

扭力限制器

扭力限制器是一種保護裝置。在機器負載震動，超載或機械故障而致所需之扭力超過設定值時，它以滑動之方式限制傳動系統所傳動之扭力，而于超載情形消失後自動齒合，不必再行設定 TUNG SHIN 扭力限制器防止機械損壞，避免了昂貴的停機損失。

扭力限制器採用彈簧負荷式磨擦表面，以螺帽或螺栓調整彈簧力，預設之滑動扭力。

扭力限制器可在鏈輪、齒輪、槽輪或法蘭板作為中心構件，夾在其磨擦面中間使用之 TUNG SHIN 扭力限制器之額定性能實際可靠，符合最佳之彈簧負荷及表面壓力而使滑動時間更長在預設扭力時再行齒合，提供永久性的保護，本扭力限制器不似剪銷式機械一次使用就須作廢，而是可以重覆使用者。

TORQUE LIMITER

Prevent Machine Damage and Eliminate Costly Downtime

SHIN Torque Limiter is a protective device that limits the torque transmitted in a drive system by slipping when the torque demand exceeds a preset value as a result of shock loads, overloads, or machine jams. It automatically reengages when the overload is removed. No resetting is required.

Torque Limiters prevent machine damage and eliminate costly downtime. TUNG SHIN Torque Limiters utilize spring-loaded friction surfaces for their operation, and slip torque is preset by adjusting of the spring force using the adjustment nut bolts.

Torque Limiters can be used with a sprocket, gear, sheave, or flange plate as the center member clamped between two friction facings.

The TUNG SHIN Torque Limiter ratings are realistic and consistent with optimum spring loads and face pressures that permit longer slip time, maintain re-engagement at preset torque, and provide long lasting protection. This is an important advantage over the shear-pin mechanism which serves only as a one-shot remedy.



TL200^{-1/2} TL250^{-1/2}
TL350^{-1/2}

- 單螺帽調整式
- 鎖緊梅花片
防止螺帽鬆動

TL200^{-1/2} TL250^{-1/2}
TL350^{-1/2}

- Single nut adjustment
- Lock washer to prevent the nut from loosening



TL200^{-1C} 至 TL240^{-6C}

扭力限制器聯軸器，具超載後滑動之白狐作用具聯結主動軸與被動軸的能力，它包括 TUNG SHIN 扭力限制器和滾鏈聯軸器，本構造提供了一種可靠的活動聯軸器，組合容易。

TL200^{-1C} 至 TL240^{-6C}



TL500^{-1/2} TL700^{-1/2}

- 3螺栓調整式
- 以三支螺栓預設扭力。
(利用一調整螺帽固定導片)

TL500^{-1/2} TL700^{-1/2}

- Three bolt adjustment
- Torque preset by three bolts
(an adjustment nut to fix a pilot plate in place)

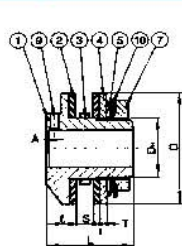
The Torque Limiter Coupling combines overload slip protection with the ability to couple driving and driven shafts. It is an assembly consisting of a TUNG SHIN Torque Limiter and Roller Chain Coupling.

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

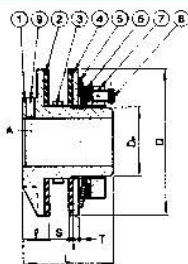
TL 250 - 1 C

- 聯軸器型 Coupling Type
- 盤式彈簧數 Number of Disc Spring
- 大小 Size
- 扭力限制器 Torque limiter

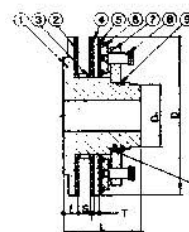
TL200-¹/₂ 至 TL240-¹⁶/₁₂ 型之外觀尺寸與性能



TL-200, TL-250, TL-350



TL-500, TL-700



TL-100, TL-140, TL-240

部品名稱 Name of Parts

- | | | |
|-----------------|----------------|-----------------------|
| 1. 體座 Hub | 4. 壓力板 Plate | 7. 調整螺帽 Nut |
| 2. 磨擦板 Friction | 5. 盤式彈簧 Spring | 8. 調整螺栓 Bolt |
| 3. 軸襯 Bush | 6. 導板 Washer | 9. 固定螺絲 Set Screw |
| | | 10. 鎖緊梅花片 Lock Washer |

