

INSTALLATION MANUAL

SHOCK GUARD

TGX(-C) Series

TGX10(-C)

TGX20(-C)

TGX35(-C)

TGX50(-C)

TGX70(-C)

- Thank you for purchasing TGX(-C) Series.
- Be sure the product delivered matches your order. This will prevent you from accidents, injuries or equipment damage caused by installing the wrong unit. If an incorrect unit is delivered, contact TSUBAKIMOTO CHAIN immediately.
- This manual should remain with the product at all times including when redistributed.
- To ensure safety, this manual should be available to every user.

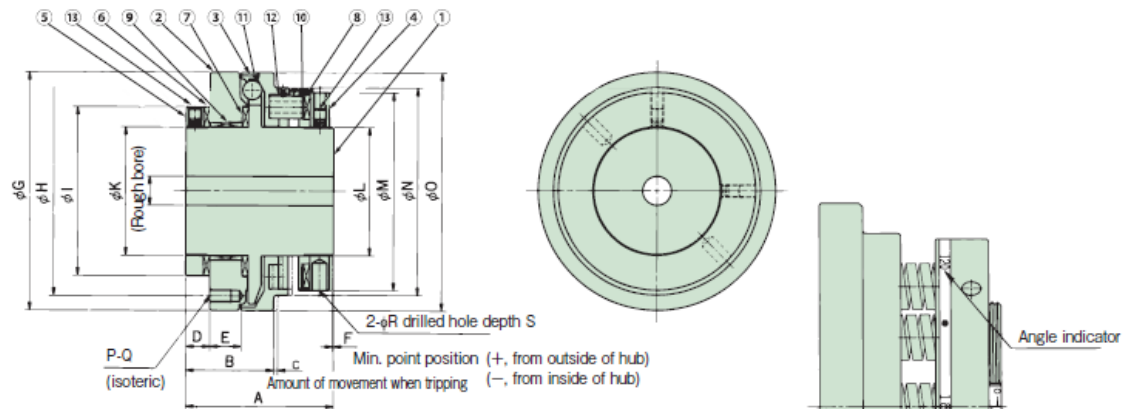
Safety

 WARNING	Death or serious injury may result from misusing the product without following the directions given under this sign.
	● Before carrying out maintenance, make sure there is no load or turning force applied to the machine. ● Inspect operation periodically for overloads. ● Comply with Ordinance on Labor Safety and Hygiene 2-1-1 general standards. ● Comply with this manual when conducting unit installation, removal, maintenance and inspection. ● When using with lifting equipment, install a suitable protection device for safety purposes. Otherwise the equipment may occur due to a falling accident.
 CAUTION	Minor or moderate injury, as well as damage to the product may result from misusing the product without following the directions given under this sign.
	● Read this manual thoroughly before servicing the unit, and handle the unit correctly. ● Design the equipment so that it can tolerate load and rotational force when overloaded. ● Mechanical parts may wear depending on the rotation speed and slipping time. Check the operation periodically, and for any mechanical failure, contact TSUBAKIMOTO CHAIN. ● This manual is an essential part of the unit, and it should remain with the unit at all times including when redistributed.

Note : Failure take heed of information labeled “CAUTION” may also lead to serious accidents depending on the situation.

