Dealer's Manual

ROAD	MTB	Trekking
City Touring/ Comfort Bike	URBAN SPORT	E-BIKE

SHIMANO Nexus

SG-3R40
SG-3R45
SG-3R75
SG-3R75-A
SG-3R75-B
SG-3D55
SG-3C41

SL-3S35-E
SL-3S41-E
SL-3S42-E
SL-C2010-3

SM-BC03
SM-BC04
SM-BC06

CJ-NX40

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IMPORTANT NOTICE

- **This dealer's manual is intended primarily for use by professional bicycle mechanics.**
  Users who are not professionally trained for bicycle assembly should not attempt to install the components themselves using the dealer's manuals. If any part of the information on the manual is unclear to you, do not proceed with the installation. Instead, contact your place of purchase or a local bicycle dealer for their assistance.
- Make sure to read all instruction manuals included with the product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All manuals and technical documents are accessible online at https://si.shimano.com.
- For consumers who do not have easy access to the internet, please contact a SHIMANO distributor or any of the SHIMANO offices to obtain a hardcopy of the User's Manual.
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

For safety, be sure to read this dealer's manual thoroughly before use, and follow it for correct use.

The following instructions must be observed at all times in order to prevent personal injury and physical damage to equipment and surroundings. The instructions are classified according to the degree of danger or damage which may occur if the product is used incorrectly.

DANGER

Failure to follow the instructions will result in death or serious injury.

WARNING

Failure to follow the instructions could result in death or serious injury.

CAUTION

Failure to follow the instructions could cause personal injury or physical damage to equipment and surroundings.

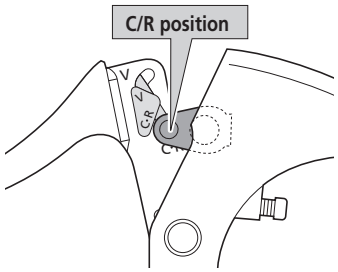
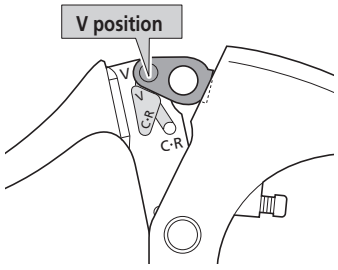
TO ENSURE SAFETY

⚠ WARNING

- **Be sure to follow the instructions provided in the manuals when installing the product.**
  Only use SHIMANO genuine parts. If a component or replacement part is incorrectly assembled or adjusted, it can lead to component failure and cause the rider to lose control and crash.
-  Wear approved eye protection while performing maintenance tasks such as replacing components.

Be sure to also inform users of the following:

- Because each bicycle may handle slightly differently depending on the model, be sure to learn the proper braking technique (including brake lever pressure and bicycle control characteristics) and operation of your bicycle. Improper use of your bicycle's brake system may result in a loss of control, which could lead to serious injury due to a fall or collision.
- Use brake levers with mode switching mechanism in the combinations shown in the figures. The brake levers are equipped with a mode switching mechanism which can be used to make them compatible with cantilever brakes, roller brakes or V-BRAKE brakes with power modulator. ***If the incorrect mode is selected, it may result in either excessive or insufficient braking force, which is highly dangerous.*** Select the correct mode as shown in the figures.

Mode position		Applicable brake
C : Mode position for compatibility with cantilever brakes **R** : Mode position for compatibility with roller brakes		• Cantilever brakes • Roller brakes
V : Mode position for compatibility with V-BRAKE brakes with power modulator		• V-BRAKE brakes with power modulator

- Check that the wheels are fastened securely before riding the bicycle. You may fall or collide and be seriously injured.

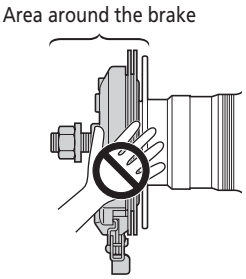
For Installation to the Bicycle, and Maintenance:

- When securing the brake arm to the frame, be sure to use an arm clip that matches the size of the chainstay, and securely tighten them with the clip bolt and clip nut to the specified tightening torque.
  Use a lock nut with nylon insert (self-locking nut) as the clip nut. It is recommended that SHIMANO made clip bolts, clip nuts, and arm clips be used.
  If the clip nut comes off the brake arm, or if the clip bolt or arm clip becomes damaged, the brake arm may rotate on the chainstay and cause the handlebars to jerk suddenly, or the bicycle wheel may lock and result in serious injury due to a fall or collision.
- When installing the hub to the frame, be sure to install the correct non-turn washers to the left and right sides, and securely tighten the hub nuts to the specified torques. If the non-turn washers are installed on one side only, or if the hub nuts are not tightened sufficiently, the non-turn washer may fall out, which could cause the hub axle to rotate and the cassette joint to turn, resulting in the handlebars being accidentally pulled by the gear shifting cable and an extremely serious accident.
- When using a reversed rear dropout, use a chain adjuster to remove excess slack from the chain.

⚠ CAUTION

Be sure to also inform users of the following:

- Be sure to shift the shifter one gear at a time. During shifting, reduce the pedal pressure. If you try to force operation of the shifter or suddenly perform multi-shifting while the pedals are being turned strongly, your feet may come off the pedals and the bicycle may fall over, which could result in serious injury.
  Operating the shifter to multi-shift to a light gear may also cause the outer casing to spring out of the shifter.
  This does not affect the capabilities of the shift lever because the outer casing returns to the original position after shifting.
- When the brake is used frequently, do not touch the area around the brake for at least 30 minutes after riding the bicycle. The area around the brake may become hot.



< Coaster brake specifications >

- Do not continuously apply the brakes when riding down long slopes. This will cause the internal brake parts to become very hot, weakening braking performance, as well as causing a reduction in the amount of brake grease inside the brake, which can lead to problems such as abnormally sudden braking.
- Spin the wheel and confirm that the braking force of the coaster brake is correct.

NOTICE

Be sure to also inform users of the following:

- It is possible to shift gears while pedaling lightly, but on rare occasions the pawls and ratchet inside the hub may produce some noise afterwards as part of normal gear shifting operation.
- During travel, stopping the pedals makes it easier to shift gears.
- If using a chain tensioner, use the special CS-S500 18T or 20T sprocket with chain guard. Do not use any other types of sprocket, otherwise the chain may come off the sprockets.
- For carrying out maintenance, the use of SHIMANO internal geared hub grease or a lubrication kit is recommended. If SHIMANO grease is not used, problems such as a malfunction in gear shifting may occur.
- The internal geared hub is not completely waterproof. Avoid using the hub in places where water might get inside it or using high-pressure water to clean the hub, otherwise the internal mechanism may rust.

For Installation to the Bicycle, and Maintenance:

- You should periodically wash the sprockets in a neutral detergent and then lubricate them again. In addition, cleaning the chain with a neutral detergent and lubricating it can be an effective way of extending the useful life of the sprockets and chain.
- If the chain keeps coming off the chainrings during use, replace the chainrings and chain.
- Assemble the wheel with 3x or 4x lacing, and do not spoke the wheel radially. Otherwise, the spokes or the wheel may get damaged, or noise may occur when braking.
- If the wheel becomes stiff and difficult to turn, replace the coaster brake shoes or lubricate the hub.
- In order to maintain proper performance, it is recommended that you lubricate the internal unit once a year from the start of use (or once about every 2,000 km if the bicycle is used very frequently). If the bicycle is used under harsh conditions, more frequent maintenance is required. Also, for carrying out maintenance, the use of SHIMANO internal geared hub grease or a lubrication kit is recommended. If SHIMANO grease or a SHIMANO lubrication kit is not used, problems such as a malfunction in shifting unit may occur.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend SHIMANO lubricants and maintenance products.

< Cassette joint specifications >

- The CJ-NX40 cassette joint should only be used with sprockets from 16T to 23T for outward assembling or 19T to 23T for inward assembling.
- It is recommended that the front chainring be set so that the gear ratio is about 2.3 (3R40 / 3R45 / 3D55 / 3C41) or 2.6 (3R75).
  Example In the case of 2.3: F41T to R18T, F42T to R18T
  In the case of 2.6: F41T to R16T, F42T to R16T

The actual product may differ from the illustration because this manual is intended chiefly to explain the procedures for using the product.

LIST OF TOOLS TO BE USED

LIST OF TOOLS TO BE USED

The following tools are required to assemble the product.

Tool		Tool		Tool	
	3 mm hexagon wrench		15 mm spanner		Cross head screwdriver [#2]
	4 mm hexagon wrench		17 mm spanner		TL-CT12 cable cutter
	5 mm hexagon wrench		Cross head screwdriver		TL-LR10
	10 mm spanner		Cross head screwdriver [#1]		Adjustable wrench

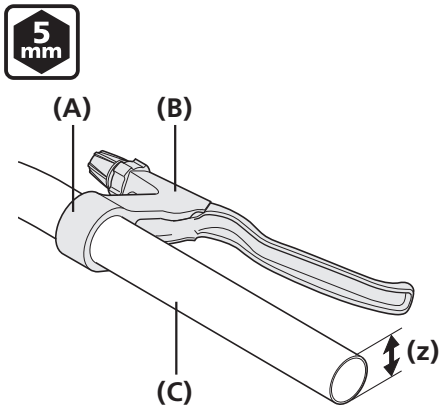
INSTALLATION

INSTALLATION

■ Installation of the lever

Installation of the REVOSHIFT shifter

1



Install the brake lever **(B)**.

(z) Use Φ22.2 mm handlebars.

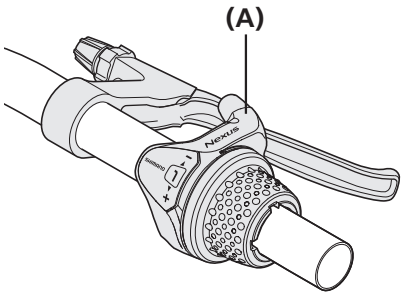
(A) Brake lever band
(B) Brake lever
(C) Handlebar

Tightening torque	
5 mm	6 - 8 N·m

TECH TIPS

Use a brake lever with a band of a thickness of 4.3 mm or less to prevent the brake lever and REVOSHIFT shifter from interfering with each other.

2

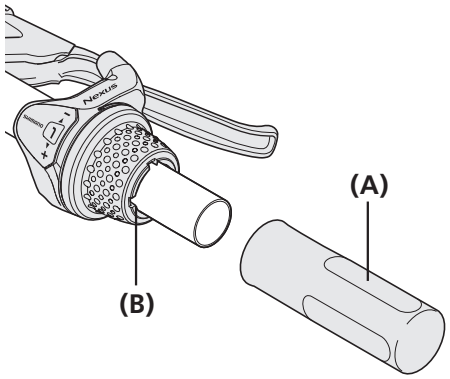


Install the REVOSHIFT shifter **(A)**.

(A) REVOSHIFT shifter

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3

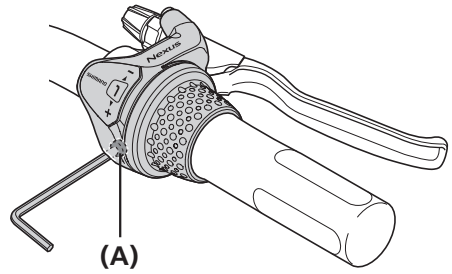


Install the half grip **(A)**.

Leave a gap **(B)** of 0.5 mm between the REVOSHIFT shifter and the half grip.

(A) Half grip
(B) Gap between REVOSHIFT shifter and half grip

4

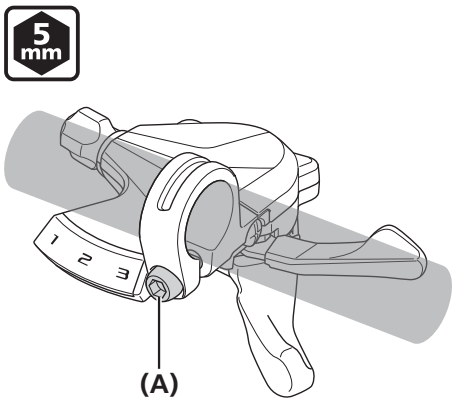


Secure the REVOSHIFT shifter.

