排列				蝶形弹簧TB型和SBH型排列				
	T1	T2	T3	T4	T1	T2	T3	T4	
0	2.5-5	5-20	-	20-40	5-10	10-40	-	-	0.41
1	6-12	12-25	25-55	55-100	12-25	25-50	50-100	-	1.30
2	12-25	25-50	50-120	120-200	25-50	50-100	100-200	-	2.27
3	25-50	50-100	100-250	200-450	50-100	100-200	200-450	-	3.88
4	50-100	100-200	200-500	500-1000	100-200	200-400	400-800	800-2000	8.34
5	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1200-3400	13.51
6	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	2900-5800	21
7	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	3000-8200	37

技术参数-尺寸																						
规格	尺寸 (mm)																					
	孔径d		d ₁	D ₂	D _A	d ₂	d ₃	l ₁	l ₂	l ₃	l ₄	l ₅	l ₇	l ₈	L	L ₁	L ₂	z	H=行程			FR
	预制孔	最大																	DK	SR	SGR	
0	7	20	41.0	48	55	38	28	4.0	6.5	3.0	7.5	9	27.5	8	38.5	51.0	66.0	6xM5	1.4	1.2	0.6	1.6
1	10	25	60.0	70	82	50	38	4.0	8.0	6.0	11.5	9	33.0	10	52.0	70.0	85.0	6xM5	2.3	1.8	0.8	2.3
2	14	35	78.0	89	100	60	52	5.0	10.0	5.0	12.0	9	39.0	12	61.0	78.0	100.0	6xM6	2.4	2.0	1.1	3.5
3	18	45	90.5	105	120	80	65	5.0	12.0	8.5	21.0	10	47.0	12	78.0	96.0	125.0	6xM8	2.7	2.2	1.2	3.8
4	24	55	105.0	155	146	100	78	6.5	15.0	11.0	27.0	9	52.5	16	100.0	124.5	152.5	6xM10 ¹⁾	3.7	2.5	1.2	4.5
5	30	65	120.0	125	176	120	90	6.5	17.0	12.0	33.0	9	57.5	18	113.5	140.0	171.0	6xM12 ¹⁾	4.6	3.0	1.6	-
6 ²⁾	40	80	136.0	160	200	130	108	7.0	20.0	14.0	39.0	9	64.0	20	119.0	150.0	183.0	6xM12 ¹⁾	5.0	3.5	2.5	-
7 ²⁾	50	100	168.0	200	240	160	135	8.0	25.0	15.0	46.0	9	72.0	25	141.0	175.0	213.0	6xM16 ¹⁾	5.5	4.0	2.7	-

1) TB和SBH型锁紧力矩根据12.9级螺丝标准
 2) 规格6: 尺寸t=15mm, 规格7: 尺寸t=21mm

订货描述示例:	AQ8.0	2	BJ	FT	T2	020	40Nm
	力矩限制器型式	规格	复位形式	结构	蝶形弹簧排列	孔径	设定力矩

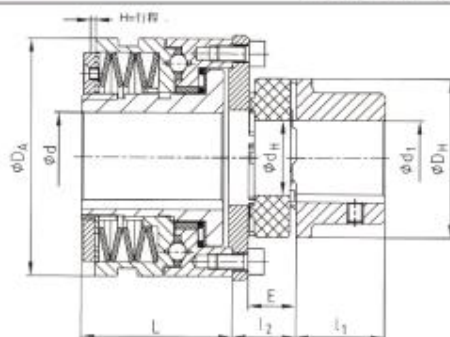
力矩限制器

THE TORQUE LIMITER

带弹性联轴器AQ8.0



- 轴-轴连接的AQ8.0力矩限制器
- 轴向插入，安装方便
- 能补偿安装偏差
- 有三种复位型式，步进式，同步式和失效保护式
- 可装在设备上上进行力矩设定
- 多种弹性体可供选择
- 成品孔径公差按照ISO标准为H7，键槽宽公差按照标准DIN 6885/1为JS9



