

SHIMANO
ALFINE



INTER 11

SERVICE MANUAL

SG-S7001-11

SG-S7051-11

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SHIMANO ALFINE Internal Geared Hub Disk Brake 11-speed

E-BIKE DESIGN

The SHIMANO ALFINE S7001-11 hub offers a wide 409% gear range and an improved internal structure for better gear engagement. It is approved for E-BIKE and non E-BIKE use and is available in black and silver

- Improved internal structure for better gear engagement
- Smooth shifting performance
- Improved performance for both E-BIKE and non-E-BIKE usage

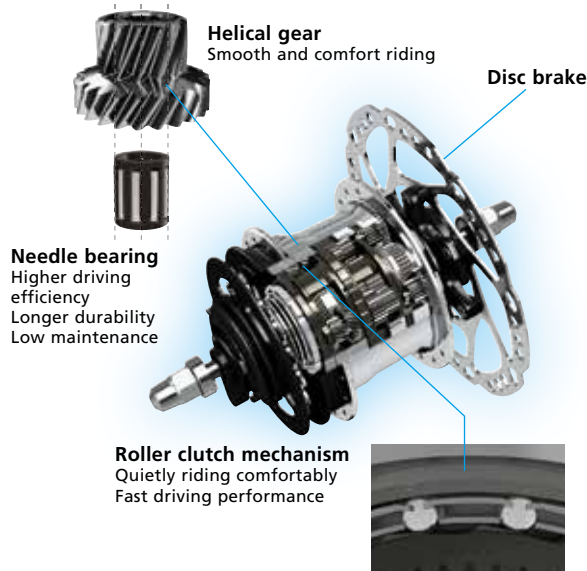


SG-S7001-11
SG-S7051-11

TECHNOLOGIES

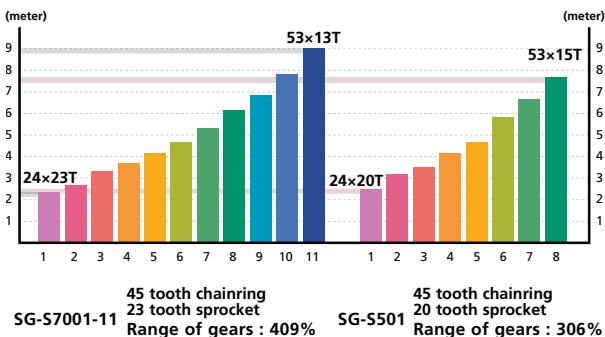
INTER 11 INTER-11

SHIMANO ALFINE 11-speed



Wide Gear Ratio Broad terrain riding support

Distance travelled per crank revolution (700C)



The diagram above shows distance traveled per crank revolution.
If we compare with chainring/sprocket combination rear derailleur system offers, 1st gear of SG-S7001-11 offers as same gear as 24 tooth for chainring, 23 tooth for sprocket.
11th gear of SG-S7001-11 offers as same gear as 53 tooth for chainring, 13 tooth for sprocket. It covers wide range as a total.

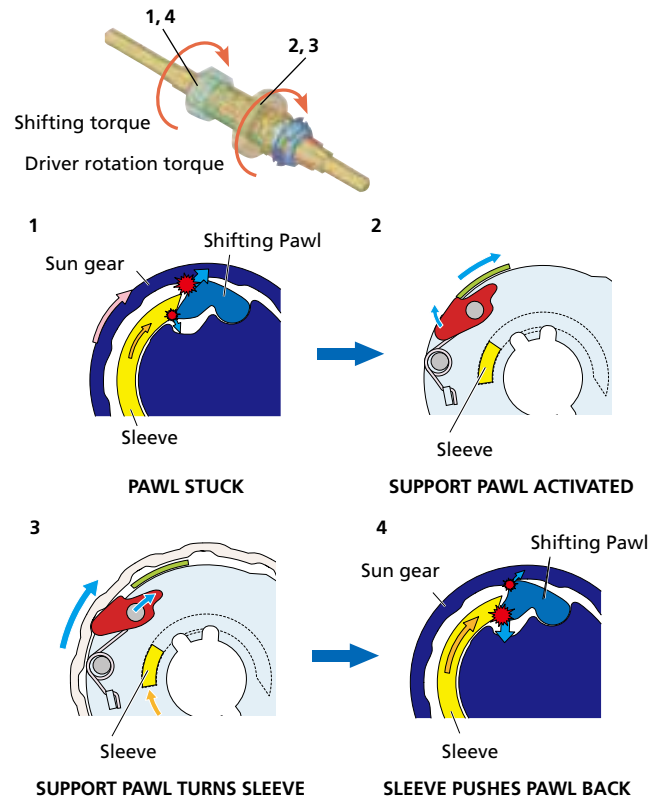
Gear Change Support

SHIMANO gear change support mechanism utilizes some portion of pedaling force at down shifting. The result is a quick and precise downshift with very light feeling. For the automatic shifting system, this gear change support mechanism is the key. Shifting effort is reduced to the point where the hub can be shifted through a small low-torque DC motor. Less electricity is required, so a smaller battery allows the system to be lighter and more compact.

Equipped: SHIMANO ALFINE/SHIMANO NEXUS INTER-8/
SHIMANO NEXUS INTER-3

40% less shifting force required

Pedaling force is applied against the sleeve to help overcome sleeve return pressure and execute the shift.



TECHNOLOGIES

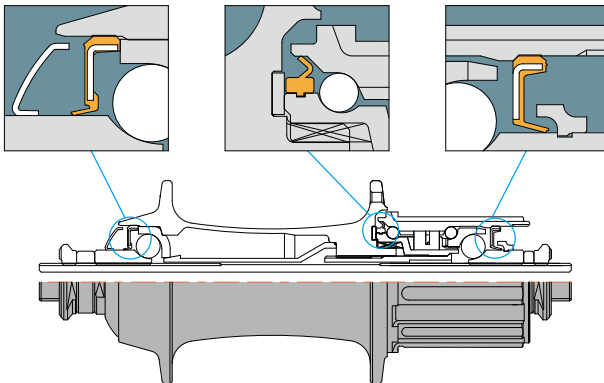
Labyrinth & Contact Sealing

Specifically designed seals inside the hub shut out mud, dust, dirt and moisture and protect the bearing mechanisms, realizing low maintenance as well as longer service life.

This maintains the original performance for a longer period of time under unfavorable environmental conditions.

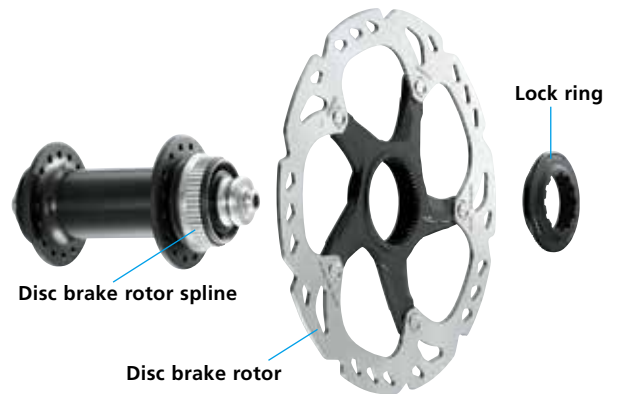


Labyrinth & contact seal (road)



CENTER LOCK System

The CENTER LOCK system makes an easy disc brake rotor installation possible with spline mount and a lock ring. The lock ring mounting system reduces the total working hours by shortening the amount of time of both installation and de-installation. In addition, the secure fixing by the spline mount enhances precision and rigidity while improving braking efficiency.





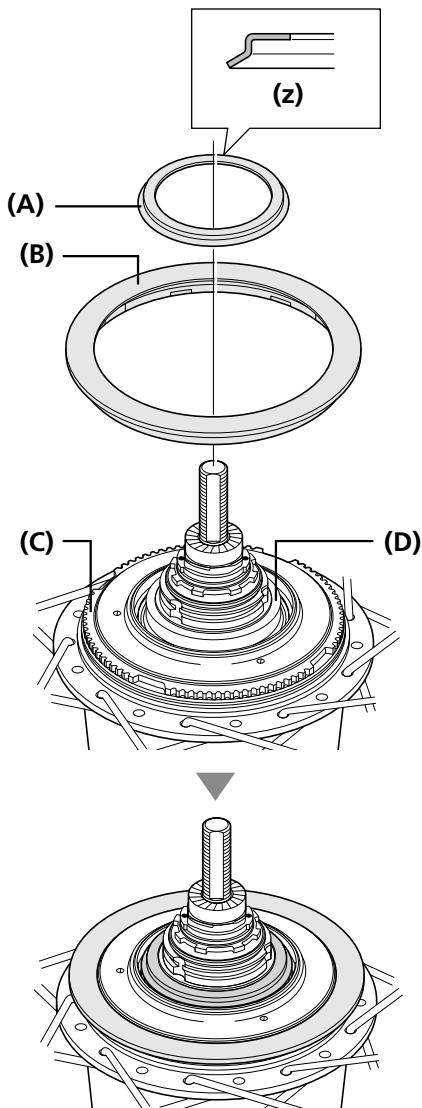
Dealer's Manual

SG-S7001-11

INSTALLATION

■ Installation of the CS-S500 sprocket with chain guard

1

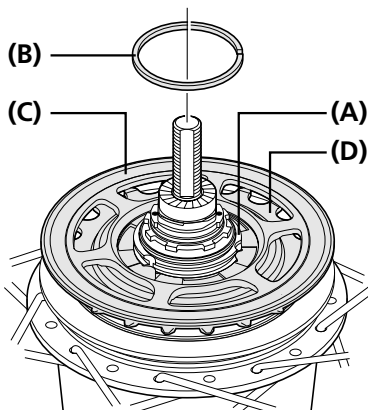


Install the chain guard to the right hand dust cap of the hub body, and then install right hand dust cap B to the driver.

Install the right-hand dust cap B in the orientation (z).

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

2



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

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

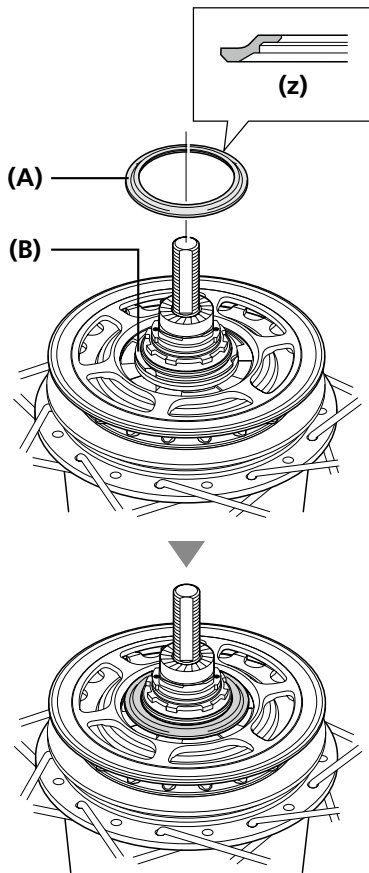


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Installation of the cassette joint to the hub

1

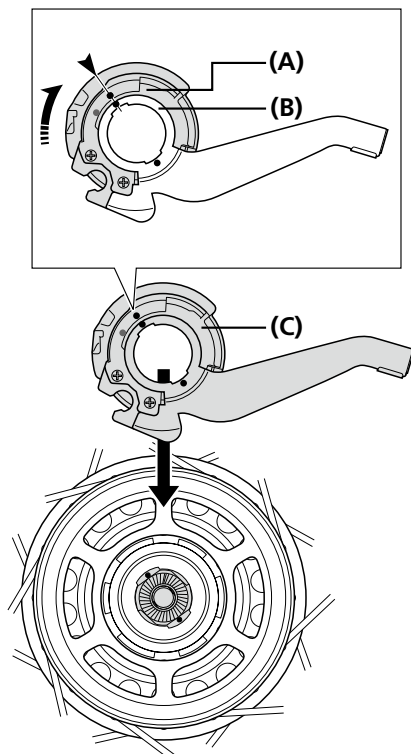


Install the driver cap to the driver on the right side of the hub body.

Install the driver cap in the orientation (z).

- (A) Driver cap
- (B) Driver

2



Turn the cassette joint pulley in the direction of the arrow in the illustration to align the red ● marks on the pulley and the bracket. With the cassette joint in this condition, install it so that the red ● mark on the cassette joint is aligned with the red ● mark on the right side of the hub body.

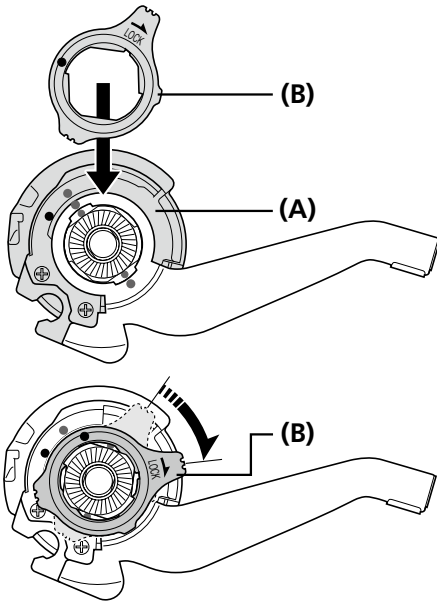
- (A) Pulley
- (B) Bracket
- (C) Cassette joint



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3



Secure the cassette joint to the hub with the cassette joint fixing ring.

When installing the cassette joint fixing ring, align the yellow ● mark with the yellow ● mark on the cassette joint pulley, and then turn the cassette joint fixing ring 45° clockwise.

(A) Pulley

(B) Cassette joint fixing ring

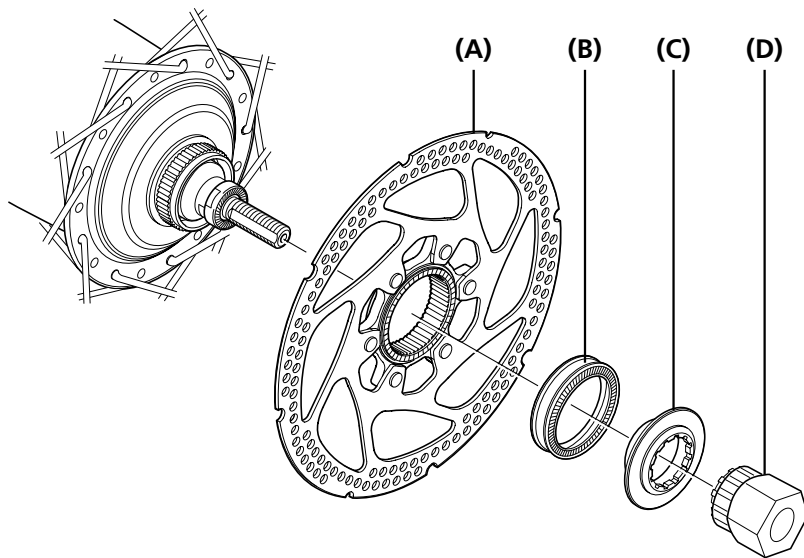


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Installation of the disc brake rotor

Install the disc brake rotor as shown in the illustration.



- (A) Disc brake rotor
- (B) Rotor spacer
- (C) Disc brake rotor installation ring
- (D) TL-LR10

Tightening torque



40 N·m

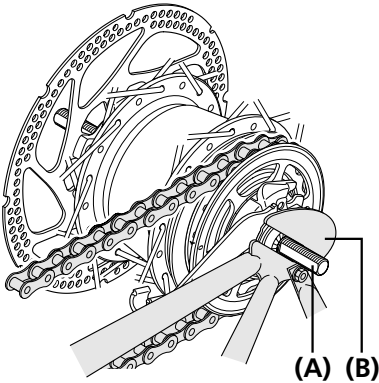


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Installation of the hub to the frame

1

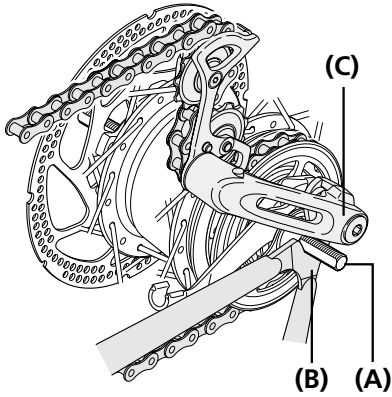


When not using the chain tensioner
Mount the chain on the sprocket, and then set the hub axle into the fork ends.

- (A) Hub axle
- (B) Fork ends
- (C) Chain tensioner

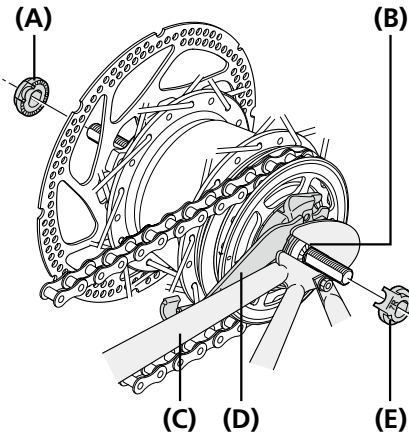
NOTICE

When using the chain tensioner, be sure to read these service instructions in conjunction with the service instructions for the CT-S500 chain tensioner.



When using the chain tensioner
Mount the chain on the sprocket, and then set the hub axle into the fork ends.

2



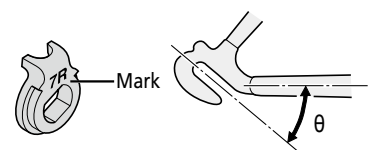
Place the non-turn washers onto the right side and left side of the hub axle.

At this time, turn the cassette joint so that the projecting parts of the non-turn washers fit into the grooves of the fork ends. If this is done, the cassette joint can be installed so that it is almost parallel to the chainstay.

- (A) Non-turn washer (for left side)
- (B) Groove of fork end
- (C) Chainstay
- (D) Cassette joint
- (E) Non-turn washer (for right side)

TECH TIPS

- Use whichever non-turn washers match the shape of the fork ends. Different non-turn washers are used at the left and right sides.
- The projecting parts should be on the fork ends side.
- Install the non-turn washers so that the projecting parts are securely in the fork ends grooves on either side of the hub axle.



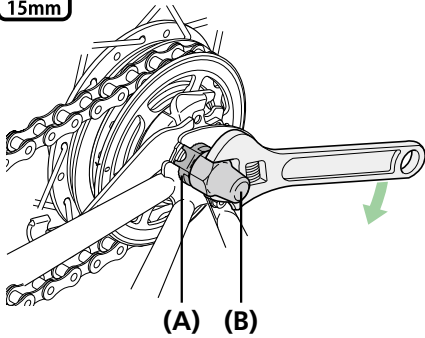
Fork ends	Non-turn washer		
	Mark / Color		Size
	Right	Left	
Standard	5R/Yellow	5L/Brown	$\Theta \leq 20^{\circ}$
	7R/Black	7L/Gray	$20^{\circ} \leq \Theta \leq 38^{\circ}$
Reversed	6R/Silver	6L/White	$\Theta = 0^{\circ}$
Reversed (full chain case)	5R/Yellow	5L/Brown	$\Theta = 0^{\circ}$
Vertical	8R/Blue	8L/Green	$\Theta = 60^{\circ} - 90^{\circ}$



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3



Take up the slack in the chain and secure the wheel to the frame with the cap nuts.

- (A) Non-turn washer
- (B) Cap nut
- (C) Carrier stay
- (D) Washer
- (E) Mudguard stay

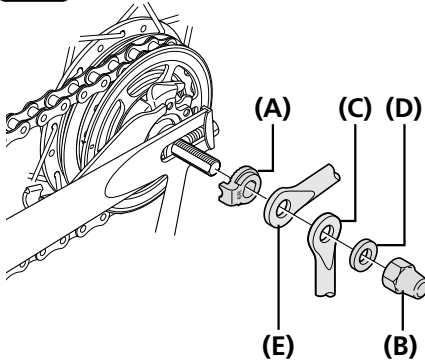
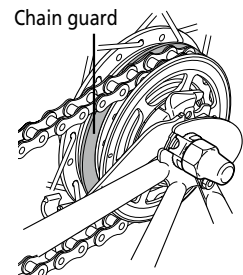
Tightening torque



30 - 45 N·m

NOTICE

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 it is not fully installed, noise may be generated.



