

KTI KITO Technical Information	Disassembly/reassembly Manual for Model CX003	CX1-1.1.2	1/20
		Edition : A 08.06	

Table of Contents

Safety Precautions	2
Disassembly/reassembly tools and Lubricant.....	4
Before Disassembly/reassembly	4
Part Name	5
Disassembly Procedure	6
Disassembly of Brake	6
Removal of the Load Chain	7
Disassembly of Gear	8
Disassembly of Latch.....	9
Assembly Procedure	10
Assembly of Gear	10
Assembly of Load Chain.....	12
Assembly of Brake.....	13
Bottom Yoke Assembly.....	16
Assembly of Latch	16
Preoperational Check	17

Safety Precautions

This Disassembly/reassembly Manual for Chain Hoist includes important contents to prevent injury to any person performing disassembly/reassembly, users, other persons and damage to property, and to disassemble/reassemble the Chain Hoist safely and correctly.

Before performing disassembly/reassembly, be sure to read and follow the Owner's Manual of Chain Hoist Model CX003 (separate document) since its contents are also important for disassembly/reassembly.

Disassembly/reassembly of Chain Hoist is essential for inspection and repair. Refer to the separate Periodic Inspection Manual and Troubleshooting to perform disassembly/reassembly correctly.

Person to perform disassembly/reassembly

Disassembly/reassembly shall be performed by a competent person (a person duly authorized by the company as having expertise on the structure and device of Chain Hoist, or with expertise and appropriate understanding of the Periodic Inspection Manual and Disassembly/reassembly Manual), or consult with KITO or your dealer.

Disassembly/reassembly in general

⚠ WARNING



Mandatory

Only competent persons must disassemble/reassemble the Chain Hoist.

Disassembly/reassembly by anyone other than competent persons may result in death or severe injury.



Prohibited

Do not adjust or disassemble the Over Load Limiter (OLL *).

Adjustment or disassembly of OLL may result in death or severe injury.

Failure to do so may affect OLL operation, since the OLL is precisely adjusted.

* A device to prevent an excessive overload, built in Hand Wheel Assembly.



Prohibited

Do not use parts beyond their discard limit or criteria and unauthorized parts for the KITO Chain Hoist Model CX003.

Even if the part is an authorized part for KITO Chain Hoist, it may not be used for a different model.

Use parts correctly in accordance with the Disassembly/reassembly Manual.

Failure to do so may result in death or severe injury.



Prohibited

Do not disassemble/reassemble the Chain Hoist subject to a load.

When disassembling/reassembling a Chain Hoist, place it on a floor and disassemble/reassemble it.

Disassembly/reassembly of a Chain Hoist subject to a load may result in death or severe injury.



Prohibited

Do not lubricate the Friction Plate.

The Friction Plate is of the dry type.

Lubricating the Friction Plate may result in death or severe injury due to insufficient braking.



Prohibited

Do not use grease or oil in areas near a fire or spark.

Failure to do so may result in ignition.



Prohibited

Do not cut, extend or weld the Load Chain.

Failure to do so may result in death or severe injury.

⚠ WARNING



Mandatory

When assembling the braking unit, clean the Friction Disc, Friction Plate, Ratchet Disc and Bushing.

Oil, dust or foreign objects on the braking surface may result in death or severe injury, due to insufficient braking.



Mandatory

When assembly is completed, perform a functional test (Preoperational check) to ensure that the hoist is operating properly.

Failure to do so may result in death or severe injury.

Refer to the Preoperational Check in this manual for details.



Prohibited

Do not disassemble the Hand Wheel Assembly.

Failure to do so may result in death or severe injury.



Prohibited

Do not disassemble the Pawl Shaft.

Failure to do so may result in death or severe injury.

When the Pawl Shaft is loosened, replace the Body Assembly (including the Pawl Shaft).



Mandatory

Set Pawl Spring Assembly properly with two Pawl Springs fitted each other.

Improper combination may result in death or severe injury.



Mandatory

Set the lower part of the Pawl Spring Assembly securely under the step of the Pawl Shaft.

Failure to do so may result in death or severe injury.

⚠ CAUTION



Mandatory

When assembling, follow the instructions below.

Failure to follow these instructions may result in injury due to damage to the Chain Hoist or falling parts.

- a. Before re-assembly, remove dust and oil on the part to be re-used.
- b. When re-assembling, replace the grease with new one.
- c. When re-assembling, replace the Snap Rings with new ones.
- d. Fasten bolts and nuts to the specified tightening torque.
- e. Insert the Snap Ring completely in the groove.
- f. When assembling the gear unit, match the gear marks "O" and "V" on each of Gear #2.
- g. Assemble the Load Chain (no load side) without torsion.



Mandatory



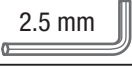







When assembling the Pawl, follow the instructions below.


Failure to do so may result in an inability to lift loads.

- Hook the Pawl Spring correctly onto the Pawl.
- Engage the Pawl and Ratchet Disc correctly.

Disassembly/reassembly tools and Lubricant

Prepare the following tools and lubricant for disassembly/reassembly.

No.	Tool Name	Purpose	Icon
1	Hexagon wrench 4mm	For disassembly/reassembly of Frame A / B, Gear Case, Wheel Cover	 4 mm
2	Shaft Snap Ring pliers	For disassembly/reassembly of Pawl and Cam Guide	
3	Hexagon wrench 2.5mm	For disassembly/reassembly of End Pin	 2.5 mm
4	Hexagon wrench 3mm	For disassembly/reassembly of Bottom Yoke and Latch	 3 mm
5	Spanner 7mm	For disassembly/reassembly of Bottom Yoke and Latch	
6	Needle-nose pliers	For Cam Guide	
7	Lubricating grease Type 1, Class 2 (JIS K 2220)	For oil application except the following No. 8.	 Grease
8	Rust preventive oil Type 2, Class 1 (JIS K 2246)	For oiling on the Pawl and Pawl Shaft	 Oil
9	Three Bond 1401, Loctite 241 or 242	For locking of the Set Screw and bolts for the Bottom Yoke	 Lock
10	Torque wrench	For checking tightening force	 Torque

- Replace the Snap Rings and Grease with fresh supplies when reassembling. (illustrated in this manual with .)
- Prepare wooden blocks (2 pieces) to stabilize the Body of the Chain Hoist when disassembling/reassembling.

Before Disassembly/reassembly

⚠ WARNING



Mandatory

Only competent persons to disassemble/reassemble Chain Hoist.

Disassembly/reassembly by anyone other than a competent person may result in death or severe injury.



Prohibited

Do not use parts beyond their discard limit or criteria and unauthorized parts for the KITO Chain Hoist Model CX003.

Even if the part is an authorized part for KITO Chain Hoist, it may not be used for a different model.

Use parts correctly in accordance with the Disassembly/reassembly Manual.

Failure to do so may result in death or severe injury.



Prohibited

Do not disassemble/reassemble a Chain Hoist subject to a load.

When disassembling/reassembling a Chain Hoist, place it on the floor and disassemble/reassemble it.

Disassembly/reassembly of a Chain Hoist subject to a load may result in death or severe injury.



