Rapid

Power Transmission Product

RAPID TORQUE LIMITER

Prevent Machine Damage and Eliminate Costly Down

The Rapid 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. Rapid Torque Limiters prevent machine damage and eliminate costly downtime.

Rapid Torque Limiters utilize spring loaded friction surfaces for their operation and slip torque is preset by adjustment of the spring force using the adjustment nut or bolts.

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

The Rapid 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 that serves only as a one-shot remedy.

RTL 350 – 1

- **Number of Disc Spring**
- **Size**
- **Reach Torque Limiter**

RTL200-1 RTL200-2

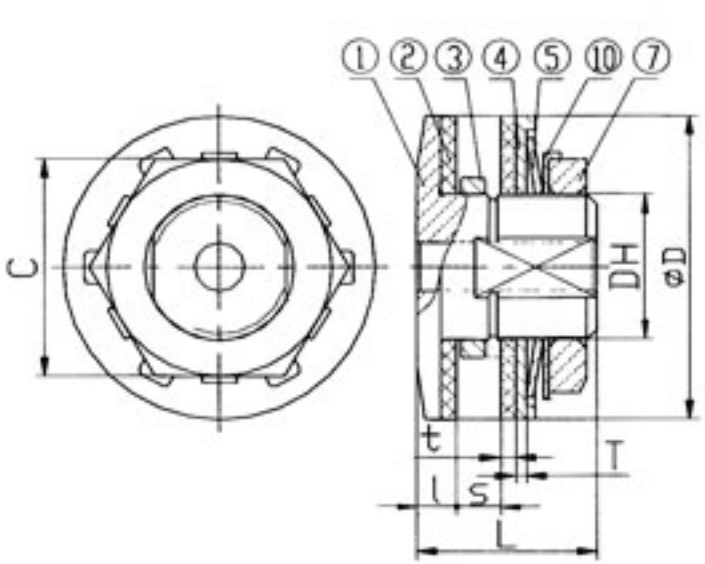
- **Single Nut Adjustment**
- **Lock Washer to prevent the nut from loosening**

RTL250-1 RTL250-2
RTL350-1 RTL350-2

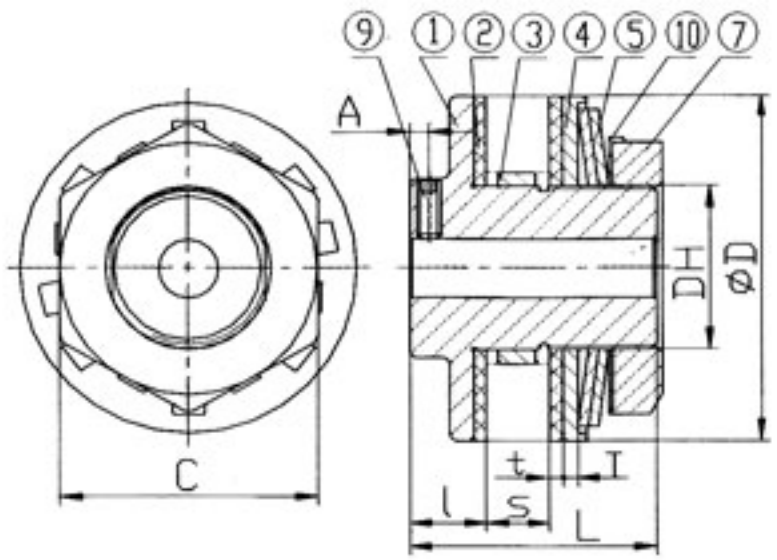
- **Single Nut Adjustment**
- **Lock Washer to prevent the nut from loosening**

