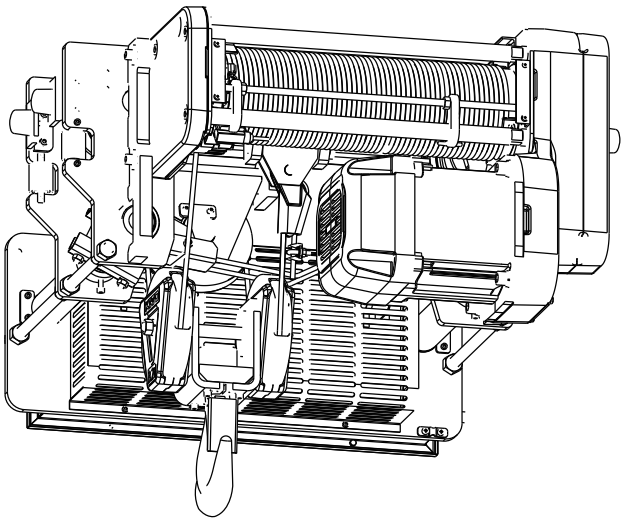
RY Series Wire Rope Hoist (2.8t to 5t)

Disassembly and Reassembly Manual

Low Headroom Type: RYL



Safety precaution

This Disassembly and Reassembly Manual includes contents to prevent injury to any person performing Disassembly and reassembly, users, and other persons and damage to property, and to disassemble/reassemble the Wire rope hoist safely and correctly.Before performing disassembly/reassembly, be sure to read and follow this manual as well as the RY series Wire Rope Hoist Owner's Manual (separate document) since its contents are also important for Disassembly/reassembly.Disassembly/reassembly of the Wire rope hoist are required operations for regular inspection and repair.Carry out disassembly/reassembly properly in accordance with these manuals.

Persons performing 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 the Wire rope hoist) or consult KITO.

Safety Precautions

Improper use of the hoist may cause serious accidents resulting in death or severe injury such as drop of lifted load. Read this Disassembly and Reassembly Manual carefully before installation, operation and maintenance. Use the product after understanding the product knowledge, safety information and precautions.This Disassembly and Reassembly Manual classifies the safety information and precautions into three categories of“DANGER”,“WARNING”, and “CAUTION”. Also read the instruction manual of the device associated with the hoist (option, crane, etc.), and follow the described contents.

Description of Signal Words

⚠ **DANGER**	Indicates an imminently hazardous situation which, if not avoided, will result in death or severe injury.
⚠ **WARNING**	Indicates a potentially hazardous situation which, if not avoided, could result in death or severe injury.
⚠ **CAUTION**	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Further, the event described in CAUTION may result in serious accident depending on the situation. All of these items describe important matters. Please follow the instruction.After reading, please keep this manual at hand for future use by the user.

Description of Safety Symbols


Prohibited

⃠ means “Prohibited” or “You must not do”.
Prohibited action is shown in the circle or described near the circle with words and figures.
This Disassembly and Reassembly Manual uses ⃠ as the general prohibition.


Mandatory

❗ means “Mandatory Action” or “You must do”.
Required action is shown in the circle or described near the circle with words and figures.
This Disassembly and Reassembly Manual uses ❗ as the general instruction.

■ Disassembly and reassembly (general)

⚠ DANGER


Prohibited

- **Only competent persons must disassemble/reassemble the rope hoist.**

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


Prohibited

- **Do not use unauthorized parts for RY Series Wire Rope Hoist.**
  Even if the part is an authorized part, it may not be used for a different model.
  Use parts correctly in accordance with this manual.

Failure to follow this instruction may result in death or severe injury.


Prohibited

- **Do not disassemble/reassemble the rope hoist while it is being suspended.**
  When disassembling/reassembling the rope hoist, place it on the floor and perform them on the workbench.

Failure to follow this instruction may result in death or severe injury.


Prohibited

- **Do not perform disassembly/reassembly during conduction.**

Failure to follow this instruction may result in death or severe injury due to an electric shock or unexpected operation.


Prohibited

- **Do not use oil such as gear grease and lubricating oil in areas near a fire or spark.**

Failure to follow this instruction may result in fire or severe injury arising from ignition.


Mandatory

- **Carry out the installation or removal work of the rope hoist after securing the stable foothold.**

Failure to follow this instruction may result in death or severe injury due to falling or dropping.


Mandatory

- **Carry out the installation or removal work of the rope hoist after shutting down the power distribution panel.**

Failure to follow this instruction may result in death or severe injury due to an electric shock.


Mandatory

- **When reassembly is complete, perform a function check (preoperational check) to make sure it operates properly.**

Failure to follow this instruction may result in death or severe injury.
For details, refer to 'Periodic Inspection' in the separated Owner's Manual.


Mandatory

- **Tighten the bolts and nuts with the specified tightening torques.**

Failure to follow this instruction may result in death or severe injury.

⚠ CAUTION


Mandatory

- **When reassembling, follow the instructions below.**
  - **Before reassembly, remove dust and oil on the part to be reused.**
  - **Insert snap rings completely in the groove.**
  - **When closing the control box cover, be careful so that your finger won't get caught.**
  - **Assemble the wire rope without torsion.**

Failure to follow these instructions may cause loss of property arising from damaged product or dropped parts.


Mandatory

- **When reassembling, replace the following parts with new ones.**
  - **Gear grease (Type and required amount of grease vary depending on the specification and main body size. Refer to the separated "RY Series Wire Rope Hoist Owner's Manual".**
  - **Packing and the like**
  - **Molybdenum disulfide lubricant, Molytherm No.2 (specified brand, manufactured by SUMICO LUBRICANT)**
  - **Oil seal**
  - **Snap ring**
  - **Split pin**
  - **O-ring**
  - **Spring pin**

Failure to follow this instruction may cause bodily injury or loss of property.

■ Before disassembly and reassembly

⚠ DANGER


Mandatory

- **Disassembling/reassembling improperly causes death or severe injury. Only competent persons with expertise and experience must disassemble/reassemble the rope hoist.**
  Alternatively, contact the nearest distributor or KITO.
  (Refer to the back of this manual.)
  - **Perform disassembly and reassembly in correct procedures as described in the manual.**
  - **Before reassembling the parts such as gear, clean and remove oil and dust on them.**
    Especially when a plastic hammer is used, clean them thoroughly so that no chip of the hammer remains inside.
  - **Prepare anti-loosening (screw lock) for bolts. Apply it to the specified locations.**
  - **Use only authorized parts for replacement.**

Failure to follow these instructions may result in death or severe injury.

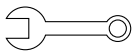
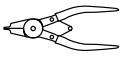
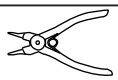
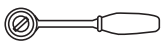
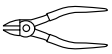
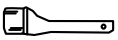
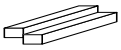
NOTE

The disassembly and reassembly procedures are described based on the representative model. Note that components may be slightly different for different capacities. In addition, the specifications may be changed without prior notice and may be different from the actual products.

Table of Contents

Disassembly and assembly tool

For disassembly and reassembly, prepare the following tools.

No.	Tool/jig name	Application	Icon
1	Wrench 7 mm/8 mm/13 mm/16 mm/18 mm/ 19 mm/22 mm/24 mm/30 mm	Bolts and nuts	
2	Hexagon wrench 3mm/5mm/6mm/8mm/10mm/14mm	Socket bolts	
3	Snap ring pliers S	Snap rings (shaft)	
4	Snap ring pliers R	Snap rings (hole)	
5	Socket wrench 7 mm/8 mm/13 mm/16 mm/18 mm/ 19 mm/22 mm/24 mm/30 mm	Bolts and nuts	
6	Combination pliers	Split pins	
7	Plastic hammer	Removing pinions	
8	Screwdrivers (+)(-)	Screws	
9	Puller	Ball bearings	
10	Thickness gauge	Checking brake gaps	
11	Torque wrench	Setting torque	
12	Pliers/Needle nose pliers	Set pins	
13	Nippers	Cutting INSULOK	
14	Brush	Applying lubricating oil	
15	Vise	Disassembling lifting motor	
16	Wood block	Used as a sleeper	
17	Fiber sling	Used when lifting rope drum and the like	
18	Chain sling	Supporting control box unit and the like	
19	Eye type Bolt M12	Supporting control box unit and the like	
20	Round bar	Pinions	
21	Pin punch	Spring pins	
22	Spatula	Used when removing lubricating oil	

●Use the following types of grease.

- Molybdenum disulfide lubricant, Molytherm No.2 (specified brand, manufactured by SUMICO LUBRICANT)
- EPNOC-AP(N)-2 (specified brand, manufactured by JXTG Nippon Oil & Energy Corporation)
- EPNOC-AP(N)-0: 2.5 kg (specified brand, manufactured by JXTG Nippon Oil & Energy Corporation)
- Moly PS Grease No.2

●Helpful tools

- Remover. Preparing remover for bearings (for inner race & outer race) or for oil seal allows easy operation.
- Preparing wire for guiding lead wires will be helpful.

Major parts in common

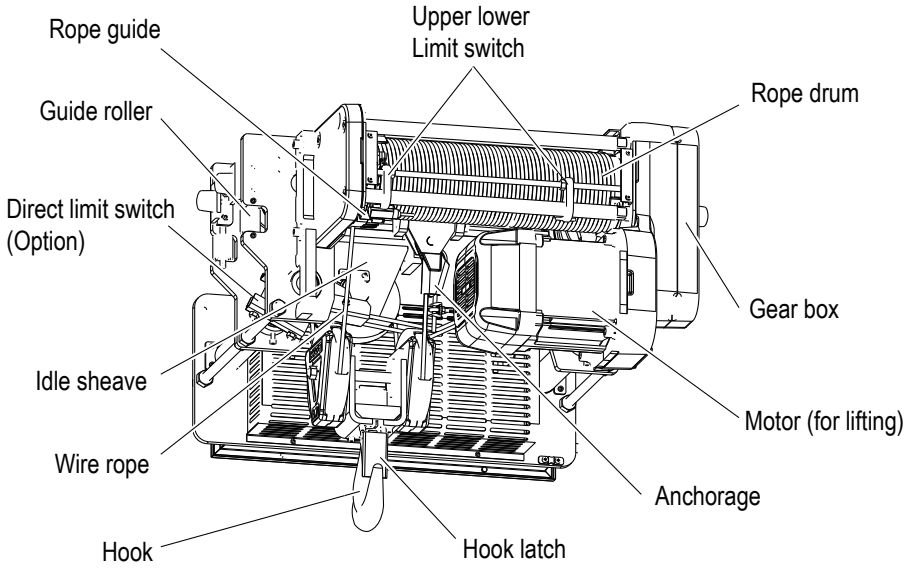
The table below indicates the major parts in common when the destination and power source are the same.

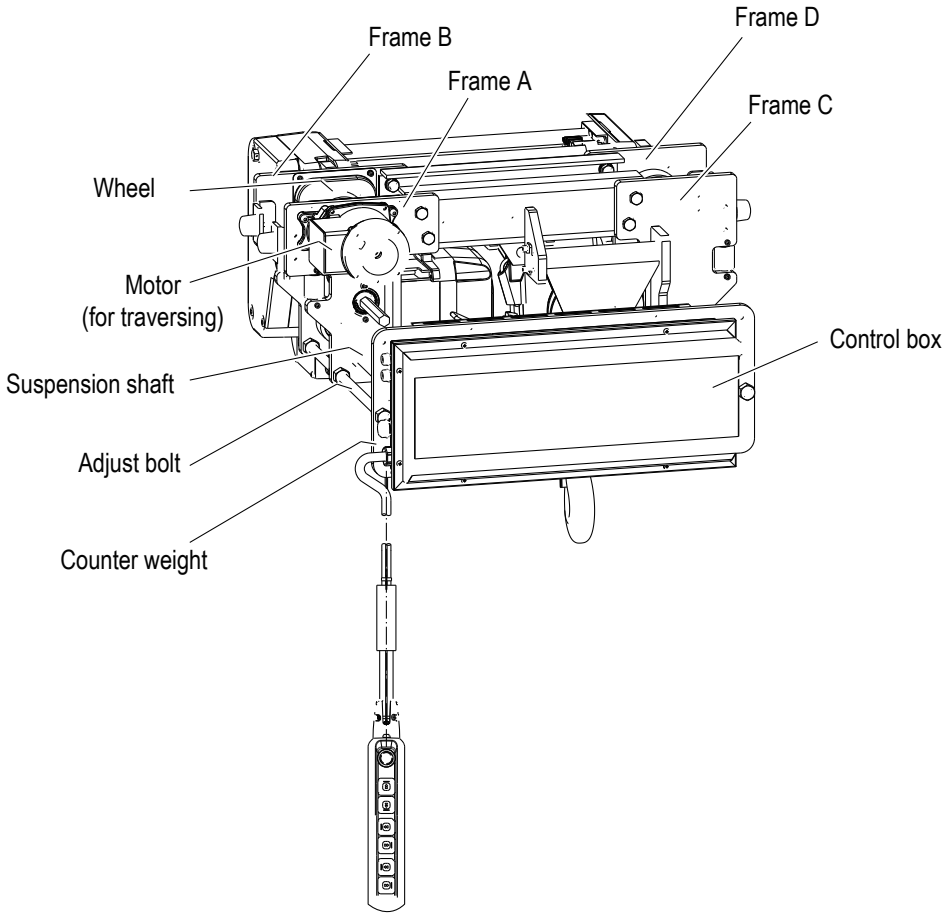
Rated load	2.8 t/3 t/3.2 t															
Rail width (mm)	125-175					176-350					351-500					Difference
Lifting range (m)	6	7.6	9	10.2	12	6	7.6	9	10.2	12	6	7.6	9	10.2	12	
Frame A, B, C, and D	a	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
Suspension shaft	a	←	←	←	←	b	←	←	←	←	c	←	←	←	←	Length
Adjusting bolt	a	←	←	←	←	b	←	←	←	←	c	←	←	←	←	Length
Drive shaft	a	←	←	←	←	b	←	←	←	←	c	←	←	←	←	Length
Drum	a	d	b	e	c	a	d	b	e	c	a	d	b	e	c	Length and diameter
Support shaft	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Limit switch bolt	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Drum cover	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Counter weight	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Beam	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Traversing motor	a	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
Hook block	a	←	←	←	←	←	←	←	←	←	←	←	←	←	←	(Rated load marking)
Wire rope	a	d	b	e	c	a	d	b	e	c	a	d	b	e	c	Structure, diameter or length

Rated load	4.8 t/5 t															
Rail width (mm)	125-175					176-350					351-500					Difference
Lifting range (m)	6	7.6	9	10.2	12	6	7.6	9	10.2	12	6	7.6	9	10.2	12	
Frame A, B, C, and D	b	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
Suspension shaft	d	←	←	←	←	e	←	←	←	←	f	←	←	←	←	Length
Adjusting bolt	a	←	←	←	←	b	←	←	←	←	c	←	←	←	←	Length
Drive shaft	a	←	←	←	←	b	←	←	←	←	c	←	←	←	←	Length
Drum	a	d	b	e	c	a	d	b	e	c	a	d	b	e	c	Length and diameter
Support shaft	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Limit switch bolt	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Drum cover	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Counter weight	d	e	←	f	←	d	e	←	f	←	d	e	←	f	←	Length
Beam	a	b	←	c	←	a	b	←	c	←	a	b	←	c	←	Length
Traversing motor	b	←	←	←	←	←	←	←	←	←	←	←	←	←	←	
Hook block	b	←	←	←	←	←	←	←	←	←	←	←	←	←	←	(Rated load marking)
Wire rope	f	d	g	e	h	f	d	g	e	h	f	d	g	e	h	Structure, diameter or length

Rated load	2.8 t/3 t/3.2 t		4.8t/5t		Difference
Lifting speed	Standard	High	Standard	High	
Gear box	a	b	a	c	Speed ratio
Lifting motor	a	b	b	c	Motor capacity
Control box	a	b	b	c	Inverter
Lifting resistor	a	b	b	c	Capacity

Name of parts





Disassembly procedure

⚠ DANGER

Prohibited

- **Do not disassemble the rope hoist while it is being suspended.**

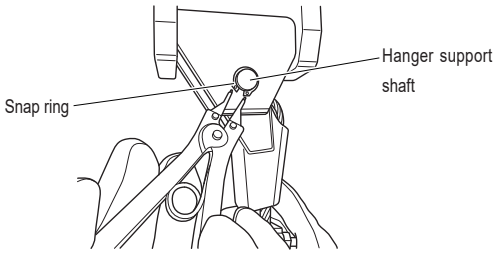
Doing so may result in death or severe injury due to a falling part.
Place it on the floor and perform maintenance on the workbench.

The overall disassembly procedure is shown below. Perform disassembly of only necessary parts.

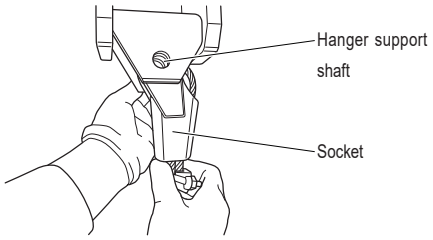
1 Wire rope

■ Removing Wire Rope

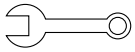
(1) Remove the snap ring from the hanger support shaft supporting the Rope End Fixing Part of the Main Unit.

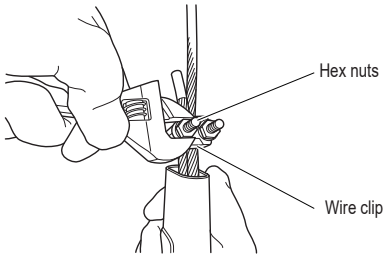


(2) Pull out the hanger support shaft from inside.
(3) Remove the socket.



(4) Remove the hex nuts (two locations), and then the Wire Clip at the rope end.



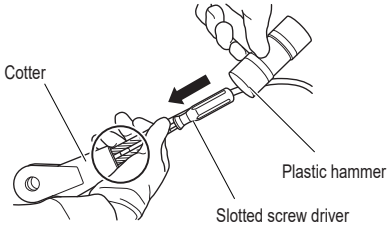


⚠ CAUTION

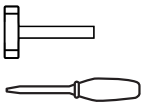
Mandatory

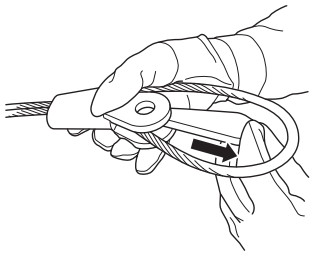
Your hands may be injured.
Wear gloves and the like. Be careful of fine splits of element wires at the rope end while working.

(5) Tap lightly the tip of the cotter, and pull out the cotter from the socket.

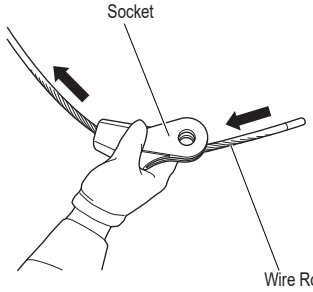


If it is difficult to tap the tip of the cotter, put a slotted screw driver on the cotter as shown in the figure and tap the driver with a hammer.

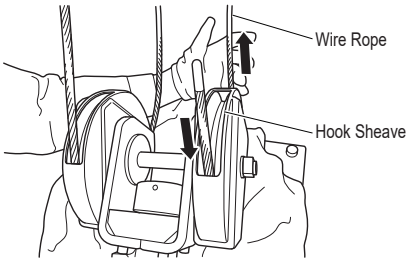




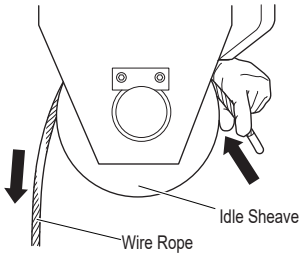
(6) Remove the Wire Rope from the socket.



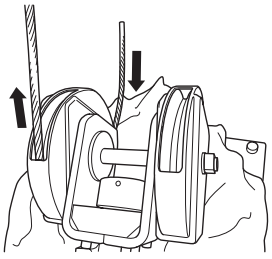
(7) Pull out slowly the Wire Rope from the Hook Sheave of the Hook Block.



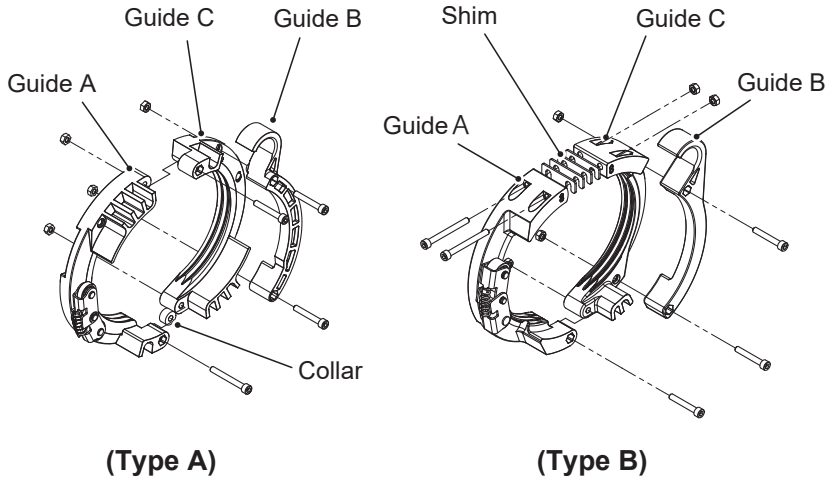
(8) Pull out slowly the Wire Rope from the Idle Sheave.



(9) Pull out slowly the Wire Rope from the other Hook Sheave of the Hook Block.



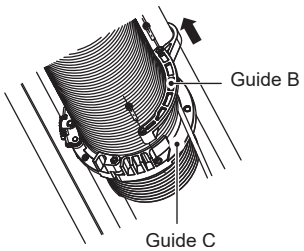
There are two types of Rope Guides with different shapes of connecting parts as shown below. Understand the structures of the Rope Guides first and perform the procedures for each type to remove or attach parts.



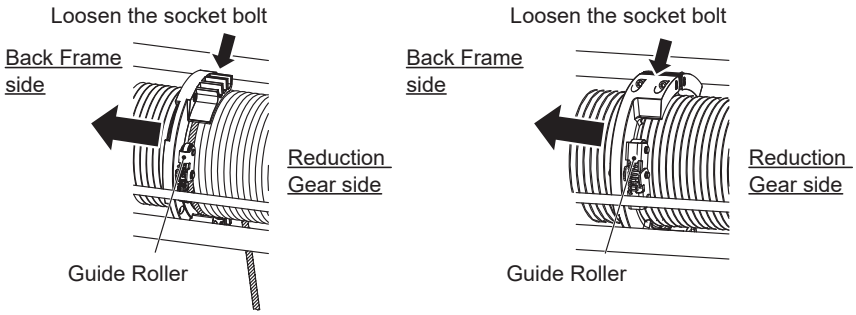
(Type A) **(Type B)**

Structures of Rope Guides

(10) Remove the bolt fixing Guide B, and remove Guide B from Guide C along the Support Shaft.



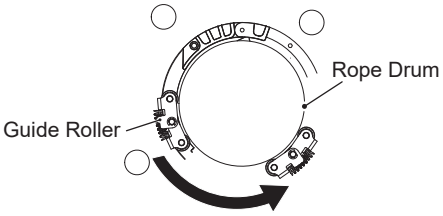
(11) Loosen the socket bolt indicated by the arrow in the figure below. Next, move Guide A toward the Back Frame side until its Guide Roller does not lie on the wire, and remove the socket bolt you loosened.



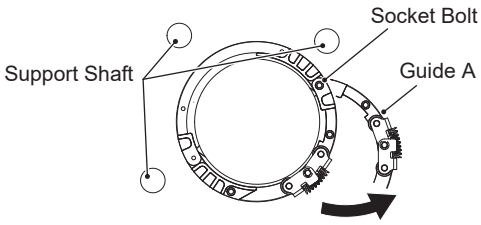
(Type A) **(Type B)**

(12) Remove the Rope Guide from the Rope Drum by following the procedure described below.

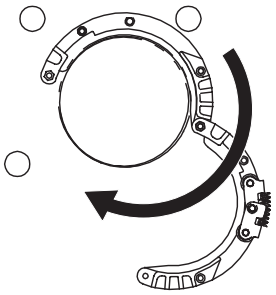
12-1. As shown in the figure on the right, rotate Guide A and Guide C along the Rope Drum using the Guide Roller as a guide.



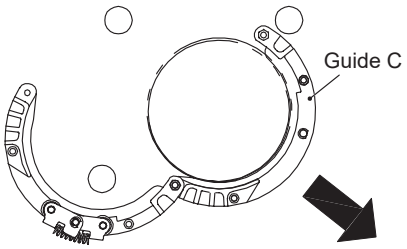
12-2. Loosen the socket bolt connecting Guide A to Guide C, and remove Guide A from the Rope Drum at a position where Guide A has no interference with the Support Shaft.



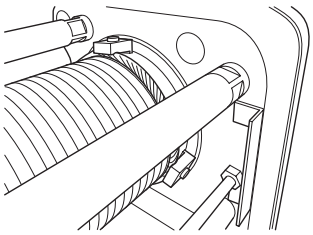
12-3. As shown in the figure on the right, rotate Guide A and Guide C along the Rope Drum with Guide A removed from the Rope Drum.



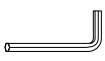
12-4. Remove Guide C from the Rope Drum at a position where Guide C has no interference with the Support Shaft.

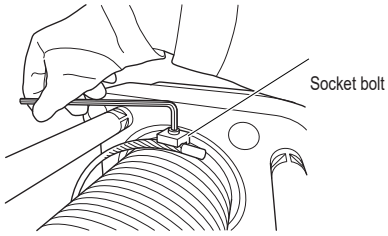


(13) Perform unwinding operation while pulling the Wire Rope by hand so that the Wire Rope does not float away from the Rope Drum. Remove in advance the Wire Rope to the position of the Rope Clamp as shown right.


(Fixed state)

(14) Loosen socket bolts and remove Wire Clamps at three locations to remove the Wire Rope from the Wire Drum. Remove the Wire Rope while holding it by hand so as to prevent the Wire Rope from being removed suddenly by tension of the Wire Rope.

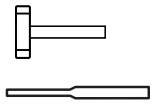


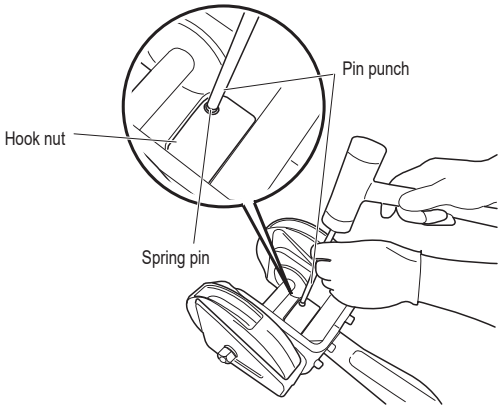


2 Hook block

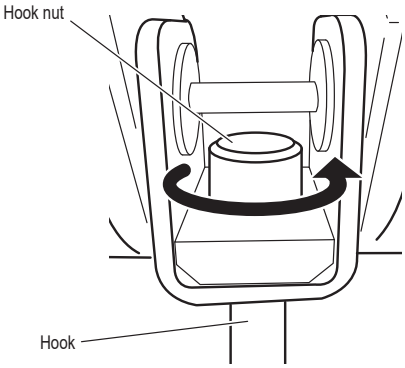
■ Removing the hook block

(1) Pull out the spring pin fixing the hook nut and hook.

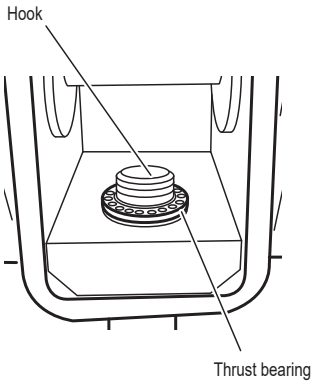




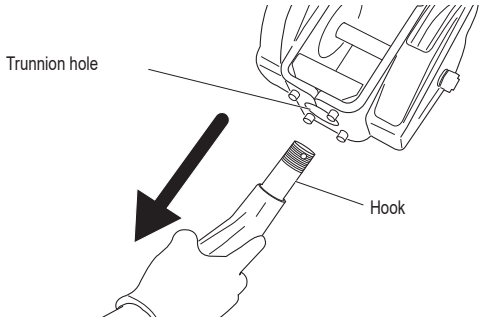
(2) Remove the hook nut fixing the hook.



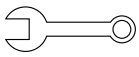
(3) Remove the thrust bearing from the hook.



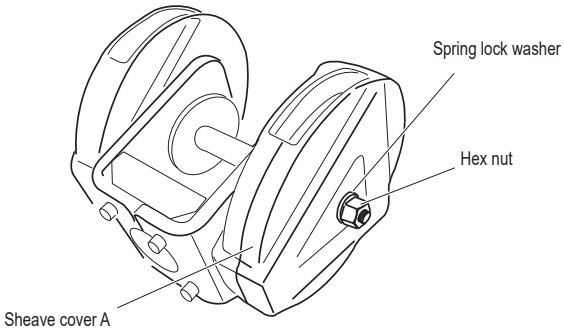
(4) Remove the hook from the trunnion hole.



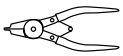
(5) Remove the hex nuts and spring lock washers fixing the sheave covers A and B.

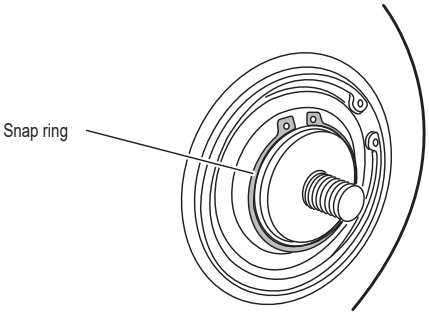

24mm

(6) Remove the sheave cover A.

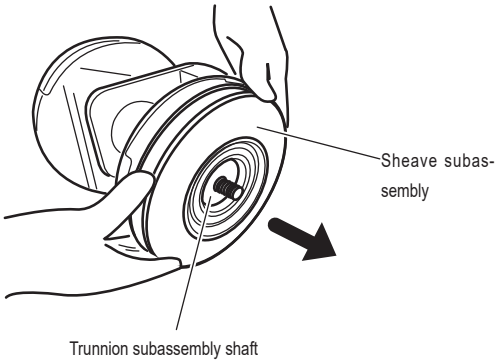


(7) Remove the snap ring fixing the sheave subassembly.

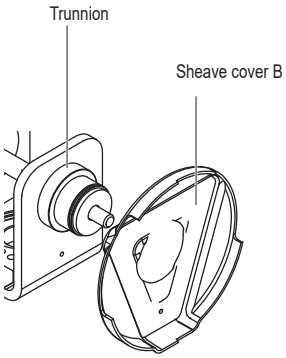




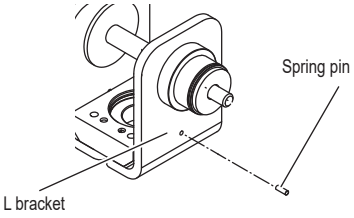
(8) Remove the sheave subassembly from the trunnion subassembly shaft.



(9) Remove the sheave cover B from the trunnion.



(10) Pull out the spring pin from the L bracket.



(11) Remove the parts on the opposite side in the same way.

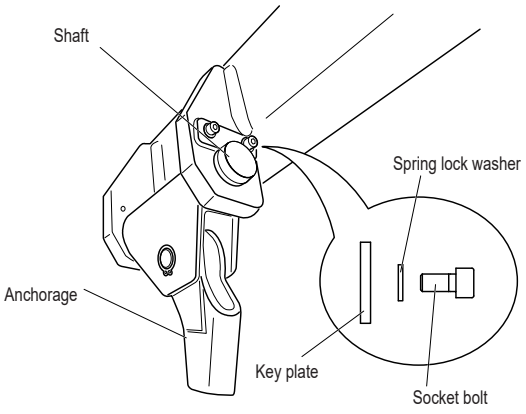
Follow the steps from (5) to (10).

3 Anchorage

■ Removing the anchorage

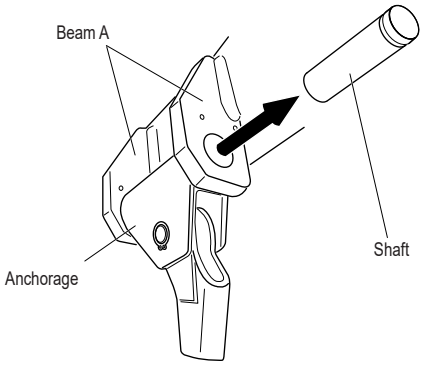
(1) Remove the socket bolts and spring lock washers (two locations for each) of the key plate fixing the shaft of the anchorage, and remove the key plate.

[5mm]



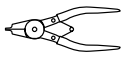
(2) Pull out the shaft of the anchorage from the hole of the beam A, and remove the anchorage.

- Make sure to support the anchorage by hand to prevent it from dropping.

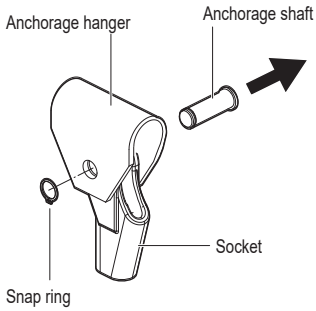


■ Disassembling the anchorage

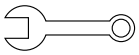
(1) Remove the snap ring fixing the anchorage shaft.



(2) Pull out the anchorage shaft from the anchorage hanger and socket.



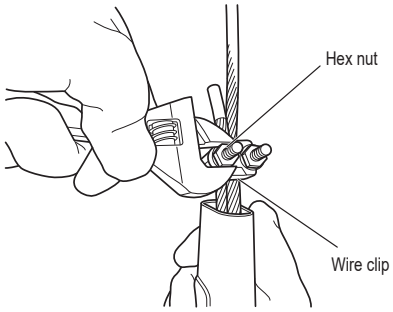
(3) Remove the hex nuts (two locations), and remove the wire clip at the rope end.



⚠ CAUTION

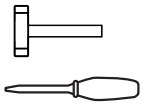
Mandatory

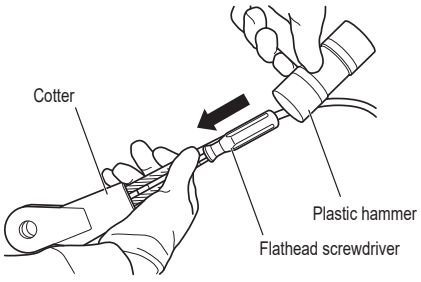
Your hands may be injured.
Wear gloves and the like. Be careful of fine splits of element wires at the rope end while working.

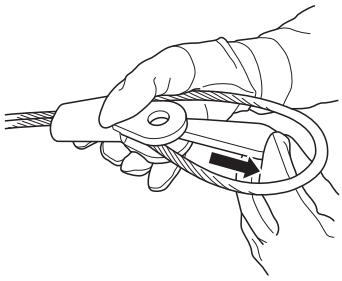


(4) Hammer the cotter tip gently, and pull out the cotter from the socket.

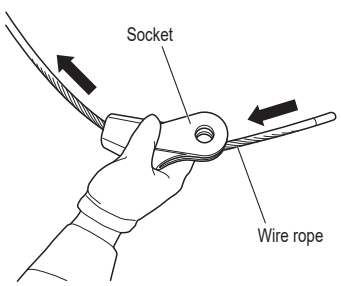
- When you feel difficult to hammer the tip of the cotter, apply a flathead screwdriver to the cotter and then hammer it as shown in the figure.







(5) Remove the wire rope from the socket.

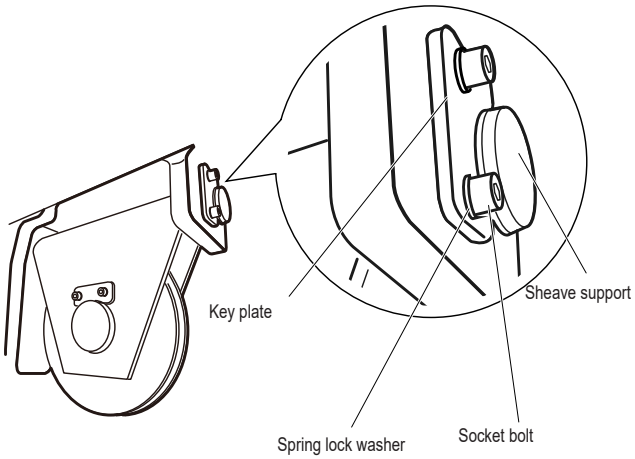


4 Idle sheave

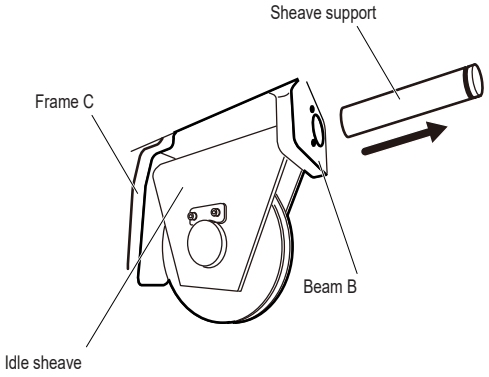
■ Removing the idle sheave

(1) Remove the socket bolts (two locations) of the key plate fixing the sheave support, and remove the key plate.


[5mm]



(2) While supporting the idle sheave by hand to prevent it from dropping, pull out the sheave support from the hole of the beam B and frame C, and remove the idle sheave.

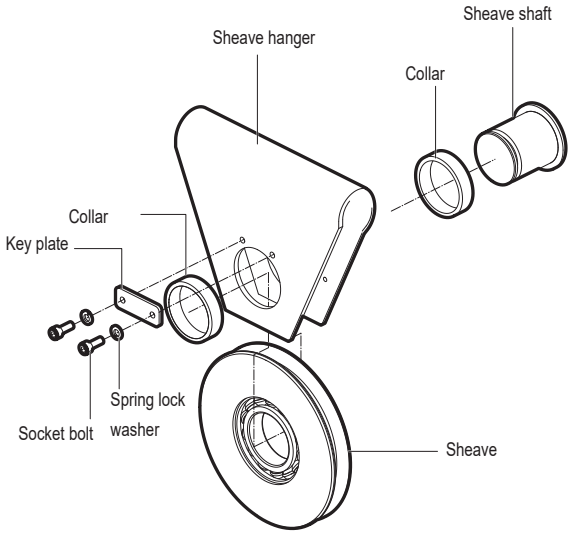


■ Disassembling the idle sheave

(1) Remove the socket bolts and spring lock washers (two locations for each) fixing the key plate, and remove the key plate.


[5mm]

(2) Pull out the sheave shaft, and remove the collar and sheave.

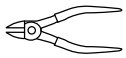


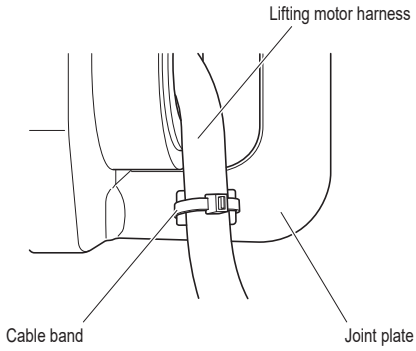
5 Lifting motor

■ Removing the lifting motor harness (terminal box side)

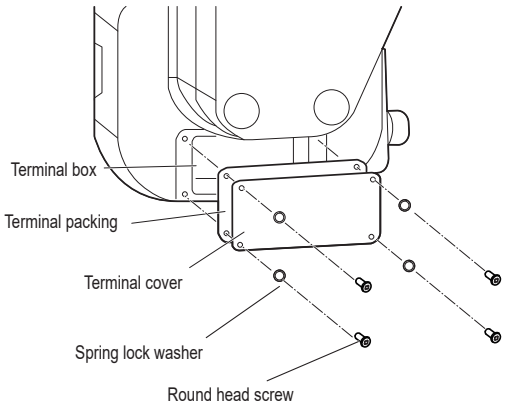
● For 200V-03S, 03H, 05S, 400V-03S, 03H, 05S, and 05H

(1) Cut the cable band fixing the lifting motor harness to the joint plate.

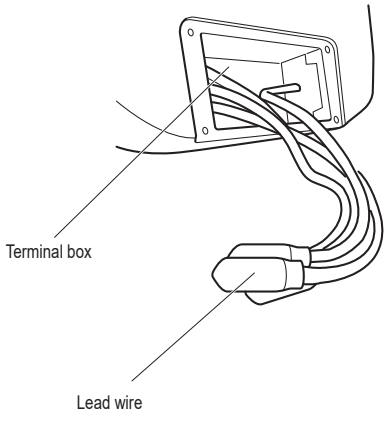




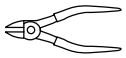
(2) Remove the round head screws and spring lock washers (four locations for each) fixing the terminal packing and terminal cover, and remove the terminal cover and terminal packing.

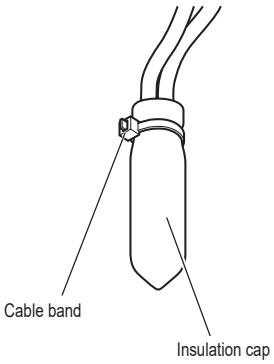


(3) Pull out the lead wire contained in the terminal box.

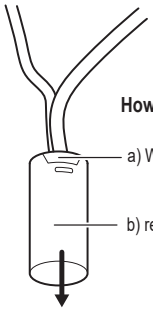


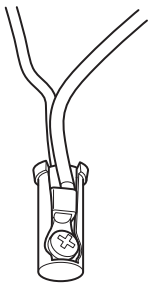
(4) Cut the cable band fixing the insulation cap, and remove the insulation caps (three locations).