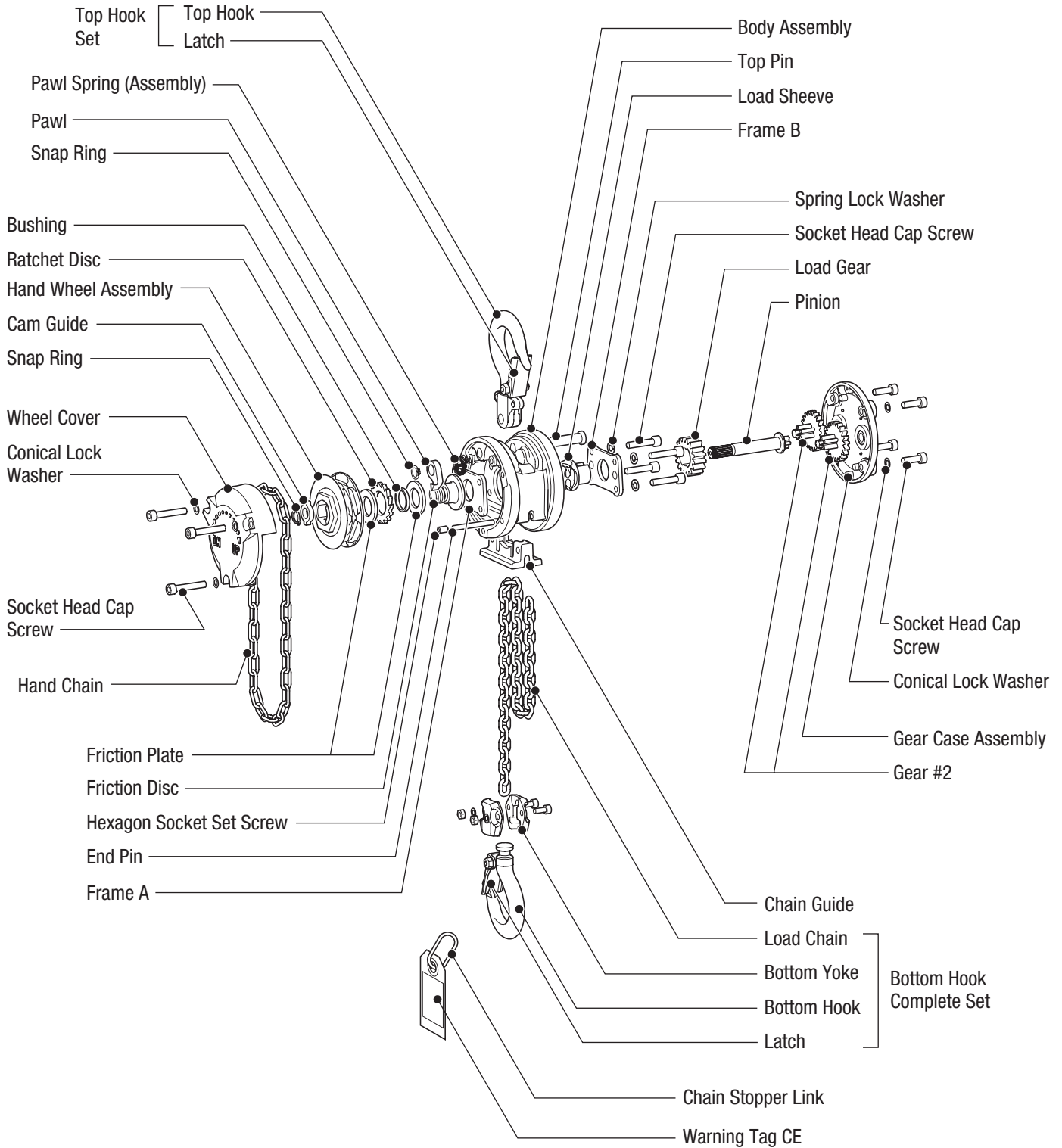
Mandatory

When assembly is completed, perform a functional test (operational check) to confirm that the Chain Hoist works correctly.

Failure to do so may result in death or severe injury. Refer to "Operational Check" in this manual for details.

- Read this manual thoroughly and perform disassembly/reassembly correctly.
- Consult with KITO when changing the lift.

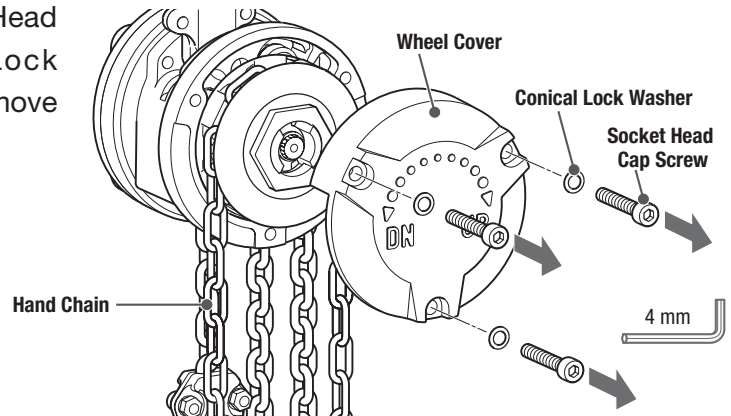
Part Name



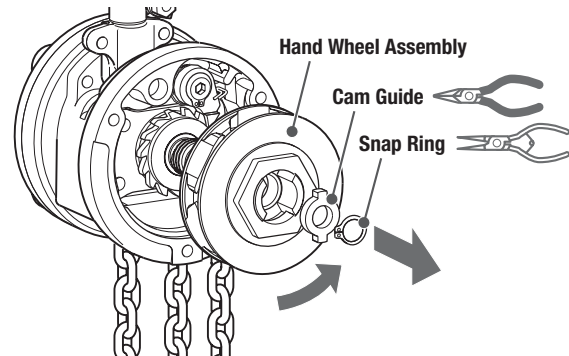
Disassembly Procedure

1 Disassembly of Brake

- (1) Remove three sets of Socket Head Cap Screws and Conical Lock Washers from Wheel Cover. Remove the Cover and Hand Chain.



- (2) Remove the Snap Ring and the Cam Guide, using a tool with a small tip, such as needle-nose pliers. Turn the Hand Wheel Assembly counterclockwise to remove it.



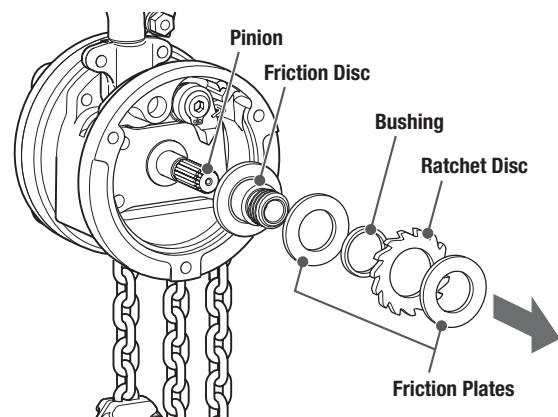
⚠ WARNING

Do not disassemble the Hand Wheel Assembly.
Failure to do so may result in death or severe injury.