1. CONSTRUCTION

SHOCK GUARD

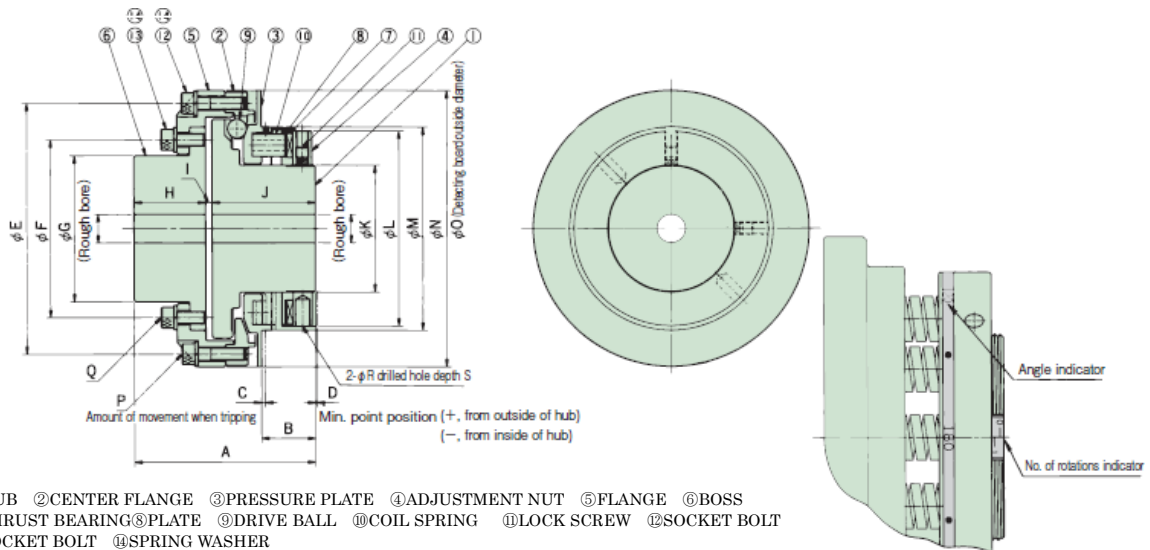


①HUB ②DRIVEN FLANGE ③PRESSURE PLATE ④ADJUSTMENT NUT ⑤LOCK NUT
 ⑥⑦THRUST BEARING A ⑧THRUST BEARING B ⑨RADIAL BEARING ⑩PLATE
 ⑪DRIVE BALL ⑫COIL SPRING ⑬LOCK SCREW

*1 TGX35 consists of ⑥⑦THRUST BEARING A ⑧THRUST BEARING B ⑨RADIAL BEARING

*2 TGX10 does not have ⑥⑦THRUST BEARING A and ⑨RADIAL BEARING. Only the ball is set (35piecesX2lines)

*3 ADJUSTMENT NUT for fixing the LOCK SCREW (1) is included with the SHOCK GUARD. After setting appropriate torque, tighten with the following torque to avoid interference with the HUB's pocket.
 Lock screw size :TGX10~35 M5...3.8N · m {38.7kgf · cm} TGX50/70 M8...16N · m {163kgf · cm}



①HUB ②CENTER FLANGE ③PRESSURE PLATE ④ADJUSTMENT NUT ⑤FLANGE ⑥BOSS
 ⑦THRUST BEARING⑧PLATE ⑨DRIVE BALL ⑩COIL SPRING ⑪LOCK SCREW ⑫SOCKET BOLT
 ⑬SOCKET BOLT ⑭SPRING WASHER

*3 ADJUSTMENT NUT for fixing the LOCK SCREW (1) is included with the SHOCK GUARD. After setting appropriate torque, tighten with the following torque to avoid interference with the HUB's pocket.
 Lock screw size :TGX10~35 M5...3.8N · m {38.7kgf · cm} TGX50/70 M8...16N · m {163kgf · cm}

2. DISASSEMBLY

When the bore finishing is processed, it is necessary to disassemble it.

Please note that each part doesn't mix when you disassemble two or more Shock guard.

2-1 PROCESS

(1) Please have the adjustable nut side below, and detach the bolt where the flange is fixed.

(2) Next, please detach the plate, the coil spring, the thrust bearing B, and the slide plate.

(3) Please detach the drive ball.