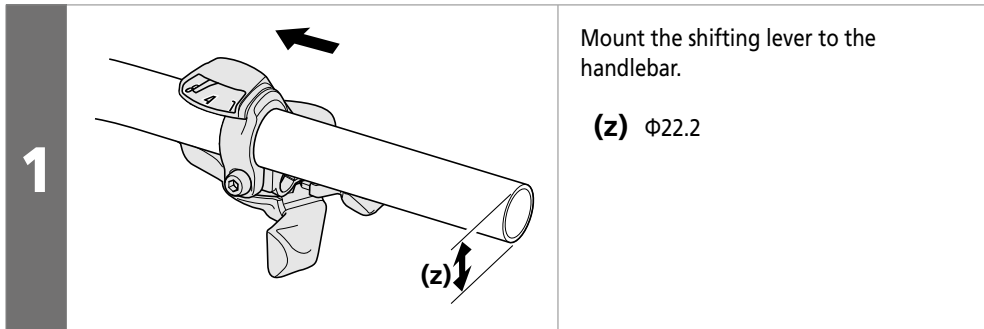
When installing a part such as a mudguard stay to the hub axle, install in the order shown in the illustration.



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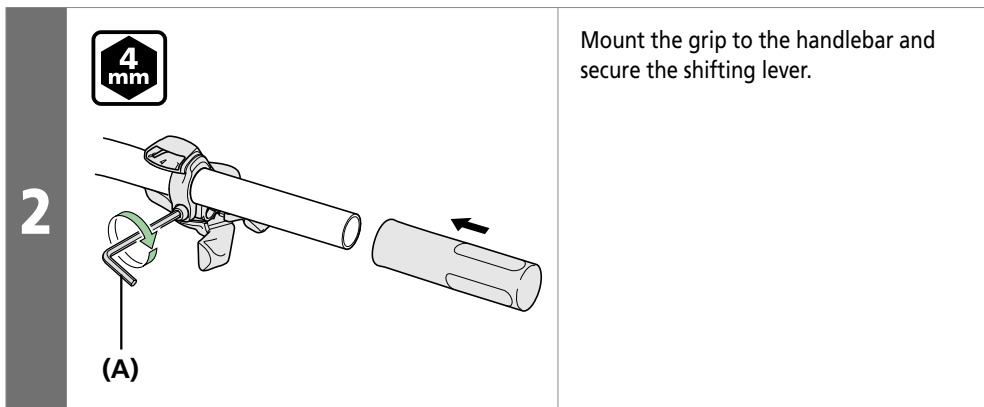
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■ Installation of the shifting lever



NOTICE

Use a handlebar with an outer diameter of $\Phi 22.2$ mm.



(A) 4mm hexagon wrench

Tightening torque



5 - 7 N·m

NOTICE

Use a handlebar grip with a maximum outer diameter of $\Phi 32$ mm.



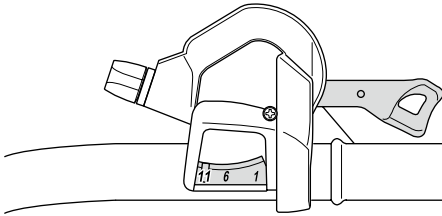
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For internal 11-speed

Shifting lever side

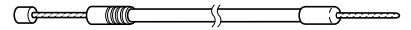
1



Set the shifting lever to 11.

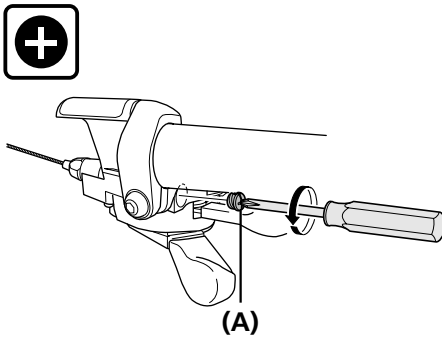
NOTICE

- Use a shifting cable with one inner cable drum.
Cable with one inner cable drum: OT-SP41



- Make sure that the shield cap is at the shifting lever end.

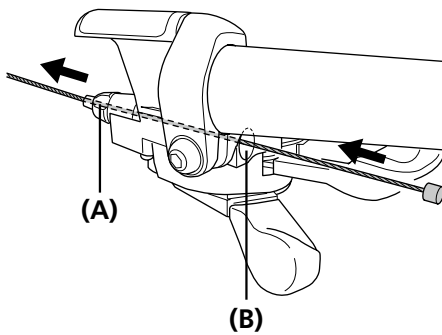
2



Loosen and remove the wire end hooking cap.

(A) Wire end hooking cap

3

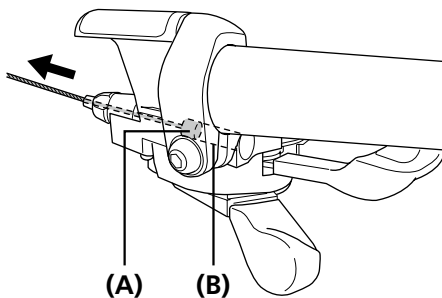


Insert the inner cable into the hole in the winder unit, and then pass it through the hole in the cable adjustment barrel.

(A) Hole in cable adjustment barrel

(B) Hole in winder unit

4



Pull the inner cable so that the inner cable drum fits into the hole in the winder unit.

(A) Inner cable drum

(B) Hole in winder unit

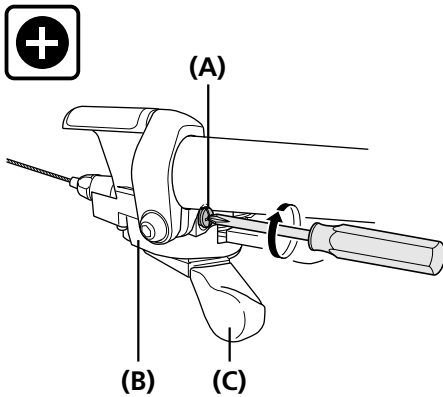


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5



Screw in the wire end hooking cap as shown in the illustration until it stops.

If it is turned any further, it will damage the screw thread in the cover.

In addition, the unit cover may become bent, which may cause an obstruction between the unit cover and the main lever, and the main lever may not operate correctly.

If the main lever does not return properly, loosen the wire end hooking cap slightly to make a gap between the main lever and the unit cover, and check that this improves the returning of the main lever.

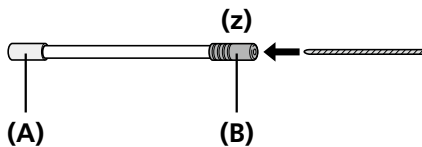
- (A) Wire end hooking cap
- (B) Unit cover
- (C) Main lever

Tightening torque



0.3 - 0.5 N·m

6



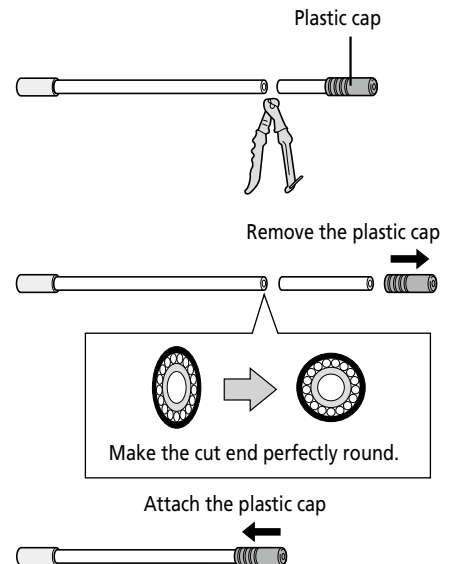
Pass the inner cable through the OT-SP41 outer casing through the end with the plastic cap.

(z) Lever side

- (A) Aluminum cap
- (B) Plastic cap



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.

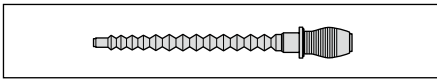
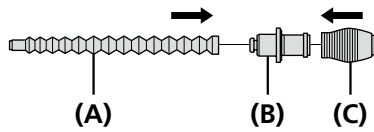


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Cassette joint end

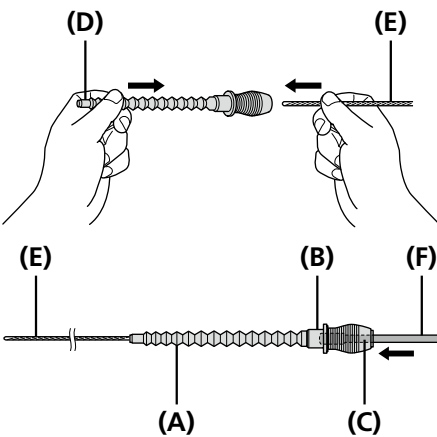
1



Install the rubber cover and rubber bellows to the outer casing holder unit.

- (A) Rubber bellows
- (B) Outer casing holder unit
- (C) Rubber cover

2



Wipe away any grease which may be on the inner cable and, while holding the end of the rubber bellows, pass the inner cable through. Be careful not to pierce the rubber bellows with the end of the inner cable at this time.

Slide the rubber bellows onto the inner cable.

After this, insert the outer casing into the rubber cover and set it into the outer casing holder unit. Push the outer casing so that it securely touches the holder unit.

- (A) Rubber bellows
- (B) Outer casing holder unit
- (C) Rubber cover
- (D) End of rubber bellows
- (E) Inner cable
- (F) Outer casing

NOTICE

Use a new inner cable. Do not use a cable which has had the end cut off. Pay attention to the end of the inner cable.

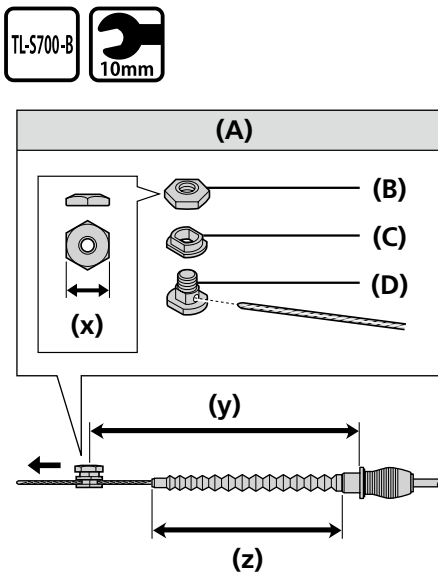


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3



After checking that the end of the outer casing is sitting securely in the cable adjustment barrel of the shifting lever, attach the inner cable fixing bolt unit to the inner cable.

Then, pull the inner cable while attaching the inner cable fixing bolt unit.

- (x) 10 mm
- (y) 184 mm
- (z) 75 mm or less

- (A) Inner cable fixing bolt unit
- (B) Inner cable fixing nut
- (C) Inner cable fixing washer (Black)
- (D) Inner cable fixing bolt (Black)

Tightening torque



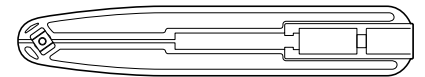
3.5 - 5.5 N·m

NOTICE

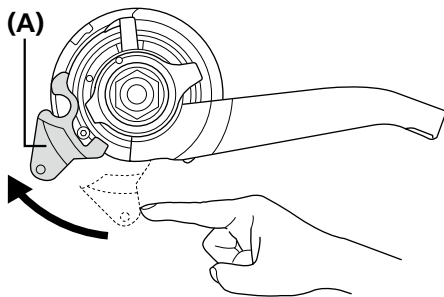
This inner cable fixing bolt unit is designed only for CJ-S700. 7-step and 8-step fixing bolt units cannot be used.



When installing the inner cable fixing bolt unit, use the setting tool TL-S700-B.



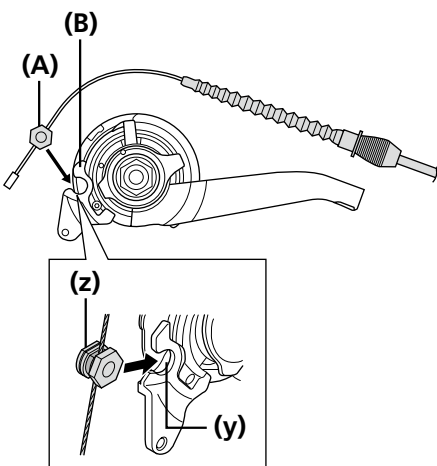
4



Turn the lever of the pulley clockwise. In the following steps 5 and 7, continue to work in this condition.

- (A) Pulley lever

5



Bring the cable around to the cassette joint pulley, hold it so that the inner cable fixing nut is facing to the outside (toward the fork end), and then slide the flats part (y) of the inner cable fixing washer into the gap (z) in the pulley.

- (A) Inner cable fixing nut
- (B) Pulley

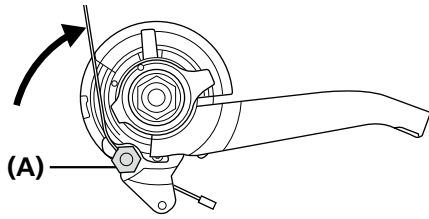


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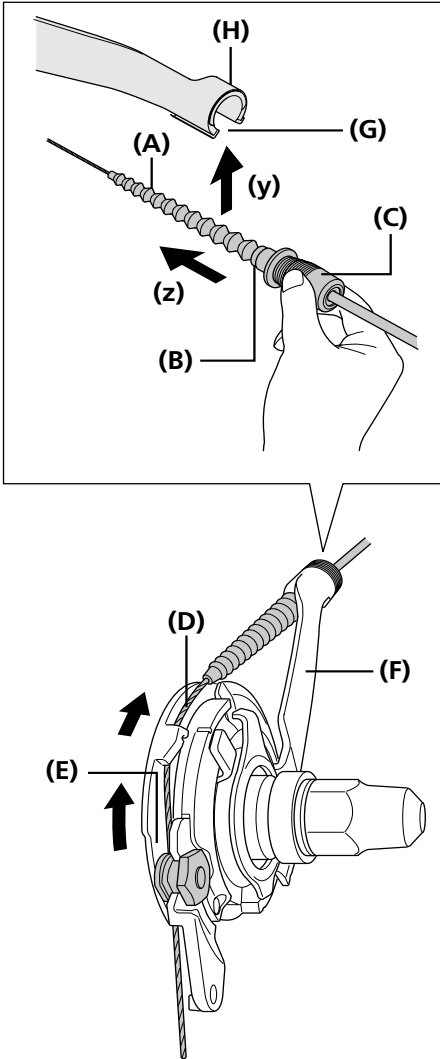
6



Turn the cable 60° counterclockwise and attach it to the hook.

(A) Hook

7

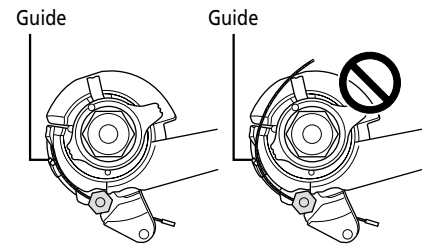


Set the inner cable in the pulley as shown in the illustration and, while holding the rubber cover, insert the rubber bellows of the inner cable into the slit in the cassette joint bracket (y) and securely set the outer casing holder unit into the outer casing holder of the cassette joint (z). Be careful not to damage the rubber bellows at this time.

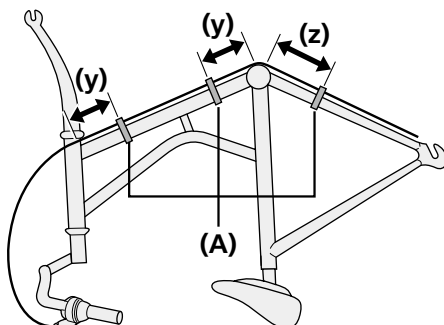
(A) Rubber bellows
(B) Outer casing holder unit
(C) Rubber cover
(D) Inner cable
(E) Pulley
(F) Bracket
(G) Slit
(H) Outer casing holder

NOTICE

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



8



Secure the cable to the frame with the outer casing bands.

(y) 10 mm
(z) 15 mm

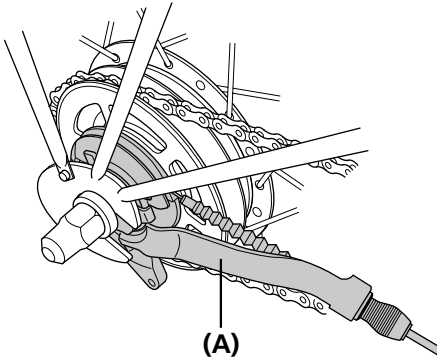
(A) Outer casing bands



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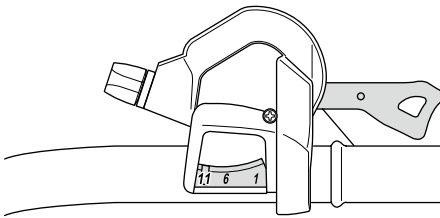
Disconnecting the shifting cable when removing the rear wheel from the frame



Disconnect the cable from the cassette joint when removing the rear wheel from the frame.

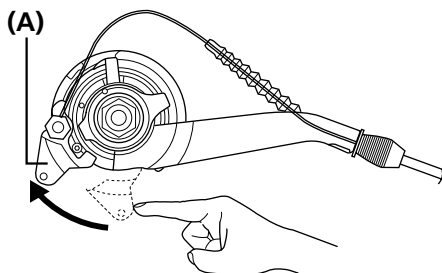
(A) Cassette joint

1



Set the shifting lever to 11.

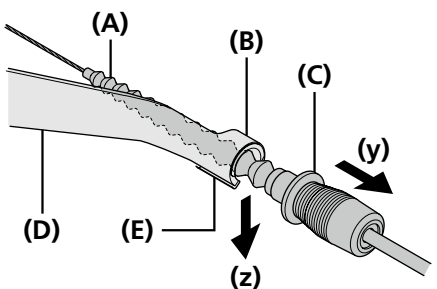
2



Press the lever of the pulley clockwise to loosen the inner cable. In the following steps 3 and 4, continue to work in this condition.

(A) Pulley lever

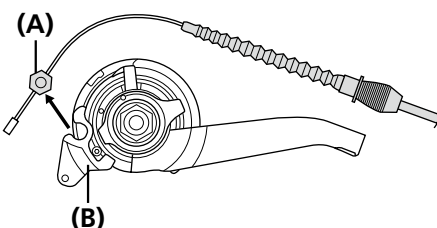
3



Remove the outer casing holder unit from the outer casing holder of the cassette joint (y). Remove the inner cable the rubber bellows is attached to from the slit in the bracket (z). Be careful not to damage the rubber bellows at this time.

(A) Rubber bellows
(B) Outer casing holder
(C) Outer casing holder unit
(D) Bracket
(E) Slit

4



Remove the inner cable fixing bolt unit from the cassette joint pulley.

(A) Inner cable fixing bolt unit
(B) Cassette joint pulley

NOTICE

If reinstalling the cable, refer to steps 4 to 7 in "Cassette joint end".



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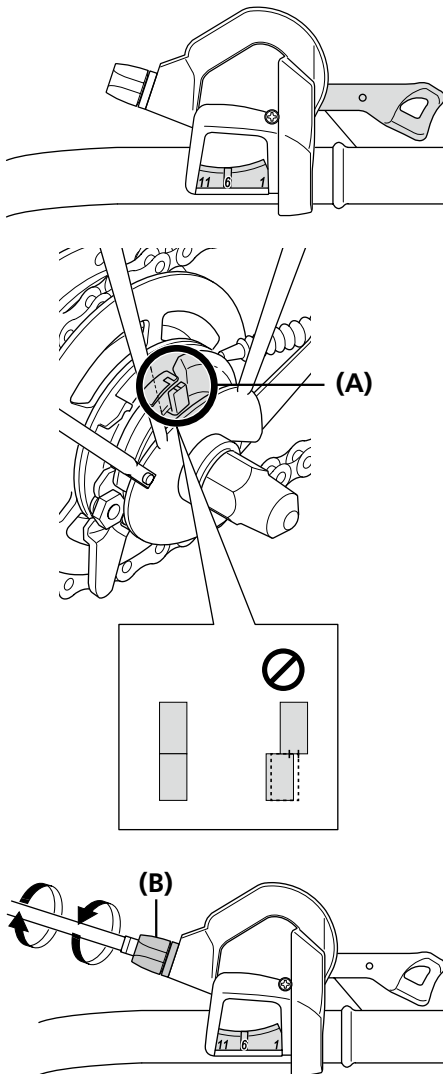
<https://si.shimano.com/DM/SG0004>

ADJUSTMENT

■ Adjusting the cassette joint

For internal 11-speed

1



Set the shifting lever from **[11]** to **[6]**.
Check to be sure that the yellow setting lines on the cassette joint bracket and pulley are aligned at this time.

If the yellow setting lines are not aligned, turn the cable adjustment barrel of the shifting lever to align the yellow setting lines.