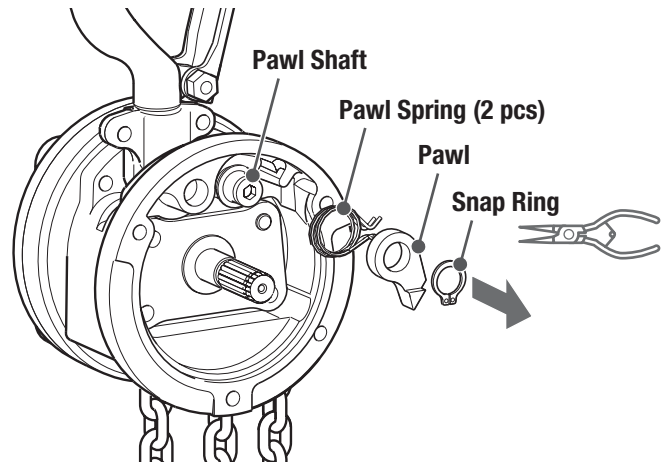
⚠ CAUTION

Carefully remove the Snap Ring.
Failure to do so may result in injury.

- (3) Remove two Friction Plates, Ratchet Disc, Bushing and Friction Disc from Pinion.



- (4) Remove the Snap Ring of the Pawl Shaft and pull out the Pawl and two Pawl Springs.



⚠ WARNING

Do not disassemble the Pawl Shaft.

If it is loosened, replace the Body Assembly (including the Pawl Shaft) with a new one.

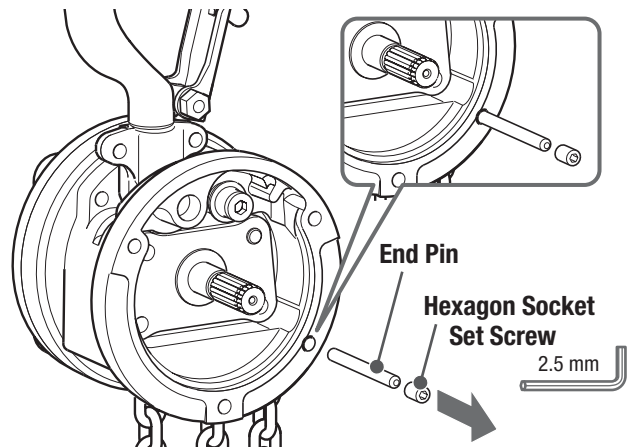
⚠ CAUTION

Carefully remove the Snap Ring.

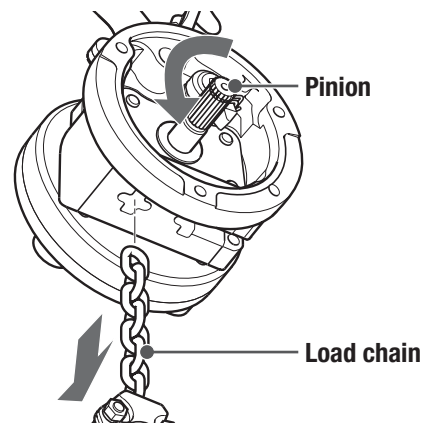
Failure to do so may result in injury.

2 Removal of the Load Chain

- (1) Remove the Hexagon Socket Set Screw and pull out End Pin. When it is hard to pull out the End Pin, lightly hit the side of the Gear Case.



- (2) Turn the Pinion counterclockwise and remove the load chain.



⚠ CAUTION

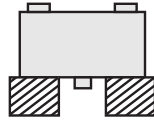
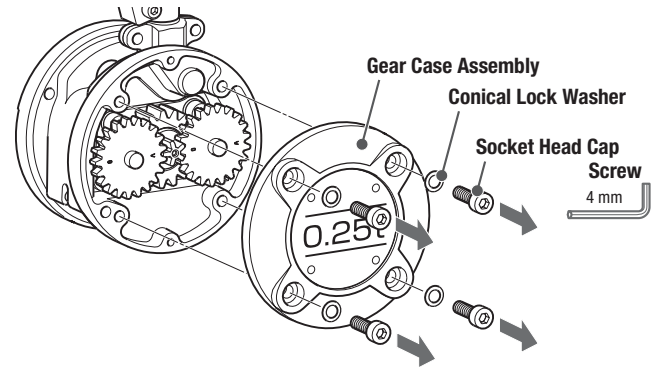
Do not pull the Bottom Hook and Load Chain excessively.

Failure to do so may entangle the Chain.

Disassembly Procedure (continued from the previous page)

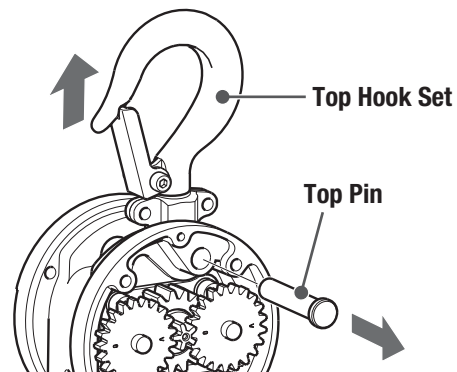
3 Disassembly of Gear

- (1) Turn the Body as shown in the right figure. Remove four sets of Socket Head Cap Screws and Conical Lock Washers, and then remove the Gear Case Assembly.

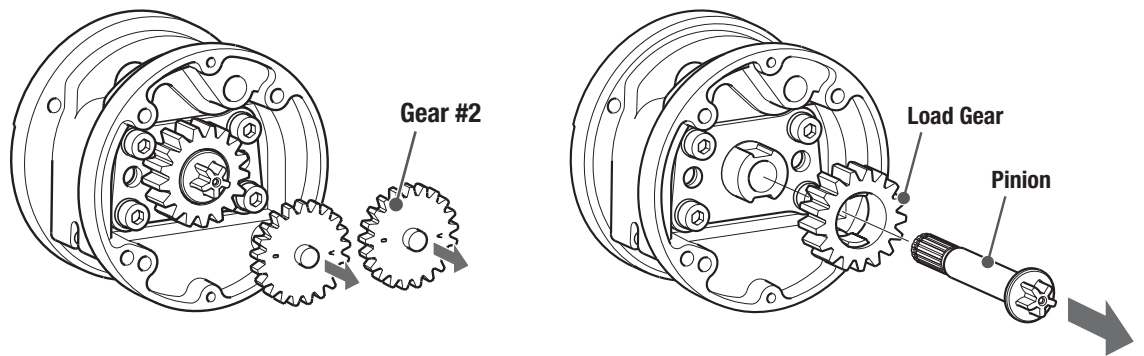


To facilitate disassembly, place the hoist Body on wood blocks with the pinion set between the blocks.