部品名稱

- | | |
|---------|---------|
| 1. 體座 | 6. 壓力板 |
| 2. 磨擦片 | 7. 導板 |
| 3. 軸襯 | 8. 調整螺栓 |
| 4. 平版 | 9. 扣環 |
| 5. 盤式彈簧 | 10. 彈簧銷 |

尺寸單位: mm

型式	扭力範圍 (kgf-m)	普通 內徑 (H10)	最大 內徑	軸襯 長度	軸襯 外徑	中心 構件 孔徑	D	DH	L	E	T	T	S (最大)	A	C	調整 螺帽	調整 螺栓	固定 螺絲	重量 (kg)
TL200-1	0.3-1	7	14	3.8	30	30	50	24	29	6.5	2.6	2.5	7	-	38	M24 P1.0	-	-	0.2
TL200-2	0.7-2																		
TL250-1	0.7-2.8	10	22	4.5	41	41	65	35	48	16	4.5	3.2	9	4	50	M35 P1.5	-	M5	0.5
TL250-2	1.4-5.5																		
TL350-1	2.0-7.6	17	25	6.5	49	49	89	42	62	19	4.5	3.2	16	6	63	M42 P1.5	-	M6	1.2
TL350-2	3.5-15.2																		
TL500-1	4.8-21.4	20	42	6.5	74	74	127	65	76	22	5.7	3.2	16	7	-	M65 P1.5	M8 P1.0 3pcs	M8	3
TL500-2	9-42.9																		
TL700-1	11.8-58.1	30	64	9.5	105	105	178	95	98	24	7.7	3.2	29	8	-	M95 P1.5	M10 P1.25 3pcs	M10	6.7
TL700-2	22.8-110.6																		
TL100-16	40-130	30	72	12.5	135	135	254	100	115	23	15	4.0	24		19		M18 P1.5 8pcs		21
TL100-24	60-190																		
TL140-10	90-272	40	100	15.5 19.5 23.5	183	183	356	145	150	31	13	4.0	29		27		M26 P1.5 5pcs		52
TL140-15	200-400																		
TL240-6	250-500	50	130	15.5 19.5 23.5	226	226	508	185	175	36	15	4.0	31		36		M32 P1.5 6pcs		117
TL240-12	470-950																		

DIMENSIONS AND CAPACITY FOR TL200-¹/₂ TO TL240-¹⁶/₁₂

Dimensions in mm

Model	Torque Range (kgf-m)	Plain Bore	Max. Bore	Bush. Length	O.D. of Bush.	Bore of Center Member	D	DH	L	e	T	t	S (max.)	A	C	Adjust. Nut	Adjust. Bolt	Set Screw	Weight (kg)
TL200-1	0.3-1	7	14	3.8	30	30	50	24	29	6.5	2.6	2.5	7	-	38	M24 P1.0	-	-	0.2
TL200-2	0.7-2																		
TL250-1	0.7-2.8	10	22	4.5	41	41	65	35	48	16	4.5	3.2	9	4	50	M35 P1.5	-	M5	0.5
TL250-2	1.4-5.5																		
TL350-1	2.0-7.6	17	25	6.5	49	49	89	42	62	19	4.5	3.2	16	6	63	M42 P1.5	-	M6	1.2
TL350-2	3.5-15.2																		
TL500-1	4.8-21.4	20	42	6.5	74	74	127	65	76	22	5.7	3.2	16	7	-	M65 P1.5	M8 P1.0 3pcs	M8	3
TL500-2	9-42.9																		
TL700-1	11.8-58.1	30	64	9.5	105	105	178	95	98	24	7.7	3.2	29	8	-	M95 P1.5	M10 P1.25 3pcs	M10	6.7
TL700-2	22.8-110.6																		
TL100-16	40-130	30	72	12.5	135	135	254	100	115	23	15	4.0	24		19		M18 P1.5 8pcs		21
TL100-24	60-190																		
TL140-10	90-272	40	100	15.5 19.5 23.5	183	183	356	145	150	31	13	4.0	29		27		M26 P1.5 5pcs		52
TL140-15	200-400																		
TL240-6	250-500	50	130	15.5 19.5 23.5	226	226	508	185	175	36	15	4.0	31		36		M32 P1.5 6pcs		117
TL240-12	470-950																		