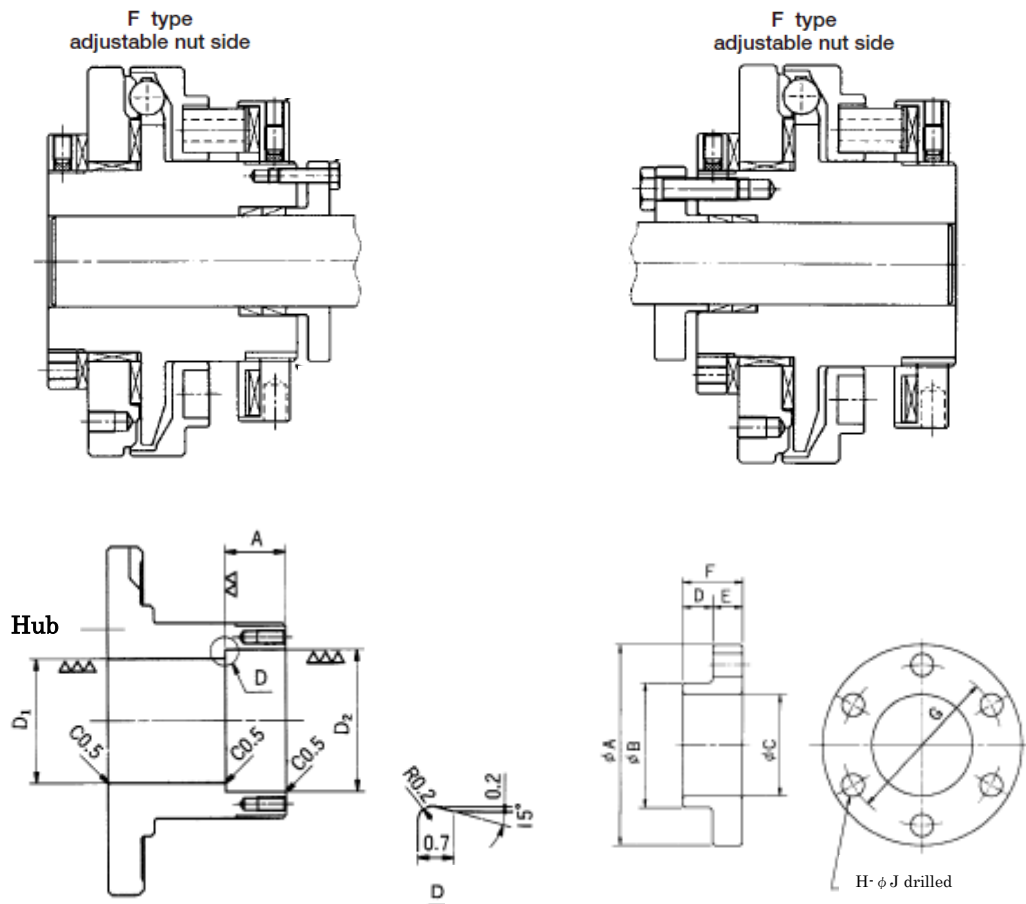
3. BORE FINISHING

3-1 COMBINATION WITH A POWER LOCK

The combination with a power lock will recommend our power lock EL series. Each size and the axis diameter and power lock model No. that suits it are as shown in the table.

The pressure flange is necessary for the combination with the EL series.

Shaft diameter	Power lock model No.	Hub • Boss				
		Bore diameter		Axially size (A)		
		φ D1	φ D2	Power lock number		
				1	2	3
10	PL010×013E	10H7	13H7	7.5	12	16.5
12	PL012×015E	12H7	15H7	7.5	12	16.5
13	PL013×016E	13H7	16H7	7.5	12	16.5
14	PL014×018E	14H7	18H7	9.3	15.6	21.9
15	PL015×019E	15H7	19H7	9.3	15.6	21.9
16	PL016×020E	16H7	20H7	9.3	15.6	21.9
17	PL017×021E	17H7	21H7	9.3	15.6	21.9
18	PL018×022E	18H7	22H7	9.3	15.6	21.9
19	PL019×024E	19H7	24H7	9.3	15.6	21.9
20	PL020×025E	20H7	25H7	9.3	15.6	21.9
22	PL022×026E	22H7	26H7	9.3	15.6	21.9
24	PL024×028E	24H7	28H7	9.3	15.6	21.9
25	PL025×030E	25H7	30H7	9.3	15.6	21.9
28	PL028×032E	28H7	32H7	9.3	15.6	21.9
30	PL030×035E	30H7	35H7	9.3	15.6	21.9
32	PL032×036E	32H7	36H7	9.3	15.6	21.9
35	PL035×040E	35 ^{+0.030 +0.010}	40H7	10	17	24
36	PL036×042E	36H7	42H7	10	17	24
38	PL038×044E	38H7	44H7	10	17	24
40	PL040×045E	40H7	45H7	11	19	27
42	PL042×048E	42H7	48H7	11	19	27
45	PL045×052E	45H8	52H7	13	23	33
48	PL048×055E	48H8	55H7	13	23	33
50	PL050×057E	50H8	57H7	13	23	33
55	PL055×062E	55H8	62H7	13	23	33
56	PL056×064E	56H8	64H7	15	27	39
60	PL060×068E	60H8	68H7	15	27	39
63	PL063×071E	63H8	71H7	15	27	39
65	PL065×073E	65H8	73H7	15	27	39
70	PL070×079E	70H8	79H7	17	31	45



Rough Bore Pressure Flange

Unit: mm

Pressure flange Model No.	A	Rough bore max dimensions		D	E	F	G PCD	H	J	※1 Mass kg	Inertia moment kg·m ²	※2 GD ² kgf·m ²	Pressure bolt size × the number	Top side screw effective depth	
		B	C												
TGX10-F	30	14.9	10.1	5	6	11	22	4	4.5	0.037	0.043	0.173	M4×14ℓ	4	M4× 8ℓ
TGX20-F	40	24.8	10.1	6	6	12	32	6	4.5	0.080	0.150	0.600	M4×14ℓ	6	M4× 8ℓ
TGX35-F	55	39.8	15.1	6	6	12	47	8	4.5	0.16	0.598	2.39	M4×14ℓ	8	M4× 8ℓ
TGX35-S	70	39.8	15.1	6	8	14	60	6	5.5	0.29	1.698	6.79	M5×16ℓ	6	M5× 8ℓ ※3
TGX50-F	81	56.8	20.2	7	10	17	69	8	6.6	0.53	4.240	16.96	M6×22ℓ	8	M6×12ℓ
TGX70-F	101	78.7	25.2	7	10	17	89	10	6.6	0.87	10.83	43.33	M6×22ℓ	10	M6×12ℓ

※1, Weight and ※2 GD² are together as 1 set of pressure flange (max. bore) and pressure bolt.

※3 Already finished at fixed nut (note).

All products are MTO.