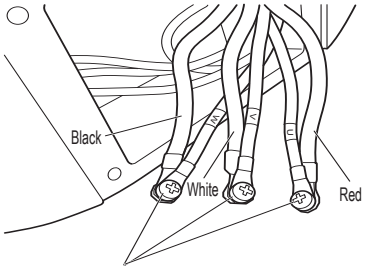
- When removing plastic insulation caps, refer to the procedure below.



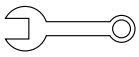


After removal

(5) Remove the round head screw, spring lock washer, and hex nut each connecting the lead wires (red, white, and black) of the lifting motor harness to the lead wires (mark tube with U, V, and W) extended from the lifting motor.
Then loosen the round head screw fixing the ground wire (green/yellow) into the terminal box, and remove the ground wire.

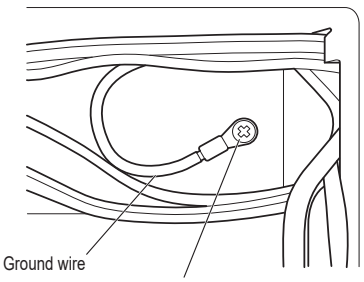


Round head screw, spring lock washer, and hex nut

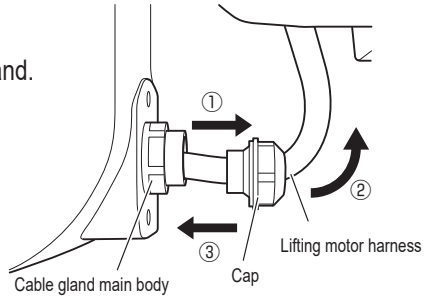


[7mm/8mm]

(6) Then loosen the round head screw fixing the ground wire (green/yellow) into the terminal box, and remove the ground wire.

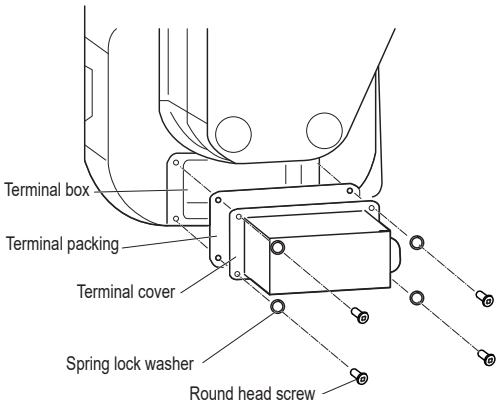


(6) a) Remove the cap of the cable gland.
b) Pull out the lifting motor harness.
c) Return the cap of the cable gland to the main body of the cable gland.

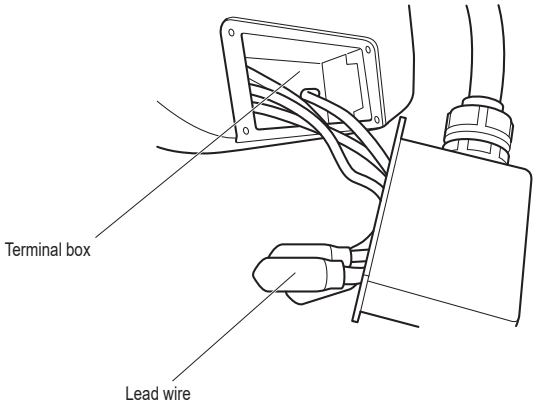


● For 200V-05H

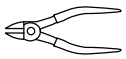
(1) Remove the round head screws and spring lock washers (four locations for each), and remove the terminal cover and terminal packing.

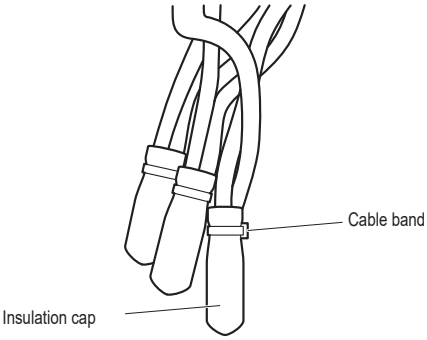


(2) Pull out the lead wire contained in the terminal box.

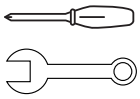


(3) Cut the cable bands (three locations) fixing the insulation caps (three locations).

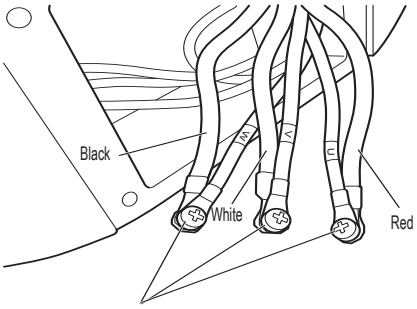




(4) Remove the round head screw, spring lock washer, and hex nut for connecting the motor wire to the lifting motor harness.

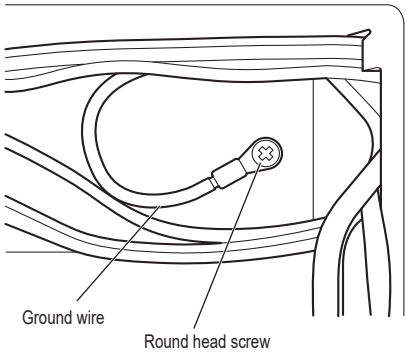


[7mm/8mm]

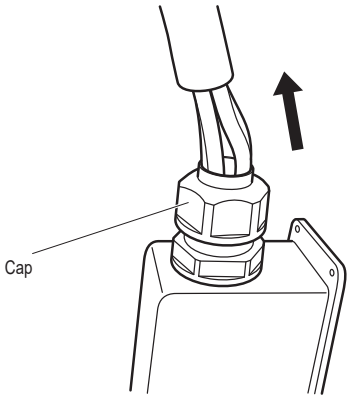


Round head screw, spring lock washer, and hex nut

(5) Loosen the round head screw fixing the ground wire (green/yellow) into the terminal box, and remove the ground wire.

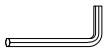


(6) Loosen the cap of the cable gland fixed to the terminal cover, and pull out the lifting motor harness from the terminal cover.



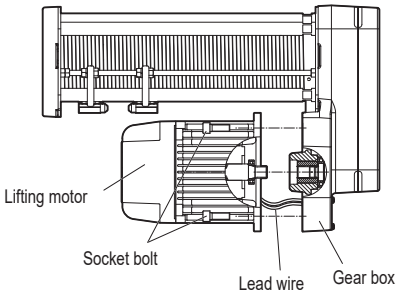
Removing the lifting motor

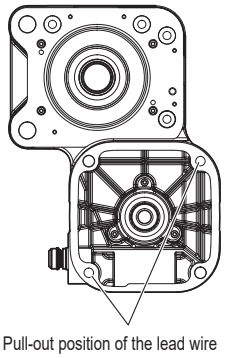
(1) Suspend the lifting motor with a fiber sling, etc., remove the socket bolts (four locations) fixing the lifting motor, and remove the lifting motor from the gear box.



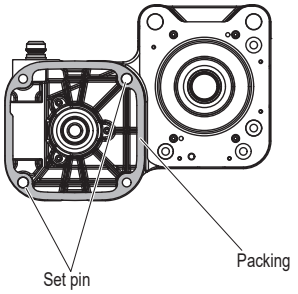
[14mm]

- When removing the lifting motor, make sure not to let the lead wire get caught by the gear box.



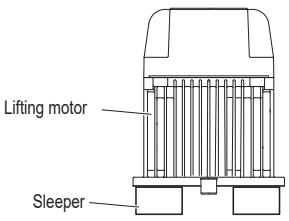


(2) Remove the set pins (two locations) and packing.

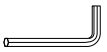


Disassembling the lifting motor

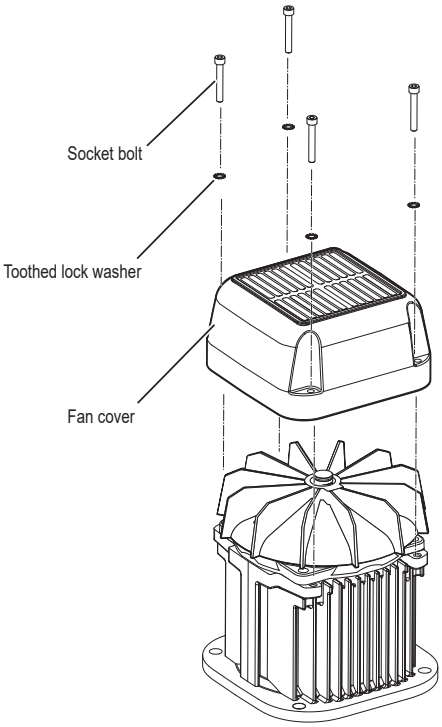
(1) Place the removed lifting motor upright on the sleeper.



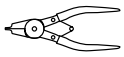
(2) Remove the socket bolts and toothed lock washers (four locations for each) fixing the fan cover, and remove the fan cover.

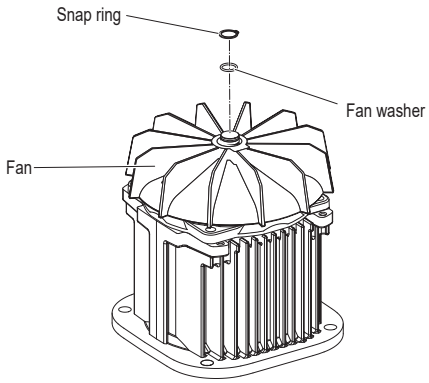


[6mm]

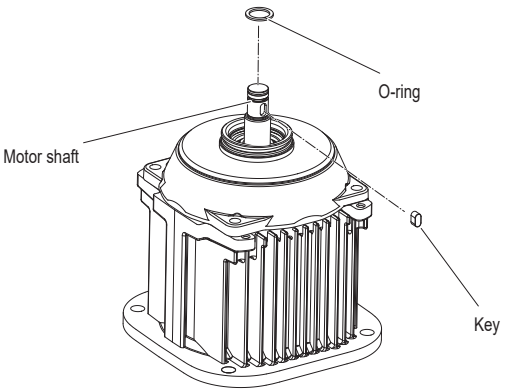


(3) Remove the snap ring and fan washer for installing the fan, and remove the fan.



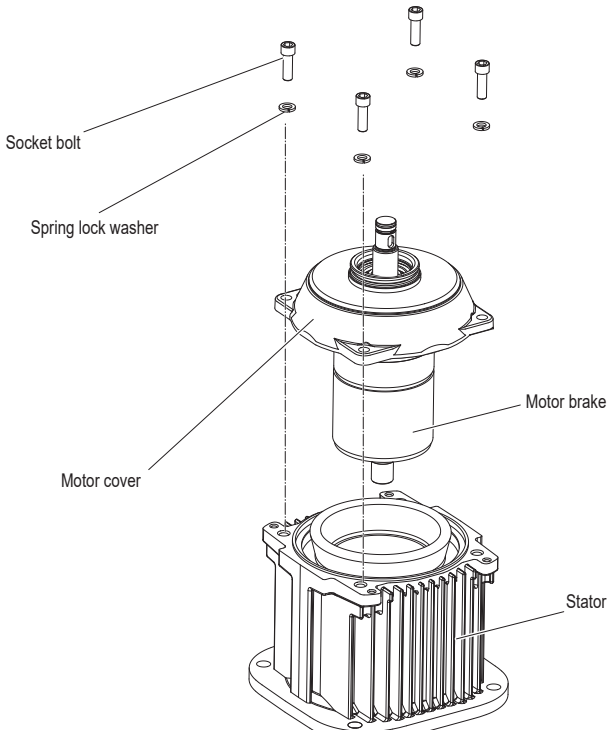


(4) Remove the key and O-ring installed to the motor shaft.

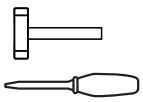


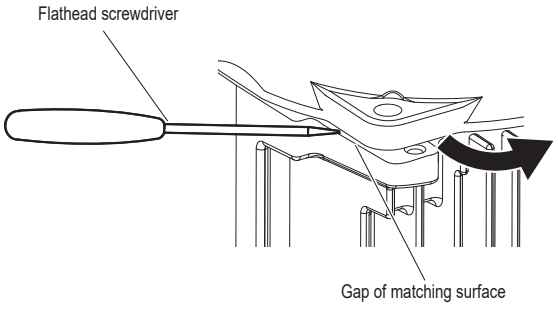
(5) Remove the socket bolts and spring lock washers (four locations for each) of the motor cover.

[10mm]

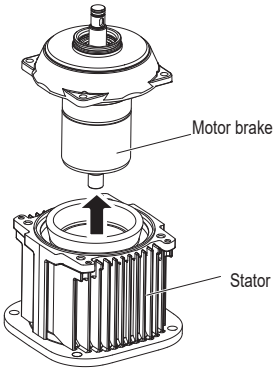


(6) Insert the flathead screwdriver into a gap of the matching surfaces of the motor cover (two diagonal locations). Then hammer the screwdriver gently with the plastic hammer. After that, rotate (shift) the motor cover and remove the motor brake assembly from the motor frame.



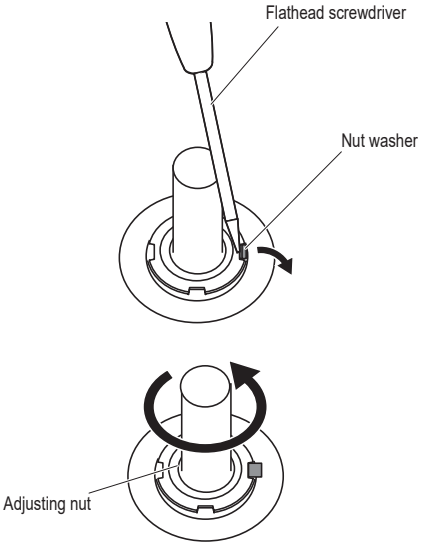


(7) Remove the motor brake from the stator.

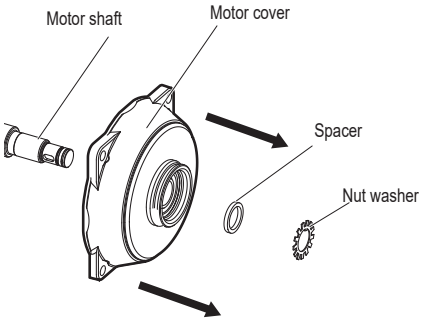


■ Disassembling the motor brake

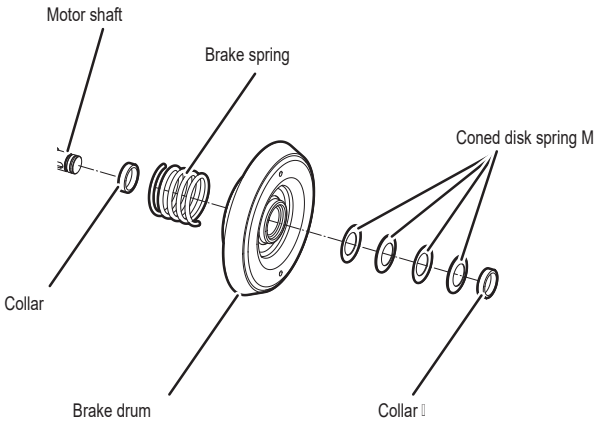
(1) Use the flathead screwdriver to return the nut washer claw to be flat, and rotate the adjusting nut to remove.



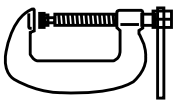
(2) Remove the nut washer and spacer, and remove the motor cover from the motor shaft.



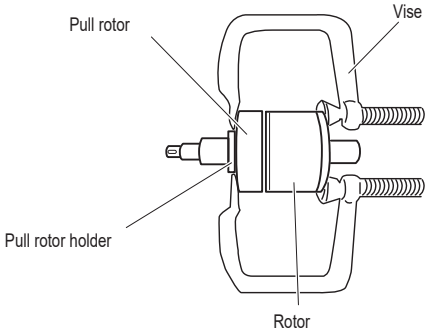
(3) Remove the collar M, 4 coned disk springs M, brake drum, brake spring, and collar.



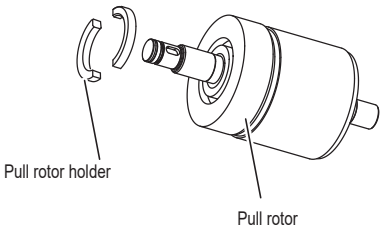
(4) Tighten the pull rotor and rotor with the vise, and remove the pull rotor holder.



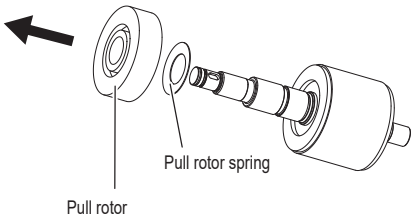
2 pieces



- Put in two pull rotor holders.



(5) Remove the vise, and remove the pull rotor and pull rotor spring.

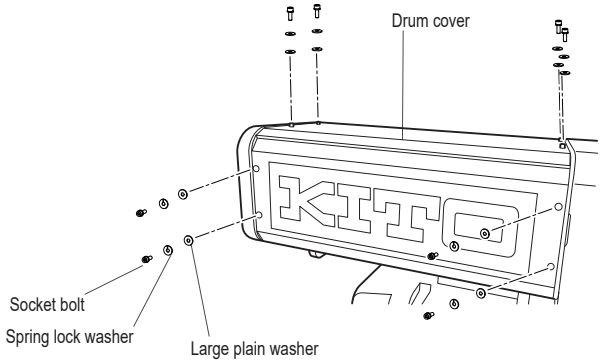


6 Rope drum

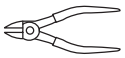
■ Removing the LS harness

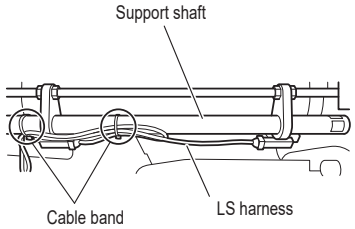
(1) Remove the socket bolts, spring lock washers, and large plain washers (eight locations for each) installing the drum cover.

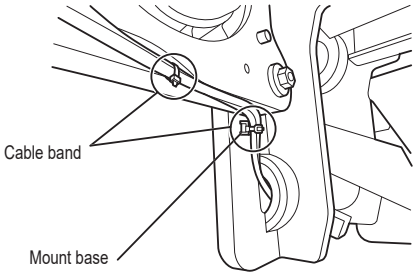
[3mm]



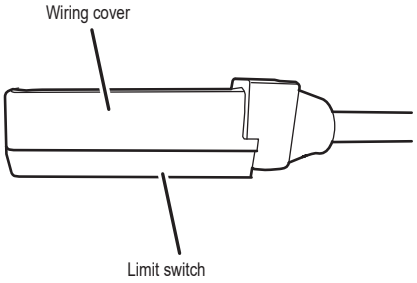
(2) Cut all the cable bands fixing the LS harness to the support shaft and mount base.



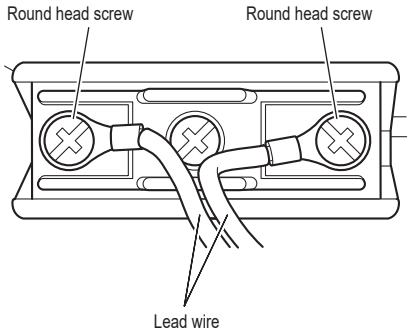




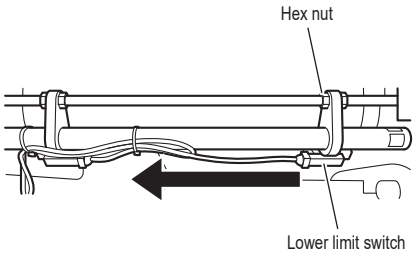
(3) Remove the wiring cover of the limit switch.



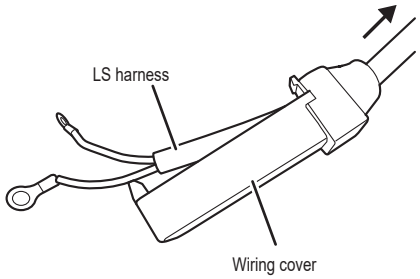
(4) Loosen the round head screw fixing the lead wire of the limit switch, and remove the lead wire from the limit switch.



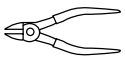
- When removing the lead wire of the Lower limit switch, if it cannot be removed due to interference by the lifting motor, loosen the hex nut fixing the LS fitting. Then shift the Lower limit switch to the position where no interference occurs, and remove the lead wire.

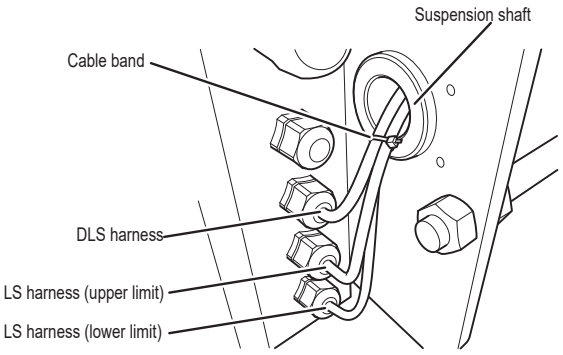


(5) Pull out the LS harness from the wiring cover, and return the wiring cover to the limit switch.



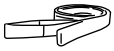
(6) Cut the cable band bundling the DLS harness and LS harness on the control box side, and pull out the LS harness from the suspension shaft.

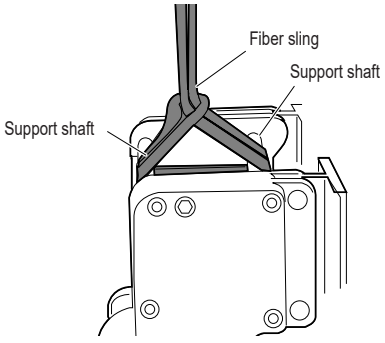




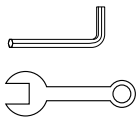
■ Removing the rope drum unit

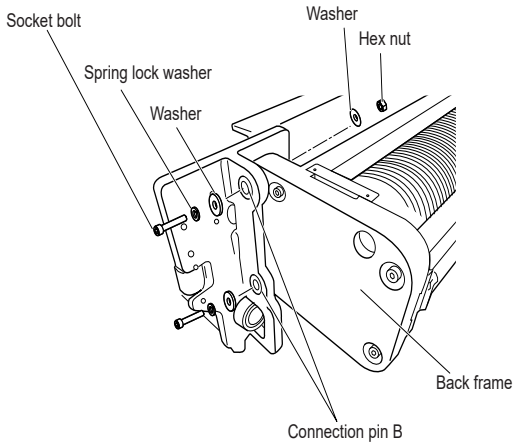
(1) Hook the fiber sling to the support shafts (two locations on the upper side) of the rope drum unit. Then suspend it with the crane to the extent the rope drum unit does not drop even when the connection pin A or B is pulled out, and apply a tension.



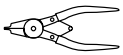


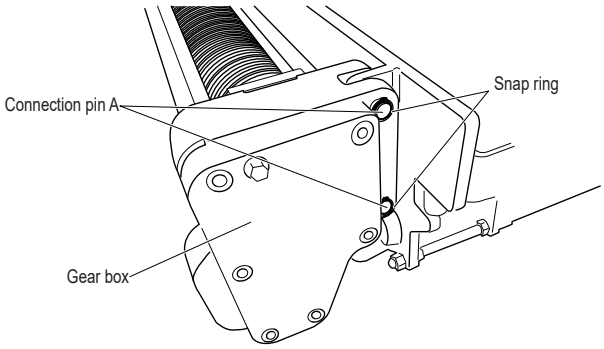
(2) Remove the socket bolts and hex nuts fixing the connection pins B (two locations) of the back frame side, and remove the washers and spring lock washers.



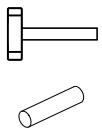


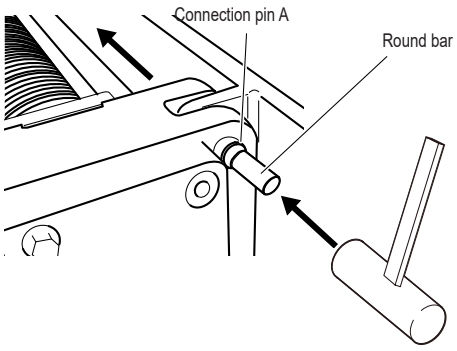
(3) Remove the snap rings outside of the connection pins A (two locations) on the gear box side



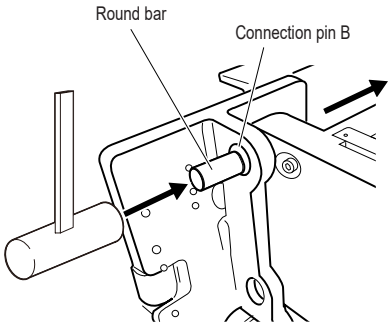


(4) Apply the round bar to the connection pins A and B. Hammer it gently with the plastic hammer, and pull out the connection pins A and B.

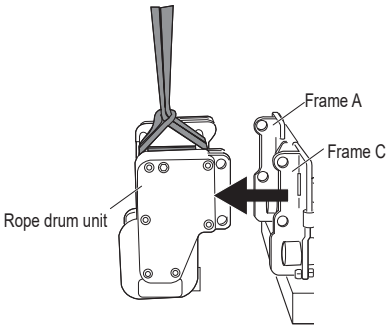




- If you cannot pull out the connection pin A or B, adjust the tension of the fiber sling supporting the rope drum unit to reduce the self weight applied to the connection pin A or B. Then pull it out again.
- Pull out the connection pins A and B alternately one by one.

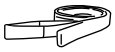


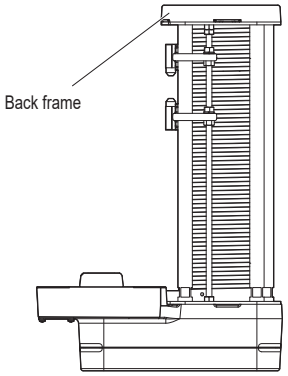
(5) Remove the rope drum unit from the frame A and frame C.



■ Disassembling the rope drum

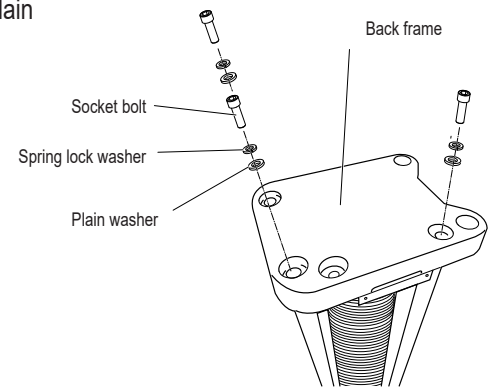
(1) Place the rope drum unit with the back frame side facing up.



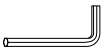


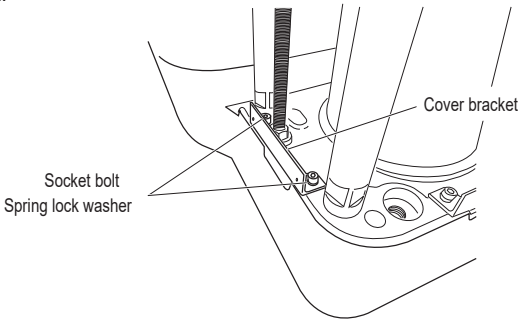
(2) Remove the socket bolts, spring lock washers, and plain washers (three locations for each) of the back frame.


[10mm]

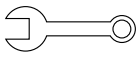


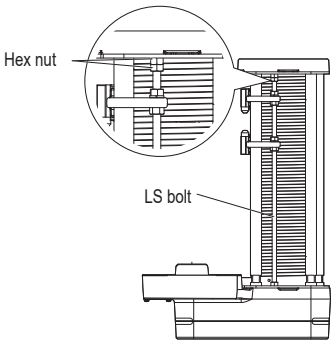
(3) Remove the socket bolts and spring lock washers (two locations for each) of the cover bracket on the gear box side, and remove the cover bracket.


[5mm]

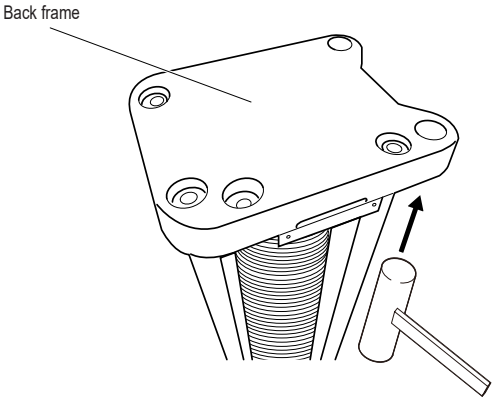


(4) Loosen the hex nuts (two locations) of the limit switch bolt (hereinafter referred to as LS bolt) on the back frame side.

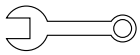

[18mm]

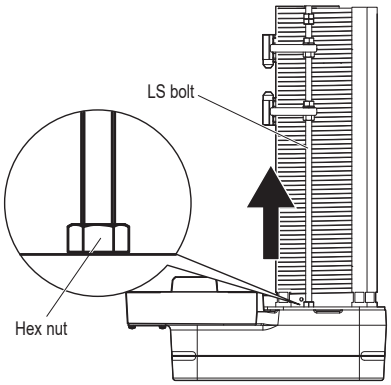


(5) While hammering at the back side of the back frame with the plastic hammer, remove the back frame.

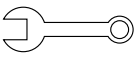


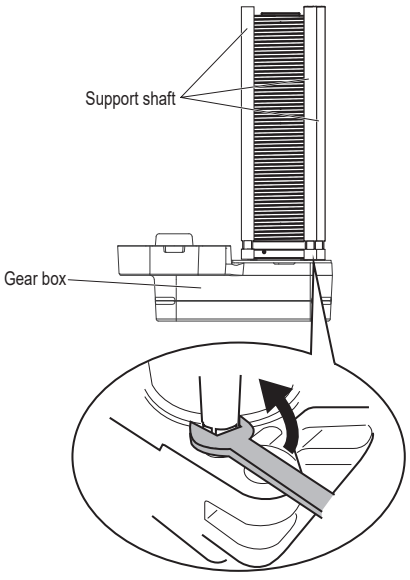
(6) Loosen the hex nut (one location) of the LS bolt, and remove the LS bolt from the gear box.


[18mm]

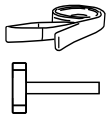


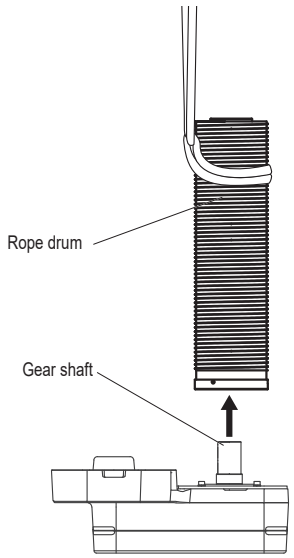
(7) Loosen the support shafts (three locations) from gear box.


[24mm]



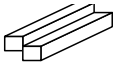
(8) Wind the fiber sling around the rope drum. While lifting the rope drum with a crane gradually, pull it out straight.

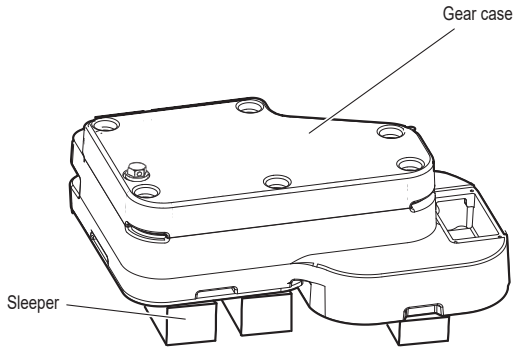




■ Disassembling the gear box

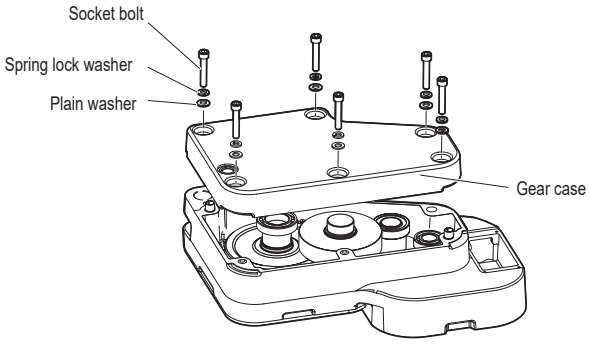
(1) Place the gear box on the sleeper with the gear case side facing up.



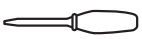


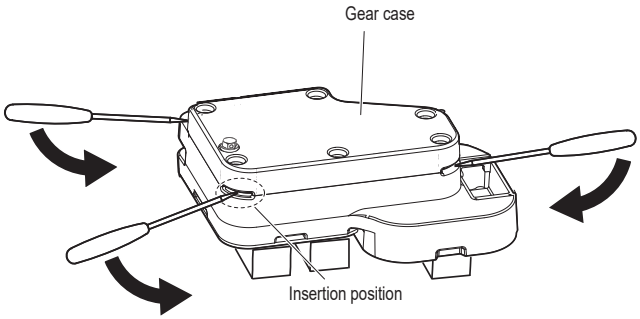
(2) Remove the socket bolts, spring lock washers, and plain washers (six locations for each), and remove the gear case from the body.


[8mm]

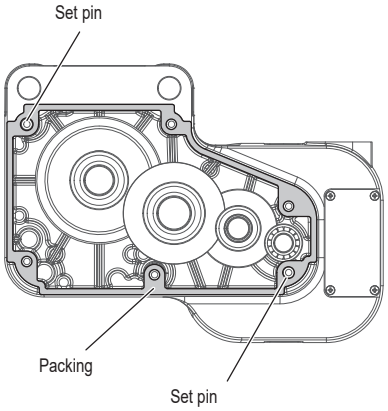


(3) Insert the screwdrivers (-) into the three locations shown in the right figure, and lift the gear case to remove.



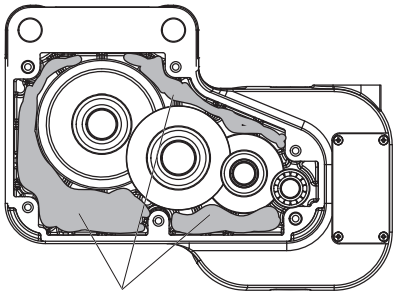


(4) Remove the packing, and remove the set pins (two locations).

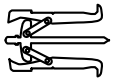


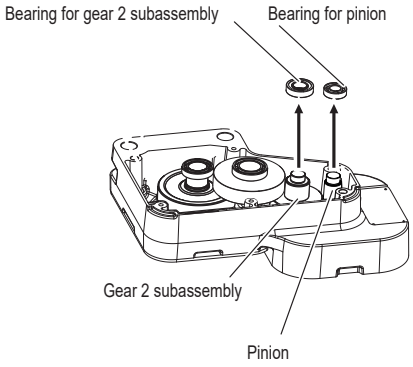
(5) Remove the lubricating oil (grease) in the body.

・ Remove it using the spatula and the like.

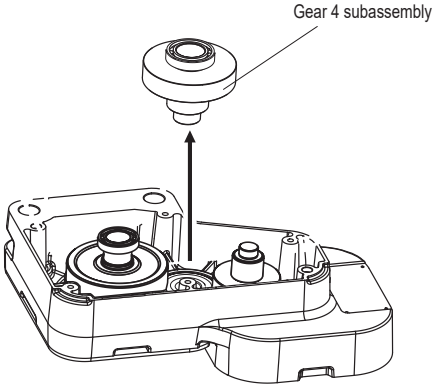


(6) Remove the bearing at the tip of the gear 2 sub-assembly, and remove the bearing at the tip of the pinion.

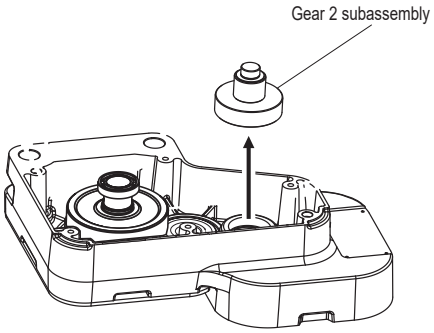




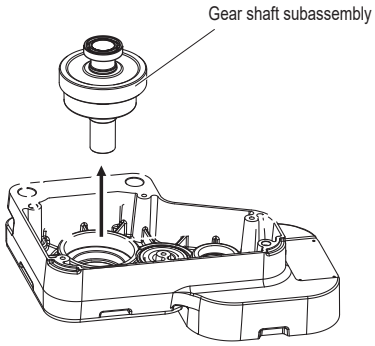
(7) Remove the gear 4 subassembly



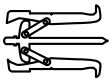
(8) Remove the gear 2 subassembly

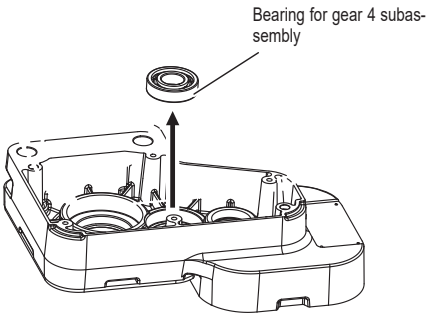


(9) Remove the gear shaft subassembly

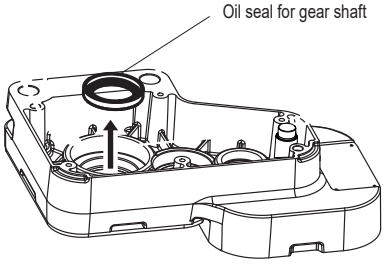


(10) Remove the bearing for gear 4 subassembly

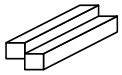


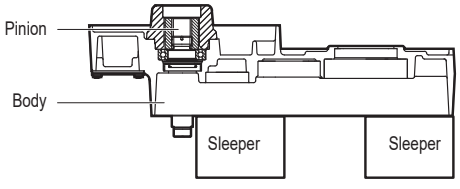


(11) Use the screwdrivers (-) and the like to remove the oil seal for gear shaft.

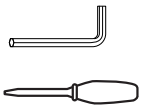


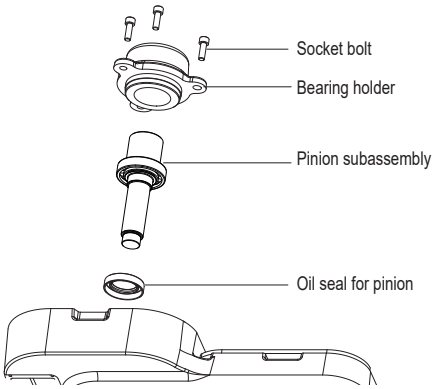
(12) Place the body on the sleeper with the pinion side facing up.





(13) a) Remove the socket bolts
(three locations) for installing the bearing holder.
b) Remove the bearing holder.
c) Remove the pinion subassembly.
d) Use the screwdriver (-) and the like
to remove the oil seal for pinion.

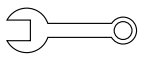




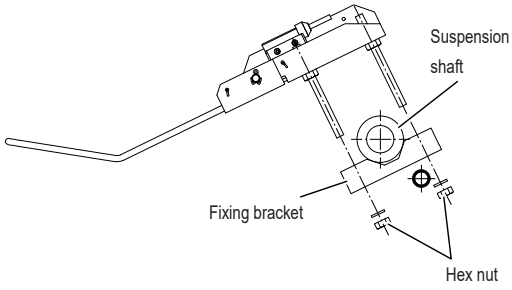
7 Direct limit switch

■ Removing the direct limit switch

(1) Remove the hex nut fixing the fixing bracket of the direct limit switch, and remove the direct limit switch from the suspension shaft.



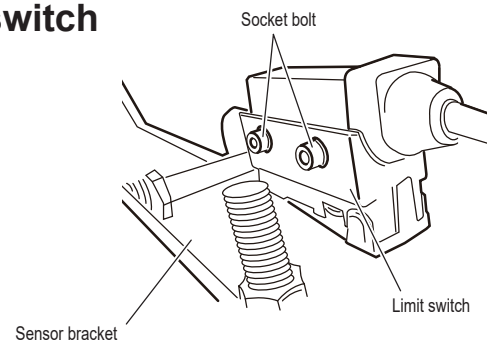
[16mm]



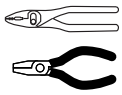
■ Disassembling the direct limit switch

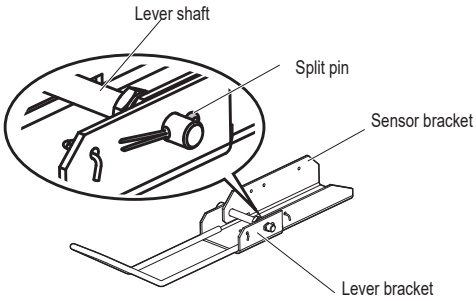
(1) Remove the socket bolts (two locations) fixing the limit switch, and remove the limit switch from the sensor bracket.

[3mm]

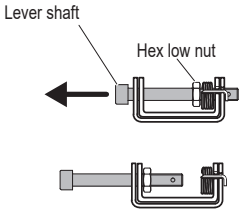


(2) Remove the split pin at the tip of the lever shaft.

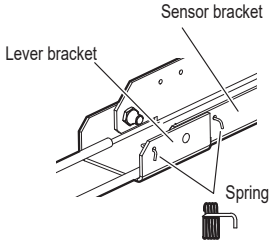




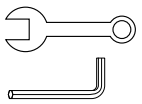
(3) Pull out the lever shaft to the position of the hex low nut.