扭力限制器聯軸器

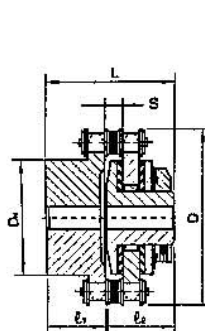
TL200^{-1C}/_{-2C} 至 TL240^{-6C}/_{-12C} 型之外觀尺寸與性能

型 式	扭力防衛 (kgf-m)	最高 運轉速度 (RPM)	普通內徑(H10)		最大內徑		鏈 輪	D	DH	L	e1	e2	S	重量 (kg)
			聯軸 器側	扭力限 制器側	聯軸 器側	扭力限 制器側								
TL200-1C	0.3-1	1200	8	7	31	14	RS 40-16T	76	50	55	24	29	7.5	1.0
TL200-2C	0.7-2.0													
TL250-1C	0.7-2.8	1000	13	10	38	22	RS 40-22T	102	56	76	25	48	7.4	2.0
TL250-2C	1.4-5.5													
TL350-1C	2.0-7.6	800	13	17	45	25	RS 50-24T	137	72	103	37	62	9.7	5.2
TL350-2C	3.5-15.2													
TL500-1C	4.8-21.4	500	18	20	65	42	RS 60-28T	188	105	120	40	76	11.6	12.3
TL500-2C	9.0-42.9													
TL700-1C	11.8-58.1	400	23	30	90	64	RS 80-28T	251	150	168	66	98	15.3	31.0
TL700-2C	22.8-110.6													
TL100-16C	40-130	300	33	30	95	72	RS 140-22T	355	137	189	71	115	26.2	66
TL100-24C	60-190													
TL140-10C	90-272	200	38	40	118	100	RS 160-26T	470	167	235	80	150	30.1	140
TL140-15C	200-400													
TL240-6C	250-500	140	43	50	150	130	RS 160-36T	631	237	300	120	175	30.1	285
TL240-12C	470-950													

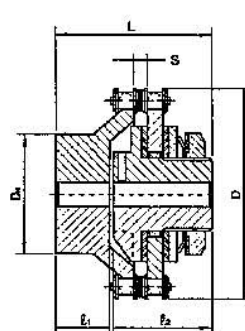
TORQUE LIMITER COUPLING

DIMENSIONS AND CAPACITY FOR TL200^{-1C}/_{-2C} TO TL240^{-6C}/_{-12C}

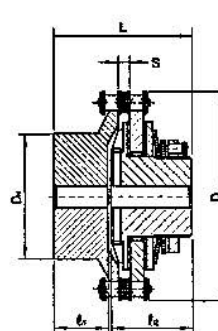
Model	Torque Range (kgf-m)	Max. Running Speed (r/min)	Plain Bore		最大內徑		Sprocket	D	DH	L	e1	e2	S	Weight (kg)
			Coupling Half	TL Half	Coupling Half	TL Half								
TL200-1C	0.3-1	1200	8	7	31	14	RS 40-16T	76	50	55	24	29	7.5	1.0
TL200-2C	0.7-2.0													
TL250-1C	0.7-2.8	1000	13	10	38	22	RS 40-22T	102	56	76	25	48	7.4	2.0
TL250-2C	1.4-5.5													
TL350-1C	2.0-7.6	800	13	17	45	25	RS 50-24T	137	72	103	37	62	9.7	5.2
TL350-2C	3.5-15.2													
TL500-1C	4.8-21.4	500	18	20	65	42	RS 60-28T	188	105	120	40	76	11.6	12.3
TL500-2C	9.0-42.9													
TL700-1C	11.8-58.1	400	23	30	90	64	RS 80-28T	251	150	168	66	98	15.3	31.0
TL700-2C	22.8-110.6													
TL100-16C	40-130	300	33	30	95	72	RS 140-22T	355	137	189	71	115	26.2	66
TL100-24C	60-190													
TL140-10C	90-272	200	38	40	118	100	RS 160-26T	470	167	235	80	150	30.1	140
TL140-15C	200-400													
TL240-6C	250-500	140	43	50	150	130	RS 160-36T	631	237	300	120	175	30.1	285
TL240-12C	470-950													



