

Instruction Manual for

SHOCK GUARD & SHOCK GUARD COUPLING

TGB Series

TGB20(C) --- TGB70(C), TGB90(C) --- TGB130(C)

Sprocket Types: TGB20 --- TGB70

- Thank you for purchasing SHOCK GUARD.
- 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.

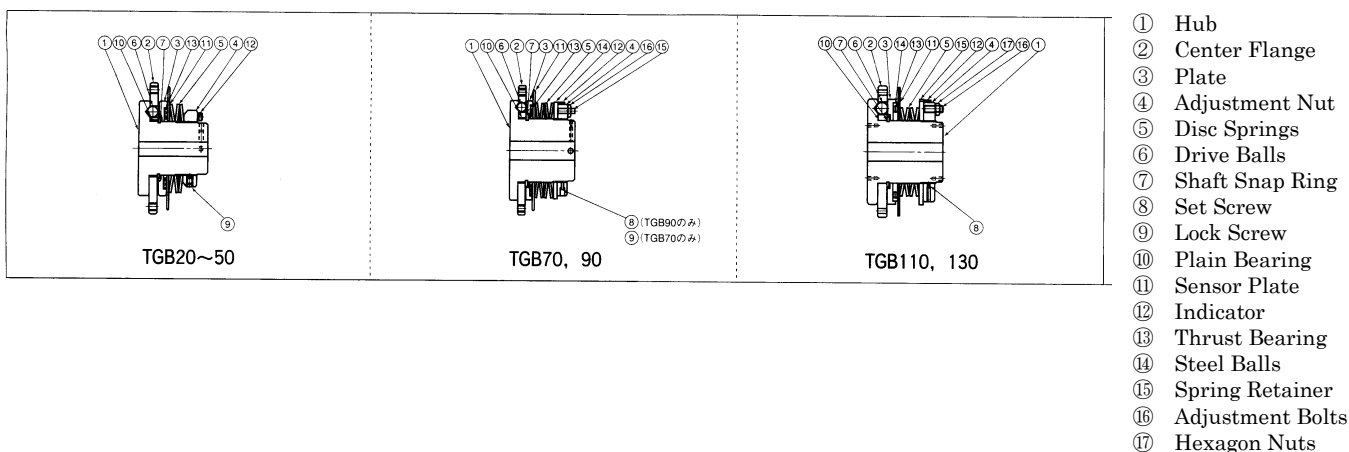
Safety

⚠ WARNING	Death or serious injury may result from misusing the product without following the directions
● 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.	

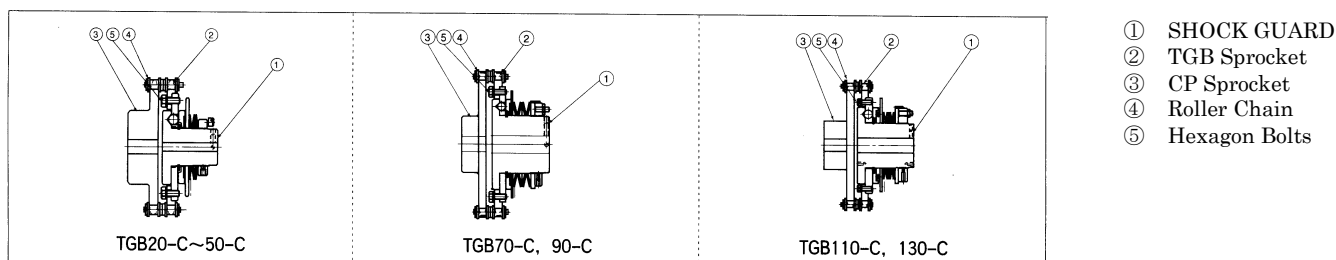
Note : Failure take heed of information labeled “CAUTION” may also lead to serious accidents depending on the situation.