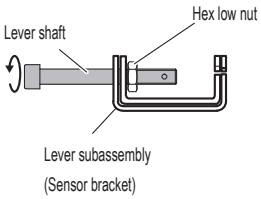


(4) Remove the spring from the lever bracket and sensor bracket.

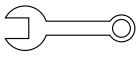


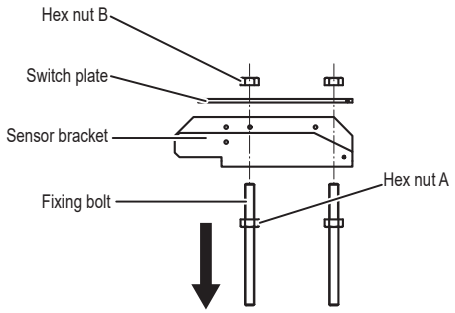
(5) Remove the hex low nut from the lever shaft, and pull out the lever shaft from the sensor bracket and lever bracket.


[16mm]
[8mm]



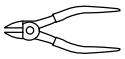
(6) Loosen the hex nut B, pull out the fixing bolt, and remove the sensor bracket and switch plate.

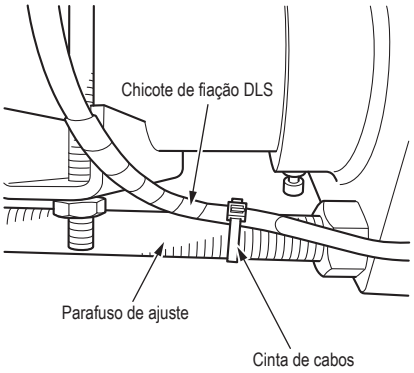

[16mm]



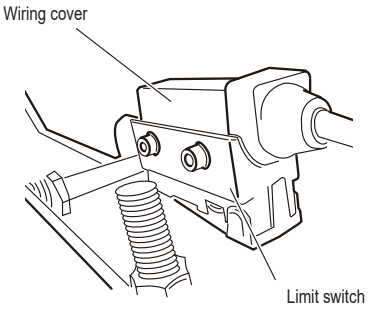
■ Removing the DLS harness

(1) Cut the cable band fixing the DLS harness to the adjusting bolt.

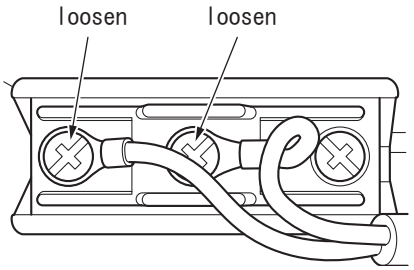




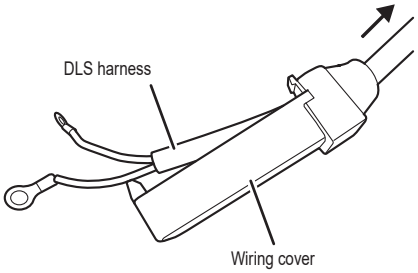
(2) Remove the wiring cover of the limit switch of the direct limit switch.



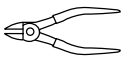
(3) Loosen the screw fixing the DLS harness, and remove the DLS harness.

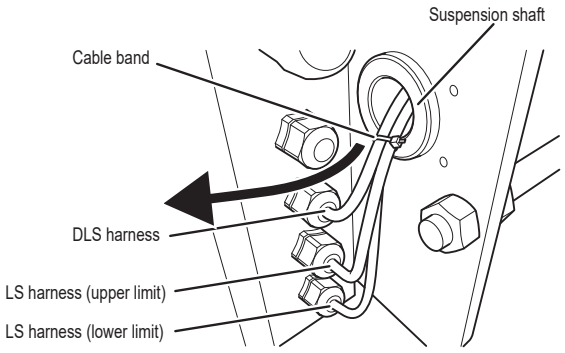


(4) Pull out the DLS harness from the wiring cover, and return the wiring cover to the limit switch.



(5) Cut the cable band bundling the DLS harness and 2 LS harnesses on the control box side, and pull out the DLS harness from the suspension shaft.



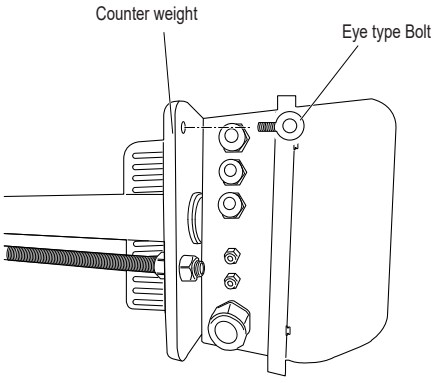


8 Control box

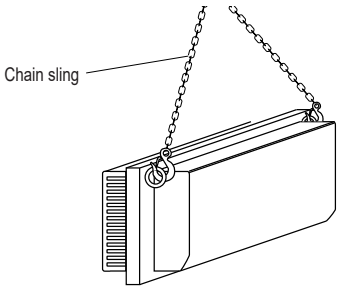
■ Removing the control box unit

(1) Install the eye type bolt M12 to the screw holes (two locations) of the counter weight on both sides.

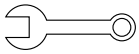
(Ring internal diameter 30 mm)



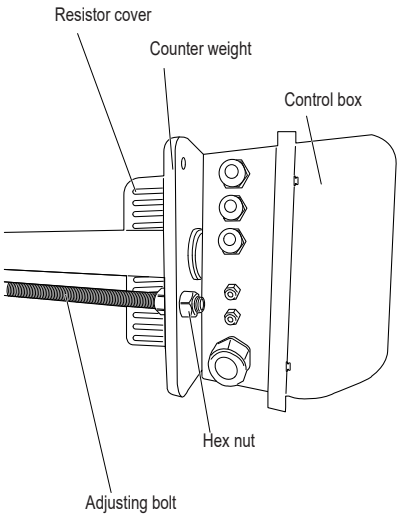
(2) Pass the chain sling through the eye type bolts (two locations). Suspend it with the crane, and apply a tension to the chain sling.



(3) Remove the hex nuts (two locations) of the adjusting bolt outside of the counter weight.

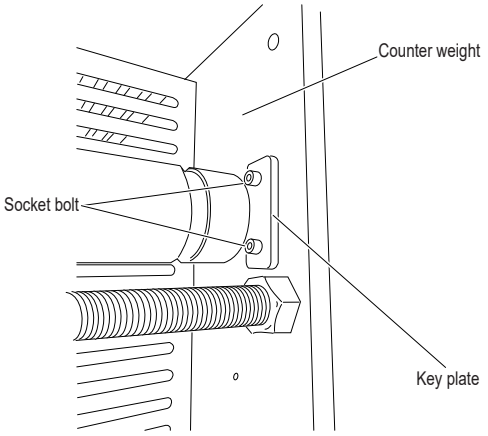


[30mm]

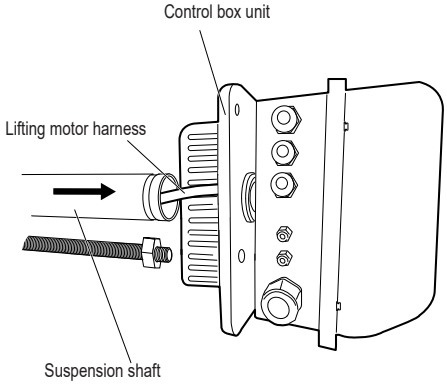


(4) Remove the socket bolts (two locations for each) of the key plates (two locations), and remove the key plates from the counter weight.

[5mm]

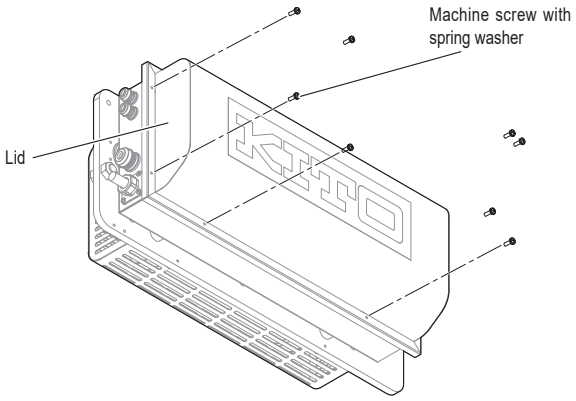


(5) While pulling out the lifting motor harness from the suspension shaft, remove the control box unit.



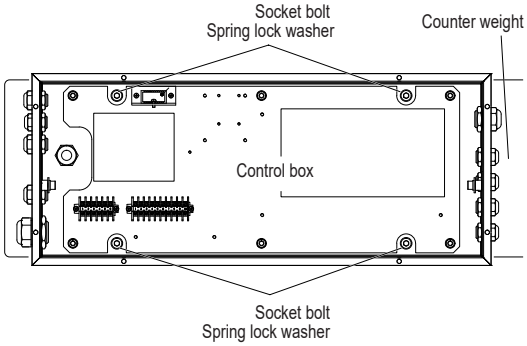
■ Removing the control box

(1) Loosen the machine screw with spring washers (8 locations) fixing the lid of the control box, and open the lid.



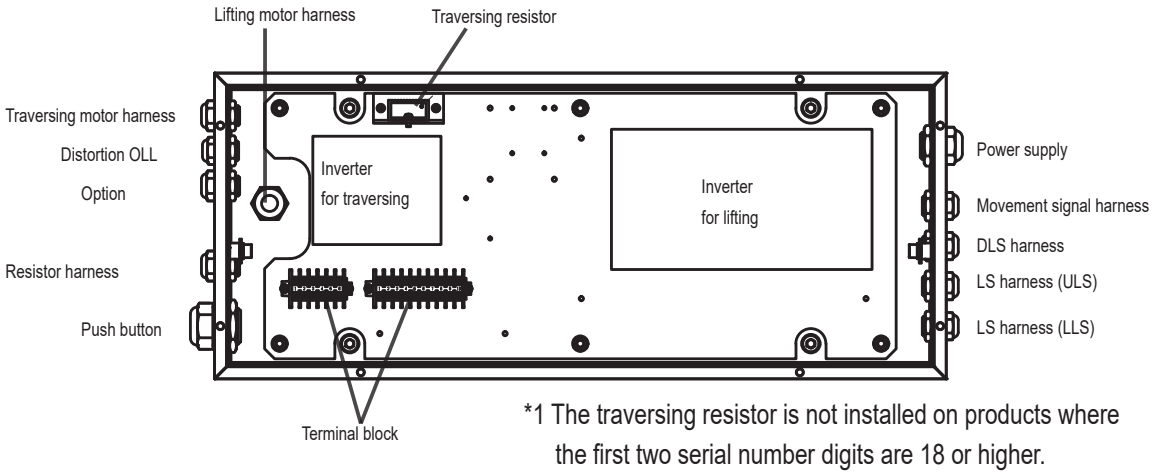
(2) Remove the socket bolts and spring lock washers (four locations for each) fixing the control box, and remove the control box from the counter weight.

[8mm]



■ Disassembling the control box

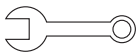
Positions of the harness and the like are shown below.



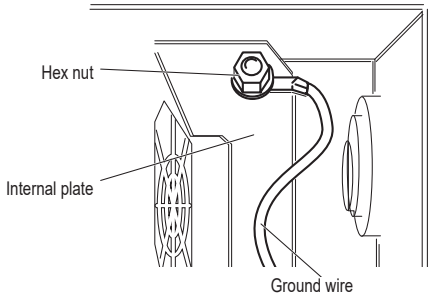
*1 The traversing resistor is not installed on products where the first two serial number digits are 18 or higher.

● Removing the ground wire

(1) Remove the hex nut fixing the ground wire, and remove the ground wire from the internal plate.



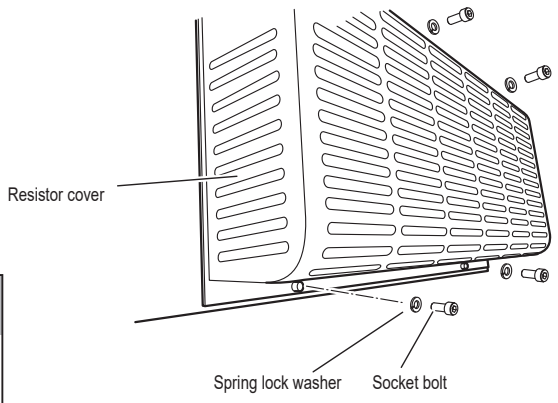
[13mm]



■ Removing the resistor harness

(1) Remove the socket bolts and spring lock washers (four locations for each), and remove the resistor cover from the counter weight.

[5mm]

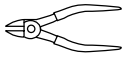


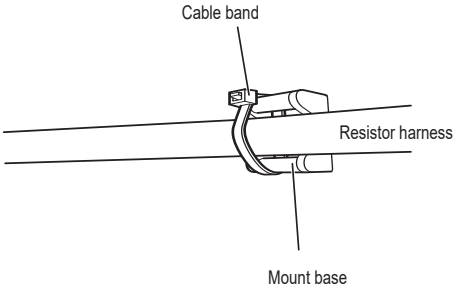
⚠ CAUTION

Prohibited

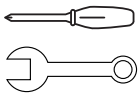
- **The resistor cover is hot after the rope hoist is operated. Do not touch the cover until it cools down.**
  Otherwise, you may get burned.

(2) Cut the cable band fixing the resistor harness to the mount base.

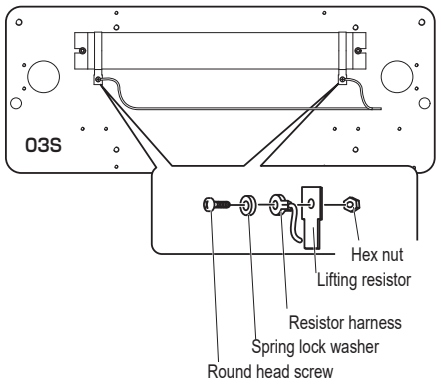




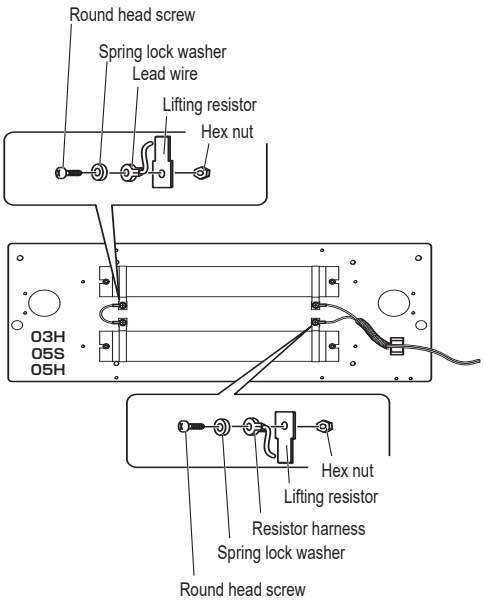
(3) Remove the round head screw, spring lock washer, and hex nut each connecting the lifting resistor to the resistor harness, and remove the resistor harness and lead wire.



[7mm/8mm]



When using one lifting resistor



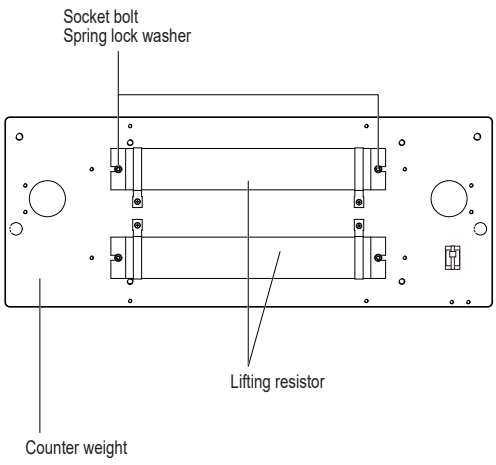
When using two lifting resistors

■ Removing the lifting resistor

(1) Remove the socket bolts and spring lock washers (two locations for each), and remove the lifting resistor from the counter weight.

[5mm]

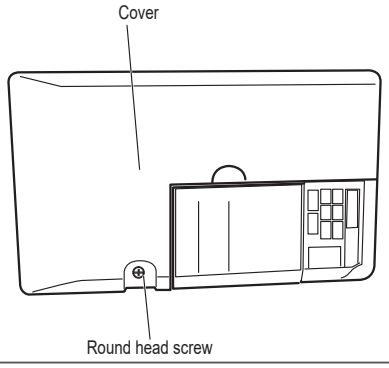
- 03S : One lifting resistor
- Others : Two lifting resistors



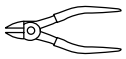
■ Removing the internal wiring and electrical components

● Removing the lifting inverter

(1) Remove the cover of the lifting inverter



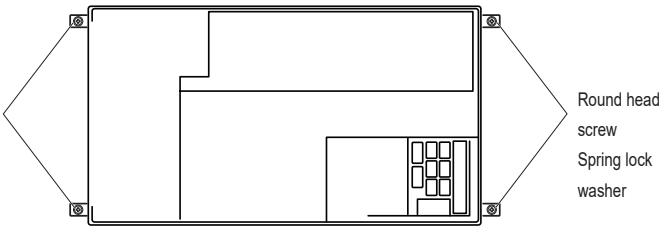
(2) Cut the cable band bundling the harness (lead wire) as necessary.



(3) Pull out the harness (H1 and H2) from the lifting inverter.
Loosen the screw of the lead wire screwed to the lifting inverter, and remove the lead wire.

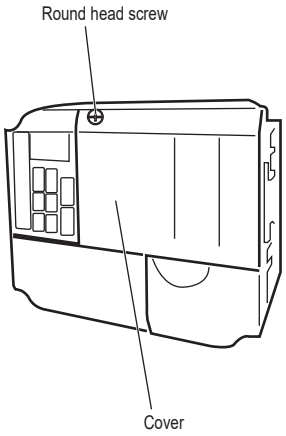
- Refer to the wiring diagram in the separated "RY Series Wire Rope Hoist Owner's Manual".

(4) Remove the round head screws and spring lock washers (four locations for each) fixing the lifting inverter, and remove the lifting inverter.

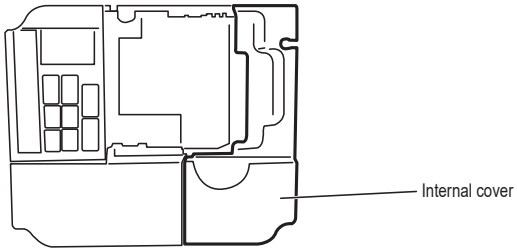


● Removing the traversing inverter

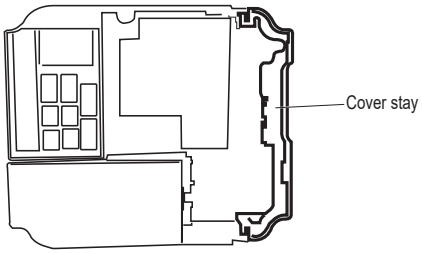
(1) Remove the cover of the traversing inverter.



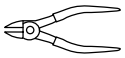
(2) Remove the internal cover of the traversing inverter.



(3) Remove the cover stay of the traversing inverter.



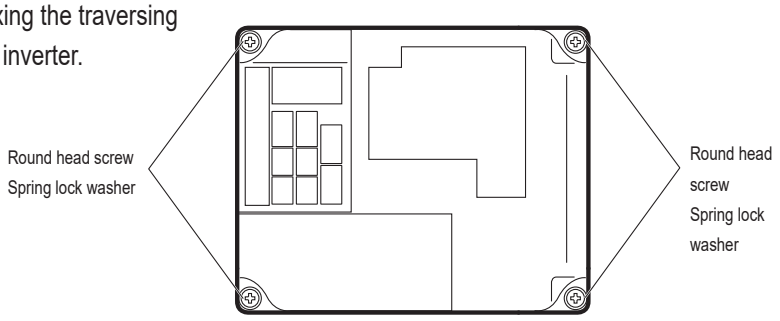
(4) Cut the cable band bundling the harness (lead wire) as necessary.



(5) Pull out the harness (H1 and H3) from the traversing inverter.
Loosen the screw of the lead wire screwed to the traversing inverter, and remove the lead wire.

- Refer to the wiring diagram in the separated "RY Series Wire Rope Hoist Owner's Manual".

(6) Remove the round head screws and spring lock washers (four locations for each) fixing the traversing inverter, and remove the traversing inverter.

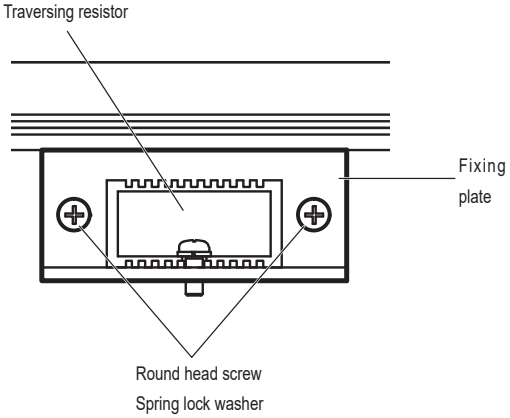


● Removing the traversing resistor

(1) Pull out the harness from the traversing resistor.

- The traversing resistor is not installed on products where the first two serial number digits are 18 or higher.
- Refer to the wiring diagram in the separated "RY Series Wire Rope Hoist Owner's Manual".

(2) Remove the round head screws and plain washers (two locations for each) fixing the fixing plate of the traversing resistor, and remove the traversing resistor.

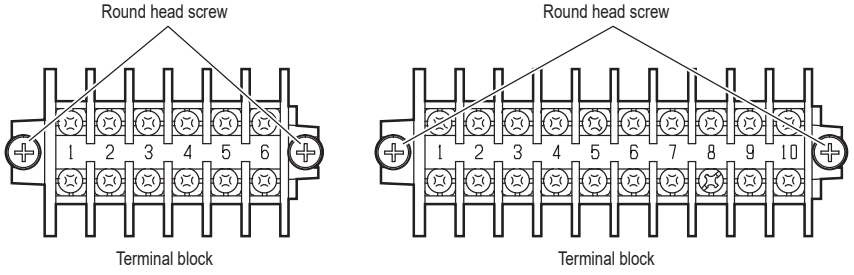


● Removing the terminal block

(1) Loosen the screw of the lead wire screwed to the terminal block, and remove the lead wire.

- Refer to the wiring diagram in the separated "RY Series Wire Rope Hoist Owner's Manual".

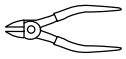
(2) Remove the round head screws (two locations for each: four locations in total) fixing the terminal blocks (two locations), and remove the terminal blocks.

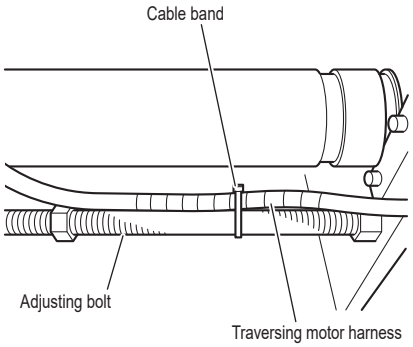


9 Traversing motor

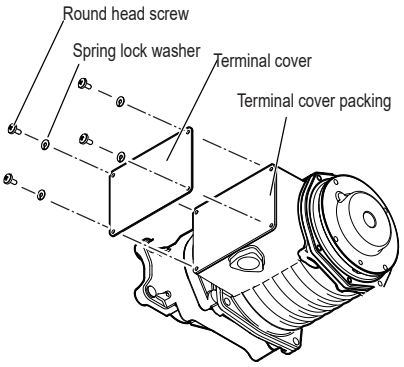
■ Removing the traversing motor harness (terminal box side)

(1) Cut the cable band fixing the traversing motor harness to the adjusting bolt.

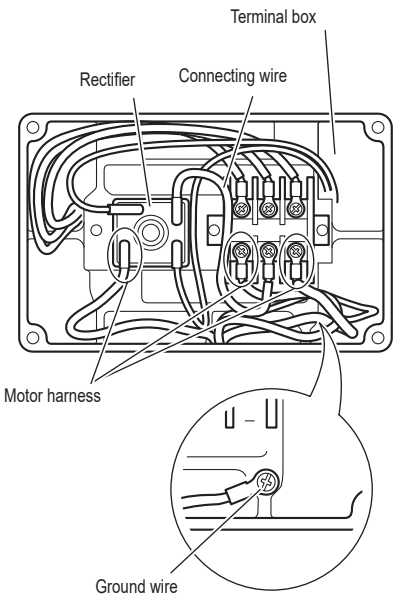




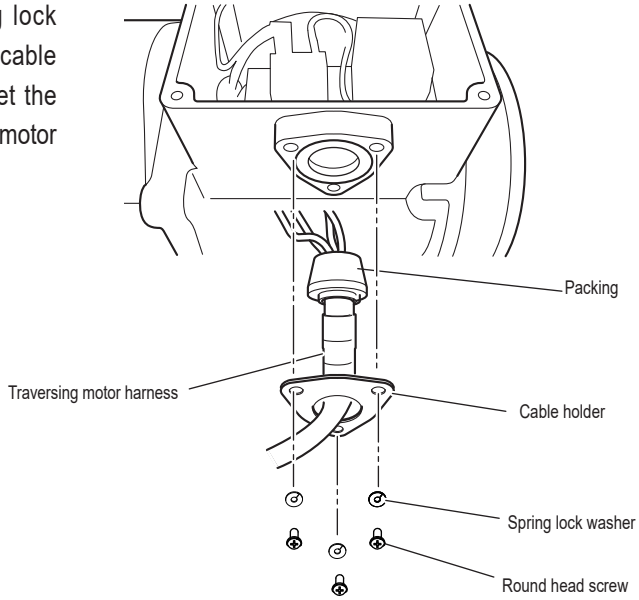
(2) Remove the round head screws and spring lock washers (four locations for each), and remove the terminal cover and terminal packing.



(3) Remove the lead wires (red, white, and black) and ground wire (green/yellow) of the traversing motor harness shown in the figure. Then remove the connecting wire connecting the rectifier to the terminal block.



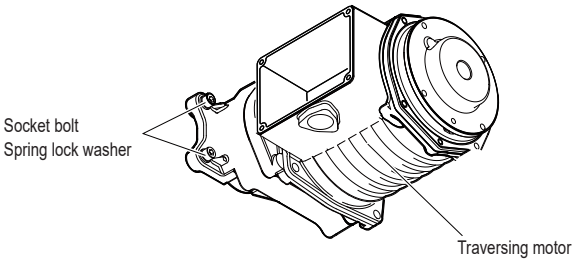
(4) Remove the round head screws and spring lock washers (three locations for each) fixing the cable packing and cable holder. Make sure not to let the lead wire get caught and remove the traversing motor harness from the terminal box.



■ Removing the traversing motor

(1) Remove the socket bolts and spring lock washers (four locations for each), and remove the traversing motor.

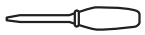

[6mm]

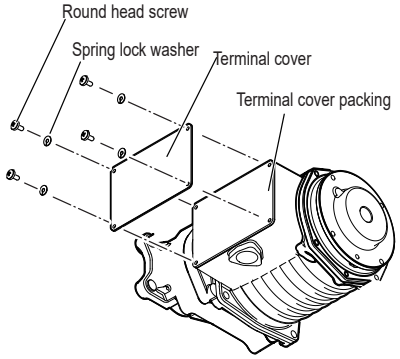


■ Disassembling the traversing motor

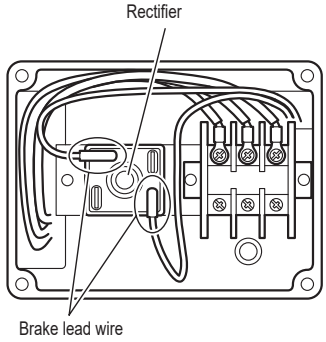
● Disassembling the brake

(1) Remove the 4 round head screws and 4 spring lock washers, and remove the terminal cover and terminal cover packing.

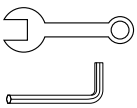




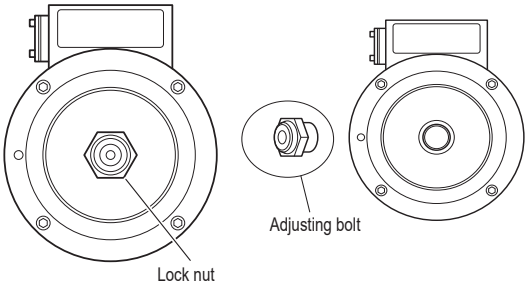
(2) Remove the lead wires (two locations) inserted into the rectifier.



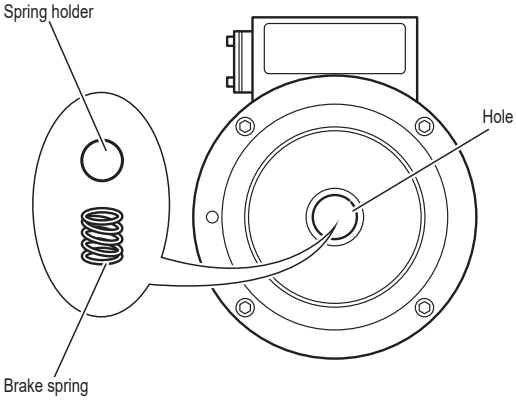
(3) Loosen the lock nut, and remove the adjusting bolt.



[10mm]

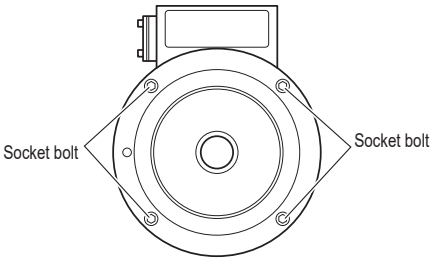


(4) Remove the spring holder and brake spring from the hole where the adjusting bolt was screwed.

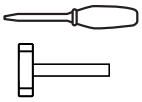


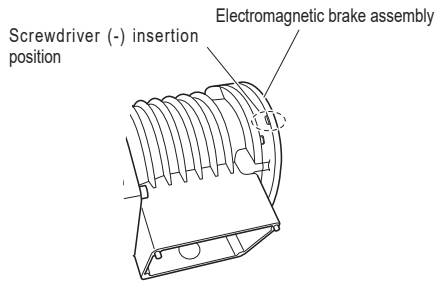
(5) Remove the socket bolts (four locations).

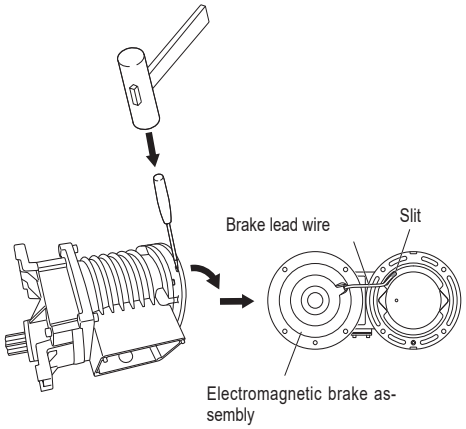

[5mm]



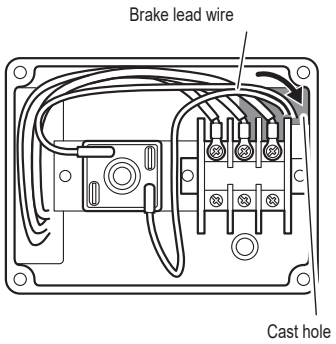
(6) Apply the flat screwdriver (-) to the insertion positions (two locations). Hammer it gently with the plastic hammer, and remove the electromagnetic brake assembly.



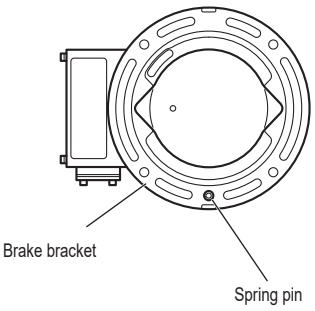




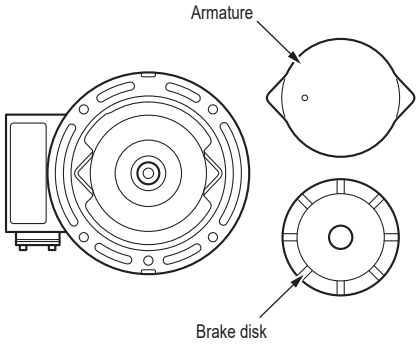
(7) Make sure not to let the brake lead wire get caught in the cast hole in the terminal box. Pull out the brake lead wire from the slit, and remove the electromagnetic brake assembly.



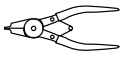
(8) Remove the spring pin fitted into the brake bracket.

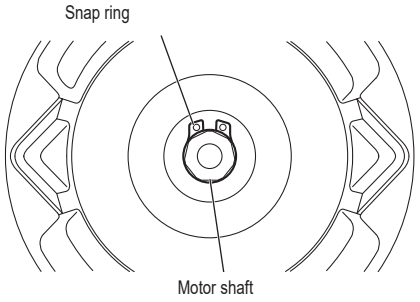


(9) Remove the armature and brake disk fitted into the brake bracket.

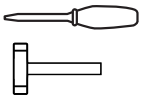


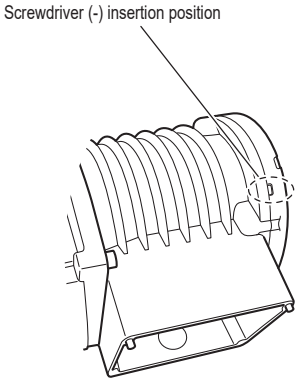
(10) Remove the snap ring at the end of the motor shaft.

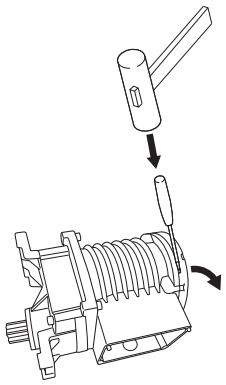


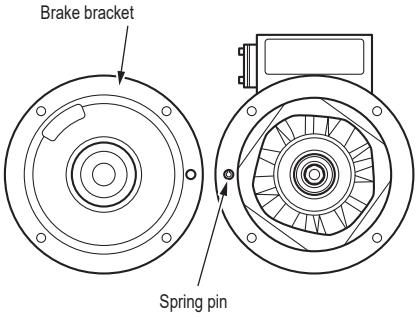


(11) Apply the screwdriver (-) to the insertion position. Hammer the screwdriver gently with the plastic hammer, and remove the brake bracket.





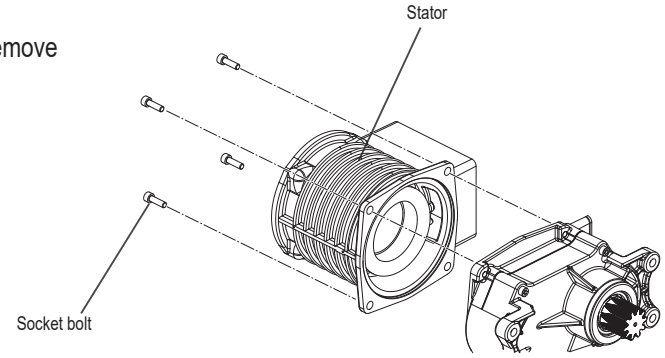




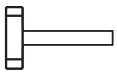
● Removing the stator and rotor

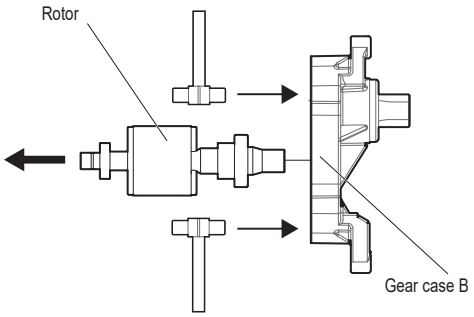
(1) Remove the socket bolts (four locations), and remove the stator.

[5mm]



(2) Hold the rotor. While hammering the gear case B gently with the plastic hammer, remove the rotor.



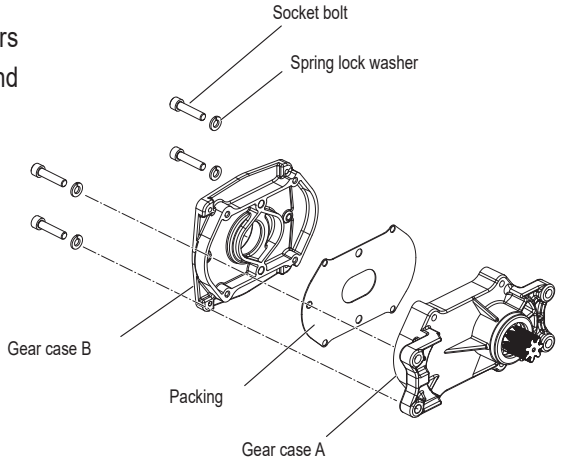


Hammer gently with the plastic hammer at the position indicated with arrows.

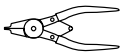
● Disassembling the gear box

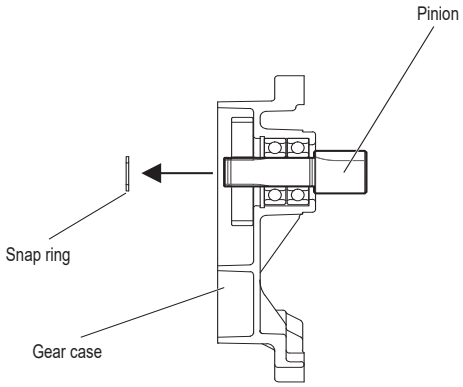
(1) Remove the socket bolts and spring lock washers (four locations for each) fixing the gear case B, and remove the gear case B and packing.

[5mm]

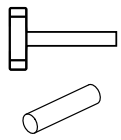


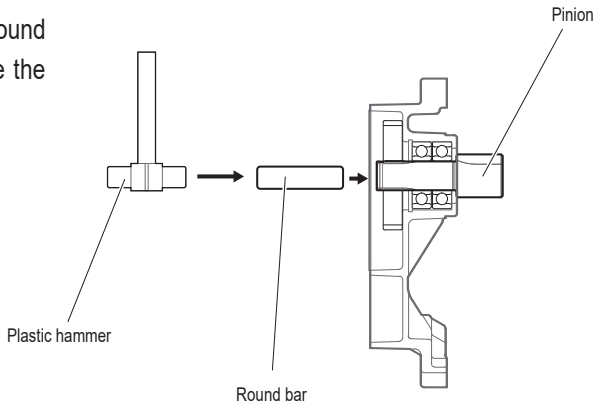
(2) Remove the snap ring of the pinion.



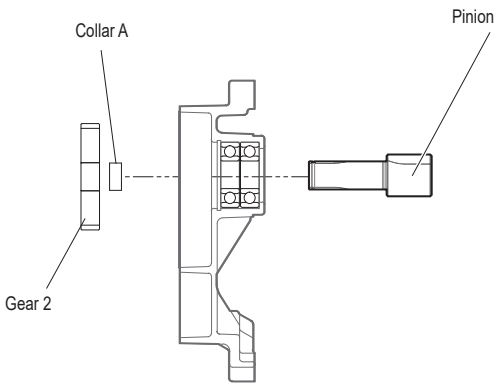


(3) Apply the round bar to the pinion. Hammer the round bar gently with the plastic hammer, and remove the pinion from the gear case A.

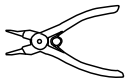


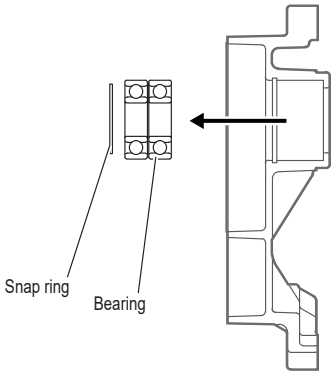


(4) Remove the gear 2 and collar A.



(5) Remove the snap ring fixing the bearing, and remove the bearing.

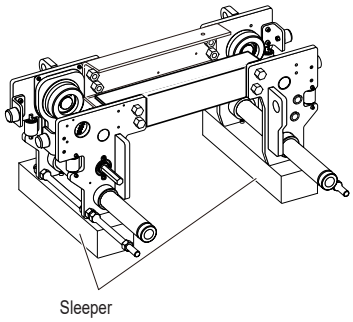




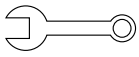
10 Trolley frame

■ Removing the frame A/B/C/D

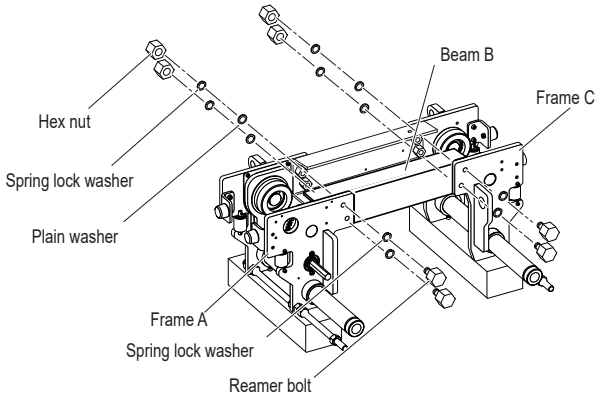
(1) Place the frame A /B and frame C/D on the sleeper with the beam installation side facing up as shown in the figure.



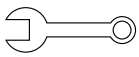
(2) Remove the reamer bolts (two locations for each: four locations in total) of the frame A and frame C. Remove the hex nut, spring lock washer, and plain washer, and remove the beam B from the frames A and C.