技术参数-扭矩											
AQ8.0 规格	联轴器 规格	DK型				MSK-SI 规格	联轴器 规格	AQ8.0+联轴器(型)			
		力矩(Nm)						力矩(Nm)			
		MSK-SI蝶形弹簧排列						MSK-SI蝶形弹簧排列			
T1	T2	T3	T4	T1	T2	T3	T4				
0	19	2.5-5	5-20	-	20-40	0	28	5-10	10-40	-	-
1	24	6-12	12-25	25-55	55-100	1	38	12-25	25-50	50-100	-
2	28	12-25	25-50	50-120	120-200	2	48	25-50	50-100	100-200	-
3	38	25-50	50-100	100-250	200-450	3	55	50-100	100-200	200-450	-
4	48	50-100	100-200	200-500	500-1000	4	75	100-200	200-400	400-800	800-2000
5	55	85-250	230-600	300-1000	600-2000	5	90	170-450	350-900	600-1800	1200-3400
6	100	180-480	360-960	720-1950	1600-3300	6	100	300-750	600-1500	1200-3000	2900-5800
7	110	250-520	500-1050	1000-2100	2000-3600	7	110	550-1100	1100-2200	2200-4400	3000-8200

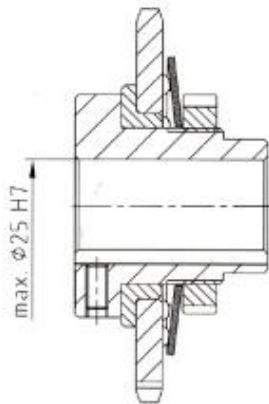
技术参数-尺寸												
AQ8.0 规格	联轴器 规格	尺寸(mm)								H=行程 型式		
		最大孔径(mm)		D_A	D_H	d_H	E	l_1	l_2	L	BJ	ST
		d	d_1									
0	19	20	24	55	40	18	16	25	22	38.5	1.4	1.2
	38											
1	24	25	28	82	55	27	18	30	24	52	2.3	1.8
	38		45									
2	28	35	38	100	65	30	20	35	28	61	2.4	2.0
	48		60									
3	38	45	45	120	80	38	24	45	32	78	2.7	2.2
	55		70									
4	48	55	60	146	105	51	28	56	38	100	3.7	2.5
	75		95									
5	55	65	70	176	120	60	30	65	44	113.5	4.6	3.0
	90		110									
6	100	80	115	200	225	113	50	110	72	119	5.0	3.5
7	110	100	125	240	225	127	55	120	78	141	5.5	4.0

订货描述示例:	AQ8.0	28	BJ	Ø25	联轴器	AQ8.0	40Nm
	力矩限制器型式	规格	复位形式	蝶形弹簧排列	孔径	孔径	设定力矩

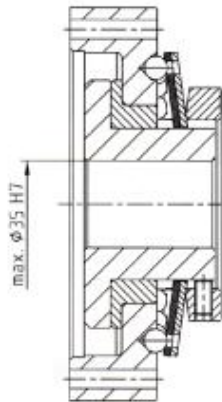
力矩限制器 THE TORQUE LIMITER 经济型设计



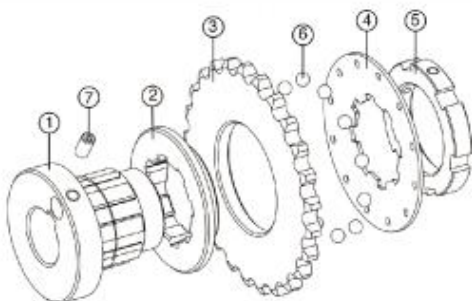
- 成本低，性能高
- 适合大批量应用，例如用于输送带传动
- 优化的加工工艺，如粉末冶金烧结工艺
- 如需详细资料请垂询



- MSO和链轮一体化特殊设计
- 设定打滑力矩范围：一片碟形弹簧最大到80Nm，二片碟形弹簧最大到160Nm
- 可适配各种链轮
- 最适合单一传动，如用于输送带传动



- MSO和传动法兰一体化特殊设计
- 设定打滑力矩范围：一片碟形弹簧最大到200Nm，二片碟形弹簧最大到400Nm
- 传动法兰的尺寸可根据所连接部件的结构进行设计



部件：

- 1、轴套上有外花键以安装碟形弹簧（传动扭矩）
- 2、滑动轴套承受轴向力和径向力
- 3、链轮端面上有凹孔放置钢珠
- 4、碟形弹簧上有凹孔，钢珠嵌入凹孔中
- 5、调节螺母外圆上开槽，以方便调定打滑力矩
- 6、用于传递扭矩和啮合钢球