Bore diameter/Power Lock applicable range

[illegible]

Bore diameter/Power Lock applicable range

[illegible]

3-2 BORE DIAMETER AND KEYWAY SPECIFICATIONS

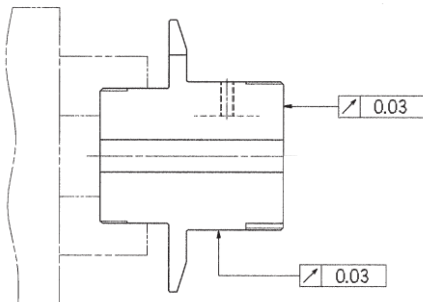
Torque Guard TGX		Torque Guard side			Coupling side (Torque Guard Coupling only)		
Torque Guard Model No.	Torque Guard Coupling Model No.	Bore diameter	Set screw	Set screw position L1	Bore diameter	Set screw	Set screw position L2
TGX10	TGX10-C	φ 15 and below	2-M4 × 4	21	φ 19 and below	2-M4 × 4	8
TGX20	TGX20-C	φ 23 and below	2-M5 × 5	20.5	φ 35 and below	2-M5 × 5	12
		φ 24,25	2-M4 × 4				
TGX35	TGX35-C	φ 35 and below	2-M6 × 6	20.5	φ 50 and below	2-M6 × 6	11
TGX50	TGX50-C	φ 55 and below	2-M6 × 6	24.5	φ 60 and below	2-M6 × 6	13
TGX70	TGX70-C	φ 70 and below	2-M6 × 6	25	φ 80 and below	2-M6 × 6	15

1.Set screws are located at 2 positions, on the keyway and 90° CW from it.

2.For Torque Guard Couplings, only the TGX10-C has a different keyway phase between the Torque Guard side and the coupling side.

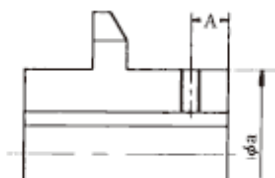
3-3 CENTERING METHOD

Chuck the hub's end face, then center and finish it as shown in the diagram below.

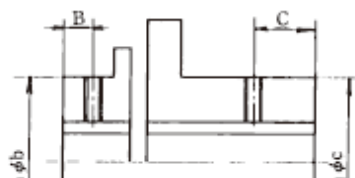


3-4 BORE KEYWAY SET SCREW DIMENSIONS

Dimensions Model No.	A x screw diameter	B x screw diameter	C x screw diameter	a	b	c
TGX10	21 × M5 and below	—	—	30	—	—
TGX20	20.5 × M5	—	—	40	—	—
TGX35	20.5 × M6	—	—	55	—	—
TGX50	24.5 × M6	—	—	80	—	—
TGX70	26 × M6	—	—	100	—	—
TGX10-C	—	8 × M 4 and below	21 × M5 and below	—	33	30
TGX20-C	—	12 × M 8 and below	20.5 × M5	—	55	40
TGX35-C	—	11 × M10 and below	20.5 × M6	—	70	55
TGX50-C	—	13 × M10 and below	24.5 × M6	—	92	80
TGX70-C	—	15 × M10 and below	25.2 × M6	—	116	100



SHOCK GUARD



SHOCK GUARD COUPLING

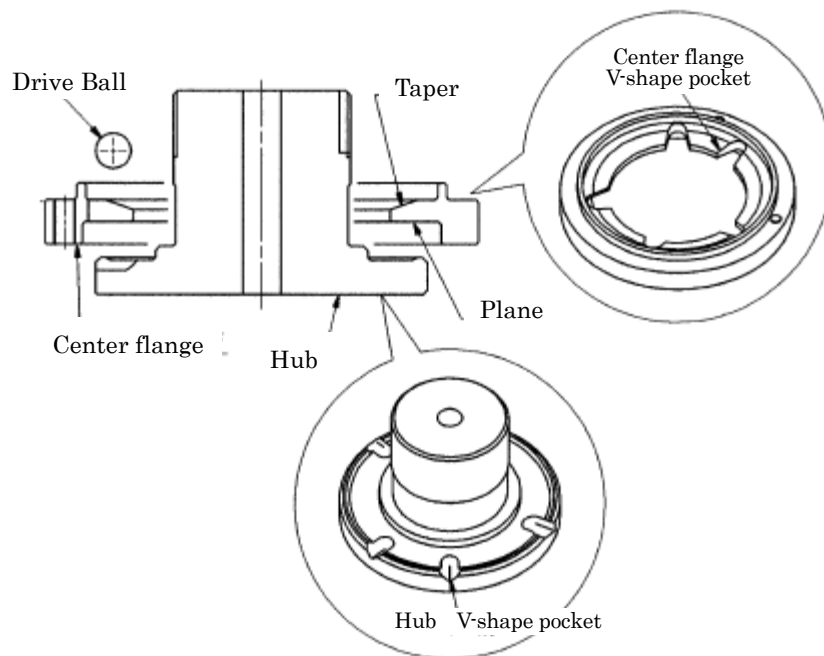
4 ASSEMBLY

First of all, please confirm there are neither dust nor spent chips in each part.

4-1 Grease is thinly spread on V-shape pocket part and V-shape pocket side all surroundings of the hub, and the center flange is built in.

A plane side of the center flange is positioned on V-shape pocket side of the hub.