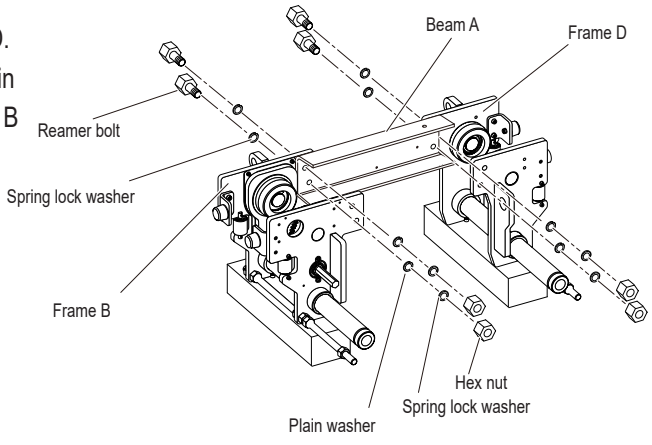
[24mm]



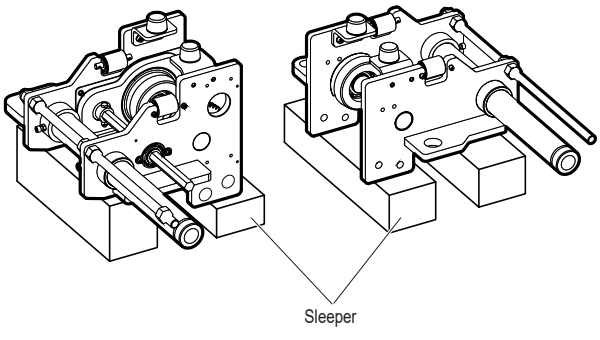
(3) Remove the reamer bolts (two locations for each: four locations in total) of the frame B and frame D. Remove the hex nut, spring lock washer, and plain washer, and remove the beam A from the frames B and D.



[24mm]



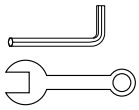
(4) Place the frame A /B and frame C/D on the sleeper as shown in the figure.

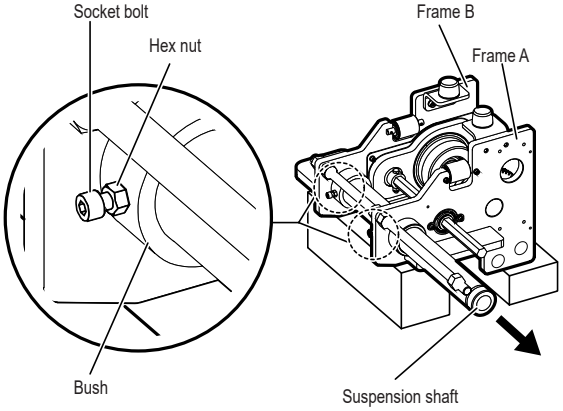


Since the components are different, there are two methods for mounting the frames to the suspension shaft: type A and type B.Follow the disassembly procedure for your type.

Type A

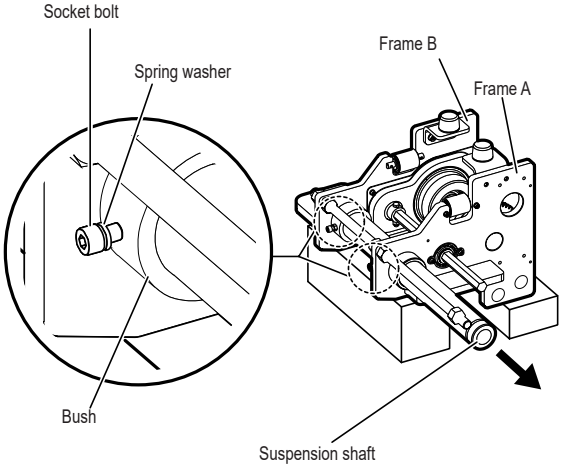
(5) Loosen the hex nut fixed to the bush of the frame A or frame B (one location for each), and remove the socket bolt.





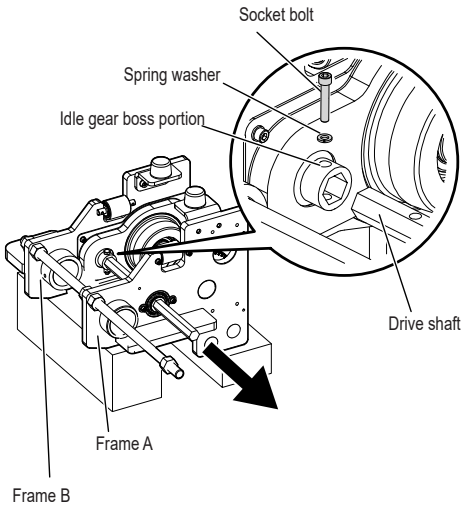
Type B

(5) Loosen the hex nut fixed to the bush of the frame A or frame B (one location for each), and remove the socket bolt and the spring washer.



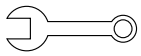
(6) Pull out the suspension shaft from the frame A and B.

(7) Remove the socket bolt and spring washer that connect the idle gear boss portion to the drive shaft.

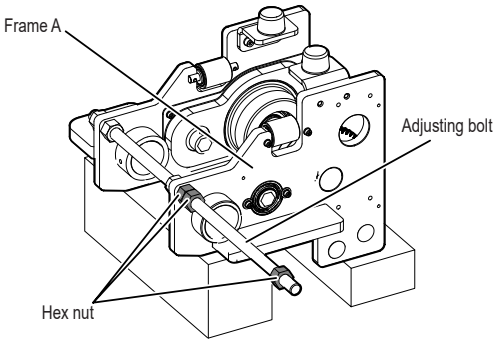


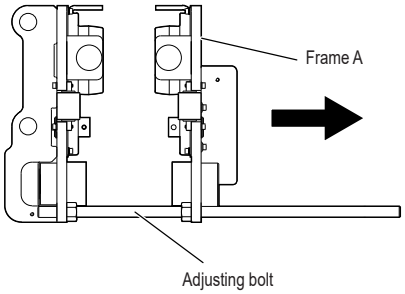
(8) Pull out the drive shaft from the frame A and the frame B.

(9) Remove the hex nuts (three locations) outside of the frame A, and pull out the frame A from the adjusting bolt.

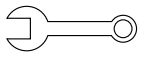


[30mm]

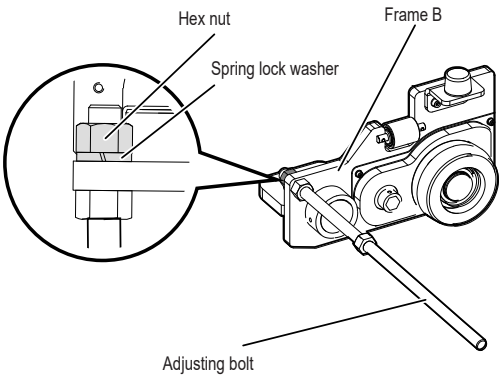


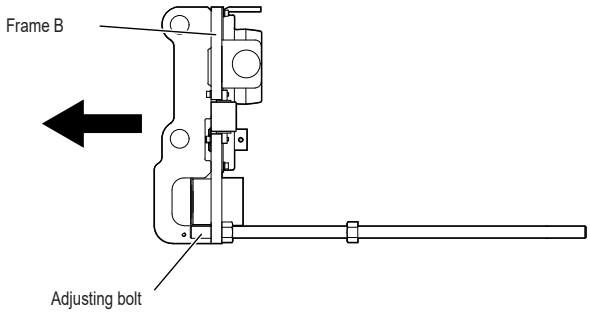


(10) Remove the hex nut and spring lock washer outside of the frame B, and pull out the frame B from the adjusting bolt.



[30mm]

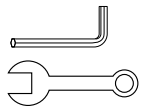


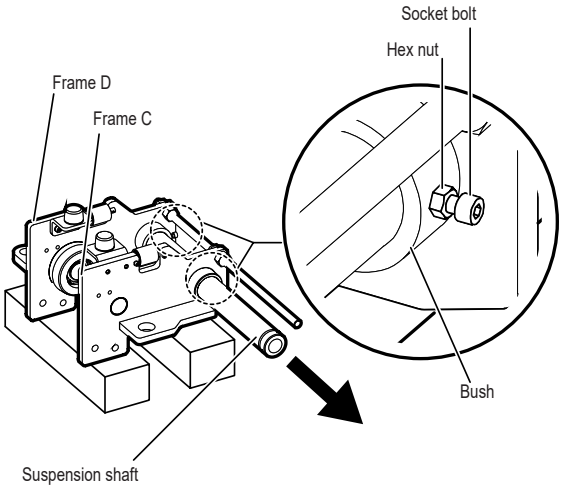


Since the components are different, there are two methods for mounting the frames to the suspension shaft: type A and type B.Follow the disassembly procedure for your type.

Type A

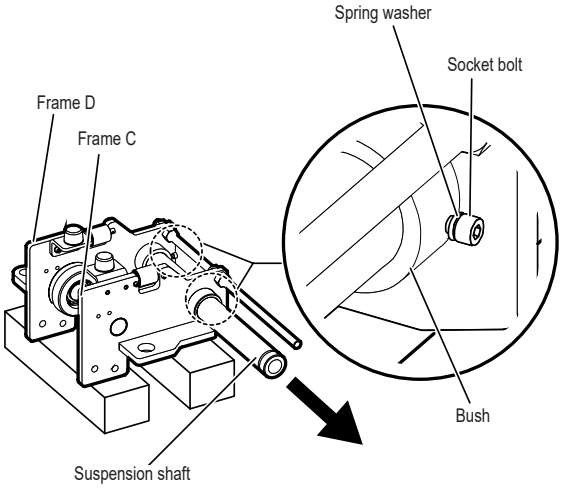
(11) Loosen the hex nut fixed to the bush of the frame C or D (one location for each), and remove the socket bolt.





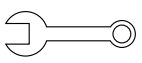
Type B

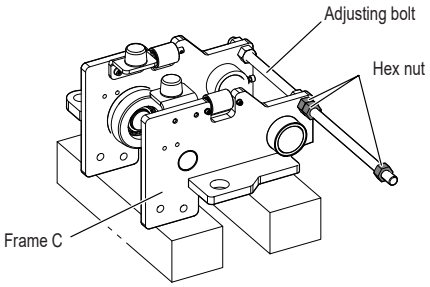
(11) Remove the socket bolt and spring washer fixed to the bush of the frame C or D (one location for each).



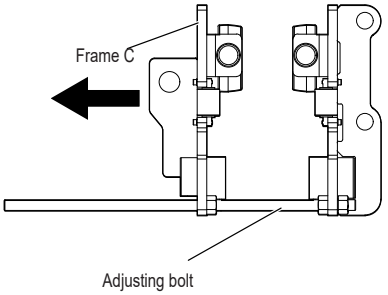
(12) Pull out the suspension shaft from the frame C and D.

(13) Remove the hex nuts (three locations) outside of the frame C.

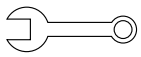




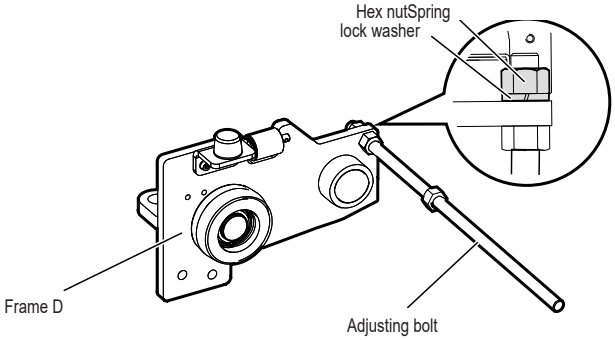
(14) Pull out the frame C from the adjusting bolt.

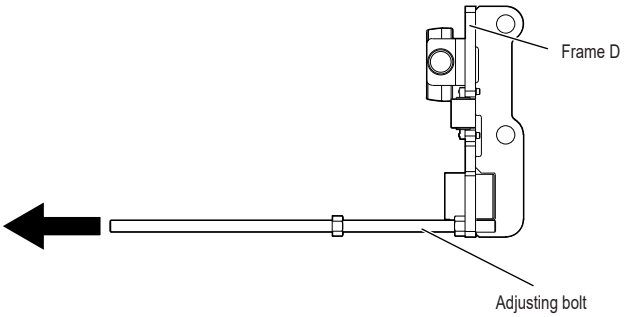


(15) Remove the hex nut and spring lock washer outside of the frame D, and pull out the adjusting bolt from the frame D.

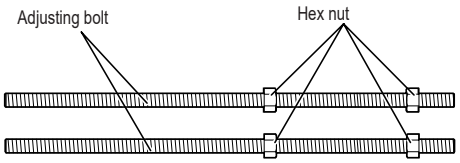


[30mm]





(16) Remove the remaining hex nuts from each of the adjusting bolts (two locations for each).



■ Disassembling the frame A

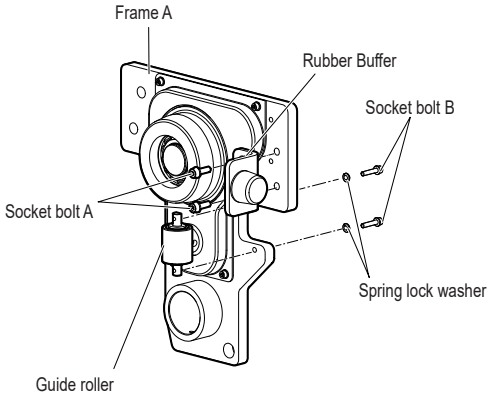
● Removing the rubber buffer/guide roller

(1) Remove the socket bolts A (two locations), and remove the rubber buffer from the frame A.

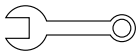
[10mm]

(2) Remove the socket bolts B (two locations) fixing the guide roller, and remove the guide roller from the frame A.

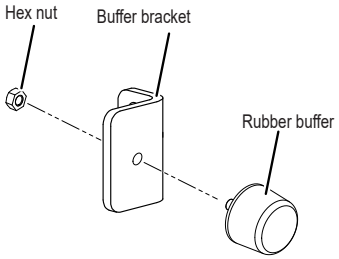
[5mm]



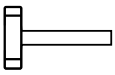
(3) Remove the hex nut fixing the rubber buffer, and remove the rubber buffer from the buffer bracket.

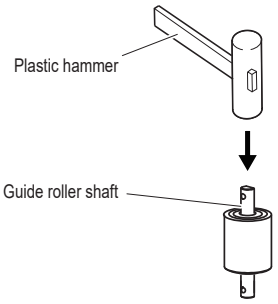


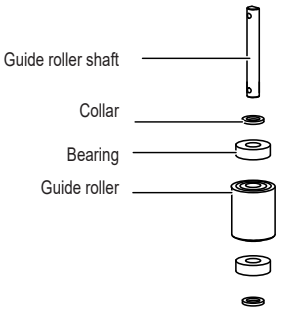
[13mm]



(4) Hammer the shaft tip of the guide roller gently with the plastic hammer, and disassemble as shown in the figure.



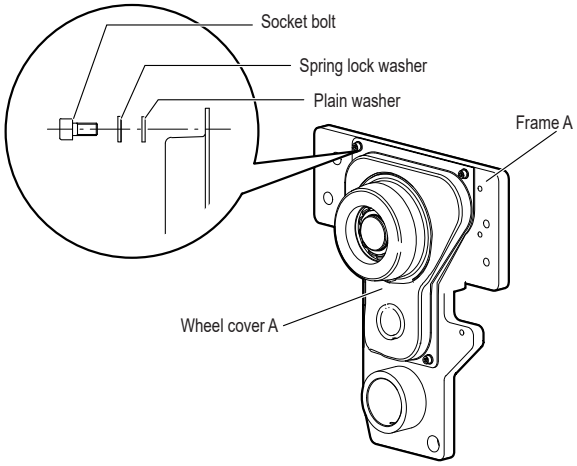




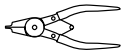
- Removing the wheel A

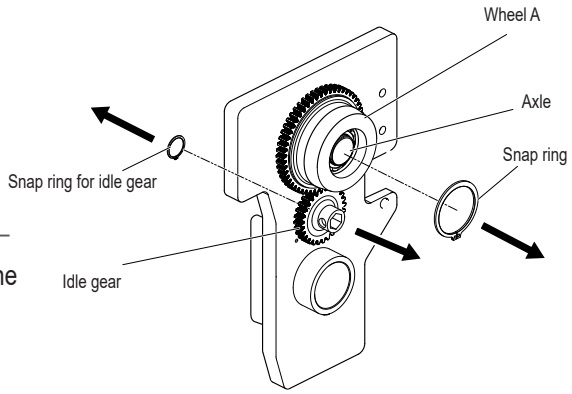
(1) Remove the socket bolts, spring lock washers, and plain washers (four locations for each) fixing the wheel cover A, and remove the wheel cover A.

[5mm]

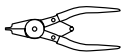


(2) Remove the snap ring fixing the wheel A, and remove the wheel A from the axle.



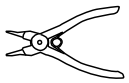


(3) Remove the snap ring for idle gear, and pull out the idle gear.

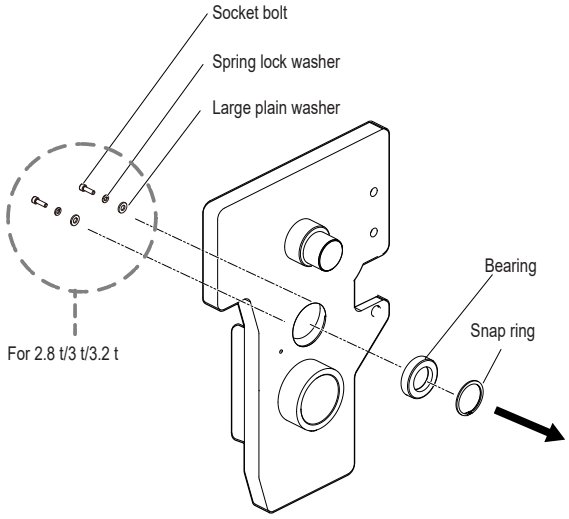


(4) <For 4.8 t/5 t>
Remove the snap ring fixing the bearing.

<For 2.8 t/3 t/3.2 t>
Remove the socket bolts, spring lock washers, and large plain washers (two locations for each) fixing the bearing. Then remove the snap ring, and remove the bearing.



[5mm]

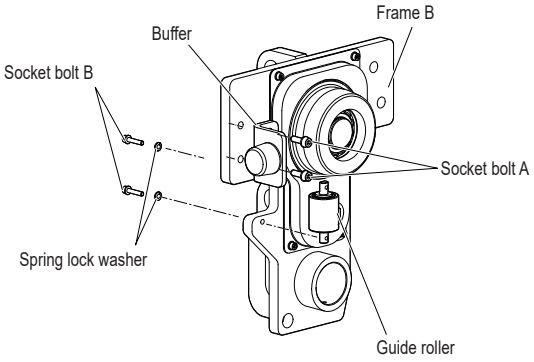


■ Disassembling the frame B

● Removing the rubber buffer/guide roller

(1) Remove the socket bolts A (two locations) fixing the rubber buffer, and remove the buffer from the frame B.

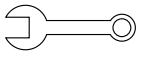
[10mm]



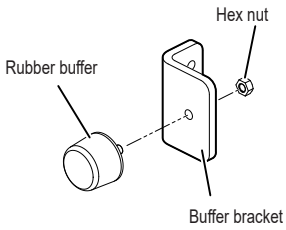
(2) Remove the socket bolts B and spring lock washers (two locations for each) fixing the guide roller, and remove the guide roller from the frame B.

[5mm]

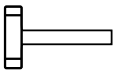
(3) Remove the hex nut fixing the rubber buffer, and remove the rubber buffer from the buffer bracket.

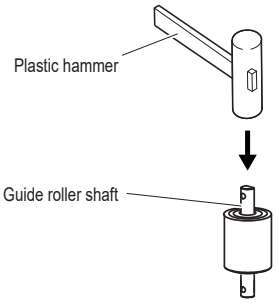


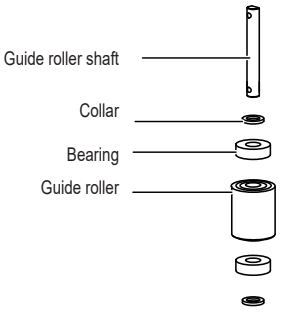
[13mm]



(4) Hammer the shaft tip of the guide roller gently with the plastic hammer, and disassemble as shown in the figure.



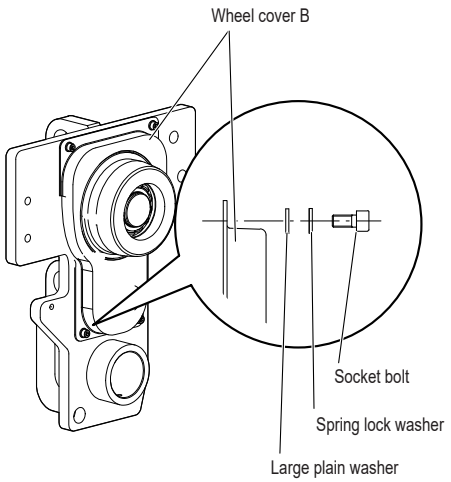




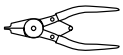
● Removing the wheel A

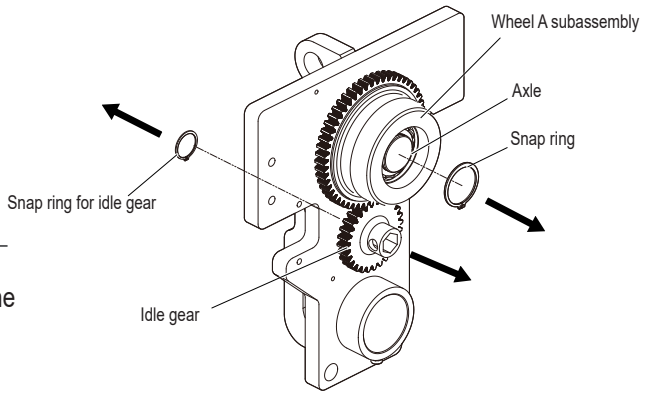
(1) Remove the socket bolts, spring lock washers, and plain washers (four locations for each) fixing the wheel cover B, and remove the wheel cover B.


[5mm]

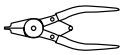


(2) Remove the snap ring fixing the wheel A subassembly, and remove the wheel A subassembly from the axle.



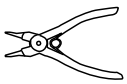


(3) Remove the snap ring for idle gear, and pull out the idle gear.

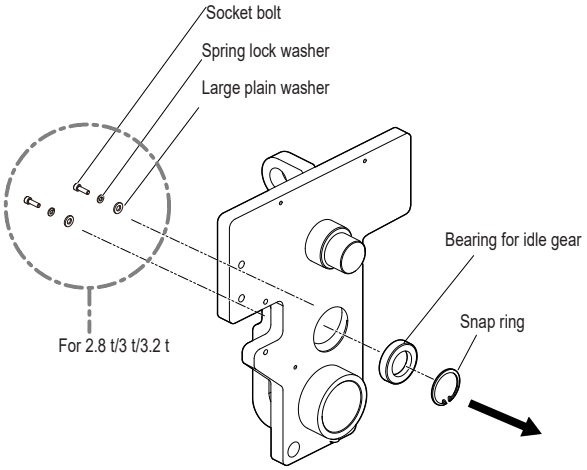


(4) <For 4.8 t/5 t>
Remove the snap ring fixing the bearing.

<For 2.8 t/3 t/3.2 t>
Remove the socket bolts, spring lock washers, and large plain washers (two locations for each) fixing the bearing, and remove the snap ring.




[5mm]



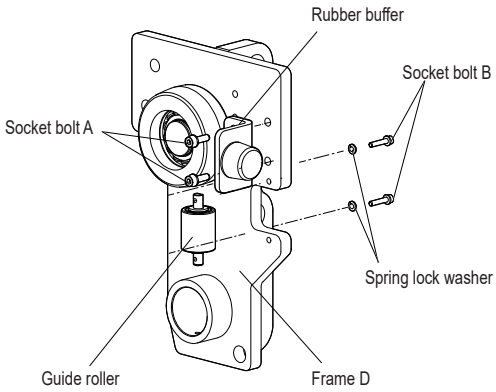
(5) Remove the bearing

■ Disassembling the frame C

● Removing the buffer/guide roller

(1) Remove the socket bolts A (two locations) fixing the buffer, and remove the buffer from the frame C.

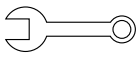

[10mm]

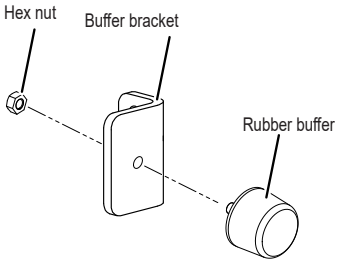


(2) Remove the socket bolts B and spring lock washers (two locations for each) fixing the guide roller, and remove the guide roller from the frame C.

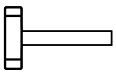

[5mm]

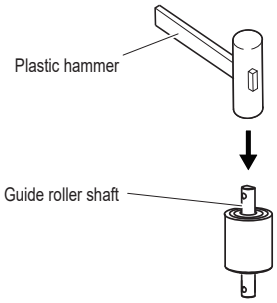
(3) Remove the hex nut fixing the rubber buffer, and remove the rubber buffer from the buffer bracket

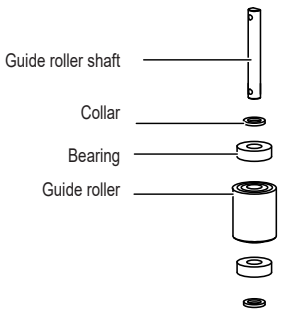

[13mm]



(4) Hammer the shaft tip of the guide roller gently with the plastic hammer, and disassemble as shown in the figure

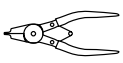


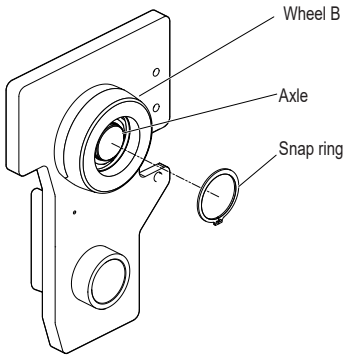




● Removing the wheel B

(5) Remove the snap ring fixing the wheel B, and remove the wheel B from the axle



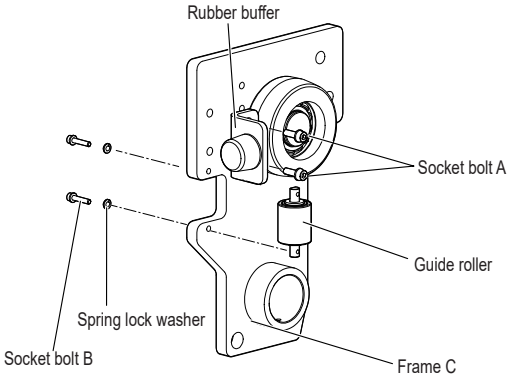


■ Disassembling the frame D

● Removing the rubber buffer/guide roller

(1) Remove the socket bolts A (two locations) fixing the rubber buffer, and remove the buffer from the frame D.

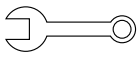
[10mm]



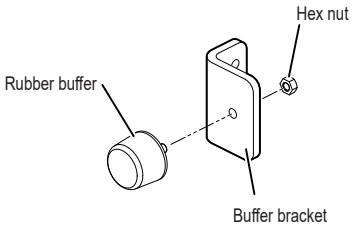
(2) Remove the socket bolt B and spring lock washer (two locations for each) fixing the guide roller, and remove the guide roller from the frame D

[5mm]

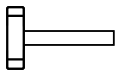
(3) Remove the hex nut fixing the rubber buffer, and remove the rubber buffer from the rubber buffer bracket.

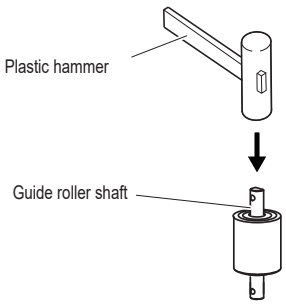


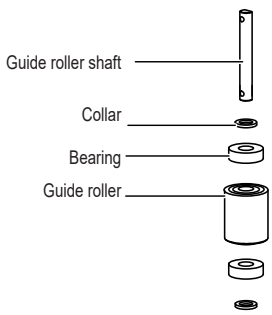
[13mm]



(4) Hammer the shaft tip of the guide roller gently with the plastic hammer, and disassemble as shown in the figure.

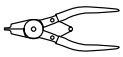


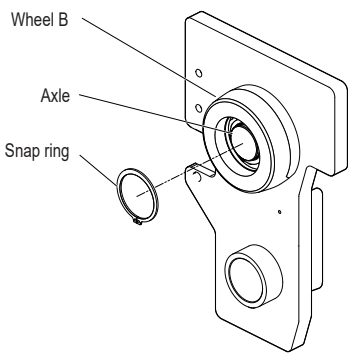




● Removing the wheel B

(1) Remove the snap ring fixing the wheel B, and remove the wheel B from the axle





1 Trolley frame

■ Assembling Frame A

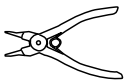
(1) Insert a bearing for idle gear into Frame A.

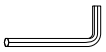
- Be careful not to scratch the bearing.

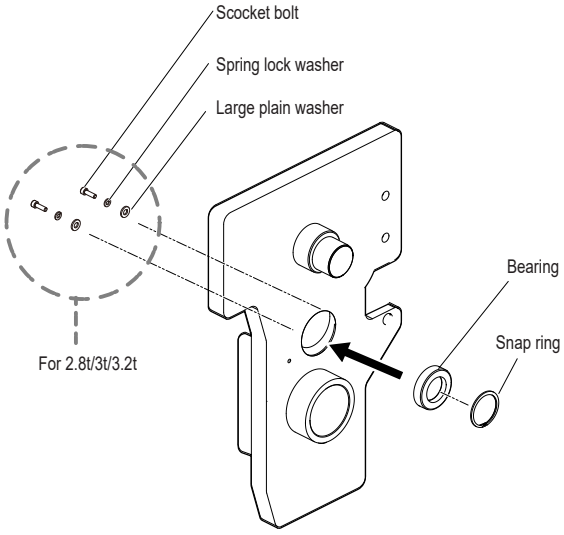
---

(2) <For 4.8t and 5t hoists>
Secure the bearing with a snap ring.
<For 2.8t, 3t, and 3.2t hoists>
Secure the bearing for idle gear with two socket bolts, two spring lock washers, two large plain washers, and a snap ring.

- The snap ring must not be protruding.




[5mm]



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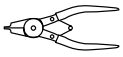
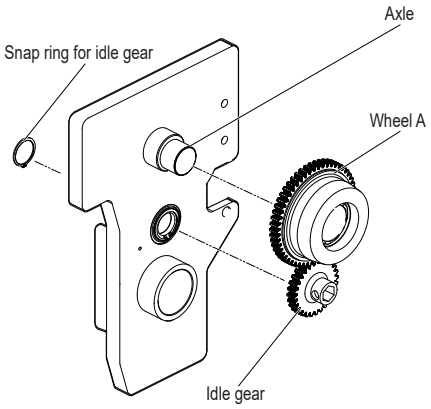
(3) Insert an idle gear into the bearing, and then from the rib side, install the snap ring for idle gear to the idle gear.



- The snap ring must not be protruding.



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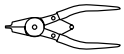
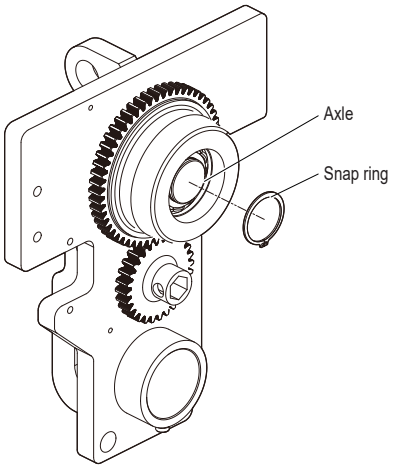
(4) Let the teeth of Wheel A engage with those of the idle gear, and then insert Wheel A into the axle.

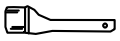
(5) Install a snap ring to the axle.



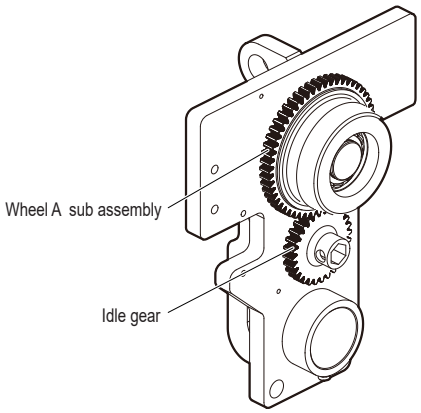
- The snap ring must not be protruding.



(6) Apply lubricant to the teeth of both the idle gear and Wheel A subassembly.



- Lubricant: EPNOC AP (N) No. 2
- The lubricant must be applied to the entire circumference of both Wheel A and the gear.

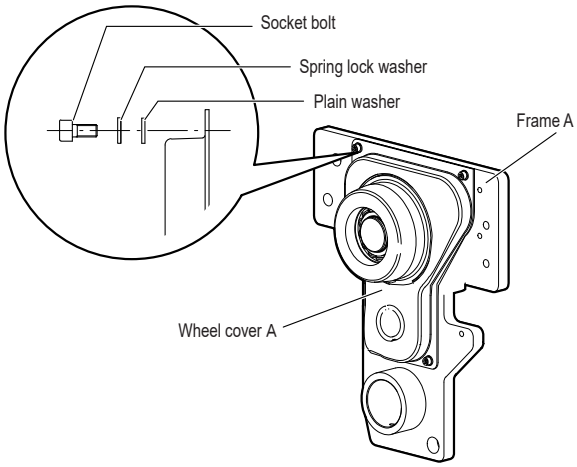


(7) Fix Wheel Cover A with four socket bolts, four spring lock washers, and four plain washers.

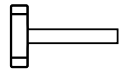

[5mm]

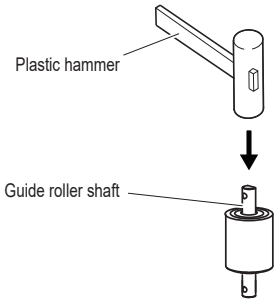
M6 torque setting: 3 N·m

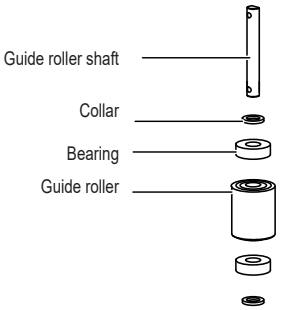
- Do not overtighten the bolts and washers. Doing so can cause Wheel Cover A to crack.



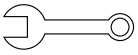
(8) Using a plastic hammer, secure a collar, a bearing, and then a guide roller to the guide roller shaft.



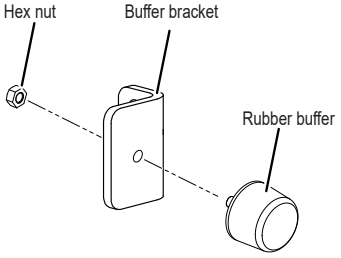




(9) Fix a rubber buffer to the buffer bracket by using a hex nut and a spring lock washer.

 [13mm]

M8 torque setting: 18 N·m

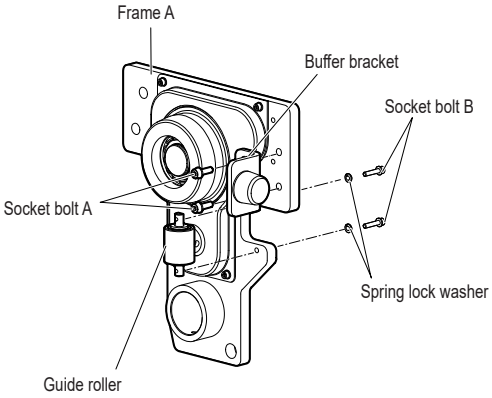


(10) Install the guide roller to Frame A by using two socket bolts and two spring lock washers.

 [5mm]

M6 torque setting: 8 N·m

- Socket bolt length
  2.8 t/3 t/3.2 t: 30 mm
  4.8 t/5 t: 35 mm



(11) Install the buffer bracket to Frame A by using two socket bolts and two spring lock washers.

 [10mm]

M12 torque setting: 60 N·m

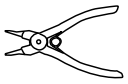
- Confirm that the buffer bracket is correctly positioned.

■ Assembling Frame B

(1) Insert a bearing for idle gear into Frame B.

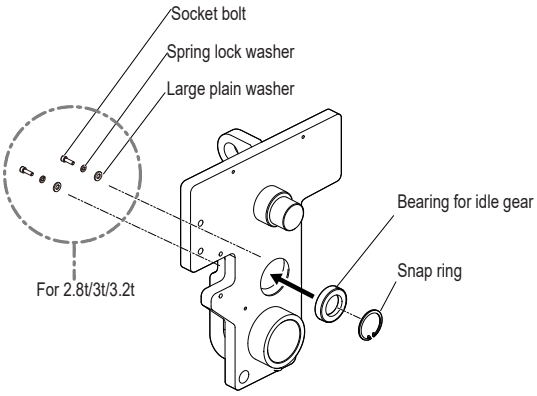
- Be careful not to scratch the bearing.

(2) <For 4.8t and 5t hoists>
Fix the bearing with a snap ring.
<For 2.8t, 3t, and 3.2t hoists>
Fix the bearing with two socket bolts, two spring lock washers, two large plain washers, and a snap ring.

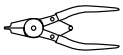


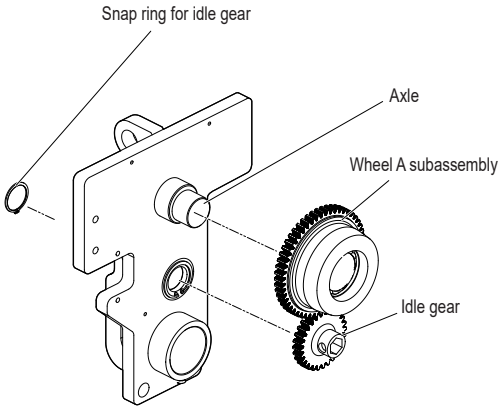
M6 torque setting: 8 N·m

- The snap ring must not be protruding.



(3) Insert the idle gear into the bearing, and then from the rib side, install the snap ring for idle gear to the idle gear.

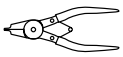


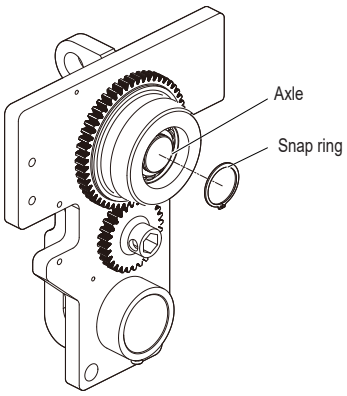


(4) Let the teeth of the Wheel A subassembly engage with those of the idle gear, and then insert the Wheel A sub-assembly into the axle.

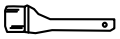
- Be careful not to dent or scratch the gear unit.

(5) Install a snap ring to the axle.

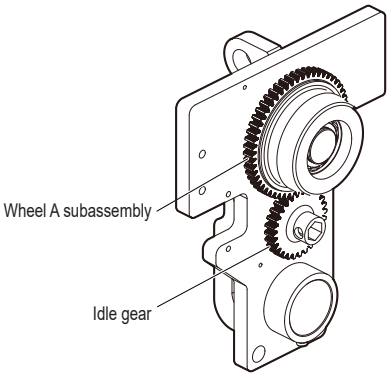




(6) Apply lubricant to the teeth of both the idle gear and the Wheel A subassembly.



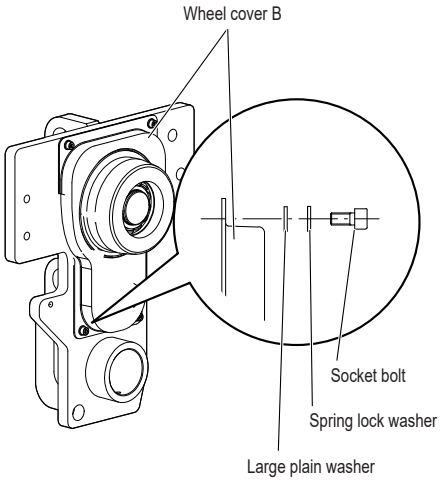
- Lubricant: EPNOC AP (N) No. 2
- The lubricant must be applied to the entire circumference of both the Wheel A subassembly and the gear.



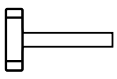
(7) Fix Wheel Cover B with four socket bolts, four spring lock washers, and four plain washers.

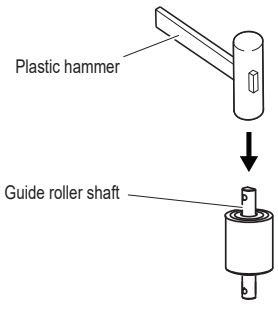
[5mm]

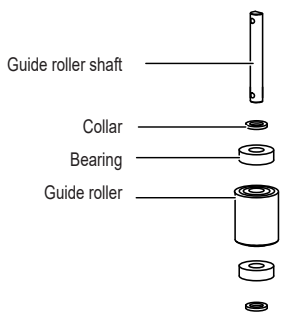
M6 torque setting: 3 N·m



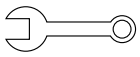
(8) Using a plastic hammer, secure a collar, a bearing, and then a guide roller to the guide roller shaft.



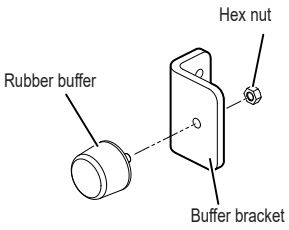




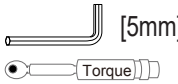
(9) Fix a rubber buffer to the buffer bracket by using a hex nut and a spring lock washer.


