



# ***INTER 3***

## **SERVICE MANUAL**

**SG-3R40**  
**SG-3C41**  
**SG-3D55**

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## SG-3R40

INTER-3 Rear Hub (3-speed)

- **Internal Gear Shifting**
  - » Gear shifting action is independent of pedaling. You can shift gears anytime, while standing still, pedaling or coasting
- **Gear Change Support**
- **Weight: 885g**
- **Color options: Black, Silver, White**



## SG-3C41

INTER-3 Rear Hub (3-speed)

- **Internal geared hub for Coaster Brake version**
- **Integral Coaster Brake**
- **Gear Change Support Mechanism**
- **Weight: 1,120g**



## SG-3D55

INTER-3 Rear Hub (3-speed)

- **Internal geared hub for Disc Brake version**
- **Gear Change Support Mechanism**
- **Aluminum hub shell**
- **CENTER LOCK Rotor mount system**
- **Weight: 945g**
- **Color options: Black, Silver**

## TECHNOLOGIES

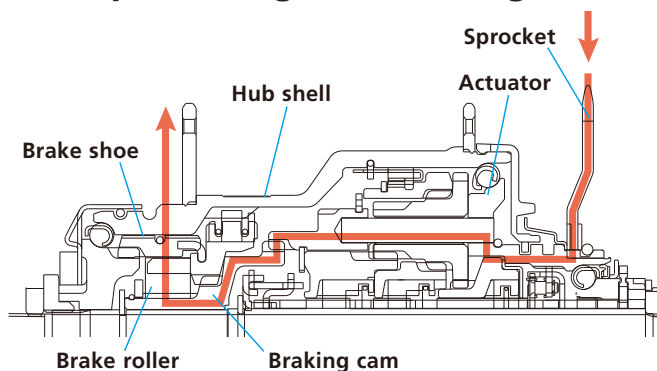
### Gear Change Support

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.

### Coaster Brake

The SHIMANO NEXUS coaster brake is operated by pedaling backward in a similar way as ordinary types. Its uniqueness is that braking power transmitted to the wheel directly for the SHIMANO NEXUS internal coaster brake is independent of the gear shifting mechanism built into the hub. Also it always generates the same braking force regardless of gear position to actualize comfortable and reliable riding. It actualizes the braking force to meet the ISO 4210 standard.

#### Equal braking force in each gear



### Surface Treatment

#### What is the difference between the Standard and the DX version?

- The Standard version is designed to use under normal climate conditions.
- The DX version features a clear coated finish and/or stainless steel material.

This finish is offering an advanced protection against corrosion and is therefore recommended to use under more severe climate conditions.

# ***INTER 3***

## **Dealer's Manual**

**SG-3R40**  
**SG-3C41**  
**SG-3D55**

**! WARNING**

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 it with the clip bolt and clip nut to the specified tightening torque. Use a lock nut with a nylon insert (self-locking nut) for the clip nut. It is recommended that Shimano made clip bolts, clip nuts, and arm clips be used. Use an arm clip that matches the chainstay.

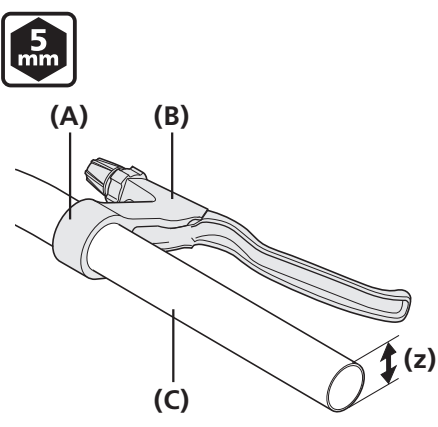
If the clip nut comes off the brake arm, or if the clip bolt or arm clip becomes damaged, the brake arm may rotate on the chainstay and cause the handlebars to jerk suddenly, or the bicycle wheel may lock and the bicycle fall over, causing serious injury.

**INSTALLATION**

**■ Installation of the lever**

**Installation of the REVOSHIFT lever**

1




Install the brake lever (B).

(z) Use  $\Phi 22.2$  mm handlebars.

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

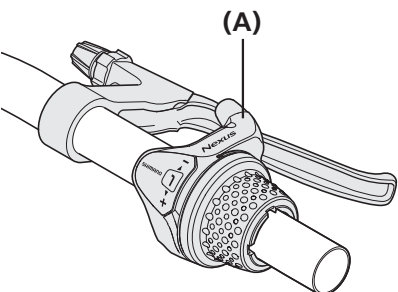
Tightening torque

5 mm	6 - 8 N·m
------	-----------

 **TECH TIPS**

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

2

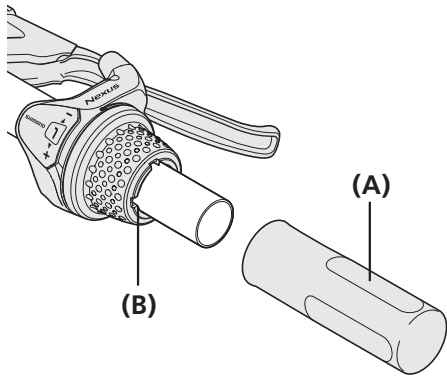


Install the REVOSHIFT lever (A).

(A) REVOSHIFT lever



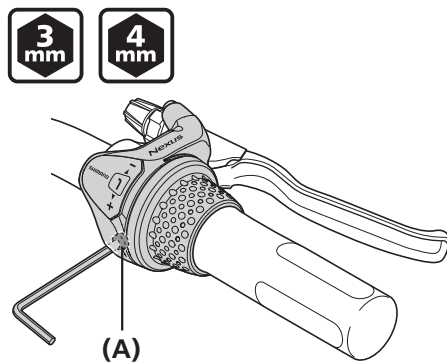
3



Install the half grip (A).  
Leave a gap (B) of 0.5 mm between the REVOSHIFT lever and the half grip.

- (A) Half grip
- (B) Gap between the REVOSHIFT lever and the half grip

4



Tighten the REVOSHIFT lever.

- (A) Fixing bolt

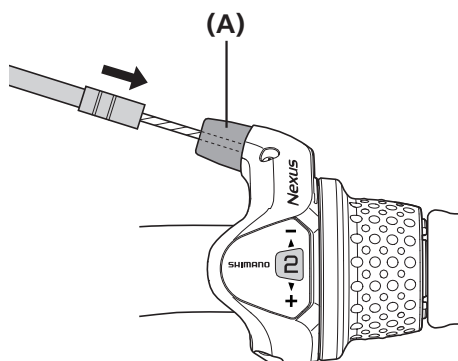
Tightening torque	
3 mm	2 - 2.5 N·m
4 mm	2 - 4 N·m



## Installation of the bell crank type hub

### Installation of the shifting cable

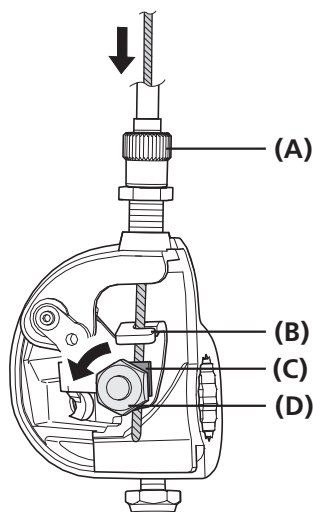
1



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

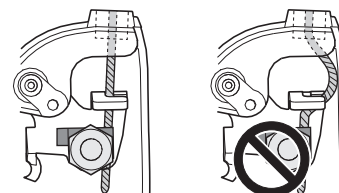
(B) Link

(C) Inner cable mounting plate

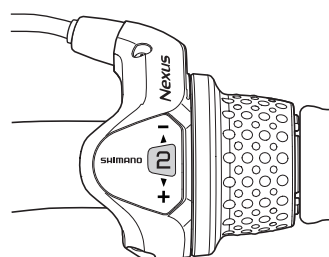
(D) Inner cable mounting nut

#### NOTICE

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



3



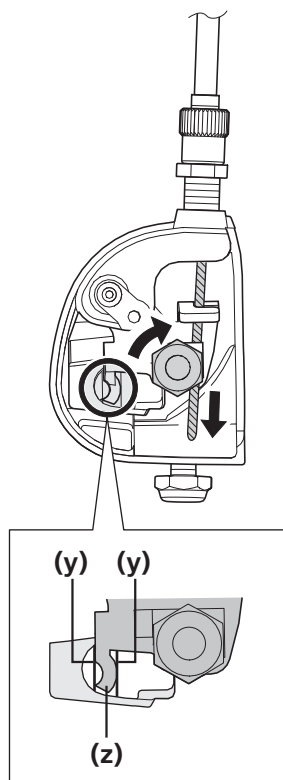
Set the REVOSHIFT lever to 2.



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4

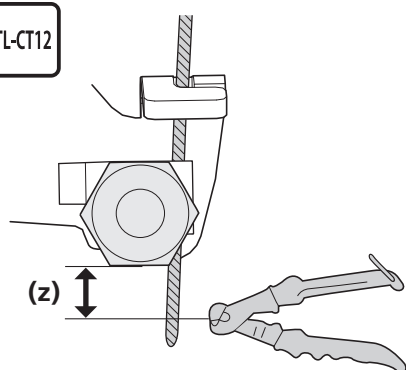


With the inner cable kept tight, tighten the inner cable mounting nut while positioning the end of the link between the two white lines on the window.