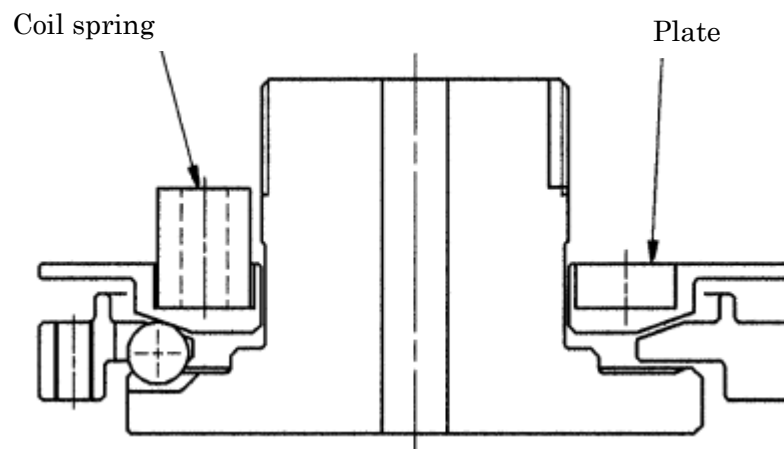
4-2 The phase of V-shape pocket of the center flange and the hub is matched, and five balls that spread grease on V-shape pocket are displayed.



4-3 Grease is spread on the taper all surroundings of the plate, the taper side is adjusted to the ball side, and it builds it.

4-4 The spring is displayed on the plate.

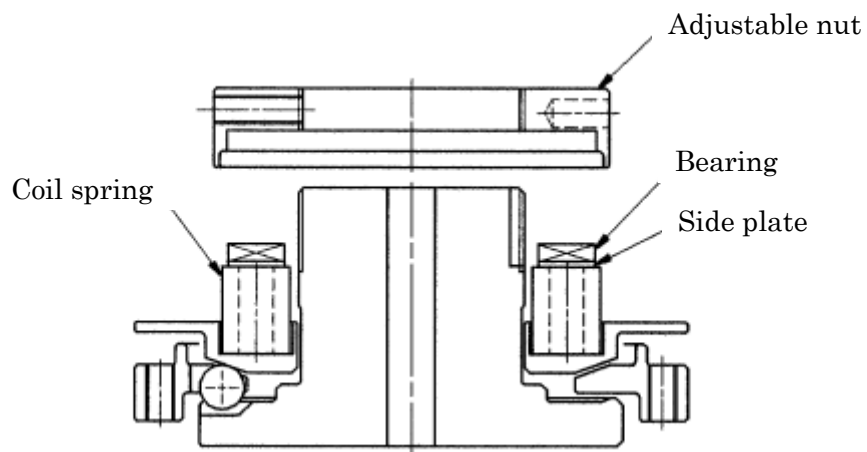
4-5 The side plate is put on the coil spring, and the bearing that spreads grease on that on both sides is put.



4-6 The adjustable nut screws in from the bearing in the hub.

4-7 The flange and the boss are fixed with the hexagonal bolt.

4-8 The flange and the center flange are fixed with the hexagonal bolt.