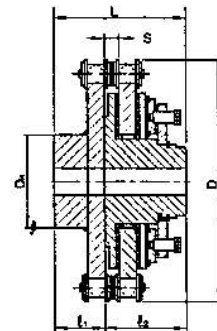
TL200-C



TL250-1, TL350-C



TL500-C, TL700-C

TL100-C, TL140-C
TL24-C

選擇方法

1. 從負荷條件或機器之設計強度，決定所需之滑動扭力。如機器之負荷條件不詳，則將扭力限制器之滑動扭力設定為其安裝軸相關馬達所產生扭力之1.5–2倍。
2. 請選擇扭力範圍和內徑範圍足夠的扭力限制器。
3. 由設于磨擦板間的中心構件厚度，決定正確的軸襯長度。軸襯的選擇不可大於中心構件的寬度，中心構件之最大厚度見表中之「S(最大)」欄。

中心構件

1. 中心構件之磨擦面必須研磨加工以得額定之扭力，共成為平坦，平行，與內徑相垂直，不含任何灰塵，銹皮或油污，表面研磨度以3S–6S(63微吋加工)為宜。
2. 如中心構件不符合本規範，則滑動扭力不穩定，中心構件內徑之加工尺寸見下表。

◆可用最少鏈輪齒數和軸襯長度之選擇見下表

SELECTION

1. Determine the required slip torque from the loading conditions or from the design strength of the machine. If the loading conditions of the machine are unknown, set the required slip torque of the Torque Limiter to 1.5 to 2 times the torque that the motor produces on the shaft where the Torque Limiter is mounted.
2. Select a Torque Limiter which has enough torque range and bore range.
3. Determine the proper bushing length from the thickness of the center member to be inserted between the friction facings.
Always choose the largest bushing which does not exceed the width of the center member. Maximum thickness of the center member is shown as "S max," in the dimension table.

CENTER MEMBER

1. The center member should be machined on its rubbing surface to obtain the rated torque and be flat and parallel, and free from rust, scale and oil. Surface finish recommended is 3S to 6S (63, micro-inches finish). If the center member is not in accordance with these specifications, the slip torque will be erratic.
2. Bore of the center member to be machined is shown in the table below.

◆Also, minimum number of sprocket teeth to be used and bushing length to be chosen are listed in the table below.

最少鏈輪齒數軸襯長度

型式	中心構件內徑 (mm)	鏈輪節距和齒數																	
		3/8"-#35		1/2"-#40		5/8"-#50		3/4"-#60		1"-#80		1 1/4"-#100		1 1/2"-#120		1 3/4"-#140		2"-#160	
		最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)	最少鏈輪齒數	軸襯長度 (mm)
TL200	30	20	3.8	16	6														
TL250	41			20	4.5	17	6.5												
TL350	49			26	4.5	21	6.5	18	9.5	15	9.5								
TL500	74			35	4.5	29	6.5	25	9.5	15	9.5								
TL700	105			48	4.5	39	6.5	33	9.5	26	9.5	21	12.5	18	12.5				
TL100	135											29	12.5	24	15.5	22	19.5		
TL140	183											39	15.5	33	15.5	29	19.5	26	23.5
TL240	226											54	15.5	46	15.5	40	19.5	26	23.5

Minimum Sprocket Teeth and Bushing Length

Size	Bore of Center Member (mm)	Sprocket Pitch and Number of Teeth																	
		3/8"-#35		1/2"-#40		5/8"-#50		3/4"-#60		1"-#80		1 1/4"-#100		1 1/2"-#120		1 3/4"-#140		2"-#160	
		Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)	Sprock- et Min. Teeth	Bush Length (mm)
TL200	30	20	3.8	16	6														
TL250	41			20	4.5	17	6.5												
TL350	49			26	4.5	21	6.5	18	9.5	15	9.5								
TL500	74			35	4.5	29	6.5	25	9.5	15	9.5								
TL700	105			48	4.5	39	6.5	33	9.5	26	9.5	21	12.5	18	12.5				
TL100	135											29	12.5	24	15.5	22	19.5		
TL140	183											39	15.5	33	15.5	29	19.5	26	23.5
TL240	226											54	15.5	46	15.5	40	19.5	26	23.5