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

5

TL-CT12

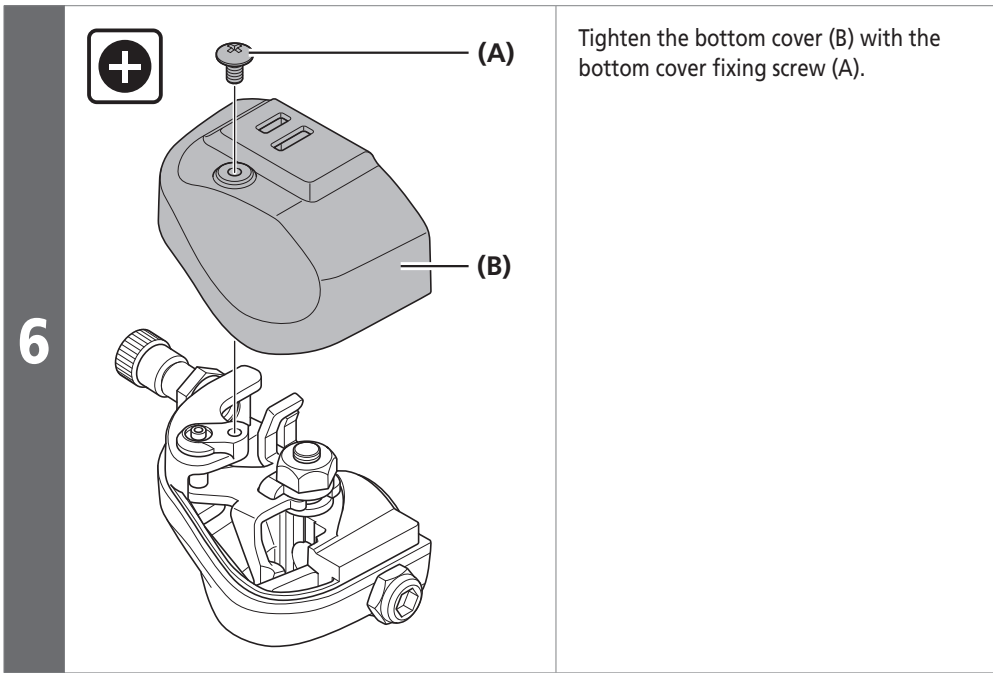


After tightening the inner cable mounting nut, cut off the excess length of inner cable.


- (z) Within 4 mm





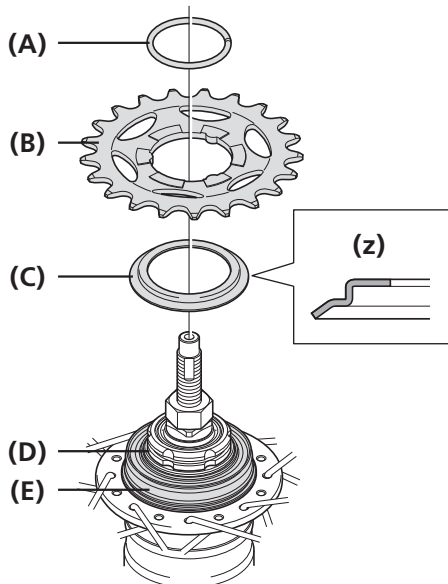


- (A) Bottom cover fixing screw  
(B) Bottom cover

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)



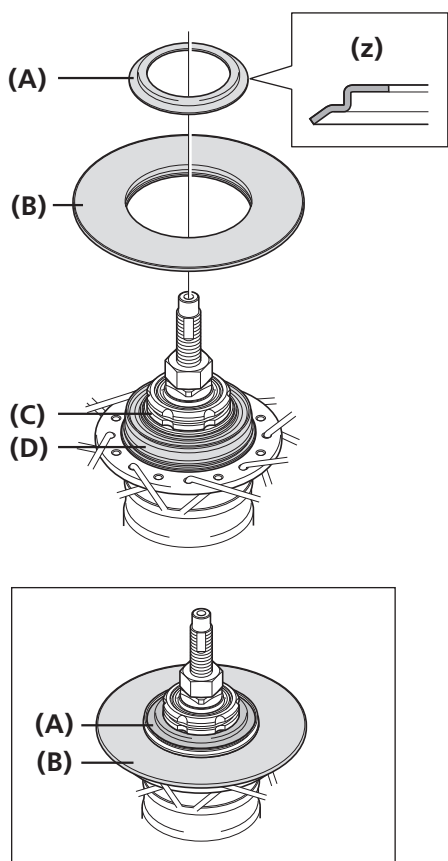
Place the right-hand waterproof cap B (C) onto the driver (D) on the right side of the hub body.

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)



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

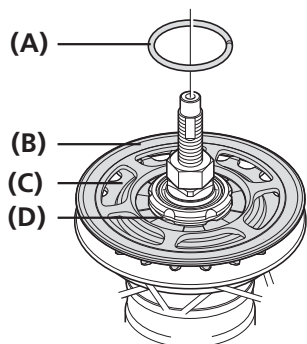
Do not use an inward assembling sprocket with 16T or less, otherwise the right-hand waterproof cap A will come into contact with the sprocket.



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2

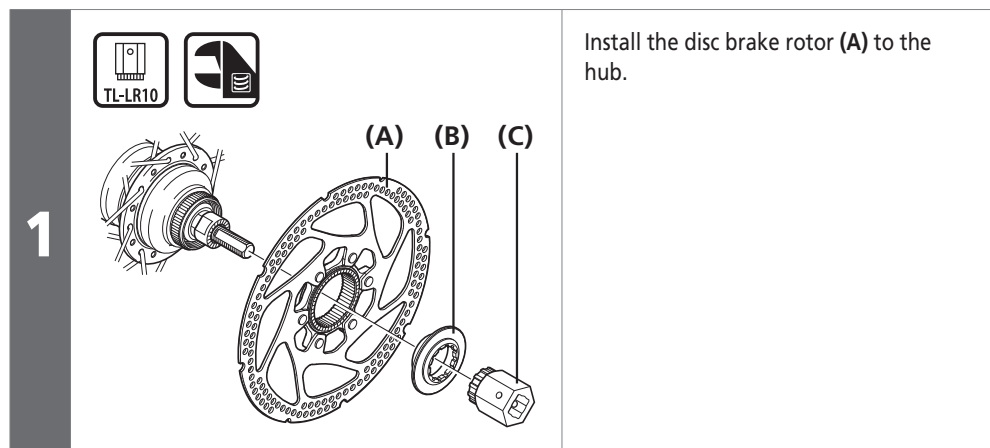


Install the CS-S500 sprocket (C) to the driver (D) on the right side of the hub body with the guard plate (B) facing outward, and secure it in place with the snap ring (A).

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



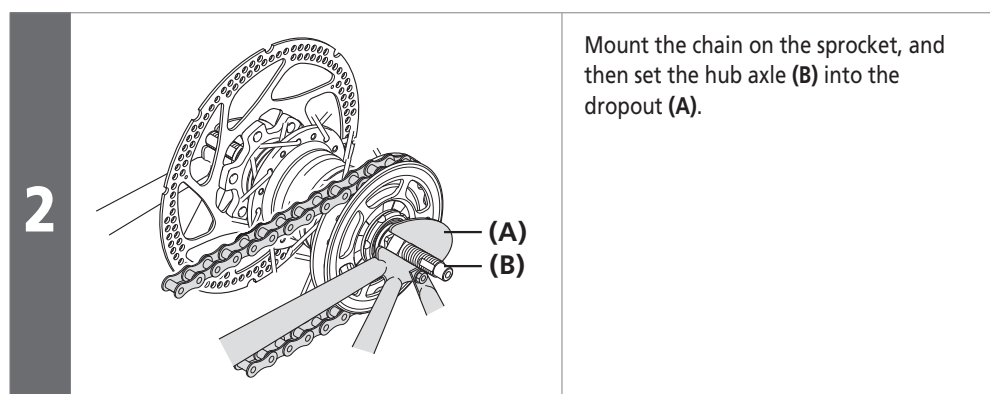
## Installation of the hub to the frame (for disc brakes)



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

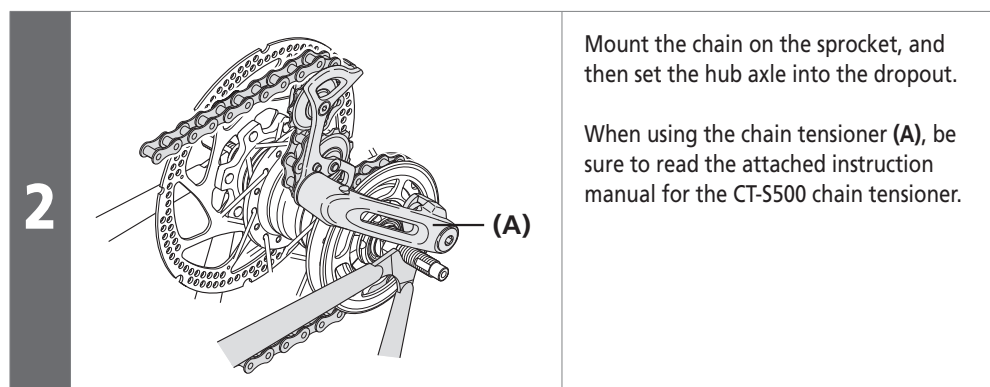
Tightening torque	
TL-LR10	40 N·m

### < When not using the chain tensioner >



- (A) Dropout  
(B) Hub axle

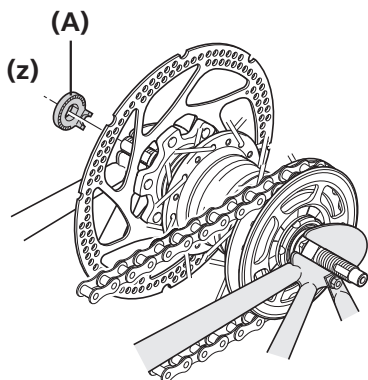
### < When using the chain tensioner >



- (A) Chain tensioner



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 dropout.

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

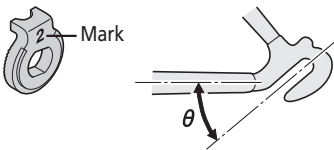
Install the non-turn washer so that the protrusion fits securely in the dropout groove at the front and back sides of the hub axle.

(A) Non-turn washer

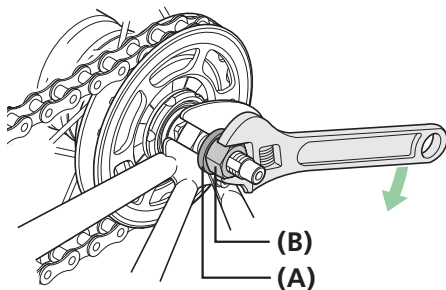
NOTICE

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

Dropout	Non-turn washer (for left side use)	
	Mark / Color	Size
Standard	2 / Yellow	$\theta \leq 20^\circ$
Reversed		$\theta \leq 38^\circ$
Reversed (full chain case)		$\theta = 0^\circ$
Vertical	8L / Green	$\theta = 60^\circ - 90^\circ$



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)

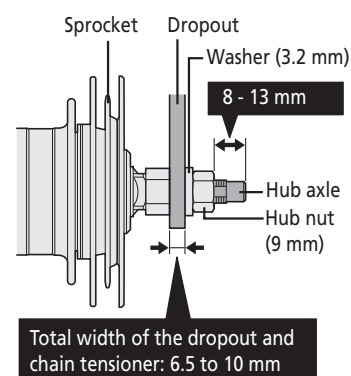
#### Tightening torque



30 - 45 N·m

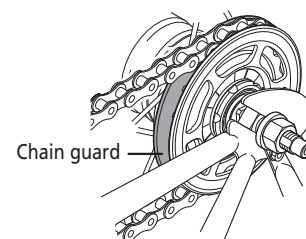
#### NOTICE

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.

