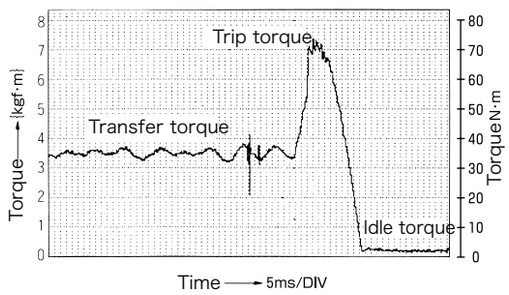
TGM SERIES SHOCK GUARD

Shock Guard TGM Series are safety devices for the protection of machine equipment from overload. The Shock Guard TGM Series has many advantages compared to other safety devices such as share pin type, friction type, ball type, roller type etc.

High Precision Trip Torque

Accuracy of consecutive repeated trip torque fluctuations is within ±5%. One (1) high precision cam follower pressurizes tightly from the radial direction in the precisely machined pocket. A highly rigid and stable load rate rectangular spring is used. Trip movement is a rolling movement, so even a repeat trip produces almost no torque variation.

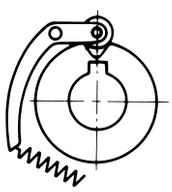


Sealed Construction

Covered in a special aluminum alloy casing, the TGM Series is sealed, so it is almost impossible for dust, oil or water to penetrate it. Therefore, it does not affect trip torque precision, making it an ideal overload protection device.

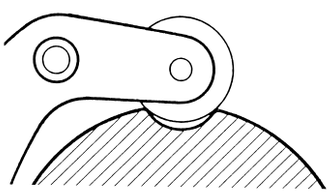
Single Position

The cam follower and pocket engage together, so there is no phase shift between the drive and the driven sides.



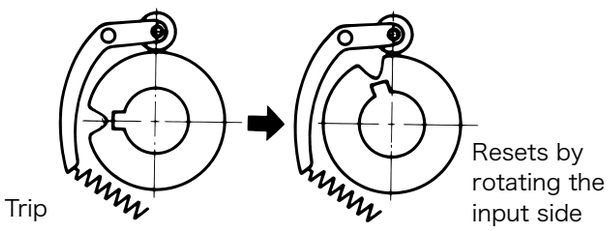
No Backlash

There is no backlash since the engagement of cam follower and pocket involves 2 contact points.



Automatic Reset

Once the cause of overload is removed, the Shock Guard automatically moves back to its original position by rotating the input side a little (at less than 50r/min), or by inching the motor.



Long Life

The TGM Series is able to withstand more than 100.000 trips. Due to strong materials, thermal processing and precision machining, the cam follower and pocket can withstand even severe repeat trips and not collapse. During trip, the idling part uses a heavy-duty needle bearing, so there is almost no friction.

LS Detecting Plate for Overload Detector

When the Shock Guard trips the LS detecting plate slides in the axial direction, so it is easy to actuate the limit switch, shut off the power or set off the alarm. When tripping it can be used whether it stops on the camshaft side or the housing (Torque Guard case) side. The LS detecting plate can be mounted on all models.

Easy Operation

The camshaft and case can be used on either the drive or driven sides. As well, it can be used in either direction of rotation. For the drive member, you can choose between using a chain, pulley or gear. Assembling with a coupling is also possible.

Variable Torque Setting

By simply turning the adjusting screw with a hexagonal Allen Wrench, precise torque can be set. The adjusting nut is on the outer surface of the Torque Guard, so torque setting can be done easily.

Maintenance Free

The Shock Guard TGM Series is packed in high quality grease before shipment, so greasing is not necessary.