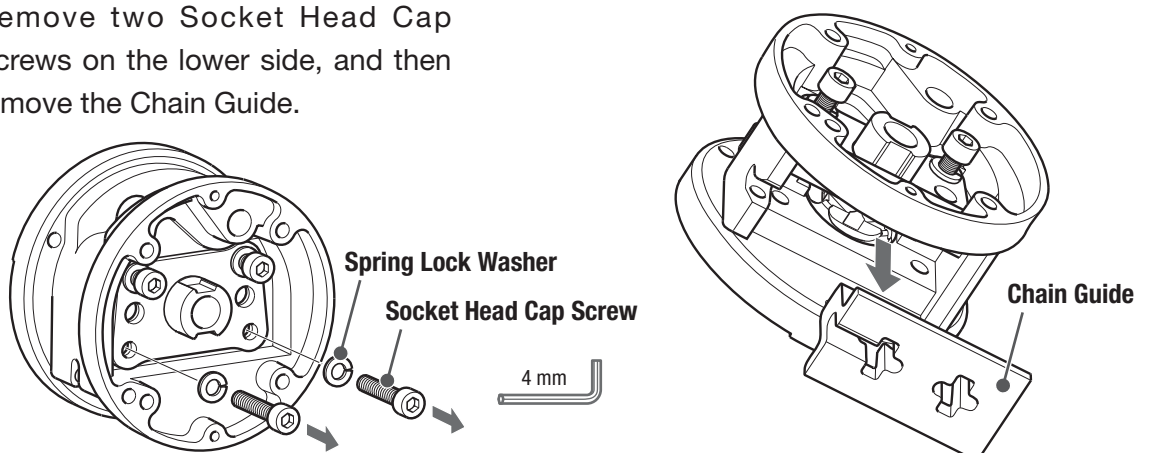
- (2) Pull out the Top Pin to remove the Top Hook Set.



- (3) Remove two pieces of Gear #2, Pinion and Load Gear.

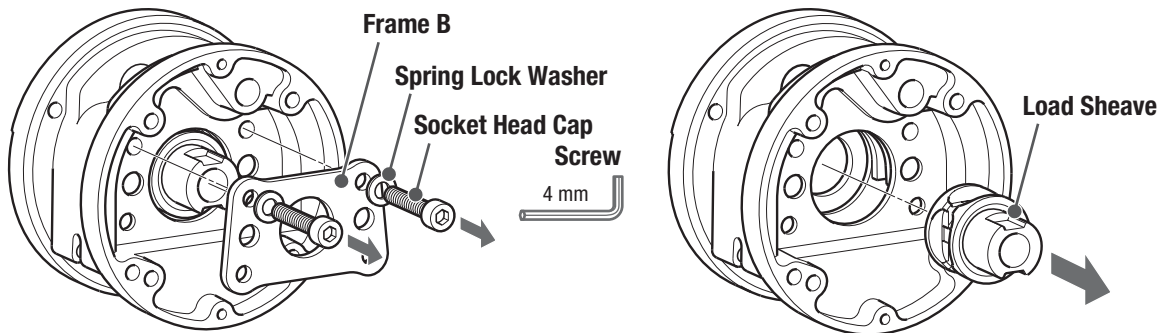


- (4) Remove two Socket Head Cap Screws on the lower side, and then remove the Chain Guide.

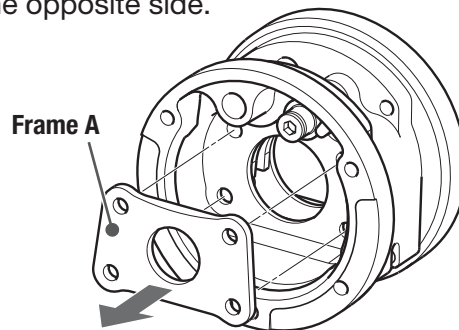


To facilitate disassembly, loosen two Socket Head Cap Screws on the upper side first.

- (5) Remove the two Socket Head Cap Screws on the upper side, and then remove Frame B and Load Sheave.

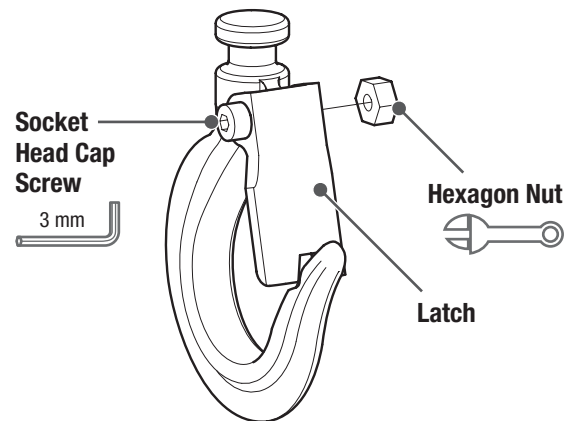


- (6) Remove Frame A on the opposite side.

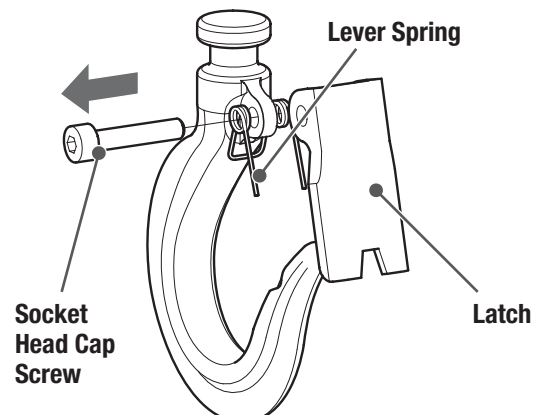


4 Disassembly of the Latch

- (1) Loosen the Socket Head Cap Screw fixing Latch and remove the Hexagon Nut.



- (2) Hold the Latch firmly and remove the Socket Head Cap Screw from the fixing hole.



⚠ CAUTION

Holding the Latch securely, remove the Socket Head Cap Screw.

Failure to do so may mean the Lever Spring bounces off to cause injury.

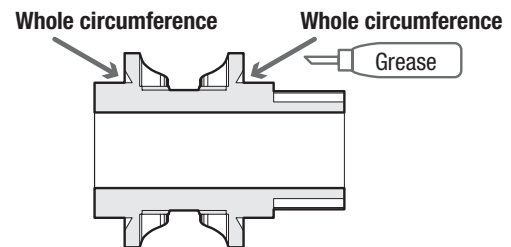
Assembly Procedure

Remove the grease, oil and dust on each part.

1 Assembly of Gear

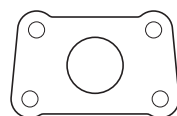
- (1) Apply general-purpose grease over the entire circumference of the specified part of the Load Sheave (arrow in the figure).

General-purpose grease: 1.2g

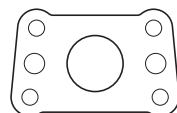


Load Sheave cross section

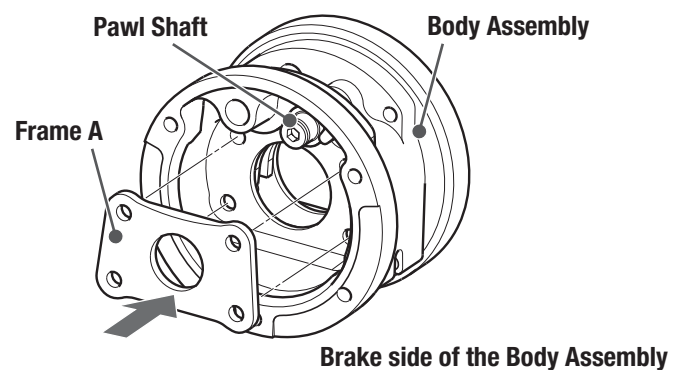
- (2) Assemble Frame A into the Body Assembly at the brake side (with the Pawl Shaft), and then insert the Load Sheave into the Body Assembly from the Gear side with the Load Sheave directed as shown in the figure "Gear side of the Body".