力矩限制器 THE TORQUE LIMITER

安装与运行

MSK-F 标准型



MSK-RS 带链轮



- 
- 打滑力矩可达6800Nm (标准型)
 - 可带链轮一起供货
 - 不含石棉并防锈的干式运行摩擦片
☉ (可按需要防爆设计)
 - 耐磨性能良好的摩擦片, 使用寿命长
 - 高性能的滑动套, 无需润滑
 - 可安装在设备上在调节
 - 螺母可安全地锁定在12个不同的位置
 - 安装和调节打滑力矩很方便
 - 钢制部件, 安全系数高
 - 表面镀锌镀铬, 可放腐蚀
 - 如要求防锈和防酸设计请垂询
 - 使用高性能的碟形弹簧和摩擦片, 可设置较大的打滑力矩

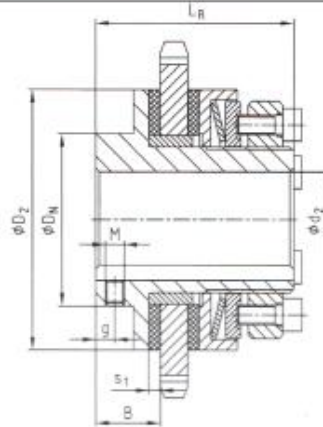
MSK 标准模块化设计为您的传动提供最佳方案。

可和性能良好的额MSK联轴器以及客户选定的传动部件（如链轮）装配一体，为设备提供最佳的过载保护！
通过各种不同排列方式的碟形弹簧和高性能的摩擦片组合，可实现在很小的空间传递较大的力矩。

MSK-RS 型力矩限制器 MSK-RS TYPE TORQUE LIMITER MSK-RS 带链轮



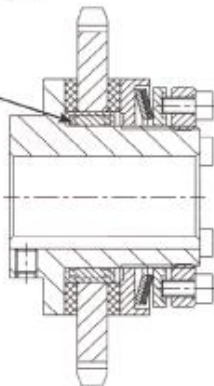
- MSK-RS带链轮
- 标准链轮有库存（见下表）
- 非标准链轮请垂询
- 出厂前预设打滑力矩
- 如需不锈钢力矩限制器请垂询
- 成品孔径公差按照ISO标准为H7，键槽宽公差按照标准DIN 6885/为JS9



技术参数														
规格	最大转速 (min ⁻¹)	力矩 (Nm)			尺寸 (mm)									
		1MF	2MF	3MF	孔d ₂		D ₂	D _N	B	S ₁	L _R	定位螺丝		客户自选
					预制孔	最大						g	M	
01	6600	5-35	10-70	-	-	22	58	40	16	3	45	4	M5	
02	5600	20-75	40-150	130-200	-	25	68	45	17	3	52	6	M5	
03	4300	25-140	50-280	250-400	-	35	88	58	19	3	57	6	M6	
04	3300	50-300	100-600	550-800	-	45	115	75	21	4	68	6	M6	

1) 仅用于安装空间有限的场合

可根据要求用滚针
轴承代替滑动套



- 可用滚针轴承代替滑动套
- 链轮可承受很高的径向载荷
- 可承受很高的力矩，使用寿命长

摩擦式扭力限制器

TYPE FRICTION OF TORQUE LIMITER

◇ 扭力设定

Setting Torque

扭力限制器的设定只需扭紧或放松调整螺栓/或调整螺帽便可，CTL200至CTL350型各具一调整螺帽，CTL500至CTL700型则各具调整螺栓供扭力调整用。

Torque setting of the Torque Limiter is achieved by tightening or loosening the adjustment bolts and/or the adjustment nuts. For torque adjustment of CTL200toCTL350,an adjustment nut is provided, an for CTL500toCTL700 adjustment bolts are provided .

扭力限制器在安装至轴上后，即可进行扭力调整，其步骤如下：

The torque setting can be made after mounting the Torque Limiter on the shaft .