1. Structure and Parts

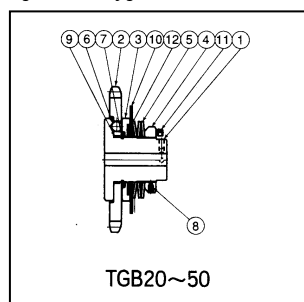
SHOCK GUARD



SHOCK GUARD COUPLING

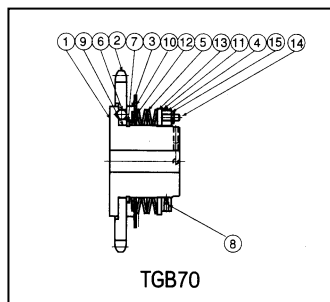


Sprocket Types



- ① Hub
- ② Center Sprocket
- ③ Plate
- ④ Adjustment Nut
- ⑤ Disc Springs
- ⑥ Drive Balls
- ⑦ Shaft Snap Ring
- ⑧ Lock Screw
- ⑨ Plain Bearing
- ⑩ Sensor Plate
- ⑪ Indicator
- ⑫ Thrust Bearing

TGB70



- ① Hub
- ② Center Sprocket
- ③ Plate
- ④ Adjustment Nut
- ⑤ Disc Springs
- ⑥ Drive Balls
- ⑦ Shaft Snap Ring
- ⑧ Lock Screw
- ⑨ Plain Bearing
- ⑩ Sensor Plate
- ⑪ Indicator
- ⑫ Thrust Bearing
- ⑬ Spring Retainer
- ⑭ Adjustment Bolts
- ⑮ Hexagon Nuts

- For sprocket types, follow the instructions for TGB20 --- TGB70.
- Each unit is provided with one lock screw ⑧.

2. Boring

1. General

Do not confuse the parts when disassembling two or more units. If incorrect parts are used, the unit indicator may lose accuracy.

<Disassembly>

TGB20 --- TGB50

- Remove the adjustment nut.
- Remove the following from hub in the order given: three disc springs, sensor plate, Thrust bearing and plate.
- Remove the shaft snap ring.
- Remove the drive balls after taking the center flange apart.
Make sure all parts are free of dust, and do not misplace the balls.

TGB70 --- TGB130

- Remove the hexagon screw that secures the adjustment nut (except for TGB70).
- Loosen the three hexagon nuts and remove the adjustment bolts.
- Remove the adjustment nut.
- Remove the following from hub in the order given: spring retainer, four dish springs, sensor plate, Thrust bearing and plate.
- Remove the drive balls after taking the center flange apart.
Make sure all parts are free of dust, and do not misplace the balls.

<Boring>

- Clamp the OD of hub flange and align the ODs of hub and boss.
- Refer to the following charts for tap sizes and positions.
Tap holes over the indicators for TGB20 --- TGB50.

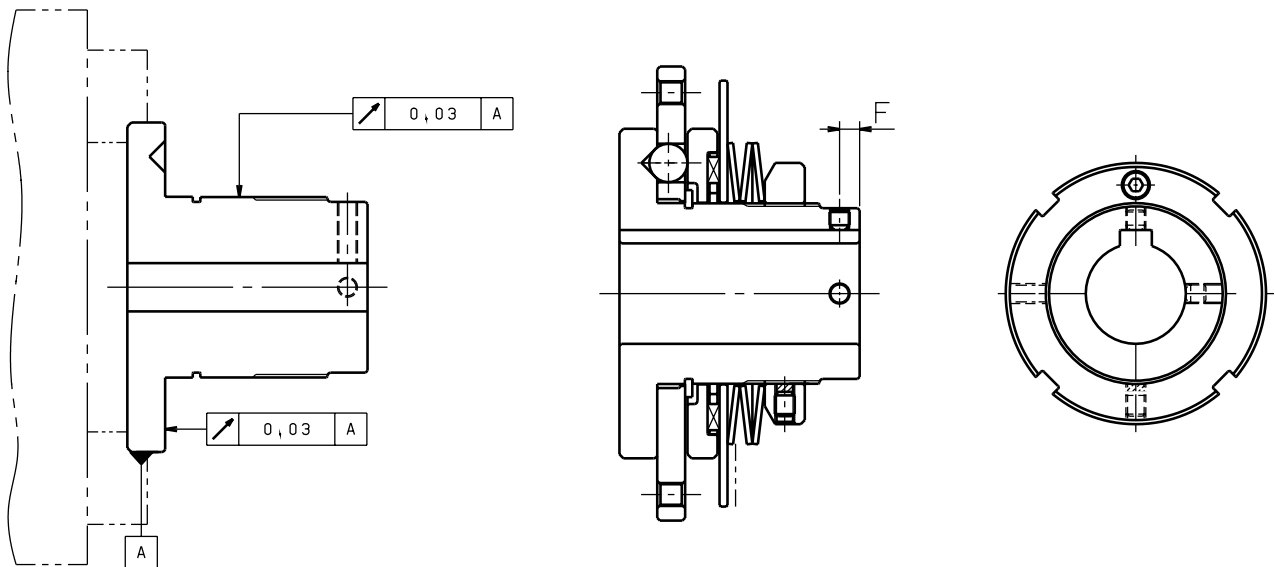
Model No.	Snap Ring Size
TGB20	32 (C Type)
TGB30	45 (Concentric)
TGB50	75 (Concentric)
TGB70	110 (Concentric)
TGB90	130 (C Type)
TGB110	160 (C Type)
TGB130	190 (C Type)