After this, move the shifting lever once more from **[6]** to **[11]** and then back to **[6]**, and then re-check to be sure that the yellow setting lines are aligned.

- (A) Yellow setting lines
- (B) Cable adjustment barrel

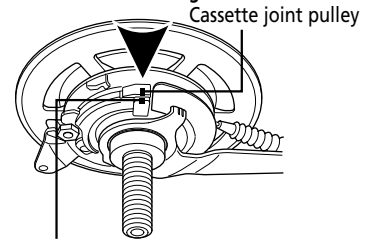


TECH TIPS

- The yellow setting lines on the cassette joint are located in two places. Use the one that is easiest to see.

< When bicycle is standing up >

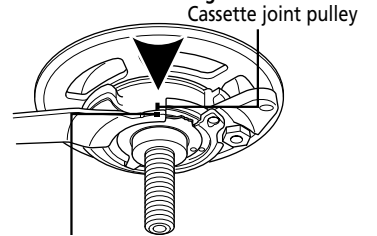
Should be straight



Cassette joint bracket

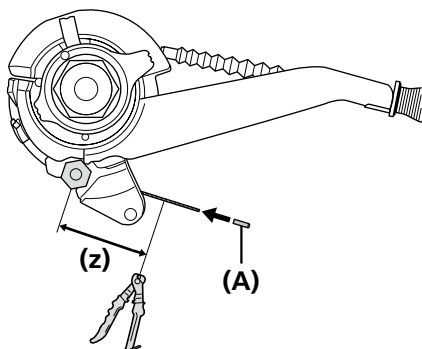
< When bicycle is upside down >

Should be straight



Cassette joint bracket

2



After adjusting the cassette joint, cut off the excess length of inner cable.

Then install the inner end cap.
After attaching the inner end cap, bend the inner cable outward (toward the frame end) to prevent it from coming in contact with the chain.

(z) 25 – 30 mm

- (A) Inner end cap



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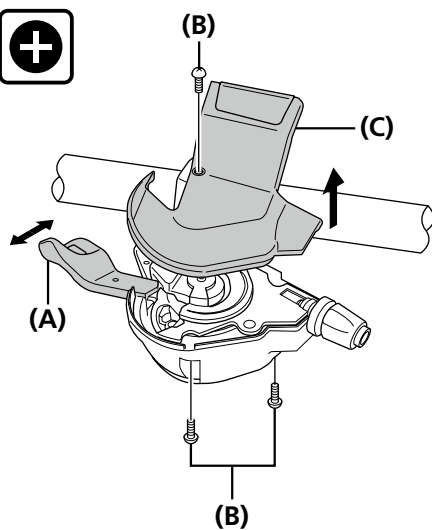
MAINTENANCE

■ Replacement and assembly of the indicator unit

Disassembly and assembly should only be carried out when removing and replacing the indicator unit.

For internal 11-speed

Removal



Operate the release lever 10 times or more to set it to **[11]**.

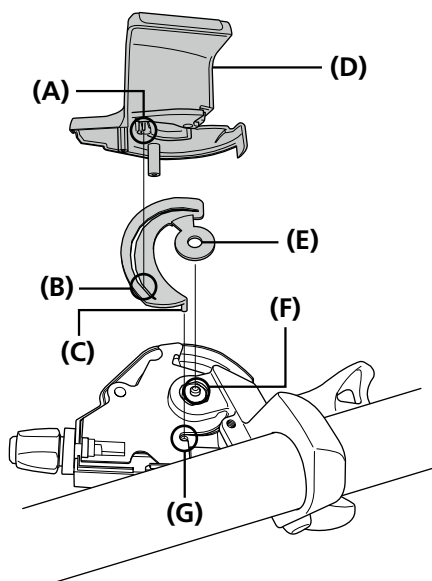
Loosen and remove the three cover fixing screws which are securing the indicator unit.

Remove the indicator unit as shown in the illustration.

- (A) Release lever
- (B) Cover fixing screws
- (C) Indicator unit

Installation

1



Check that the needle of the indicator is on the left side (**[11]** position), and then install the indicator unit so that it is facing straight upward.

At this time, check that the main axle is installed in the cam unit hole and that the pin of the cam unit is installed in the winder unit hole, and then insert the indicator shaft protruding from the bottom of the indicator unit into the groove of the cam unit.

- (A) Indicator shaft
- (B) Cam unit groove (**[11]** position)
- (C) Cam unit pin
- (D) Indicator unit
- (E) Cam unit hole
- (F) Main axle
- (G) Winder unit hole



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Dealer's Manual (SG-S7001-11)

2 Secure the indicator unit with the three cover fixing screws.

3 Operate the main and the release levers, to check their operation.
If they do not operate correctly, reinstall the indicator unit while taking particular note of step 1.

Tightening torque	
	0.3 - 0.5 N·m



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■ In the case of 11-speed internal geared hub (Oil maintenance kit: Y13098023)

Tools included in the kit: Syringe, Tube, Bleed nipple, O ring, Container

General Safety Information

WARNING

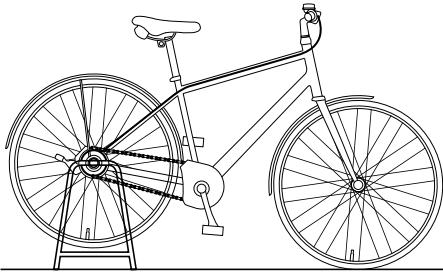
- When changing the oil, be careful that no oil gets on the disc brake rotor, brake pads, on the rim when using rim brakes, etc. If oil gets on any of these parts, there is a danger that brake performance may be reduced. Take care of this problem according to the procedures in the brake instruction manual.
- 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 by mistake, go immediately to an area with fresh air, stay warm and quiet, and seek professional medical advice if required. If breathing stops, perform artificial respiration, and if breathing is difficult, provide the affected person with oxygen.

Cautions regarding handling of SG-S700 OIL :

- Contact with eyes may result in irritation. Use safety glasses when handling, and avoid contact with eyes. In the event of eye contact, flush with fresh water and seek medical assistance immediately.
- Contact with skin may cause a rash and discomfort. Use gloves when handling. In the event of skin contact, wash well with soap and water. If skin condition becomes abnormal, seek medical assistance immediately.
- 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.
- When storing, close the container tightly to prevent water or foreign materials from entering; store out of reach of children; do not store in areas subject to direct sunlight, areas subject to temperatures above 40°C, areas subject to water or high humidity where rust is likely to occur, or in areas where there is a risk of freezing.
- Dispose of used oil, old oil, or oil used for cleaning in accordance with applicable local laws and regulations.
- To maintain product performance, oil should be changed after the first 1,000 km from start of use of the product, and once every 2 years thereafter (after every 5,000 km if bicycle is ridden frequently).
- When performing maintenance, use only Shimano SG-S700 OIL. If SG-S700 OIL is not used, problems such as an oil leakage and gear shifting malfunction may occur.
- When using a 1L can of oil, it may become impossible to suck out oil with a syringe when there is only a little oil left. First, transfer all oil to a different container.
- Read these instructions carefully, and keep them in a safe place for later reference.



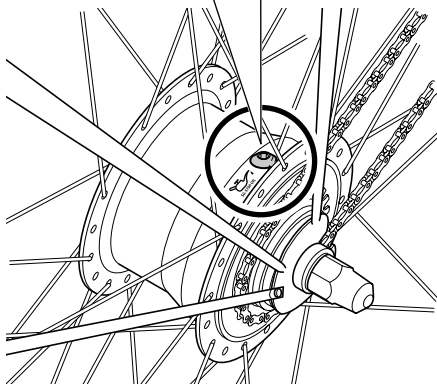
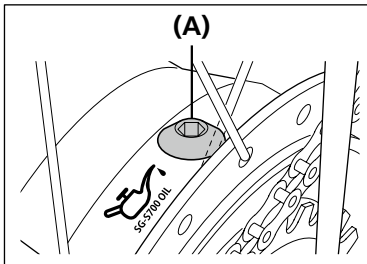
Internal geared hub: Oil replacement



Using a stand, etc., enable the rear wheel to turn while performing work.

Draining out the old oil

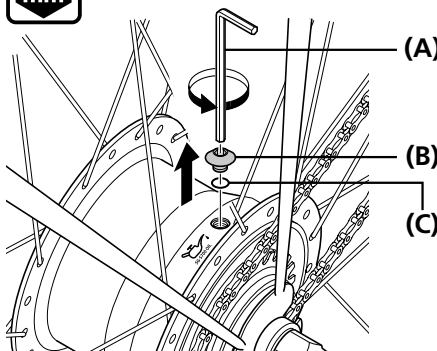
1



Rotate the wheel slowly until the oil port is facing up.

(A) Oil port

2



Remove the oil port bolt and O-ring.

(A) 3mm hexagon wrench

(B) Oil port bolt

(C) O-ring

NOTICE

Be careful that the oil port is facing up; if the oil port bolt is loosened when it is not facing up, the oil inside may leak out.

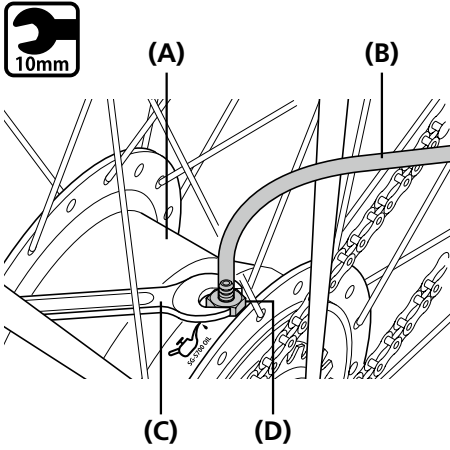


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Dealer's Manual (SG-S7001-11)

3



Attach the bleed nipple with tube attached to the hub shell.

- (A) Hub shell
- (B) Tube
- (C) 10mm spanner
- (D) Bleed nipple

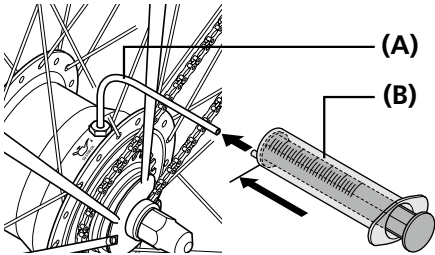
Tightening torque	
	1 - 3 N·m



TECH TIPS

Check that the O-ring is properly installed on the bleed nipple.

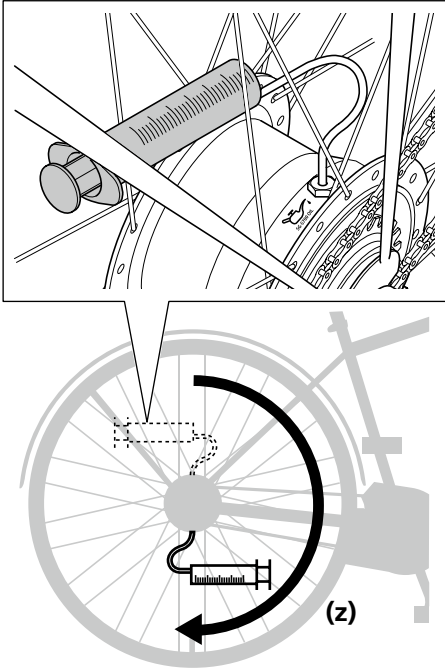
4



With the piston of the syringe pushed fully in, firmly connect the syringe to the tube.

- (A) Tube
- (B) Syringe

5



Insert the syringe between the spokes, and slowly turn the wheel forward until the oil port is facing down.

(z) Turn in forward direction

6

Wait about 5 minutes with the hub kept still and not turning so that the oil settles.

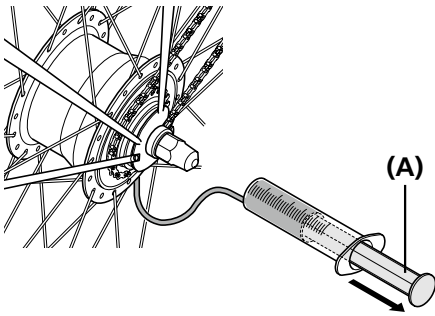


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Dealer's Manual (SG-S7001-11)

7



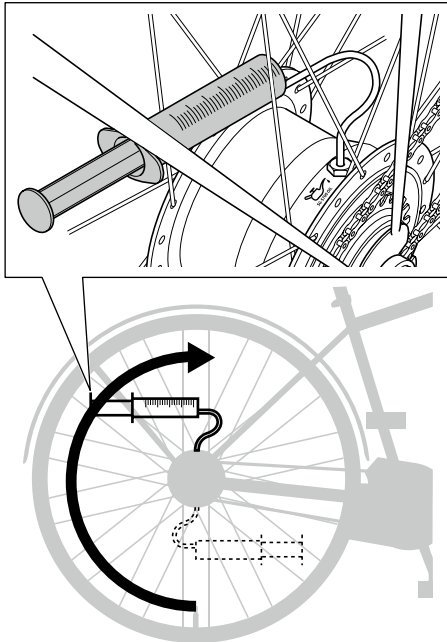
Pull the piston out slowly to draw out the oil inside the hub shell.

(A) Piston

NOTICE

If the piston is pulled out quickly, air is likely to be mixed in.

8

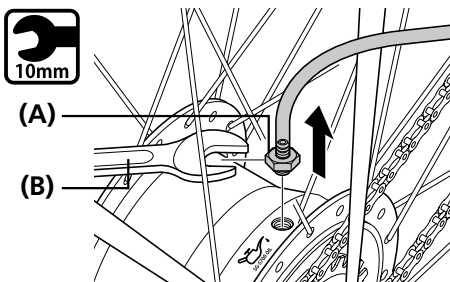


Rotate the wheel slowly until the oil port is facing up.

NOTICE

To make sure that the syringe does not get caught by the chain case, etc., store the syringe between the spokes when turning the wheel.

9

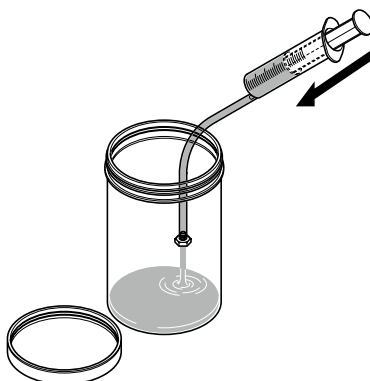


While being careful that the tube does not come off the syringe, remove the bleed nipple.

(A) Bleed nipple

(B) 10mm spanner

10



Remove the old oil from the syringe.



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<https://si.shimano.com/DM/SG0004>

Cleaning the inside

1

Attach the bleed nipple to the hub shell.

Tightening torque



1 - 3 N·m

2

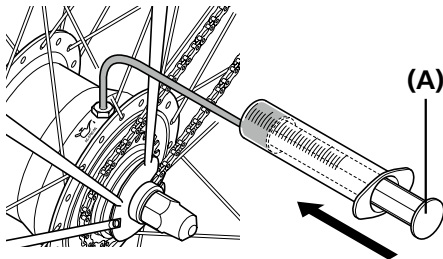
Suck 25ml of new oil into the syringe and connect it firmly to the tube.



TECH TIPS

If the syringe or tube becomes dirty when removing old oil or cleaning the inside of the hub, clean the syringe and tube using parts cleaner, etc., if necessary.

3



Push the piston to inject the new oil into the inside of the hub.

(A) Piston



TECH TIPS

When the oil is forced in, the internal pressure will increase and the piston may push back. If the piston is periodically pulled back to reduce the pressure inside the hub, the oil will be easier to inject into the inside of the hub.

4

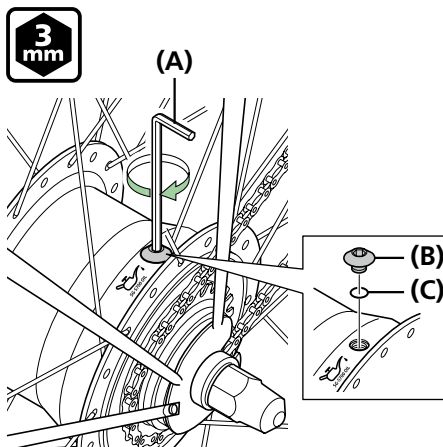
After pulling back the piston to reduce the internal pressure, remove the bleed nipple.



TECH TIPS

If the bleed nipple is removed without pulling back the piston, the oil may flow back into the piston together with air from inside the tube and spill out of the piston.

5



Install the O-ring and the oil port bolt.

(A) 3mm hexagon wrench

(B) Oil port bolt

(C) O-ring

Tightening torque



2 - 3 N·m



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Dealer's Manual (SG-S7001-11)

6 While performing gear-change operations, turn the pedals to turn the wheel for about 1 minute.

7 Keep the wheel still without rotating for about 1 minute.

8 Remove the oil from inside by following the procedures in **Draining out the old oil** above.

Injecting new oil

1 Inject 25ml of new oil into the hub by following steps **Cleaning the inside 1 - 5** above.

2 Clean off any oil that may have gotten on the hub, etc.



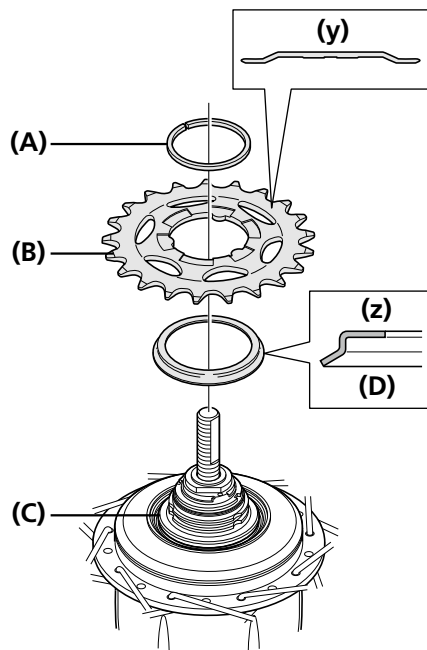


Dealer's Manual

SG-S7051-11

INSTALLATION

Installation of sprockets to the hub (SG-S7051-11/SG-S7051-8/SM-S705)



Place right-hand dust cap B onto the driver on the right side of the hub body.

Next, install the sprocket and secure it in place with the snap ring.

(y) Inward assembling

(z) Note the direction

(A) Snap ring

(B) Sprocket

(C) Driver

(D) Right-hand dust cap B

NOTICE

This product should only be used with inward assembling sprockets with 18T to 23T.

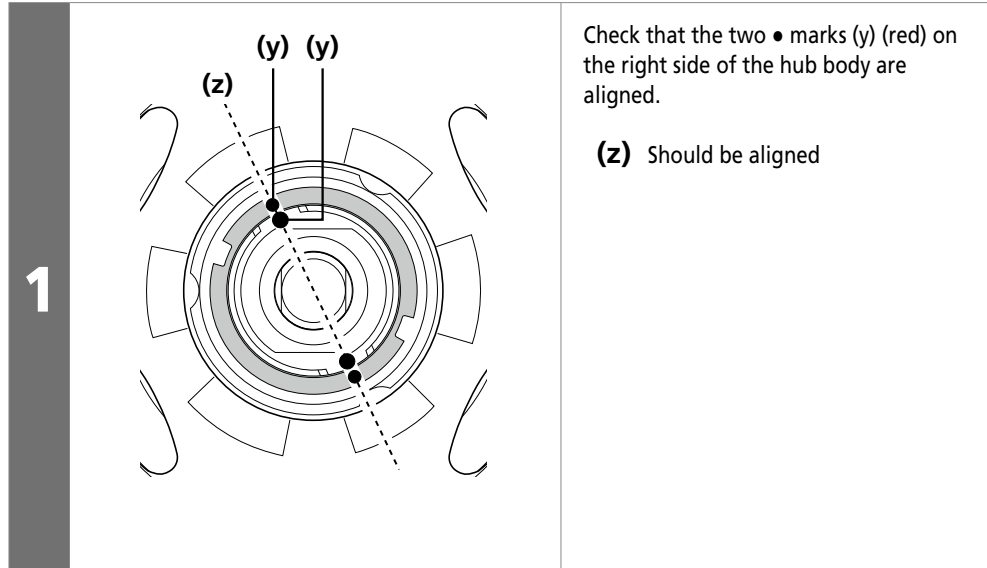


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<https://si.shimano.com/DM/S7051>

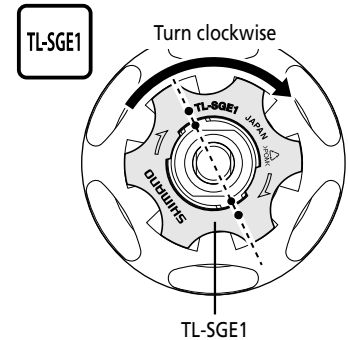
■ Installation of the motor unit to the hub (MU-UR500/MU-S705)

Unless otherwise noted, MU-UR500 is used as an example for this explanation.