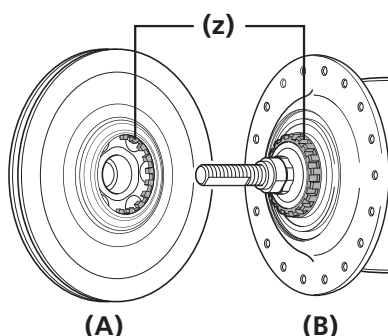


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## Installation of the hub to the frame (for roller brakes)

1



Engage the serrations on the hub body (B) with the serrations on the inter-M brake (A), and then provisionally tighten the brake unit fixing nut.

(z) Align the serrations

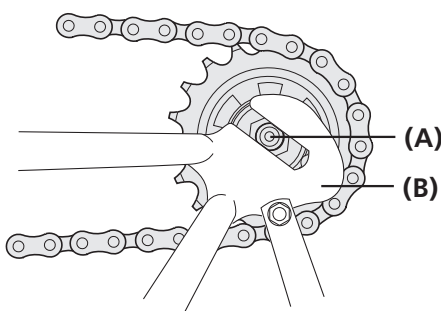
- (A) Inter-M brake  
(B) Hub body

### 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 instruction manual for the inter-M brake for details on installing the inter-M brake.

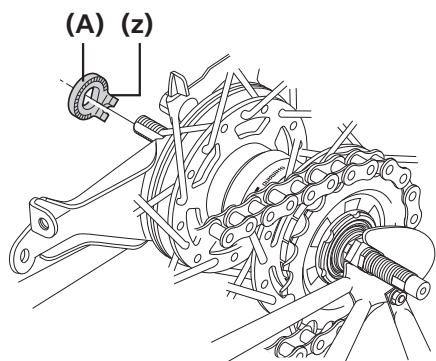
2



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

- (A) Hub axle  
(B) 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 dropout.

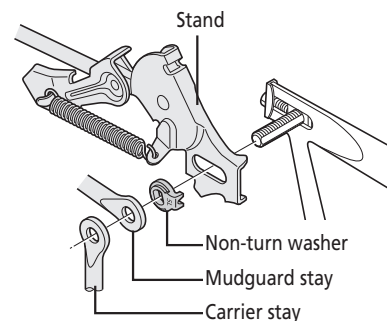
(z) The protrusion should be on the dropout side.

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.

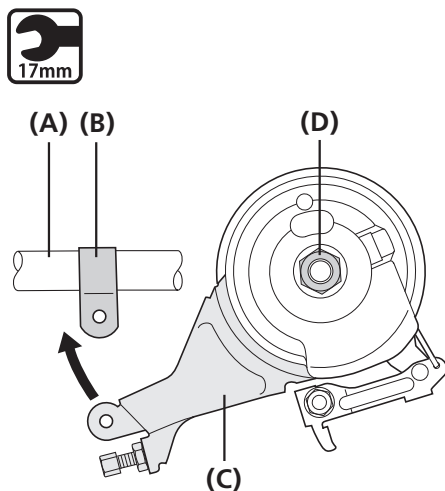
- (A) Non-turn washer (gold)

### 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.



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



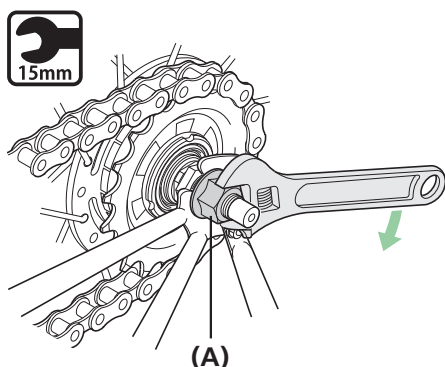
20 - 25 N·m

#### 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

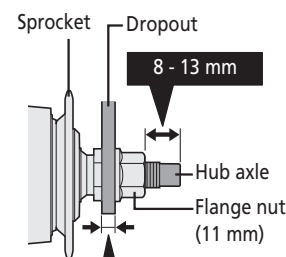
#### Tightening torque



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.



Total width of the dropout and chain tensioner: 4 to 7.5 mm

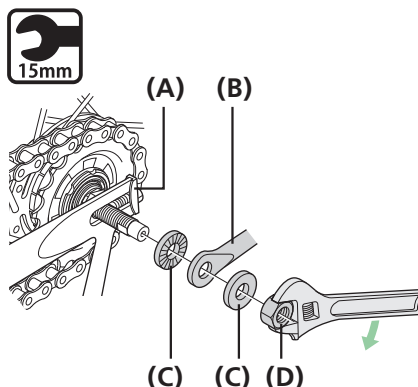


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**< For a 189.4 mm long axle >**

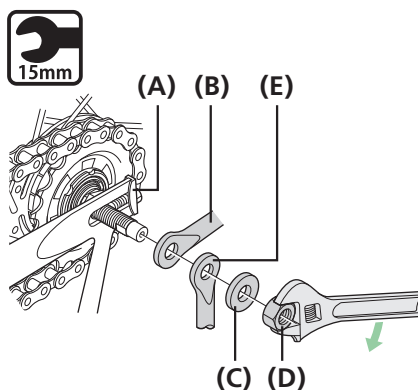


If the total width of the dropout and other parts such the stand and mudguard stay **(B)**, on the right side of the hub axle, is 8.5 to 11.5 mm

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.

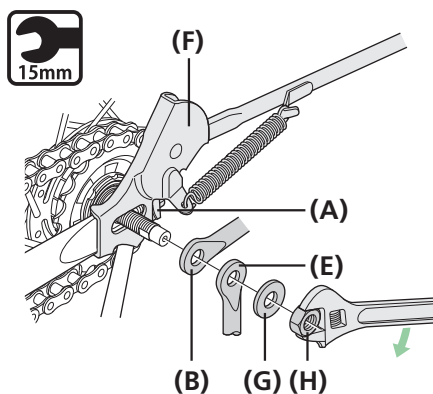
Example: Mount the parts in the order shown in the illustration.



If the total width of the dropout and other parts such as 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 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



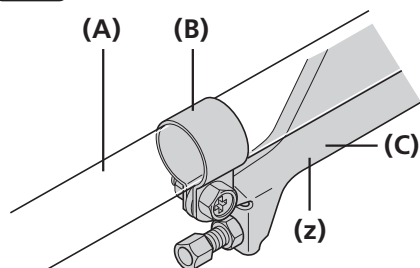
30 - 45 N·m

**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.



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

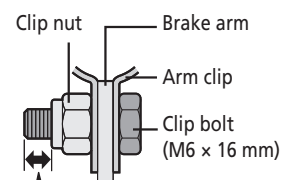
#### Tightening torque



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.



About 4 mm

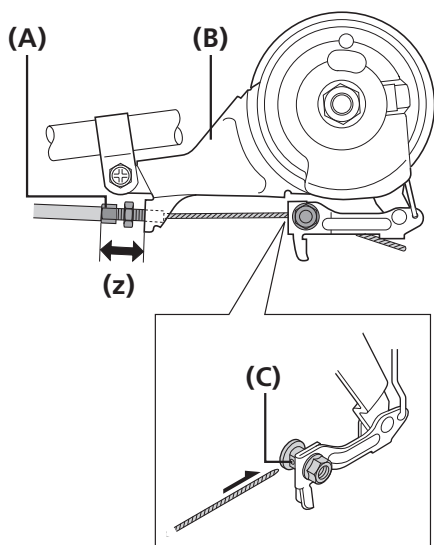


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## Installing the brake cable

1

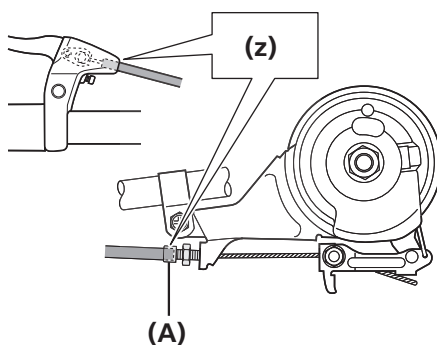


Place the cable adjustment barrel (A) so that it is 15 – 17 mm from the end of the brake arm (B), and then pass the inner cable through the cable adjustment barrel of the brake arm and then through the hole in the inner cable fixing bolt (C).

(z) Should be 15 – 17 mm

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

2

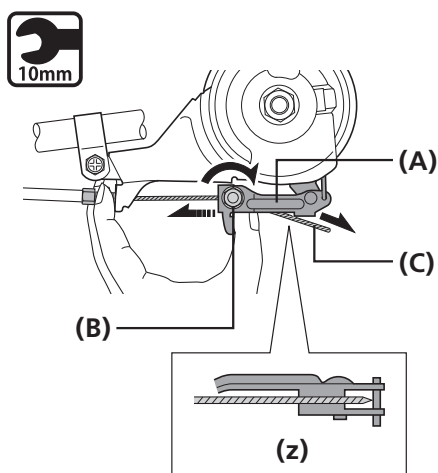


Check that both ends of the outer casing are securely inserted into the cable adjustment barrels (A) of both the brake lever and brake arm.

(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



6 - 8 N·m

### NOTICE

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

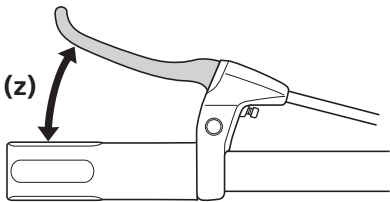


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Adjusting the brake cable

1



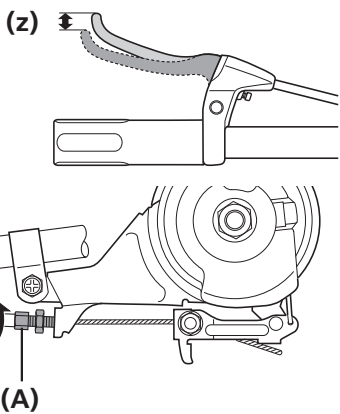
After checking that the wheel does not easily turn while the brake cable is being pulled, depress the brake lever about 10 times as far as the grip in order to run in the brake cable.