(A) Fixing screw

Tightening torque	
3 mm	2 - 2.5 N·m
4 mm	2 - 4 N·m

Installation of the shifter (RAPIDFIRE PLUS)



Secure the shifter using the clamp screw **(A)**.

(A) Clamp screw

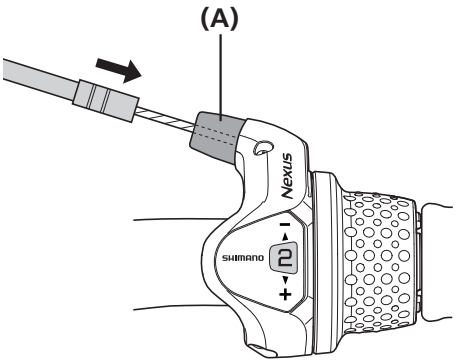
Tightening torque	
5 mm	5 N·m

■ Installation of the bell crank type hub

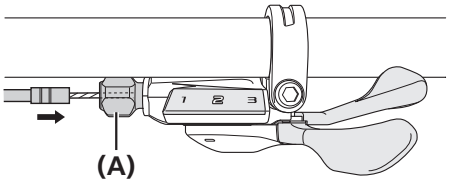
Installation of the shifting cable

1

REVOSHIFT shifter



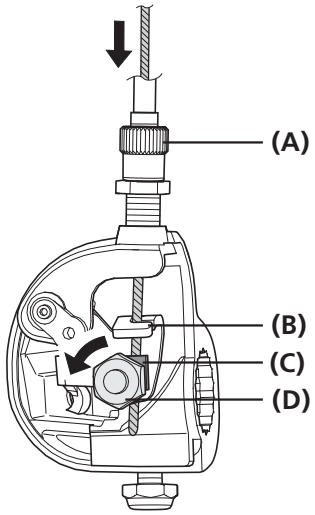
RAPIDFIRE PLUS



Insert the outer casing into the outer casing holder **(A)**.

(A) Outer casing holder

2



Fit the inner cable into the link **(B)** in the bell crank.

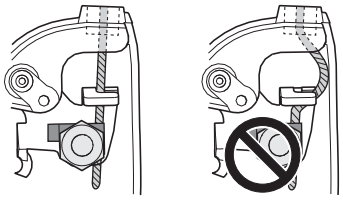
Loosen the inner cable mounting nut **(D)** on the bell crank.

Pass the inner cable through the cable adjustment barrel **(A)** along the groove in the link and between the link and inner cable mounting plate **(C)**.

(A) Cable adjustment barrel
(B) Link
(C) Inner cable mounting plate
(D) Inner cable mounting nut

NOTICE

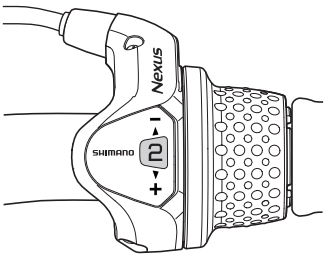
Make sure to pass the inner cable through the groove in the link.



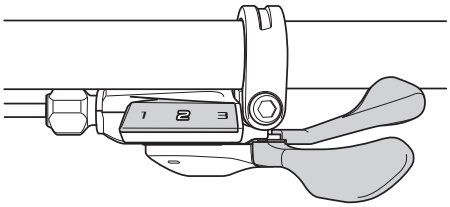
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3

REVOSHIFT shifter

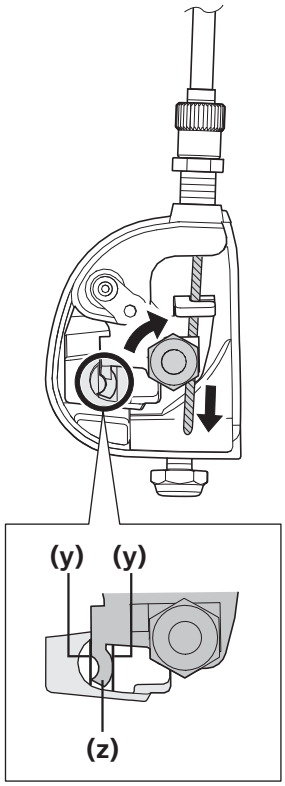


RAPIDFIRE PLUS



Set the shifter to 2.

4

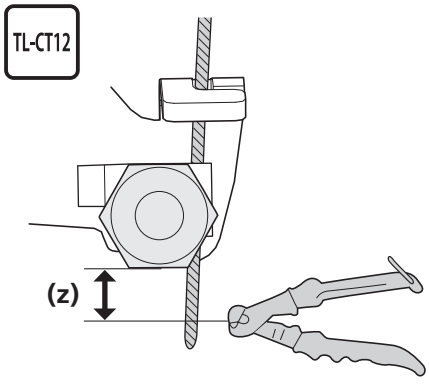


With the inner cable kept tight, tighten the inner cable mounting nut while positioning the end of the link between the two white lines on the window.

(y) White lines

(z) Position the end of the link between the white lines.

5

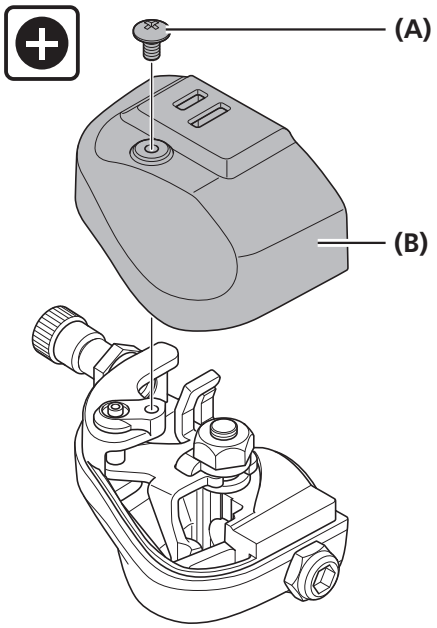


After tightening the inner cable mounting nut, cut off the excess length of inner cable.

(z) Within 4 mm

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6

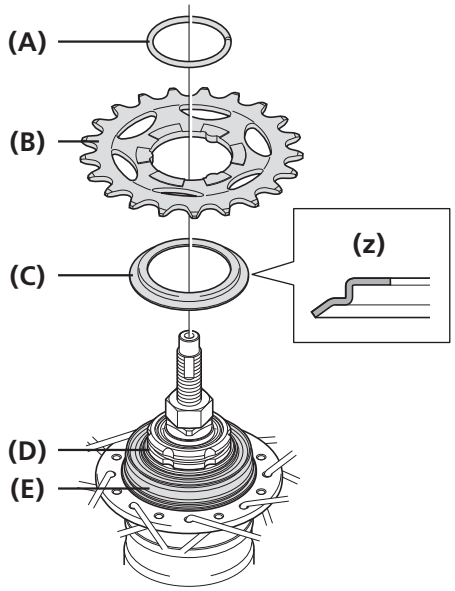


Tighten the bottom cover (B) with the bottom cover fixing screw (A).

(A) Bottom cover fixing screw
(B) Bottom cover

Tightening torque	
⊕	0.4 - 0.7 N·m (SM-BC03) 0.35 - 0.55 N·m (SM-BC04 / SM-BC06)

Installation of the sprocket to the hub (SM-GEAR)



Place the right-hand waterproof cap B **(C)** onto the driver **(D)** on the right side of the hub body.

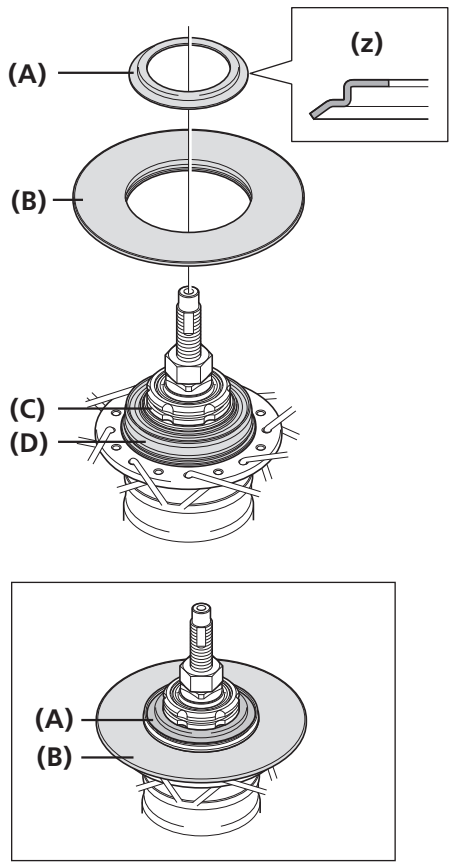
Next, install the sprocket **(B)** and secure it in place with the snap ring **(A)**.

(z) Note the direction

(A) Snap ring
(B) Sprocket
(C) Right-hand waterproof cap B
(D) Driver
(E) Right-hand waterproof cap A

Installation of the sprocket to the hub (CS-S500 sprocket with chain guard)

1



Install the chain guard **(B)** to the right-hand waterproof cap A **(D)** of the hub body, and then install the right-hand waterproof cap B **(A)** to the driver **(C)**.

(z) Note the direction

(A) Right-hand waterproof cap B
(B) Chain guard
(C) Driver
(D) Right-hand waterproof cap A

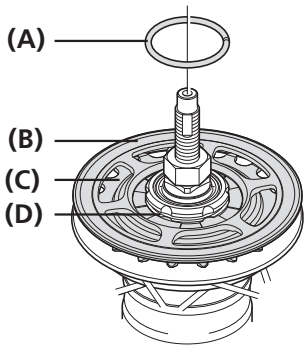
NOTICE

Do not use an inward assembling sprocket with 16T or less, otherwise the right-hand waterproof cap A will come into contact with the sprocket.

To be continued on next page

Installation of the bell crank type hub

2

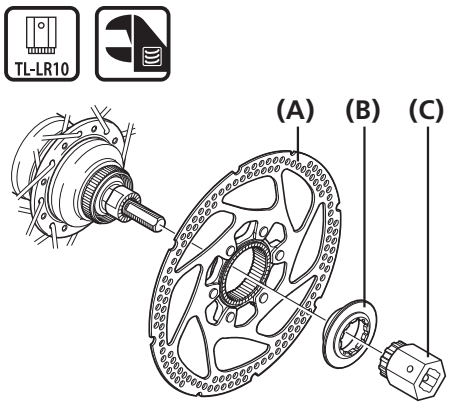


Install the CS-S500 sprocket **(C)** to the driver **(D)** on the right side of the hub body with the guard plate **(B)** facing outward, and secure it in place with the snap ring **(A)**.

(A) Snap ring
(B) Guard plate
(C) CS-S500 Sprocket
(D) Driver

Installation of the hub to the frame (for disc brakes)

1



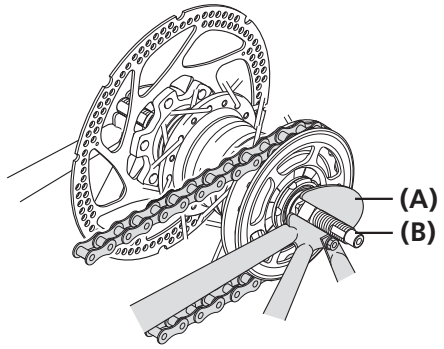
Install the disc brake rotor **(A)** to the hub.

(A) Disc brake rotor
(B) Disc brake rotor mounting ring
(C) TL-LR10

Tightening torque	
TL-LR10	40 N·m

< When not using the chain tensioner >

2

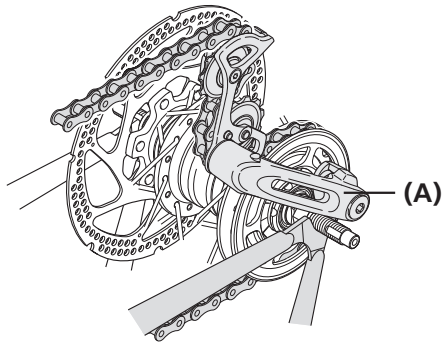


Mount the chain on the sprocket, and then set the hub axle **(B)** into the rear dropout **(A)**.