TECH TIPS

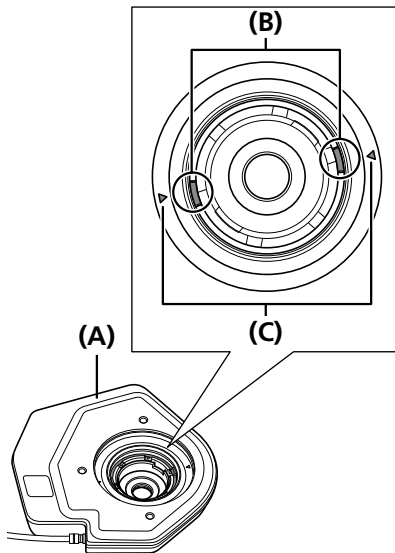
If the two ● marks (y) (red) are not aligned, use the TL-SGE1 to align the two ● marks (y) (red).



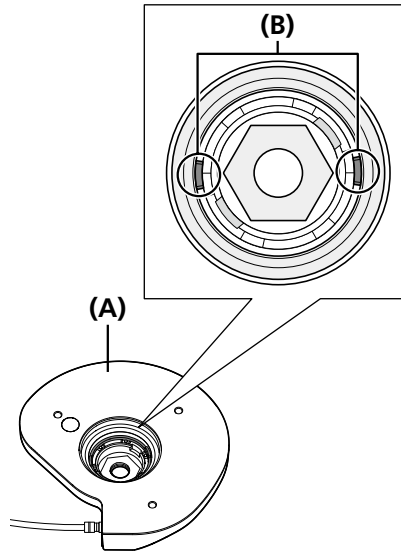
Make sure that the two protrusions on the reverse side of the motor unit are at the initial positions.

- For MU-UR500, confirm that the mark and protrusions are aligned.
- For MU-S705, confirm that the protrusions are positioned as shown in the illustration.

MU-UR500



MU-S705



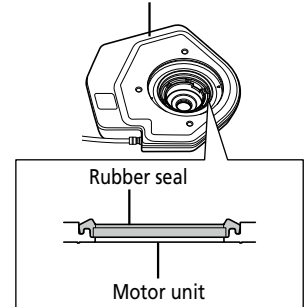
- (A) Reverse side of motor unit
- (B) Protrusion
- (C) Mark (MU-UR500)

NOTICE

Check that the rubber seal is attached. If the rubber seal is not attached, attach as shown in the illustration. There is no compatibility between MU-UR500 and MU-S705 rubber seals.

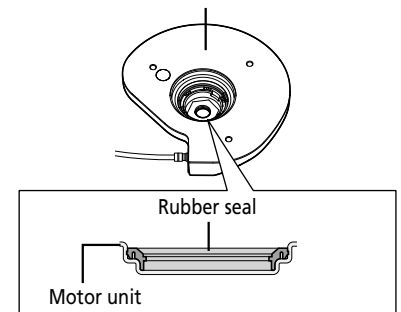
MU-UR500

Reverse side of motor unit



MU-S705

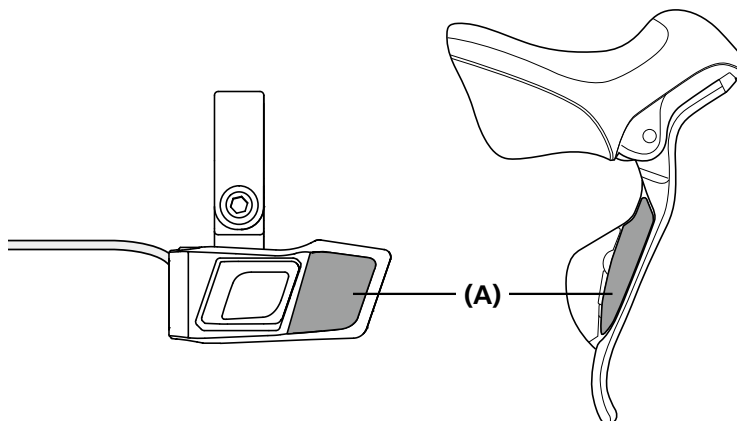
Reverse side of motor unit



- (A) Shifting switch

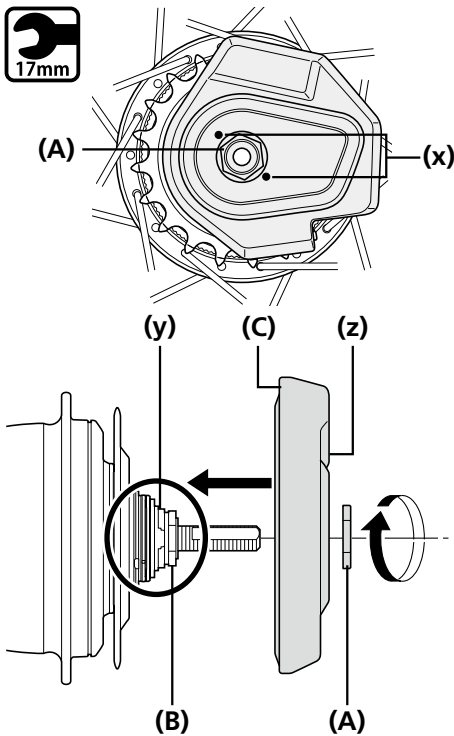
NOTICE

The motor unit is set at the initial position when it is shipped; therefore, install it without changing the position. If the motor unit may not be at the initial position, push the following shifting switch ten or more times to move the protrusions on the motor unit clockwise (check from the back side of the motor unit). (Check the shifting up and down of the shifting switch in advance as it may have been switched by customization.) If the motor unit is installed off the initial position, some gears may become unavailable and the hub or the motor unit may be damaged.



Dealer's Manual (SG-S7051-11)

3



Install the motor unit to the hub so that the • mark (x) on the motor unit is aligned with the • mark (y) on the hub lock spacer.

After this, gently push the motor unit while turning it slowly to set it correctly until it stops turning on the hub axle.

Next, secure the motor unit by tightening right-hand lock nut B.

- (x) Motor unit • mark
MU-UR500: Silver
MU-S705: Yellow
- (y) hub lock spacer • mark (red)
This is the mark for which the position was aligned in step 1.
- (z) Outer side

- (A) Right-hand lock nut B
- (B) Right-hand lock nut A
- (C) Motor unit

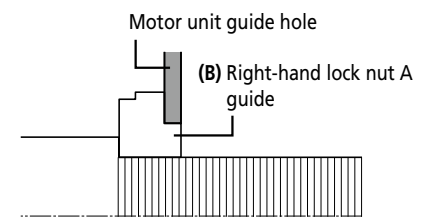
Tightening torque



6 - 10 N·m

NOTICE

Check that the guide of right-hand lock nut A is seated securely in the guide hole on the front of the motor unit.

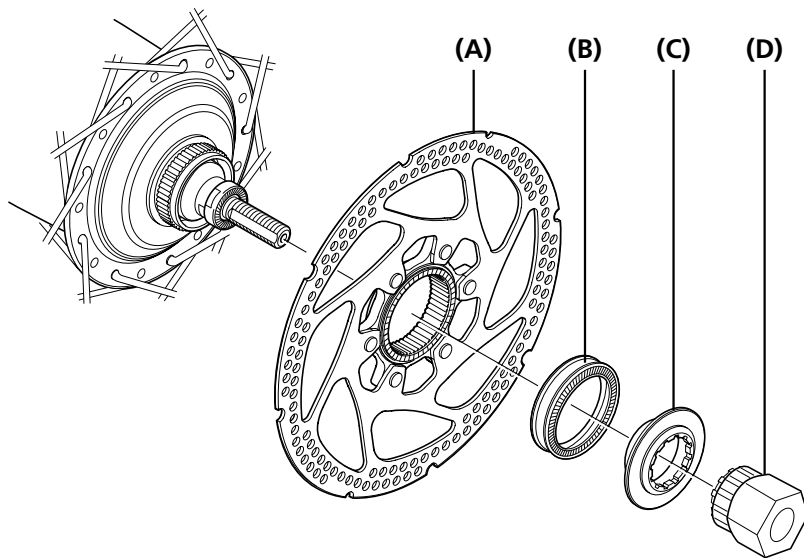


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<https://si.shimano.com/DM/S7051>

Installation of the disc brake rotor

Install the disc brake rotor as shown in the illustration.



- (A) Disc brake rotor
- (B) Rotor spacer
- (C) Disc brake rotor installation ring
- (D) TL-LR10

Tightening torque



40 N·m



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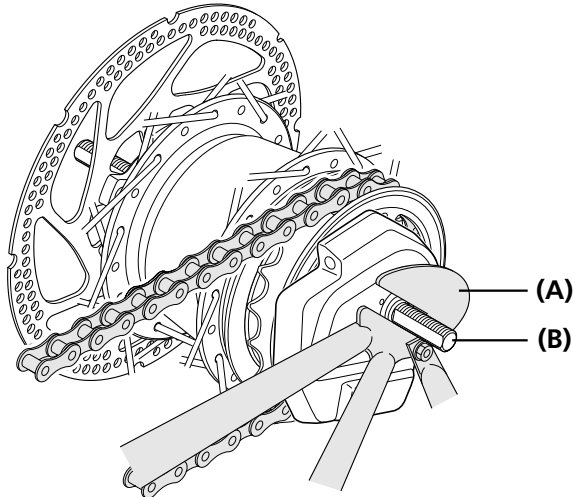
<https://si.shimano.com/DM/S7051>

Installation of the hub to the frame

The method of installing the hub to the frame is the same when the chain tensioner is being used and when it is not being used.

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

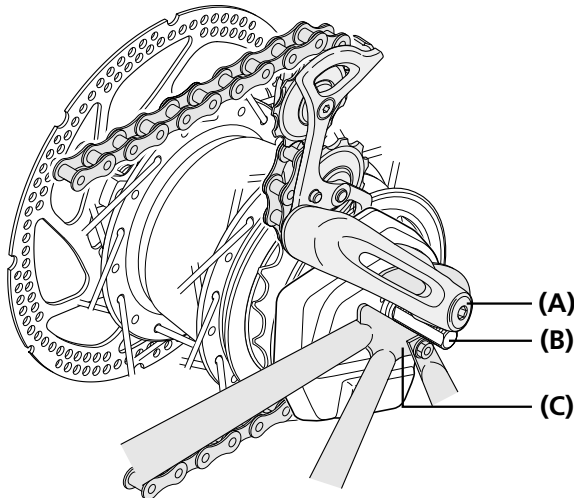
When not using chain tensioner



(A) Dropout

(B) Hub axle

When using chain tensioner



(A) Chain tensioner

(B) Hub axle

(C) Dropout



TECH TIPS

When using the chain tensioner, be sure to read the attached instruction manual for the CT-S500 chain tensioner.



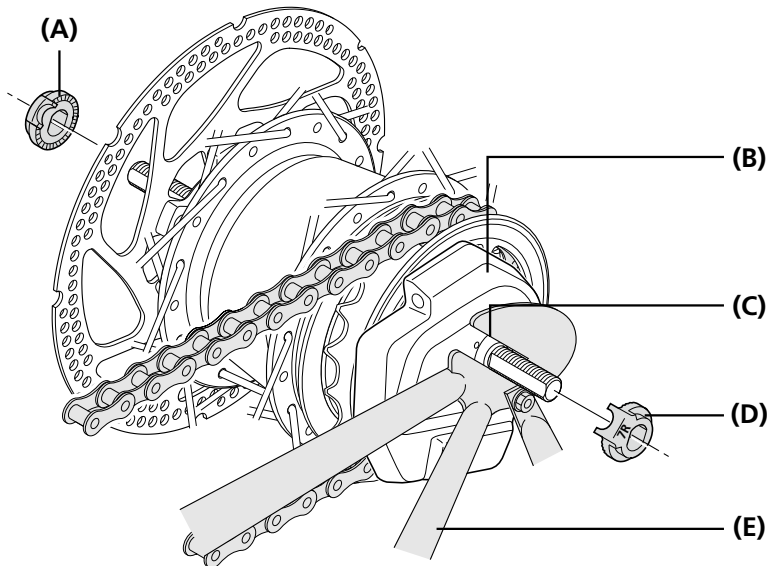
Click here for the latest Dealer's Manual

<https://si.shimano.com/DM/S7051>

2

Place non-turn washers and onto the right and left sides of the hub axle.

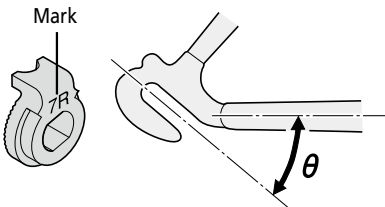
At this time, turn the motor unit so that the projecting parts of the non-turn washers fit into the grooves of the dropouts.



- (A) Non-turn washer (for left-side use)
- (B) Motor unit
- (C) Groove in dropout
- (D) Non-turn washer (for right-side use)
- (E) Chainstay

TECH TIPS

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



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

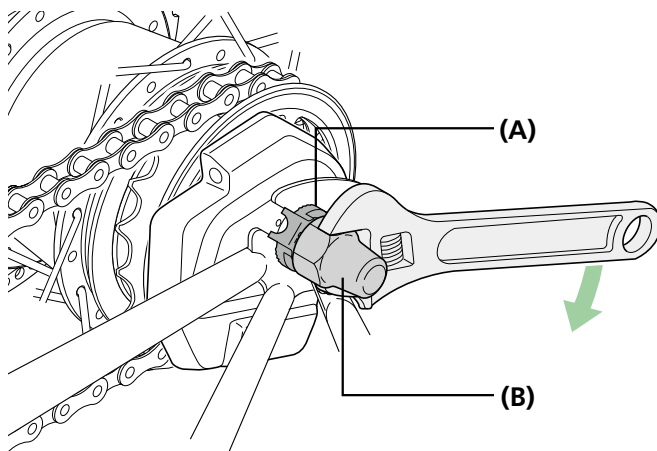
Dropout	Non-turn washer		
	Mark/Color		Size
	For right	For left	
Standard	5R/Yellow	5L/Brown	$\theta \leq 20^\circ$
	7R/Black	7L/Gray	$\theta \leq 38^\circ$
Reversed	6R/Silver	6L/White	$\theta = 0^\circ$
Reversed (Full chain case)	5R/Yellow	5L/Brown	$\theta = 0^\circ$
Vertical	8R/Blue	8L/Green	$\theta = 60^\circ - 90^\circ$



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<https://si.shimano.com/DM/S7051>

Take up slack in the chain and secure the wheel to the frame with the hub nut.



3

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

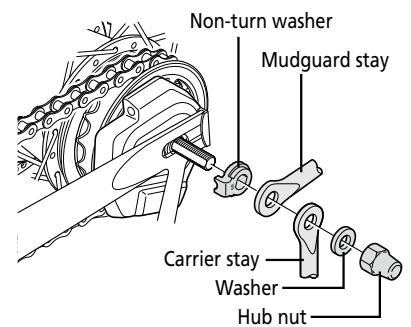
Tightening torque



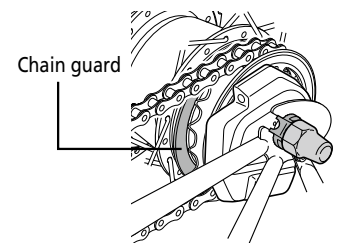
30 - 45 N·m

NOTICE

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



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



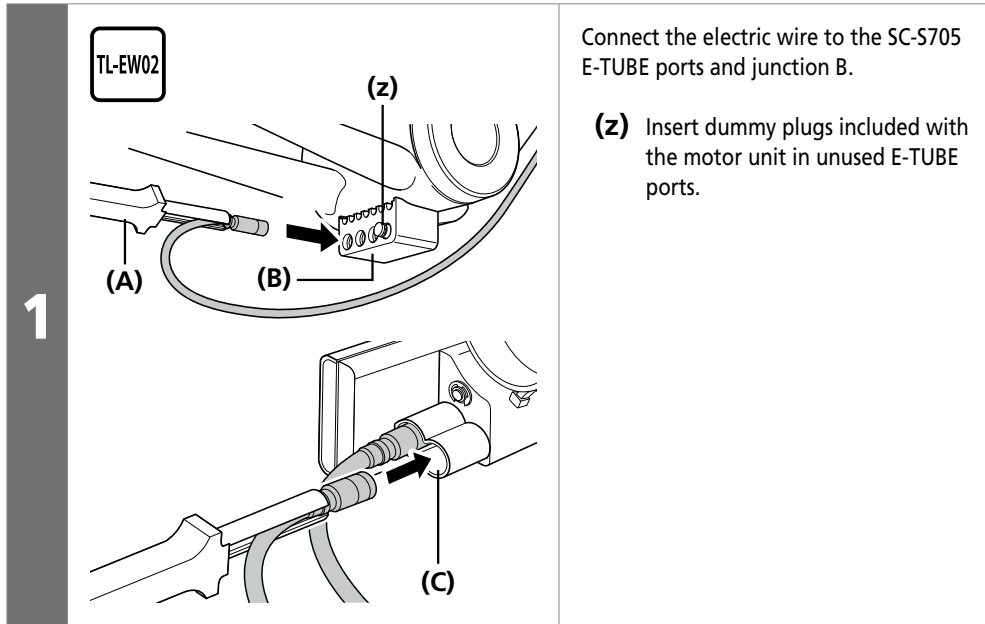
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CONNECTION OF THE ELECTRIC WIRES

■ Connection of junction

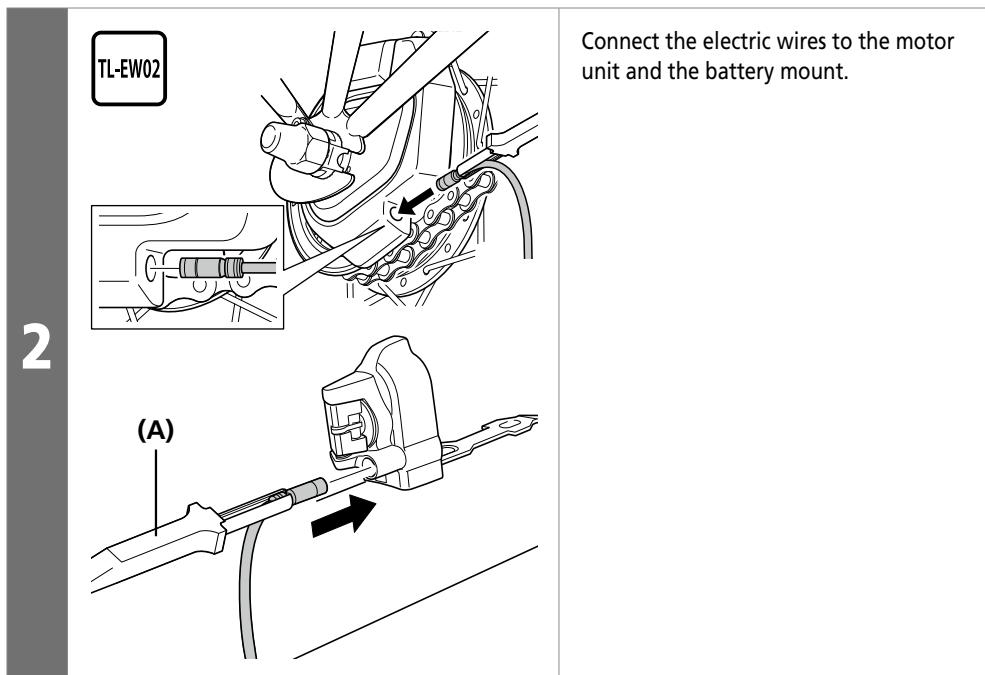
External battery mount type (SM-JC40)



- (A) TL-EW02
- (B) Junction B
- (C) E-TUBE ports

NOTICE

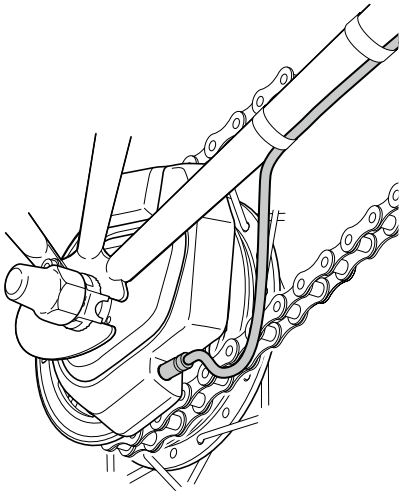
Be sure to push them together until they connect with a click.