[13mm]

M8 torque setting: 18 N·m



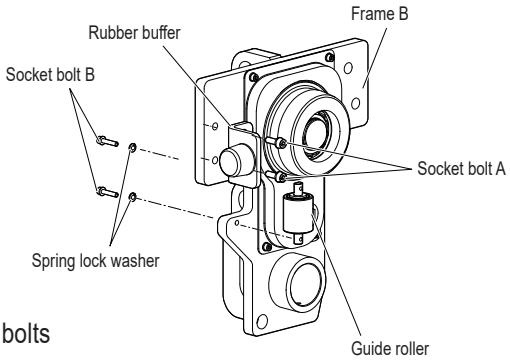
(10) Install the guide roller to Frame B by using two socket bolts and two spring lock washers.



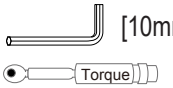
[5mm]

M6 torque setting: 8 N·m

- Socket bolt length
  2.8 t/3 t/3.2 t: 30 mm
  4.8 t/5 t: 35 mm



(11) Fix the buffer bracket to Frame B by using two socket bolts and two spring lock washers.



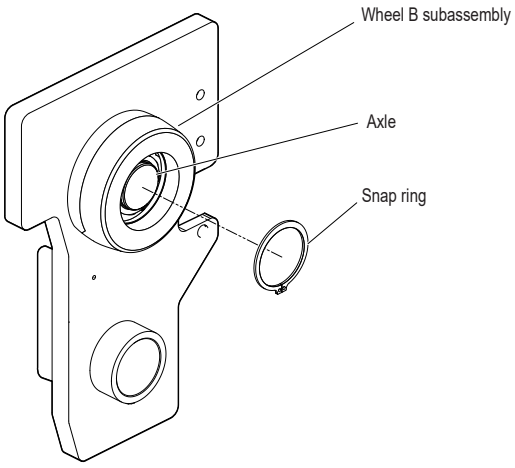
[10mm]

M12 torque setting: 60 N·m

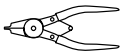
- Confirm that the buffer bracket is correctly positioned.

■ Assembling Frame C

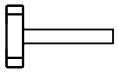
(1) Insert the Wheel B subassembly into the axle.

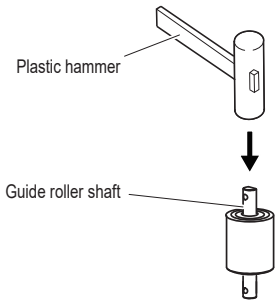


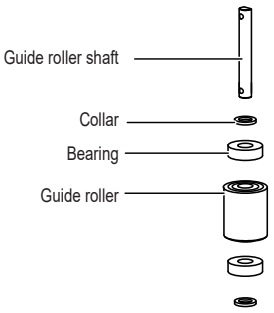
(2) Install a snap ring to the axle into which the Wheel B subassembly has been inserted.



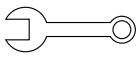
(3) Using a plastic hammer, secure a collar, a bearing, and then a guide roller to the guide roller shaft.





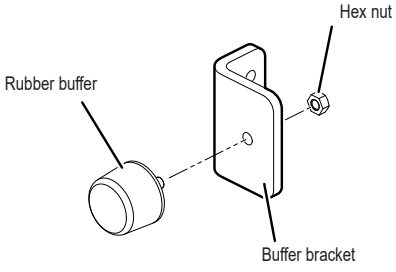


(4) Fix a rubber buffer to the buffer bracket by using a hex nut and a spring lock washer.



[13mm]

M8 torque setting: 18 N·m

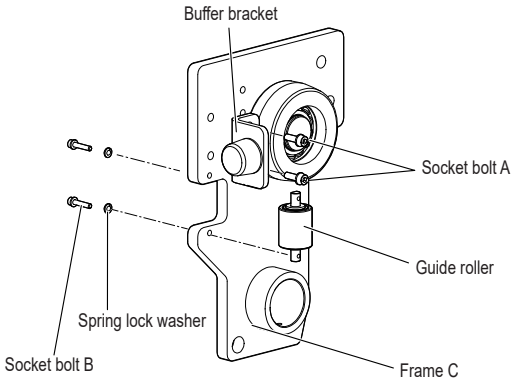


(5) Install the guide roller to Frame C by using two Socket Bolt As and two spring lock washers.


[5mm]

M6 torque setting: 8 N·m

- Socket bolt length
  2.8 t/3 t/3.2 t: 30 mm
  4.8 t/5 t: 35 mm



(6) Fix the buffer bracket to Frame C by using two Socket Bolt Bs and two spring lock washers.

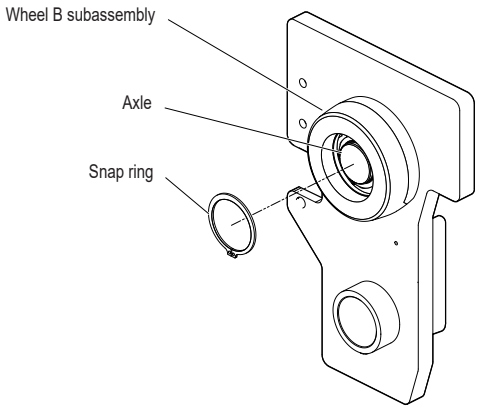

[10mm]

M12 torque setting: 60 N·m

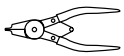
- Confirm that the buffer bracket is correctly positioned.

■ Assembling Frame D

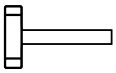
(1) Insert the Wheel B subassembly into the axle.

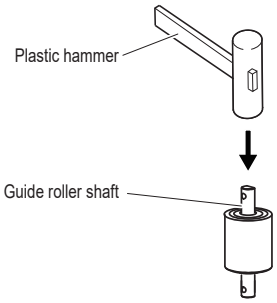


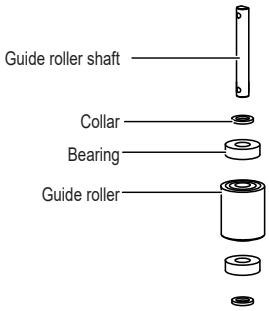
(2) Install a snap ring to the axle.



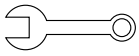
(3) Using a plastic hammer, secure a collar, a bearing, and then a guide roller to the guide roller shaft.





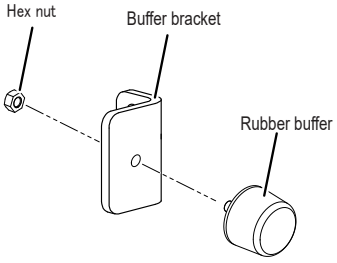


(4) Fix a rubber buffer to the buffer bracket by using a hex nut and a spring lock washer.

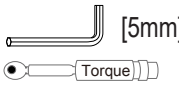


[13mm]

M8 torque setting: 18 N·m

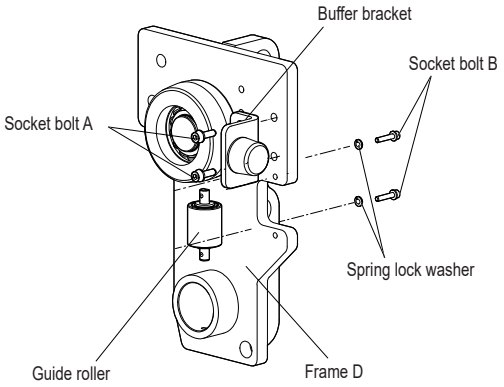


(5) Install the guide roller to Frame D by using two Socket Bolt As and two spring lock washers.

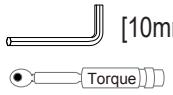


M6 torque setting: 8 N·m

- Socket bolt length
  2.8 t/3 t/3.2 t: 30 mm
  4.8 t/5 t: 35 mm



(6) Install the buffer bracket to Frame D by using two Socket Bolt Bs and two spring lock washers.

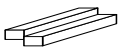


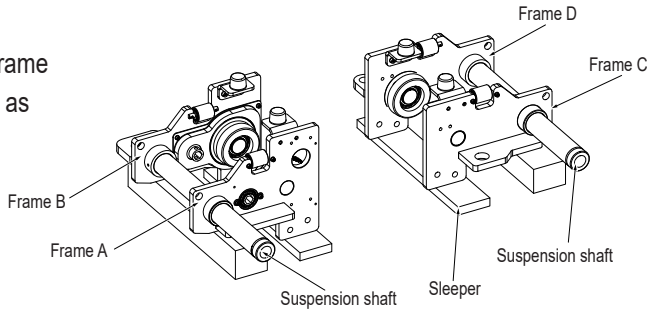
M12 torque setting: 60 N·m

- Confirm that the buffer bracket is correctly positioned.

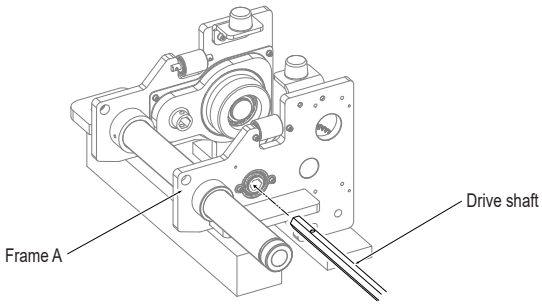
■ Assembling all frames

(1) Pass one suspension shaft through Frame A and Frame B and another suspension shaft through Frame C and Frame D, and then place them on sleepers as shown in the figure to the right.

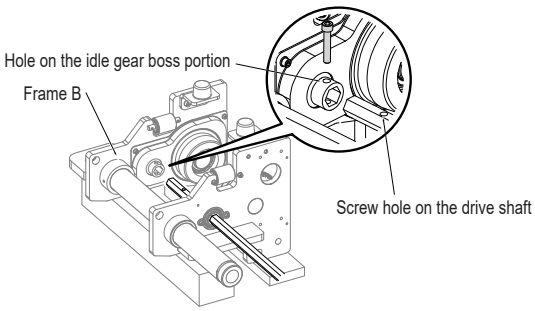




(2) Hold the drive shaft with the end having a screw hole facing Frame A, and then pass the drive shaft through Frame A.

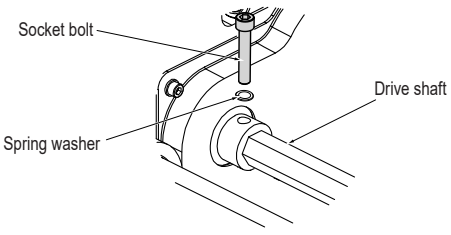


(3) Insert a drive shaft into the idle gear boss portion on Frame B, aligning its screw hole with the hole on the idle gear boss portion.



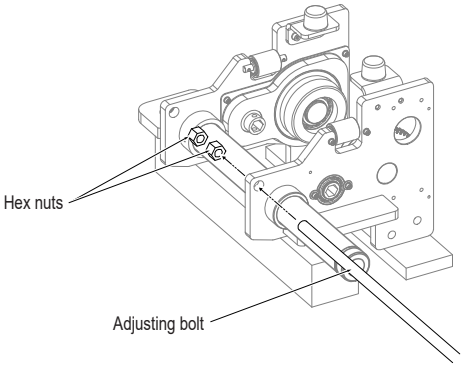
(4) Mount the socket bolt and spring washer to the screw section of the drive shaft.


[5mm]

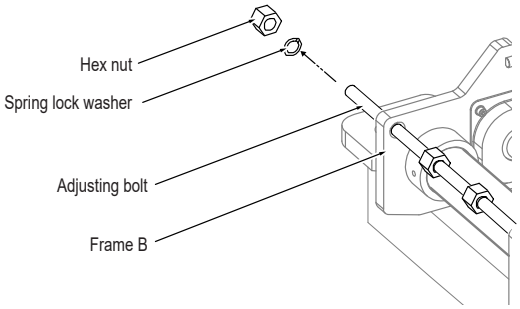


(5) Pass the adjusting bolt through Frame A, and then thread two hex nuts onto the adjusting bolt.

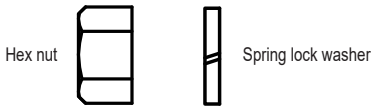
- The two hex nuts must be installed with their tapered ends facing each other.



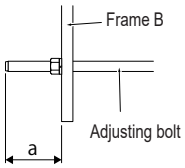
(6) Pass the adjusting bolt through Frame B, and then install a spring lock washer and a hex nut onto the adjusting bolt.



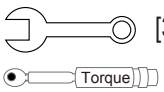
- Hold the nut with its tapered end facing away from the adjusting bolt when you thread the nut onto the adjusting bolt.



- Distance "a" between the end face of Frame B and the tip of the adjusting bolt must be as follows:
- 2.8t/3t/3.2t: 34.5mm
- 4.8t/5t: 30.5mm

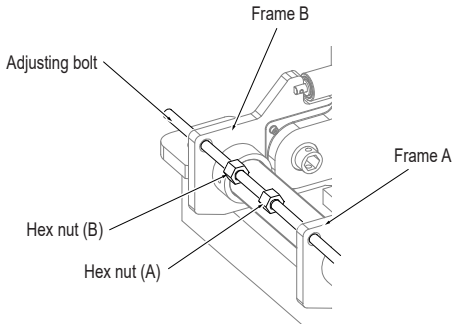


(7) Screw down a hex nut (B) firmly against Frame B to fix the adjusting bolt to Frame B.



[30mm]

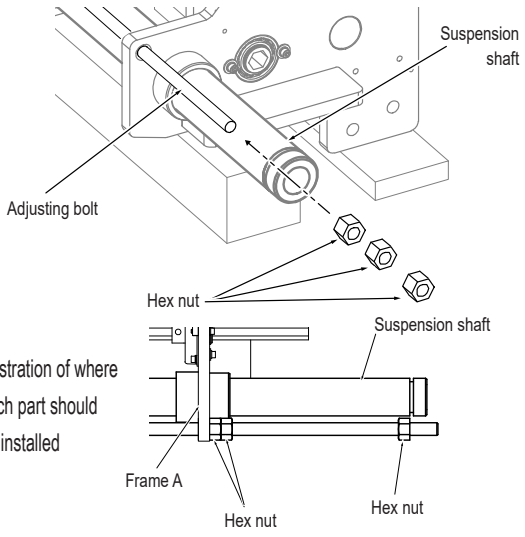
M20 torque setting: 300 N·m



- If a torque cannot be set, screw down the nut firmly against the frame, and then retighten the nut.
- Do not tighten the hex nut (A) yet.

(8) Thread three hex nuts onto the adjusting bolt extending from the outer side of Frame A.

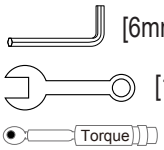
- Screw down two hex nuts until they are loosely in contact with Frame A. Screw down another hex nut until it is just past the groove on the suspension shaft (see the "Illustration of where each part should be installed").



Since the components are different, there are two methods for mounting the frames to the suspension shaft: type A and type B.Follow the disassembly procedure for your type.

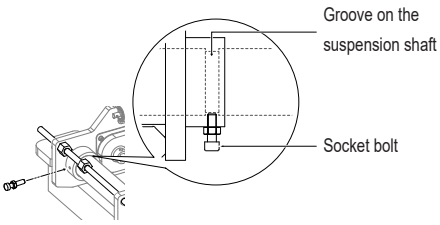
Type A

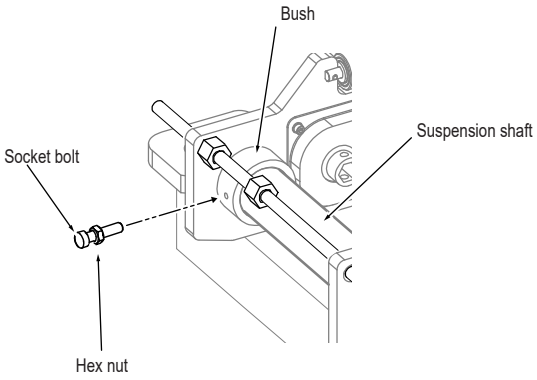
(9) Screw in and tighten a socket bolt (with a hex nut) against the bush adjoining Frame B to lock the suspension shaft in place. Retighten the hex nut.



M8 torque setting: 18 N·m

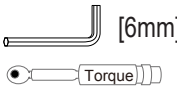
- Adjust the position of the suspension shaft so that the tip of the socket bolt engages with the groove on the suspension shaft. (As shown in the figure below.)





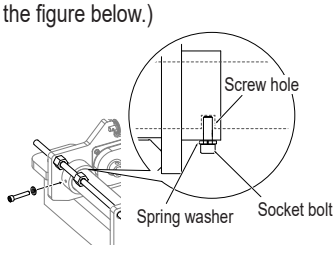
Type B

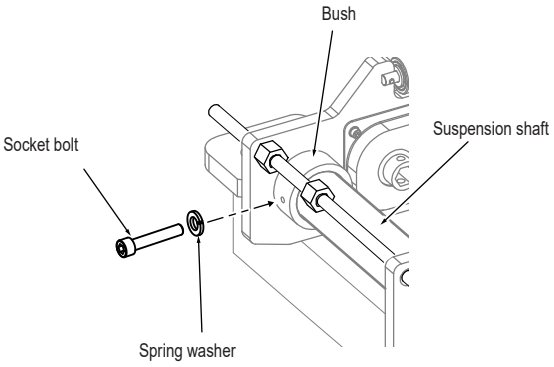
(9) Screw in and tighten a socket bolt and spring washer against the bush adjoining Frame B to lock the suspension shaft in place.



M8 torque setting: 18 N·m

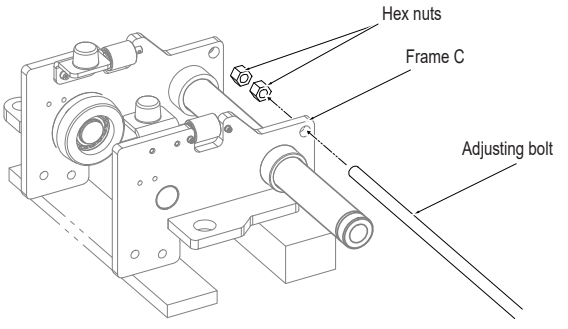
- Adjust the position of the suspension shaft so that the tip of the socket bolt engages with the screw hole. (As shown in the figure below.)





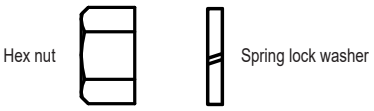
(10) Pass the adjusting bolt through Frame C, and then thread two hex nuts onto the adjusting bolt.

- The two hex nuts must be installed with their tapered ends facing each other.

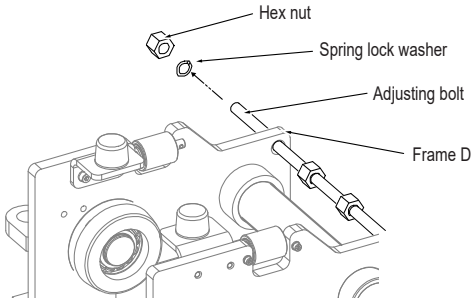


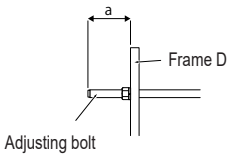
(11) Pass the adjusting bolt through Frame D, and then thread a spring lock washer and a hex nut onto the adjusting bolt.

- Hold the nut with its tapered end facing away from the adjusting bolt when you install the nut onto the adjusting bolt.

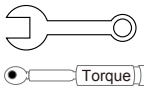


- Distance "a" between the end face of Frame D and the tip of the adjusting bolt must be as follows:
- 2.8t/3t/3.2t: 34.5mm
- 4.8t/5t: 30.5mm



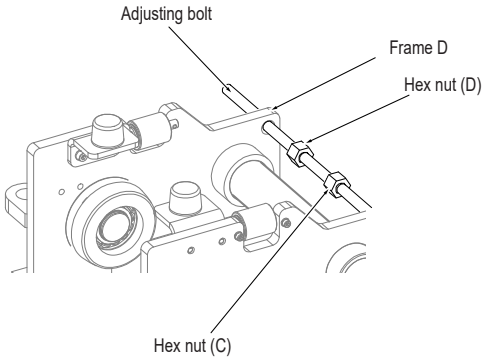


(12) Screw down a hex nut (D) firmly against Frame D to fasten the adjusting bolt to Frame D.



M20 torque setting: 300 N·m

- If a torque cannot be set, screw down the nut firmly against the frame, and then retighten the nut.
- Do not tighten the hex nut (C) yet.



(13) Thread three hex nuts onto the adjusting bolt extending from the outer side of Frame C.

- Screw down two hex nuts until they are loosely in contact with Frame C. Screw down another hex nut until it is just past the groove on the suspension shaft (see the "Illustration of where each part should be installed").

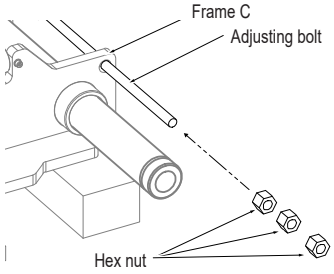
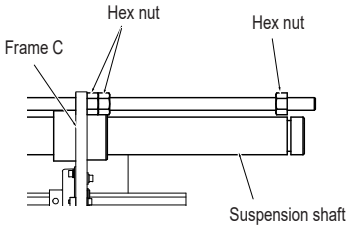


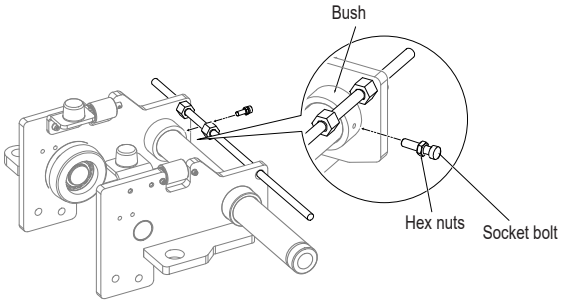
Illustration of where each part should be installed

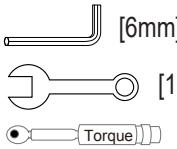


Since the components are different, there are two methods for mounting the frames to the suspension shaft: type A and type B.Follow the disassembly procedure for your type.

Type A

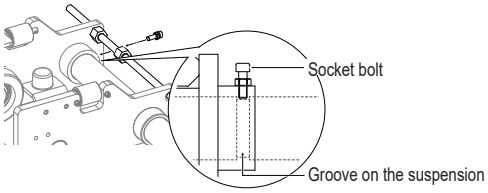
(14) Screw in and tighten a socket bolt (with a hex nut) onto the bush adjoining Frame D to fix the suspension shaft in place. Retighten the hex nut.





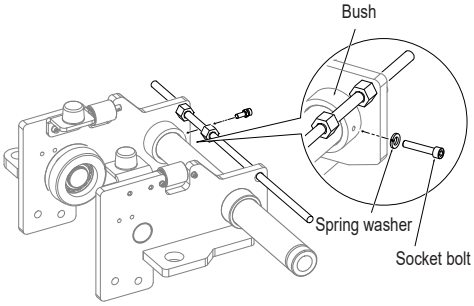
M8 torque setting: 18 N·m

- Adjust the position of the suspension shaft so that the tip of the socket bolt engages with the groove on the suspension shaft. (As shown in the figure below.)



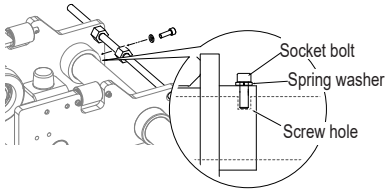
Type B

(14) Screw in and tighten a socket bolt and spring washer onto the bush adjoining Frame D to fix the suspension shaft in place.

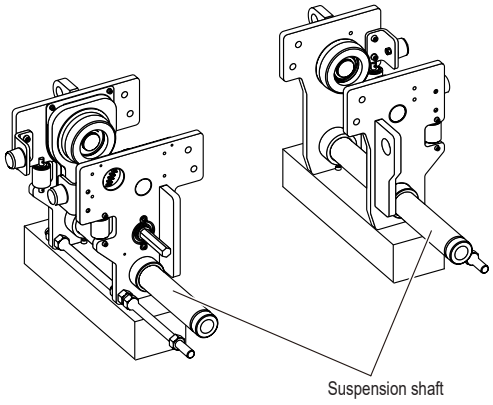


M8 torque setting: 18 N·m

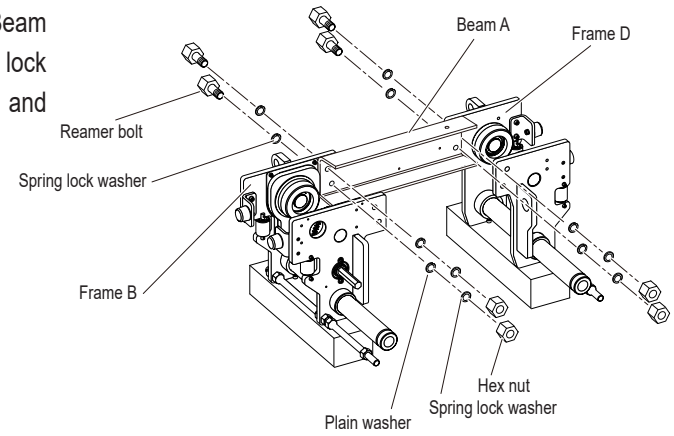
- Adjust the position of the suspension shaft so that the tip of the socket bolt engages with the screw hole. (As shown in the figure below.)



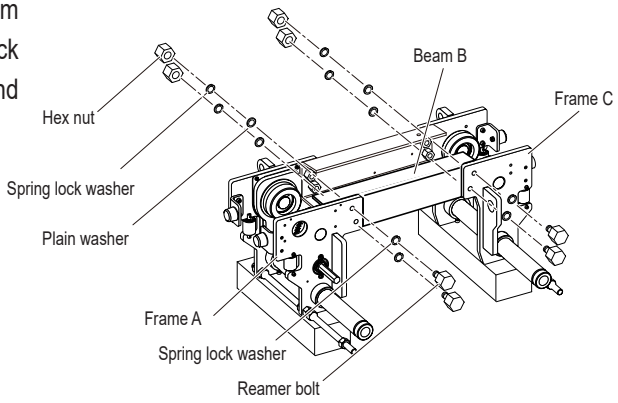
(15) Hold Frames A and B and Frames C and D with the suspension shafts down, and place them on the sleepers.



(16) Join Frame B with Frame D by loosely fastening Beam A to them by using four reamer bolts, four spring lock washers, four hex nuts, four spring lock washers, and four plain washers.



(17) Join Frame A with Frame C by loosely fastening Beam B to them by using four reamer bolts, four spring lock washers, four hex nuts, four spring lock washers, and four plain washers.

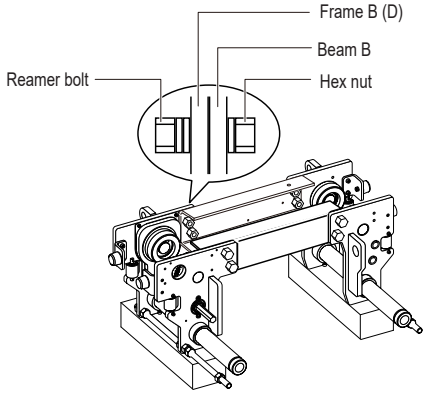


(18) Fully tighten four reamer bolts and four hex nuts on Frame B and Frame D.

[24mm]

Torque

M16 torque setting: 153 N·m

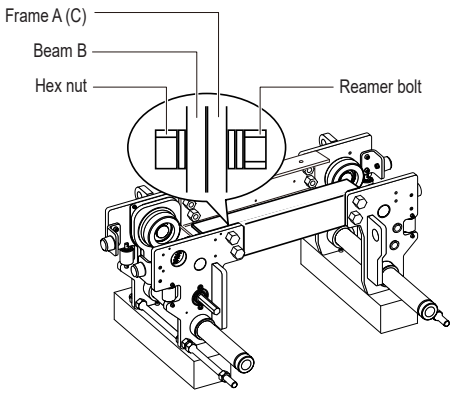


(19) Fully tighten four reamer bolts and four hex nuts on Frame A and Frame C.

[24mm]

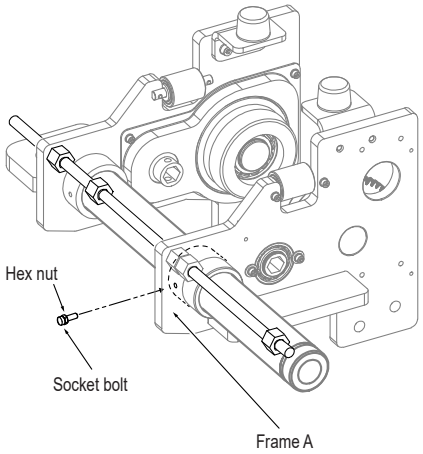
Torque

M16 torque setting: 153 N·m



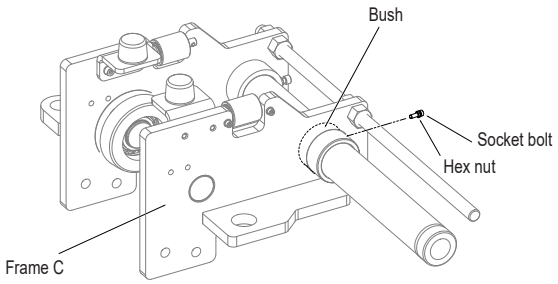
(20) Screw in and loosely tighten a socket bolt (with a hex nut) against the bush adjoining Frame A. (Similarly, remember to only loosely tighten the hex nut.)

- Fully tighten the socket bolt and the hex nut only after lifting the main unit and adjusting the distance between frames.



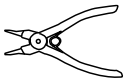
(21) Screw in and loosely tighten a socket bolt (with a hex nut) against the bush adjoining Frame C. (Similarly, remember to only loosely tighten the hex nut.)

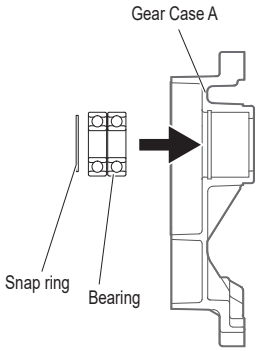
- Fully tighten the socket bolt and the hex nut only after lifting the main unit and adjusting the distance between frames.



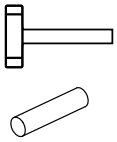
2 Traversing Motor

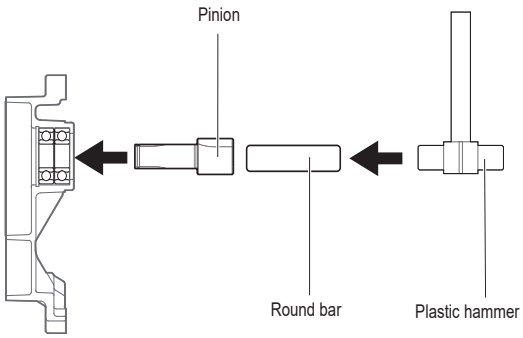
(1) Insert two bearings into Gear Case A, and then fix them in place with a snap ring.



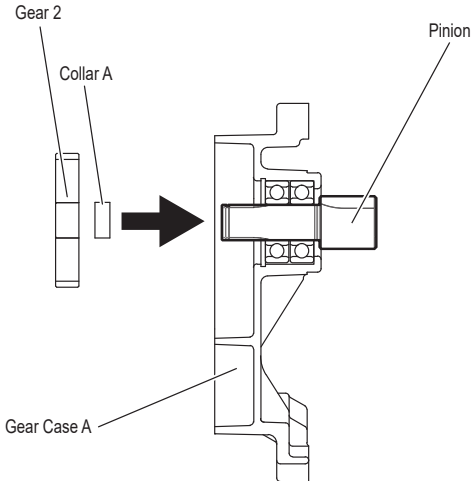


(2) Hold a round bar against a pinion, and then with a plastic hammer, lightly tap on the round bar to insert the pinion.

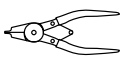


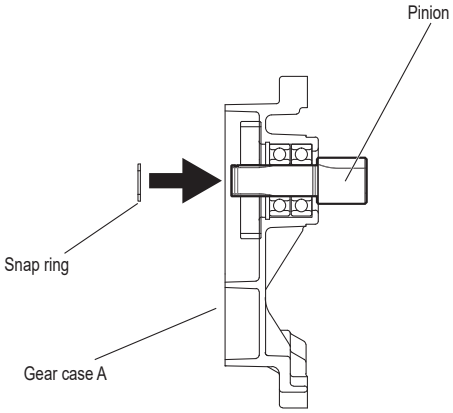


(3) Slide Collar A and Gear 2 onto the pinion.

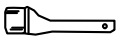


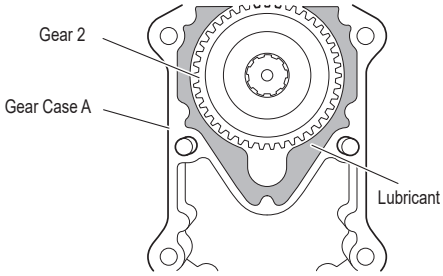
(4) Install a snap ring to the pinion.





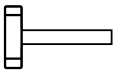
(5) Apply lubricant to Gear Case A and Gear 2.

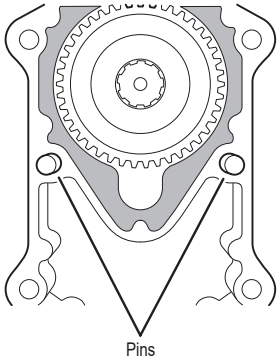




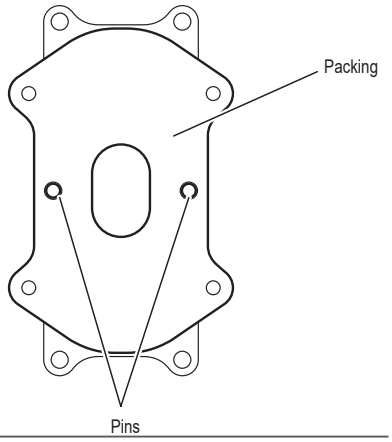
- Lubricant: EPNOC AP (N) No. 2
  (For details about the amount of lubricant to be used, see the owners' manual.)

(6) With a plastic hammer, drive two pins into the gear case.

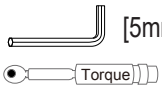




(7) Install a packing, making sure that the pins are aligned with the holes on the packing.

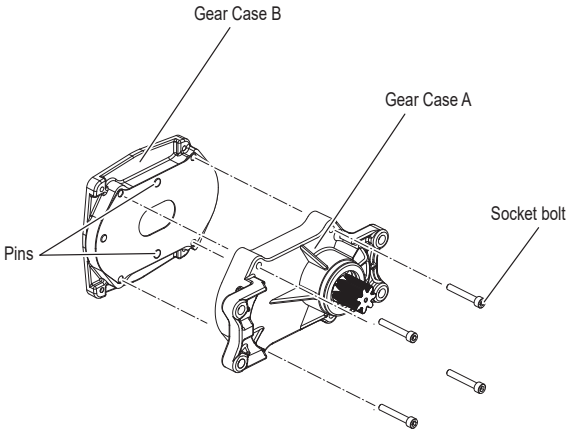


(8) Install Gear Case B by screwing in four socket bolts from the pinion side, making sure that the pins are aligned with the holes on the gear case.

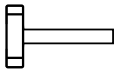


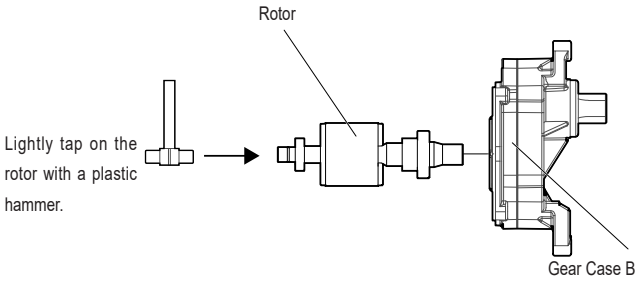
M6 torque setting: 8 N·m

- Apply a threadlocker to the socket bolts.

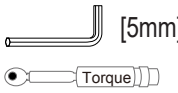


(9) With a plastic hammer, lightly tap on a rotor to drive it into Gear Case B.



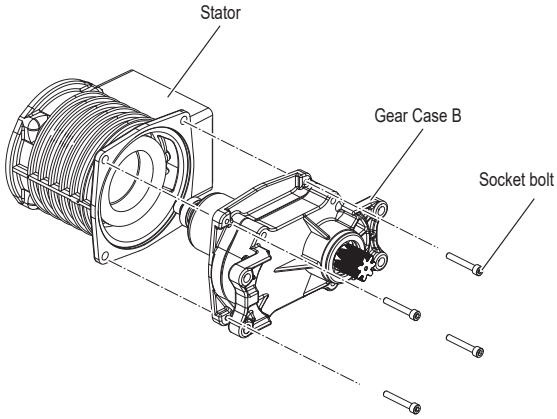


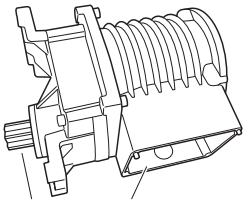
(10) Fix a stator to Gear Case B by using four socket bolts.



M6 torque setting: 8 N·m

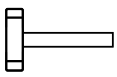
- Ensure that the stator is properly positioned before attaching it to the gear case.
- Apply a threadlocker to the socket bolts before screwing them in.

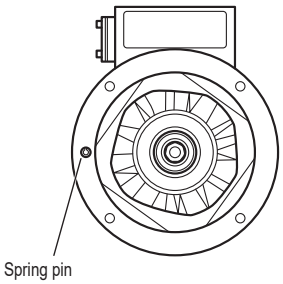




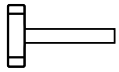
When assembling, pay attention to the position of the terminal box relative to the position of the pinion.

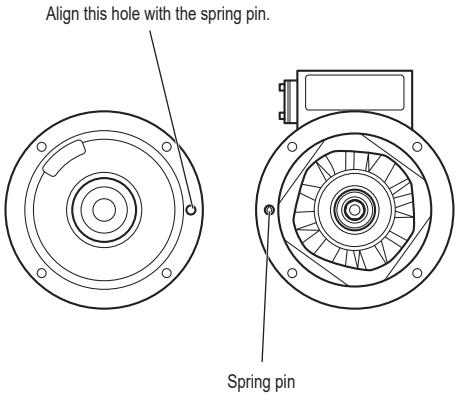
(11) Install a spring pin to the stator by lightly tapping on it with a plastic hammer.



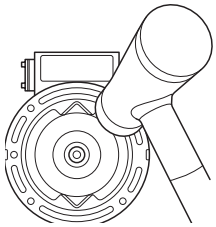


(12) Install a brake bracket, making sure that the spring pin is aligned with the hole on the brake bracket.

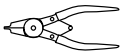


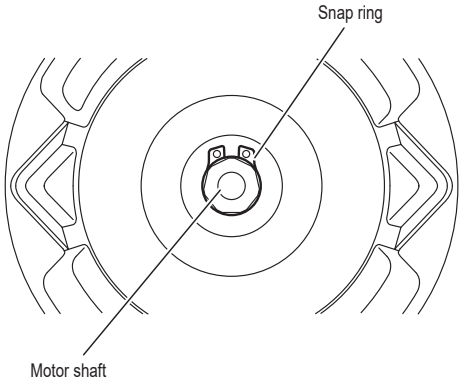


- With a plastic hammer, lightly tap on the brake bracket to make it engage with the stator.

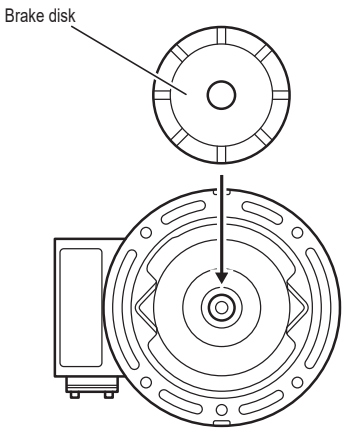


(13) Install a snap ring to the motor shaft.

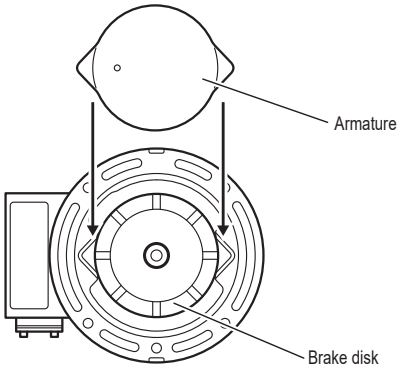




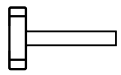
(14) Install a brake disk.

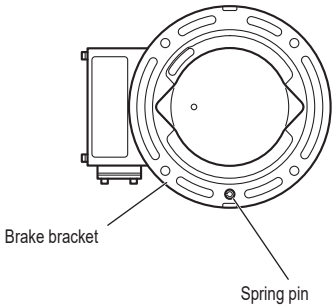


(15) Install an armature.

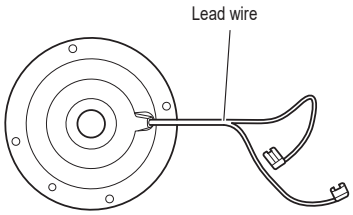


(16) Install a spring pin to the brake bracket by lightly tapping on it with a plastic hammer.

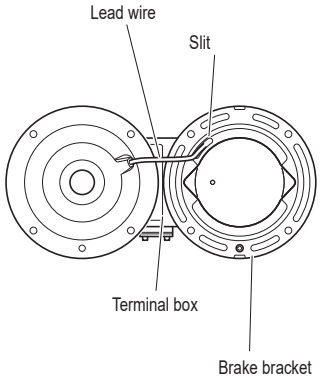




(17) Pass the lead wire extending from the electromagnetic brake assembly through a slit on the brake bracket and route it to the terminal box.