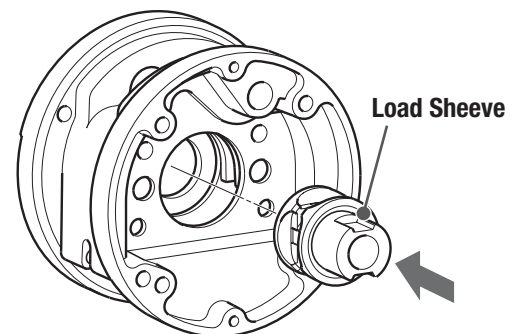
Frame A
(5 holes)



Frame B
(7 holes)



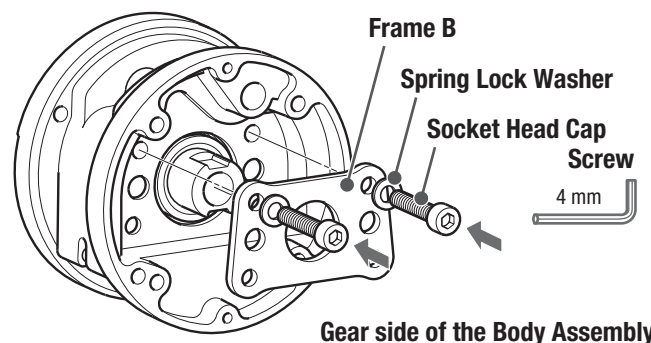
Brake side of the Body Assembly



Gear side of the Body Assembly

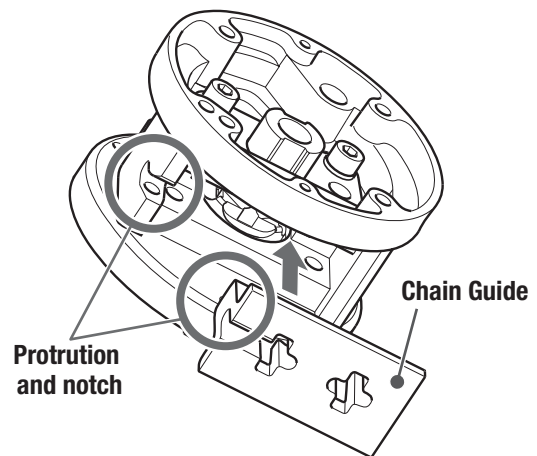
- (3) Insert Frame B into the Body Assembly from the Gear side and fix the upper part of Frame B temporarily with two sets of Spring Lock Washers and Socket Head Cap Screws (M5-25).

* Ensure that the Spring Lock Washers are fastened to contact the Frame B.

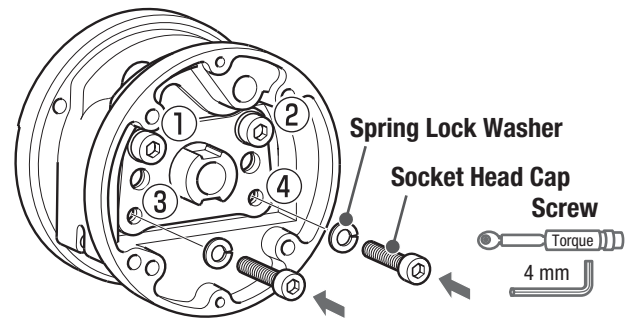


Gear side of the Body Assembly

- (4) Align the projecting part of the Chain Guide with the notch of the Body, and assemble the Chain Guide to the bottom of the Body Assembly.

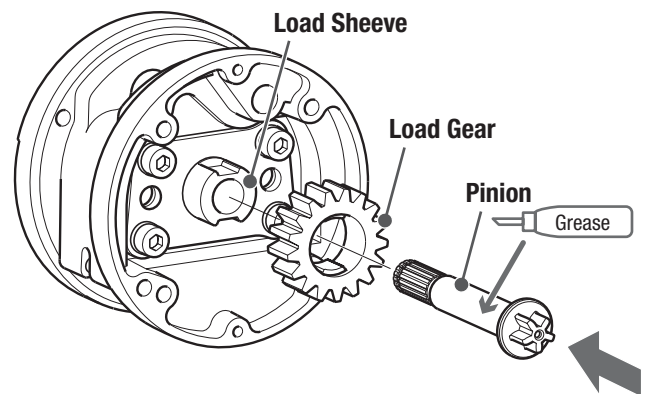


- (5) Insert two sets of Spring Lock Washers and Socket Head Cap Screws on the lower side of Frame A/B and tighten temporarily them, and then secure all the four screws in order of ①, ②, ③ and ④ with the specific torque. Ensure that the Road Sheave rotates smoothly.



Tightening torque: 7 to 8N•m

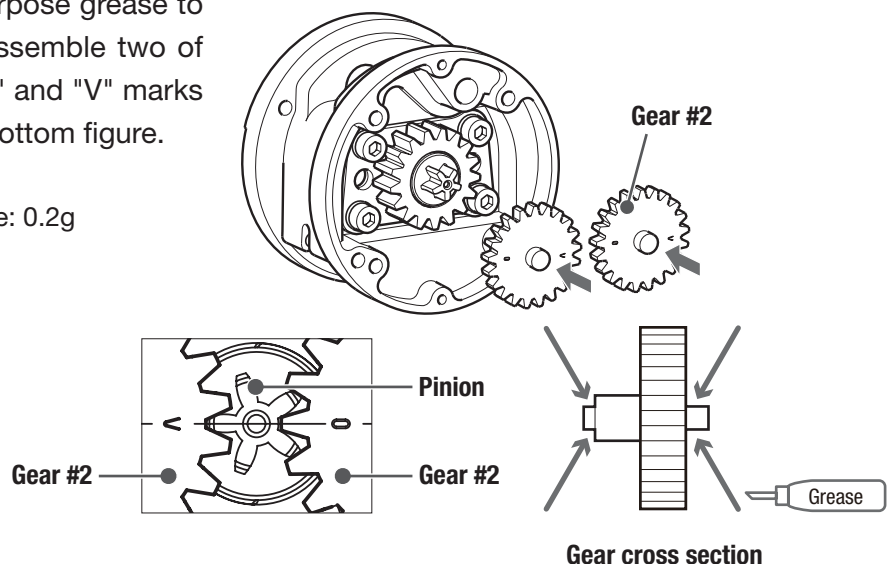
- (6) Attach the Load Gear to the Load Sheave. Apply specified amount of general-purpose grease to the specified position of the Pinion and insert the Pinion in and out of the Load Sheave a few times.



