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INSTALLATION MANUAL

TORQUE LIMITER Series

TL10(C)~TL20(C)

Safety Guide and Warranty



WARNING

Death or serious injury may result from product misuse due to not following the instructions.

“Mechanical type Safety and Control devices”

- Begin inspection and maintenance after verifying that no load or rotational force is being applied to the equipment.
- Check the operation of the device periodically so that it can be sure to function properly when overload occurs.

“Electrical type Safety and Control devices”

- When carrying out an operation test or making a periodic inspection, make sure to verify that it functions properly as a protection device.
- Follow the instruction manual when carrying out megger testing because most electrical devices have certain requirements for megger testing.
- Check the operation of the device periodically so that it can be sure to function properly when overloaded occurs.

“Common”

- Comply with the 2-1-1 General Standard of “Ordinance on Labor Safety and Hygiene”.
- When performing maintenance or inspections:
 - 1) Wear proper work clothes and protective equipment (safety devices, gloves, shoes, etc.). To avoid an accident, make sure to perform maintenance and inspections in an appropriate environment.
 - 2) Make sure the power is switched off, and the machine has stopped completely before carrying out maintenance and inspections. Take the necessary measures to ensure the power is not turned back on.
 - 3) Follow the instruction manual.
 - 4) Wire according to the technical standards of Electrical Installation and company regulations. Take note of the cautions in this manual which explain installation direction, clearance and environmental conditions. Make sure to ground the device to prevent electrical shock and to improve noise resistance.
- When using with lifting equipment, install a suitable protection device for safety purposes, otherwise an accident resulting in death, serious injury or damage to the equipment may occur due to a falling accident.

**CAUTION**

Minor or moderate injury, as well as damage to the product may result from product misuse due to not following the instructions.

“Mechanical type Safety and Control devices”

- The strength of the equipment should be designed to withstand the load or rotational force when the device is activated due to overload.
- Wear damage may occur depending on the number and frequency of activations. Following the manual, check the functions and operations periodically. If something is not functioning properly, contact the distributor for repair.

“Electrical type Safety and Control devices”

- Consumable parts (tantalum electrolytic capacitors, relays, etc.) are built-in the products. Using the manual, periodically check the functions and operation of the device. If it is not functioning properly, contact the distributor for repair.
- Do not use the device in a corrosive gas environment. Sulphidizing gases (SO₂, H₂S) can especially corrode the copper and copper alloy used on PCBs and parts, and cause a malfunction.

“Common”

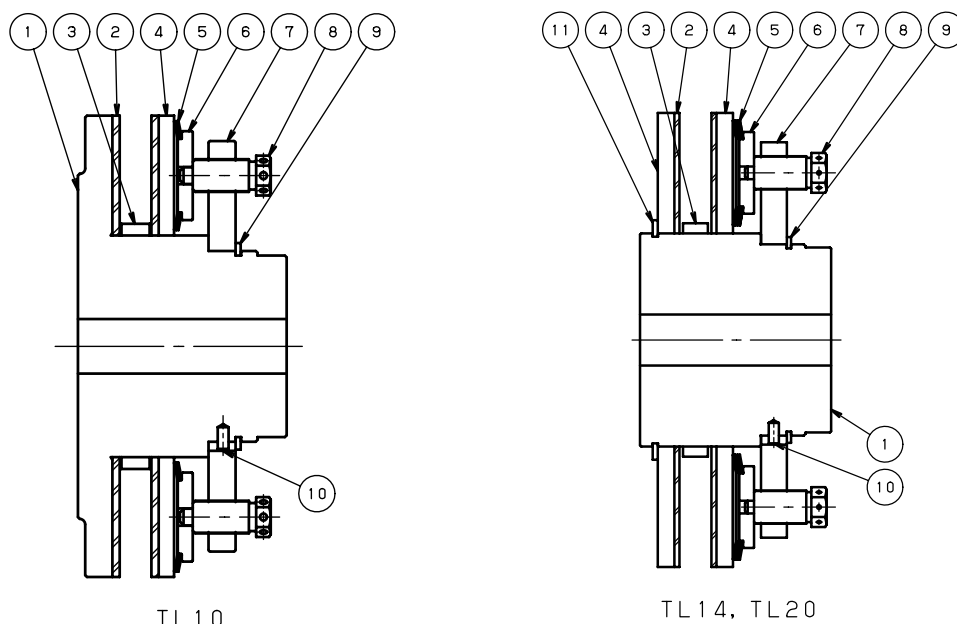
- Read the instruction manual carefully, and use the product properly. In case the instruction manual is not available, request one from the distributor where you purchased the product, or our sales office with the product name and model number.
- Deliver this instruction manual to the final customer who uses the TSUBAKIMOTO CHAIN product.