(A) Rear dropout
(B) Hub axle

< When using the chain tensioner >

2



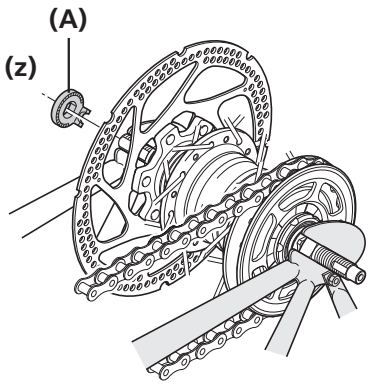
Mount the chain on the sprocket, and then set the hub axle into the rear dropout.

When using the chain tensioner **(A)**, be sure to read the attached manual for the CT-S500 chain tensioner.

(A) Chain tensioner

To be continued on next page

3



Place the non-turn washer **(A)** onto the left side of the hub axle from the outer side.

At this time, turn the hub axle and install the non-turn washer so that the protrusion of the washer fits into the groove in the rear dropout.

(z) The protrusion should be on the rear dropout side.

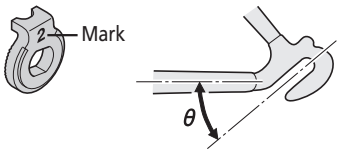
Install the non-turn washer so that the protrusion fits securely in the rear dropout groove at the front and back sides of the hub axle.

(A) Non-turn washer

NOTICE

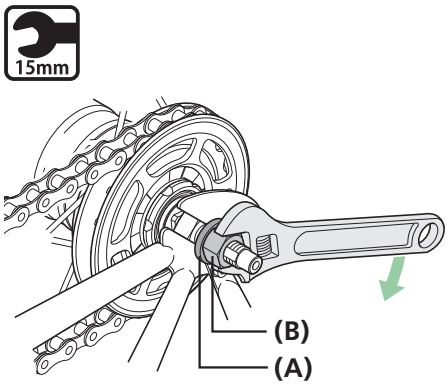
Use a non-turn washer that matches the shape of the rear dropout.

Rear dropout	Non-turn washer (for left side use)	
	Mark / Color	Size
Standard	2 / Yellow	Θ ≤ 20°
		Θ ≤ 38°
Reversed		Θ = 0°
Reversed (full chain case)		Θ = 0°
Vertical	8L / Green	Θ = 60° - 90°



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4



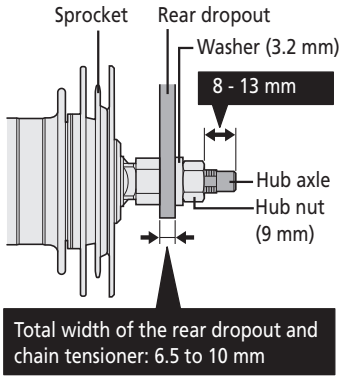
Take up the slack in the chain and secure the wheel to the frame, using a 3.2 mm washer **(A)** and a 9 mm hub nut **(B)** on the right side and a cap nut on the left side of the hub axle.

(A) Washer (3.2 mm)
(B) Hub nut (9 mm)

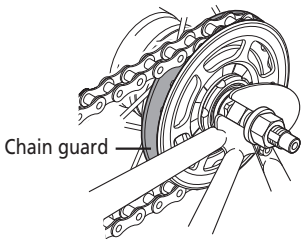
Tightening torque	
15mm	30 - 45 N·m

NOTICE

Make sure that the hub axle on the right side protrudes about 8 to 13 mm from the end face of the hub nut.

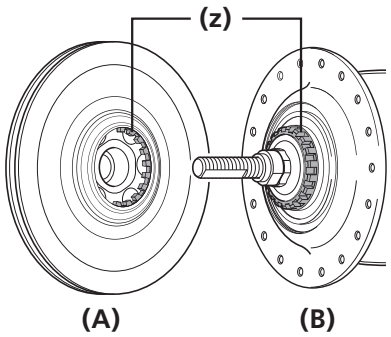


When installing the hub to the frame, the chain guard may come off, so check that the chain guard is securely installed so that it will not come off.
If installation is incomplete, noise may be generated.



Installation of the hub to the frame (for roller brakes)

1



Engage the splines on the hub body **(B)** with the splines on the INTER M brake **(A)**, and then provisionally tighten the brake unit fixing nut.

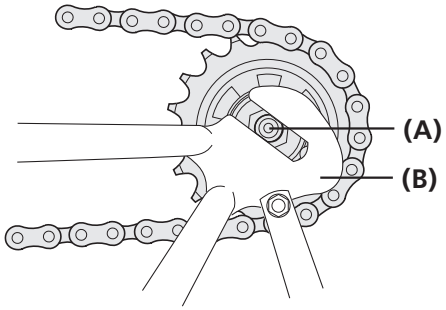
(z) Align the splines

(A) INTER M brake
(B) Hub body

NOTICE

Fully tightening the brake unit fixing nut may make the wheel difficult to turn when the arm clip is attached later.
Refer to the manual for the INTER M brake for details on installing the INTER M brake.

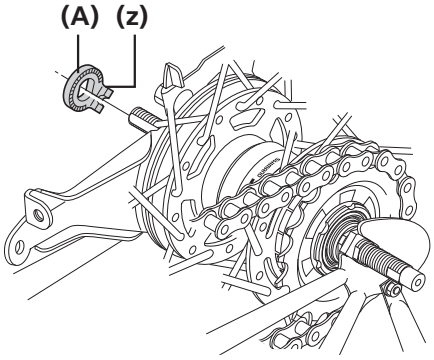
2



Mount the chain on the sprocket, and then set the hub axle **(A)** into the rear dropout **(B)**.

(A) Hub axle
(B) Rear dropout

3



Place the non-turn washer **(A)** onto the left side of the hub axle from the outer side.

At this time, turn the hub axle and install the non-turn washer so that the protrusion of the washer fits into the groove in the rear dropout.

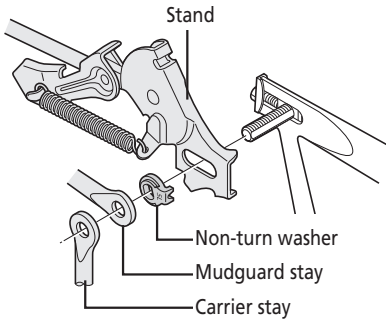
(z) The protrusion should be on the rear dropout side.

Install the non-turn washer so that the protrusion fits securely in the rear dropout groove at the front and back sides of the hub axle.

(A) Non-turn washer (gold)

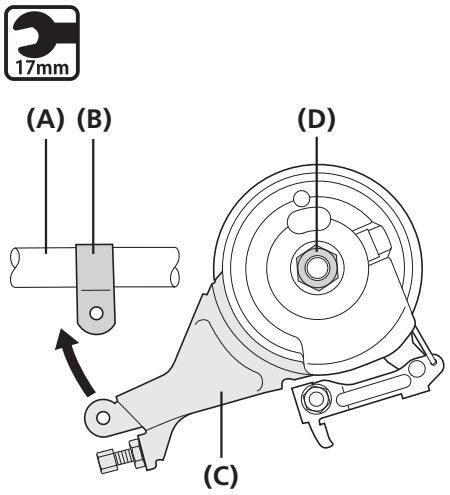
NOTICE

- When installing a stand to the hub axle, place the non-turn washer onto the stand from the outer side so that the protrusion fits into the groove in the stand.
- When installing a part such as a mudguard stay to the hub axle, place it onto the outer side of the non-turn washer.



To be continued on next page

4



Install the brake arm **(C)** of the INTER M brake to the chainstay **(A)** using the arm clip **(B)** and temporarily tighten the clip bolt and clip nut loosely.

Then, tighten the brake unit fixing nut **(D)**.

(A) Chainstay
(B) Arm clip
(C) Brake arm
(D) Brake unit fixing nut

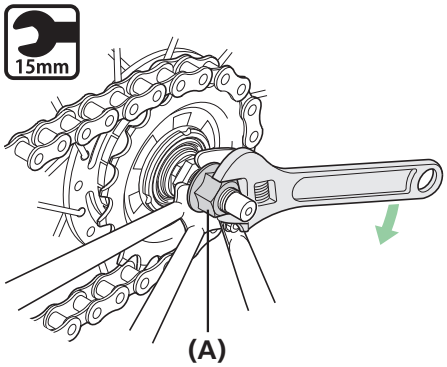
Tightening torque	
17mm	20 - 25 N·m

NOTICE

If it is impossible to temporarily attach the brake arm to the chainstay due to misalignment of the brake arm as shown in the illustration, loosen the brake unit fixing nut and turn the brake arm before temporarily attaching it to the chainstay. Then, tighten the brake unit fixing nut.

< For a 170.3 mm long axle >

5



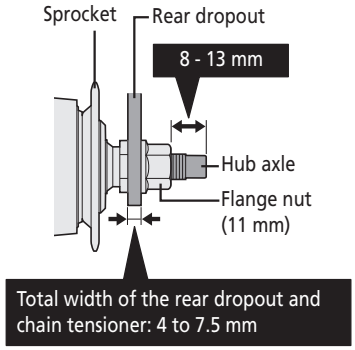
Take up the slack in the chain and secure the wheel to the frame with the flange nut **(A)**.

(A) Flange nut

Tightening torque	
15mm	30 - 45 N·m

NOTICE

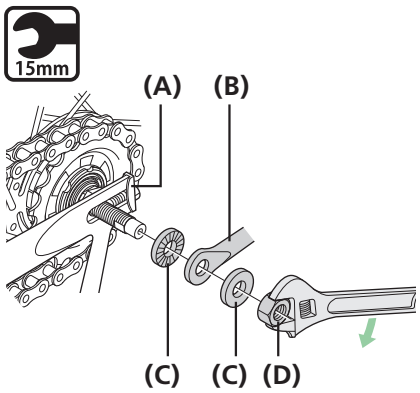
Make sure that the hub axle on the right side protrudes 8 to 13 mm from the end face of the flange nut.



To be continued on next page

< For a 189.4 mm long axle >

5

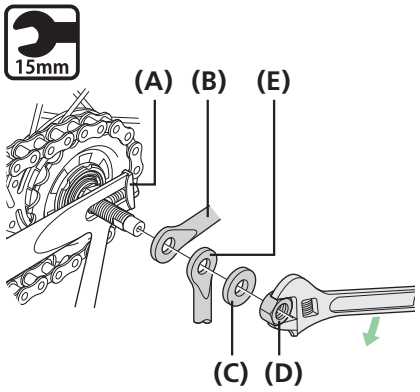


If the total width of the rear dropout and other parts such the stand and mudguard stay **(B)**, on the right side of the hub axle, is 8.5 to 11.5 mm

Secure the right side of the hub axle with two 3.2 mm washers **(C)** and a 9 mm hub nut **(D)**.

Secure the left side of the hub axle with a 3.2 mm washer and a 9 mm hub nut.

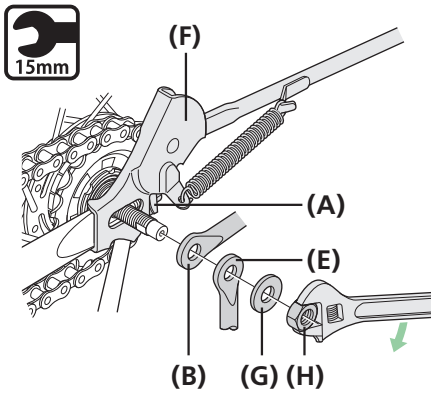
Example: Mount the parts in the order shown in the illustration.



If the total width of the rear dropout and other parts such the stand and mudguard stay, on the right side of the hub axle, is 11.5 to 14.5 mm

Secure the both side of the hub axle with a 3.2 mm washer **(C)** and a 9 mm hub nut **(D)**.

Example: Mount the parts in the order shown in the illustration.



If the total width of the rear dropout and other parts such the stand **(F)** and mudguard stay, on the right side of the hub axle, is 14.5 to 17 mm

Secure both sides of the hub axle with a 2 mm washer **(G)** and a 7 mm hub nut **(H)**.

Example: Mount the parts in the order shown in the illustration.