General-purpose grease: 0.7g

- (7) Apply the general-purpose grease to Gear #2, and then assemble two of Gears #2 with the "O" and "V" marks set as shown in the bottom figure.

General-purpose grease: 0.2g

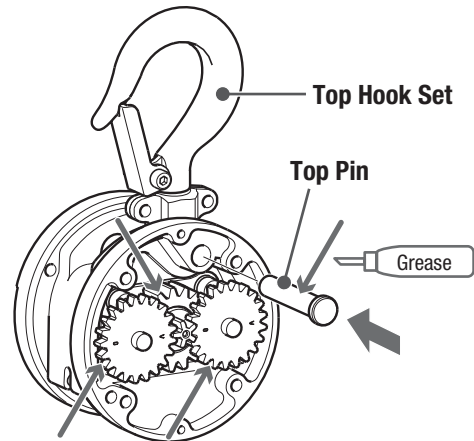


Assembly Procedure (continued from the previous page)

- (8) Apply general-purpose grease over the entire circumference on the Gear #2, the Load Gear and the Top Pin. Insert the Top Pin into the hole of the Body, with the Top Hook Set held as shown in the right figure.

General-purpose grease:

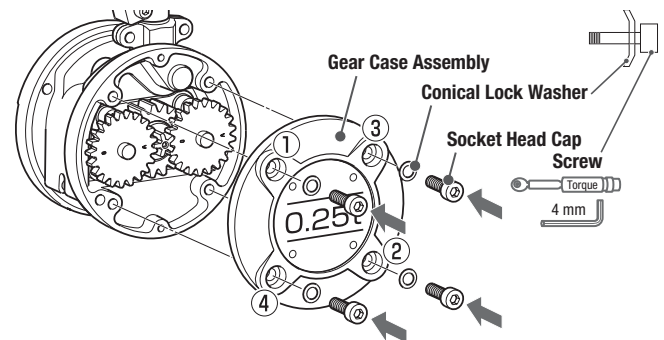
- 10g (Gear #2 and Load Gear)
- 0.2g (Top Pin)



- (9) As shown in the right figure (check the nameplate direction), attach the Gear Case Assembly to the Body and fix it temporarily with four sets of Conical Lock Washers and Socket Head Cap Screws (M5-15) in the direction shown in the right figure.

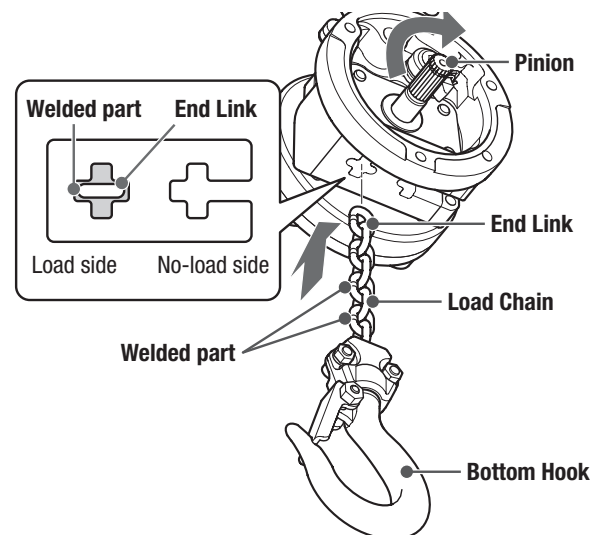
Afterward, secure all the four screws in order of ①, ②, ③ and ④ with the specific torque.

Tightening torque: 7 to 8N•m



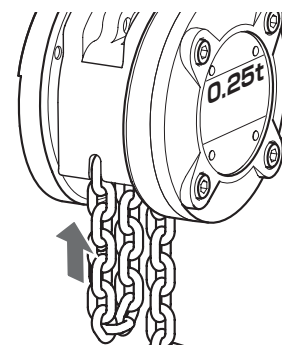
2 Assembly of Load Chain

- (1) Insert the End Link into the load-side chain slit of the Chain Guide while directing the welded part outward, as shown in the right figure. Next turn the Pinion clockwise until the End Link comes out of the no-load side sufficiently.

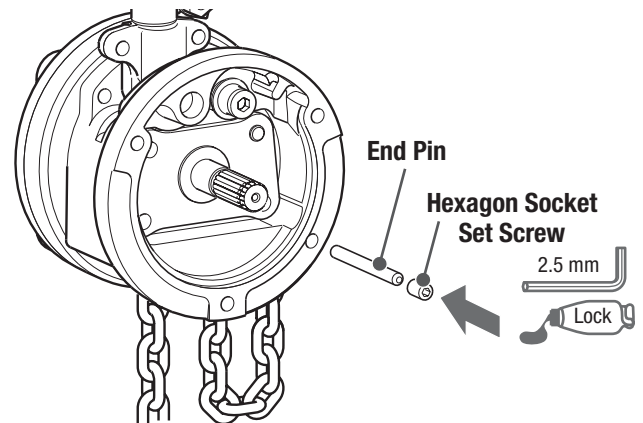


- (2) Ensure that the Load Chain is not twisted, kinked or entangled while inserting the End Link of the no-load side into the Body Assembly.

Shortening the no-load side chain can facilitate checks for a twisted, kinked or entangled link.



- (3) Insert the End Pin to fix the End Link at the no-load side, and then apply a thread locker to the Hexagon Socket Set Screw and fix the End Pin with the Socket Set Screw.



3 Assembly of Brake

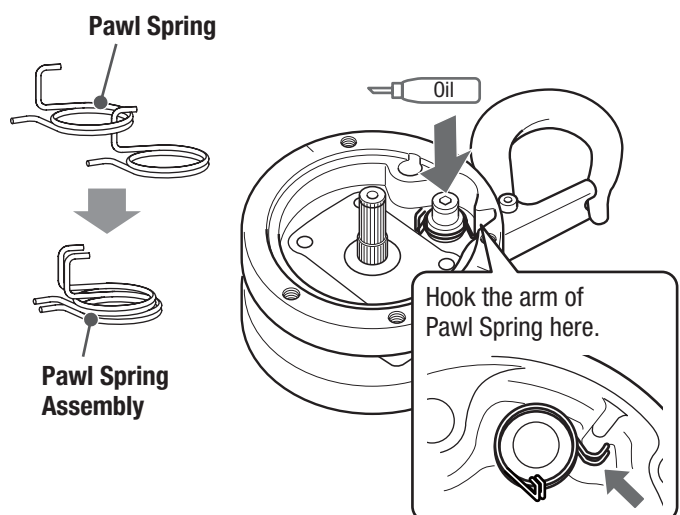
- (1) As shown in the figure, assemble two Pawl Springs to make Pawl Spring Assembly. Attach the Pawl Spring Assembly to the Pawl Shaft and press the Pawl Spring Assembly to the bottom of the Pawl Shaft step in the correct direction, and then apply rust preventive oil to the Pawl Spring Assembly.