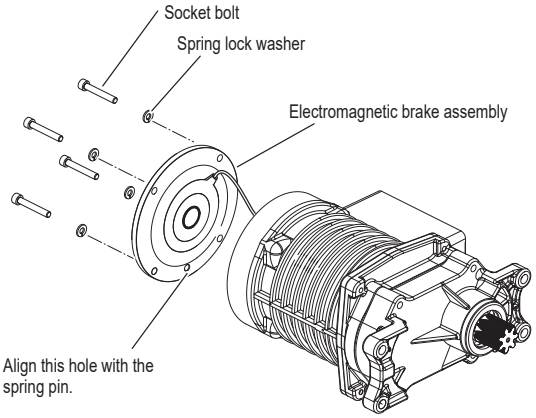
Electromagnetic brake assembly



(18) Install the electromagnetic brake assembly to the brake bracket making sure that the spring pin is aligned with the hole on the electromagnetic brake assembly, and then fix it in place by using four socket bolts and four spring lock washers.

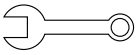

[5mm]

M6 torque setting: 8 N·m

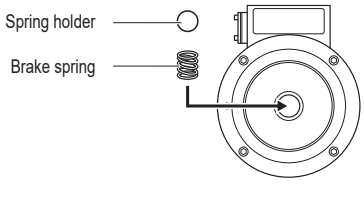


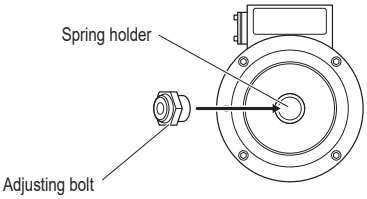
(19) Insert a brake spring, and then a spring holder in the position indicated in the figure to the right, and then from the opening on the spring holder, screw in an adjusting bolt.


[10mm]


[28mm]

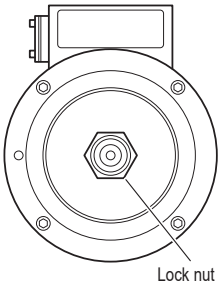
・ For details about how to adjust the brake, see the "Owners' Manual for KITO Rope Hoist RY Model (10 t)".



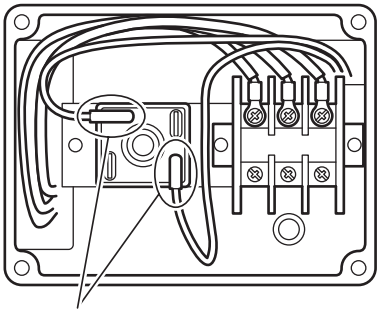


(20) After tightening the adjusting bolt to the designated torque, screw in a lock nut to prevent the adjusting bolt from becoming loose.

[28mm]



(21) Lay the lead wire routed to the terminal box as shown in the figure to the right.



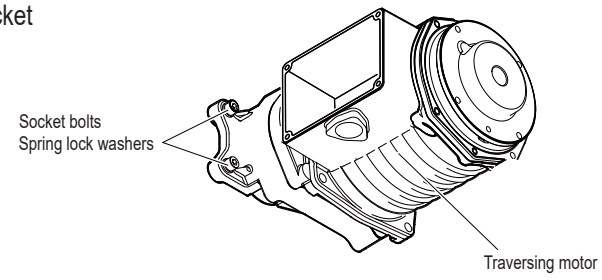
■ Installing the traversing motor

(1) Fix the traversing motor to Frame A by using four socket bolts and four spring lock washers.

[6mm]

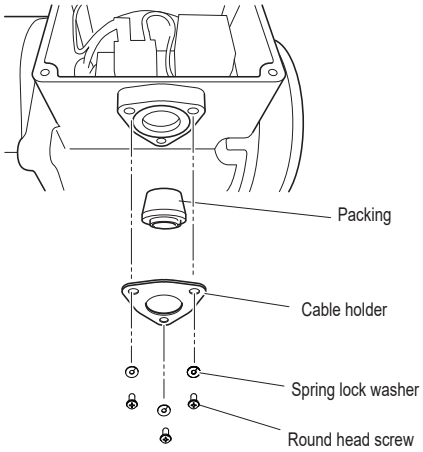
Torque

M8 torque setting: 16 N•m



■ Installing the traversing motor harness

(1) Remove the three round head screws and three spring lock washers fixing the cable holder in place.



(2) Wrap black plastic tape around the traversing motor harness about four times, and then pass the traversing motor harness through the cable holder and the packing.

For details, see the following illustration that shows where tape should be wrapped around.

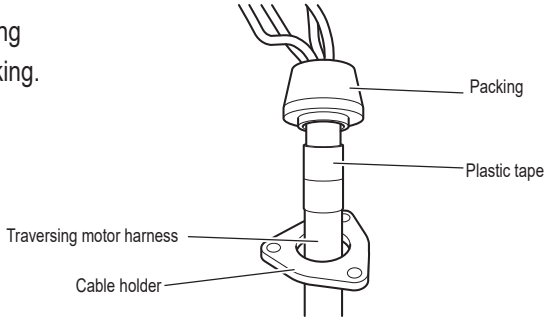
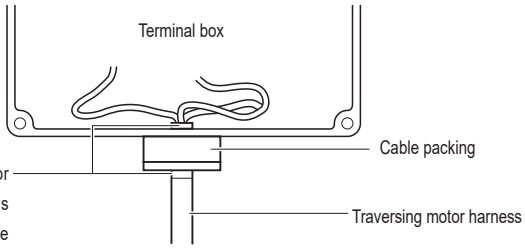
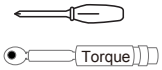


Illustration of where tape should be wrapped around

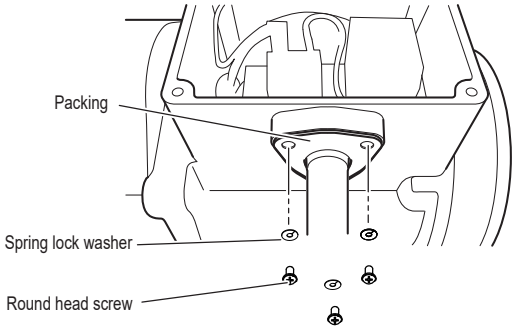


Wrap plastic tape around the traversing motor harness, making sure that 3-5 mm of plastic tape is visible from the upper and lower ends of the cable packing.

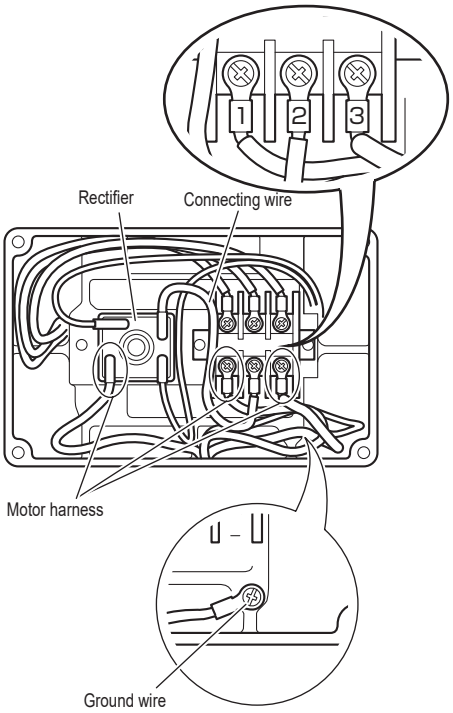
(3) Insert the traversing motor harness into the terminal box, and fix the cable packing and the cable holder in place with screws.



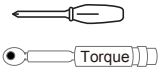
M4 torque setting: 1 N·m



(4) Secure the ground wire (green/yellow) from the traversing motor harness to the inside of the terminal box by using a screw.
Connect the remaining three lead wires (red, white, and black wires) to Terminal 1, Rectifier, and Terminal 3, respectively.



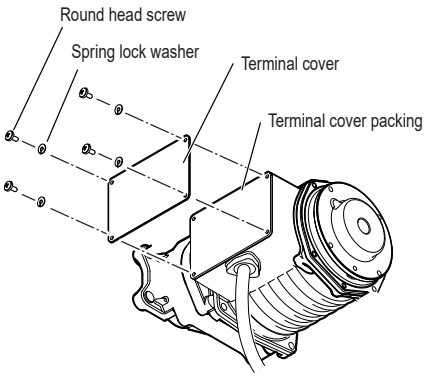
Connect the rectifier with the connecting wire from Terminal Block 2.



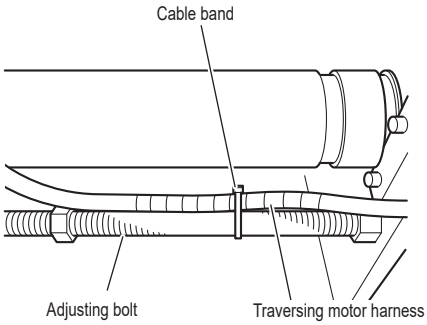
M3.5 torque setting: 0.75 N·m

(6) Fix the terminal cover and the terminal cover packing to the traversing motor by using four round head screws and four spring lock washers.

M4 torque setting: 1 N·m



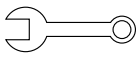
(7) Fix the traversing motor harness to the adjusting bolt by using a cable band.



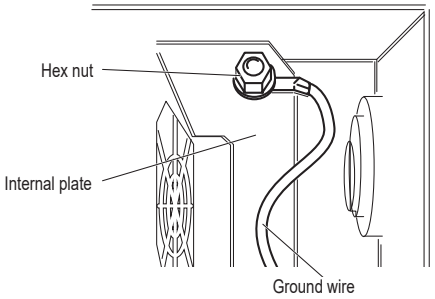
3 Control Box

(1) Lay the ground wire over the internal plate and route it to the control box.

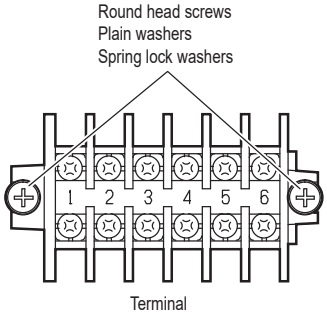
- The traversing resistor is not installed on products where the first two serial number digits are 18 or higher.

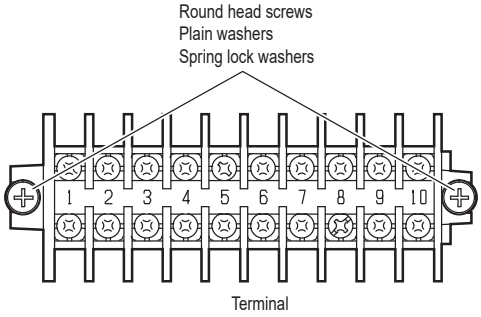

[13mm]


[6mm]



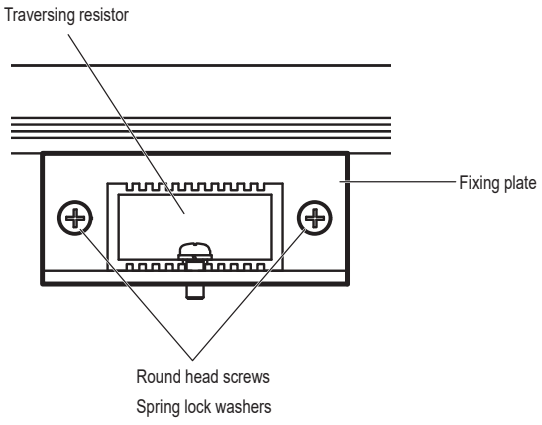
(2) Fix each of the two terminals in place by using two round head screws, two plain washers, and two spring lock washers.



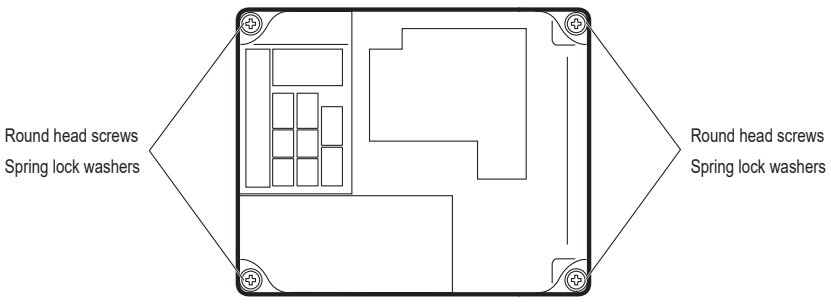


(3) Fix the fixing plate on the traversing resistor in place by using two round head screws and two spring lock washers.

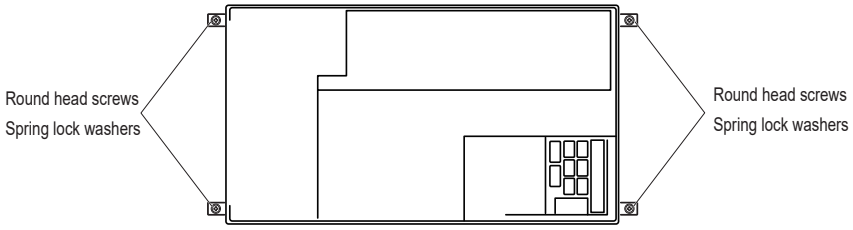
- The traversing resistor is not installed on products where the first two serial number digits are 18 or higher.



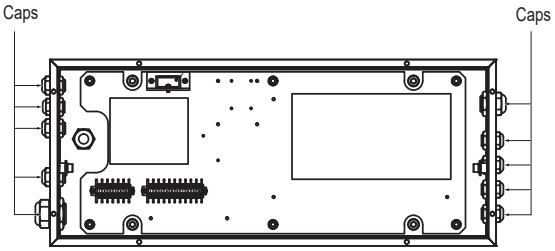
(4) Fix the traversing inverter in place by using four round head screws and four spring lock washers.



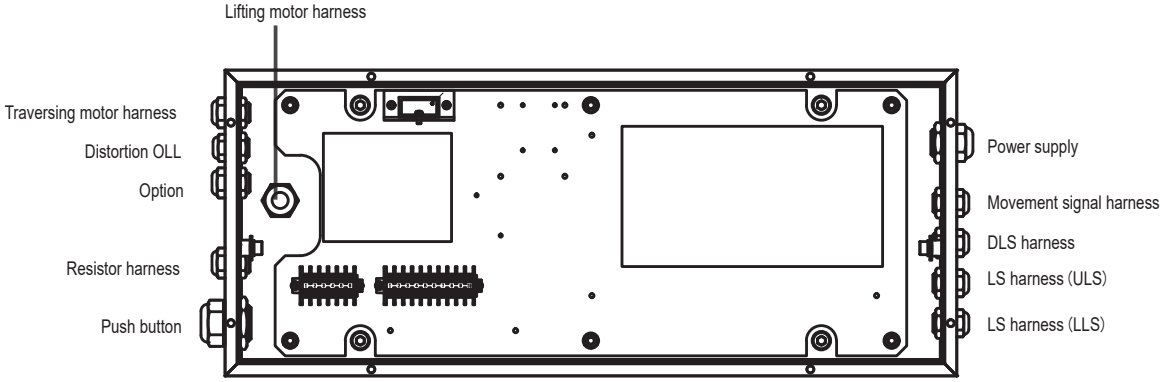
(5) Fix the lifting inverter in place by using four round head screws and four spring lock washers.



(6) Insert each harness into the corresponding cable gland, and fix it in place by tightening a cap.



The following illustration shows where each harness should be located:



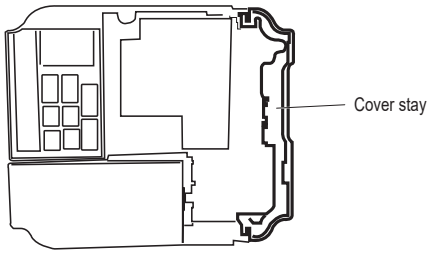
(7) Connect each harness to an inverter or a terminal.

- For details, see the wiring diagram provided in the "Owners' Manual for KITO Rope Hoist RY Model (2.8 - 5 t)".

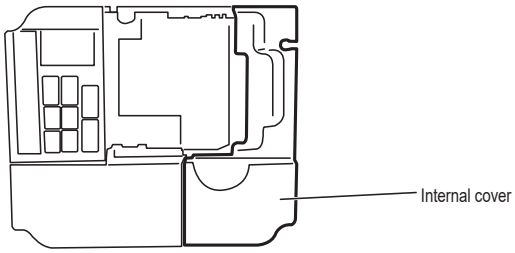
(8) Tie harnesses together with a cable band.

- Do not tie the resister line and the power line together with other harnesses.

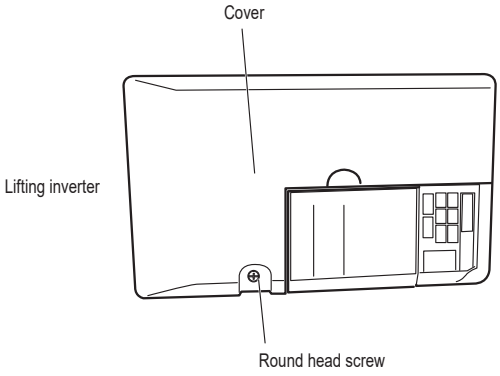
(9) Install a cover stay to the traversing inverter.

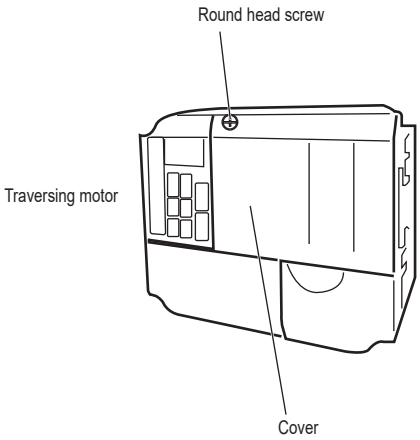


(10) Install an internal cover to the traversing inverter.



(11) Install covers to the lifting inverter and the traversing inverter.

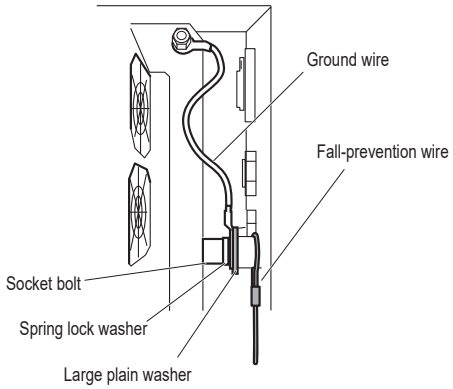




(12) Let a small loop at the end of two fall-prevention wires hang at the bosses inside the control box and the control box cover, and then install two socket bolts, two spring lock washers, and two large plain washers to prevent the wires from coming off loose.


[6mm]

- Remember to connect the ground wire.

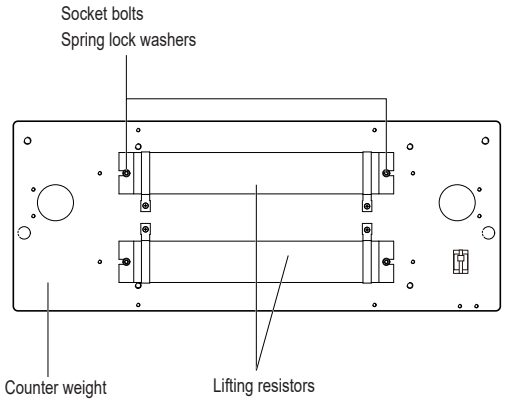


■ Installing lifting resistors

(1) Fix the lifting resistors to the counter weight by using two socket bolts and two spring lock washers.

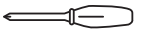
M8 torque setting: 16 N·m

- 03S: One lifting resistor
- 03H/05S/05H: Two lifting resistors



■ Installing resister harnesses

(1) Connect a resister harness to each lifting resister.

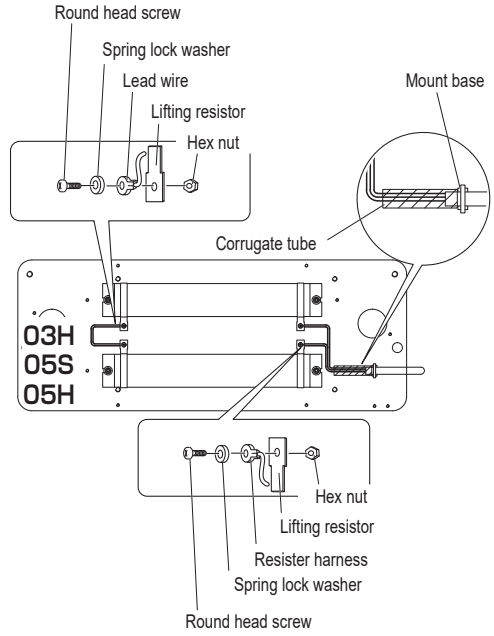


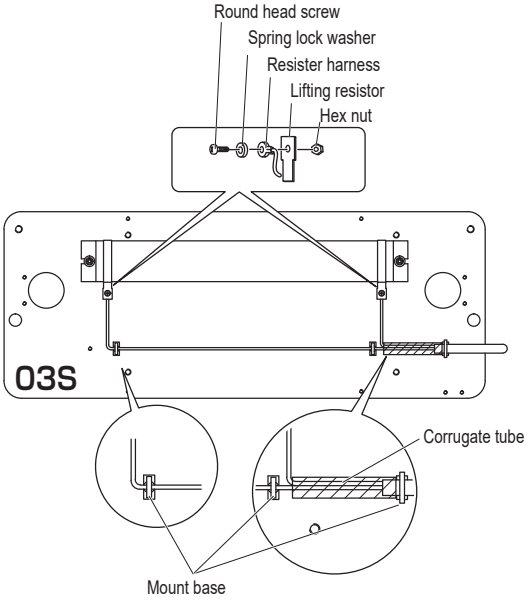
M5 torque setting: 2.5 N·m
M6 torque setting: 4 N·m

(2) Fix the mount base to the counter weight by using a round head screw.

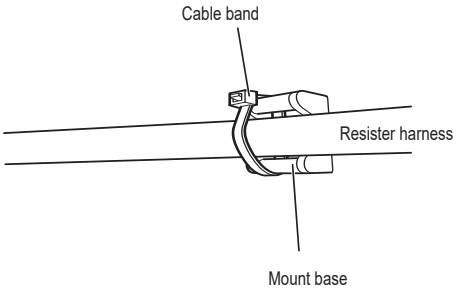
- One lifting resistor: three locations
- Two lifting resistors: one location

(3) Wrap corrugate tube around the stripped potion of the resister harness.



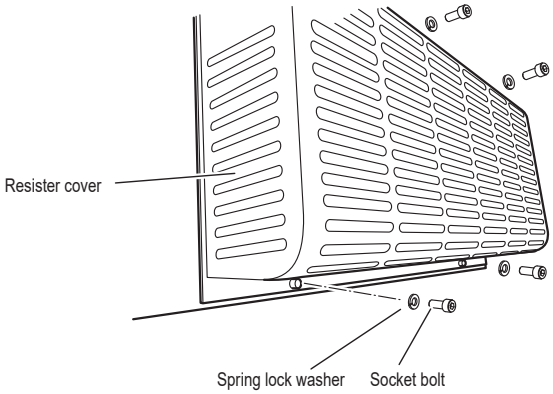


(4) Fix the resister harness to the mount base by using a cable band.

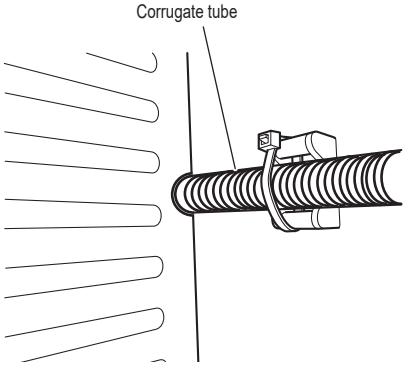


(5) Remove the four socket bolts and four spring lock washers, and then insatll the resistor cover to the counter weight.

[5mm]



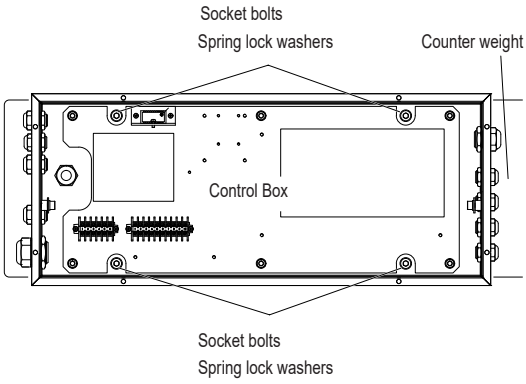
- Adjust the position of the corrugate tube so that the portion wrapped by the corrugate tube comes in contact with the edge of the resister cover.



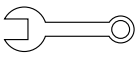
■ Installing the control box

(1) Fix the control box to the counter weight by using four socket bolts and four spring lock washers.

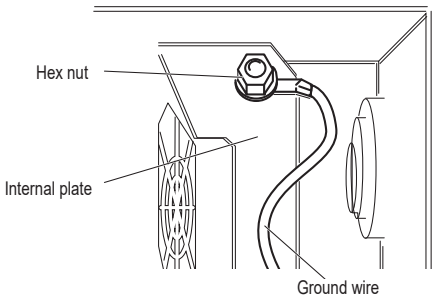
[8mm]



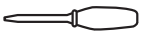
(2) Secure the ground wire to the internal plate by using a hex nut.

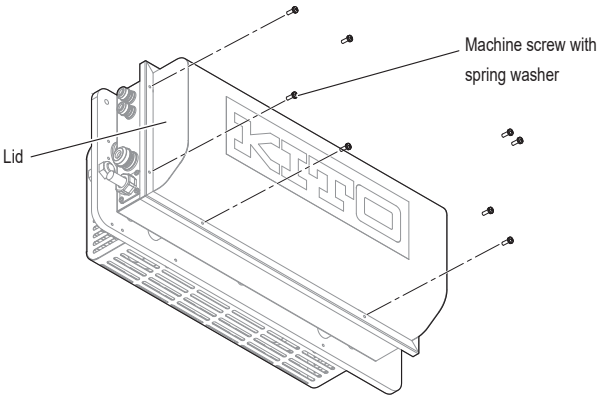


[13mm]



(3) Close the lid on the control box by using eight machine screws with spring washers.

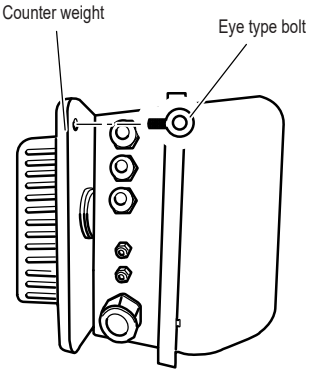




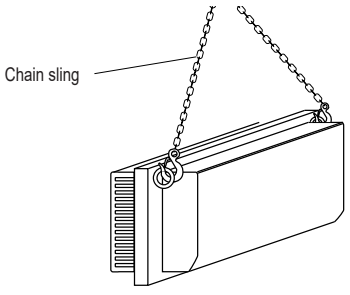
■ Installing the control box unit

(1) Install two M12 eye type bolts to the screw holes located on both sides of the counter weight.

(Inside diameter of the ring: 30 mm)

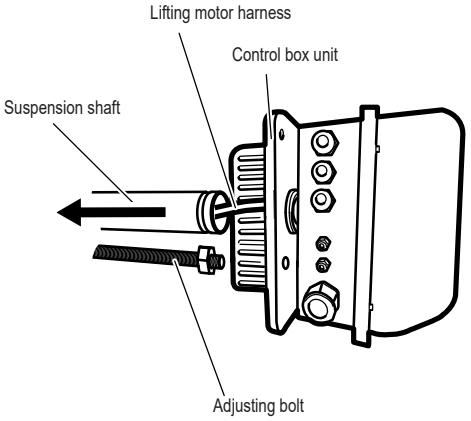


(2) Engage hooks on the forked end of a chain sling with the eyes of the two eye type bolts, and lift the control box unit with a crane so that tension is applied to the chain sling.



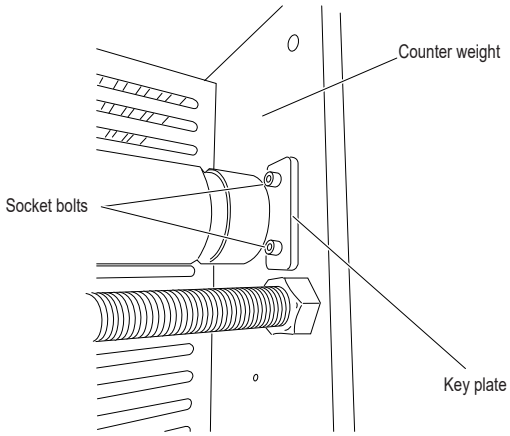
■ Installing the control box unit

(1) While inserting the lifting motor harness into the suspension shaft, install the control box unit to both the suspension shaft and the adjusting bolt.

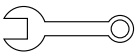


(2) Install two key plates to the counter weight by using two socket bolts each.

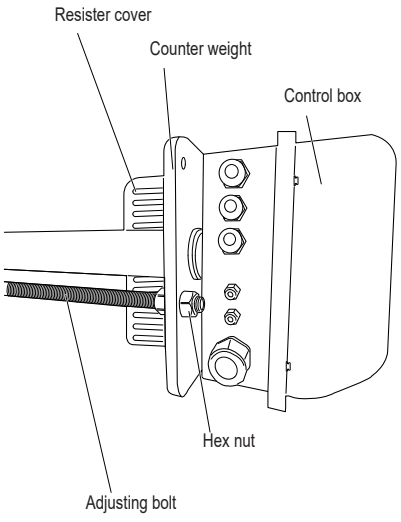
 [5mm]



(3) On the outer surface of the counter weight, install the two hex nuts on the adjusting bolts.

 [30mm]

- After installing the hex nuts, confirm that the counter weight is positioned perpendicular to the suspension shaft.

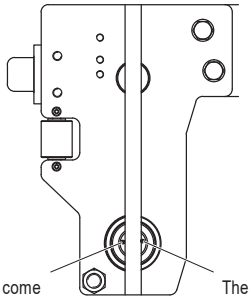


4 Direct Limit Switch

■ Installing the DLS harness

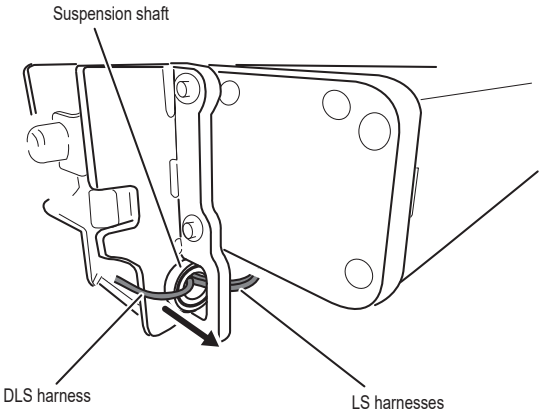
(1) Pass a DLS harness through the suspension shaft located on the right of the control box, and pull it out from the rope-drum side.

Note that the DLS harness must come out from the correct side.

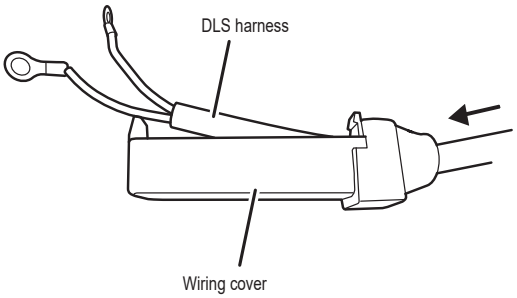


The DLS harness must come out from this side.

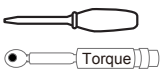
The LS harnesses must come out from this side.



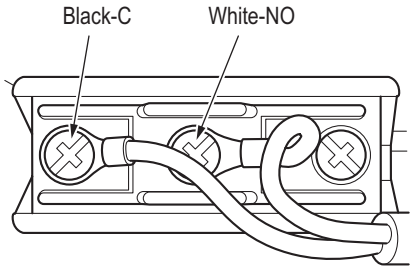
(2) Insert the DLS harness into the wiring cover of the limit switch of the direct limit switch.



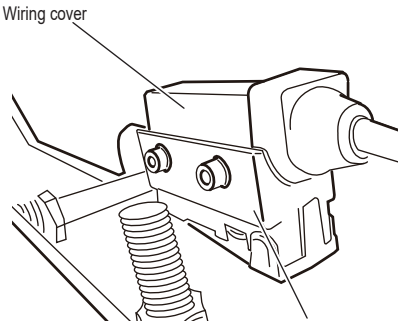
(3) Connect the DLS harness to the limit switches.
Connect the black lead wire to C and the white lead wire to NO.



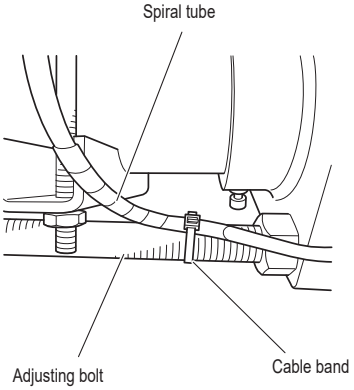
M3 torque setting: 0.5 N·m



(4) Attach the wiring cover to the direct limit switch.

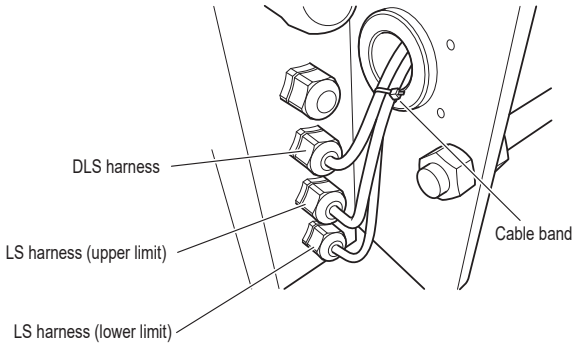


(5) Wrap a spiral tube around 100 mm of the DLS harness, and fix the DLS harness to the adjusting bolt with a cable band.



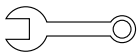
(6) With a cable band, tie the inserted DLS harness and the two LS harnesses together at the entry point to the suspension shaft.

- Tie the harnesses together making sure that they are aligned according to the positions of the cable glands that accept them.

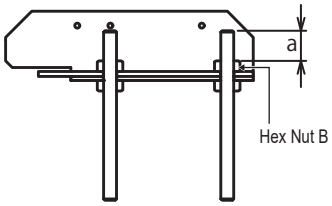


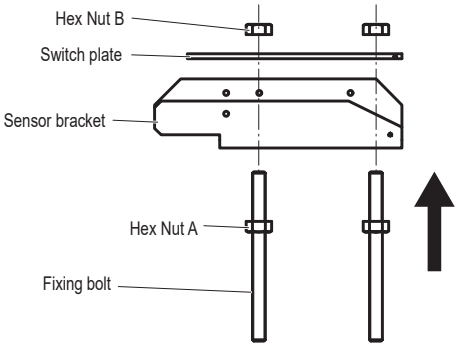
■ Installing the direct limit switch

(1) Pass fixing bolts through the sensor bracket and the switch plate, and fix them in place with Hex Nut Bs.

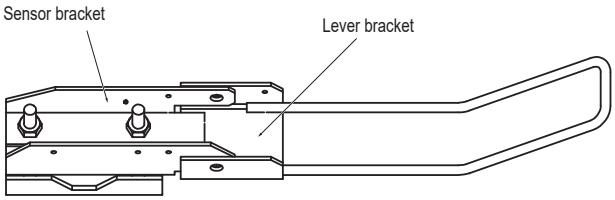

[16mm]

- Distance "a" between the upper surface of Hex Nut B and the tip of the fixing bolt must be as follows:
  For 2.8t, 3t, and 3.2t hoists: 23 mm
  For 4.8t and 5t hoists: 11 mm

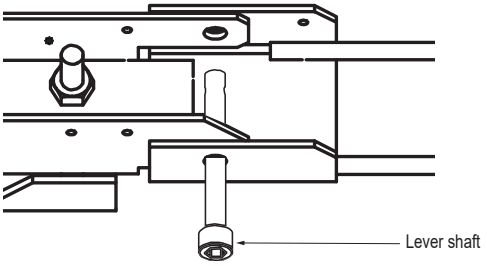




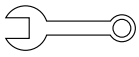
(2) Engage the lever bracket with the sensor bracket.

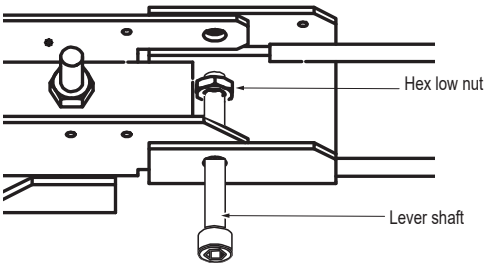


(3) Insert the lever shaft halfway in.

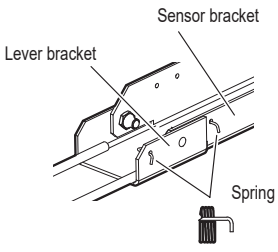


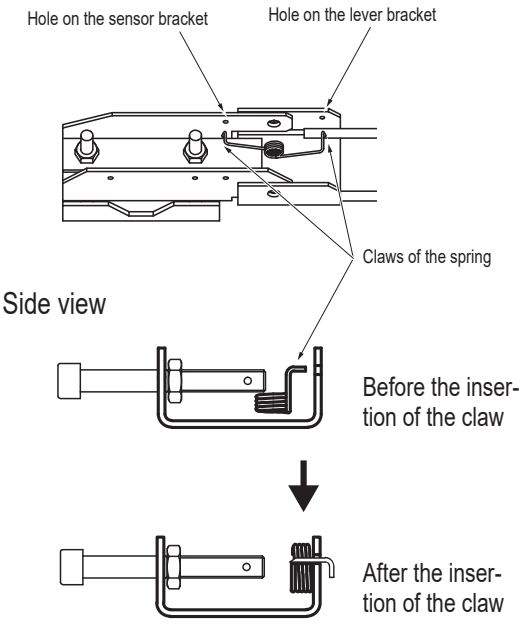
(4) Install a hex low nut onto the lever shaft and tighten it.


[16mm]

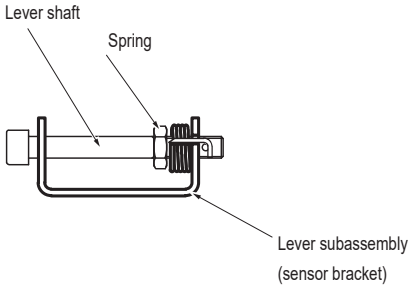


(5) As shown in the figure to the right, insert the claws of the spring into the holes on the sensor bracket and the lever bracket.

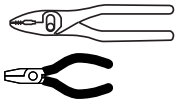


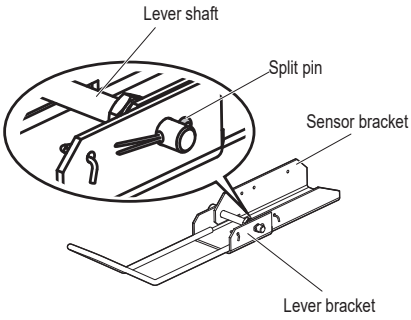


(6) Holding down the spring, pass the lever shaft through the spring and through the sensor bracket and the lever subassembly.



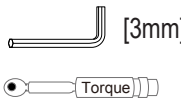
(7) Insert a split pin into the hole on the tip of the lever shaft.



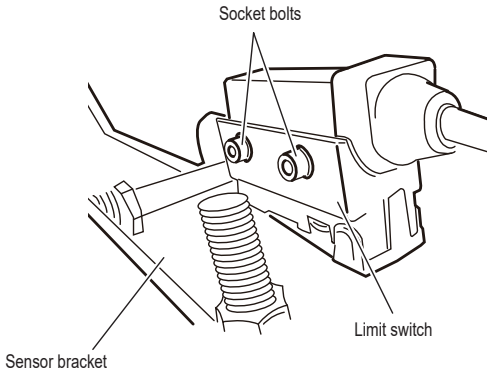


- Bend the split pin to fix the lever shaft in place.

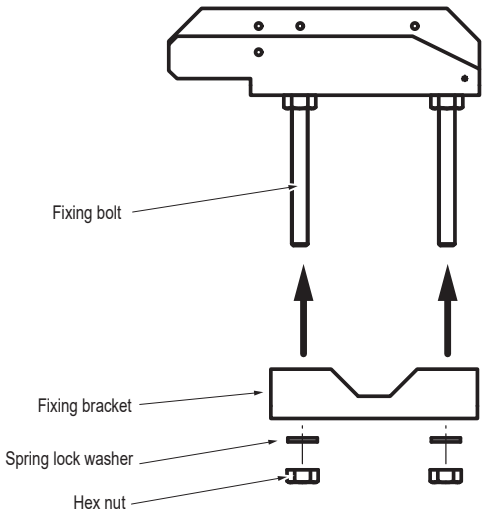
(8) Fix the limit switch to the sensor bracket by using two socket bolts.



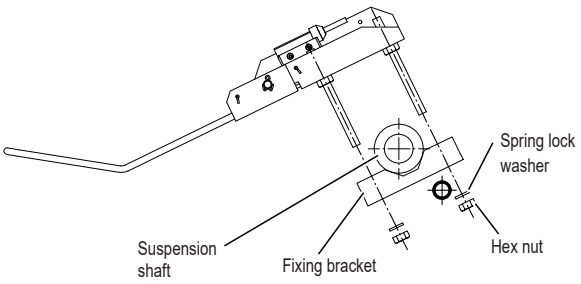
- After assembly, confirm that the limit switch functions properly when the lever is moved.