(A) Chain tensioner
(B) Mudguard stay
(C) Washer (3.2 mm)
(D) Hub nut (9 mm)
(E) Carrier stay
(F) Stand
(G) Washer (2 mm)
(H) Hub nut (7 mm)

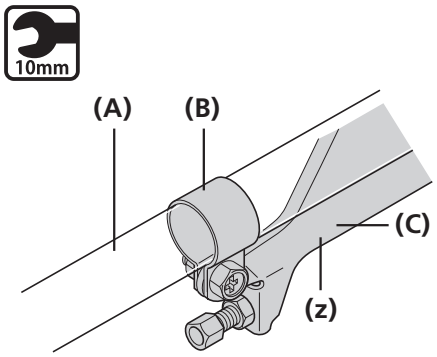
Tightening torque	
15mm	30 - 45 N·m

NOTICE

In any of the cases described in this step, make sure that the hub axle on the right side protrudes 8 to 13 mm from the end face of the hub nut.

To be continued on next page

6



Fix the brake arm **(C)** of the INTER M brake securely to the chainstay **(A)** with the arm clip **(B)**.

(z) If excessive force is applied to the brake arm, the wheel will become difficult to turn.

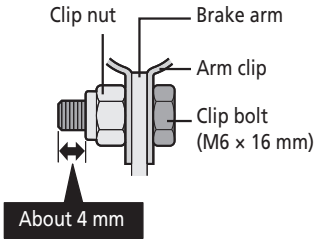
Be careful not to apply excessive force when installing.

(A) Chainstay
(B) Arm clip
(C) Brake arm

Tightening torque	
10mm	2 - 3 N·m

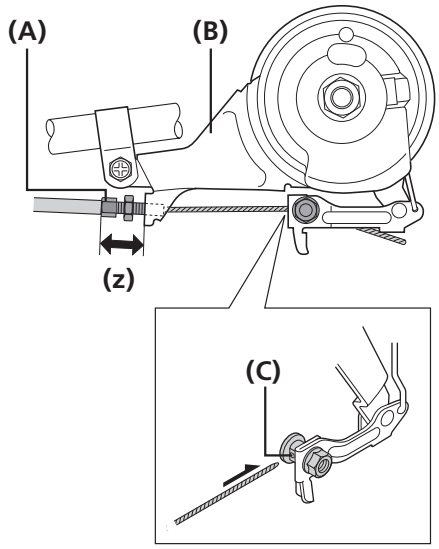
NOTICE

- When installing the arm clip, securely tighten the clip bolt while holding the clip nut with a 10 mm spanner.
- After installing the arm clip, check that the clip bolt protrudes about 4 mm from the end face of the clip nut.



Installing the brake cable

1

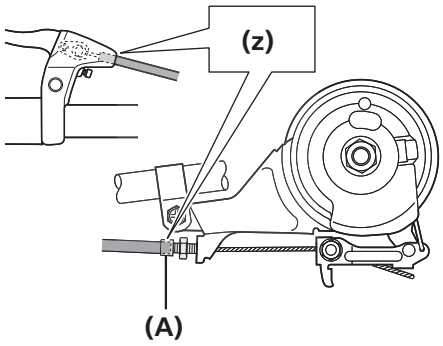


Place the cable adjustment barrel **(A)** so that it is 15 – 17 mm from the end of the brake arm **(B)**, and then pass the inner cable through the cable adjustment barrel of the brake arm and then through the hole in the inner cable fixing bolt **(C)**.

(z) Should be 15 – 17 mm

(A) Cable adjustment barrel
(B) Brake arm
(C) Hole in the inner cable fixing bolt

2

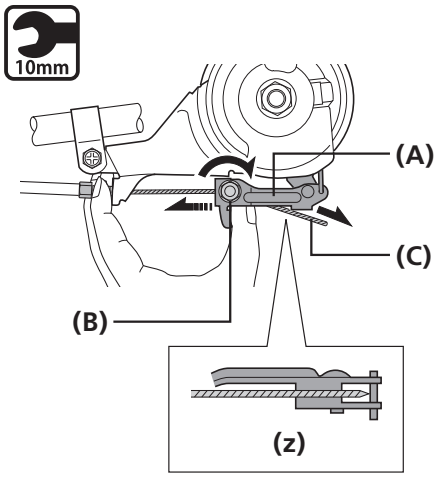


Check that both ends of the outer casing are securely inserted into the cable adjustment barrels **(A)** of both the brake lever and brake arm.

(z) Both ends of the outer casing should be securely inserted.

(A) Cable adjustment barrel

3



Pull the link **(A)** back until it stops. Then, while pulling the inner cable **(C)** to apply the full amount of tension to the cable, tighten the inner cable fixing nut **(B)**.

(A) Link
(B) Inner cable fixing nut
(C) Inner cable

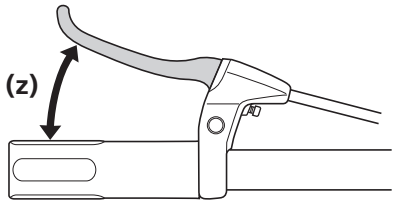
Tightening torque	
10mm	6 - 8 N·m

NOTICE

Set the inner cable so that it passes below the link as shown in illustration **(z)**.

Adjusting the brake cable

1



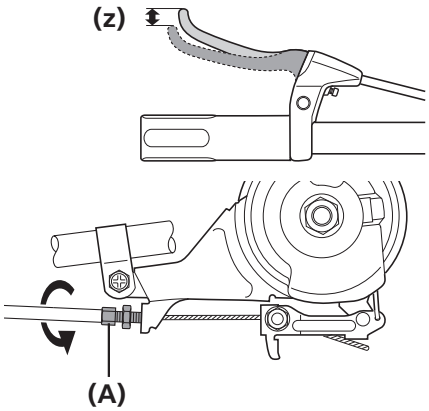
After checking that the wheel does not easily turn while the brake cable is being pulled, depress the brake lever about 10 times as far as the grip in order to run in the brake cable.

(z) Depress about 10 times

NOTICE

If the brake cable is not run in, it will need to be adjusted again after only a short period of use.

2

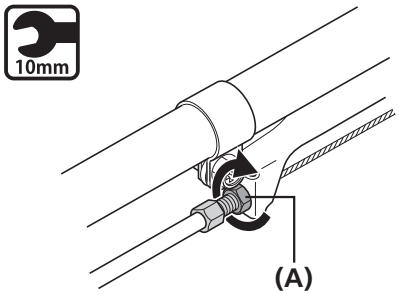


Turn the cable adjustment barrel **(A)** so that there is about 15 mm of gap **(z)** in the brake lever.

* The amount of brake lever gap is the distance from the position where the brake lever is not operated to the position where a force is felt suddenly when the brake lever is pulled.

(A) Cable adjustment barrel

3



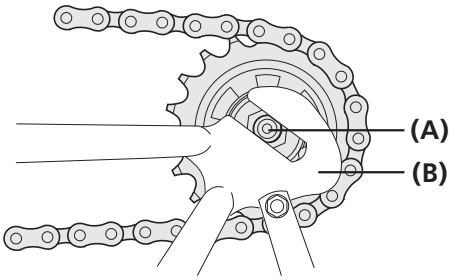
After depressing the brake lever to check the braking performance, secure the cable adjustment barrel with the cable adjusting nut **(A)**.

(A) Cable adjusting nut

Tightening torque	
10mm	1 - 2 N·m

Installation of the hub to the frame (for coaster brakes)

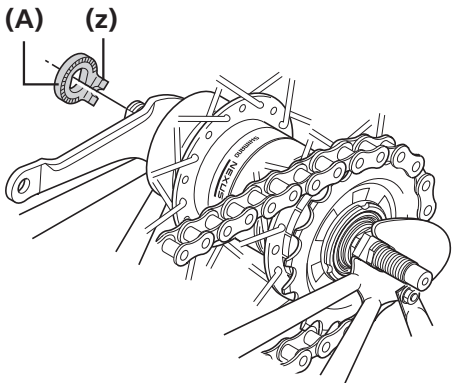
1



Mount the chain on the sprocket, and then set the hub axle **(A)** into the rear dropout **(B)**.

(A) Hub axle
(B) Rear dropout

2



Place the non-turn washer **(A)** onto the left side of the hub axle from the outer side.

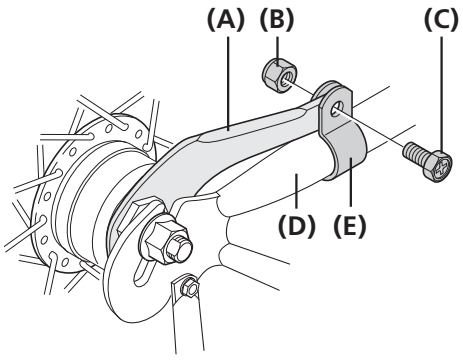
At this time, turn the hub axle and install the non-turn washer so that the protrusion of the washer fits into the groove in the rear dropout.

(z) The protrusion should be on the rear dropout side.

Install the non-turn washer so that the protrusion fits securely in the rear dropout groove at the front and back sides of the hub axle.

(A) Non-turn washer (yellow)

3



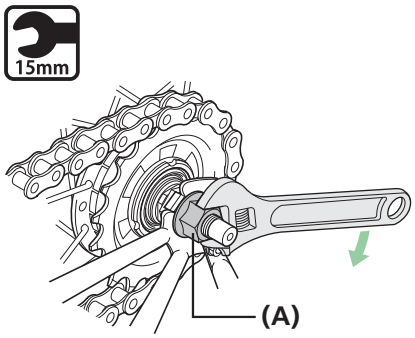
Install the brake arm **(A)** to the chainstay **(D)** using the arm clip **(E)** and temporarily tighten the clip bolt **(C)** and clip nut **(B)** loosely.

Then, tighten the brake unit fixing nut.

(A) Brake arm
(B) Clip nut
(C) Clip bolt
(D) Chainstay
(E) Arm clip

To be continued on next page

4



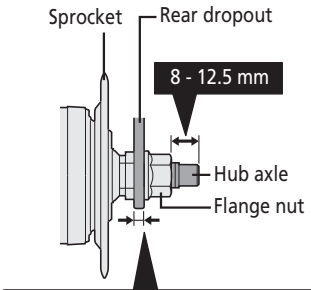
Take up the slack in the chain and secure the wheel to the frame with the flange nut **(A)**.

(A) Flange nut

Tightening torque	
15mm	30 - 45 N·m

NOTICE

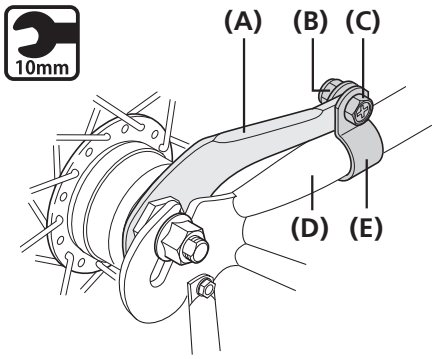
Make sure that the hub axle on the right side protrudes 8 to 12.5 mm from the end face of the flange nut.



Total width of the rear dropout and other parts such the stand and mudguard stay:
4 to 7.5 mm (Axle length: 168 mm / 175 mm)
9 to 12.5 mm (Axle length: 178 mm)

To be continued on next page

5



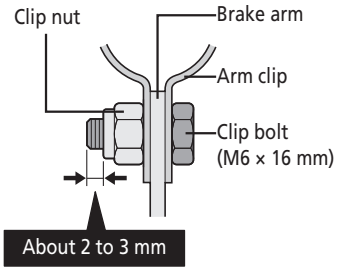
Fix the brake arm **(A)** securely to the chainstay **(D)** with the arm clip **(E)**.

(A) Brake arm
(B) Clip nut
(C) Clip bolt
(D) Chainstay
(E) Arm clip

Tightening torque	
10mm	2 - 3 N·m

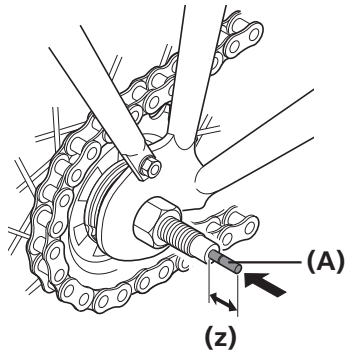
NOTICE

- When installing the arm clip, securely tighten the clip bolt while holding the clip nut with a 10 mm spanner.
- After installing the arm clip, check that the clip bolt protrudes about 2 to 3 mm from the end face of the clip nut.