Rust preventive oil: one drop

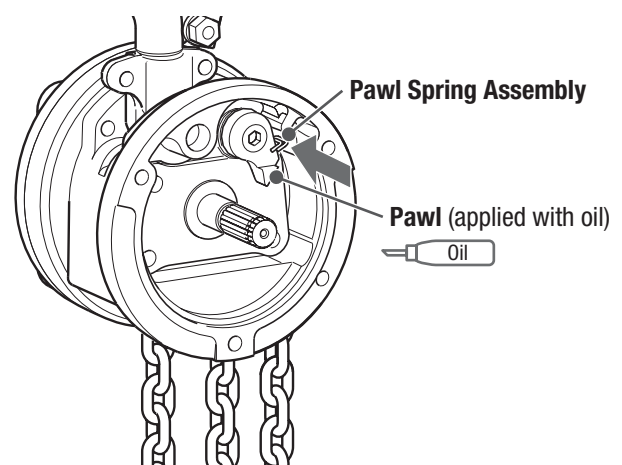
⚠ WARNING

Set Pawl Spring Assembly properly with two Pawl Springs fitted each other.

Improper combination may result in death or severe injury.

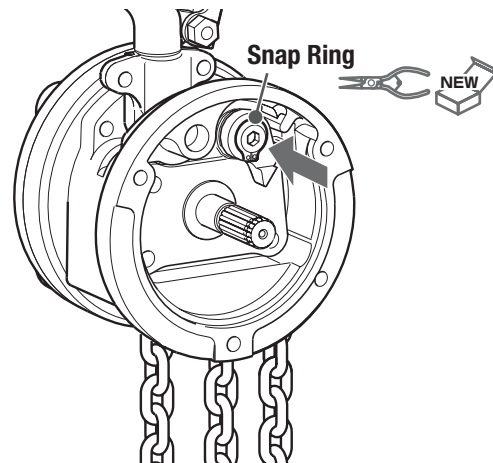


- (2) Apply rust preventive oil to the Pawl, set it in the correct direction, and then hook the Pawl to the arms of the Pawl Spring.



Assembly Procedure (continued from the previous page)

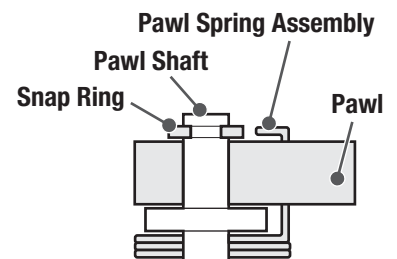
- (3) Fix the Pawl with a new Snap Ring. As shown in the figure, check that the lower part of the Pawl Spring comes under the step of the Pawl Shaft and that the Snap Ring is firmly installed into the groove of the Pawl Shaft, and furthermore, that the Snap Ring can rotate smoothly.



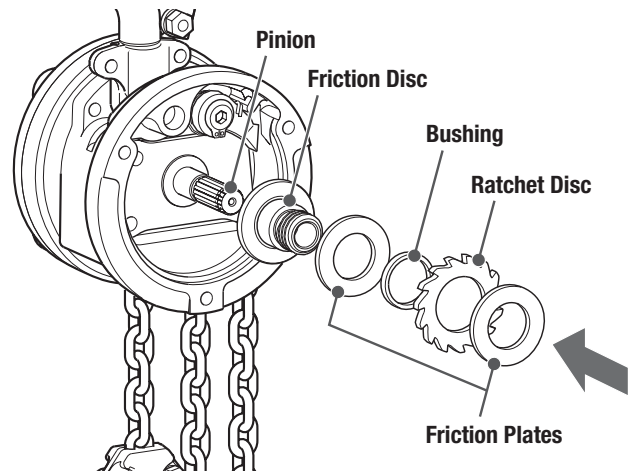
⚠ WARNING

Set the lower part of the Pawl Spring Assembly securely under the step of the Pawl Shaft.

Failure to do so may result in death or severe injury.



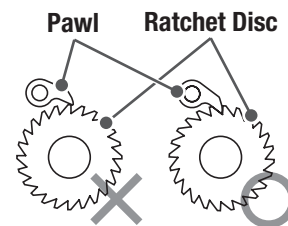
- (4) While holding the Pawl outward, set the Friction Disc, Friction Plate, Bushing, Ratchet Disc and Friction Plate in this order, as shown in the figure. Ensure that the Ratchet Disc is properly assembled, and that the Pawl and Ratchet Disc engage correctly.



⚠ WARNING

- Ensure that the braking surfaces of the Friction Disc, Friction Plate and Ratchet Disc are free of dust. If any is present, wipe it clean.
- After assembly check that the lower part of the Pawl Spring Assembly is inserted to the position under Pawl Shaft step.

Failure to do so may result in death or severe injury.



- (5) Apply general-purpose grease to the thread at the center of the Hand Wheel Assembly, up to the root of thread.

Attach a Hand Wheel Assembly to the Friction Disc, and turn it clockwise. (Assemble the Hand Wheel Assembly turning until it clicks.)

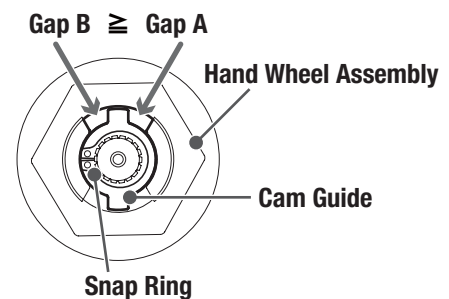
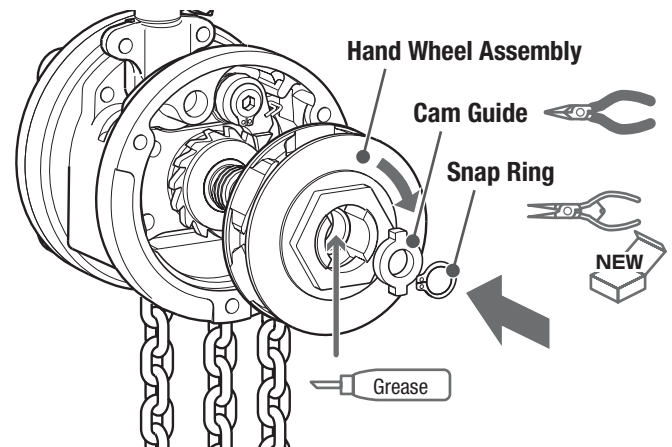
Set a Cam Guide to the center of the gap of Hand Wheel. If the Cam Guide cannot be inserted, press it turning clockwise. Check that the gaps between the Cam Guide and the Hand Wheel Assembly are as shown in the figure. Be sure to fix with a new Snap Ring.