(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

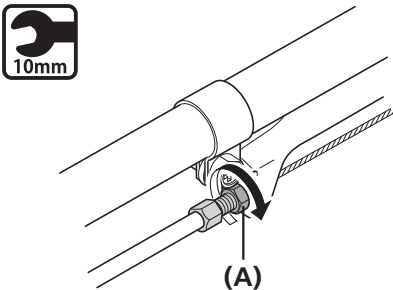


Turn the cable adjustment barrel (A) so that there is about 15 mm of gap (z) in the brake lever.

\* 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



1 - 2 N·m

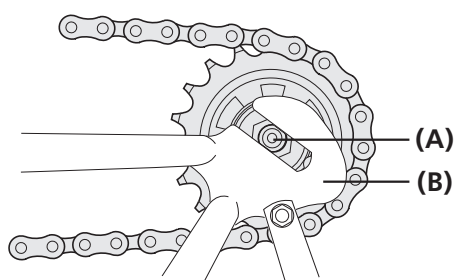


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## Installation of the hub to the frame (for coaster brakes)

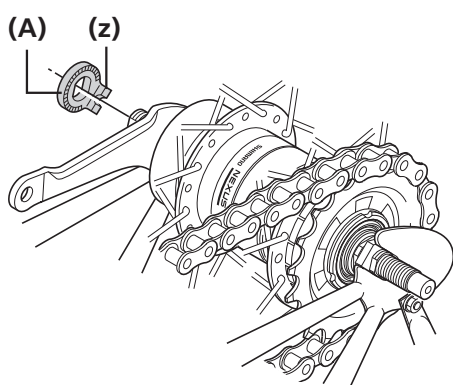
1



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

(A) Hub axle  
(B) Dropout

2



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

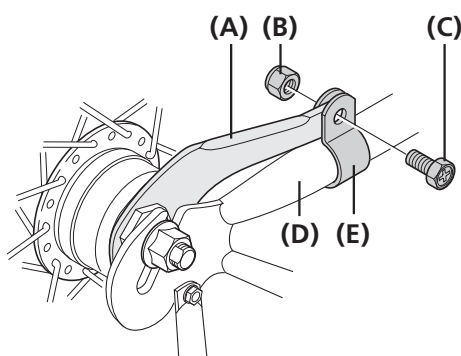
At this time, turn the hub axle and install the non-turn washer so that the protrusion of the washer fits into the groove in the dropout.

(z) 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.

(A) Non-turn washer (yellow)

3



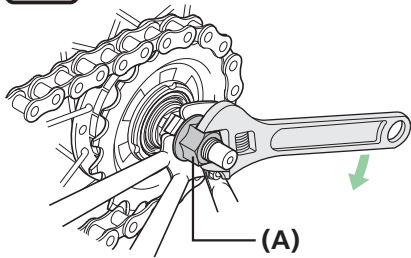
Install the brake arm (A) to the chainstay (D) using the arm clip (E) and temporarily tighten the clip bolt (C) and clip nut (B) loosely.

Then, tighten the brake unit fixing nut.

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



4



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

(A) Flange nut

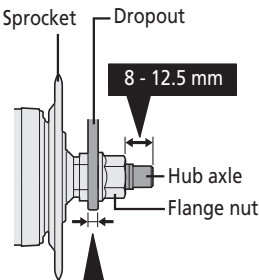
Tightening torque



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.



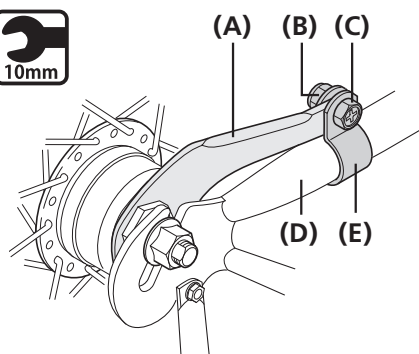
Total width of the dropout and other parts such the stand and mudguard stay:  
4 to 7.5 mm (Axle length: 168 mm / 175 mm)  
9 to 12.5 mm (Axle length: 178 mm)



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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

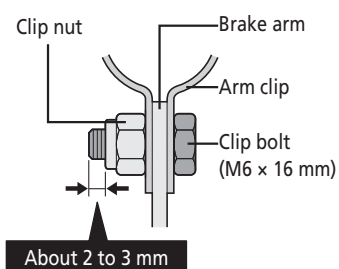
#### Tightening torque



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.

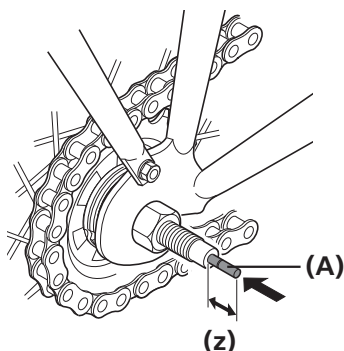


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## Installation of the bell crank

1



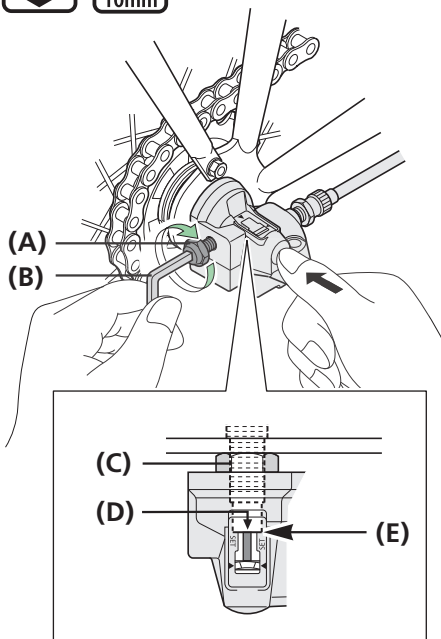
Insert the push rod (A) into the hub axle.

(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 serrations 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

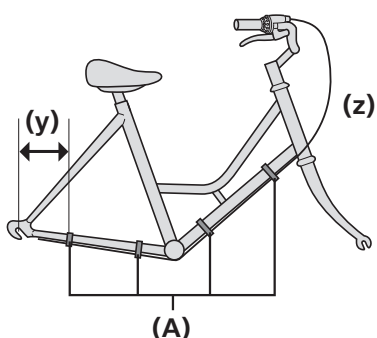
(E) End face of the hub axle

### Tightening torque



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



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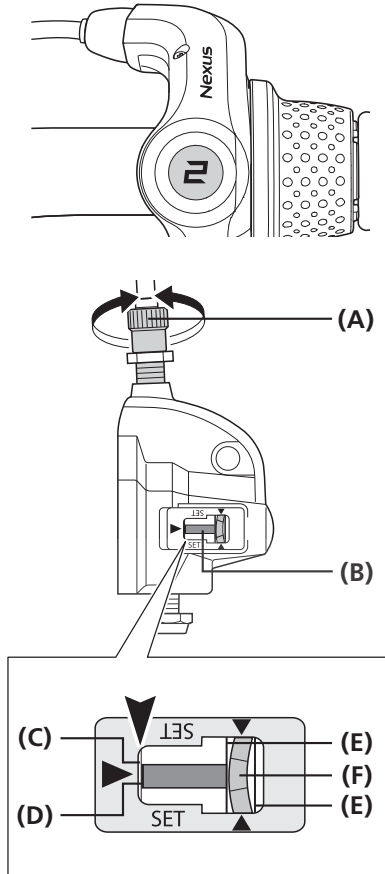
<https://si.shimano.com/DM/SG0005>



## ADJUSTMENT

### For bell cranks

1



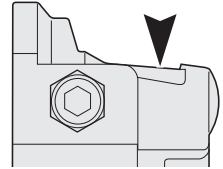
Set the REVOSHIFT lever to 2.

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

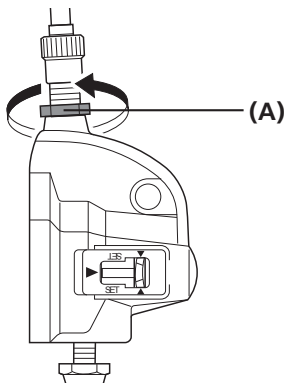
During adjustment, check the two yellow lines through the window from above.



2

While turning the crank, move the REVOSHIFT lever from 3 to 1 then back to 3. Repeat this two or three times and check to see that the gears are being shifted. Move the REVOSHIFT lever 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.

3



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

- (A) Cable adjustment nut

#### Tightening torque



1.5 - 2.5 N·m



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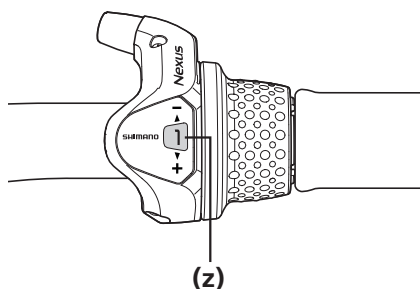
<https://si.shimano.com/DM/SG0005>

## MAINTENANCE

### ■ Replacement of the shifting cable

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

1



Set the REVOSHIFT lever to 1.

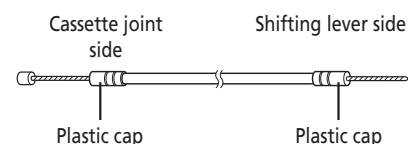
(z) Set to 1



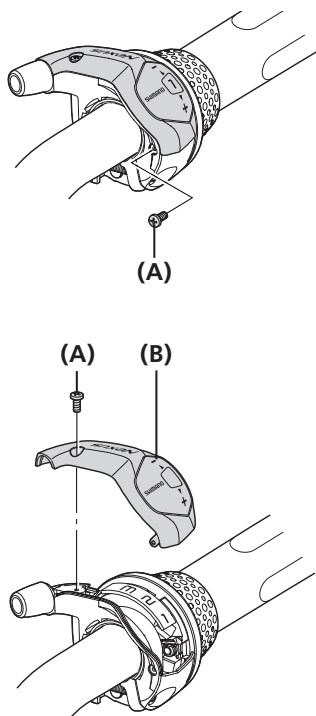
#### TECH TIPS

Use a shifting cable with one inner cable drum.

\* The shape differs depending on the model.