Installation of the bell crank

1



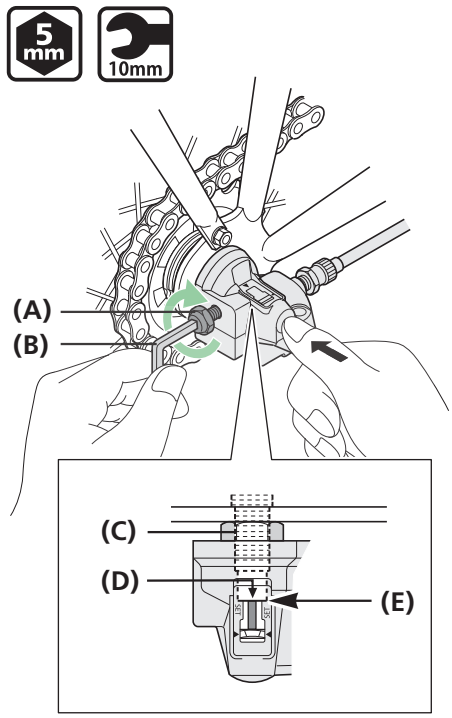
Insert the push rod **(A)** into the hub axle.

(z) About 14 mm

The push rod should protrude about 14 mm from the end face of the hub axle.

(A) Push rod

2



While pushing the bell crank into the hub axle, align the splines inside the bell crank with the hub nut **(C)**, and continue push until the crank comes into contact with the end face **(E)** of the hub axle.

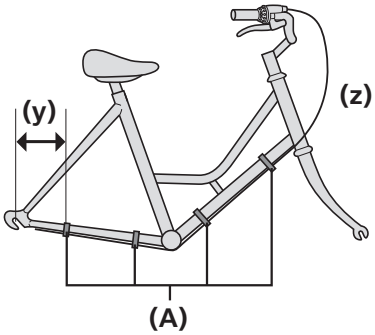
While keeping the parts in this position, tighten the bell crank fixing bolt **(A)** onto the hub axle.

Make sure that the edge **(D)** of the window is aligned with the end face of the hub axle.

(A) Bell crank fixing bolt
(B) 5 mm hexagon wrench or 10 mm spanner
(C) Hub nut
(D) Edge of the window
(E) End face of the hub axle

Tightening torque	
5 mm 10mm	3 - 5 N·m

Securing the shifting cable to the frame



Secure the cable to the frame with the outer casing bands **(A)**.

(y) 20 - 25 cm

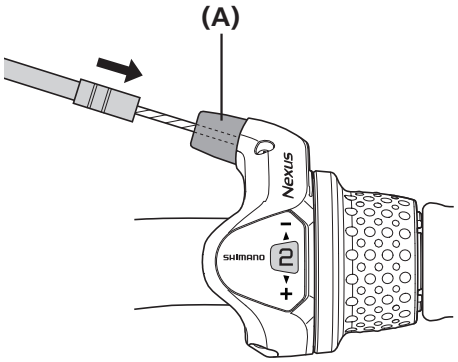
(z) Slacken the cable to prevent strain from being placed on the cable when turning the handlebars.

(A) Outer casing bands

■ Installation of the cassette joint type hub

Installation of the shifting cable

1

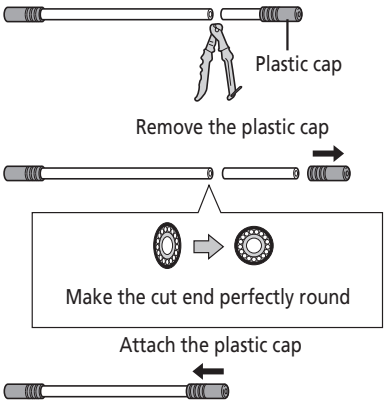


Insert the outer casing into the outer casing holder **(A)**.

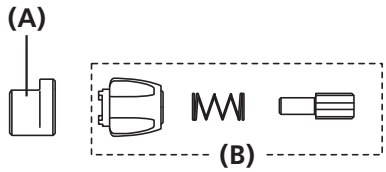
(A) Outer casing holder

TECH TIPS

If cutting the outer casing, cut it near the end with the plastic cap while the cap is still attached.
Then make the cut end perfectly round and attach the plastic cap.



2

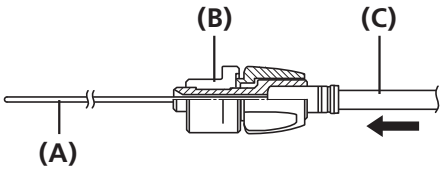


Mount the cable adjustment barrel **(B)** to the outer casing holder **(A)**.

* When mounting the outer adjustment bolt, tighten it fully and then loosen it three or four turns.

(A) Outer casing holder
(B) Cable adjustment barrel

3



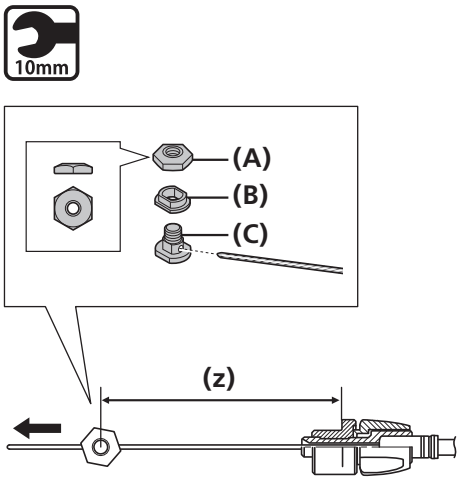
Clean any grease **(A)** on the inner cable and pass the inner cable through the cable adjustment barrel.

Then, insert the outer casing **(C)** into the cable adjustment barrel.

(A) Inner cable
(B) Outer casing holder
(C) Outer casing

To be continued on next page

4



After checking that the end of the outer casing is pushed all the way to the back of the outer casing holder of the shifter, insert the inner cable into the inner cable mounting bolt (C).

Then, attach the inner mounting nut **(A)** while adjusting the width **(z)** to 127 mm.

While pulling on the inner cable, attach the inner cable mounting nut.

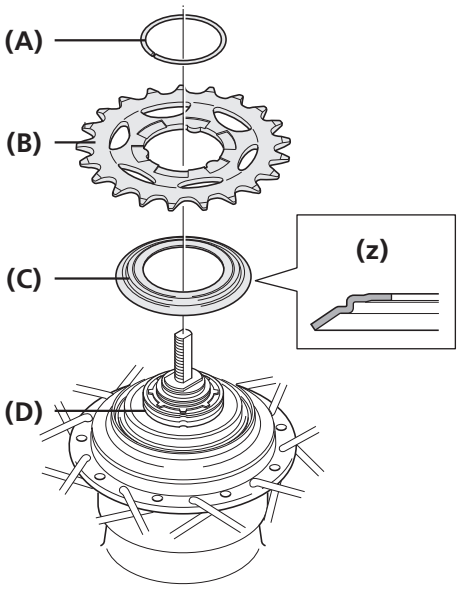
(A) Inner cable mounting nut
(B) Inner cable mounting washer
(C) Inner cable mounting bolt

Tightening torque	
10mm	3.5 - 4.5 N·m

NOTICE

Do not use this inner cable mounting bolt unit with the CJ-4S30 cassette joint.

Installation of the sprocket to the hub



Place the right-hand waterproof cap C **(C)** onto the driver **(D)** on the right side of the hub body.

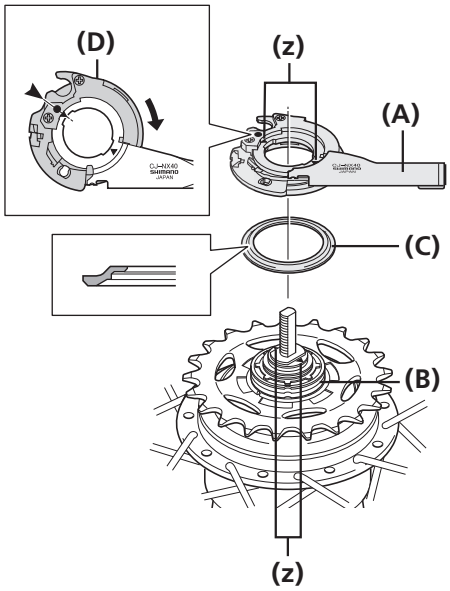
Next, install the sprocket **(B)** and secure it in place with the snap ring **(A)**.

(z) Note the direction

(A) Snap ring
(B) Sprocket
(C) Right-hand waterproof cap C
(D) Driver

Installation of the cassette joint to the hub

1



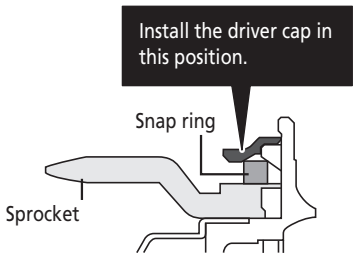
Install the driver cap **(C)** to the driver **(B)** on the right side of the hub body.

Next, turn the pulley **(D)** of the cassette joint **(A)** in the direction of the arrow so that the yellow • mark is aligned with the yellow ▲ mark, and then align the yellow ▲ marks on the cassette joint with the yellow ▲ marks on the right side of the hub body.

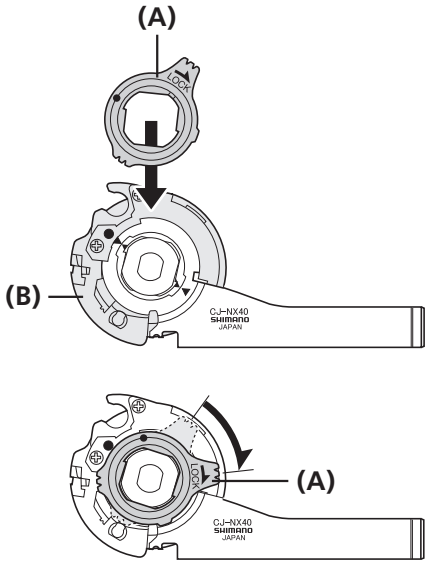
(z) Yellow ▲ marks

(A) Cassette joint
(B) Driver
(C) Driver cap
(D) Pulley

TECH TIPS



2



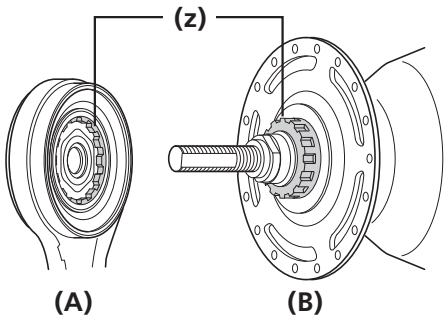
Secure the cassette joint to the hub with the cassette joint mounting ring **(A)**.

When installing the cassette joint mounting ring, align the yellow • mark with the yellow • mark on the pulley **(B)** of the cassette joint, and then turn the cassette joint mounting ring 45° clockwise.

(A) Cassette joint mounting ring
(B) Pulley

Installation of the hub to the frame

1



Engage the splines on the hub body **(B)** with the splines on the INTER M brake **(A)**, and then provisionally tighten the brake unit fixing nut.

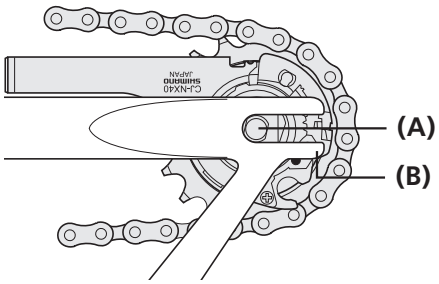
(z) Align the splines

(A) INTER M brake
(B) Hub body

TECH TIPS

Refer to the manual for the INTER M brake for details on installing the INTER M brake.