Unit : mm		
Model No.	F	Setscrew
TGB20	4	M4
TGB30	5	M5
TGB50	6	M6
TGB70	6	M8
TGB90	8	M10
TGB110	10	M12
TGB130	10	M12

Model No.	SHOCK GUARD		Coupling	
	Rough Bore	Max. Bore	Rough Bore	Max. Bore
TGB20	8	20	12.5	42
TGB30	12	30	18	48
TGB50	22	50	18	55
TGB70	32	70	28	75
TGB90	42	90	33	103
TGB110	52	110	38	113
TGB130	60	130	53	145

2. Coupling

Align and bore the boss portion while clamping it in place.



3. Re-assembly and Minimum Torque Resetting

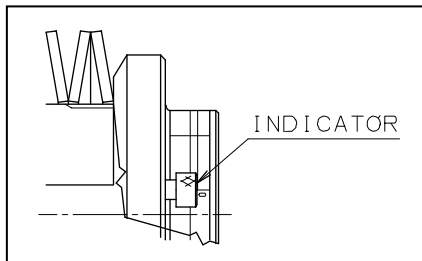
Re-assembly

- Re-assemble SHOCK GUARD by reversing the disassembly procedure.
- Then grease the drive balls and Thrust bearing.
- Confirm that the directions of the dish springs are correct.

MIN Torque Resetting

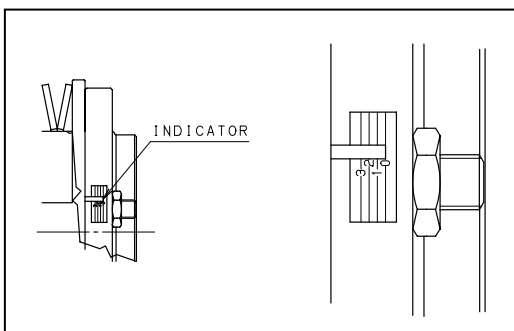
TGB20 --- TGB50

Tighten the adjustment nut and set the indicator at zero.



TGB70 --- TGB130

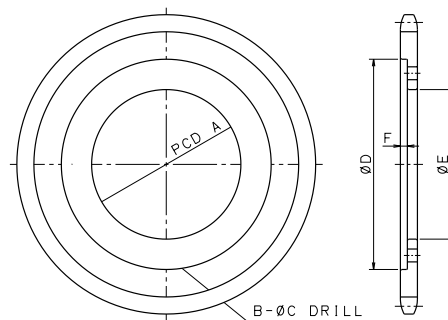
- Tighten the adjustment nut before fitting the adjustment bolts.
- Match the hub with its marking.
- Fix the hub with hexagon screws (lock screw for TGB70).
- Set the indicator at minimum or zero by tightening the three adjustment bolts.