5 SETTING TRIP TORQUE

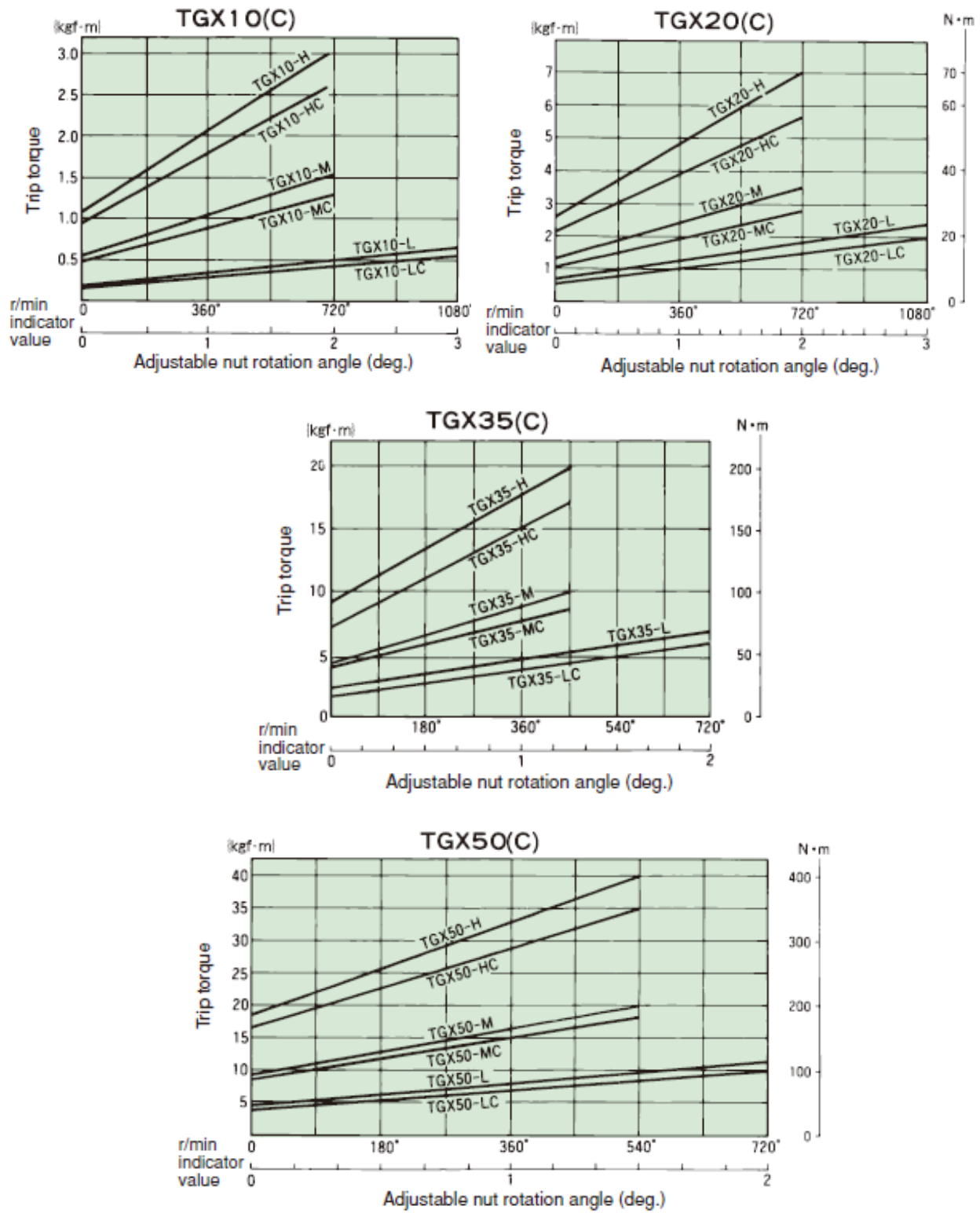
5-1 TGX Shock Guards are all set at the “0” point (minimum torque value) for delivery. Confirm that the torque indicator is set at “0” when you receive the Torque Guard.

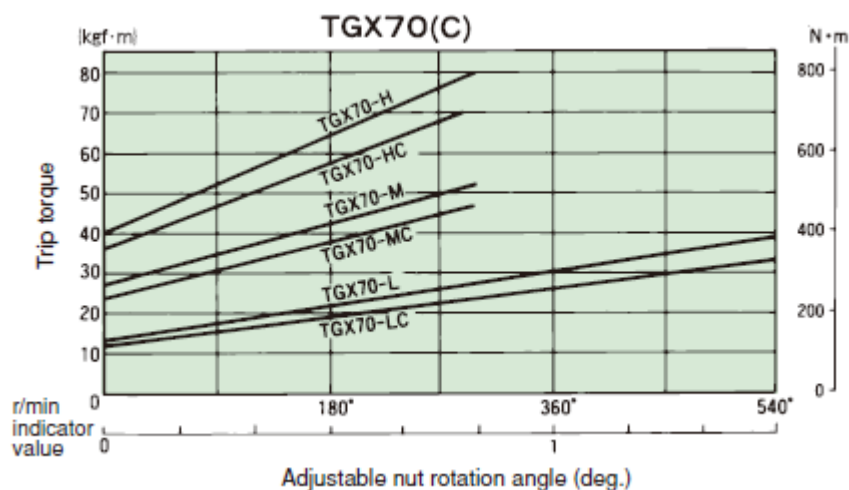
5-2 From the “Tightening Amount - Torque Correlation Chart” (below), find the adjusting nut’s (bolt) tightening angle equivalent to the predetermined trip torque. The torque indicator is at every 60° pitch. Set at 60° toward the determined tightening value, then install to the machine and conduct a trip 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 these values only as a rough guide.

5-3 After setting torque, screw the lock screw to the adjusting nut.

5-4 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. Refer to page 27 for the lock screw’s tightening torque and precautions.

Tightening Amount - Torque Correlation Chart





6 CENTERING METHOD

6-1 Centering method I

- Separate the flange from the hub and center flange.
- Move the flange, then set to the I dimensions shown in Table 1.
- Fix a dial gauge to the hub (coupling side hub), then measure the run-out of the hub's end face and outer circumference.

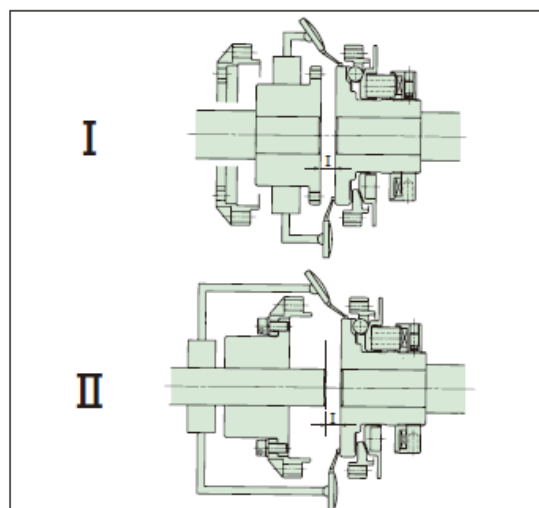
6-2 Centering method II

- Separate the flange and the center flange.
- Fix a dial gauge to the shaft, then measure the run-out of the hub's end face and outer circumference.
- Move the boss (coupling side hub), then set to the I dimensions shown in Table 1.