2

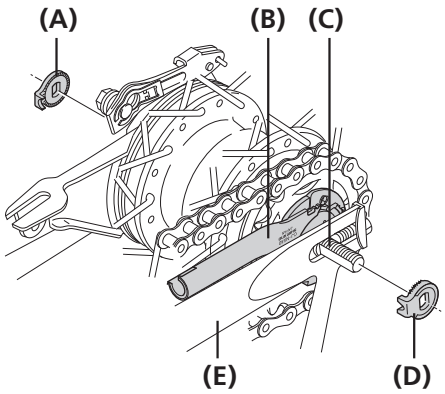


Mount the chain on the sprocket, and then set the hub axle **(A)** into the rear dropout **(B)**.

(A) Hub axle
(B) Rear dropout

To be continued on next page

3



Place the non-turn washers **(A)** and **(D)** onto the right and left side of the hub axle.

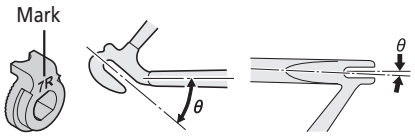
At this time, turn the cassette joint (B) so that the protrusions of the non-turn washers fit into the grooves (C) in the rear dropout and align the joint to be almost parallel to the chainstay (E).

(A) Non-turn washer (for left side use)
(B) Cassette joint
(C) Groove in the rear dropout
(D) Non-turn washer (for right side use)
(E) Chainstay

TECH TIPS

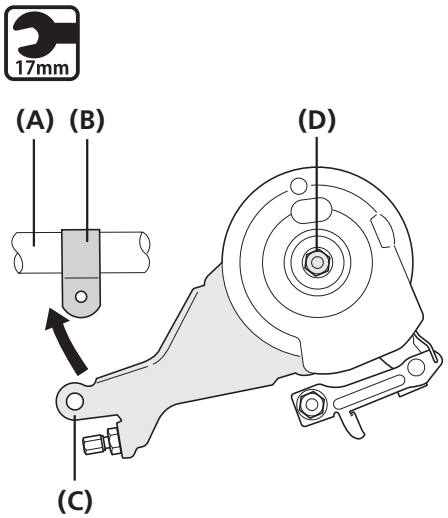
- Use a non-turn washer that matches the shape of the rear dropout. Different non-turn washers are used for the left and right sides.

Rear dropout	Non-turn washer		
	Mark / Color		Size
	Right	Left	
Standard	7R / Black	7L / Gray	20° ≤ Θ ≤ 38°
	9R / Light green	9L / Light brown	
Reversed	6R / Silver	6L / White	Θ = 0°
Reversed (full chain case)	5R / Yellow	5L / Brown	Θ = 0°



- The protrusion should be on the rear dropout side.
- Install the non-turn washer so that the protrusion fits securely in the rear dropout groove at the front and back sides of the hub axle.

4



Install the brake arm **(C)** of the INTER M brake to the chainstay **(A)** using the arm clip **(B)** and temporarily tighten the clip bolt and clip nut loosely.

Then, tighten the brake unit fixing nut **(D)**.

(A) Chainstay
(B) Arm clip
(C) Brake arm
(D) Brake unit fixing nut

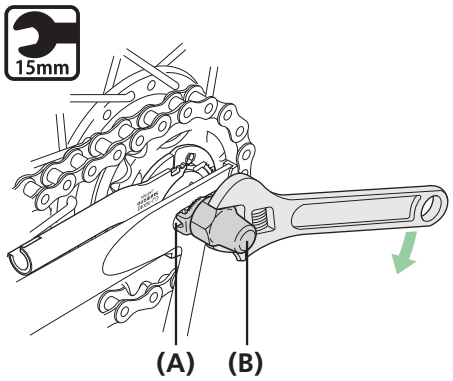
Tightening torque	
17mm	20 - 25 N·m

NOTICE

If it is impossible to temporarily attach the brake arm to the chainstay due to misalignment of the brake arm as shown in the illustration, loosen the brake unit fixing nut and turn the brake arm before temporarily attaching it to the chainstay. Then, tighten the brake unit fixing nut.

To be continued on next page

5



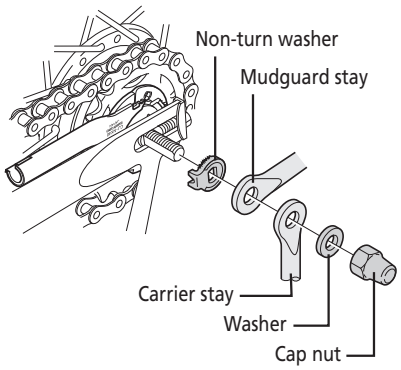
Take up the slack in the chain and secure the wheel to the frame with the cap nut **(B)**.

(A) Non-turn washer
(B) Cap nut

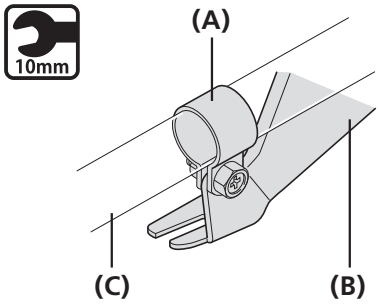
Tightening torque	
15mm	30 - 45 N·m

NOTICE

When installing parts such as a mudguard stay to the hub axle, install them in the order shown in the illustration.



6



Fix the brake arm **(B)** of the INTER M brake securely to the chainstay **(C)** with the arm clip **(A)**.

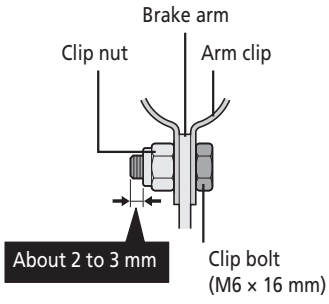
When installing the arm clip, securely tighten the clip bolt while holding the clip nut with a 10 mm spanner.

(A) Arm clip
(B) Brake arm
(C) Chainstay

Tightening torque	
10mm	2 - 3 N·m

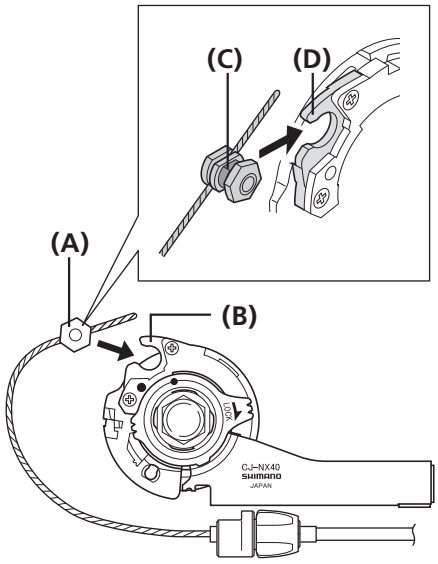
NOTICE

After installing the arm clip, check that the clip bolt protrudes about 2 to 3 mm from the end face of the clip nut.



To be continued on next page

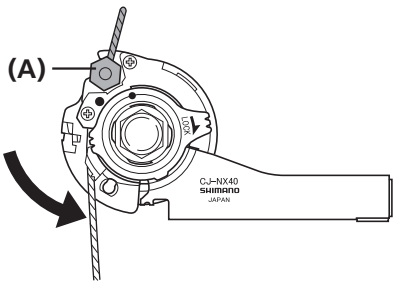
7



Bring the cable around to the cassette joint pulley **(B)**, hold it so that the inner cable mounting nut **(A)** is facing outwards (towards the rear dropout), and then slide the flats part **(C)** of the inner cable mounting washer into the gap **(D)** in the pulley.

(A) Inner cable mounting nut
(B) Pulley
(C) Flats part of inner cable mounting washer
(D) Gap in pulley

8

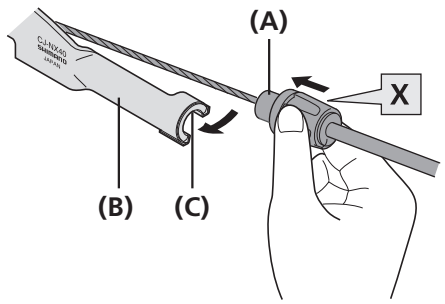


Turn the cable 60˚ counterclockwise and attach it to the hook **(A)**.

(A) Hook

To be continued on next page

9



Mount the cable adjustment barrel.

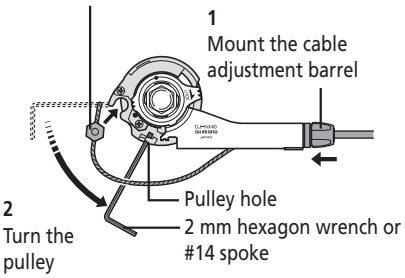
Securely fit the outer casing holder **(A)** into the slit **(C)** in the outer casing holder section **(B)** of the cassette joint while holding the cover **(X)** of the cable adjustment barrel.

(A) Outer casing holder
(B) Outer casing holder section
(C) Slit

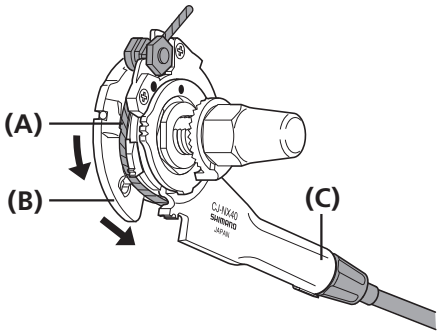
NOTICE

Fit the protrusion of the outer casing holder into the slit in the outer casing holder section.

If it is easier to first insert the outer casing holder into the outer casing holder section of the cassette joint, first insert the outer casing holder into the outer casing holder section of the cassette joint, insert a 2 mm hexagon wrench or a #14 spoke into the hole in the pulley, and then turn the pulley so that the inner cable mounting bolt unit fits into the gap in the pulley.



10

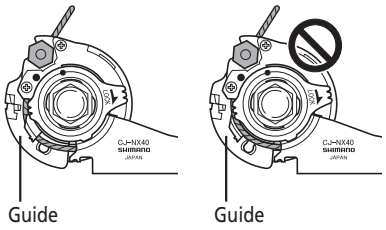


Mount the inner cable **(A)** to the pulley **(B)** as shown in the illustration.

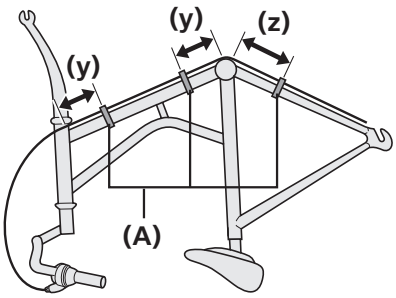
(A) Inner cable
(B) Pulley
(C) Outer casing holder section

NOTICE

Check that the inner cable is correctly seated inside the pulley guide.



Securing the shifting cable to the frame



Secure the cable to the frame with the outer casing bands **(A)**.

(y) 10 cm

(z) 15 cm

(A) Outer casing bands

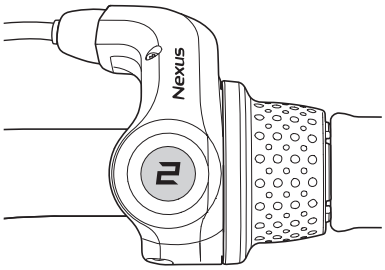
ADJUSTMENT

ADJUSTMENT

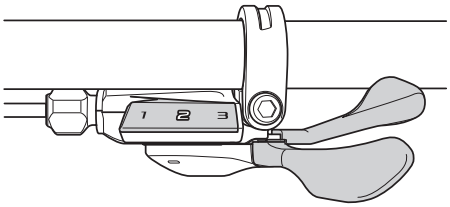
■ For bell cranks

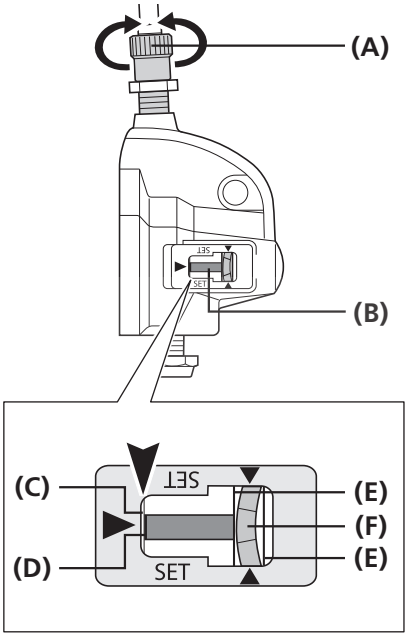
1

REVOSHIFT shifter



RAPIDFIRE PLUS





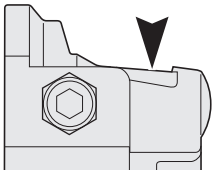
Set the shifter to 2.