2

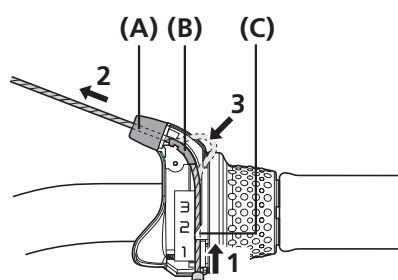


Loosen the two cover fixing screws (A) and remove the cover (B).

(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

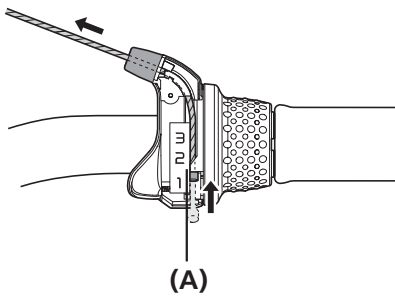
(C) Hole in winder unit



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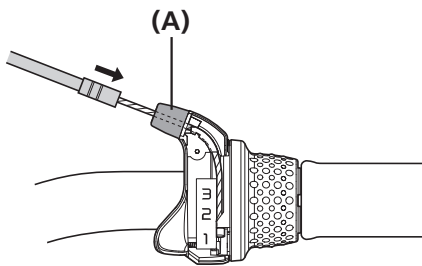
4



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

(A) Recess in winder unit

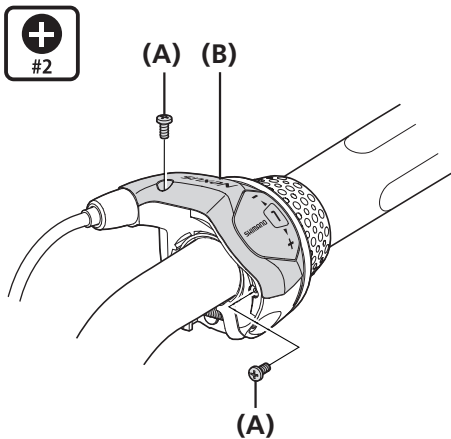
5



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

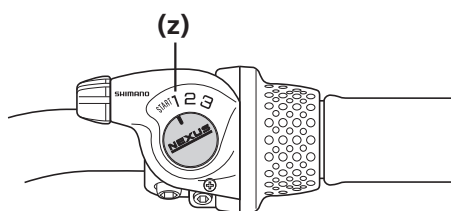


0.1 - 0.2 N·m



## REVOSHIFT lever (In the case of 3S35-E)

1



Set the REVOSHIFT lever to 1.

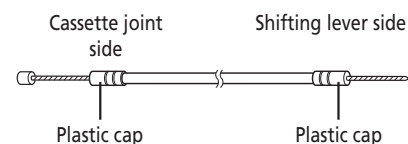
**(z)** Set to 1



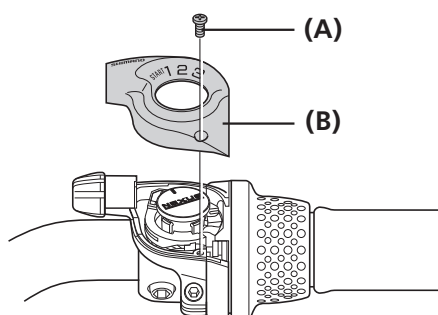
### TECH TIPS

Use a shifting cable with one inner cable drum.

\* The shape differs depending on the model.



2

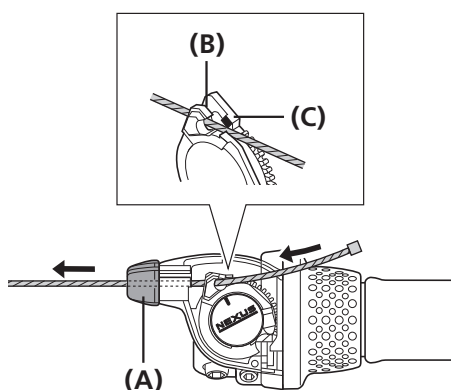


Loosen the cover fixing screw **(A)**, and then remove the indicator cover **(B)**.

**(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)**.

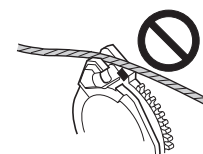
**(A)** Hole in outer casing holder

**(B)** Groove in pulley

**(C)** Projection on pulley

### NOTICE

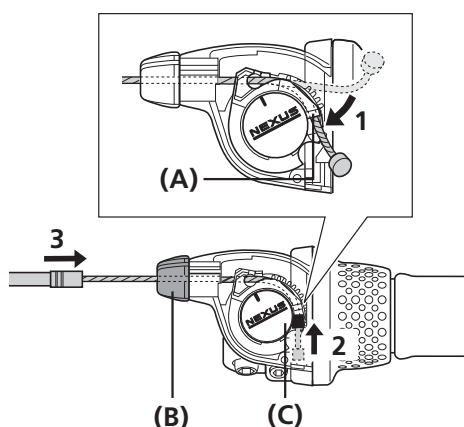
Check that the inner cable is correctly routed along the inside of the projection on the pulley.



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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.



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## Oil maintenance of the internal assembly

To maintain the product in good working order, it is recommended to have a bicycle dealer or nearest agency carry out maintenance such as lubrication of the internal parts about once every two years from the first time of use (once about every 5,000 km if the bicycle is used very frequently). 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 gear shifting may occur.

(A) WB maintenance oil set  
(Y00298010)



(A)

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.



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4



Remove the internal unit from the oil.

5



Let the excess oil drain off for approximately 60 seconds.

6



After lubrication is complete, reassemble the hub.



#### TECH TIPS

##### <Maintenance oil>

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



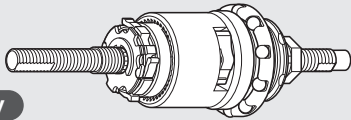
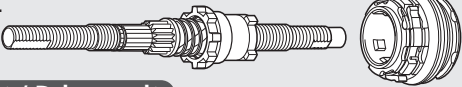
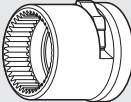
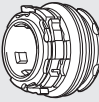



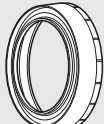
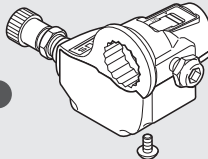

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# Troubleshooting



# Troubleshooting

Symptom	Cause and remedy
Mechanism spins freely or slips when in top <b>3</b> gear.	<p>Malfunction of the internal assembly. Replace with a new one.</p> <p><b>Internal assembly</b></p> 
Mechanism spins freely or slips when in normal <b>2</b> gear.	<p>Malfunction of the axle unit and driver unit. Replace with new ones.</p> <p><b>Axle unit / Driver unit</b></p> 
Mechanism spins freely or slips when in low <b>1</b> gear.	<p>Malfunction of pawls B. Replace the ring gear unit with a new one.</p> <p><b>Ring gear unit</b></p>  <p>Malfunction of pawls A. Replace the driver unit with a new one.</p> <p><b>Driver unit</b></p>  <p>Malfunction of pawl D or the planetary gear. Replace the carrier unit with a new one.</p> <p><b>Carrier unit</b></p> 
Turning is difficult and noise is heard.	<p>Damaged ball retainer K (7/32" x 10), J (7/32" x 8) or A (1/4" x 7). Replace the damaged part with a new one. Apply grease to the new part when replacing.</p> <p><b>Ball retainer</b></p>  <p>K (7/32" x 10) J (7/32" x 8) A (1/4" x 7)</p> <p><b>Internal hub grease</b></p>  <p>Part no. Y-041 20800</p> <p>Incorrect installation of right hand dust cap A. Install right hand dust cap correctly to the hub shell.</p> <p><b>Right hand dust cap A</b></p> 
Gear shifting is not possible.	<p>Malfunction of the bell crank <b>III</b> unit. Replace the bell crank <b>III</b> unit with a new one.</p> <p><b>Bell crank <b>III</b> unit</b></p>  <p>Incorrect installation of the bell crank <b>III</b>. Install the bell crank correctly.</p>
Push rod does not move.	<p>Damaged or malfunctioning cable. Replace the cable with a new one of a type recommended by Shimano.</p> <p>Damaged or malfunctioning push rod. Replace the push rod with a new one.</p> <p><b>Push rod</b></p> 

# Disassembly and Assembly

# Tools

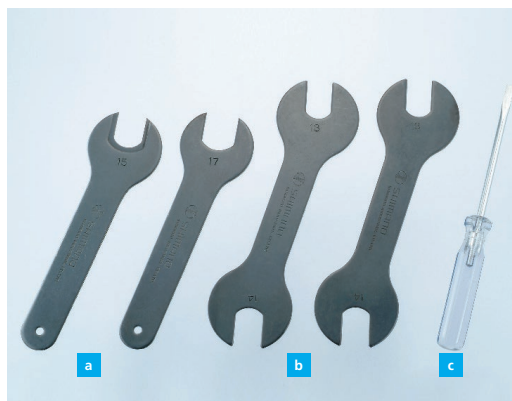
**a: TL-HS20**

Hub spanners  
Part no. Y-320 90010  
15 mm/17 mm (2 pcs.)

**b: TL-HS10**

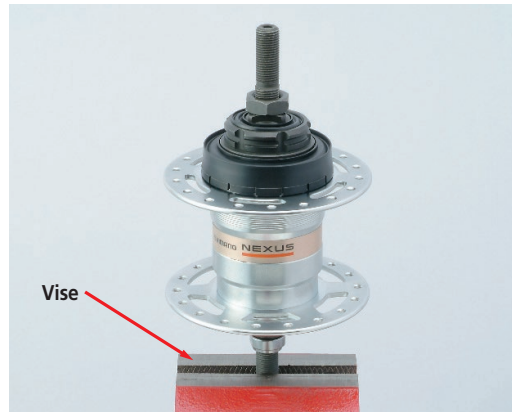
Hub spanners  
Part no. Y-230 90010  
13 mm x 14 mm (2 pcs.)

**c: Slotted Screwdriver**



# Disassembly of the INTER-3 Hub (Roller Brake Spec.)

1. Hold the two beveled surfaces of the hub axle in a vise.



## NOTICE

- Do not damage the threads of the hub axle.