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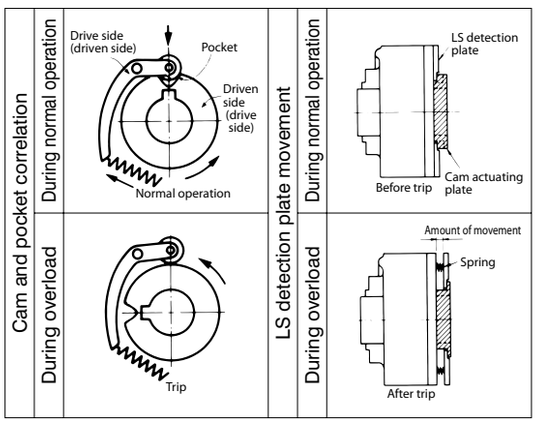
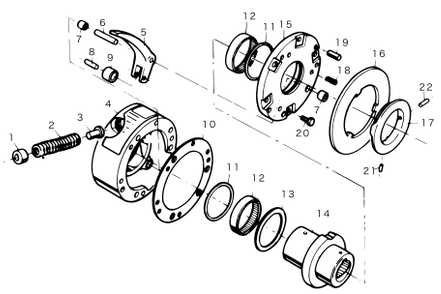
Installation and Usage

1. The cam follower transmits torque by engaging with the camshaft pocket in a radial direction. When the machine is overloaded, the cam follower pops out of the pocket, and completely separates from the overload.
2. The cam follower pocket is precision machined and heat treated, so it is able to maintain high torque precision for extended periods of time.
3. The cam follower and pocket are non-backlash, with a 2-point contact system.
4. Using the leverage of one rectangular coil spring pressurizing the cam follower, it is possible 'to give high precision pressure.
5. Torque level is infinitely adjustable by the torque control screw.
6. Due to overload, the idling during trip is received by 5 needle bearings, so there is no slide, and idling friction torque is minute.
7. Because the housing and cover are made from a solution treated aluminum, it has a light but strong construction.
8. Due to its sealed construction, it is highly difficult for dust, water or oil to penetrate the TGM Series.
9. If the Shock Guard trips because of overload, the LS detecting plate slides in the axis direction, so by operating the limit switch, overload detection is easy.

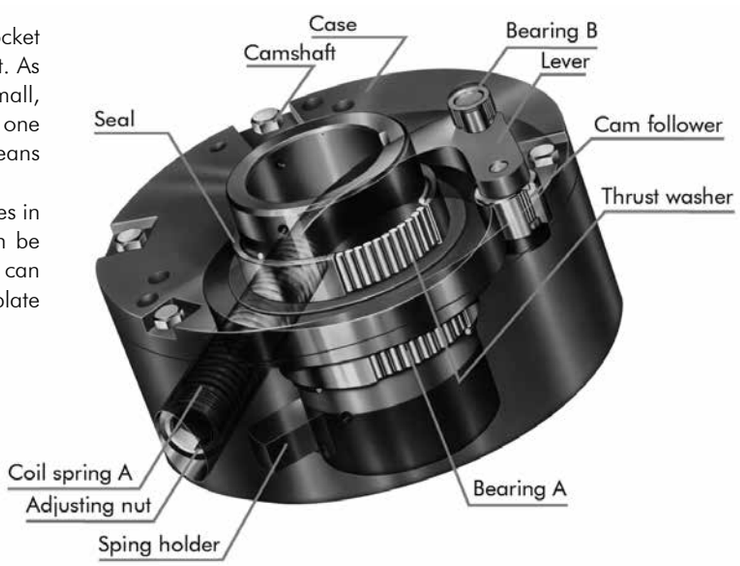
Principle

1. Torque is transmitted by the engagement of the cam follower and the pocket with a 2 point contact system.
   The method to pressurize the cam follower to the cam pocket is to hold it by one rectangular coil spring in a radial direction. Therefore there is no backlash, allowing it to function as a high trip torque precision overload protection device. Reset is carried out using an automatic reset system, so as the cam follower settles into its pocket position, operation resumes. As it is a two-point contact, there is no phase shift from the original position.
2. When overloaded, the cam follower comes out of its pocket and starts rolling on the outer diameter of the camshaft. As there is no slide section, the idling friction torque is small, making it a highly durable device. As well, the simple one position engagement construction of the TGM Series means its high trip torque precision does not diminish.
3. When the Shock Guard trips, the LS detecting plate slides in the axis direction. From this point, the limit switch can be actuated and the power can be turned off. The alarm can also be sounded. For each one trip, the LS detecting plate slides three times.