- (A) TL-EW02



3



Temporarily secure the electric wire along the frame with tape, and connect it to junction B.

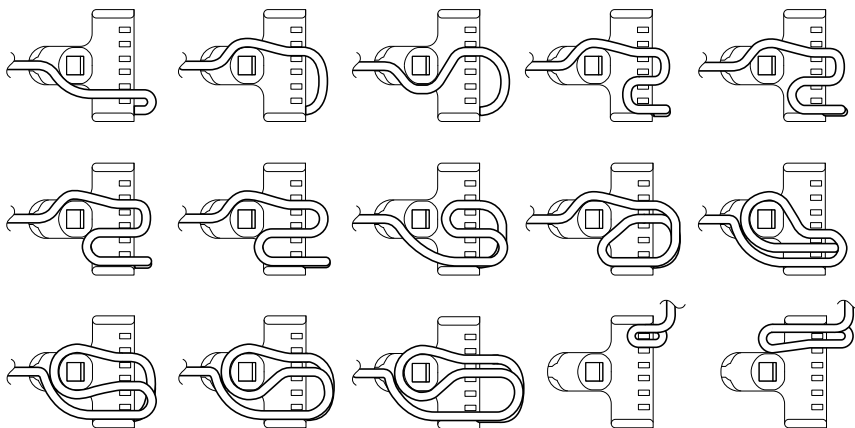
NOTICE

When routing the electric wire to the motor unit, be sure to install it to the bottom of the chainstay to avoid any interference between the cable and the chain.

4

Wind any excess length of electric wire inside junction B to adjust the length.

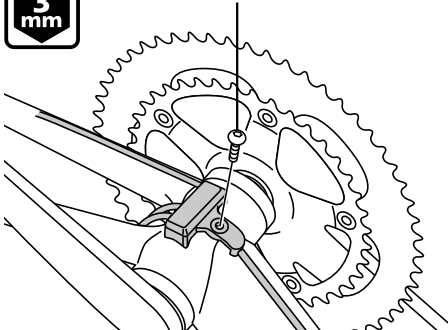
Example of adjusting junction B length



5



(A)



Once the electric wires have been routed, secure junction B underneath the bottom bracket shell.

(A) Junction B fixing bolt
(10.5 mm or 15 mm)

Tightening torque



1.5 - 2 N·m

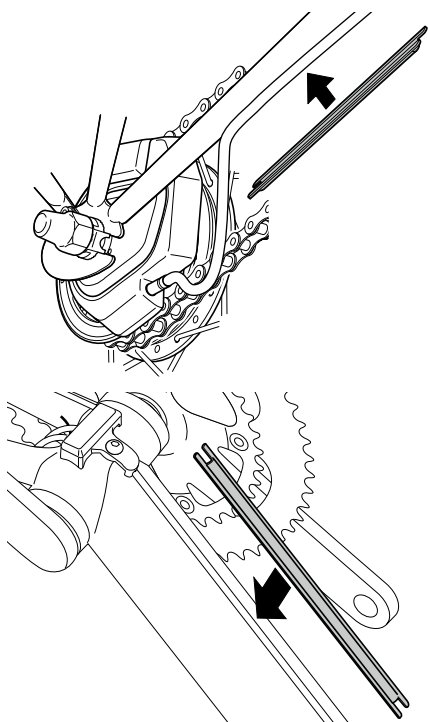


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Dealer's Manual (SG-S7051-11)

6



Next, install the electric wire cover onto the frame.

In order to make sure that the electric wire cover is securely installed, clean the frame with alcohol or some other cleaning agent to remove any grease or other substances before installing the cover.

Place the electric wire cover over the electric wires, and then attach it to the frame.

7

After connecting the electric wires to all of the components, install the battery and check the operation.

Check that gear-shifting of the rear can be performed properly by operating the shifting switch.



Disconnection of the electric wires

NOTICE

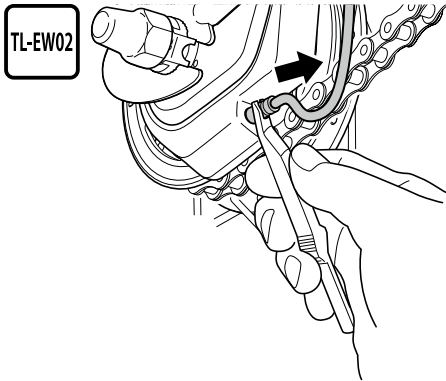
Do not keep connecting and disconnecting the small waterproof connector. The waterproof section or the connecting section may become worn or deformed, and the function may be affected.

NOTICE

Use the wide end of the TL-EW02 Shimano original tool to disconnect the electric wires. If you pull too firmly, problems with operation may occur. Insert so that the flat side is facing toward the motor unit, and then tilt it so as to push out the connector of the electric wire.

1

MU-UR500/MU-S705



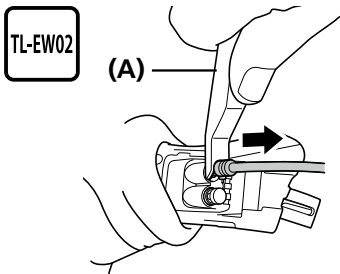
Use the wide end of the TL-EW02 Shimano original tool to disconnect the electric wires.

2

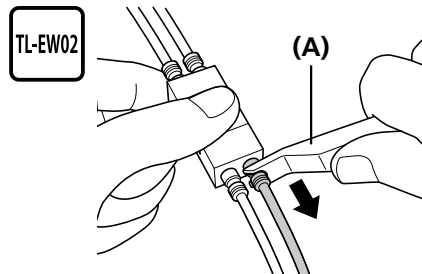
When disconnecting the electric wire from a lever, face the flat side toward the lever.

When disconnecting the connector of junction, insert the Shimano original tool so that the flat side is facing toward junction.

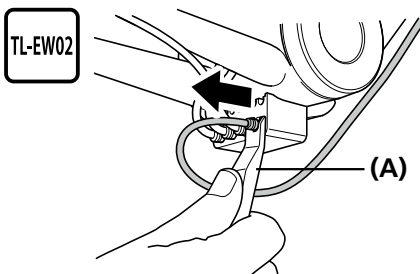
ST-S705



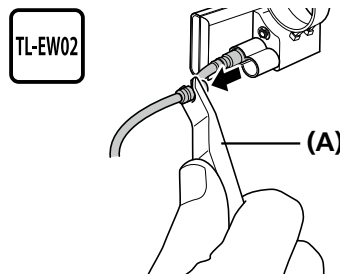
SM-JC41



SM-JC40



SC-S705



3

Run any excess length of electric wire along the handlebar, and use zip tie or similar to secure the electric wire to the handlebar.

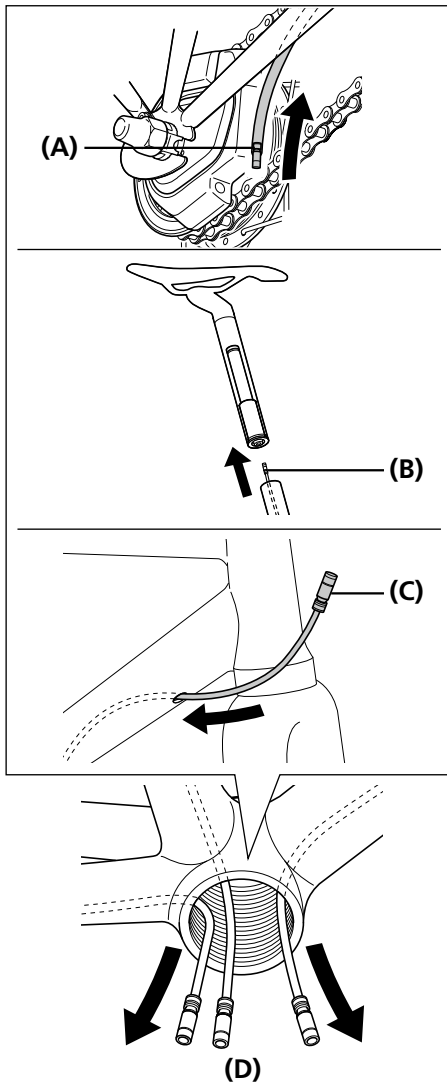


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Built-in battery mount type (SM-JC41)

1

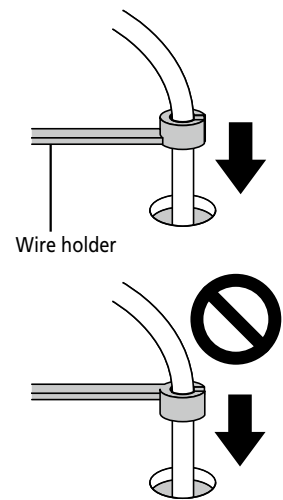


First, insert the electric wire for each of SC-S705, the battery mount, and the motor unit through the hole in the frame to the hanger section.

- (A) Electric wire for motor unit
- (B) Electric wire for built-in battery
- (C) Electric wire for SC-S705
- (D) Bottom bracket shell

NOTICE

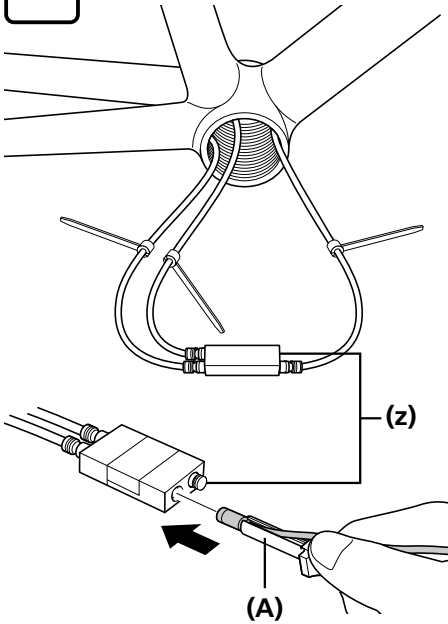
The electric wires have a correct way of being inserted.
Make sure that you insert them from the direction shown in the illustration.



Dealer's Manual (SG-S7051-11)

2

TL-EW02



Connect each electric wire to junction B.

- (z) Insert a dummy plug in the unused E-TUBE ports.
(Dummy plug is included with MU-UR500/MU-S705.)

(A) TL-EW02

NOTICE

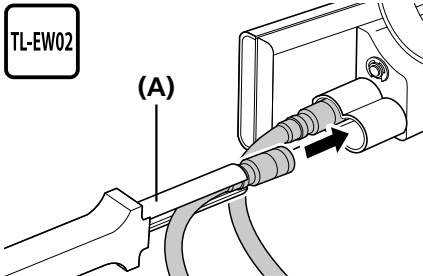
Be sure to push them together until they connect with a click.

3

Connect the electric wires to SC-S705, the motor unit and the battery mount.

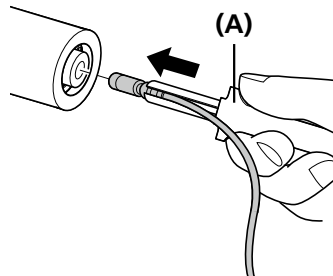
SC-S705

TL-EW02



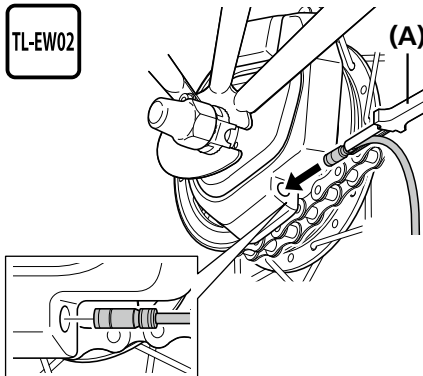
Battery mount

TL-EW02



Motor unit

TL-EW02



(A) TL-EW02

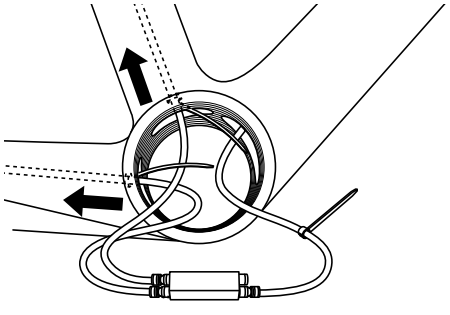
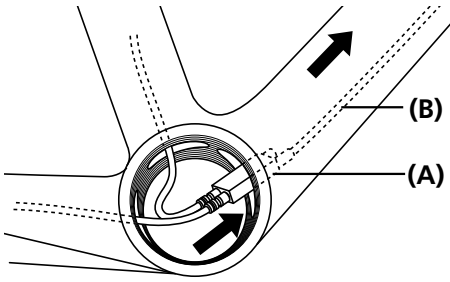
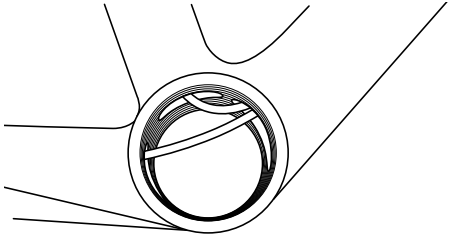


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Dealer's Manual (SG-S7051-11)

Routing junction B and the electric wires inside the frame

1		Pass the electric wires for the motor unit and the built-in battery through the chainstay and the seat tube, respectively.
2		Pass the electric wire for SC-S705 and junction B through the down tube. Check that the screws of the bottom bracket shell do not damage any of the components at this time.
3		Make only the electric wires for the motor unit and the built-in battery visible inside the hanger; push unnecessary protruding components such as the wire holder into the frame.

- (A) Junction B
(B) For SC-S705



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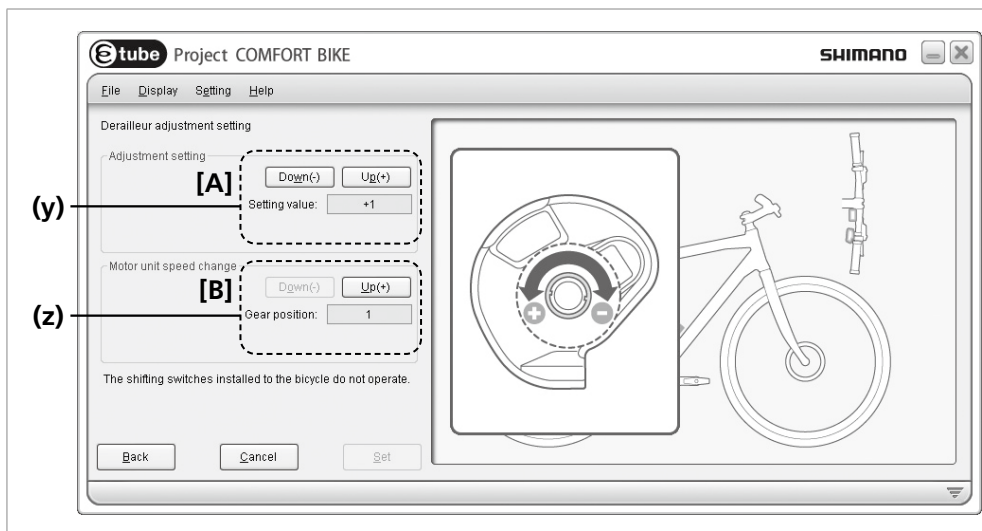
<https://si.shimano.com/DM/S7051>

MAINTENANCE

■ Adjusting the motor unit (connection and communication with PC)

CAUTION

- Improper adjustment may cause gear engagement skipping, resulting in an accidental fall.
- Perform adjustment only when you have an unusual feel during shifting. If there is no problem with shifting, unnecessary adjustment may worsen shifting performance.



(y) Set the adjustment value

(z) Shift gears



TECH TIPS

This screen is shown in English, however, a total of 8 languages are available on E-TUBE PROJECT.
(Japanese/English/German/French/ Italian/ Chinese/Dutch/Spanish)

- 1 Download the latest version of E-TUBE PROJECT from the support website.
(<http://e-tubeproject.shimano.com>)

- 2 Connect SM-PCE1 or SM-BCR2.
Connect the battery when connecting SM-BCR2.

- 3 Activate the adjustment setting mode in the E-TUBE PROJECT.

Check that the adjustment value is set to 0 (default) in the E-TUBE PROJECT [A].

- 4

(1)	Value is set to 0	⇒Go to step 5					
(2)	Value is set to other than 0	Adjust the value to 0 and shift gears to check whether abnormal noise or unusual feels have been eliminated. At this time, shift gears via the E-TUBE PROJECT [B].	<table border="1"><tr><td>The problem persists</td><td>⇒Go to step 5</td></tr><tr><td>The problem has been remedied</td><td>⇒Go to step 6</td></tr></table>	The problem persists	⇒Go to step 5	The problem has been remedied	⇒Go to step 6
The problem persists	⇒Go to step 5						
The problem has been remedied	⇒Go to step 6						



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<https://si.shimano.com/DM/S7051>

Dealer's Manual (SG-S7051-11)

Change the adjustment value by one in the + or - direction in E-TUBE PROJECT (Illustration [A] below), and check the sound or feel of gear shifting.

* Adjustment can be performed 4 increments in the + direction and 4 decrements in the - direction; a total adjustment range of 8 values.

At this time, shift gears via E-TUBE PROJECT [B].

5

(1)	The problem has been remedied	Check the sound or feel of gear shifting again while changing the adjustment value one by one in the same direction. Continue adjusting the value until the abnormal noise or unusual feels are eliminated.		
(2)	No sign of improvement	Change the adjustment value by one again in the same direction and then check the sound or feel of gear shifting again.	The problem has been remedied	⇒ Go to step 5 (1)
			The condition has worsened	⇒ Go to step 5 (3)
(3)	The condition has worsened	Change the adjustment value by two in the opposite direction and then check the sound or feel of gear shifting again. Continue adjusting the value by one in the same direction until the abnormal noise or unusual feels are eliminated.		

6

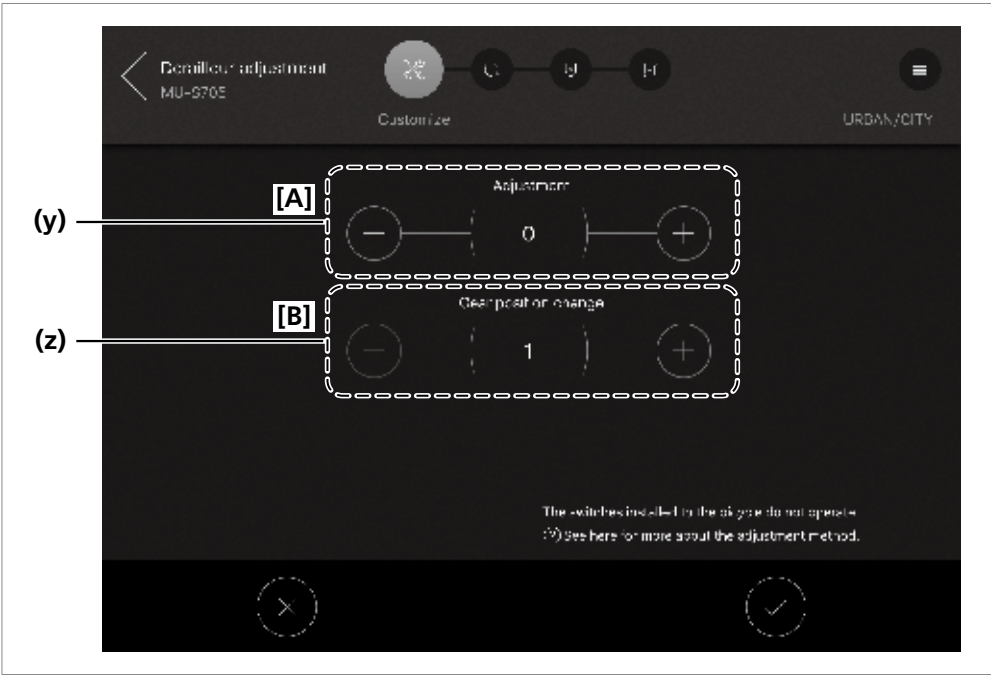
Finally, ride the bicycle to check whether there is no problem.



■ Adjusting the motor unit
(connection and communication with smartphone or tablet)

CAUTION

- Improper adjustment may cause gear engagement skipping, resulting in an accidental fall.
- Perform adjustment only when you have an unusual feel during shifting. If there is no problem with shifting, unnecessary adjustment may worsen shifting performance.