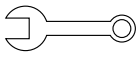


(9) Only temporarily secure the fixing bracket to the fixing bolts by using two hex nuts and two spring lock washers. The fixing bracket will be used later to install the direct limit switch to the main unit.



(10) By using two hex nuts and two spring lock washers, fix the direct limit switch to the fixing bracket, with the suspension shaft placed between them. Mount the direct limit switch to the suspension shaft located between Frame C and Frame D.



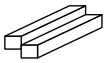
 [16mm]

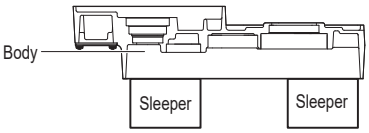
M10 torque setting: 28 N·m

5 Rope Drum Unit

■ Assembling the gear box

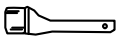
(1) Place the body on the sleepers, with the surface on which to install the lifting motor facing up.

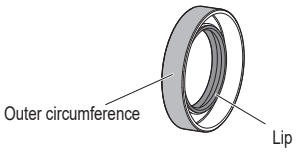




(2) Apply lubricant (grease) to the lip and outer circumference of the oil seal for pinion.

- Oil seal: AE2085A0
- Lubricant (grease): EPNOC AP (N) No. 2

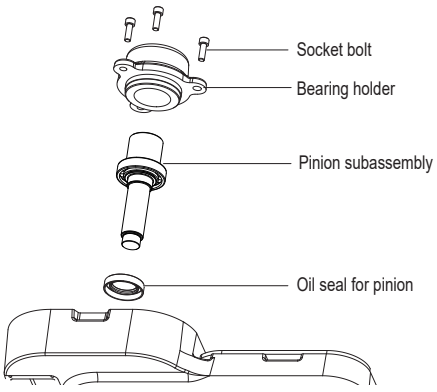




(3) Use a press-fitting jig to press the oil seal for pinion into place.

(4) Insert the pinion subassembly.

- Be careful not to scratch the oil seal.
- Use a press-fitting jig.

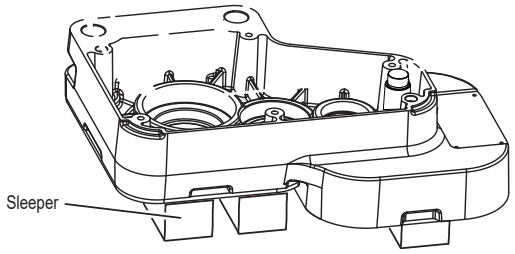


(5) Fix the bearing holder to the body by using three socket bolts.

M6 torque setting: 8 N·m

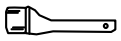
- Be sure to apply threadlocker.

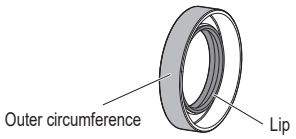
(6) Turn the body upside down and place it on the sleepers.



(7) Apply lubricant (grease) to the lip and outer circumference of the oil seal for gear shaft.

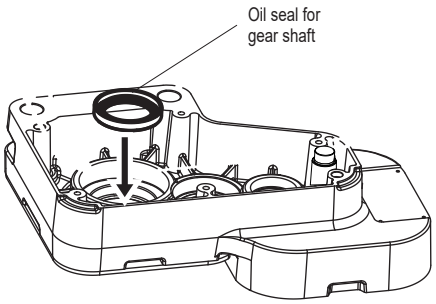
- Oil seal: AE2085A0
- Lubricant (grease): EPNOC AP (N) No. 2





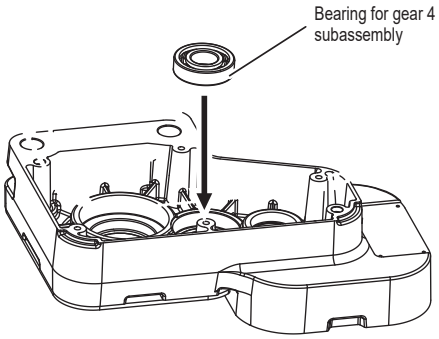
(8) Use a press-fitting jig to press the oil seal for gear shaft into place.

- Be careful not to scratch the oil seal.
- Use a press-fitting jig.



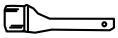
(9) Apply lubricant (grease) to the outer surface of the bearing for gear 4 subassembly, and insert it into the body.

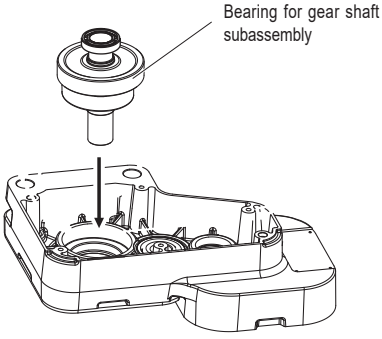
- Use a press-fitting jig.
- Lubricant (grease): EPNOC AP (N) No. 2



(10) Apply lubricant (grease) to the outer surface of the bearing for gear shaft subassembly, and then install the the bearing into the body.

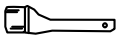
- Lubricant (grease): EPNOC AP (N) No. 2

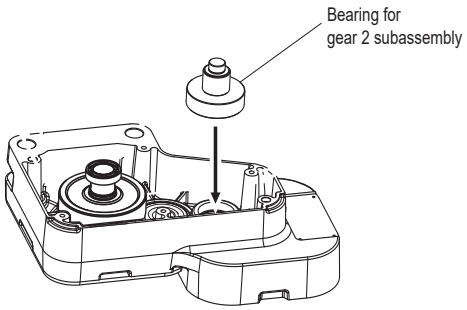




(11) Apply lubricant (grease) to the outer surface of the bearing for gear 2 subassembly, and then install the the bearing into the body.

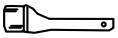
- Lubricant (grease): EPNOC AP (N) No. 2

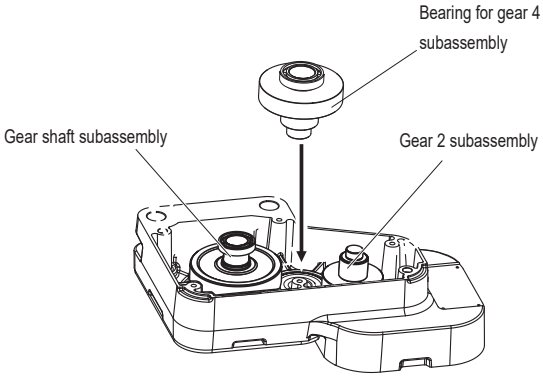




(12) Apply lubricant (grease) to the outer surface of the bearing for gear 4 subassembly, and insert it into the body, making sure that its teeth engage with those on both the gear shaft assembly and the gear 2 subassembly.

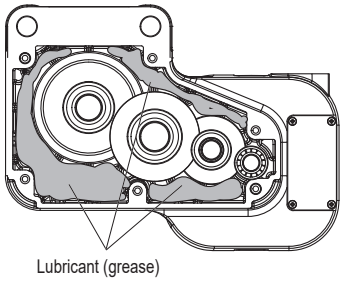
- Lubricant (grease): EPNOC AP (N) No. 2



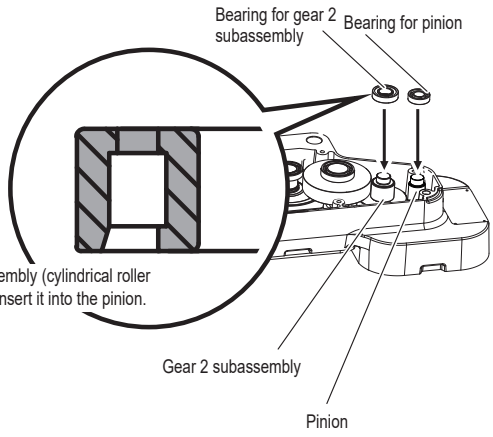


(13) Pour in lubricant (grease), taking care not to let it spill over to the inside of the body.

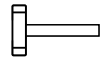
- Use a tool such as a spatula to evenly spread lubricant (grease).
- EPNOC AP (N) No. 0: 2.5 kg

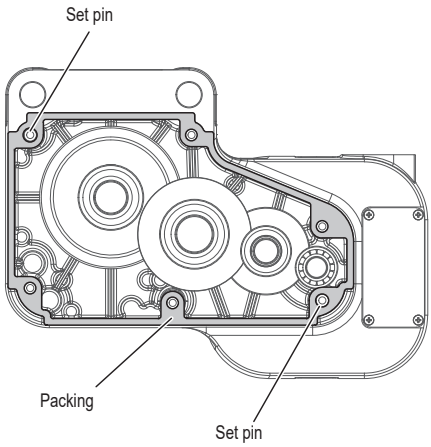


(14) Apply lubricant to the outer surfaces of both the bearing for gear 2 subassembly and the bearing for pinion, and install them into Gear 2 Subassembly the pinion, respectively.

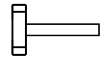


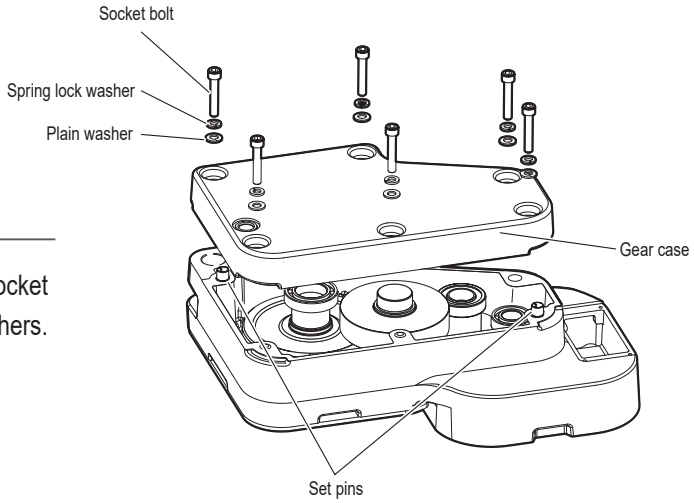
(15) Install two set pins, cover them with a packing, and position the body such that it is aligned with the outer circumference of the gear case.





(16) Install the gear case to the body, making sure that the set pins on the body is aligned with the holes on the gear case.



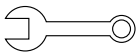


(17) Lock the gear case in place by tightening six socket bolts, six spring lock washers, and six plain washers.

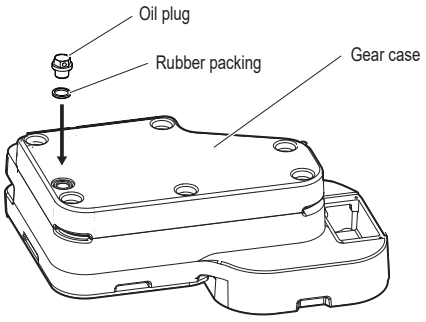

[8mm]

M10 torque setting: 40 N·m

(18) Install a rubber packing to an oil plug, and screw the oil plug into the gear case.

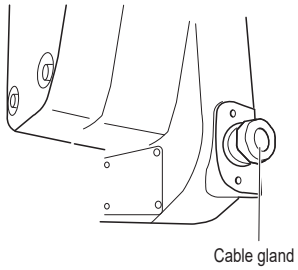

[22mm]

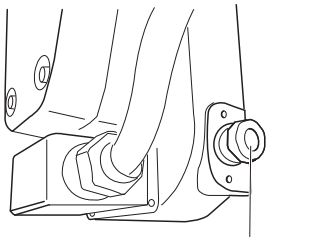
M20 torque setting: 20 N·m



(19) Attach a cable gland to the side of the gear box.

- * For the 200V-05H speed model, the terminal cover is box-shaped, in which case a blind-type cable gland must be installed at the usual position.

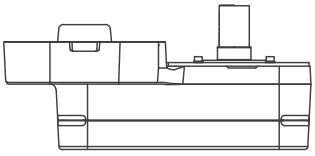




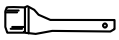
200V-05H

■ Assembling the rope drum unit

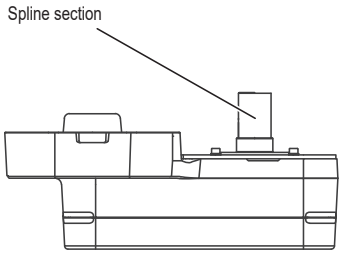
(1) Place the gear box on a flat surface, with its gear shaft facing up.



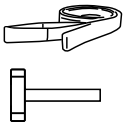
(2) Apply lubricant (Moly PS Grease No.2) to the spline section of the gear shaft.



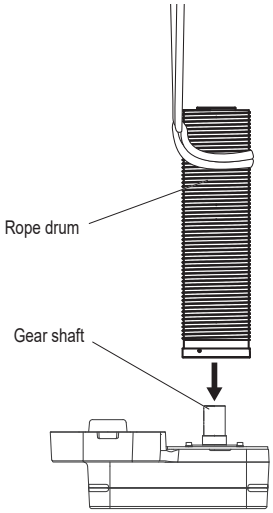
- The lubricant must be applied to the entire circumference of the spline section.



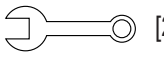
(3) Put a fiber sling attached to the crane around the rope drum, and slowly lower the rope drum to insert it into the gear shaft.



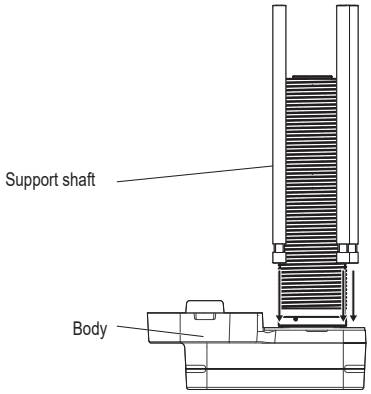
- Remove the coating on the insertion portion.
- The end face of the drum must be located 1 mm below the end face of the end plate.



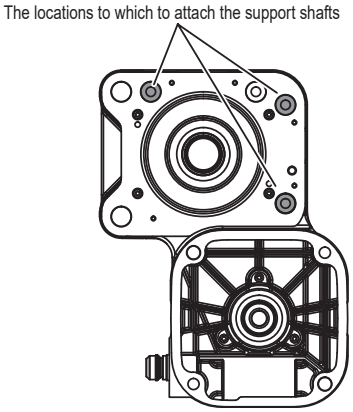
(4) Install three support shafts to the body.


[24mm]

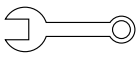
M16 torque setting: 120 N·m



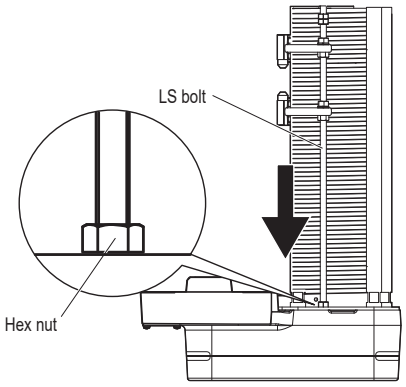
- Install the support shafts to the correct locations, as shown in the figure to the right.



(5) Install an LS bolt to the gear box and fix it in place with a hex nut.

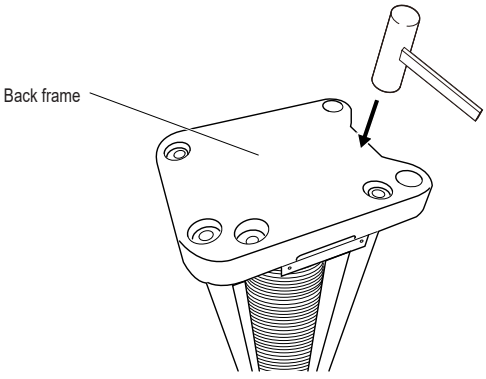

[18mm]

M12 torque setting: 60 N·m

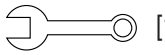


(6) Attach the back frame to the support shafts by lightly tapping on it with a plastic hammer.

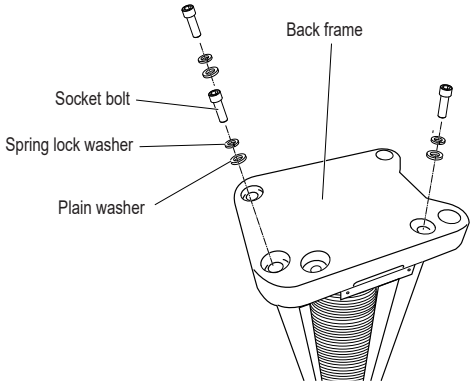
- Take care not to scratch the coating or leave dents on the back frame.



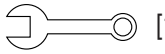
(7) Screw in three socket bolts to lock the back frame to the support shafts.


[10mm]

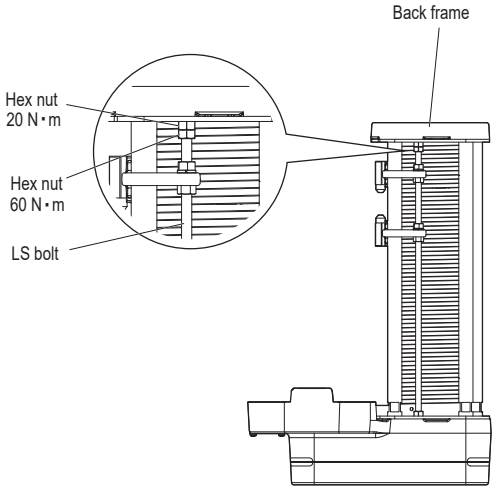
M12 torque setting: 69 N·m



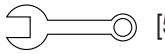
(8) Tighten the two hex nuts on the LS bolt against the back frame.


[18mm]

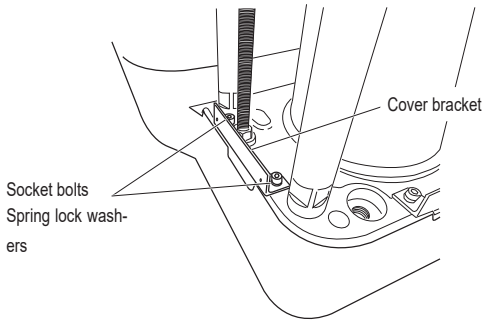
- (Torque setting for the hex nut in contact with the back frame: 20 N·m)
  (Torque setting for the hex nut in contact with the other hex nut: 60 N·m)



(9) Fix the cover bracket to the gear box by using two socket bolts and two spring lock washers.

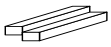

[5mm]

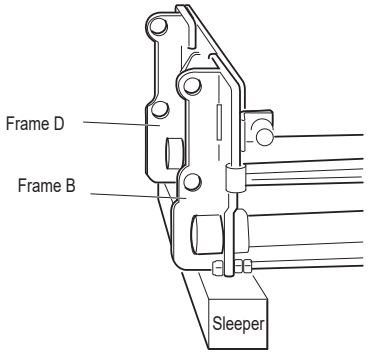
M6 torque setting: 8 N·m



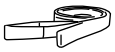
■ Installing the rope drum unit

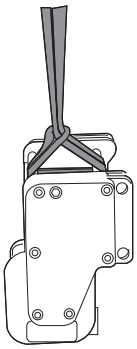
(1) Place Frames A, B, C, and D of the trolley frame unit on sleepers, as shown in the figure to the right.



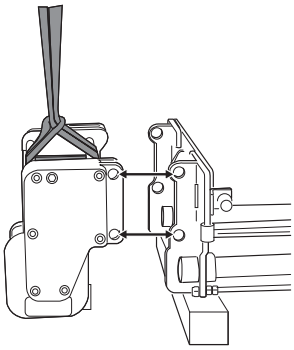


(2) Put fiber slings around the two support shafts located on the upper section of the rope drum unit, and lift the rope drum unit while keeping it level.

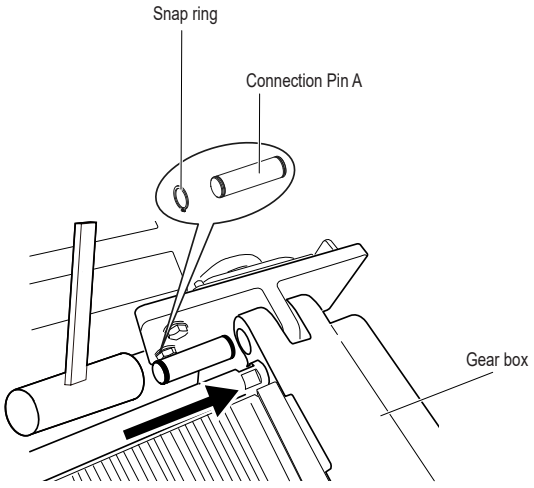




(3) Adjust the height of the rope drum unit so that the connecting hole on the rope drum unit is aligned with the one on the trolley frame unit.



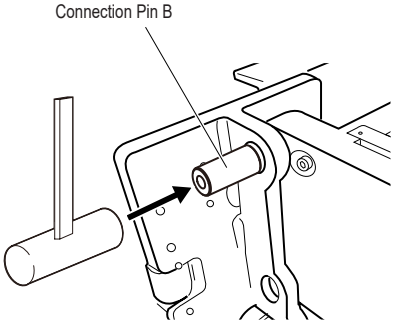
(4) Install a snap ring to only one end of Connection Pin A.



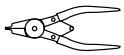
(5) On the gear box side, insert Connection Pin A.

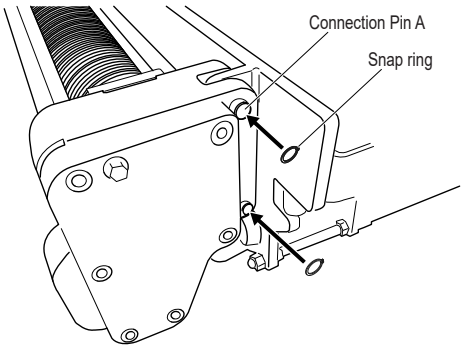
- Insert Connection Pin A from the inside.

(6) On the back-frame (Frame-D) side, insert two Connection Pin Bs.



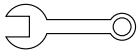
(7) Install a snap ring to each of the two Connection Pin As.



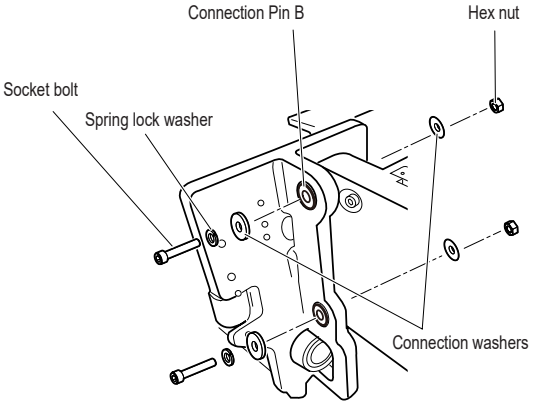


(8) Apply connection washers to both ends of Connection Pin Bs, and then by using socket bolts, hex nuts, and spring lock washers, lock Connection Pin Bs in place.

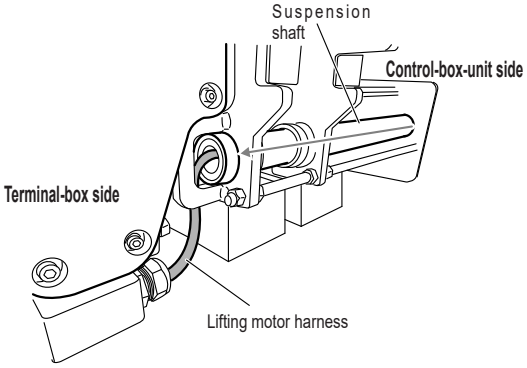

[10mm]


[19mm]

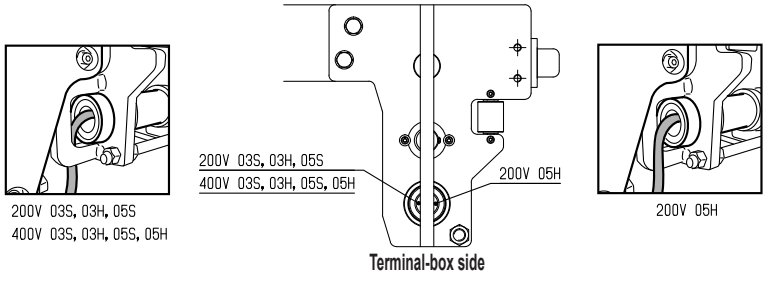
M12 torque setting: 60 N·m



(9) Pass the lifting motor harness from the control box unit through the suspension shaft on the traversing-motor side and pull it out from the terminal-box side.



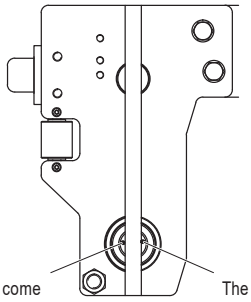
- The lifting motor harness pulled out from the suspension shaft must be routed to toward the correct side.



■ Installing the LS harnesses

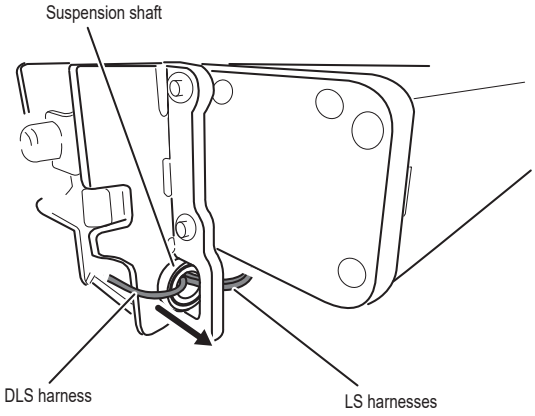
(1) Insert LS harnesses into the suspension shaft located on the right of the control box, and pull it out from the opposite side.

Note that the LS harnesses must come out from the correct side.

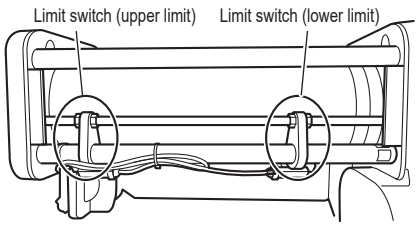


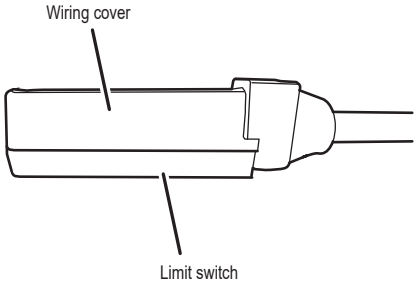
The DLS harness must come out from this side.

The LS harnesses must come out from this side.

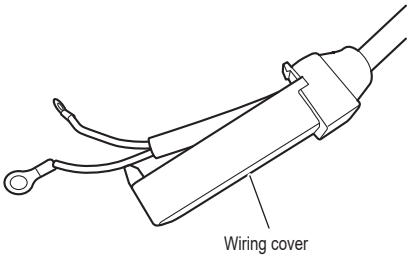


(2) Remove the wiring covers from the two limit switches (one for the upper limit and the other for the lower limit).

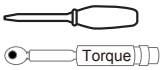




(3) After confirming which one of the two LS harnesses is for the upper limit and which is for the lower limit, insert them into the corresponding wiring covers.
A tube with marking on each LS harness tells you which one is for the upper limit and which is for the lower limit.
ULS: upper-limit side, LLS: lower-limit side

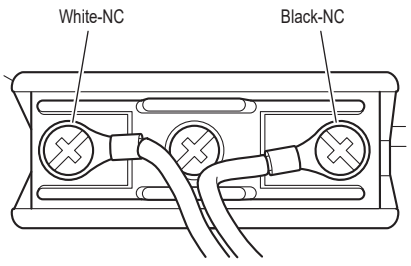


(4) Connect one LS harness to the upper-limit-side limit switch and the other to the lower-limit-side limit switch.
Connect the black lead wire to C and the white lead wire to NC.



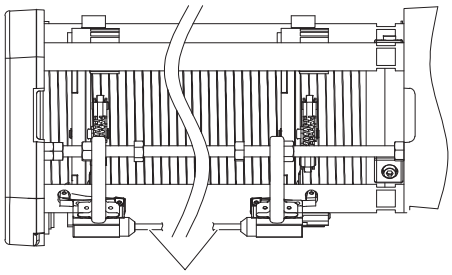
M3 torque setting: 0.5 N·m

- When the lifting motor interfering with the screwdriver impedes wiring work for the lower-limit side, shift the lower-limit-side limit switch to the position where this interference can be avoided, and then perform wiring for the lower-limit side.



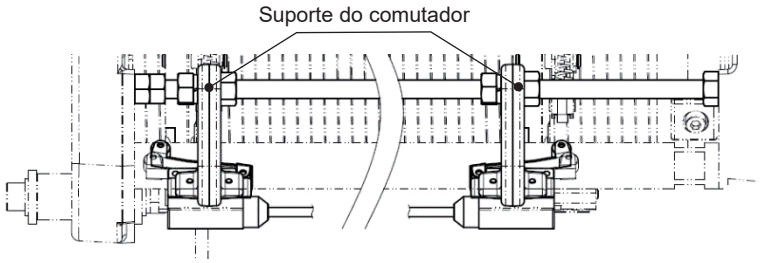
(5) Attach the wiring covers to the limit switches.

Fix them in place after confirming that the openings on these covers, from which the upper-limit-side and lower-limit-side LS harnesses come out, are facing each other.

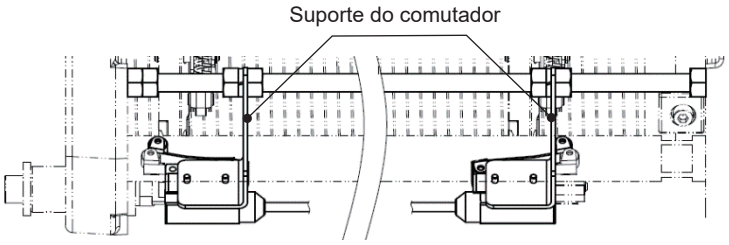


Openings from which LS harnesses come out

There are two types of Lifting limit switch: type A and type B. They differ based on the type of switch bracket they are equipped with as shown in the figure below.



(Type A: Cast switch brackets)

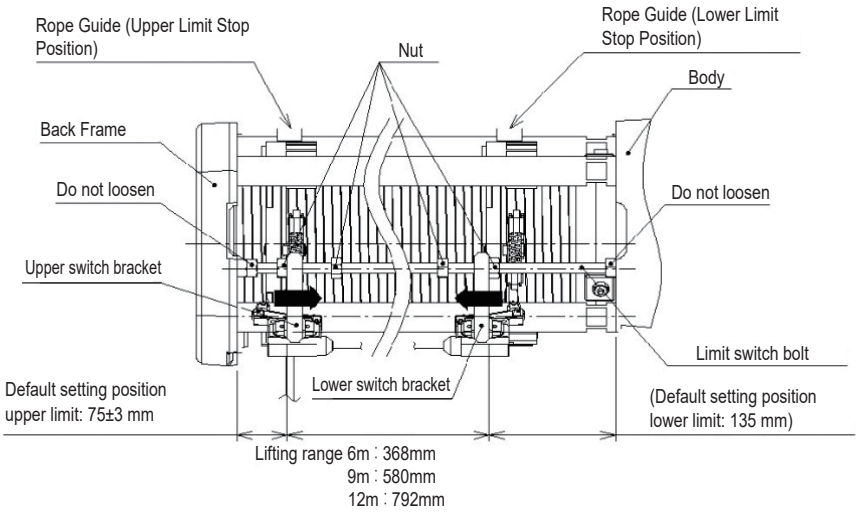


(Type B: Pressed plate switch brackets)

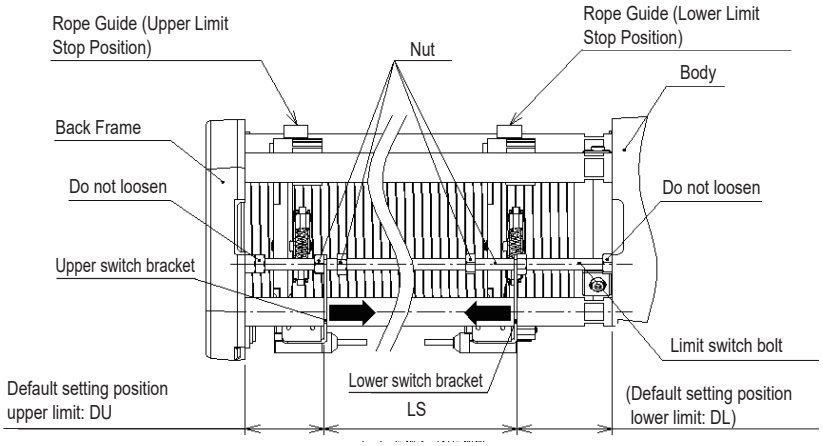
Lifting limit switch

Follow the procedures described below to adjust the device according to the type.

(6) Position Upper switch bracket and Lower switch bracket as shown in the following figure, and fix them in place by tightening the nuts.



Type A setting position



For the Type B limit switch, perform adjustments so that the dimensions DU, DL, and LS in the figure above match the values in the table below.

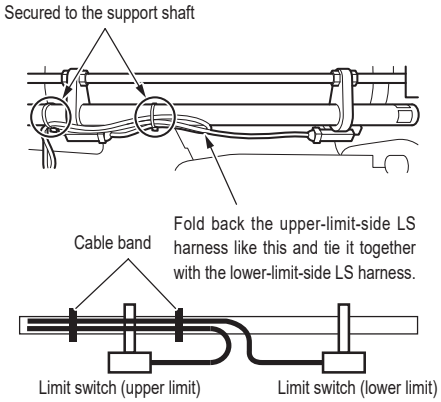
unit: mm

Limit switch type and destination		Wire rope diameter	Default setting position		Lift				
			Upper limit	Lower limit	6m	7.6m	9m	10.2m	12m
			DU	DL	LS				
Type B	For Australia	⌀9	120±3	(91)		579		791	
	Other than Australia	⌀8	93±3	(129)	356		568		780

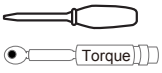
Type B setting position

For details on how to adjust the stop position, refer to “RY Series Wire Rope Hoist Owner's Manual”.

(7) As shown in the figure to the right, lay the LS harnesses such that the upper-limit-side harness and the lower-limit-side harness are of the same length, and then fix the harnesses to the support shaft by using a cable band.

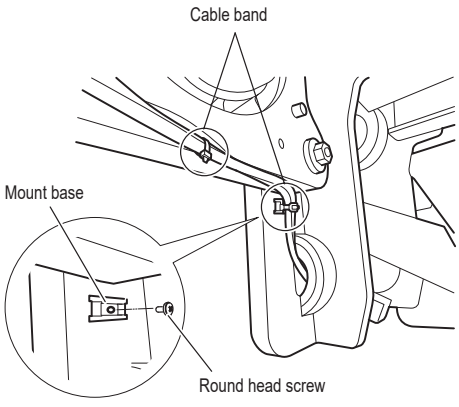


(8) Attach a mount base to the joint plate by using a round head screw, and fix the LS harnesses to it by using a cable band at the position indicated in the figure to the right.



M6 torque setting: 4 N·m

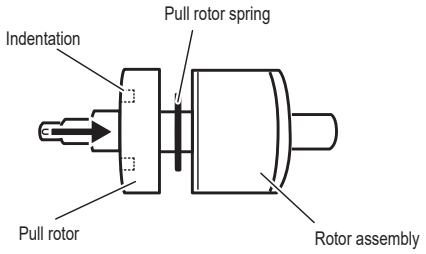
- When the harnesses are too long, you can adjust their length by loosening the cable gland on the control box and tucking part of the harnesses into the control box.



6 Lifting Motor

■ Assembling a lifting motor

(1) Fit a pull rotor spring and a pull rotor into the rotor assembly.



- Be careful not to insert the pull rotor upside down. The side with the indentations must be facing outward.

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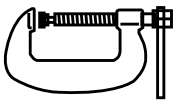
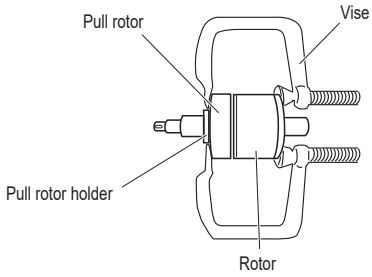
(2) Clamp both the rotor and the pull rotor with vises until the pull rotor holder is securely locked in place.



Two vises are needed.



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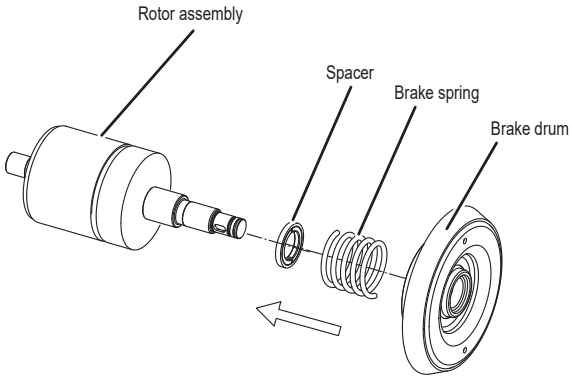
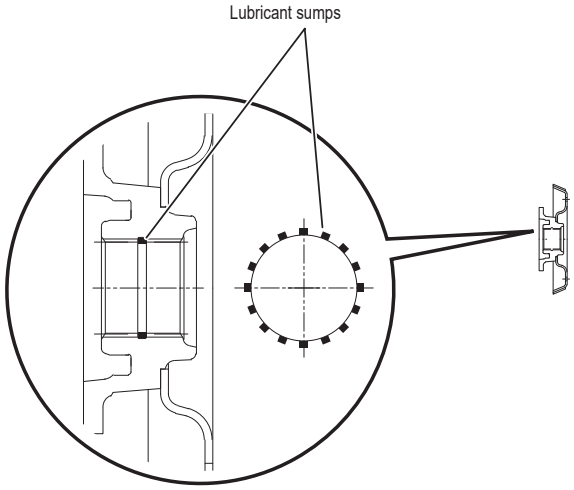
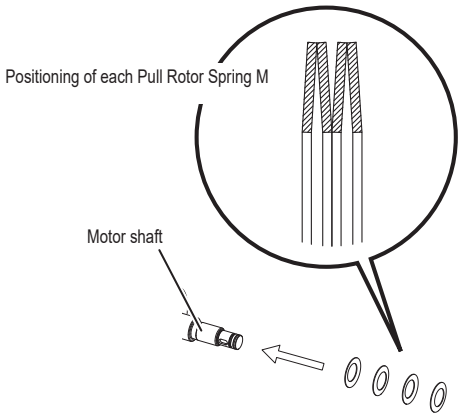
(3) Install a spacer, a brake spring, and a brake drum to the rotor assembly.
Apply lubricant to the lubricant sumps on the spline section of the brake drum.

- Lubricant: Molytherm No. 2 (molybdenum disulfide lubricant)
- Apply enough lubricant to the lubricant sumps so that, when seen from the front of the spline, the grooves on the spline seem filled with grease.

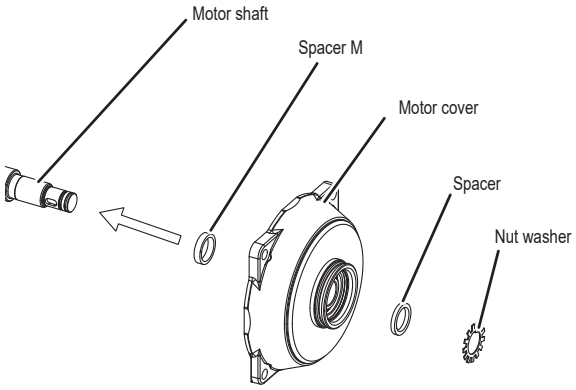




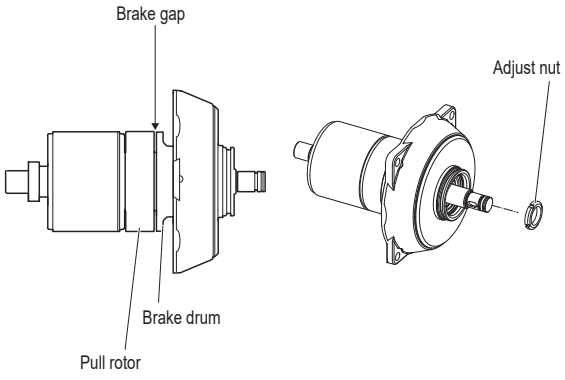
(4) Put four Pull Rotor Spring Ms on top of one another, positioning each as shown in the figure to the right.



(5) Install Spacer M and the motor cover to the motor shaft, and then install a spacer and a nut washer, in that order.



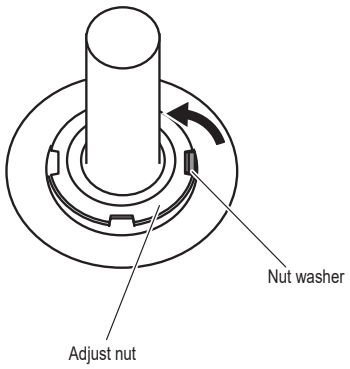
(6) Tighten the adjust nut until the brake gap (a gap between the pull rotor and the brake drum) narrows to 0.8 mm.
Measure the gap by using a thickness gauge.



(7) Bend the lugs on the nut washer so that they fit neatly inside the grooves on the adjust nut.