CTL200至350型 For CTL 200 to CTL 350 :

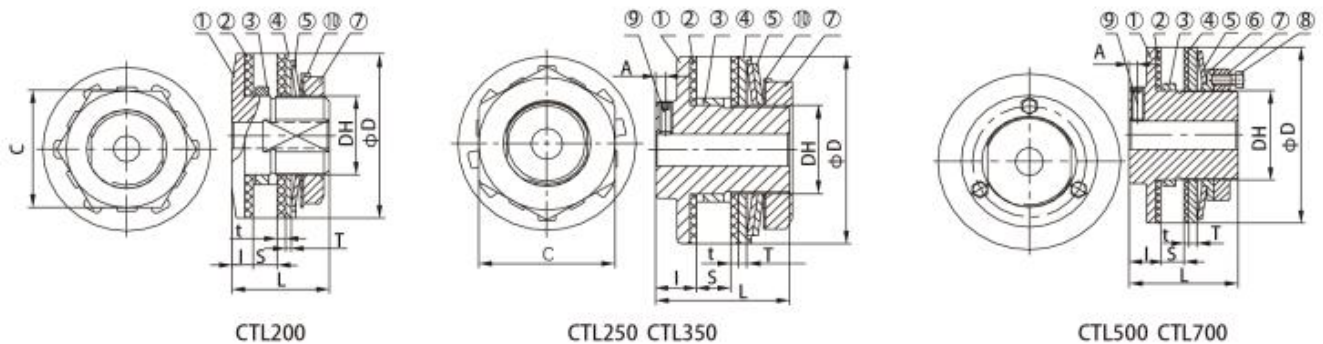
首先，用手以全力转动调整螺帽使碟形弹簧固定至一压板。然后，暂时以一扳钳把螺帽拧紧至60度。

First, rotate the adjustment nut tightly by hand so that the disc spring fits the plate. Then tentatively tighten the nut by about 60 degrees with a wrench.

CTL500至CTL10、14、20型 for CTL500 TO CTL10、14、20:

首先，转动一螺帽，把碟形弹簧固定至一压板，再将每一调整螺栓拧紧60度。其次，如于正常情况下扭力限制器仍然滑动，则逐渐拧紧螺帽（CTL200-CTL350型）或螺栓（CTL500-CTL700型），一直到扭力限制器不再滑动。注意，各螺栓之松紧度必须均匀，先试行调整数次以求得相关机器之正确扭力设定，下一页为有效旋转角度和预设扭力关系图可参考。为求精密扭力之调整，宜将本扭力限制器在扭矩调整后把螺帽或螺栓旋转45度，于50-60RMP下试运转500回转。

First, rotate the nut for fixing the disc spring to the plate, and then tighten each adjustment bolt by about 60 degrees. Then, if the Torque Limiter slips under normal loading conditions, tighten the nut (for CTL200 to CTL350) or the bolts (for CTL500 or CTL700) gradually until the torque limiter stops slipping. Always tighten (or loosen) the bolts equally .try this adjustment several times to find the proper torque setting for the machine For your guidance , the chart on the next page shows the relation between the effective rotated angle and preset torque. FOR precise torque setting ,run-in of torque limiter is recommended ;for example, 500 revolutions at 50 to 60r/min with a rotated angle of 45 degrees of adjustment nuts or the bolts.



◇ 零件名称:

Name of parts:

- | | | | |
|------|-----------------|-------|----------------|
| ①主体 | Hub | ④压板 | Pressure Plate |
| ②摩擦片 | Friction facing | ⑤碟形弹簧 | Disc Spring |
| ③衬环 | Bushing | ⑥导向压板 | Pilot Plate |

- | | |
|-------|-----------------|
| ⑦调节螺母 | Adjustment Nut |
| ⑧调节螺栓 | Adjustment Bolt |
| ⑨锁紧螺钉 | Set Screw |
| ⑩止退垫片 | Lock Washer |

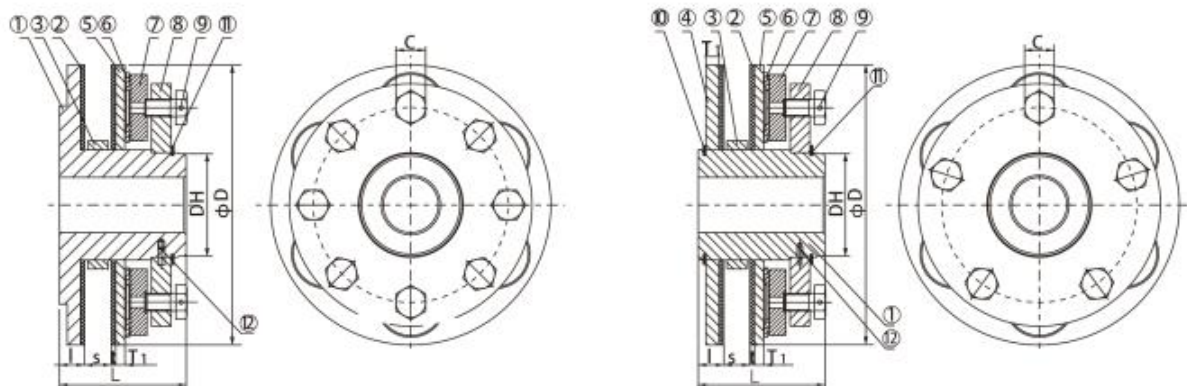
◇ CTL 200~CTL 700的尺寸表 Dimensions and Capacity for CTL200~CTL 700