Next, turn the cable adjustment barrel **(A)** to align the red line **(D)** on the push rod with the end **(C)** of the hub axle.

(A) Cable adjustment barrel
(B) Push rod
(C) End of the hub
(D) Red line on the push rod
(E) Yellow lines
(F) Yellow part of the link

NOTICE

During adjustment, check the two yellow lines through the window from above.

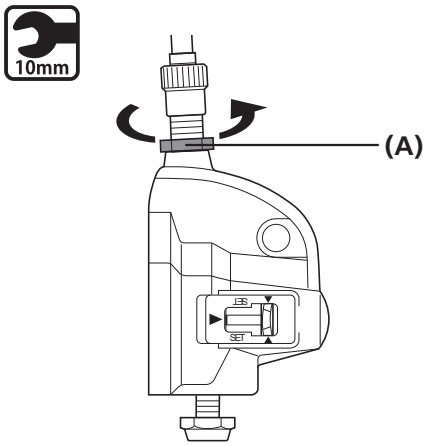


2

While turning the crank, move the shifter from 3 to 1 then back to 3. Repeat this two or three times and check that the gears are being shifted. Move the shifter from 1 to 2 again and make sure that the red line on the push rod is aligned with the end of the hub axle. If they are not aligned, perform readjustment.

To be continued on next page

3



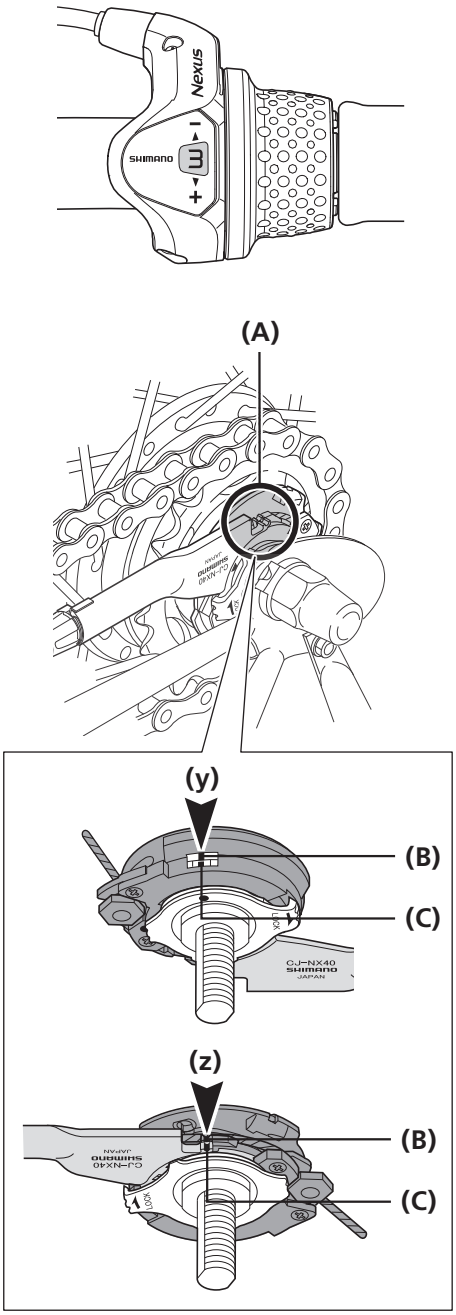
After adjusting the bell crank IV, fix the cable adjustment barrel with the cable adjustment nut **(A)**.

(A) Cable adjustment nut

Tightening torque	
10mm	1.5 - 2.5 N·m

■ For cassette joints

1



Move the REVOSHIFT shifter from 1 to 3.

Check to be sure that the yellow setting lines **(A)** on the cassette joint bracket **(C)** and pulley **(B)** are aligned at this time.

The yellow setting lines on the cassette joint are located in two places.

Use the one that is easiest to see.

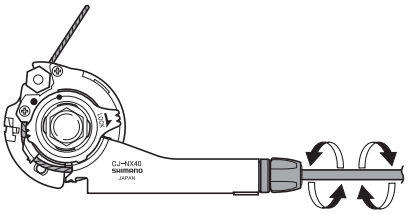
(y) When the bicycle is upright

(z) When the bicycle is upside down

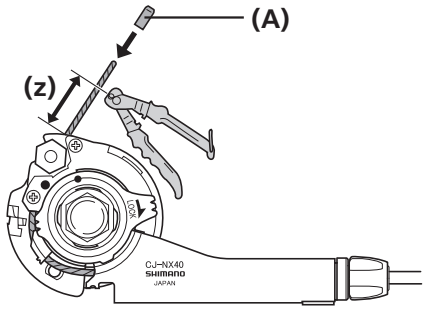
(A) Yellow setting lines
(B) Pulley
(C) Bracket

TECH TIPS

If the yellow setting lines are not aligned, turn the cable adjustment barrel of the cassette joint to align the setting lines. After this, move the shifter again from 3 to 1 then back to 3, and re-check that the yellow setting lines are aligned.



2



After adjusting the cassette joint, cut off the excess length of inner cable. Then install the inner end cap **(A)**.

(z) 15 - 20 mm

(A) Inner end cap

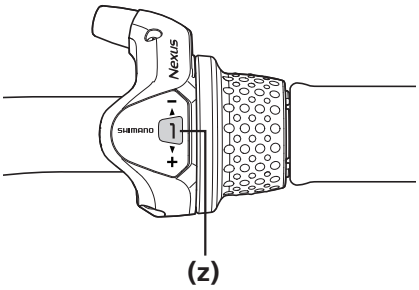
MAINTENANCE

MAINTENANCE

■ Replacement of the shifting cable

REVOSHIFT shifter (In the case of 3S41-E / 3S42-E)

1

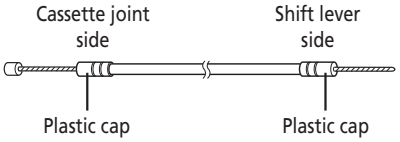


Set the REVOSHIFT shifter to 1.

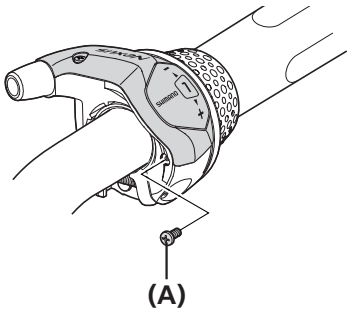
(z) Set to 1

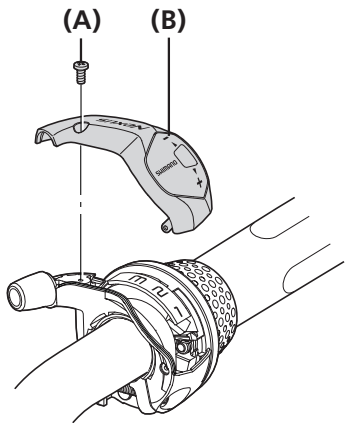
TECH TIPS

Use a shifting cable with one inner cable drum.
* The shape differs depending on the model.



2

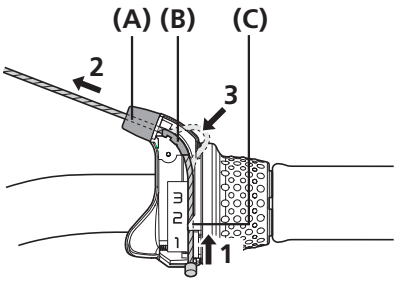




Loosen the two cover fixing screws **(A)** and remove the cover **(B)**.

(A) Cover fixing screw
(B) Cover

3



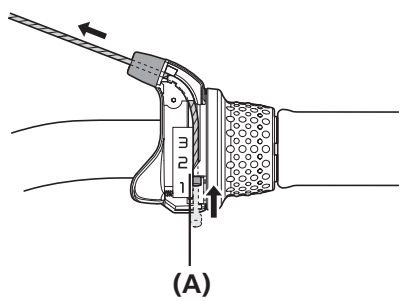
Pass the inner cable from the hole in the winder unit **(C)** through the hole in the outer casing holder **(A)**.

Next, insert the inner cable into the groove of the cable guide **(B)**.

(A) Hole in outer casing holder
(B) Groove of cable guide
(C) Hole in winder unit

To be continued on next page

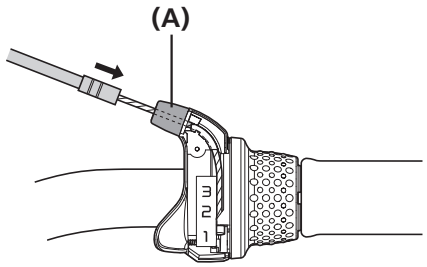
4



Pull the inner cable so that the inner cable drum fits into the recess in the winder unit **(A)**.

(A) Recess in winder unit

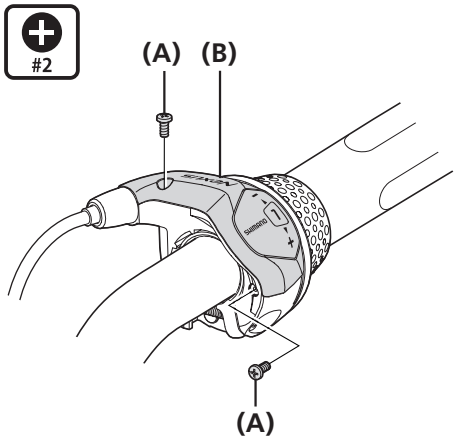
5



Insert the outer casing into the outer casing holder **(A)**.

(A) Outer casing holder

6



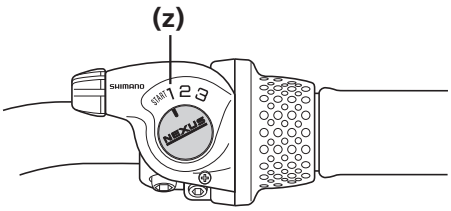
Fasten the cover **(B)** with the 2 cover fixing screws **(A)**.

(A) Cover fixing screw
(B) Cover

Tightening torque	
#2	0.1 - 0.2 N·m

REVOSHIFT shifter (In the case of 3S35-E)

1

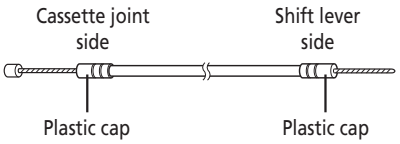


Set the REVOSHIFT shifter to 1.

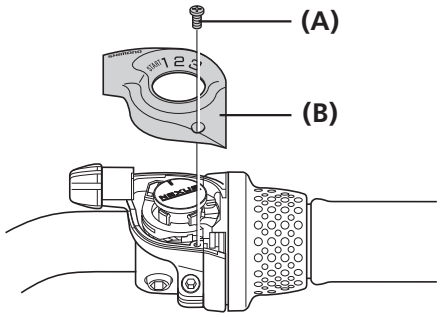
(z) Set to 1

TECH TIPS

Use a shifting cable with one inner cable drum.
* The shape differs depending on the model.



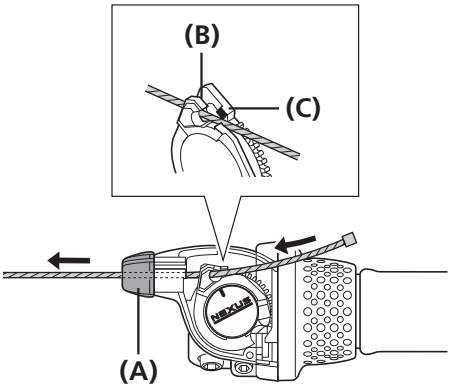
2



Loosen the cover fixing screw **(A)**, and then remove the indicator cover **(B)**.

(A) Cover fixing screw
(B) Indicator cover

3



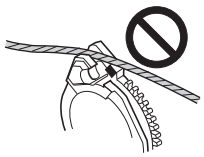
Set the inner cable onto the pulley.