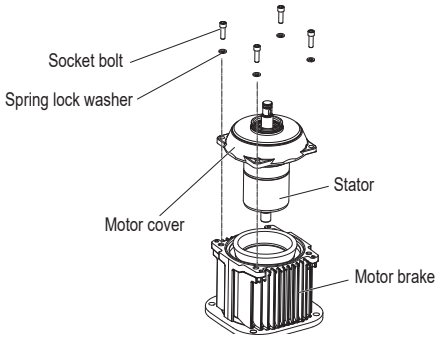
- Long-nose pliers

- When the grooves on the adjust nut are not aligned with the positions of the lugs on the nut washer, slightly turn the adjust nut in the tightening direction until the lugs are aligned with the grooves closest to them.

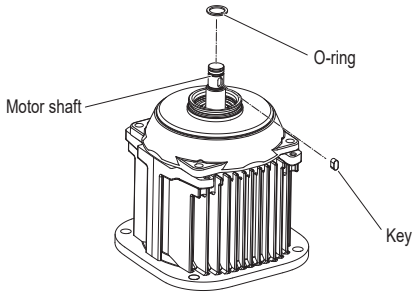


(8) Fix the motor brake and the stator in place by using four socket bolts and four spring lock washers.

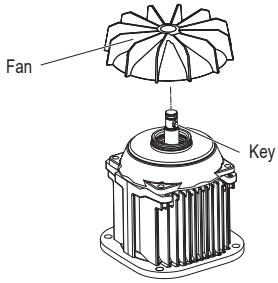
M12 torque setting: 60 N·m



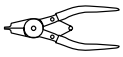
(9) Install a key to the motor shaft and install an O-ring.

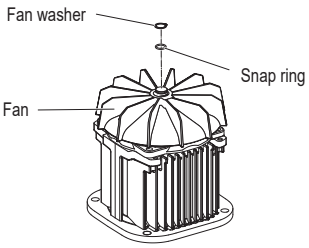


(10) Install a fan to the motor shaft, making sure that the groove on the fan is aligned with the key on the motor shaft.

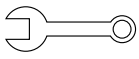


(11) Install a fan washer and a snap ring.

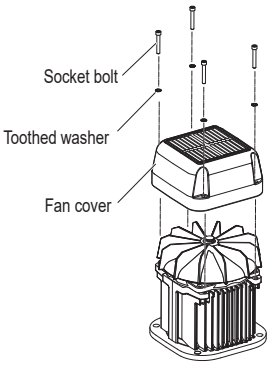




(12) Fix the fan cover with four socket bolts and four toothed washers.

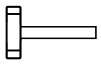


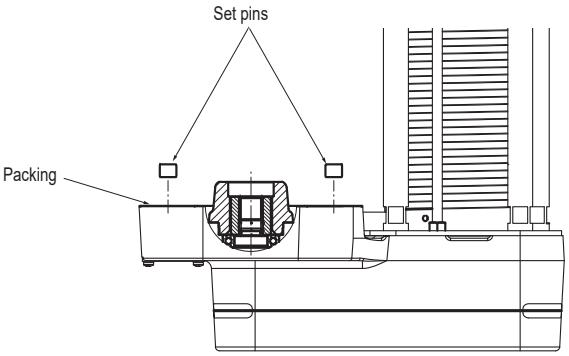
M8 torque setting: 18 N·m



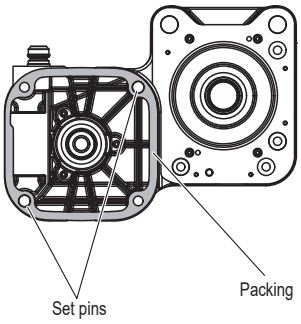
■ Installing the lifting motor

(1) Install set pins to the surface of the gear box where the lifting motor is to be installed, by lightly tapping on them with a plastic hammer.



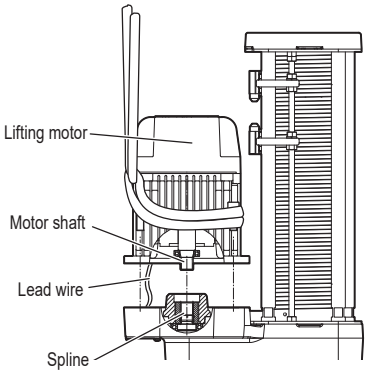


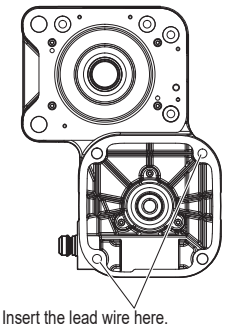
(2) Install a packing to the gear box, making sure that the pins on the gear box are aligned with the holes on the packing.



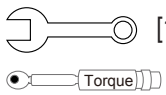
(3) While suspending the lifting motor with a fiber sling, install the lifting motor to the gear box, making sure that the motor is correctly positioned and that the motor shaft is aligned with the spline on the pinion subassembly.

- During installation, hold the motor frame with the side having a spring pin inserted into it facing down.
- Be careful not to allow the lead wire from the motor to get caught between parts during installation.
- Insert the round-terminal end of the lead wire from the direction shown in the lower figure on the right.
- Before installing the lifting motor, apply lubricant to the spline section.
  Lubricant: Moly PS Grease No.2

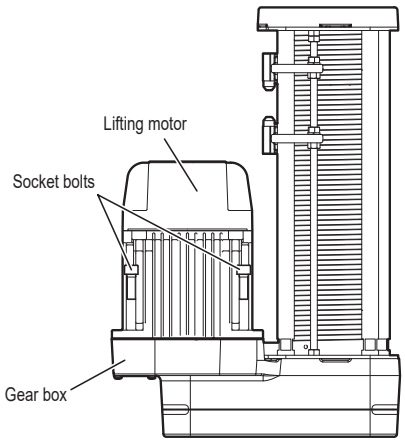




(4) Fix the lifting motor to the gear box by using four socket bolts.



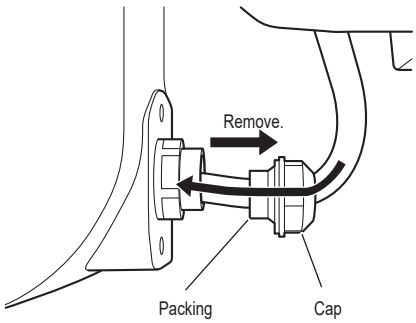
M12 torque setting: 120 N·m



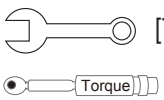
■ Installing the lifting motor harness

• (200 V-03S, 03H, 05S, 400 V-03S, 03H, 05S, 05H)

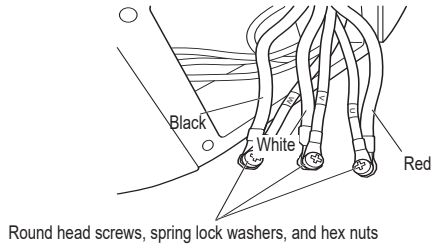
(1) Remove the cap from the cable gland, and pass the lifting motor harness through the removed cap and then the cable gland.



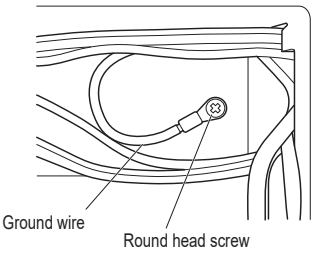
(2) Secure the ground wire (green/yellow), which is one of the four lead wires of the lifting motor harness, to the inside of the terminal box with a screw. Connect the remaining three lead wires (red, white, and black) with the lead wires (with tubes that have U, V, and W markings on them) extending from the lifting motor in combinations of red-U, white-V, and black-W, by using round head screws, spring lock washers, and hex nuts.



M4 torque setting: 1 N·m
M5 torque setting: 2.5 N·m

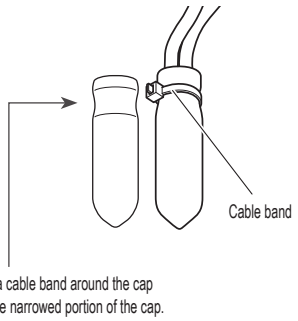


Round head screws, spring lock washers, and hex nuts

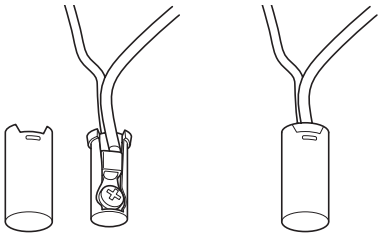


(3) Place an insulated cap on each of the three pairs of connected lead wires, and tie a cable band around the cap at the portion indicated in the figure to the right.

- When hard plastic caps are used, there is no need to tie a cable band around the cap.

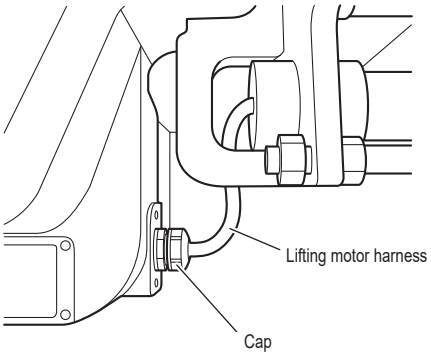


Tie a cable band around the cap
at the narrowed portion of the cap.

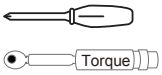


(4) Tightly screw in the cap onto the cable gland to fix the lifting motor harness in place.

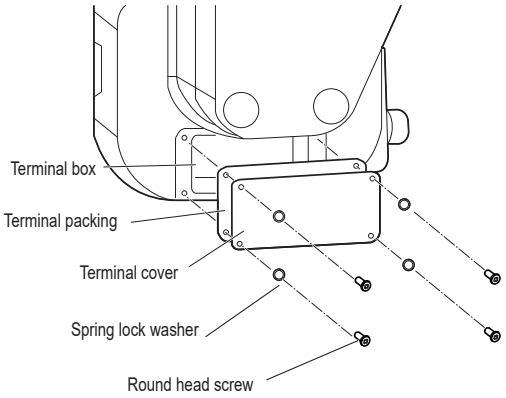
- When fixing the harness in place, make sure that it has the right degree of slackness, as indicated in the figure to the right.



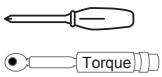
(5) Place the connected lead wires inside the terminal box, and fix the terminal packing and terminal cover to the terminal box by using four round head screws and four spring lock washers.



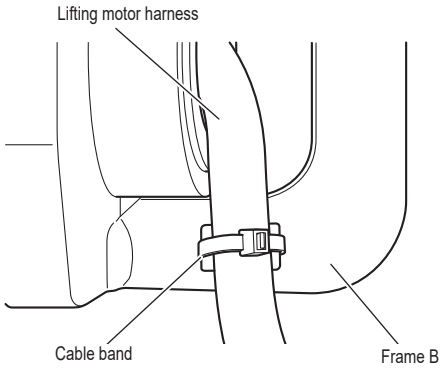
M5 torque setting: 2.5 N·m



(6) Secure the mount base for cable band to the joint plate on Frame B with a screw, and fix the lifting motor harness in place with a cable band as shown in the figure to the right.

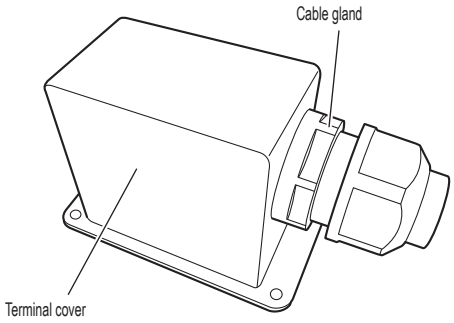


M6 torque setting: 4 N·m

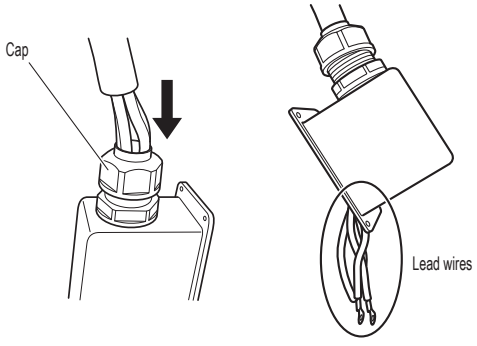


• (200 V-05H)

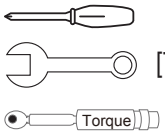
(1) Install a cable gland to the terminal cover for 200 V-05H, as shown in the figure to the right.



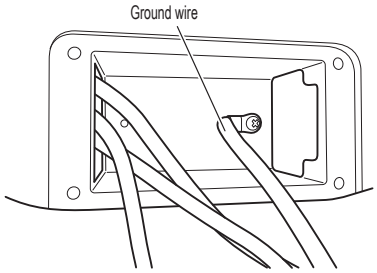
(2) Loosen the cap on the cable gland, and pass the lifting motor harness through the cap and then the cable gland.
Pull out enough length of lead wires (approximately 100 to 150 mm) for wiring, as shown in the figure to the right.

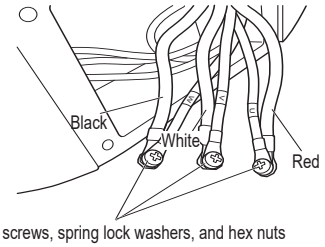


(3) Secure the ground wire (green/yellow), which is one of the four lead wires of the lifting motor harness, to the inside of the terminal box with a screw. Connect the remaining three lead wires (red, white, and black) with the lead wires (with tubes that have U, V, and W markings on them) extending from the lifting motor in combinations of red-U, white-V, and black-W, by using round head screws, spring lock washers, and hex nuts.



M4 torque setting: 1 N·m
M5 torque setting: 2.5 N·m

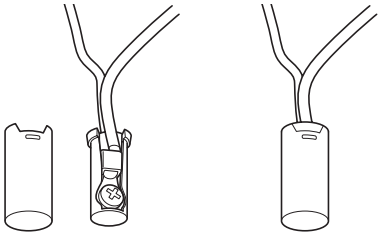


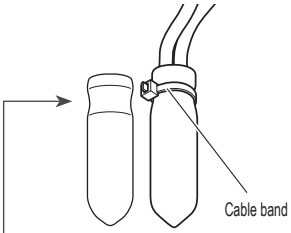


Round head screws, spring lock washers, and hex nuts

(4) Place an insulated cap on each of the three pairs of connected lead wires, and tie a cable band around the cap at the portion indicated in the figure to the right.

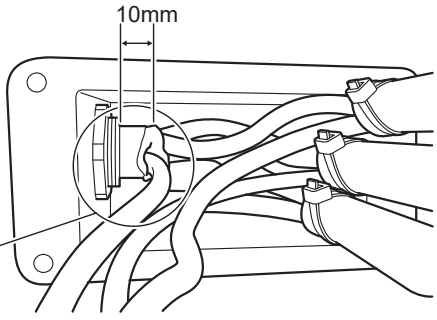
- When hard plastic caps are used, there is no need to tie a cable band around the cap.



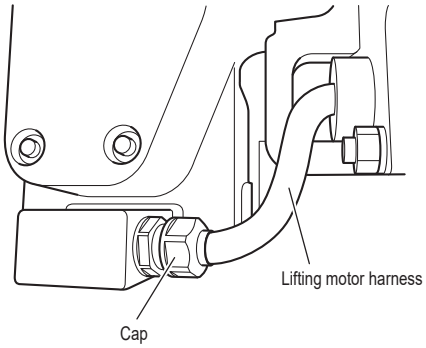


Tie a cable band around the cap at the narrowed portion of the cap.

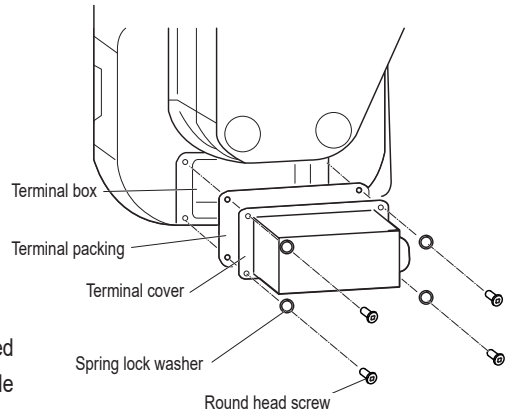
(5) After making sure that the end of the lifting motor harness is protruding approximately 10 mm from the end of the cable gland, as shown in the figure to the right, screw in the cap onto the cable gland to fix the harness in place.



Length of the lifting motor harness protruding from the cable gland



(6) Place the connected lead wires inside both the terminal box and the terminal cover, and install the terminal cover and the terminal packing to the terminal box with four round head screws and four spring lock washers.

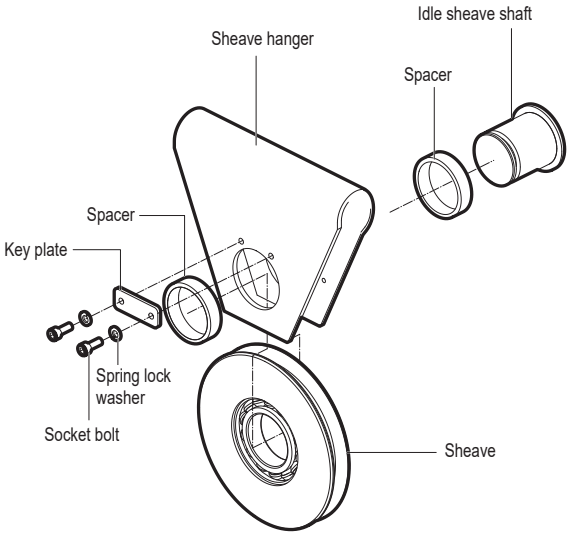


- If, after installation, it turns out that the length of the exposed harness is too long, loosen the cap on the cable gland inside the control box to adjust the length of the harness.

7 Idle Sheave

■ Assembling the idle sheave

(1) Slide a spacer, a sheave hanger, and then a sheave onto the idle sheave shaft.



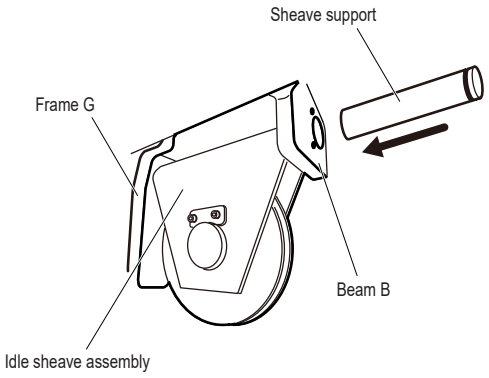
(2) Align a key plate to the groove on the idle shave shaft, and then fix it in place by using two socket bolts and two spring lock washers.

[5mm]

■ Installing the idle sheave

(1) Install the sheave support to the idle sheave assembly, Beam B, and Frame G.

- The side with the key plate attached to it must be facing inward.

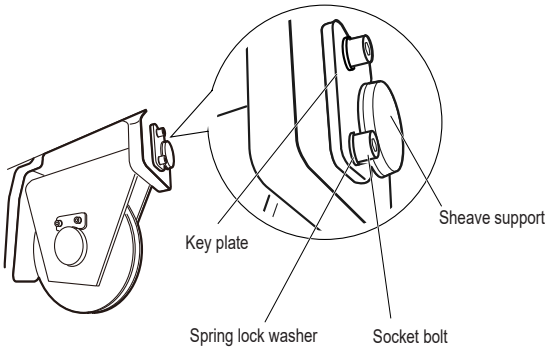


(2) Align a key plate to the groove on the sheave support, and then fix it in place by using two socket bolts.

[5mm]

Torque

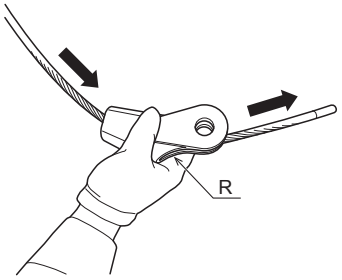
M6 torque setting: 8 N·m



8 Anchorage

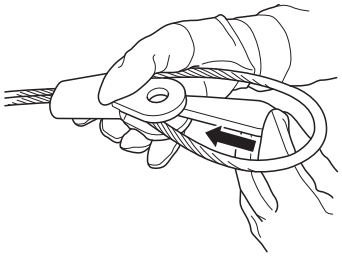
■ Assembling the anchorage

(1) Draw a wire rope through a sheave hanger. Pay attention to the position of the sheave hanger (remember to draw a wire rope through the side that has no R attached to it).

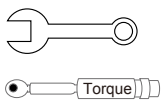


(2) Insert a cotter.

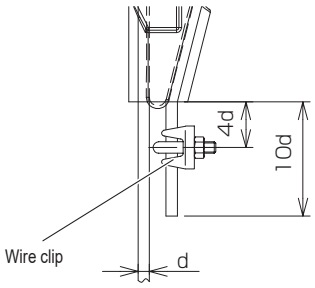
(3) Draw a wire rope through a gap between the cotter and the sheave hanger.



(4) Fix a wire clip to the rope end.



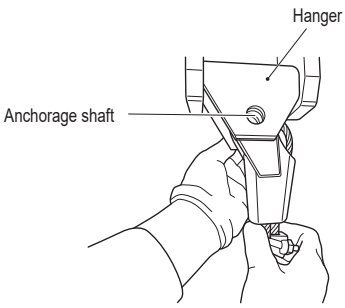
Torque setting: 9 N·m



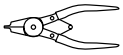
- The distance between the lower end of the sheave hanger and the position of the secured wire clip must be four times the wire rope diameter. Furthermore, the length of the wire rope extending beyond the wire clip must also be four times the wire rope diameter. Pull hard on the rope to prevent the cotter from coming loose.

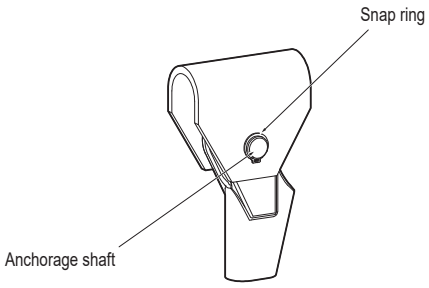
(5) From the inner side, insert an anchorage shaft into the part fixing the rope end in place on the main unit.

- Remove kinks from the wire rope, and then with the sheave hanger positioned as shown in the figure to the right, insert it into the hanger.



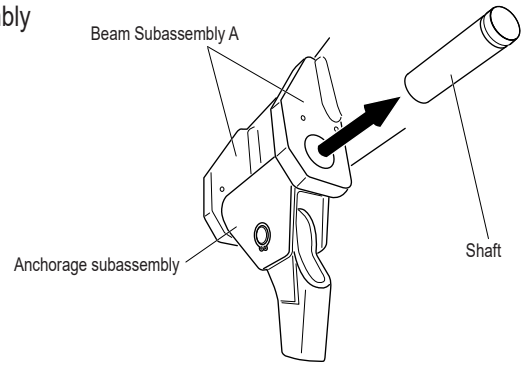
(6) Install a snap ring to the anchorage shaft.





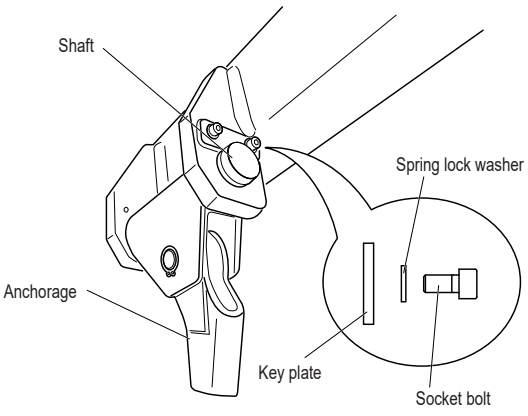
■ Installing the anchorage

(1) Install the shaft of the anchorage to Beam Subassembly A and the anchorage subassembly.



(2) Align a key plate to the groove on the shaft of the anchorage, and then fix it in place by using two socket bolts and two spring lock washers.

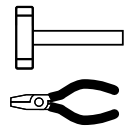
M6 torque setting: 8 N·m

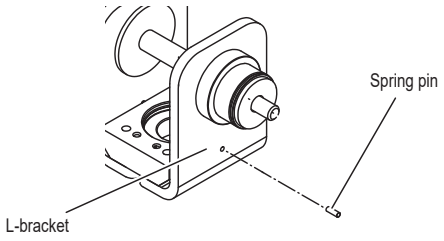


9 Hook Block

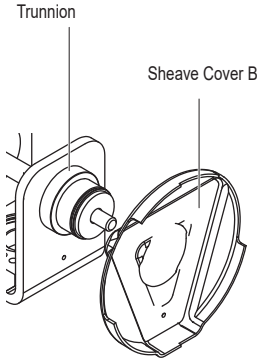
■ Assembling the hook block

(1) Press the spring pin into the L-bracket.

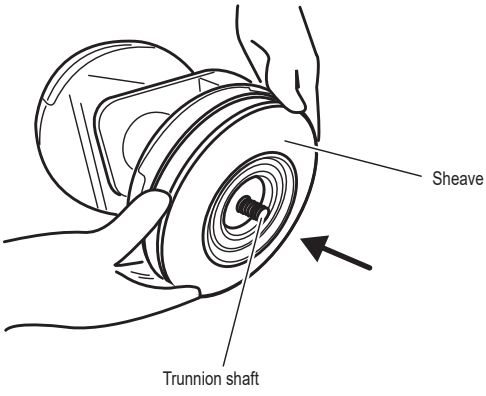




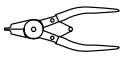
(2) Fit Sheave Cover B onto the trunnion.

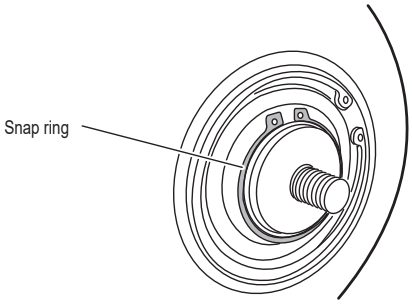


(3) Slide the sheave onto the trunnion shaft.

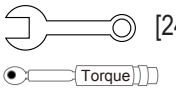


(4) Fix the sheave in place with a snap ring.

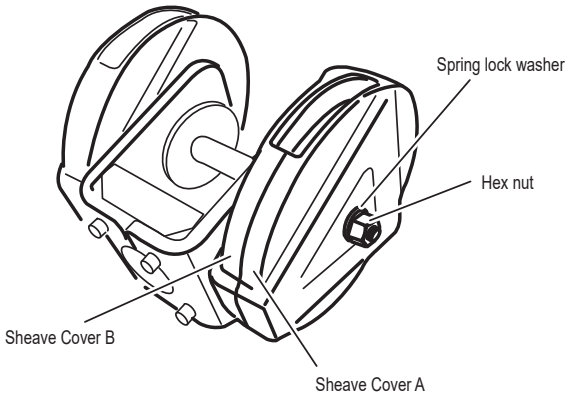




(5) Fix Sheave Cover A and Sheave Cover B in place by using a hex nut and a spring lock washer.



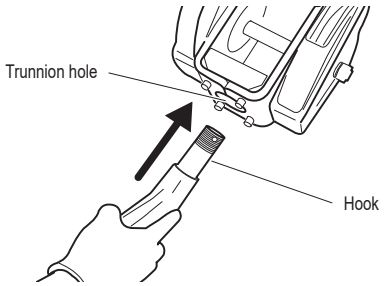
M16 torque setting: 153 N·m



(6) Install all the parts on the opposite side as well by following the same procedure.

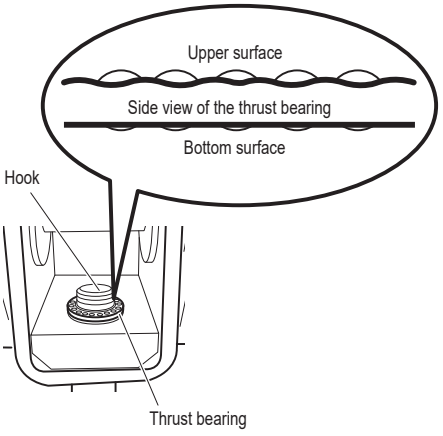
Follow steps (1) through (5).

(7) Insert the hook into the trunnion hole.



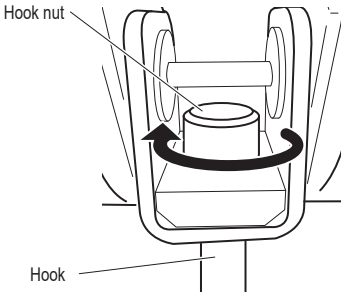
(8) Fit a thrust bearing onto the head of the hook.

- Make sure that the bearing is correctly positioned when you fit it onto the hook.

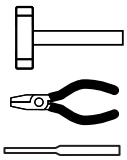


(9) Screw in the hook nut onto the head of the hook.

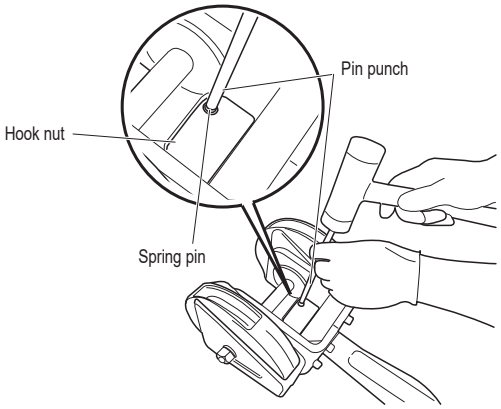
- Confirm that the hook turns.
- Before installing the hook nut, apply lubricant to the thrust bearing.
  Lubricant: EPNOC-AP(N)-2



(10) Align the hole on the hook nut with the hole on the hook, and insert a spring pin into the hole.



- Prepare a hook and a hook nut whose holes have been drilled together.



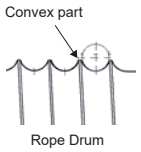
10 Wire rope

■Installing Wire Rope

⚠ WARNING

Mandatory

- **Wind the Wire Rope following the wire rope groove on the Rope Drum.**
  Winding the Wire Rope over the convex part of the wire rope groove (refer to the figure on the right) will not only impair the proper functionality and performance of the Wire Rope Hoist, but could also cause the Wire Rope Hoist to malfunction, resulting in a serious accident.



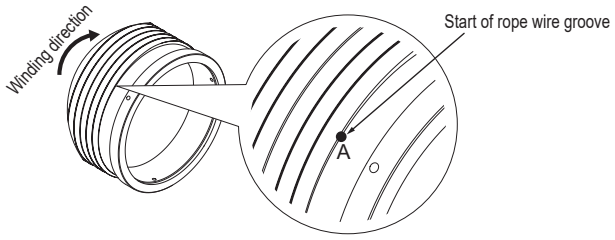
(1) Unpack the Replacement Wire Rope. Straighten the Replacement Wire Rope into a straight untwisted line in a wide space.

* NOTE: Replace the Wire Rope in a straightened state. If the Wire Rope is installed in a twisted state, it moves violently or floats away from the Rope Drum when wound on it.

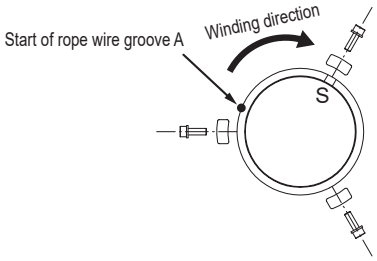
(2) Fix the end of the Wire Rope to the Rope Drum with the socket bolt and Wire Clamp.

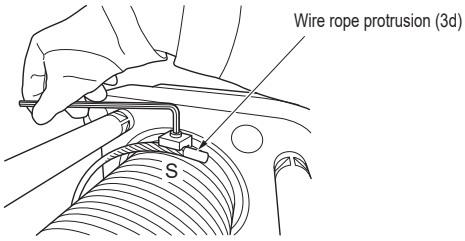
2-1. Check the position where you will first fix the Wire Rope.

- Check the location where the rope wire groove begins. (Refer to the figure below.)



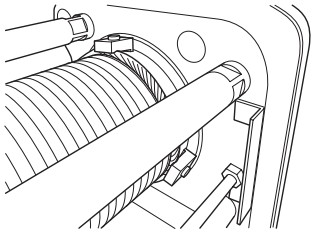
- The tapped hole closest to the start of the wire rope groove (A) in the winding direction is the position where you will first fix the Wire Rope (S). (Refer to the figure below on the left.)





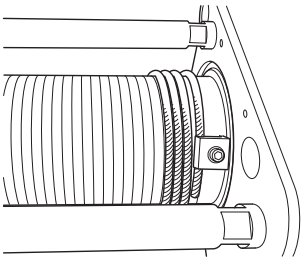
2-2. Use the Wire Clamp to fix the Wire Rope in the position (S) you checked in Step 2-1. (Refer to the figure above on the right.)
The amount that the Wire Rope protrudes from the Wire Clamp must be approximately three times the wire rope diameter.
Tightening torque: 18 N-m (in all three locations)

(3) Perform the lifting operation to rotate the Rope Drum slowly by approximately 120 degrees, and then fix the Wire Rope at the next position.



(4) In the same manner as (3), fix the Wire Rope to the remaining position. (The Wire Rope must be fixed to three positions in total.)

(5) After fixing the Wire Rope, rotate the Rope Drum slowly, and place the Wire Rope in the Rope Drum's groove from the groove's start point. When doing so, lightly pull on the Wire Rope while rotating the Rope Drum in the lifting direction to prevent the Wire Rope from floating as you place the Wire Rope in the groove of the Rope Drum.



(6) Wind the Wire Rope around the Rope Drum to some extent, and then apply grease to the locations below.

Grease:
Wirol R or Wirol Aerosol R (TOKYO ROPE MFG. CO., LTD.)

Applied locations:

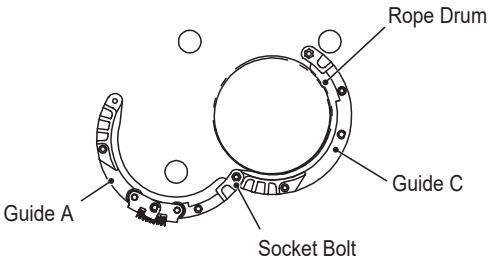
- Roller part of the Rope Guide
- Convex part engaged with the Rope Drum
- Rope Drum groove

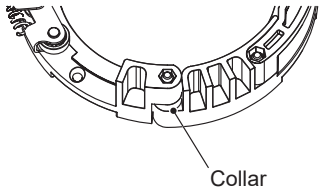
For details about the Rope Guide structure, refer to page 11.

(7) Attach the Rope Guide to the Rope Drum by following the procedure described below.

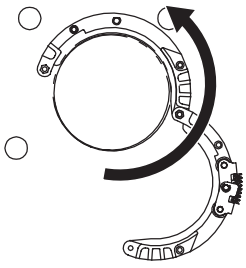
7-1. Loosely connect Guide A to Guide C with a socket bolt, and place Guide C along the Rope Drum as shown in the figure on the right.

CAUTION: For the Type A Rope Guide, put the Collar in the part connecting Guide A to Guide C.

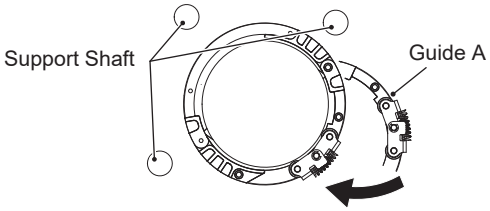




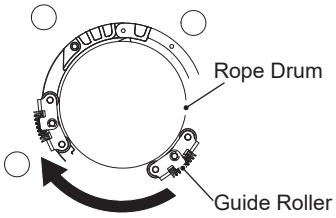
7-2. As shown in the figure on the right, rotate Guide A and Guide C along the Rope Drum with Guide C placed along the Rope Drum.



7-3. Remove Guide C from the Rope Drum at a position where Guide C has no interference with the Support Shaft.

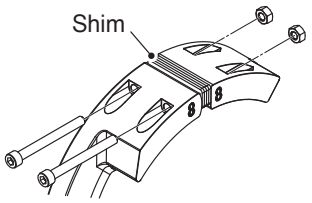


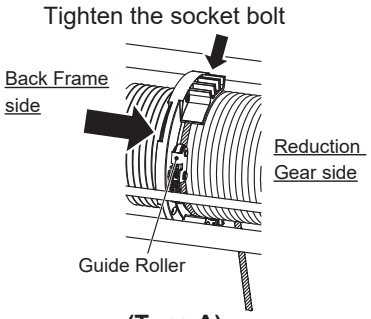
7-4. As shown in the figure on the right, rotate Guide A and Guide C along the Rope Drum using the Guide Roller as a guide.



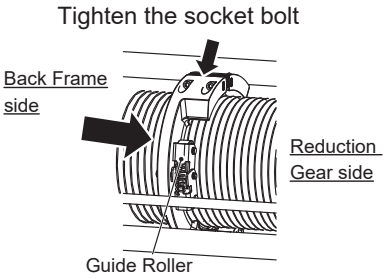
(8) Move Guide A toward the Reduction Gear side until its Guide Roller lies on the Wire Rope on the Rope Drum, and tighten the socket bolt.
Next, retighten the socket bolt you loosely connected Guide A to Guide C in Step 7-1.
(Tightening Torque : 6 N•m)

CAUTION: For the Type B Rope Guide, put the Shim in the part connecting Guide A to Guide C.



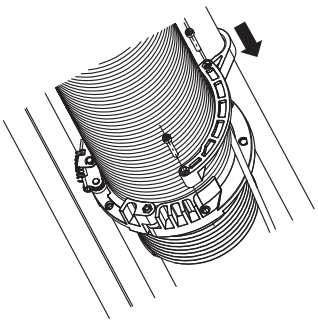


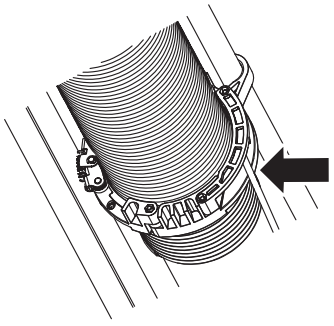
(Type A)



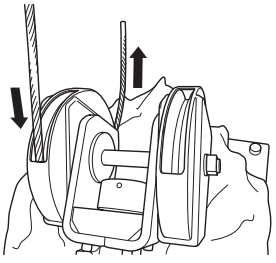
(Type B)

(9) Hook the Guide B on the Support Shaft as shown in the figure and fasten the Guide B with socket bolts.
(Tightening Torque : 6 N•m)
Pay attention to attach the Guide B so that the Wire Rope comes out from the gap between the Guide C and Guide B.

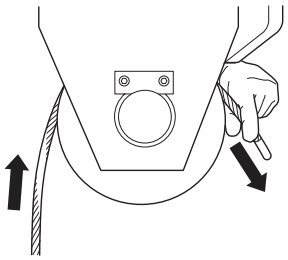




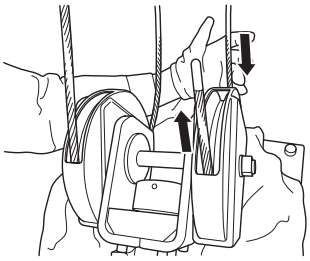
(10) Paying attention to a passing position, pass the rope end through the Hook Sheave.



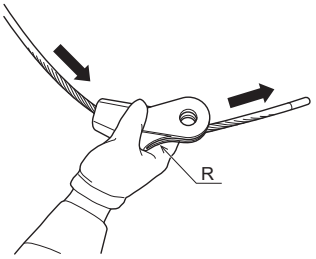
(11) Paying attention to a passing position, pass the Wire Rope through the Idle Sheave.



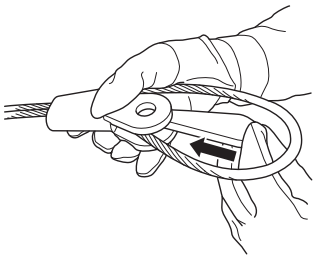
(12) Pass the Wire Rope through the other Hook Sheave of the Hook Block.



(13) Pass the Wire Rope through the socket.
Be careful about the position. (Pass the Wire Rope from the side not having an arc shape [R-shape].)

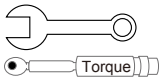


(14) Insert the cotter.



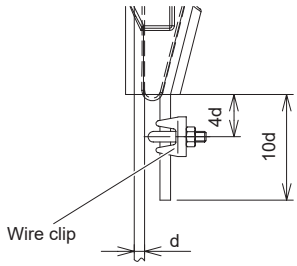
(15) Pass the Wire Rope from the gap between the cotter and the socket.

(16) Fix the Wire Clip to the rope end.



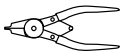
Torque setting: 9 N·m

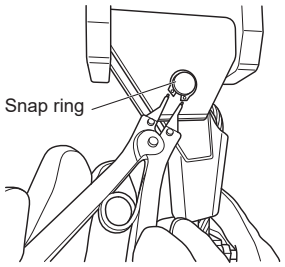
Fix the Wire Clip at a distance of four times the wire rope diameter from the lower end of the socket, so that the Wire Rope of a length of four times the wire rope diameter is exposed.
Pull the Wire Rope sufficiently before fixing so that the Wire Rope does not float away from the cotter.
(Tightening Torque of the Wire Clip: 9 N•m)



(17) Insert the hanger support shaft from inside into the rope end fixing part of the Main Unit, and fix the socket.
When this is done, untwist the Wire Rope and insert the socket into the hanger in the direction shown in the right figure.

(18) Firmly fix the tip of the fixed end shaft with the snap ring.





(19) In order to securely attach the cotter to the socket after installing the Hoist on the rail, lift the Hook Block from the floor. Then, raise the block by approx. 50 mm manually and drop it two or three times.

⚠ WARNING

Mandatory

- **After replacing the Wire Rope, check that the Rope Guide moves smoothly under no load, and the Wire Rope moves without obstruction.**
  Failure to comply with this instruction may not only result in failure to obtain normal function and performance of the hoist, but may also cause failure of the hoist and may lead to serious accidents.

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