Note Make sure to secure it using the I dimensions in Table 1, otherwise the Shock Guard can not be used because backlash will occur.

Table 1 Unit: mm

Model No.	I dimensions
TGX10-C	2
TGX20-C	3
TGX35-C	3
TGX50-C	4
TGX70-C	4



Allowable Misalignment

Unit: mm

Model No.	Allowable angular misalignment deg.	Allowable parallel misalignment	Allowable axial misalignment
TGX10-C	0.6	0.1	±0.5
TGX20-C	0.6	0.1	±0.5
TGX35-C	0.6	0.1	±0.5
TGX50-C	0.6	0.1	±0.6
TGX70-C	0.6	0.1	±0.7

For reference: Hub end face run-out per angular misalignment $\theta = 0.10^\circ$ Unit: mm

Model No.	Outside diameter	Hub end face run-out
TGX10-C	φ 53	0.092
TGX20-C	φ 75	0.131
TGX35-C	φ 98	0.171
TGX50-C	φ 138	0.241
TGX70-C	φ 177	0.309

Make angular misalignment as small as possible when installing the Torque Guard.

6-3 COMBINATION WITH A POWER LOCK

pressure bolt tightening torque

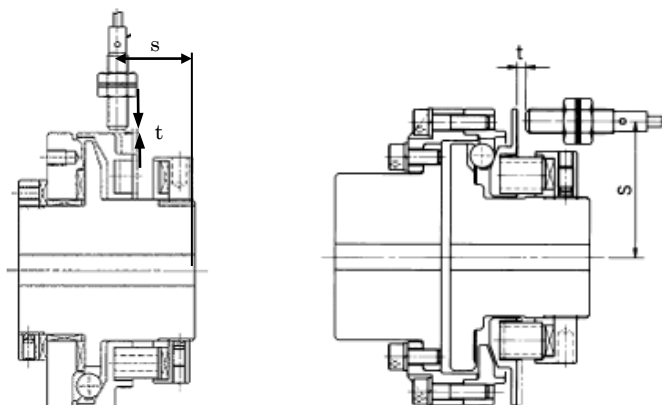
Shaft diameter (mm)	Power Lock Model No.	Pressure bolt tightening torque N·m{kgf·m}					
		TGX10 (C)	TGX20	TGX35 (C)		TGX50 (C)	TGX70 (C)
		F	F	F	S	F	F
10	PL010×013E	2.94 [0.30]	1.96 [0.20]				
12	PL012×015E	3.14 [0.32]	2.06 [0.21]				
13	PL013×016E		2.16 [0.22]				
14	PL014×018E		3.53 [0.36]				
15	PL015×019E		3.92 [0.40]	2.94 [0.30]	5.00 [0.51]		
16	PL016×020E		4.02 [0.41]	3.04 [0.31]	5.10 [0.52]		
17	PL017×021E		4.02 [0.41]	3.14 [0.32]	5.19 [0.53]		
18	PL018×022E		4.02 [0.41]	3.23 [0.33]	5.39 [0.55]		
19	PL019×024E		4.02 [0.41]	3.63 [0.37]	6.17 [0.63]		
20	PL020×025E			3.72 [0.38]	6.37 [0.65]	5.49 [0.56]	
22	PL022×026E			3.72 [0.38]	6.27 [0.64]	5.59 [0.57]	
24	PL024×028E			3.92 [0.40]	6.66 [0.68]	5.59 [0.57]	
25	PL025×030E			4.02 [0.41]		6.27 [0.64]	5.00 [0.51]
28	PL028×032E			4.02 [0.41]		6.47 [0.66]	5.19 [0.53]
30	PL030×035E			4.02 [0.41]		7.06 [0.72]	5.59 [0.57]
32	PL032×036E			4.02 [0.41]		7.35 [0.75]	5.88 [0.60]
35	PL035×040E			4.02 [0.41]		9.11 [0.93]	7.25 [0.74]
36	PL036×042E						9.51 [0.97]
38	PL038×044E						9.90 [1.01]
40	PL040×045E						11.7 [1.19]
42	PL042×048E						12.3 [1.26]
45	PL045×052E						13.7 [1.40]
48	PL048×055E						13.7 [1.40]
50	PL050×057E						13.7 [1.40]
55	PL055×062E						13.7 [1.40]
56	PL056×064E						13.7 [1.40]
60	PL060×068E						13.7 [1.40]
63	PL063×071E						13.7 [1.40]
65	PL065×073E						13.7 [1.40]
70	PL070×079E						13.7 [1.40]

7 OVERLOAD DETECTION

TG Sensor installation

The detecting distance of a TG Sensor is 1.5mm. Set the Shock Guard in a non-trip condition with the dimensions (s, t) in the chart below.