尺寸: (mm)
Dimensions in mm

型号 Model	扭矩范围 Torque Range (Nm)	最高转速 Max. speed unbalanced rpm	成品内孔 Pilot Bore	最大孔径 Max. Bore	衬环长度 Max. Bushing Length	衬环外径 O.D. of Bushing	中心元件配合孔径 Bore for center Member	D	DH	L	I	T	t	S (max.)	A	C	质量 Mass (kg)	调节螺栓 Adjust. Bolt
CTL200-1	2.9~9.8	6600	8	14	3.8 6.0	30 -0.020 -0.041	30 +0.033 0	50	M24	29	6.5	1.6	2.5	7	-	36	0.26	-
CTL200-2	6.9~20																	
CTL250-1	6.9~27	6600	10	22	4.5 8.0	41 -0.025 -0.050	41 +0.039 0	65	M35	48	16	4.0	3.2	9	4	50	0.74	-
CTL250-2	14~54																	
CTL350-1	20~74	5600	17	25	6.0 14.5	49 -0.025 -0.050	49 +0.039 0	89	M42	62	19	4.0	3.2	16	5	65	2.48	-
CTL350-2	34~149																	
CTL500-1	47~210	2700	20	42	6.0 14.5	74 -0.030 -0.060	74 +0.046 0	127	M65	76	22	6.0	3.2	16	6	-	3.85	M8xP1.0 3pcs
CTL500-2	88~420																	
CTL700-1	116~569	2100	30	64	8.0 22.0	105 -0.036 -0.071	105 +0.054 0	178	M95	98	24	7.0	3.2	29	6.5	-	9.44	M10xP1.0 3pcs
CTL700-2	223~1080																	

摩擦式扭力限制器

FRICTION-TYPE OF TORQUE LIMITER



◇ 零件名称:

CTL10

CTL14 CTL20

Name of parts:

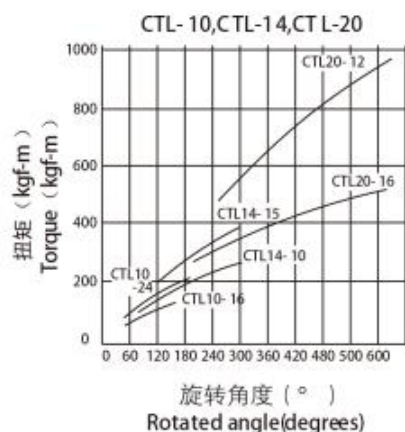
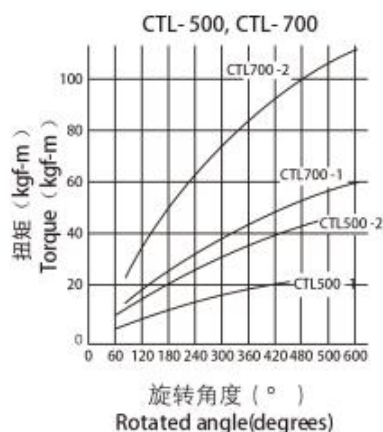
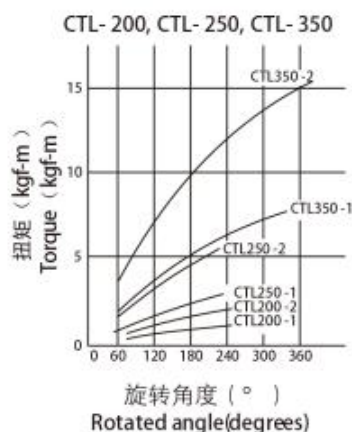
- | | | | | | |
|-------|--------------------|--------|--------------------|--------|-----------------|
| ① 主体 | H ub | ⑤ 压板B | pre ssure Plate B | ⑨ 调节螺栓 | Adjustment Bolt |
| ② 摩擦片 | Fri ction facing | ⑥ 碟型弹簧 | Disc S pring | ⑩ 轴用挡圈 | Snap Ring |
| ③ 衬环 | B ushing | ⑦ 碟簧压板 | Disc S pring Plate | ⑪ 外接圈 | Spirolox |
| ④ 压板A | P re ssure Plate A | ⑧ 导向压板 | P ilot P late | ⑫ 弹簧栓 | Spring Pin |