2. Remove the right hand dust cap A with a slotted screwdriver.



3. Hold the two beveled surfaces of the hub axle on the driver side in a vise.



## NOTICE

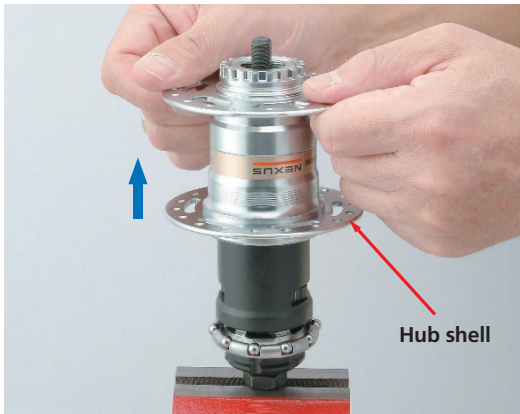
- Do not damage the threads of the hub axle.

Disassembly of the Inter-3 hub

4. Hold the left hand cone, and then remove the lock nut for left hand cone. Next, remove the left hand cone.



5. Remove the hub shell.



Now it can be replaced with the new internal assembly.



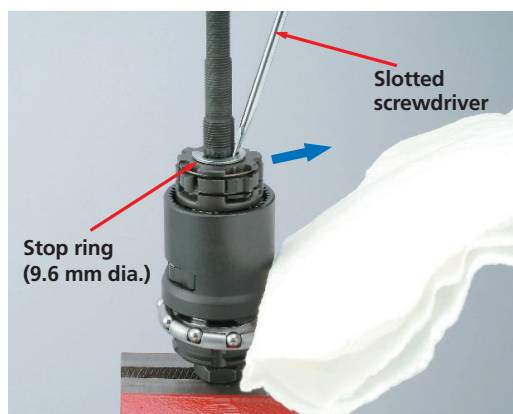
Internal assembly for quick replacement

Part no.	Axle length
Y-33S 90700	170.3 mm
Y-33S 98270	176.8 mm
Y-33S 90710	189.4 mm

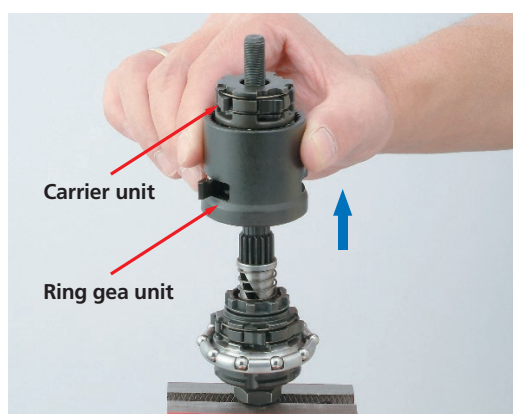
## Disassembly of the Inter-3 hub

### 6. Remove the stop ring with a slotted screwdriver

At this time, the stop ring come off with great force.  
Be careful of the safety using cloth and so on.

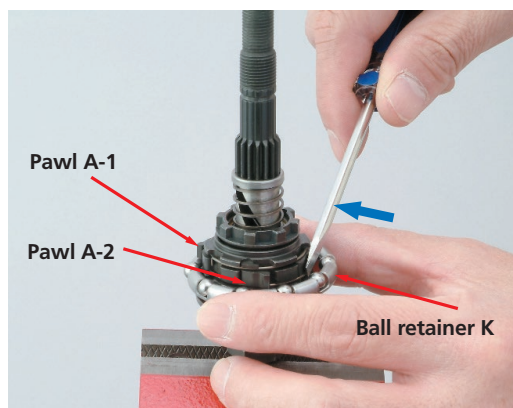


### 7. Remove the carrier unit and the ring gear unit at the same time while turning the ring gear unit slightly to the left and right.



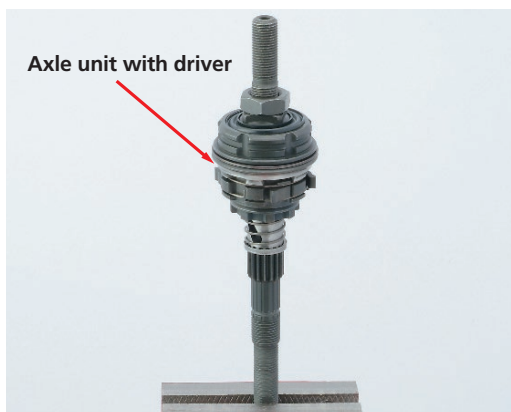
After removing them at the same time, remove the carrier unit from the ring gear unit.

### 8. Remove ball retainer K while pressing in pawl A-1 and pawl A-2 on the driver unit with your fingers.



## Disassembly of the Inter-3 hub

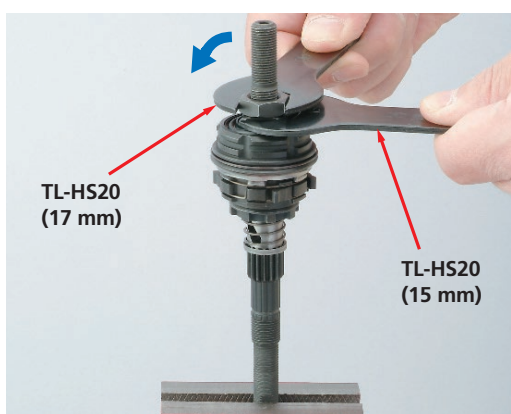
- 9.** Turn the axle unit with driver upside down and hold the two beveled surfaces of the axle in a vise.



### NOTICE

- Do not damage the threads of the hub axle.

- 10.** Remove the right hand lock nut and the right hand cone with dust seal from the hub axle.

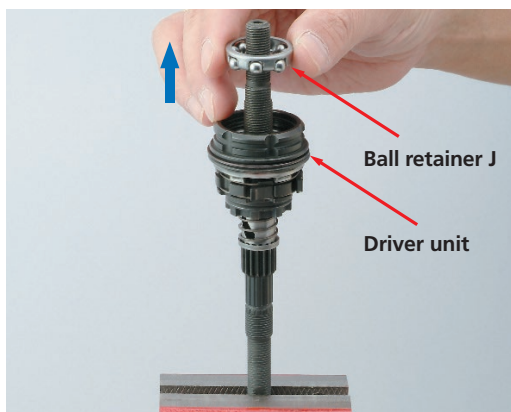


Right hand lock nut



Right hand cone with dust seal

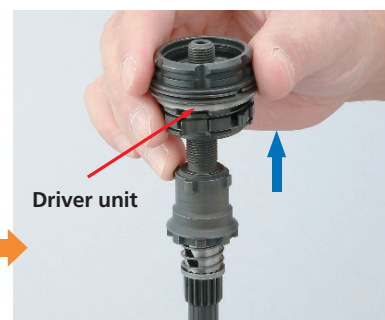
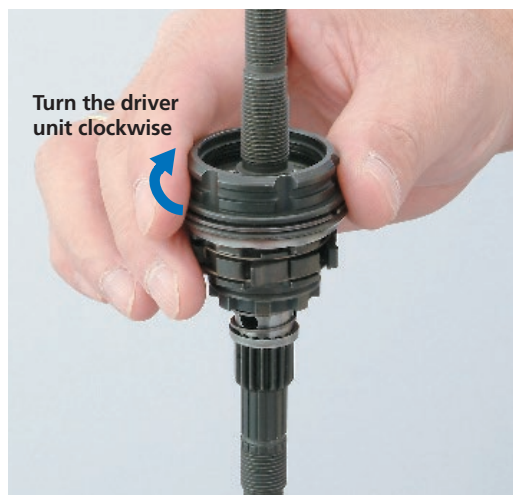
- 11.** Remove ball retainer J from the driver unit.





## Disassembly of the Inter-3 hub

- 12.** Turn the driver unit clockwise to remove it from the axle unit.



### NOTICE

- Do not disassemble the axle unit, otherwise it may cause problems with gear shifting.

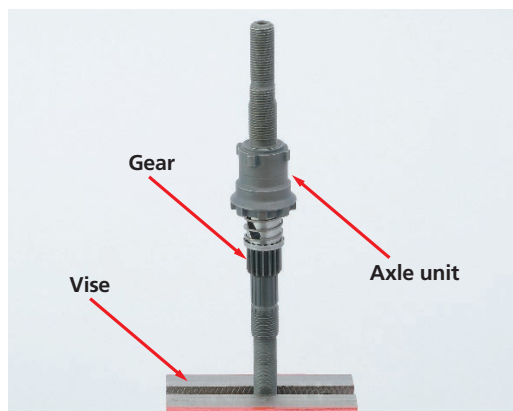
**This completes the disassembly of the Inter-3 hub.**





# Assembly of the INTER-3 Hub (Roller Brake Spec.)

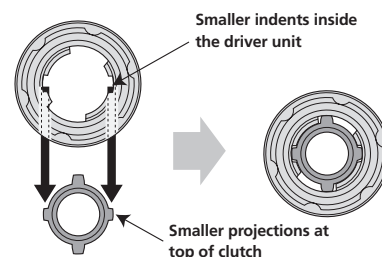
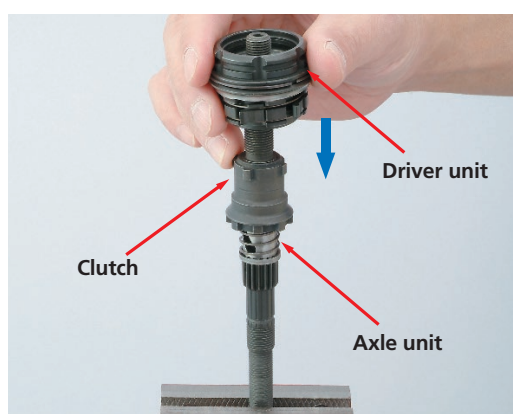
1. Hold the two beveled surfaces of the axle unit on the gear side in a vise.



## NOTICE

- Do not damage the threads of the hub axle.

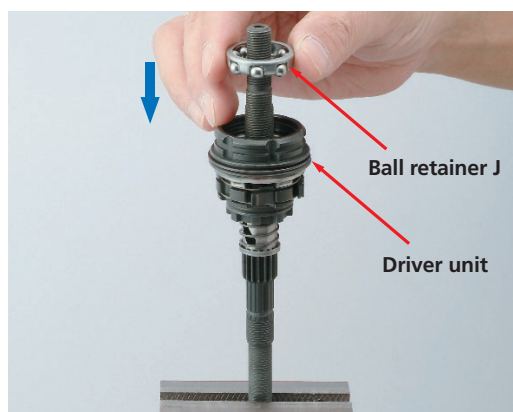
2. Install the driver unit onto the axle unit.