Insert the inner cable into groove **(B)** from the inside of the projection on the pulley **(C)**, and then pass it through the hole in the outer casing holder **(A)**.

(A) Hole in outer casing holder
(B) Groove in pulley
(C) Projection on pulley

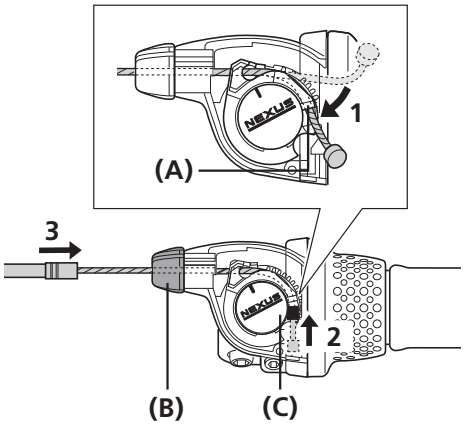
NOTICE

Check that the inner cable is correctly routed along the inside of the projection on the pulley.



To be continued on next page

4



Hook the inner cable into groove in the pulley **(A)**, and pull the inner cable so that the inner cable drum fits into the hole in the pulley **(C)**.

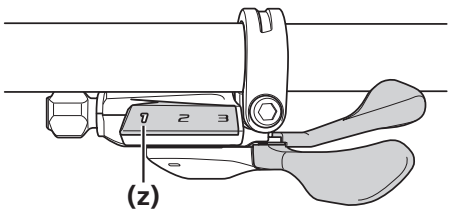
After this, insert the outer casing into the outer casing holder **(B)**.

(A) Groove in pulley
(B) Outer casing holder
(C) Hole in pulley

5 Replace the indicator cover and tighten the cover fixing screw.

Shifter (RAPIDFIRE PLUS)

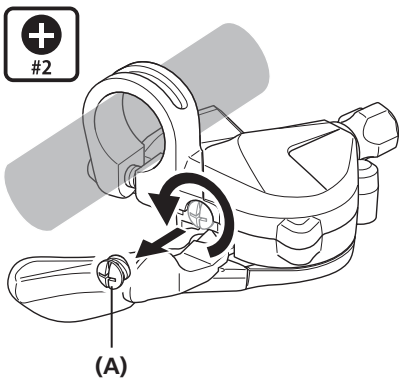
1



Set the shifter to 1.

(z) Set to 1

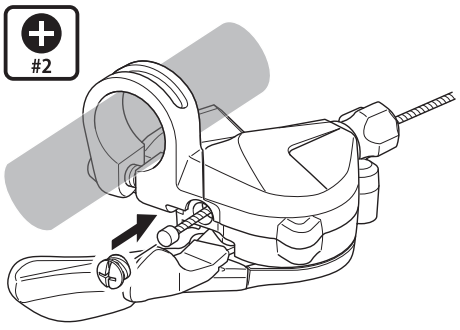
2



Remove the inner hole cap (A).

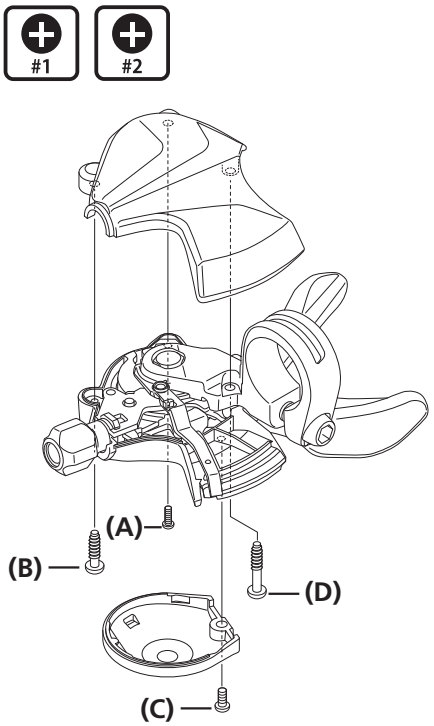
(A) Inner hole cap

3



Pass the inner cable through and install the inner hole cap.

■ Replacement of the cover (RAPIDFIRE PLUS)



Remove the four mounting screws, and replace the cover.

(A) Cross head screwdriver [#1]
(B) Cross head screwdriver [#2]
(C) Cross head screwdriver [#1]
(D) Cross head screwdriver [#2]

Tightening torque (A) (C)	
#1	0.1 - 0.3 N·m

Tightening torque (B) (D)	
#2	0.3 - 0.6 N·m

■ Oil maintenance of the internal assembly

Content of kit: WB maintenance oil, Container

General Safety Information

⚠ WARNING

- When lubricating the internal unit, be careful that no oil gets on the disc brake rotor, pads, on the rim when using rim brakes, etc.
  If oil gets on any of these parts, there is a danger that brake performance may be reduced. Take care of this problem according to the procedures in the brake instruction manual.
- Since there is a risk of explosion or fire, do not smoke, eat, or drink while using this oil. In addition, keep it away from ignition sources such as heat, sparks, open flames, or high temperatures and prevent it from catching fire due to static electricity sparks or other sparks.
- Use only outdoors or in a well-ventilated area. Inhalation of oil mist or vapors may cause nausea. Be careful to provide ventilation and use a respirator type mask. If mist or vapor is inhaled, go immediately to an area with fresh air. Cover up with a blanket. Stay warm and stable and seek professional medical advice.

Cautions regarding handling of WB maintenance oil:

- Use appropriate eye protection when handling, and avoid contact with eyes. In the event of eye contact, flush with fresh water and seek medical assistance immediately. Contact with eyes may result in irritation.
- Use gloves when handling. In the event of skin contact, wash well with soapy water. Contact with skin may cause a rash and discomfort.
- Do not drink. If it is drunk by mistake, do not induce vomiting; make the affected person drink 1 to 2 cups of water and seek medical assistance immediately.
  If the affected person loses consciousness, do not give the person anything by their mouth. If vomiting occurs naturally, tilt the body to prevent inhalation.
- After use, be sure to wash hands thoroughly.
- Keep the container sealed to prevent foreign objects and moisture from getting inside, and store it in a cool, dark area away from direct sunlight.
- Keep out of reach of children.
- Dispose of used oil, old oil, or oil used for cleaning in accordance with the method stipulated by the law.
- In order to maintain proper performance, it is recommended that you lubricate the internal unit once a year from the start of use (or once about every 2,000 km if the bicycle is used very frequently).
- Do not use oil other than WB maintenance oil. Problems such as an oil leakage and gear shifting malfunction may occur.
- Disposal of used oil: Follow local county and/or state codes for disposal. Use caution when preparing the oil for disposal.
- Read this manual carefully, and keep it in a safe place for later reference.
- For the latest product safety data sheets, check the website https://si.shimano.com.

1



Fill the bottle with maintenance oil to a height of 95 mm.

(z) 95 mm

2



Immerse the internal unit into the oil from the left side until the oil reaches up to ring gear unit 1, as shown in the illustration.

(z) Ring gear unit 1

3



Keep the internal unit immersed for approximately 90 seconds.

To be continued on next page

4



Remove the internal unit from the oil.

5



Let the excess oil drain off for approximately 60 seconds.

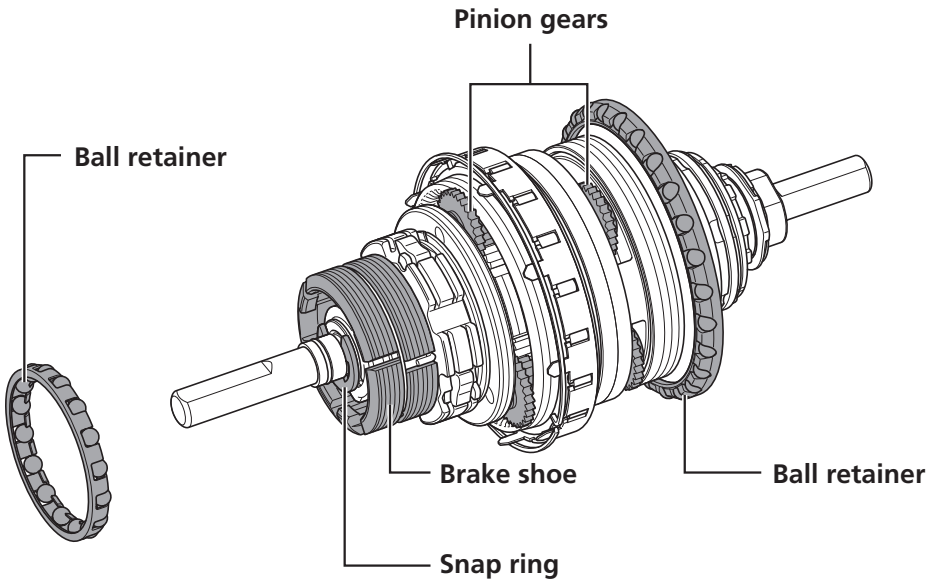
TECH TIPS

<Maintenance oil>

- Maintenance oil is reusable. Refill it as needed.
- Store it with the lid closed after use.

NOTICE

After oil maintenance, it is recommended that you apply Grease (Y04130100) to the ball retainers, snap ring, brake shoe, and pinion gears.



The illustration shows an example.

To be continued on next page

6

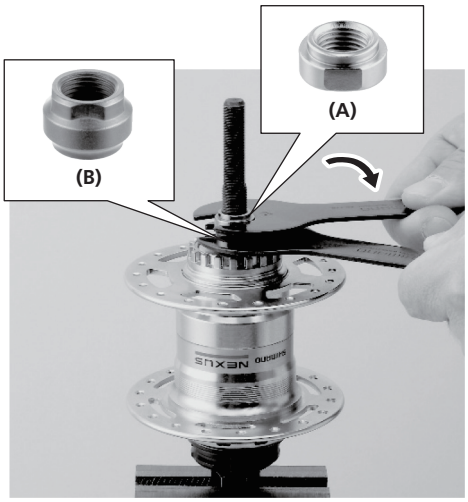
Reassemble the hub.

(1) Use the left-hand cone (or the stop nut for the coaster brake type) to adjust the hub so that the hub shell rotates smoothly and there is no excess play in the hub axle. Ensure that the side of the stop nut without a protrusion is facing up.

(2) Tighten the left-hand lock nut.
The tightening torque of the left-hand lock nut depends on the type.

- For the disc brake, roller brake, or V brake type: 24.5 to 29.4 N·m
- For the coaster brake or coaster brake (with disc brake) type: 17.7 to 24.5 N·m

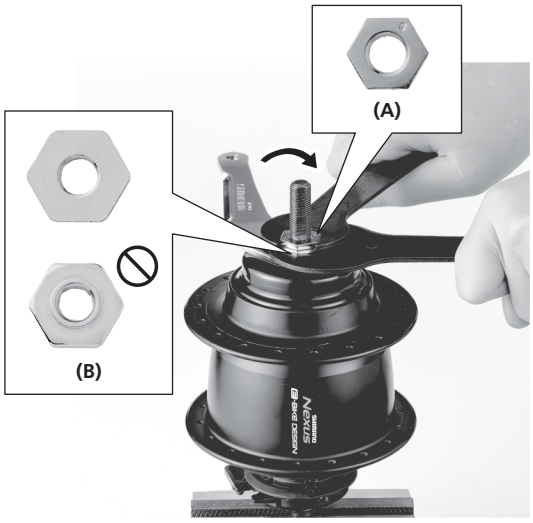
In the case of roller brake type



The image shows an example.

(A) Left-hand lock nut
(B) Left-hand cone

In the case of coaster brake type



The image shows an example.

(A) Left-hand lock nut
(B) Stop nut

SHIMANO

SHIMANO NORTH AMERICA BICYCLE, INC.
One Holland, Irvine, California 92618, U.S.A. Phone: +1-949-951-5003

SHIMANO EUROPE B.V.
High Tech Campus 92, 5656 AG Eindhoven, The Netherlands Phone: +31-402-612222

SHIMANO INC.
3-77 Oimatsu-cho, Sakai-ku, Sakai City, Osaka 590-8577, Japan

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