4. Drive Member Installation

- Install a sprocket, pulley, or gear by securing their recessed portion in the OD of center flange.
- Secure with bolts.
- Then apply an anti-loosening agent to the bolts.

Recommended dimensions for the drive member.



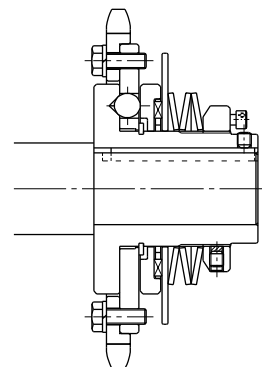
Unit : mm

Series	Recommended Dimensions for Drive Member					
	A	B	C	D	E	F
TGB20-H	78	4	5.5	90H7	64	3 and above
TGB30-L,H	100	6	6.6	113H7	84	4 and above
TGB50-L,M,H	142	6	9.0	160H7	124	5 and above
TGB70-H	200	6	11.0	220H7	172	5 and above
TGB90-L,H	265	8	13.5	295H8	240	5 and above
TGB110-L,H	325	6	17.5	355H8	292	5 and above
TGB130-L,H	360	8	17.5	400H8	325	5 and above

5. Shaft Installation

With Key

- Use a parallel key. The key should fit in the shaft keyway with a slight clearance over the key.
- Secure key and shaft to the unit by tightening the setscrew.
- Apply Loctite 242 or its equivalent to the setscrew.
- Clearance fit between the shaft and hub ID is recommended.
- If the key fits the shaft keyway with a tight fit, the adjustment nut may not be tightened.



6. Coupling Installation

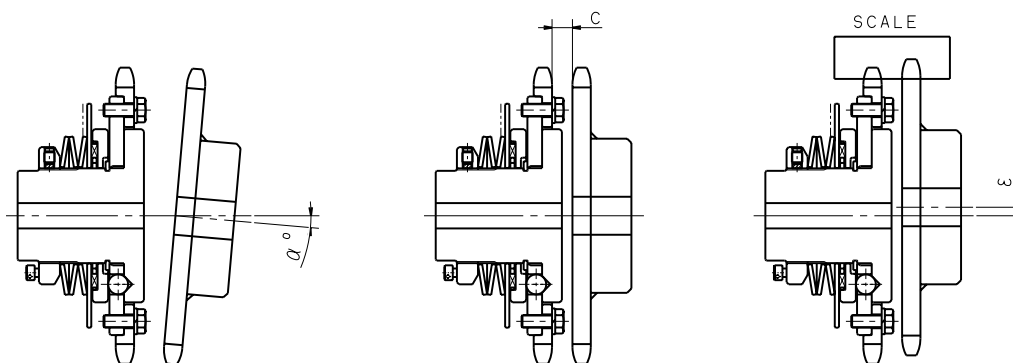
Align both sprockets within the tolerance specified in Table #.

① Angular Misalignment

Mount coupling within the allowable angular misalignment 0.5° while maintaining the specified dimension C.

② Parallel Misalignment

Align the bottom teeth against a straightedge within the appropriate misalignment ε .



Unit: mm

Model No.	Allowable Angular Misalignment (α°)	(C) Dimension	Allowable Parallel Misalignment (ε)mm
TGB20-C	0.5	7.1	0.25
TGB30-C	0.5	9.2	0.31
TGB50-C	0.5	10.9	0.38
TGB70-C	0.5	14.3	0.50
TGB90-C	0.5	17.8	0.64
TGB110-C	0.5	21.4	0.76
TGB130-C	0.5	28.5	1.00

After the sprockets are aligned, secure them by wrapping the roller chain around the sprockets. Insert the joint link in the chain ends and lock with the clip provided.