## NOTICE

- Align the two smaller indents inside the driver unit with the two smaller projections at the top of the clutch when installing the driver unit.

3. Place ball retainer J onto the driver unit



## NOTICE

- Be careful of the setting direction.
- Apply a liberal coating of internal hub grease.



(Y04120800)

## Assembly of the Inter-3 hub

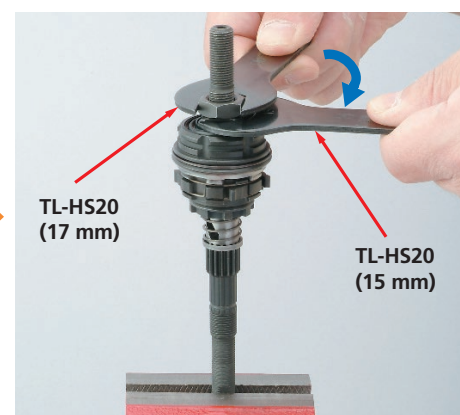
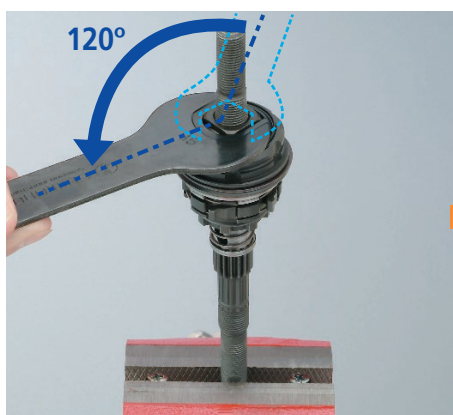
- 4. Screw the right hand cone with dust seal onto the hub axle as far as it will go. Then turn the right hand cone counterclockwise by 120 degree, and then secure it by tightening the right hand lock nut.**



Right hand lock nut

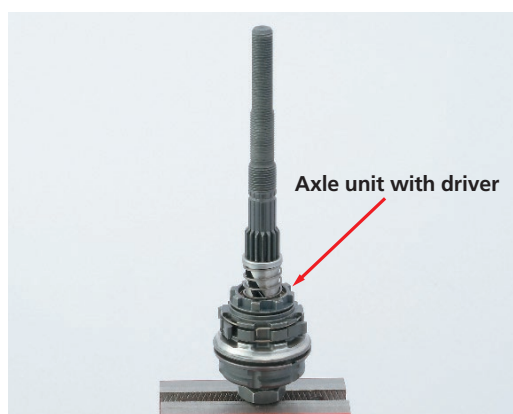


Right hand cone with dust seal



**Tightening torque:**  
12 - 20 N·m {104 - 174 in.lbs}

- 5. Turn the axle unit with driver upside down and hold the two beveled surfaces of the axle on the driver side in a vise.**

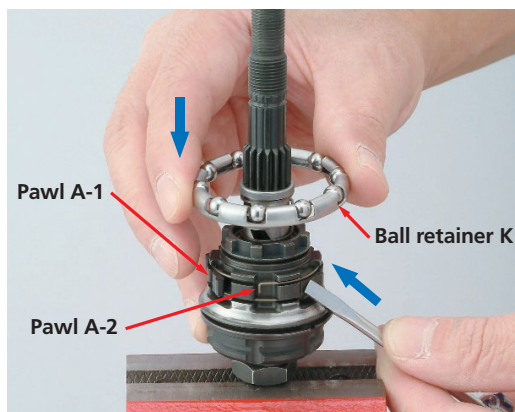


### NOTICE

- Do not damage the threads of the hub axle.

## Assembly of the Inter-3 hub

- 6. Install ball retainer K while pressing in pawl A-1 and pawl A-2 on the driver unit with your fingers.**



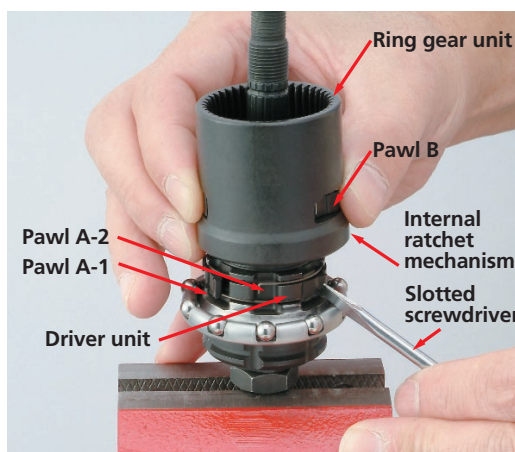
### NOTICE

- Be careful of the setting direction.
- Apply a liberal coating of internal hub grease.



(Y04120800)

- 7. While pushing the two pawls B on the ring gear unit with your fingers, push the two pawls A-1 and the two pawls A-2 on the driver unit one by one with a slotted screwdriver and install the ring gear unit to the driver unit.**



### NOTICE

- Be careful of the directions of the two pawls B.
- Apply a liberal coating of internal hub grease.
- Check that pawls B are not hooked onto the clutch.
- Check that pawls A-1 and A-2 are engaged with the ratchet mechanism in the ring gear unit.
- Apply a liberal coating of internal hub grease to the gear inside the ring gear unit.



OK

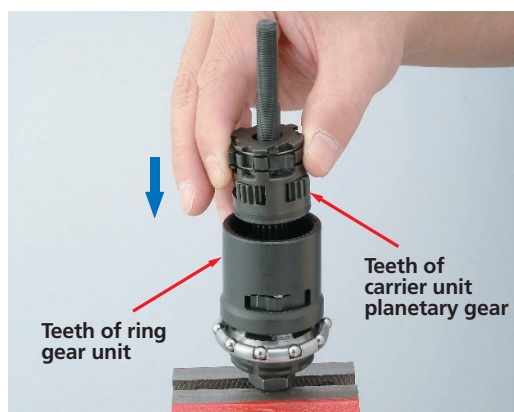


Not OK



## Assembly of the Inter-3 hub

- 8.** Engage the teeth of the planetary gear of the carrier unit with the teeth of the ring gear unit while turning the carrier unit slightly to the left and right and pushing it onto the ring gear unit.



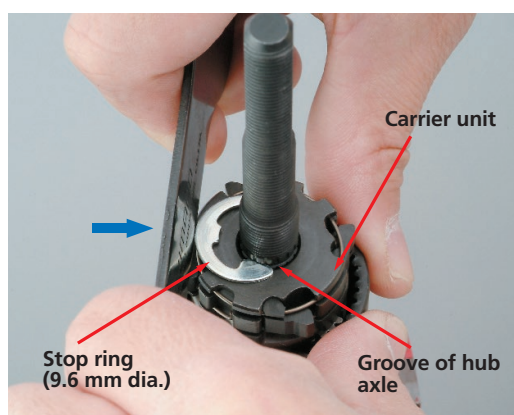
### Check

- Check that the stop ring groove of the hub axle is visible from the edge of the carrier unit after the carrier unit has been installed.

### NOTICE

- Apply a liberal coating of internal hub grease to the planetary gear (in 4 places) inside the carrier unit.

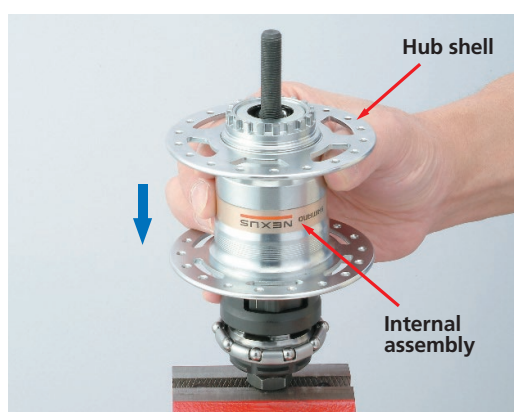
- 9.** Insert the stop ring into the groove of the hub axle.



### NOTICE

- After inserting the stop ring, check that there is a small amount of play in the carrier unit in the vertical direction. If there is no vertical play and the carrier unit turns stiffly, turn the internal assembly upside down and hold the hub axle in a vice. Then loosen the right hand lock nut and the right hand cone with dust seal to adjust until there is sufficient play.

- 10.** While turning the hub shell counterclockwise slightly, place it onto the internal assembly.



## Assembly of the Inter-3 hub

- 11.** Screw on the left hand cone to adjust so that the hub shell can be turned smoothly without any play. After adjusting, secure the left hand cone with the lock nut for left hand cone.

**Tightening torque:**  
12 - 20 N·m {104 - 174 in.lbs}

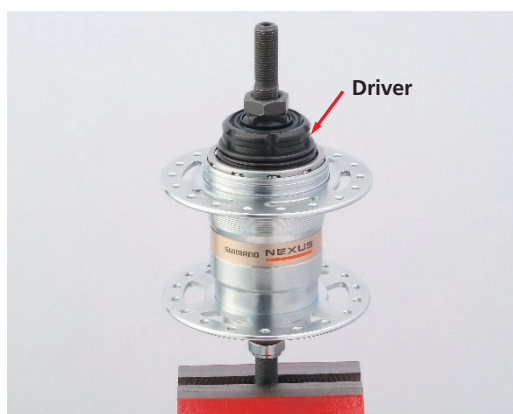


Lock nut for left hand cone



Left hand cone

- 12.** Turn the hub upside down and hold the two beveled surfaces of the axle in a vise.



### NOTICE

- Do not damage the threads of the hub axle.

- 13.** Install right hand dust cap A to the hub shell.



### Check

- After installing right hand dust cap A to the hub shell, turn the hub shell clockwise and check that it turns smoothly. If the hub shell does not turn smoothly, re-install right hand dust cap A.

### NOTICE

- Apply a coating of internal hub grease to the inside of right hand dust cap A to waterproof it.
- Push right hand dust cap A firmly onto the hub shell until it clicks.

**This completes the assembly of the Inter-3 hub**

# Service Parts



# Service Parts

## Bell Crank



SM-BC03



SM-BC04

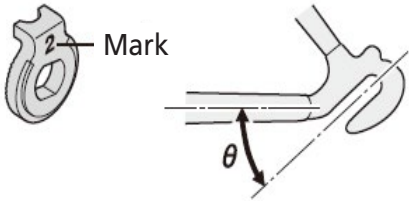


SM-BC06

## Non-Turn Washer

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 .