◇ CTL 10~CTL20的尺寸表 Dimensions and Capacity for CTL10 CTL20

尺寸: (mm)
Dimensions in mm

型号 Model	扭矩范围 Torque Range (Nm)	最高转速 Max.sp eed unbalanced rpm	成品 内孔 Finish Bore	最大 孔径 Max. Bore	衬环 长度 Bushing Length	衬环外径 O.D.of Bushing	中心元件 配合孔径 Bore for center Member	D	D _H	L	I	T ₁	T ₂	t	S (max.)	C	质量 Mass (kg)	调节 螺栓 Adjust.Bo
CTL10-16	400~1240	1400	30	72	12.5	135 ^{-0.085}	135 ^{+0.07} ₀	254	100	115	23	8.5	-	4.0	24	19	21	M18x1.5
CTL10-24	590~1860																	
CTL14-10	890~2660	1200	40	100	19.5	185 ^{-0.07}	185 ^{+0.07} ₀	356	145	150	31	13	13	4.0	29	27	52	M26x1.5
CTL14-15	1960~3920																	
CTL20-16	2450~4900	800	50	135	15.5	226 ^{-0.07}	226 ^{+0.07} ₀	508	185	175	36	15	18	4.0	31	36	117	M32x1.5
CTL20-12	4610~9310																	

◇ 旋转角度与预设扭力 rotated angle and setting torque



◇ 订货描述示例:

Order form:

CTL14-10	φ40	φ40键槽 φ40keyway
规格与型号 Size/type of joint	成品孔径 Finish bore (H7)	成品孔径(H7) 键槽按GB/T3852-1997 (JS9) 标准 Finish bore (H7) to GB/T3852-1997(JS9)

扭力限制型联轴器

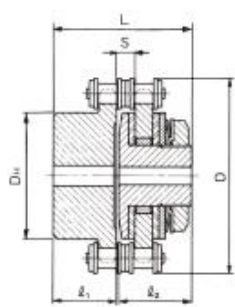
TYPE TORQUE LIMITER COUPLING



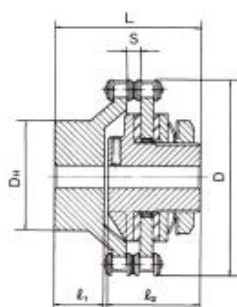
扭力限制型联轴器，具超载后打滑之保护作用，同时也实现了轴—轴传动的可能，MISHKIN® 扭力限制器型联轴器是滚子链联轴器与MISHKIN® 扭力限制器的一种完美结合。

the torque limiter coupling combines overload slip protection with the ability to couple driving and driven shafts. It is an assembly consisting of a MISHKIN torque limiter and roller chain coupling.

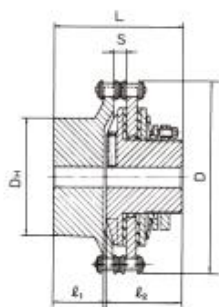
This construction provides a dependable character and easy-to-assemble flexible coupling