RTL500-1 RTL500-2
RTL700-1 RTL700-2

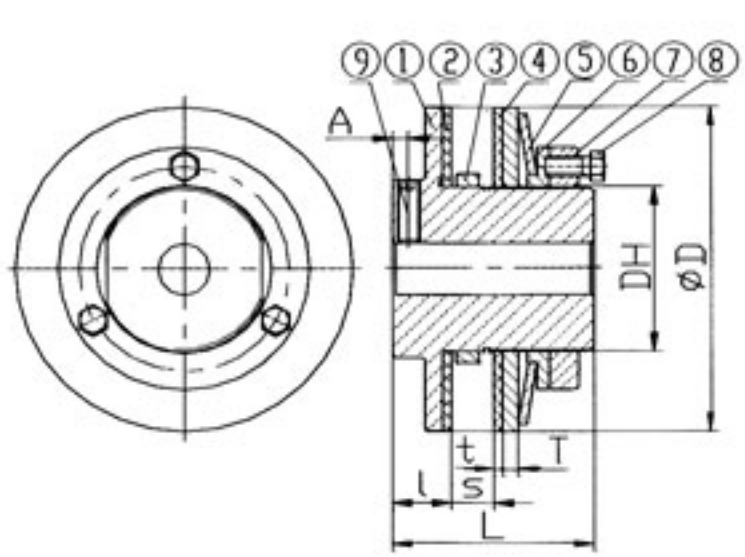
- **Three Bolts Adjustment**
- **Torque preset by the three bolts (an adjustment nut to fix a pilot plate in place)**



RTL200



RTL250 RTL350



RTL500 RTL700

Dimensions and Capacity for RTL200 to RTL700

Size	Torque Range (kgf·m)	Plain Bore	Max. Bore	Bush Length	O.D. of Bush	Bore for Center Member	D	DH	L	l	T	t	S (Max)	A	C	Adjust. Nut	Adjust. Bolt	Set Screw	Weight (kg)
RTL200-1	0.3 ~ 1.0	8	14	3.8 6	30 -0.020 -0.041	30 +0.033 0	50	24	29	6.5	2.6	2.5	7	-	36	M24 P1.	-	-	0.248
RTL200-2	0.7 ~ 2.0																		0.256
RTL250-1	0.7 ~ 2.8	10	22	6 8	41 -0.025 -0.050	41 +0.039 0	65	35	48	16	4	3.2	9	4	50	M35 P1.5	-	M5	0.721
RTL250-2	1.4 ~ 5.5																		0.739
RTL350-1	2.0 ~ 7.6	17	25	6 8 9.5 14.5	49 -0.025 -0.050	49 +0.039 0	89	42	62	19	4	3.2	16	5	65	M42 P1.5	-	M6	2.417
RTL350-2	3.5 ~ 15.2																		2.477
RTL500-1	4.8 ~ 21.4	20	42	6 8 9.5 14.5	74 -0.030 -0.060	74 +0.046 0	127	65	76	22	6	3.2	16	6	-	M65 P1.5	M8 P1.0 3pcs	M8	3.692
RTL500-2	9.0 ~ 42.9																		3.858
RTL700-1	11.8 ~ 58.1	30	64	8 9.5 14.5 17 22	105 -0.036 -0.071	105 +0.054 0	178	95	98	24	7	3.2	29	6.5	-	M95 P1.5	M10 P1.25 3pcs	M10	9.033
RTL700-2	22.8 ~ 111																		9.436

Name of parts:

1. **Hub**
2. **Friction Facing**
3. **Bushing**
4. **Pressure Plate**
5. **Disc Spring**
6. **Pilot Plate**
7. **Adjustment Nut**
8. **Adjustment Bolt**
9. **Set Screw**
10. **Lock Washer**

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 ~ 2 times the torque that the motor produces on the shaft where the torque limiter is mounted.
2. Select a torque limiter that 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 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, parallel, square with bore, and free from rust, scale, and oil. Surface finish recommended is Ra1.6. 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, min. numbers of sprockets teeth to be used and bushing length to be chosen are listed in this table.