- (y) Set the adjustment value
- (z) Shift gears

TECH TIPS

This screen is shown in English, however, a total of 8 languages are available on E-TUBE PROJECT.
(Japanese/English/German/French/Italian/Chinese/Dutch/Spanish)

1

Download E-TUBE PROJECT for smartphones/tablets.

2

Establish a Bluetooth LE connection with a smartphone or tablet referring to the section "About wireless functions (SC-MT800)".

3

Activate the adjustment setting mode in E-TUBE PROJECT.

4

Check that the adjustment value is set to 0 (default) in E-TUBE PROJECT [A].

(1)	Value is set to 0	⇒ Go to step 5		
(2)	Value is set to other than 0	Adjust the value to 0 and shift gears to check whether abnormal noise or unusual feels have been eliminated. At this time, shift gears via E-TUBE PROJECT [B].	The problem persists	⇒ Go to step 5
			The problem has been remedied	⇒ Go to step 6

Dealer's Manual (SG-S7051-11)

Change the adjustment value by one in the + or - direction in E-TUBE PROJECT (Illustration [A] below), and check the sound or feel of gear shifting.

* Adjustment can be performed 4 increments in the + direction and 4 decrements in the - direction; a total adjustment range of 8 values.

At this time, shift gears via E-TUBE PROJECT [B].

5

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			The problem persists	⇒ Go to step 5(3)
(3)	The condition has worsened	Change the adjustment value by two in the opposite direction and then check the sound or feel of gear shifting again. Continue adjusting the value by one in the same direction until the abnormal noise or unusual feels are eliminated.		

6

Finally, ride the bicycle to check whether there is no problem.



■ In the case of 11-speed internal geared hub (Oil maintenance kit: Y13098023)

Tools included in the kit: Syringe, Tube, Bleed nipple, O ring, Container

General Safety Information

WARNING

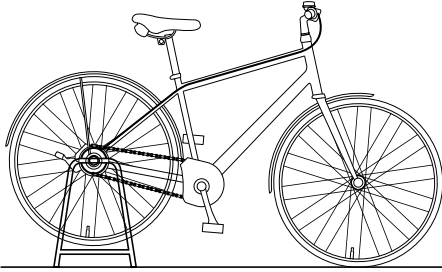
- When changing the oil, be careful that no oil gets on the disc brake rotor, brake pads, on the rim when using rim brakes, etc.
If oil gets on any of these parts, there is a danger that brake performance may be reduced.
Take care of this problem according to the procedures in the brake instruction manual.
- 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 by mistake, go immediately to an area with fresh air, stay warm and quiet, and seek professional medical advice if required.
If breathing stops, perform artificial respiration, and if breathing is difficult, provide the affected person with oxygen.

Cautions regarding handling of SG-S700 OIL :

- Contact with eyes may result in irritation. Use safety glasses when handling, and avoid contact with eyes.
In the event of eye contact, flush with fresh water and seek medical assistance immediately.
- Contact with skin may cause a rash and discomfort. Use gloves when handling. In the event of skin contact, wash well with soap and water.
If skin condition becomes abnormal, seek medical assistance immediately.
- 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.
- When storing, close the container tightly to prevent water or foreign materials from entering; store out of reach of children; do not store in areas subject to direct sunlight, areas subject to temperatures above 40°C, areas subject to water or high humidity where rust is likely to occur, or in areas where there is a risk of freezing.
- Dispose of used oil, old oil, or oil used for cleaning in accordance with applicable local laws and regulations.
- To maintain product performance, oil should be changed after the first 1,000 km from start of use of the product, and once every 2 years thereafter (after every 5,000 km if bicycle is ridden frequently).
- When performing maintenance, use only Shimano SG-S700 OIL.
If SG-S700 OIL is not used, problems such as an oil leakage and gear shifting malfunction may occur.
- When using a 1 L can of oil, it may become impossible to suck out oil with a syringe when there is only a little oil left. First, transfer all oil to a different container.
- Read these instructions carefully, and keep them in a safe place for later reference.



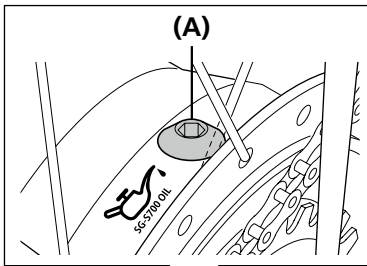
Internal geared hub: Oil replacement



Using a stand, etc., enable the rear wheel to turn while performing work.

Draining out the old oil

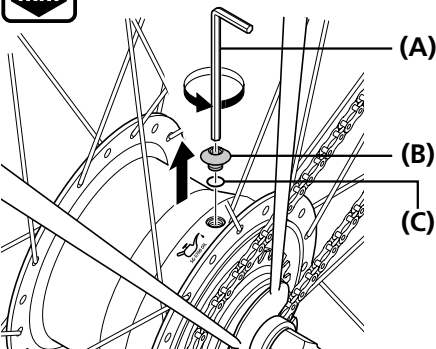
1



Rotate the wheel slowly until the oil port is facing up.

(A) Oil port

2



Remove the oil port bolt and O-ring.

(A) 3 mm hexagon wrench

(B) Oil port bolt

(C) O-ring

NOTICE

Be careful that the oil port is facing up; if the oil port bolt is loosened when it is not facing up, the oil inside may leak out.

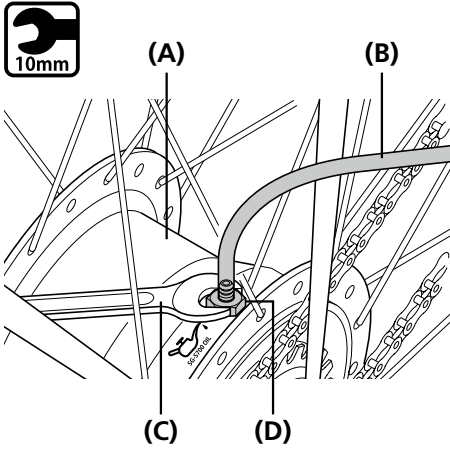


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Dealer's Manual (SG-S7051-11)

3



Attach the bleed nipple with tube attached to the hub shell.

- (A) Hub shell
- (B) Tube
- (C) 10 mm spanner
- (D) Bleed nipple

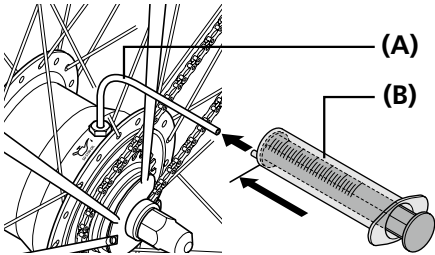
Tightening torque	
	1 - 3 N·m



TECH TIPS

Check that the O-ring is properly installed on the bleed nipple.

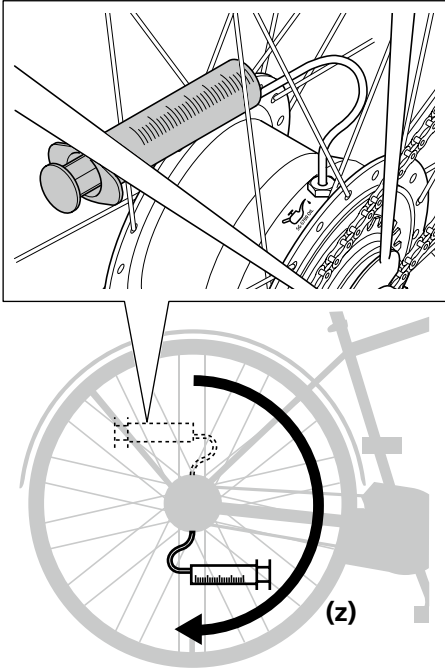
4



With the piston of the syringe pushed fully in, firmly connect the syringe to the tube.

- (A) Tube
- (B) Syringe

5



Insert the syringe between the spokes, and slowly turn the wheel forward until the oil port is facing down.

(z) Turn in forward direction

6

Wait about 5 minutes with the hub kept still and not turning so that the oil settles.

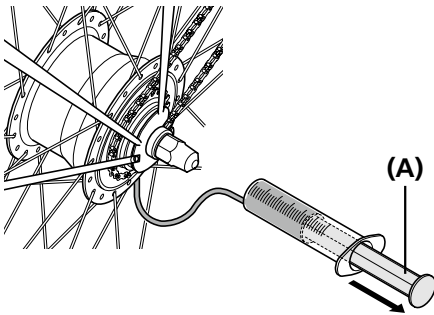


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Dealer's Manual (SG-S7051-11)

7



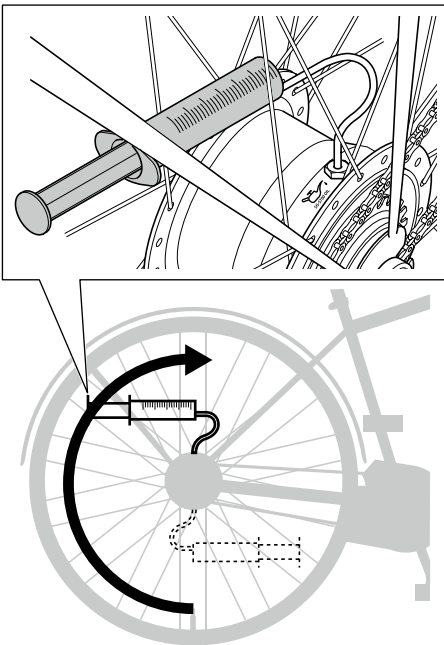
Pull the piston out slowly to draw out the oil inside the hub shell.

(A) Piston

NOTICE

If the piston is pulled out quickly, air is likely to be mixed in.

8

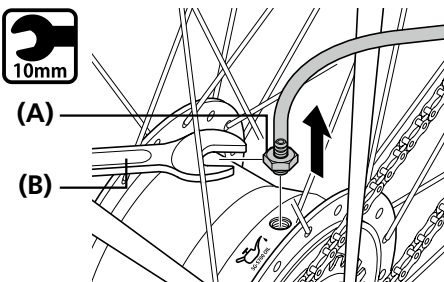


Rotate the wheel slowly until the oil port is facing up.

NOTICE

To make sure that the syringe does not get caught by the chain case, etc., store the syringe between the spokes when turning the wheel.

9

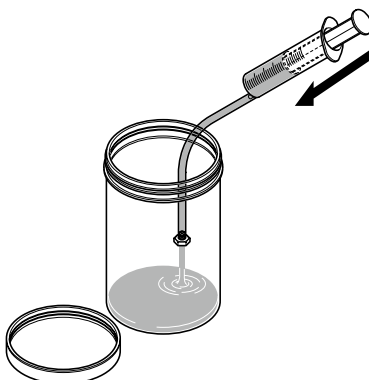


While being careful that the tube does not come off the syringe, remove the bleed nipple.

(A) Bleed nipple

(B) 10 mm spanner

10



Remove the old oil from the syringe.



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Dealer's Manual (SG-S7051-11)

Cleaning the inside

1

Attach the bleed nipple to the hub shell.

Tightening torque



1 - 3 N·m

2

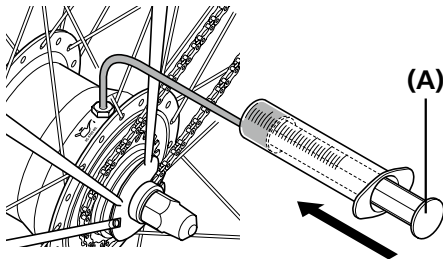
Suck 25 ml of new oil into the syringe and connect it firmly to the tube.



TECH TIPS

If the syringe or tube becomes dirty when removing old oil or cleaning the inside of the hub, clean the syringe and tube using parts cleaner, etc., if necessary.

3



Push the piston to inject the new oil into the inside of the hub.

(A) Piston



TECH TIPS

When the oil is forced in, the internal pressure will increase and the piston may push back. If the piston is periodically pulled back to reduce the pressure inside the hub, the oil will be easier to inject into the inside of the hub.

4

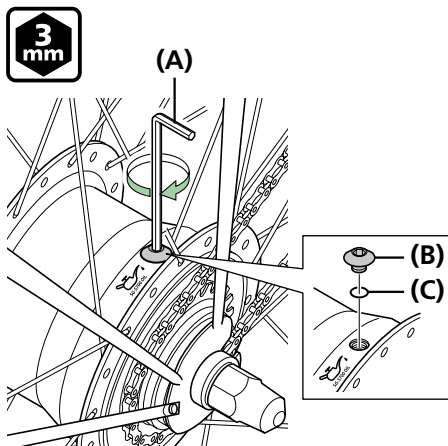
After pulling back the piston to reduce the internal pressure, remove the bleed nipple.



TECH TIPS

If the bleed nipple is removed without pulling back the piston, the oil may flow back into the piston together with air from inside the tube and spill out of the piston.

5



Install the O-ring and the oil port bolt.

(A) 3 mm hexagon wrench

(B) Oil port bolt

(C) O-ring

Tightening torque



2 - 3 N·m



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<https://si.shimano.com/DM/S7051>

Dealer's Manual (SG-S7051-11)

6 While performing gear-change operations, turn the pedals to turn the wheel for about 1 minute.

7 Keep the wheel still without rotating for about 1 minute.

8 Remove the oil from inside by following the procedures in **Draining out the old oil** above.

Injecting new oil

1 Inject 25 ml of new oil into the hub by following steps **Cleaning the inside 1 - 5** above.

2 Clean off any oil that may have gotten on the hub, etc.



Troubleshooting

Troubleshooting

Check the following prior to performing adjustment or maintenance.

- All of the following occurrences are due to the internal gear-shifting structure and are not the failure of the internal components.

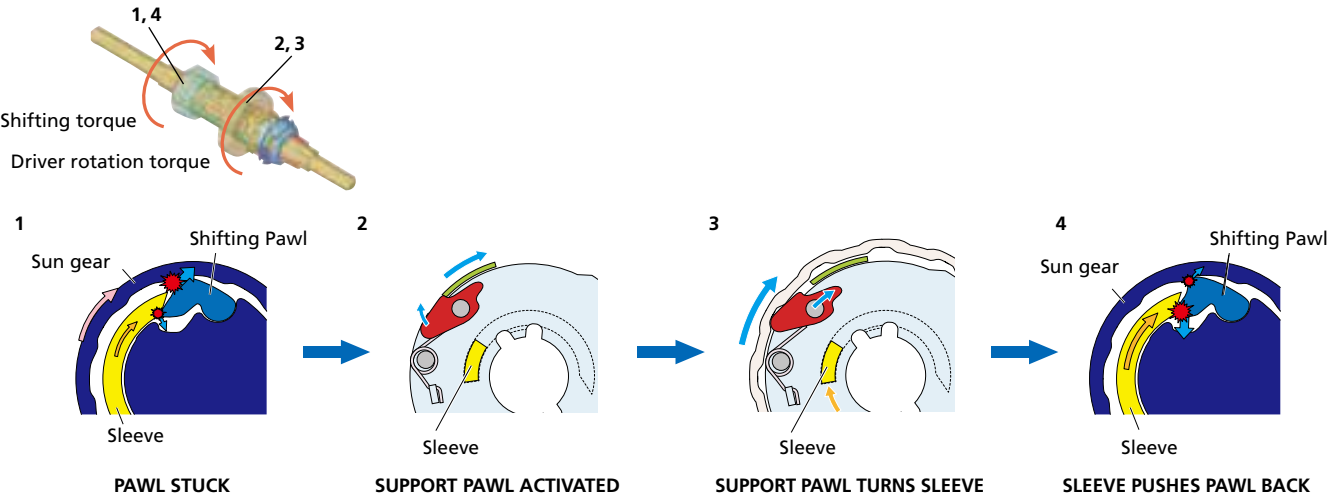
Phenomenon	Type of hub	Gear positions where phenomenon might occur
	For Disk brake / V-brake	
Noise occurs when the pedals rotate.	-	All gear positions except 1st
Noise occurs when the bicycle is pushed backward.	X	All gear positions except 1st
The hub has a built-in mechanism that supports gear shifting* and when the mechanism operates during gear shifting, noise and vibrations occur.	X	All gear positions
Depending on gear position, gear-shifting may feel different.	X	All gear positions
Noise occurs when pedal rotation is stopped during riding.	-	All gear positions

*Gear Change Support

SHIMANO gear change support mechanism utilizes some portion of pedaling force at down shifting. The result is a quick and precise downshift with very light feeling on both mechanical and DI2 version of the hub.

40% less shifting force required

Pedaling force is applied against the sleeve to help overcome sleeve return pressure and execute the shift.



NOTICE

- If you cannot determine a definite cause for the malfunction, it is recommended to replace the internal assembly. (Refer to p.68)

Troubleshooting

	Symptom/cause			Solution	Reference page	
Gear shifting	Gear shifting is poor.	The cable has been routed inappropriately.			–	
		Cable performance is poor.			–	
		The cassette joint was adjusted while over-shifted.			P.19	
	Gear shifting is impossible.	The cable was not adjusted properly.			P.19	
		Check whether gear shifting is possible with the wheel removed from the frame.	Possible	The wheel was not installed properly to the frame.	Recheck the procedure for installing the hub to the frame.	P.10, P.42
			Not possible	There is a malfunction in the shifting lever.	Replace the lever with a new one.	P.12
		There is a malfunction in the hub.		If something is broken inside, replace the broken part or unit. If nothing is broken or if you are unsure, replace the internal assembly.	P.68	
Abnormal noise	There is an abnormal noise.	The cable was not adjusted properly.			P.19	
	The abnormal noise does not stop even after adjusting the cable.	During gear shifting.			P.68	
		When pedaling.			If something is broken inside, replace the broken part or unit. If nothing is broken or if you are unsure, replace the internal assembly.	P.68
When riding	The display on the indicator on the lever differs from the gear position of the hub.	The cable was not adjusted properly.			P.19	
		Internal unit failure.			If something is broken inside, replace the broken part or unit. If nothing is broken or if you are unsure, replace the entire internal unit.	P.68
	The hub is difficult to rotate, or does not rotate smoothly.	The cone is too tight.			Adjust the stop nut so that the hub shell can be turned smoothly without any gap.After adjusting, secure the stop nut with the locknut.	P.86
		Internal unit failure.			If something is broken inside, replace the broken part or unit. If nothing is broken or if you are unsure, replace the entire internal unit.	P.68
		There is rattling when pedaling.	The area around the cone is damaged.			Replace the right hand cone and driver unit.
When not riding	Free rotation is not smooth while not pedaling.			Replace the shell, ball retainer and driver unit.	P.68, P.73, P.75	

Troubleshooting

Oil leak

	Symptom/cause	Solution	Reference page
Oil leak	Oil leak from Right hand dust cap A	Replace right hand dust cap A	P.68, P.87
	Oil leak from Drive plate seal	Replace Drive plate seal & Lock washer seal	P.74, P.80, P.81
	Oil leak from Seal ring R	Replace Seal ring R	P.77, P.78
	Oil leak from Oil port bolt	Replace Oil port bolt & O-ring	P.88
	Oil leak from Seal ring L	Replace Seal ring L	P.69, P.85

Disassembly & Assembly

Required Tools

A: Hammer

B: TL-S701

C: TL-S702

D: TL-S704

E: 3mm hexagon wrench

F: TL-HS37 Hub spanner 17 mm

G: TL-HS35 Hub spanner 15 mm

H: 10mm spanner

I : Slotted Screwdriver

J : TL-AF10

K: Cassette joint

L: TL-S703 Oil Kit



Replacing the Internal Assembly

Refer to the part breakdown (p.100~101) for the names of parts.

- 1. Hold the two beveled surfaces of the hub axle on the brake arm side in a vise and remove the dust cap A using TL-AF10.**
When removing the dust cap A, engage the four tabs on TL-AF10 in the indentations on the dust cap A.



NOTICE

- Forcibly pulling it may cause damage to the bracket cover because of its material properties.
- Do not damage the threads of the hub axle.

- 2. Turn the hub upside down and hold the two beveled surfaces of the hub axle on the sprocket side in a vise.**
(1) Secure the hub back into place with the drive side downward.
(2) Use TL-HS35 and TL-HS37 to remove the lock nut and left hand cone.



NOTICE

- Do not damage the threads of the hub axle.

- 3. Remove the hub shell.**



Replacing the Internal Assembly

- 4. Remove the seal ring L and ball retainer from the hub shell.**



NOTICE

- Do not damage the threads of the hub axle.