General-purpose grease: 0.3g

⚠ WARNING

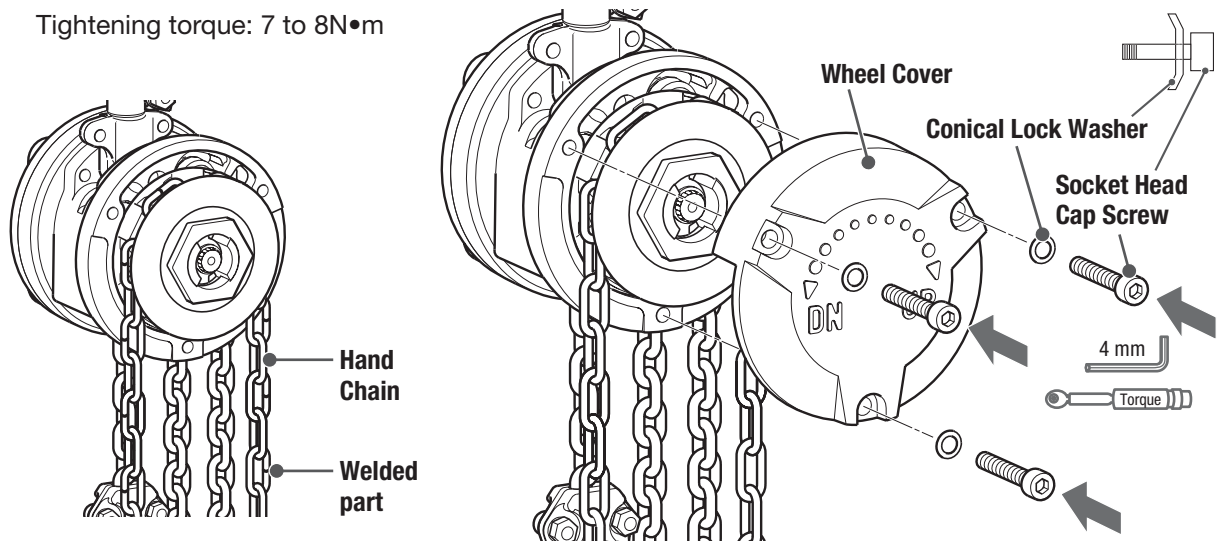
Ensure that the braking surface of Hand Wheel Assembly is free of dust. If there is any, wipe it clean.

Failure to do so may result in death or severe injury.



- (6) Attach a Hand Chain around the Hand Wheel while directing its welded part outward, place a Wheel Cover on it, and then fix it with three sets of Conical Lock Washers and Socket Head Cap Screws (M5-30) with the specific torque in the direction shown in the figure below.

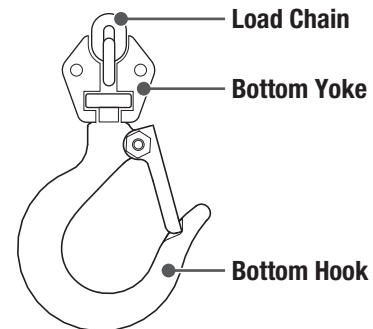
Tightening torque: 7 to 8N•m



Assembly Procedure (continued from the previous page)

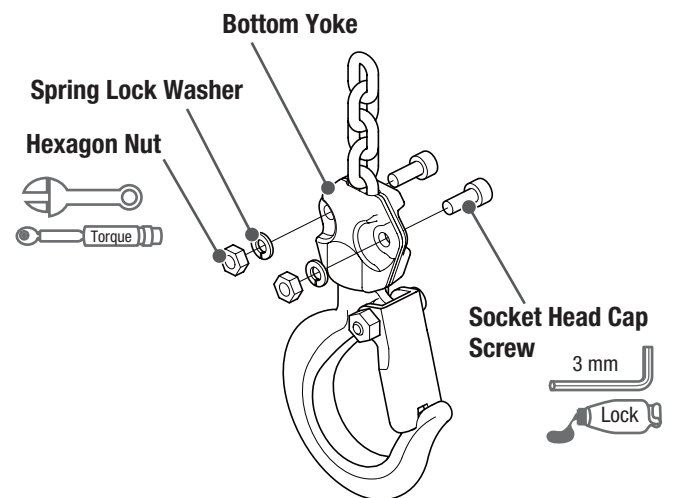
4 Bottom Yoke Assembly (without chain)

- (1) Set the Load Chain and Bottom Hook to one side of the Bottom Yoke.



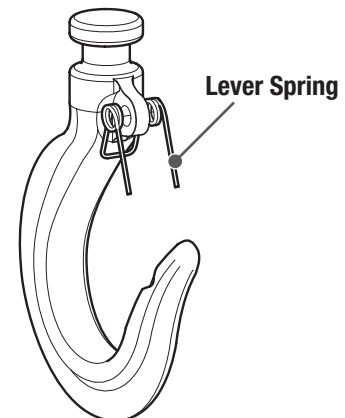
- (2) Attach the other side of the Bottom Yoke to the previously-assembled Bottom Yoke, apply a thread locker to the Socket Head Cap Screws, and then fix the Bottom Yoke with Hexagon Nuts and Spring Lock Washers with the specific torque. Ensure that the Bottom Hook rotates lightly.

Tightening torque: 4.4 to 5.5N•m

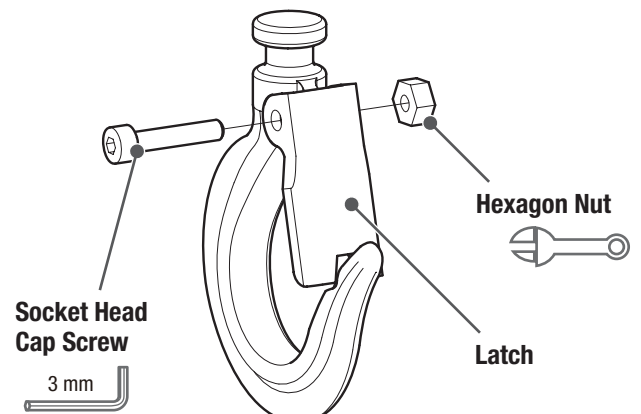


5 Assembly of Latch

- (1) Align the Lever Spring with the hole of the Hook for the Latch fitting properly.



- (2) Align the Latch with the hole of the hook for the Latch fitting, and fasten it with a Socket Head Cap Screw and a Hexagon Nut. Ensure that the Latch can move smoothly.



Preoperational Check

Before use, ensure you check the following when disassembly/reassembly is completed.

- (1) Ensure that there is no missing part. If there is any, disassemble/reassemble the hoist again correctly.
- (2) Perform daily check. Refer to the Owner's Manual for details.
- (3) Before performing the following operational test under the rated load, ensure to check that the hoist has no defect when subject to no load.

Preoperational Test

⚠ WARNING

When assembly is completed, check the operation to confirm that the Chain Hoist works correctly.

Failure to do so may result in death or severe injury.

Item	Method	Discard limit or criteria	Action
No load test	Repeat lifting and lowering a few times.	<ul style="list-style-type: none"> •The Chain Hoist should be operated with a light pulling force. •The Chain Hoist should have regular click sounds of Pawl when lifting. 	Disassemble the Chain Hoist to verify that the hoist is assembled properly and the components are free of defects.
Rated load test	Lift and lower the rated load for 20 to 30cm. Perform the items in the "Basic function" of Monthly Inspection.	<ul style="list-style-type: none"> •The Chain Hoist should have regular click sounds of Pawl and run smoothly when lifting. •The sound should be at a constant level with no irregular clicks. •The Chain Hoist should make no sound when lowering. •It should be free of a heavy pulling force. •It should be free of slip in braking. 	

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