1 Adjusting screw
2 Coil spring A
3 Spring seat
4 Case
5 Lever
6 Fulcrum pin
7 Bearing B
8 Roller pin
9 Cam follower
10 Gasket
11 Seal
12 Bearing A
13 Thrust washer
14 Cam shaft
15 Cover
16 LS detecting pl
17 Cam actuation
18 Coil spring B
19 Spring pin
20 Hexagonal bolt



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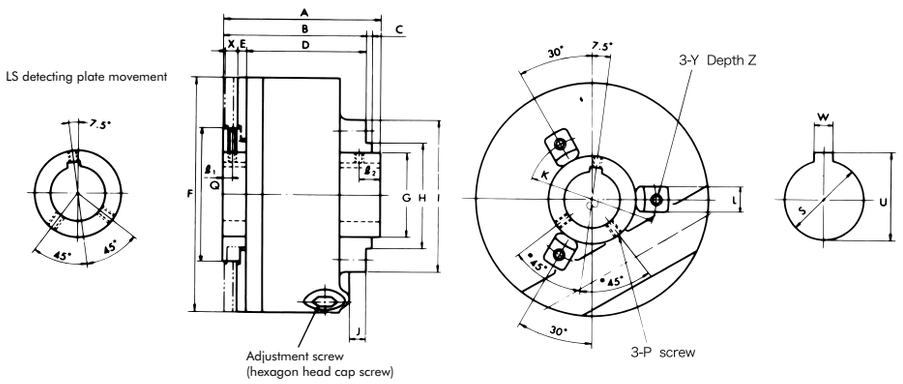

TGM

Dimensions in mm

Model	Torque Range Nm	Max. Running Speed r/min	Bore Size H7	Approx Mass kg/pc
TGM3	1.5 ~ 3.7	600	14	0.6
TGM6	2.5 ~ 6.4	600	14	0.6
TGM20	6.4 ~ 20	500	20	1.1
TGM60	20 ~ 69	300	30	2.5
TGM200	68 ~ 225	200	50	5.4
TGM400*	225 ~ 451	150	60	17.2
TGM800*	451 ~ 902	150	60	17.2

Model	A	B	C	D	E	F	G	H	i	J	K	L	M	P	Q	ℓ1	ℓ2	S H7	U	W	X	Y	Z
TGM3	60	57	2	48	3	80	22	30	50	3	40	8	5	M4	40	4	6	14	16.3	5	4	M4	8
TGM6	60	57	2	48	3	80	22	30	50	3	40	8	5	M4	40	4	6	14	16.3	5	4	M4	8
TGM20	70	66	3	57	3	100	30	40	60	4	50	10	6	M4	50	4	7	20	22.8	6	4	M5	10
TGM60	89	81	3	68	5	133	47.6	60	86	7	73	14	12	M5	76	6	12	30	33.3	8	6	M6	13
TGM200	110	100	3	85	5	178	69.9	82	133	14	114	20	12	M6	105	7	14	50	53.8	14	6	M10	19
TGM400*	157	147	9	131	5	273	88.9	114	190	17	165	28	17	M8	124	7	16	60	64.4	18	8	M12	28
TGM800*	157	147	9	131	5	273	88.9	114	190	17	165	28	17	M8	124	7	16	60	64.4	18	8	M12	28

*= Non-stock item

Torque Setting

Pre-torque setting is available in accordance with your requirements before delivery. The scattering of setting torque is within ±5%. Setting torque is stamped on the name plate.

Model Identification

TGM60 D30-2.5 WS

- WS — Weak Spring
- 2.5 — Setting torque (kgf·m)
- D30 — Bore diameter
- TGM60 — Shock Guard

Note:
The dimensions of keyway are as per JIS 1301-1976. At delivery, the Shock Guard has pre-setting at Minimum torque