- 5. The internal assembly can be replaced.**



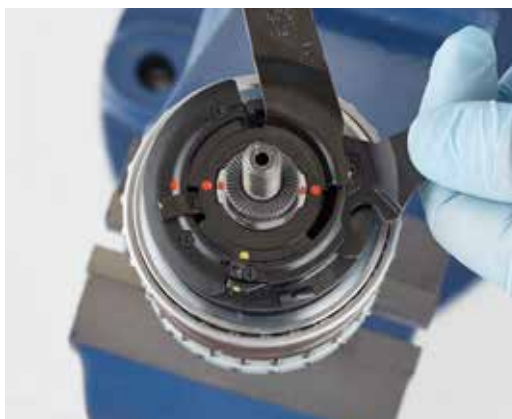
Disassembling the Internal Assembly

Installing the cassette joint

With the brake arm facing downward, pinch the flat portion of the axle with a vise, and secure the internal assembly in place.

1. Set the cassette joint.

- (1) Turn the cassette joint pulley in the direction of the arrow to align the red●marks on the pulley and the bracket.
- (2) Install it with the red●marks on the cassette joint aligned with the red●marks on the right side of the hub body.



2. When installing the cassette joint mounting ring, align the yellow●mark with the yellow●mark on the pulley of the cassette joint.



3. Turn the cassette joint mounting ring 45° clockwise.

Hold down the bracket securely when performing work.



Disassembling the Internal Assembly

When disassembling or assembling the internal assembly, turn the cassette joint until it makes contact and ensure that the unit is in 1st gear (the tabs on the hub axle are folded down) before working. It will be easier to keep the unit in 1s gear if you connect a compatible shifting lever.

**1. Remove the O-ring.****2. Carefully remove the stop ring with a slotted screwdriver.****NOTICE**

- The Stop ring detaches with some force, so be careful not to lose it.
- Do not reuse a Stop ring that has been removed.

Disassembling the Internal Assembly

- 3. Remove the entire assembly including the carrier 1 unit.**



- 4. Disassemble the removed assembly to individual parts.**



Disassembling the Internal Assembly

5. Remove the ball retainer S.**6. Reverse axle unit in vice to access the drive side cone assembly.****7. Remove the cassette joint.**

Follow the reverse procedure from "Installing the cassette joint."



Disassembling the Internal Assembly

8. Remove the right-hand lock nut.



9. Remove the joint nut stop washer.



10. Remove the lock washer and lock washer seal.



Disassembling the Internal Assembly

11. Remove the drive plate seal.



12. Remove the hub axle.

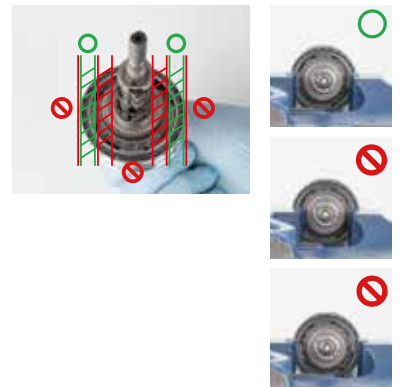
(1) Place the driver assembly on the vise.



NOTICE

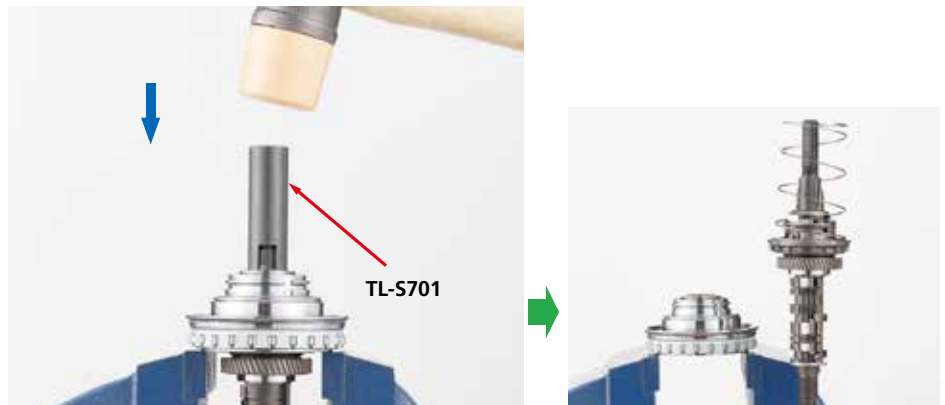
- Place the driver assembly and vise so that they are in the correct position. Otherwise, the part may detach or be damaged, making it impossible to reinstall it.

(2) Set TL-S701 as shown in the figure.



Disassembling the Internal Assembly

- (3) Use a hammer to strike TL-S701.
- Use your hand to support the hub axle while you strike it.



13. Remove the return spring A.



14. Remove the clutch unit by turning it counterclockwise and aligning the two teeth to the two grooves, as shown.



Disassembling the Internal Assembly

- 15. Remove the right-hand cone from the driver unit.**



- 16. Remove the seal ring R and ball retainer P from the driver unit.**



NOTICE

- Do not reuse a seal ring R that has been removed.

This completes the disassembly of the INTER-11 coaster hub.

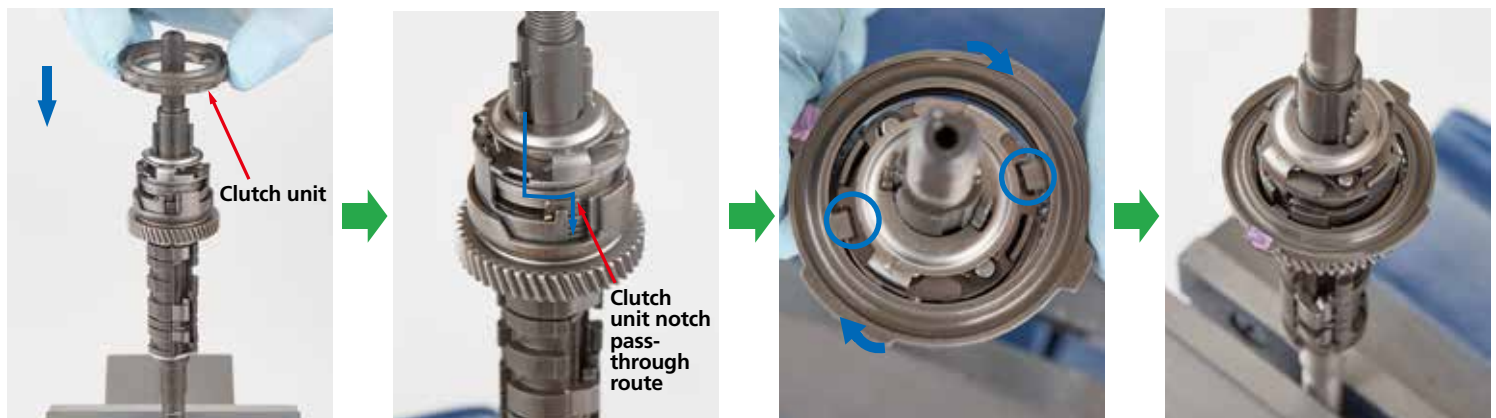


Assembling the Internal Assembly

1. Install the ball retainer P and new seal ring R on the driver unit. Push in the seal ring R using TL-S704.

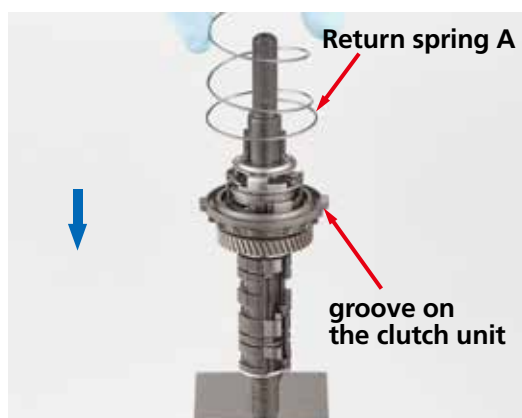


2. With the hub axle unit mounted in a vice, align the two teeth on the clutch unit with the two notches in the hub axle unit. Turn the clutch unit clockwise until it is in its final position as shown.



Assembling the Internal Assembly

- 3. Install the return spring A with the largest coil downward. The spring should sit in the groove on the clutch unit. Be careful not to install the return spring A upside down.**



- 4. Assemble the driver unit by aligning the more shallow notch on the driver unit with the wider tooth on the clutch unit. Rotate the driver counterclockwise to hold the compressed spring in position.**



Assembling the Internal Assembly

- 5. When installing the right hand cone, align the two serrations with the grooves in the axle.**



- 6. Set the cone installation tool (TL-S702) and strike it until it comes to a stop.**

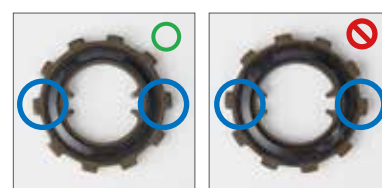


NOTICE

- Make sure the right hand cone is completely seated, as shown and the seal is installed equally.

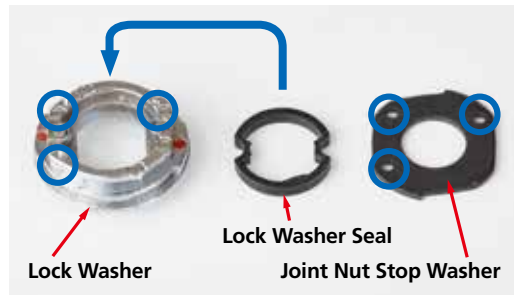


- 7. Install the driver plate seal. Be careful of the setting direction as shown in the picture.**



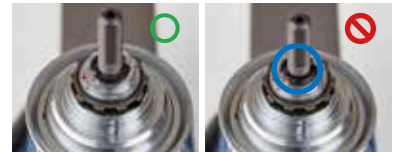
Assembling the Internal Assembly

- 8. Assemble the lock washer, lock washer seal, and joint nut stop washer and install on the hub axle.**



NOTICE

- Make sure the lock washer seal is completely seated, as shown and the seal is installed equally.



- 9. Tighten the right-hand lock nut.**



NOTICE

- If either the lock washer or driver plate rotates during this step, return to assembly step 5 and make sure that the cone is correctly seated.

Assembling the Internal Assembly

- 10. Install the cassette joint.**
Refer to "Installing the cassette joint."



- 11. Reverse the axle unit in the vice to complete assembly.**



- 12. Install the ball retainer S.**



NOTICE

- Be careful, as the balls can easily fall from the retainer.
- Keep the vertical direction of the ball retainer in mind as you set it.

Assembling the Internal Assembly

13. Install the carrier 1 unit.



14. Install the sun gear 2.



15. Install the carrier 2 unit.

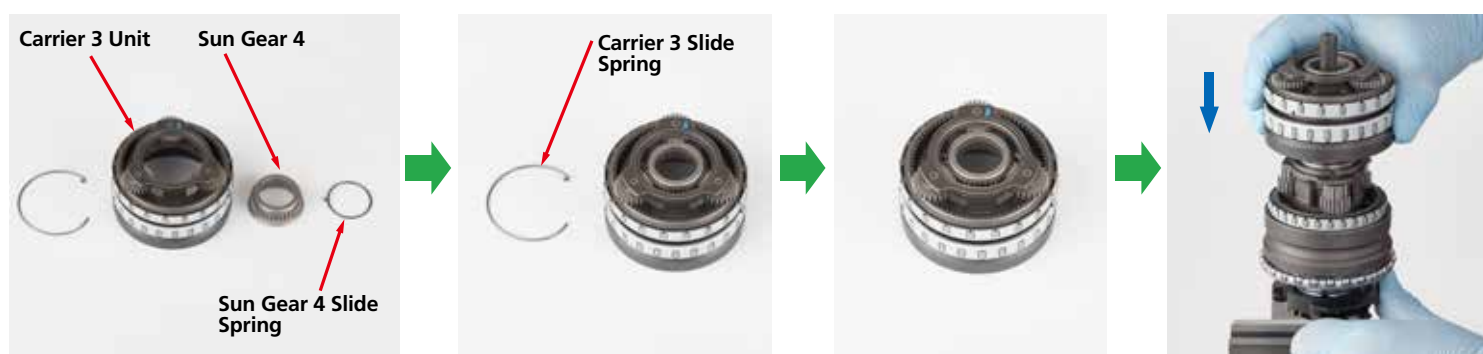


Assembling the Internal Assembly

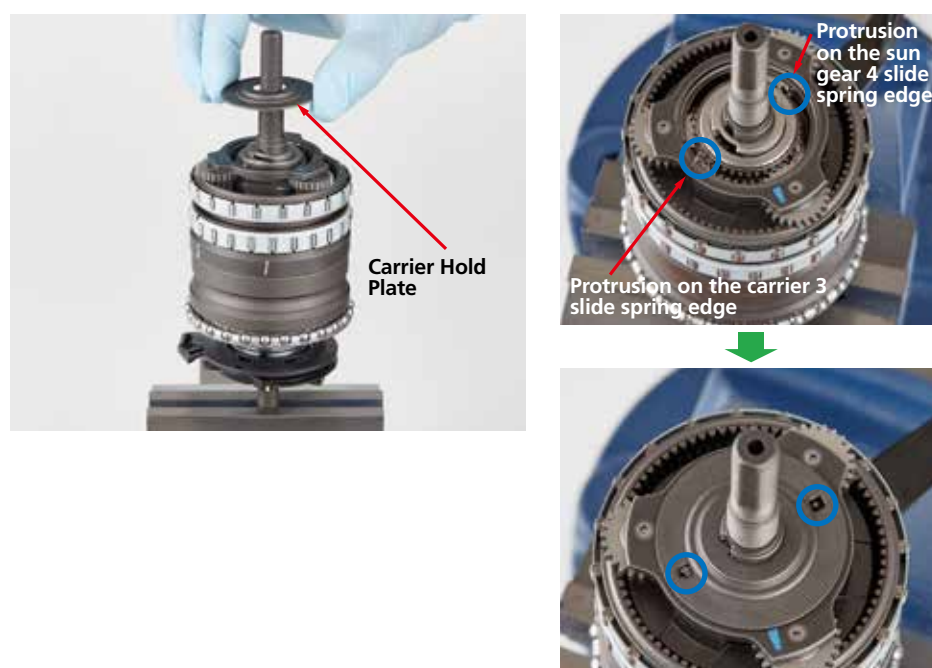
- 16. Install the sun gear 3 guide ring.**
When installing, align the serration on the sun gear 3 guide ring with the groove on the hub axle.



- 17. Assemble the carrier 3 unit, carrier 3 slide spring, sun gear 4, and sun gear 4 slide spring and install on the hub axle.**



- 18. Install the carrier hold plate.**
When installing, ensure that the protrusions on the sun gear 4 slide spring and carrier 3 slide spring edges are engaged in the two holes in the carrier hold plate.



Assembling the Internal Assembly

19. Insert the stop ring.



NOTICE

- If there is no visible groove to receive the stop ring, it is likely that the ring gear and carrier unit are not properly assembled, return to assembly step 14.

20. Install the O-ring.



21. Install the ball retainer and new seal ring L on the hub shell. Push in the seal ring R using TL-S704.



Assembling the Internal Assembly

22. Install the hub shell.



23. Screw the left hand cone to adjust so that the hub shell can be turned smoothly without any play. After adjusting, secure the stop nut with the locknut.



24. Turn the unit over, secure it back in the vise, and then remove the cassette joint. Follow the reverse procedure from "Installing the cassette joint."



Assembling the Internal Assembly

- 25. Install the dust cap A using TL-AF10.**
When installing the dust cap A, engage the four tabs on TL-AF10 in the indentations on the dust cap A.



- 26. Assembly is now complete.**



Changing Oil

For details, see "Oil maintenance of the internal assembly" in the Dealer's Manual.

Draining/Injecting Oil

1. Remove the oil port bolt and O-ring.



2. Attach the syringe (TL-S703) tube bleed nipple into the hub shell.



3. Slowly move the syringe (TL-S703) piston to drain the oil inside or inject oil.



Service Parts & Tools

Service Parts and Tools

Cassette Joint



CJ-C7000



CJ-C7000BD

The Belt Drive specifications is designed to not interfere with the belt drive.

CJ-C7000

CJ-C7000BD



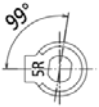
Measurement Tool



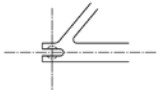
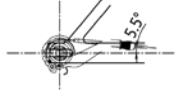
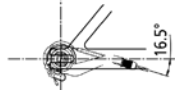
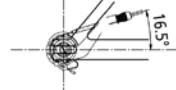
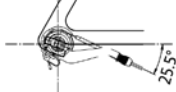
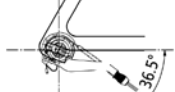
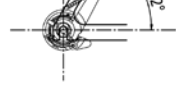
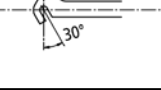
TL-S700-B

NEXUS non-turn washers

The shape of the dropout determines which NTW to choose. In the illustration below, you can see the result for various frame dropouts in combination with the chosen NTW.

	5R/L	6R/L	7R/L	8R/L
For right hand side	 5R: Yellow	 6R: Silver	 7R: Black	 8R: Dark blue
For left hand side	 5L: Brown	 6L: White	 7L: Gray	 8L: Dark green

*See Technical Information for the latest information

		5R/L	6R/L	7R/L	8R	8L
Reversed type rear dropout					—	—
Standard type rear dropout					—	—
					—	—
Vertical type rear dropout		—	—	—		
		—	—	—		

Interchangeability

Interchangeability

		Compatible Products
Internal Unit	SG-S7051-11	SG-S7051-11 SG-S705
	SG-S7001-11	SG-S7001-11 SG-S700

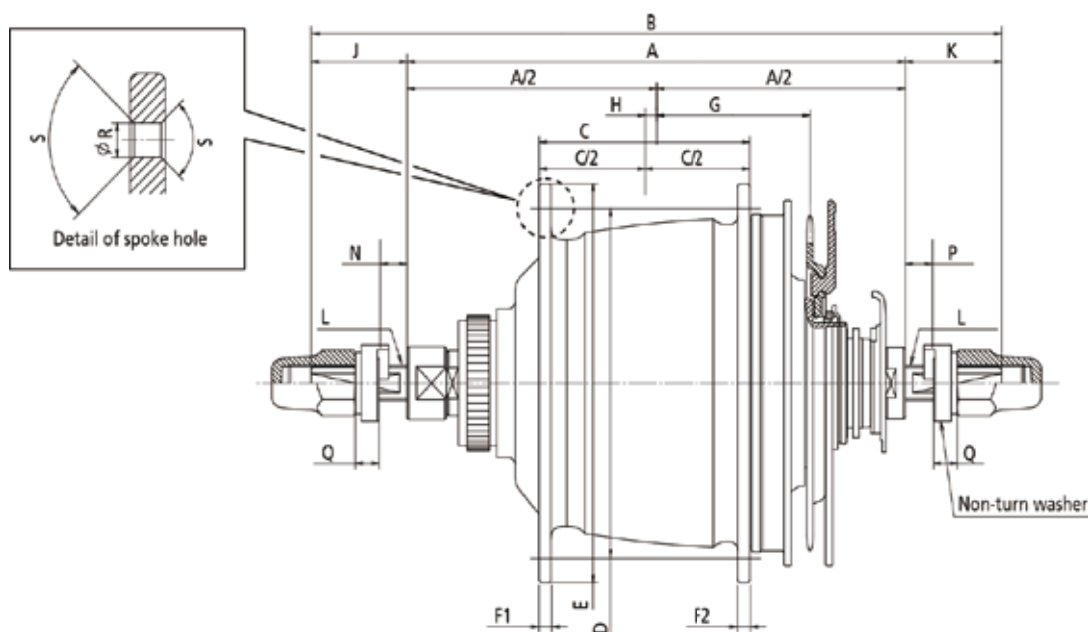
(NOTE) *The specifications differ depending on the length of the axle etc. Therefore, follow the compatibility of the axle length and such.