Thank you for purchasing a Torque Limiter. Make sure the unit delivered matches your order and no shortages exist in the parts provided. Any such shortages or other delivery errors must immediately be reported to your distributor. This manual should be considered an essential part of the Torque Limiter and remain with the coupling when redistributed.

To ensure safety, read all instructions thoroughly before installing or working on the equipment.

1. Assembly of Torque Limiter

Wipe off oil, rust and dirt from each part before assembling your Torque Limiter. Then, assemble as follows.



PART NO.	NAME OF PART
1	Hub
2	Friction facing
3	Bushing
4	Pressure plate
5	Disc spring
6	Spring plate
7	Pilot plate
8	Adjustable bolt
9	Spiro lox
10	Spring pin
11	Snap ring shaft

Table 1

2. Machining accuracy on center member

- ① Finish the friction face sides of the center member (both sides) in 3s-6s.
- ② In addition machine the bore diameter of the center member in accordance with the dimensional tolerance in the catalog.

3. Run-in

Usually, run-in operations for the Torque Limiter are not necessary. When slip torque stability is especially important, hand tighten the adjusting nut or bolts as much as possible, and then slip approximately 500 times for running-in at a wrench-tightened 60° more. If the rotation speed is fast, split several times and subject it to 500 slips.

4. Torque setting

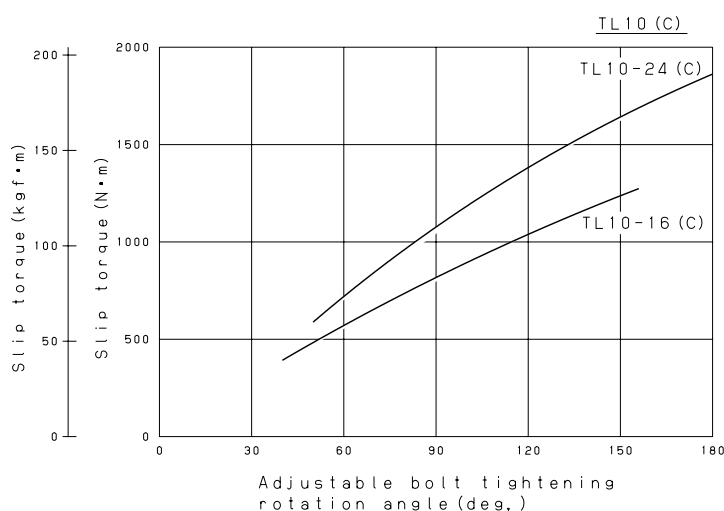
After installing the Torque Limiter to the equipment, tighten the adjusting bolts gradually from a loose position to find the optimal position.