7. Torque Setting

1) TGB20 --- TGB50 (TGB20-C --- TGB50-C)

- ① Find the tightening angle that corresponds to your required trip torque using the Tightening Angle and Trip Torque graph on the next page. First, tighten the adjustment nut 60 degrees below the determined value, and perform a trip test. Then gradually increase the trip torque to its optimum value. Note that each graph should serve as a rough guide and not as a reference to determine the actual trip torque.
- ② Do not exceed the maximum torque on the indicator when tightening the adjustment screw. Otherwise, the dish springs will not have sufficient space to flex.
- ③ After setting the optimum torque by turning the adjustment nut, tighten the lock screw provided to the following values. Note that tightening less than the tightening torques given may cause the screw to loosen during operation. On the other hand, tightening more than those shown may result in a deformed lock screw. Such screw may not be loosened.

Apply Loctite 242 or its equivalent to the lock screw to prevent loosening from vibrations.

Tightening Torque

Lock screw M5 : 3.8 N·m {38.7 kgf·cm}

Lock screw M8 : 16 N·m {163 kgf·cm}

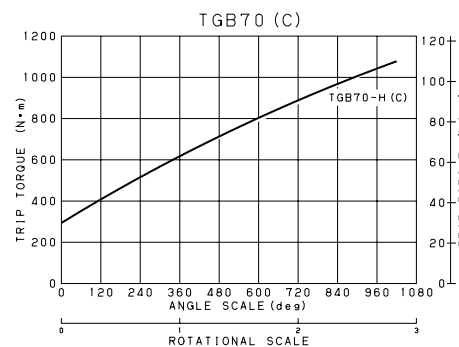
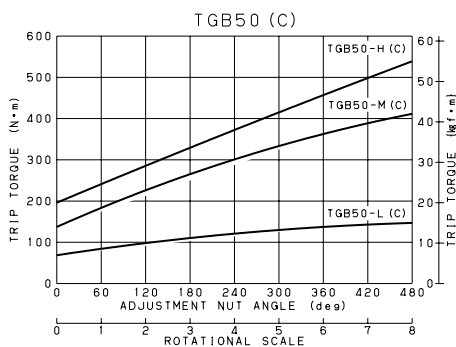
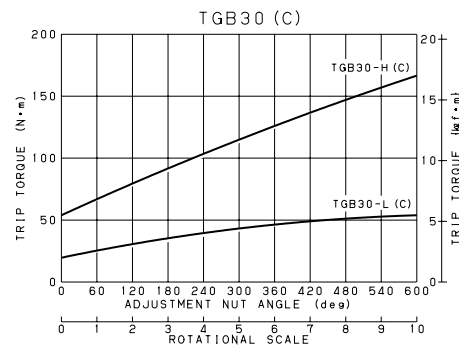
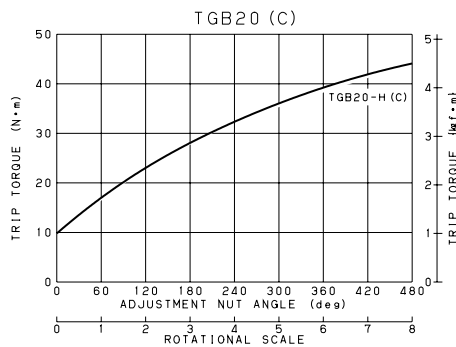
Notes:

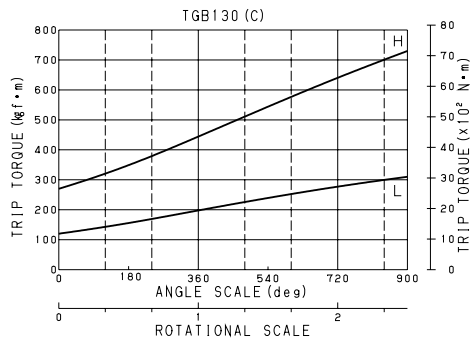
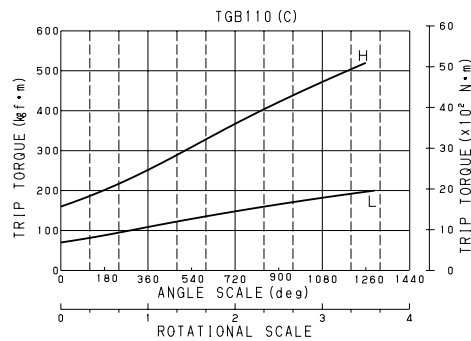
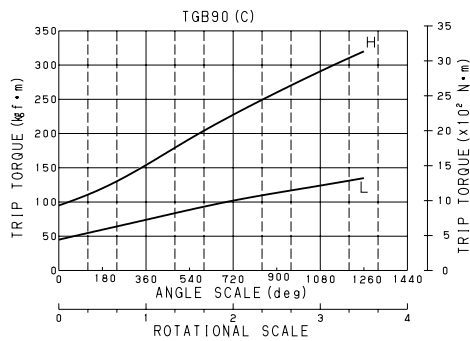
Ensure the following before retightening a lock screw that has been removed.