Hub dimensions

(Over Locknut Dimensions and Axle)

Hub dimensions (Over Locknut Dimensions and Axle)

SG-S7001-11



	Series	ALFINE		NEXUS			
	Function name	INTER-11	INTER-8	INTER-8	INTER-8	INTER-8	INTER-8
	Model No.	SG-S7001-11	SG-S7001-8	SG-C6011-8R SG-C6001-8R SG-C6011-8V SG-C6001-8V	SG-C6001-8C	SG-C6001-8D	SG-C6001-8CD
	Speed	11	8				
	Gear ratio: Total	409%	307%				
	Spoke size	#13 / #14					
A	Over locknut dim. / O.L.D. (mm)	135	132	132	135		
B	Axle length (mm)	187	184			187	
C	Flange distance (mm)	57.3	58.3			57.3	58.3
D	Spoke hole P.C.D. (mm)	92.6					
E	Flange diameter (mm)	104.3	105.2				
F	Flange width (mm): F1 (left)	3.2					
	Flange width (mm): F2 (right)	3.2					
G	Chain line (mm): G1 (outward assembly)	46.8	47.7	47.9	46.8		
	Chain line (mm): G2 (inward assembly)	41.8	42.7	42.9	41.8		
H	Offset (mm)	3.1	2.7	2.6	3.1	4	
J	Axle length from hub (left)	26			25.7	26	26.6
K	Axle length from hub (right)	26					25.4
L	Axle size	BC3 / 8 TPI 26					
N	Rear dropout mounting width (left, includes stay etc.)	5-9	4-9			5-9	4-9
P	Rear dropout mounting width (right, includes stay etc.)	5-9	4-9			5-9	4-9
Q	Non-turn washer width	6.4					
R	Spoke hole diameter (mm)	2.9	2.9	2.9	2.9	2.9	2.9
S	Spoke hole chamfer	90°					

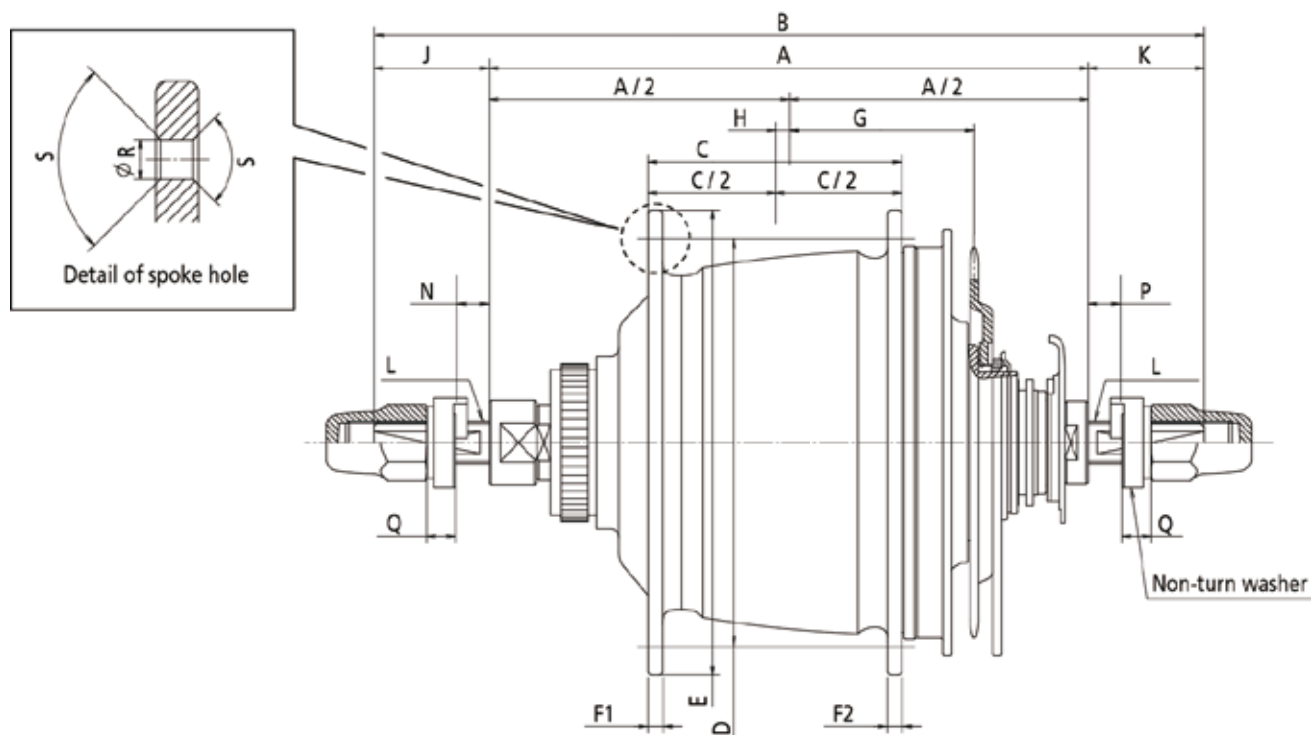
Hub dimensions

SG-S7001-11

Series		NEXUS					
Function name		INTER-7		INTER-7	INTER-7	INTER-5E	INTER-5E
Model No.		SG-C3001-7R		SG-C3001-7C	SG-C3001-7D	SG-C7000-5D	SG-C7000-5R SG-C7000-5V SG-C7000-5C
Speed		7				5	
Gear ratio: Total		244%				263%	
Spoke size		#13 / #14					
A	Over locknut dim. / O.L.D. (mm)	130		127	135		
B	Axle length (mm)	182	201	176	187		
C	Flange distance (mm)	54.6		56.2	54.6	57.3	58.3
D	Spoke hole P.C.D. (mm)	87		83.5	87	92.6	
E	Flange diameter (mm)	99.6		92.5	99.6	105.2	
F	Flange width (mm): F1 (left)	3.2		2.7	3.2		
	Flange width (mm): F2 (right)	3.2		2.3	3.2		
G	Chain line (mm): G1 (outward assembly)	45.3		46.5	46.8	47.2	
	Chain line (mm): G2 (inward assembly)	40.3		41.5	41.8	42.2	
H	Offset (mm)	3.85		4.6	2.5	3.2	3.2 3.7(-5C spec.)
J	Axle length from hub (left)	26	37	24.5	26		
K	Axle length from hub (right)	26	34	24	26		
L	Axle size	BC3 / 8 TPI 26					
N	Rear dropout mounting width (left, includes stay etc.)	4-9	15-20	4-9	5-9		
P	Rear dropout mounting width (right, includes stay etc.)	4-9	12-17	4-9	5-9		
Q	Non-turn washer width	6.4					
R	Spoke hole diameter (mm)	2.9		2.7	2.9		
S	Spoke hole chamfer	90°		105°	90°		

Hub dimensions

SG-S7051-11



Series			ALFINE		NEXUS			
Function name			INTER-11	INTER-8	INTER-8			
Model No.			SG-S7051-11	SG-S7051-8	SG-C6061-8R	SG-C6061-8C	SG-C6061-8D	SG-C6061-8CD
Speed			11	8				
Gear ratio		Total	409%	307%				
A	Over locknut dim. / O.L.D. (mm)		135					
B	Axle length (mm)		187					
C	Flange distance (mm)		57.3	58.3		57.3		58.3
D	Spoke hole P.C.D. (mm)		92.6					
E	Flange diameter (mm)		104.3	105.2				
F	Flange width (mm): F1 (left)		3.2					
	Flange width (mm): F2 (right)							
G	Chain line (mm): (inward assembly)		41.8					
H	Offset (mm)		3.15	3.1	3.7	3.3	3.7	
J	Axle length from hub (left)		26					
K	Axle length from hub (right)							
L	Axle size		BC3 / 8 TPI 26					
N	Rear dropout mounting width (left, includes stay etc.)		5-9					
P	Rear dropout mounting width (right, includes stay etc.)							
Q	Non turn washer width		6.4					
R	Spoke hole diameter (mm)		2.9					
S	Spoke hole chamfer		90°					

Hub dimensions

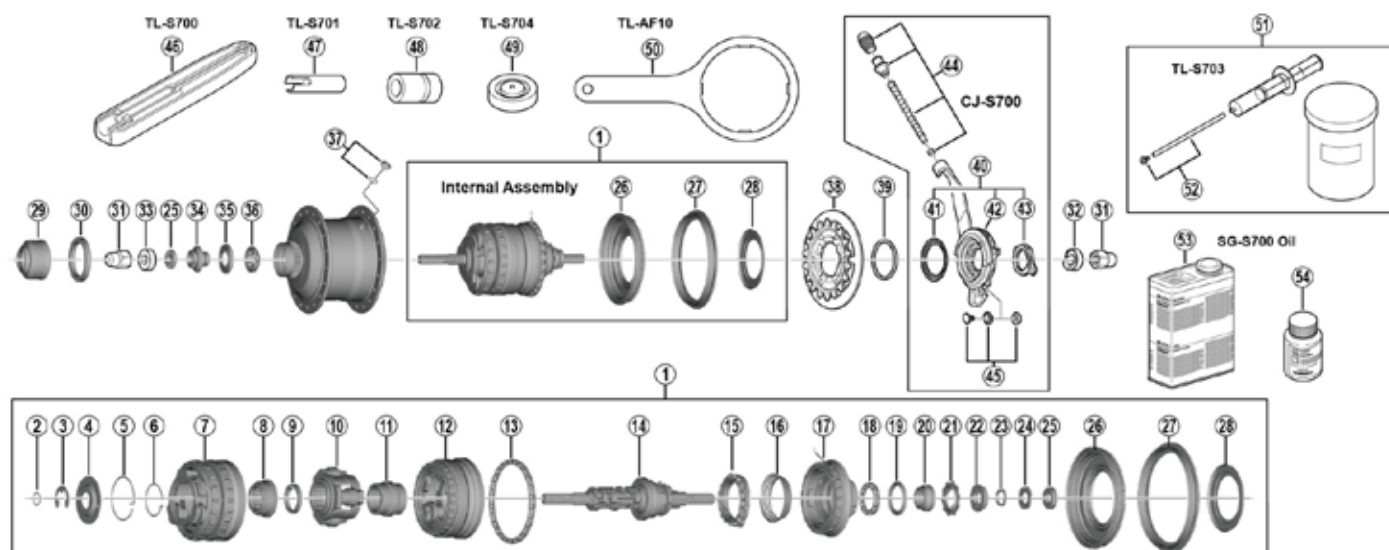
SG-S7051-11

	Series		NEXUS			
	Function name		INTER-5E			
	Model No.		SG-C7050-5D	SG-C7050-5R	SG-C7050-5C	SG-C7050-5V
	Speed		5			
	Gear ratio	Total	263%			
A	Over locknut dim. / O.L.D. (mm)		135			
B	Axle length (mm)		187			
C	Flange distance (mm)		57.3	58.3		
D	Spoke hole P.C.D. (mm)		92.6			
E	Flange diameter (mm)		105.2			
F	Flange width (mm): F1 (left)		3.2			
	Flange width (mm): F2 (right)					
G	Chain line (mm): (inward assembly)		42.2			
H	Offset (mm)		3.2	3.7		
J	Axle length from hub (left)		26			
K	Axle length from hub (right)					
L	Axle size		BC3 / 8 TPI 26			
N	Rear dropout mounting width (left, includes stay etc.)		5-9			
P	Rear dropout mounting width (right, includes stay etc.)					
Q	Non turn washer width		6.4			
R	Spoke hole diameter (mm)		2.9			
S	Spoke hole chamfer		90°			

EV / Spare Parts List

Spare parts list

ALFINE 11-speed Internal Hub SG-S7001-11



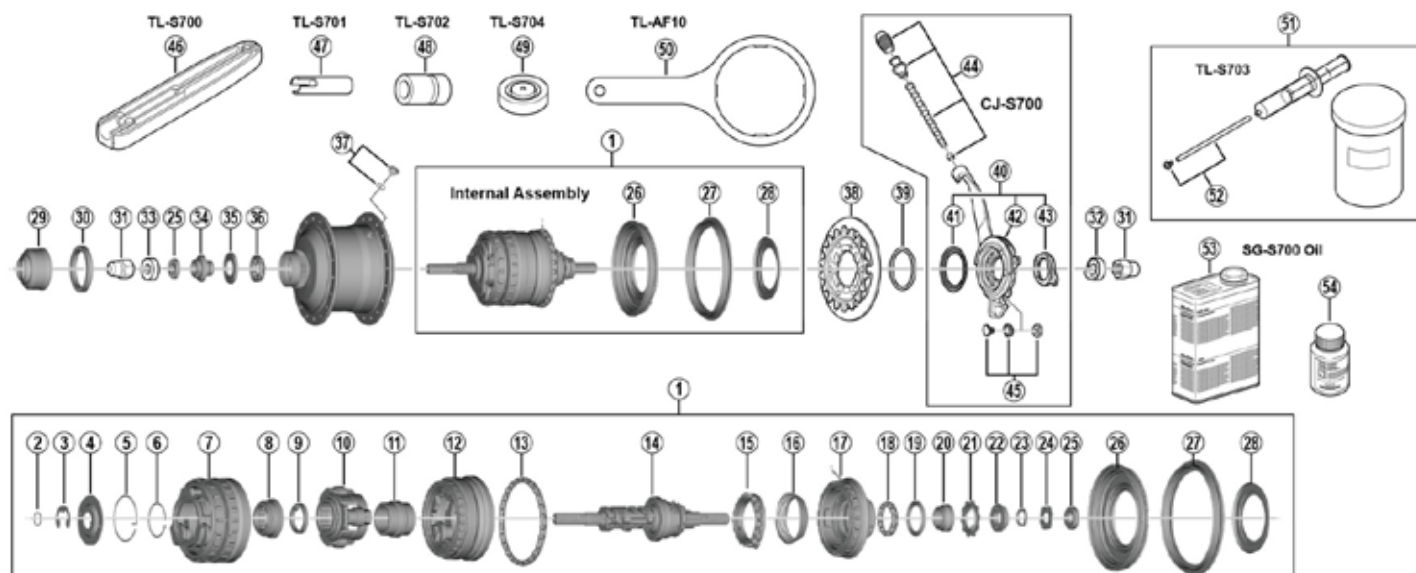
ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y3EN98010	Internal Assembly (Axle Length 187 mm)
2	Y37E08000	O-Ring
3	Y34R79000	Stop Ring (ø12 / 1.0 mm)
	Y34R79010	Stop Ring (ø12 / 1.3 mm)
	Y34R79020	Stop Ring (ø12 / 1.6 mm)
4	Y37R78000	Carrier Hold Plate
5	Y37R80000	Carrier 3 Slide Spring
6	Y37R81000	Sun Gear 4 Slide Spring
7	Y37R98020	Carrier 3 Unit
8	Y3EN09000	Sun Gear 4
9	Y37R56000	Sun Gear 3 Guide Ring
10	Y3EN98020	Carrier 2 Unit
11	Y3EN07000	Sun Gear 2
12	Y3EN98030	Carrier 1 Unit
13	Y37R98050	Ball Retainer S (3/16" x 26)
14	Y3EN98040	Hub Axle Unit (Axle Length 187 mm)
15	Y3EN98050	Clutch Unit
16	Y34R21000	Return Spring A
17	Y3EN98060	Driver Unit
18	Y34R98070	Ball Retainer P (3/16" x 13)
19	Y37R18000	Seal Ring R
20	Y37R17000	Right Hand Cone
21	Y37R16000	Drive Plate Seal
22	Y37R98090	Lock Washer
23	Y37R15000	Lock Washer Seal
24	Y37R12000	Joint Nut Stop Washer
25	Y37R11000	Serrated Lock Nut (4.4 mm)
26	Y37R98100	Right Hand Dust Cap A w/Seal
27	Y35Z20000	Chain Guard
28	Y37R75000	Right Hand Dust Cap D
29	Y37R74000	Rotor Mount Cover

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
30	Y37R82000	Rotor Spacer
31	Y72A01000	Cap Nut (3/8")
32	Y34R85010	Non-turn Washer 8R (Dark Blue)
33	Y34R85000	Non-turn Washer 8L (Dark Green)
34	Y37R98110	Left Hand Cone w/Dust Cap
35	Y37R73000	Seal Ring L
36	Y36U98030	Ball Retainer (7/32" x 9)
37	Y37R98120	Oil Port Bolt (Silver) & O-Ring
	Y37R98130	Oil Port Bolt (Black) & O-Ring
38	ICSS50018	Sprocket Wheel 18T w/Guard Plate (CS-S500)
	ICSS50020	Sprocket Wheel 20T w/Guard Plate (CS-S500)
39	Y32120100	Snap Ring C
40	Y72A98010	CJ-S700 Cassette Joint Unit
	Y72A98030	CJ-S700 Cassette Joint Unit for Belt drive system
41	Y74Y18000	Driver Cap
42	Y72A98020	CJ-S700 Cassette Joint
	Y72A98040	CJ-S700 Cassette Joint for Belt drive system
43	Y33Z98020	Cassette Joint Fixing Ring
44	Y6TV98060	Outer Receiver Unit
45	Y6TV98070	Inner Cable Fixing Bolt Unit
46	Y13098024	TL-S700 Inner Cable Fixing Bolt Setting Tool
47	Y13098021	TL-S701 Right Hand Cone Removal Tool
48	Y13098022	TL-S702 Right Hand Cone Installation Tool
49	Y70819000	TL-S704 Seal Set Tool
50	Y32010000	TL-AF10 Right Hand Dust Cap A Installation Tool
51	Y13098023	TL-S703 Oil Kit
52	Y13098025	Tube Set (Tube & Bleeding Nipple)
53	Y13098480	SG-S700 Oil (1 L)
54	Y00201100	SG-S700 Oil (50 ml)
-	Y13098481	Right Hand Hub Cup

Spare parts list

ALFINE 11-speed Internal Hub

SG-S7051-11 MU-S705



ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y3EM98010	Internal Assembly (Axle Length 187 mm)
2	Y37E08000	O-Ring
3	Y34R79000	Stop Ring Diameter (12 mm / 1.0 mm)
	Y34R79010	Stop Ring Diameter (12 mm / 1.3 mm)
	Y34R79020	Stop Ring Diameter (12 mm / 1.6 mm)
4	Y37R78000	Carrier Hold Plate
5	Y37R80000	Carrier 3 Slide Spring
6	Y37R81000	Sun Gear 4 Slide Spring
7	Y37R98020	Carrier 3 Unit
8	Y3EN09000	Sun Gear 4
9	Y37R56000	Sun Gear 3 Guide Ring
10	Y3EN98020	Carrier 2 Unit
11	Y3EN07000	Sun Gear 2
12	Y3EN98030	Carrier 1 Unit
13	Y37R98050	Ball Retainer S (3/16" x 26)
14	Y3EM98020	Hub Axle Unit (Axle Length 187 mm)
15	Y3EN98050	Clutch Unit
16	Y34R21000	Return Spring A
17	Y3EN98060	Driver Unit
18	Y34R98070	Ball Retainer P (3/16" x 13)
19	Y38F06000	Seal Ring R
20	Y3EM98030	Right Hand Cone w/Cap
21	Y38F13000	Drive Plate Seal
22	Y38F98040	Lock Washer
23	Y37R15000	Lock Washer Seal
24	Y38F17000	Right Hand Lock Nut Washer
25	Y38F16000	Right Hand Lock Nut
26	Y37R98100	Right Hand Dust Cap A w/Seal
27	Y35Z20000	Chain Guard

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
28	Y37R75000	Right Hand Dust Cap D
29	Y37R74000	Rotor Mount Cover
30	Y37R82000	Rotor Spacer
31	Y72A01000	Cap Nut (3/8")
32	Y34R85010	Non-turn Washer 8R (Dark Blue)
33	Y34R85000	Non-turn Washer 8L (Dark Green)
34	Y37R11000	Left Hand Serrated Lock Nut (4.4 mm)
35	Y37R98110	Left Hand Cone w/Dust Cap
36	Y37R73000	Seal Ring L
37	Y36U98030	Ball Retainer (7/32" x 9)
38	Y37R98120	Oil Port Bolt (Silver) & O-Ring
	Y37R98130	Oil Port Bolt (Black) & O-Ring
39	ICSS50018X	Sprocket Wheel 18T (CS-S500 w/o Guard)
	ICSS50020X	Sprocket Wheel 20T (CS-S500 w/o Guard)
40	Y32120100	Snap Ring C
41	Y38F98050	Motor Unit Seal & Lock Nut
42	Y707000G0	Motor Unit Seal
43	Y707000Y0	Lock Nut
44	Y20W10000	TL-SGE1 1st Gear Set Tool
45	Y13098021	TL-S701 Right Hand Cone Removal Tool
46	Y13098022	TL-S702 Right Hand Cone Installation Tool
47	Y70819000	TL-S704 Seal Set Tool
48	Y32010000	TL-AF10 Right Hand Dust Cap A Installation Tool
49	Y13098023	TL-S703 Oil Kit
50	Y13098025	Tube Set (Tube & Bleeding Nipple)
51	Y13098480	SG-S700 Oil (1 L)
52	Y13098481	SG-S700 Oil (50 ml)
-	Y37R07000	Right Hand Hub Cup