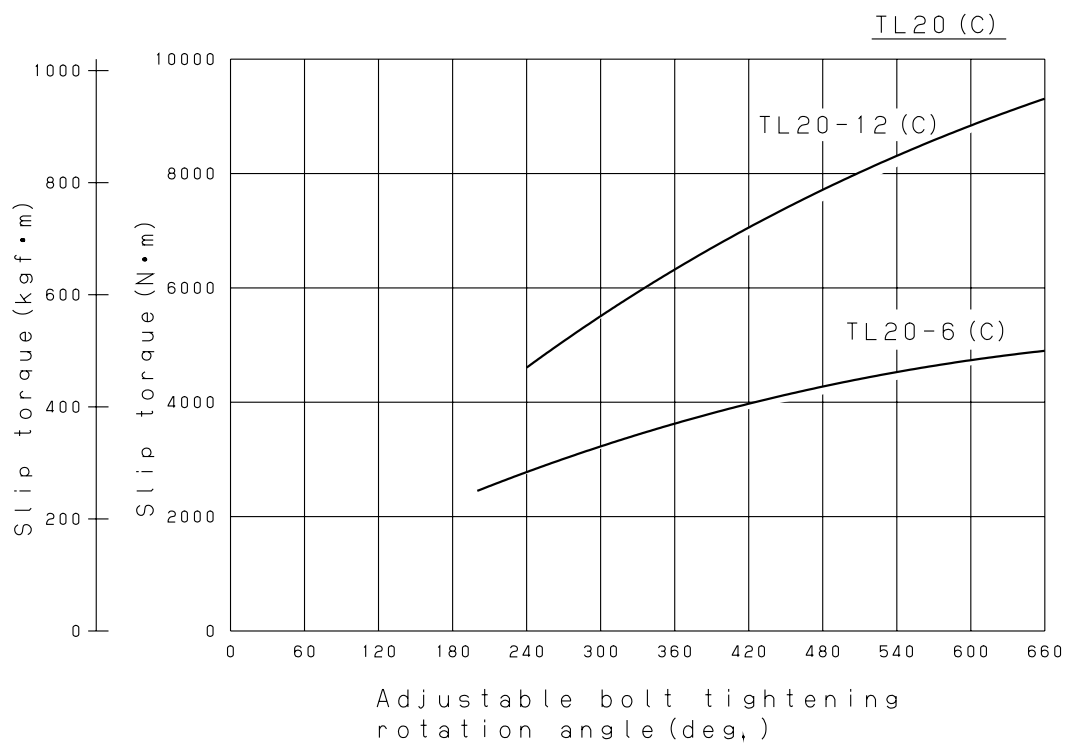
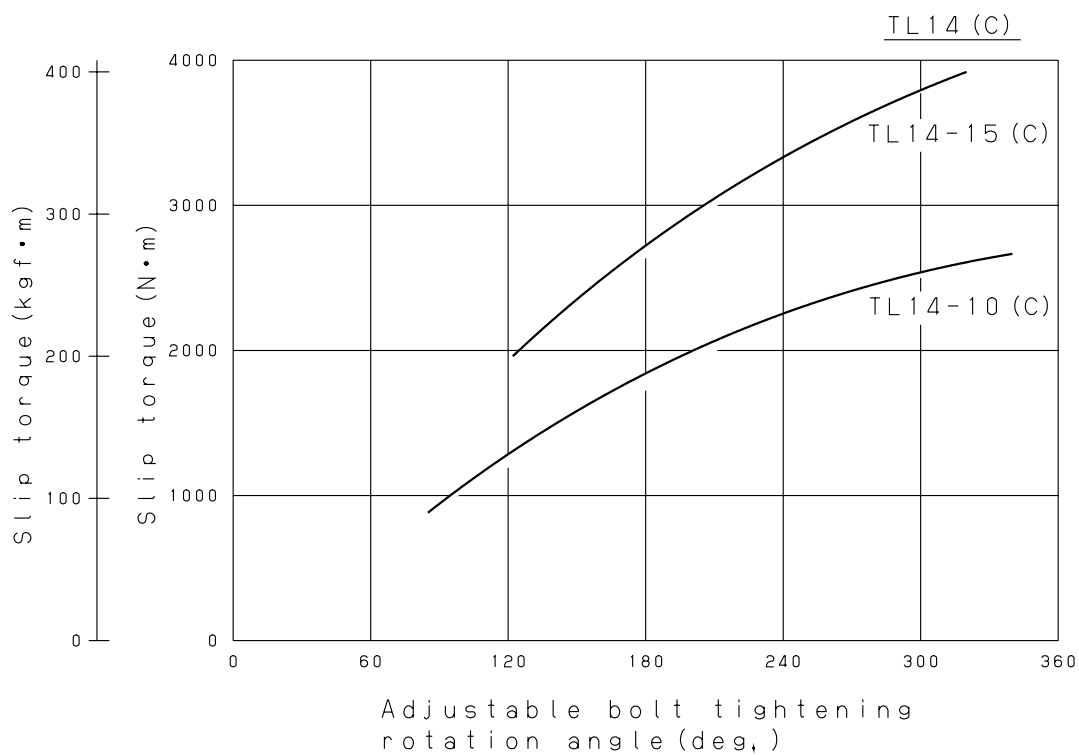
In addition, by using the “Tightening Amount-Torque Correlation Charts” below, the tightening amount of the adjusting bolts for slip torque can be found. However, due to the condition of the friction surface and other factors, the torque for the fixed tightening amount changes.

Using the graph as a rough guide, try test operating the Torque Limiter with the tightening amount slightly loose, then tighten gradually to find the optimal position. This is the most practical method.

Tightening Amount and Torque Correlation Chart

Tightening angle 0° in the under charts refer to a condition where a disk spring secured by hand-tightening the adjustable bolts.





5. Tightening method for adjustable bolts

Make sure Spirolox is surely in the ditch.