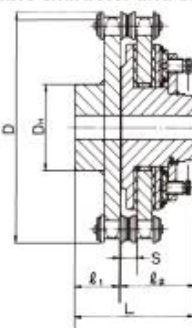
CTL200-C



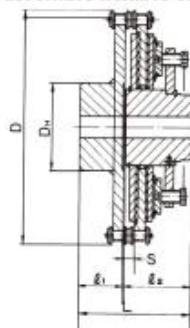
CTL250-C, CTL350-C



CTL500-C, CTL700-C



CTL10-C

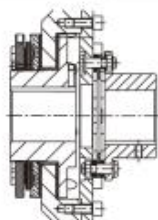


CTL14-C, CTL20-C

◇ 扭力限制型联轴器的尺寸 Capacity and Dimension of Torque Limiter Coupling

尺寸:(mm)
Dimensions in mm

型号 Model	扭矩范围 Torque Range (Nm)	最高转速 Max. Running Speed (r/min)	成型孔径 Finish Bore		最大孔径 Max. Bore		链轮 Sprocket	D	D _H	L	l ₁	l ₂	S	重量 Weight (kg)
			链轮 Sprocket	CTL	链轮 Sprocket	CTL								
CTL200-1C	2.9~9.8	1200	8	7	31	14	RS 40-16T	76	50	55	24	29	7.5	1.0
CTL200-2C	6.9~20													
CTL250-1C	6.9~27	1000	13	10	38	22	RS 40-22T	102	56	76	25	48	7.4	1.9
CTL250-2C	14~54													
CTL350-1C	20~74	800	13	17	45	25	RS 50-24T	137	72	103	37	62	9.7	4.2
CTL350-2C	34~149													
CTL500-1C	47~210	500	18	20	65	42	RS 60-28T	188	105	120	40	76	11.6	10.0
CTL500-2C	88~420													
CTL700-1C	116~569	400	23	30	90	64	RS80-28T	251	150	168	66	98	15.3	26.0
CTL700-2C	223~1080													
CTL10-16C	400~1240	300	33	30	95	72	RS140-22T	355	137	189	71	115	26.2	66.0
CTL10-24C	590~1860													
CTL14-10C	890~2660	200	28	40	118	100	RS160-26T	470	167	235	80	150	30.1	140.0
CTL14-15C	1960~3920													
CTL20-16C	2450~4900	140	43	50	150	135	RS160-36T	631	237	300	120	175	30.1	285.0
CTL20-12C	4610~9310													



- 可和刚性无齿隙钢膜片联轴器组装
With torsionally rigid, backlash-free steel lamina coupling
- 可适应较高的工作温度 (可达280° C)
suitable for high operating temperatures up to 280° C
- 有不同长度的中间体适用不同的轴间距
with variable spacers for different shaft distance dimensions

◇ 订货描述示例:

Order form:

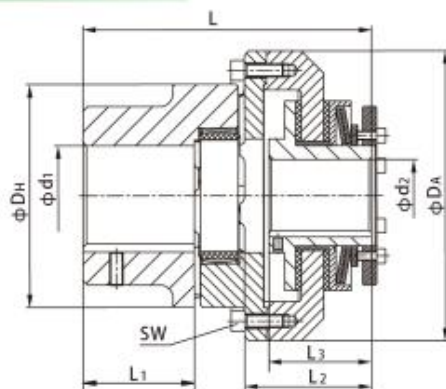
CTL14-10C	φ 28/φ 40	φ 28/φ 40键槽按 φ 28/φ 40keyway
规格与型号 Size/type of joint	链轮孔径/扭力限制器孔径 Sprocket H7/KRTL H7	成品孔径(H7)键槽按GB/T3852-1997(JS 9)标准 Finish bore (H7) Keyway toGB/T3852 sheet 1997(JS9)

扭力限制型联轴器

TYPE TORQUE LIMITER COUPLING



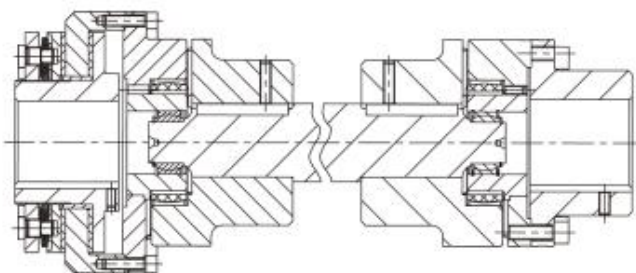
- 轴与轴连接 Shaft-to-shaft-connection
- 扭向弹性力矩限制器 Torsionally flexible safety clutch
- 轴向插入，安装方便 Axial plug-in
- 能补偿安装偏差 Able to compensate for misalignment
- 可装在设备上调节打滑力矩 Torque can be set while in place
- 成品孔径公差按照ISO标准为H7，键槽公差按照标准为JS9
Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - Js9