Install the TG Sensor with the Shock Guard at the tripped position. Then, while rotating the Shock Guard by hand, verify that the TG Sensor is functioning (LED at the side is lighting) and there is no interference with the plate. Finally, reset the Shock Guard.



Unit: mm

Dimensions Model No.	S	t	Amount of plate movement
TGX10	29.9	1.2	1.4
TGX20	28.3	1.2	1.6
TGX35	29.5	1.2	2.0
TGX50	35.6	1.2	2.6
TGX70	34.5	1.2	3.5

Unit: mm

Dimensions Model No.	S	t	Amount of plate movement
TGX10-C	36.5	2.1~2.8	1.3
TGX20-C	45	2.4~3.1	1.6
TGX35-C	59	2.7~3.4	1.9
TGX50-C	83	3.2~3.9	2.4
TGX70-C	105	4.1~4.8	3.3

8 RETURN

Reset is carried out by an automatic reset system.

Please stop rotating once, and remove the cause of the overload.

9 MAINTENANCE

Lightly grease the balls and bearings once per year or every 1,000 trips.

Grease

Mobil	Showa Shell	Eneos	Idemitsu	Cosmo
Mobilux	Alvania	Epnoc Grease	Daphny Eponex	Cosmo Dynamax
EP2	EP Grease 2	AP(N)2	Grease EP No.2	EP Grease 2

Warranty

TSUBAKIMOTO CHAIN CO.: hereinafter referred to as "Seller"
Customer: hereinafter referred to as "Buyer"
Goods sold or supplied by Seller to Buyer: hereinafter referred to as "Goods"

1. Warranty period without charge

18 months effective the date of shipment or 12 months effective the first use of Goods, including installation of Goods to Buyer's equipment or machines - whichever comes first.

2. Warranty coverage

Should any damage or problem with the Goods arise within the warranty period, given that the Goods were operated and maintained under instructions provided in the manual, Seller would repair and replace at no charge once the Goods are returned to Seller. The following are excluded from the warranty.

- 1) Any costs related to removing Goods from the Buyer's equipment or machines to repair or replace parts.
- 2) Costs to transport Buyer's equipment or machines to the Buyer's repair shop.
- 3) Costs to reimburse any profit loss due to any repair or damage and consequential losses caused by the Buyer.

3. Warranty with charge

Seller will charge any investigation and repair of Goods caused by:

- 1) Improper installation by failing to follow the instruction manual.
- 2) Insufficient maintenance or improper operation by the Buyer.
- 3) Incorrect installation of Goods to other equipment or machines.

- 4) Any modifications or alterations of Goods by the Buyer.
- 5) Any repair by engineers other than the Seller or those designated by the Seller.
- 6) Operation in an inappropriate environment not specified in the manual.

- 7) Force Majeure or forces beyond the Seller's control such as natural disasters and injustice done by a third party.
- 8) Secondary damage or problem incurred by the Buyer's equipment or machines.

- 9) Defected parts supplied, or specified by the Buyer.
- 10) Incorrect wiring or parameter setting by the Buyer.
- 11) The end of life cycle of the Goods under normal usage.
- 12) Loss or damage not liable to the Seller.

4. Dispatch Service

Service to dispatch a Seller's engineer to investigate, adjust or trial test Seller's Goods is at the Buyer's expense.

5. Disclaimer

- 1) In our constant efforts to improve, TSUBAKIMOTO CHAIN may change the contents of this document without notice.
- 2) Considerable effort has been made to ensure that the contents of this document are free from errors. However, TSUBAKIMOTO CHAIN makes no warranties with respect to the accuracy of information described herein. In the mean time, we would appreciate comments or reports on any inaccuracies or omissions found in this document to help us make timely amendments as necessary. Your cooperation is greatly appreciated.



TSUBAKIMOTO CHAIN CO.

1-1, Kohtari-Kuresumi, Nagaokakyo

Kyoto 617- 0833, Japan

Website: <http://tsubakimoto.com/>

Global Associated Partners:

U.S. Tsubaki Power Transmission, LLC

<http://www.ustsubaki.com/>

Tsubakimoto Singapore Pte. Ltd.

<http://tsubaki.sg/>

Tsubakimoto Europe B.V.

<http://tsubaki.eu/>

Tsubaki of Canada Limited

<http://tsubaki.ca/>

Taiwan Tsubakimoto Co.

<http://tsubakimoto.com.tw/>

Tsubakimoto U.K. Ltd.

<http://tsubaki.eu/>

Tsubaki Australia Pty. Limited

<http://tsubaki.com.au/>

Tsubakimoto Chain (Shanghai) Co., Ltd.

<http://tsubaki.cn/>

Tsubakimoto Korea Co., Ltd..

<http://tsubakimoto-tck.co.kr/>

DATE 2020/09/09 BulltinNo.08J00TS00E1