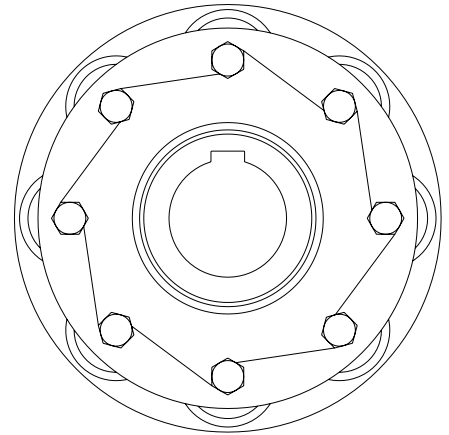
The Pilot plate for TL10 have 8 pcs. of adjustable bolts,
for TL14 and TL20 have 5 pcs. adjustable bolts.

Place the Spring plate and Disc spring in contact
with each other, and tighten the Adjustable bolts
manually until there is no backlash between their faces.

At this time, the center of the Adjustable bolt, Spring
plate, and the Disc spring must become the same.

Afterwards, retighten the adjustable bolts to the appropriate angle.

After completing the torque setting, thread the wire through the hole of the adjustable bolts,
and fix the wire firmly.



6. Replace the friction facing

Change the friction facing when they reach roughly half the thickness of dimension
described in the catalog. 2mm for TL10~TL20.

Before replacing the friction facing, each part must be completely free of oil, rust and dirt.
Also, reassemble the Torque Limiter according to the structure drawing.

7. Maintenance and precautions after the replacement procedure

Periodically inspect the torque setting, for the initial torque setting may be affected by
changes in friction, ambient temperature, humidity and other conditions.

Replace the friction facing and bushing if they wear. Their replacement parts are in stock.

Keep the Torque Limiter free from water and oil. This will maintain the effectiveness of
torque and prevent the equipment or load from falling, and causing serious accidents.

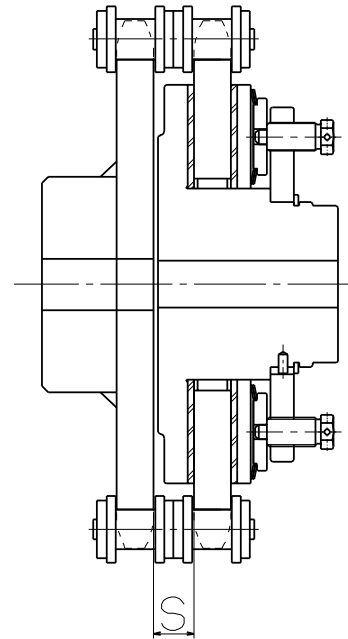
8. Torque Limiter Coupling

Refer to the heading 1 ~ heading 7 for assembly of Torque Limiter, torque setting and
precaution.

9. Installing the Torque Limiter Coupling

Align the shaft centers by calibrating the angular and parallel misalignments. Measure by placing the scale by the sprocket teeth. Adjust the length between the sprockets or dimension S, and their parallelism according to the dimensions provided below. Then wrap the chain around the sprockets and lock with a joint pin.

Size	TL10-C	TL14-C	TL20-C
S (mm)	26.2	30.1	30.1
Max. Angular Misalignment	0.5	0.5	0.5
Max. Parallel Misalignment	0.85	1.0	1.0



TSUBAKIMOTO CHAIN CO.: hereinafter referred to as “Seller”

Warranty: **Customer:** hereinafter referred to as “Buyer”

Goods sold or supplied by Seller to Buyer: hereinafter referred to as “Goods”

1. Warranty period without charge

Effective 18 months from the date of shipment or 12 months from the first use of Goods, including the installation of the Goods to the Buyer’s equipment or machine - 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 according to the instructions provided in the manual, the Seller will repair and replace at no charge once the Goods are returned to the Seller.

This warranty does not include the following:

- 1) Any costs related to removal of Goods from the Buyer’s equipment or machine to repair or replace parts.
- 2) Cost 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 for 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 the 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 environment not specified in the manual.
- 7) Force Majeure or forces beyond the Seller’s control such as natural disasters and injustices inflicted by a third party.
- 8) Secondary damage or problems incurred by the Buyer’s equipment or machines.
- 9) Defective parts supplied or specified by the Buyer.
- 10) Incorrect wiring or parameter settings by the Buyer.
- 11) The end of life cycle of the Goods under normal usage.
- 12) Losses or damages not liable to the Seller.

4. Dispatch service

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

5. Disclaimer

- 1) In our constant efforts to improve, TSUBAKIMOTO CHAIN may make changes to this document or the product described herein without notice.
- 2) Considerable effort has been made to ensure that the contents of this document are free from technical inaccuracies and errors. However, any such inaccuracies or errors reported will be gladly examined and amended as necessary.



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