◇ 扭力限制型联轴器的尺寸 Capacity and Dimension of Torque Limiter Coupling

尺寸:(mm)
Dimensions in mm

型号 Model	扭矩范围 Torque Range (Nm)	最高转速 Max.sp eed Unbalanced rpm	d ₁	d ₂	DA	DH	L	L ₁	L ₂	L ₃	SW
CTL200-1C1	2.9~9.8	1800	6-19	8-14	70	40	77	25	36	29	6-M4
CTL200-2C1	6.9~20										
CTL250-1C2	6.9~27	1800	8-24	10-22	87	55	106	30	58	48	6-M5
CTL250-2C2	14~54										
CTL350-1C3	20~74	1800	10-28	17-25	118	65	129	35	74	62	6-M6
CTL350-2C3	34~149										
CTL500-1C5	47~210	1800	14-42	20-42	158	95	166	50	90	76	8-M8
CTL500-2C5	88~420										
CTL700-1C8	116~569	1400	22-65	30-64	216	135	225	75	115	98	8-M10
CTL700-2C8	223~1080										
CTL1016-1C10	400~1240	1400	40-90	30-72	300	200	284	100	139	115	8-M12
CTL1024-2C10	590~1860										



- 带中间轴联轴器
as intermediate shaft coupling
- 适合较大的轴间距离
for large shaft distance dimensions
- 可和钢膜片联轴器组装
available in combination with or steel lamina couplings

◇ 订货描述示例:

Order form:

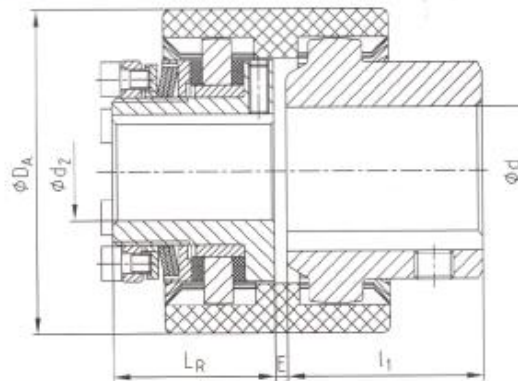
CTL350-1C3	φ 20/φ 24	φ 20/φ 24键槽 φ 28/φ 40keyway
规格与型号 Size/type of joint	联轴器孔径/扭力限制器孔径 Coupling H7/KRTL H7	成品孔径(H7)键槽按GB/T3852-1997(JS 9)标准 Finish bore (H7) Keyway toGB/T3852 sheet 1997(JS 9)

MSGL 力矩限制器 MSGL TYPE TORQUE LIMITER

MSGL 扭力限制器



- 轴-轴连接的力矩限制器
- 扭向刚性力矩限制器
- 轴向插入
- 双节式结构可补偿很大的安装偏差
- 应用于简单的传动场合（如低速传动等）
- 安装方便
- 成品孔径公差按照ISO标准为H7，键槽宽公差按照标准DIN 6885/1为JS9

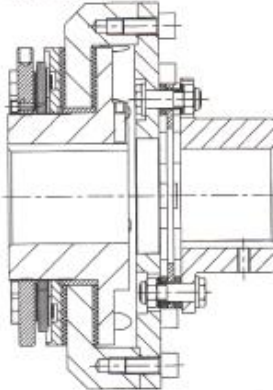


技术参数

MSGL 规格	GL 规格	MSGL 力矩 (Nm)					尺寸 (mm)						
		1MF	2MF	3MF	MSGL 力矩 (Nm)		孔 d_2		最大孔径 d	D_A	L_A	E	l_1
					TKN	TK max.	预制孔	最大					
01	19	MD	1-5	-	16	32	-	10	19	48	31	2.5	25.0
02	28	2-10	4-20	-	45	90	-	20	28	66	33	2.5	40.0
03	38	5-35	10-70	-	80	160	-	22	38	83	45	1.0	35.5
04	48	20-75	40-150	130-200	140	280	-	25	48	95	52	1.0	45.5
05	65	25-140	50-280	250-400	380	760	-	35	65	132	57	1.0	64.4

1)成品孔径大于 19mm, 键槽宽标准DIN 6885/3

2)仅用于安装空间有限制的场合



- MSG 可和刚性无齿性的DJM膜片联轴器组装
- 可适应较高的工作温度（可达280℃）
- 有不同长度的中间体适用于不同的轴间距

订货描述示例:

MSG	1	1MF	GL	38	∅20	∅25	50Nm
力矩限制器 型式	规格	蝶形弹簧 层数	联轴器 型号	规格	轴套孔径	轴套孔径	设定力矩