1. The brass portion is not disengaged from the screw body (the rest of the screw). Using a lock screw whose brass portion and body are disengaged may damage the hub thread.
2. The brass portion is not markedly damaged. If the screw is used under such condition, the hub thread may be damaged. Replace with a new lock screw if the above or similar conditions apply.

2) TGB70 --- TGB130 (TGB70-C --- TGB130-C)

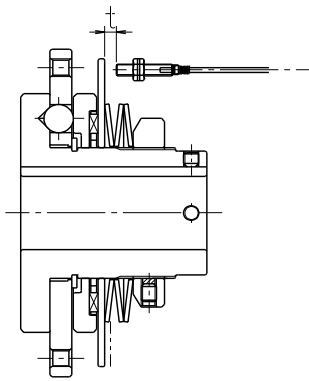
- ① Adjust torque with adjustment bolts.
Loosen the three hexagon nuts used to prevent the adjustment bolts from loosening.
Make sure the adjustment nut matches the hub marking, and that the hexagon head cap screw used for anti-loosening (lock screw for TGB70 and 70-C) is securely fastened.
- ② Find the tightening angle that corresponds to your required trip torque using the Tightening Angle and Trip Torque graph on the next page. First, tighten the adjustment nut 60 degrees below the determined value, and perform a trip test. Then gradually increase the trip torque to its optimum value. Note that each graph should serve as a rough guide and not as a reference to determine the actual trip torque.
- ③ Firmly tighten the hexagon nut to prevent loosening.
- ④ Do not exceed the maximum torque on the indicator when tightening the adjustment screw. Otherwise, the dish springs will not have sufficient space to flex.





8. Overload Detection

- The axial movement of the sensor plate is used to determine overload.
- The plate moves with every trip revolution. Use a proximity switch that can sufficiently detect the sensor plate displacements as shown in the table below.
- If using a TGA sensor, read and follow the instructions provided in its manual.



Unit : mm		
Model No.	t	Displacement of Sensor Plate
TGB20-H	1.8 --- 3.3	1.8
TGB30-L,H	2.0 --- 3.5	2.0
TGB50-L,M,H	2.7 --- 4.2	2.7

Unit : mm		
Model No.	t	Displacement of Sensor Plate
TGB70-H	3.3 --- 4.8	3.3
TGB90-L,H	5.6 --- 6.8	5.4
TGB110-L,H	6.2 --- 7.4	6.0
TGB130-L,H	6.8 --- 8.0	6.6

9. Resetting

This auto-resetting type only requires restarting the motor, and other parts of the drive unit to reengage.

- ① When the TGB trips from overload, stop the motor and remove the cause of overload.
- ② Reset TGB and operate at 50 rpm or slower or by inching the motor. Never reset manually.
- ③ The clicking noises indicate that the drive balls have rolled back into their positions.

10. Maintenance

① SHOCK GUARD

Apply a thin layer of grease to the drive balls and Thrust bearing, once a year or every 1000 trips.

Grease

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

② Coupling

Grease roller chain and sprockets with molybdenum disulfide or any of the above grease once a month.

③ Sprocket

Refer to the catalog on Tsubaki Drive Chains for maintaining your sprockets and roller chain.

Infrequent trips and operations do not necessarily mean that the sprockets are in good condition. Long continuous operations can wear out sprockets.

Inspect sprockets periodically by referring to the catalog.

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.



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