Minimum Sprocket Teeth and Bushing Length

Size	Bore of Center Member (mm)	Sprocket Pitch and Number of Teeth													
		9.525-06B		12.7-08B		15.875-10B		19.05-12B		25.4-16B		31.75-20B		38.1-24B	
		Sprocket MinTeeth	Bush Length (mm)	Sprocket MinTeeth	Bush Length (mm)	Sprocket MinTeeth	Bush Length (mm)	Sprocket MinTeeth	Bush Length (mm)	Sprocket MinTeeth	Bush Length (mm)	Sprocket MinTeeth	Bush Length (mm)	Sprocket MinTeeth	Bush Length (mm)
RTL200	30	20	3.8	16	6										
RTL250	41			20	6	16	8								
RTL350	49			26	6	21	8	18	9.5	14	14.5				
RTL500	74			35	6	29	8	24	9.5	19	14.5				
RTL700	105					39	8	33	9.5	25	14.5	21	17	18	22

TORQUE SETTING

Torque setting of the torque limiter is achieved by tightening or loosening the adjustment bolts and/or the adjustment nut. For torque adjustment of RTL200 through RTL350, an adjustment nut is provided, and for RTL500 through RTL700, adjustment bolts are provided.

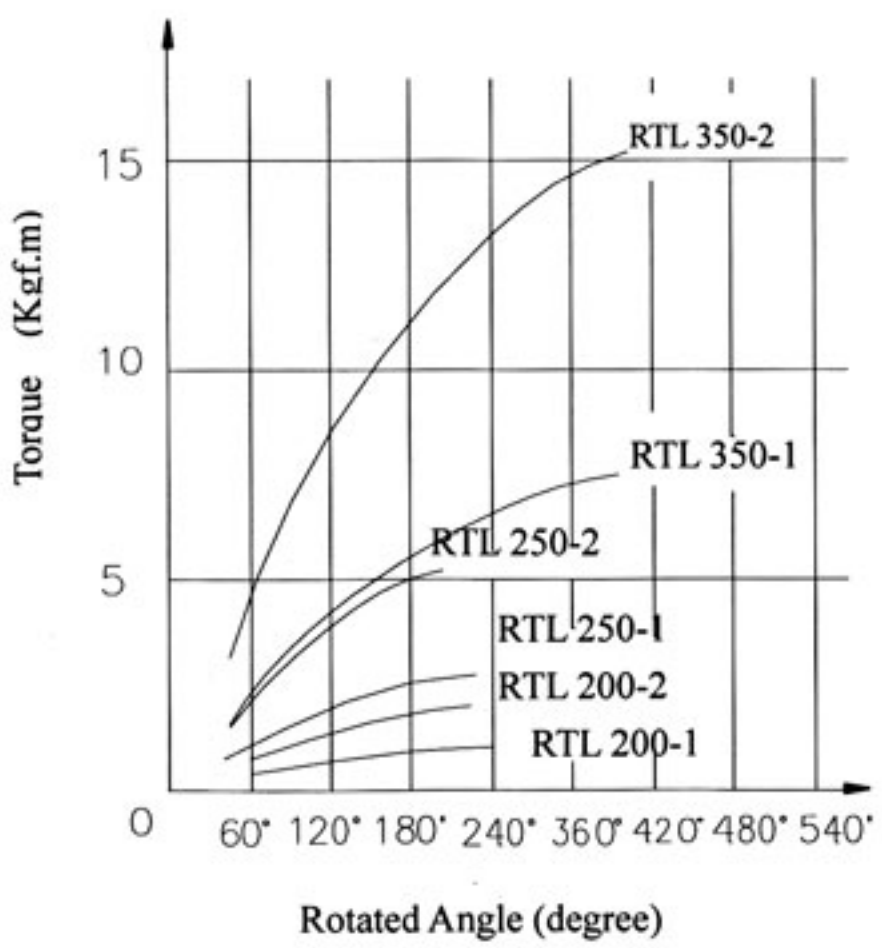
The torque setting can be made after mounting the torque limiter on the shaft. The process is:

For RTL200 through RTL350,
First, rotate the adjustment nut tightly by hand so that the disk spring fits the plate. **Then** tentatively tighten the nut by about 60 degrees with a wrench.

For RTL500 through RTL700,
First, rotate the nut for fixing the disk 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 RTL200 ~ RTL350) or the bolts (for RTL500 ~ RTL700) 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 below chart 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 revolution at 50 ~ 60 rpm with a rotated angle of 45 degrees of the adjustment nut or the bolts.

Rotated Angle and Setting Torque

RTL200 RTL250 RTL350



RTL500 RTL700