扭力設定

扭力限制器的扭力設定只需扭緊或放鬆調整螺栓或調整螺帽便可，TL200至 TL350型各具一調整螺帽，TL500至 TL240型則各具調整栓供扭力調整用。

扭力限制器在安裝至軸上後，即可進行扭力調整，其步驟如下：

TL200至TL350型：

首先，用手以全力轉動調整螺帽使盤式彈簧固定至一板片。

然後，暫時以一板鉗把螺帽扭緊約60°。

TL500至TL240型：

首先，轉動一螺帽，把盤式彈簧固定至一板片，再將每一調整螺栓扭緊60°。

其次，如於正常負荷情況下此扭力限制器仍然滑動，則逐漸扭緊螺帽(TL200-TL350型)或螺栓(TL500-TL240型)，一直到扭力限制器不再滑動，注意，各螺栓之鬆緊度必須均勻，先試行調整數次以求得相關機器之正確扭力設定，下一頁之有效旋轉角度和預設扭力關係圖可供參考。

為求精密之扭力調整，宜將本扭力限制器在調整螺帽或螺栓旋轉45°，於 50-60RPH 下試運轉500迴轉。

Torque setting of the Torque Limiter is achieved by tightening or loosening the adjustment bolts and/or the adjustment nuts. For torque adjustment of TL200 to TL350, an adjustment nut is provided, and for TL500 to TL240 adjustment bolts are provided. The torque setting can be made after mounting the Torque Limiter on the shaft. The procedure is:

For TL200 to TL350

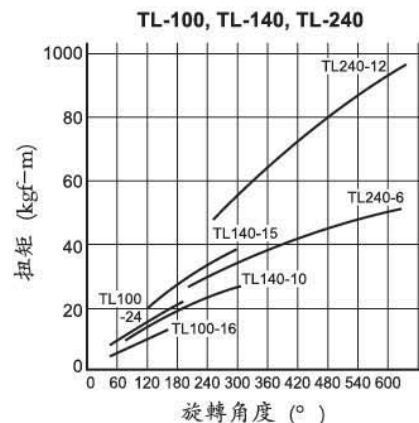
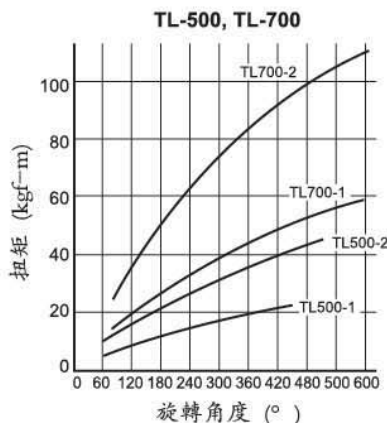
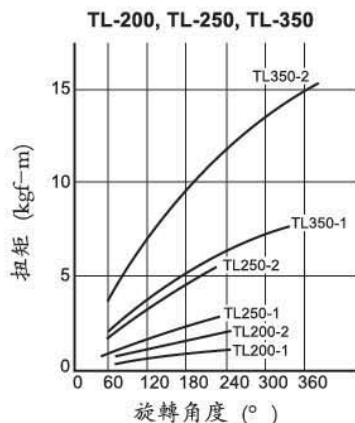
First, rotate the adjustment nut tightly by hand so that the disc spring fits the plate.

Then tentatively tighten the nut by about 60 degrees with a wrench.

For TL500 to TL240

First, rotate the nut for fixing the disc spring to the plate, and then tighten each adjustment blot by about 60 degrees. Then, if the Torque Limiter slips under normal loading conditions, tighten the nus (for TL200 to TL350) or the bolts (for TL500 to TL240) gradually until the torque limiter stops slipping. Always tighten (or loosen) the bolts equally. Try this adusmtent 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 the 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.

旋轉角度與預設扭力：



ROTATED ANGLE AND SETTING TORQUE