Dropout	Non-Turn Washer (for left side use)	
	Mark / Color	Size
Except vertical type	2 / Yellow	$\theta=0^{\circ} \sim 60^{\circ}$
Vertical type	8L / Green	$\theta=60^{\circ} \sim 90$



# Interchangeability



# Interchangeability

		Compatible Products
Internal Unit	SG-3R40	SG-3R40
	SG-3C41	SG-3C41
	SG-3D55	SG-3D55

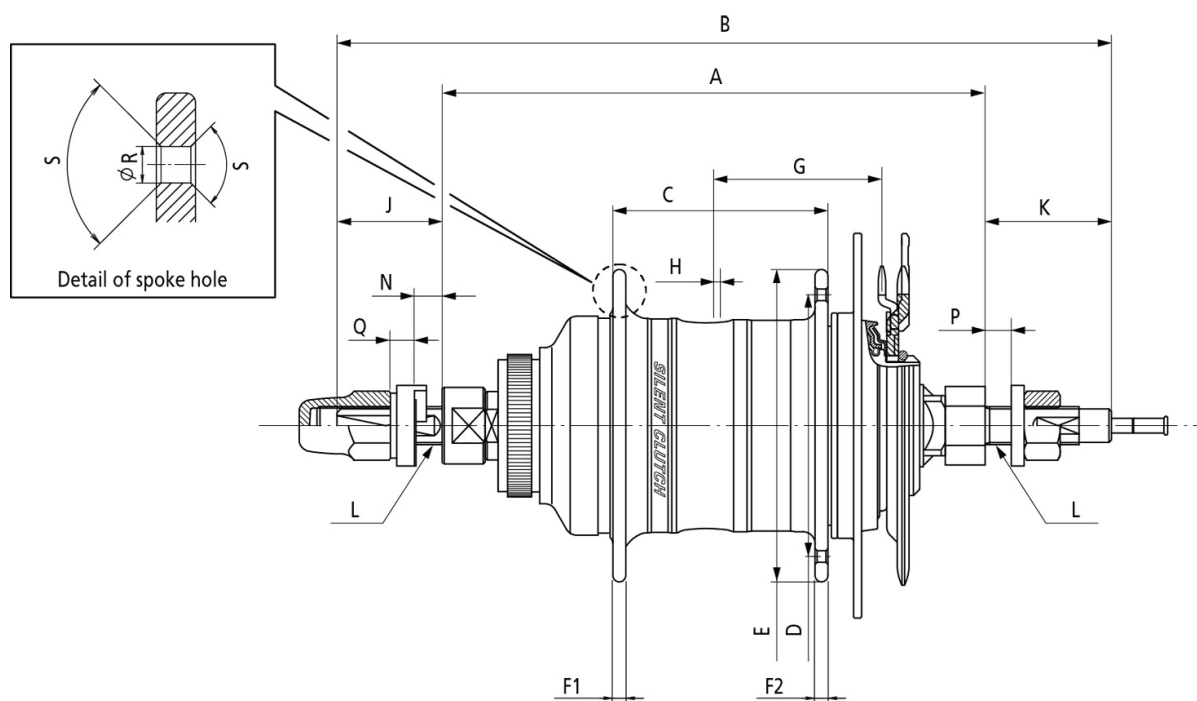
(NOTE) \*The specifications differ depending on the length of the axle etc. Therefore, follow the compatibility of the axle length and such.

# Hub dimensions

## (Over Locknut Dimensions and Axle)

# Hub dimensions (Over Locknut Dimensions and Axle)

## SG-3R40 / SG-3C41 / SG-D55

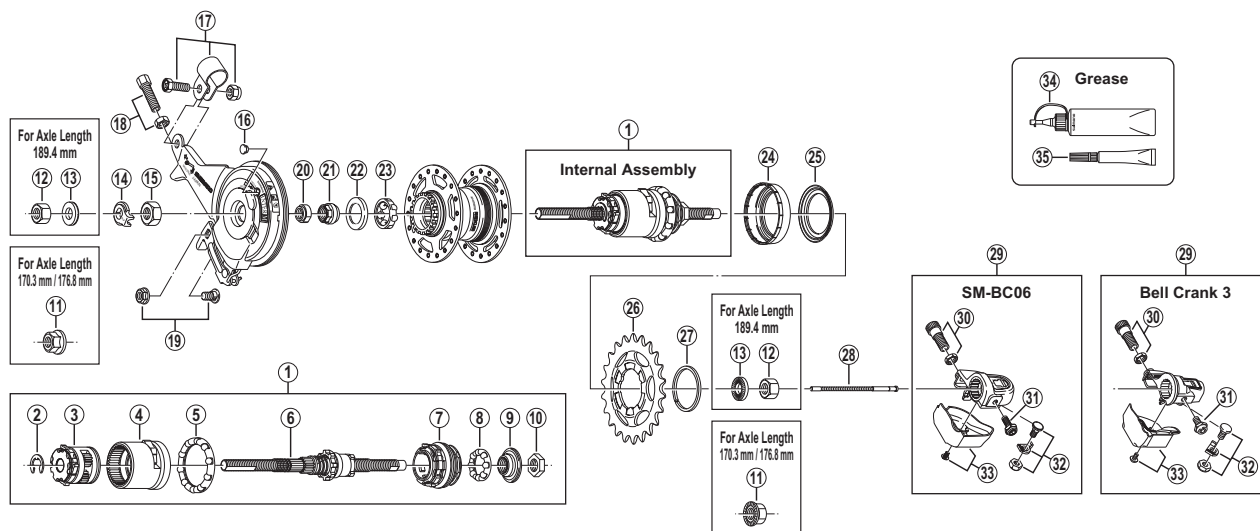


	Series		NEXUS								
	Model No.		SG-3R40				SG-3C41			SG-3D55	
	Speed		3								
	Gear ratio: Total		186%								
	Sales area		All								
	Brake type		Hub roller brake				Coaster brake			Disc brake	
	Hub shell material		Steel							Aluminum	
	Spoke size		#13 / #14								
A	Over locknut dim. / O.L.D. (mm)		120		127		130	120		127	135
B	Axle length (mm)		170	189	177	183	183.5	168	178	175	193
	Push rod length (mm)		81.85	90.75	86.85	90.75	86.85	81.85	86.85		90.75
C	Flange distance (mm)		53				57.5			53.5	
D	Spoke hole P.C.D. (mm)		74				59			65	
	Butterfly spoke hole		-								
E	Flange diameter (mm)		84				67.5			77.6	
F	Flange width (mm): F1 (left)		2.3							3.2	
	Flange width (mm): F2 (right)		2.3							3.2	
G	Chain line (mm)	15T (flat gear) use	42.2		40.5		45.5	43.7		42.2	44.5
		Inward assembly	39.7		38		43	41.2		39.7	42
		Outward assembly	44.7		43		48	46.2		44.7	47
H	Offset (mm)		0.8		2.5			1.2		2.7	1.7
J	Axle length from hub (left)		22.5	32.7	22.5	24.5	22.5	21	26	21	26.2
K	Axle length from hub (right)		27.4	36.3	27.5	31.4	30.8	27	32	26.6	31.4
L	Axle size		BC3 / 8 TPI 26								
N	Rear dropout mounting width (left, includes stay etc.)		4.0 -7.5	8.5 -17.0	4.0 -7.5	8.0 -11.5	7.5 -11.0	4.0 -7.5	9.0 -12.5	4.0 -7.5	6.5 - 10.0
P	Rear dropout mounting width (right, includes stay etc.)										
Q	Non-turn washer width		4.0				4.0			4.0 or 6.4	
R	Spoke hole diameter (mm)		2.7							2.9	
S	Spoke hole chamfer		105°							90°	

# EV / Spare Parts List

# Spare parts list

## NEXUS 3-SPEED HUB w/Hi-Power Roller Brake SG-3R40 inter -3 Hub / BR-IM31-R inter -M Brake



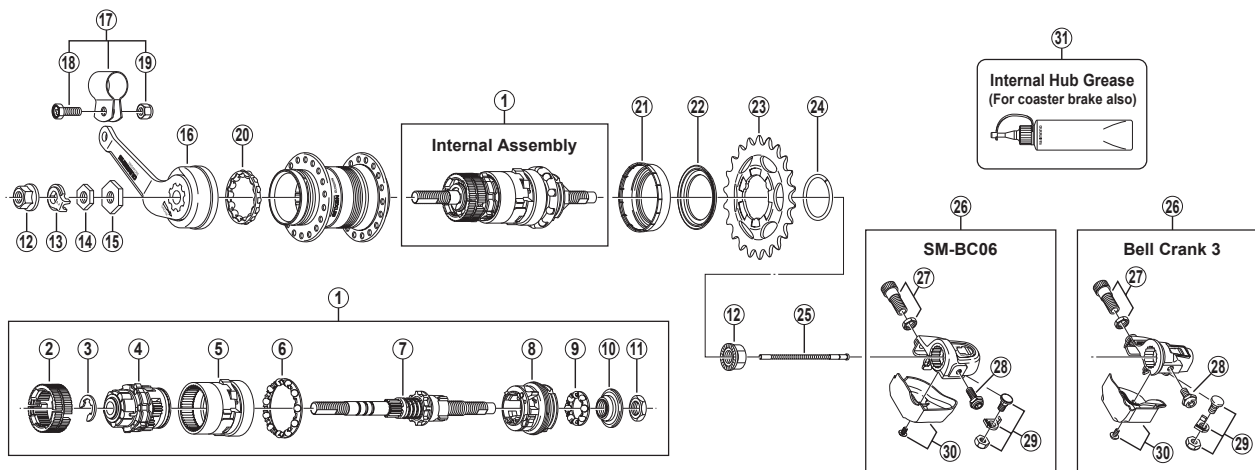
ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y33S90700	Internal Assembly (Axle Length 170.3 mm)
	Y33S98270	Internal Assembly (Axle Length 176.8 mm)
	Y33S90710	Internal Assembly (Axle Length 189.4 mm)
2	Y33Y19000	Stop Ring ( $\phi$ 9.6 mm)
3	Y33S90400	Carrier Unit
4	Y33S90300	Ring Gear Unit
5	Y33R90220	Ball Retainer K (7/32" x 10)
6	Y33S98040	Axle Unit (Axle Length 170.3 mm)
	Y33S98280	Axle Unit (Axle Length 176.8 mm)
	Y33S98050	Axle Unit (Axle Length 189.4 mm)
7	Y33S90200	Driver Unit
8	Y33R90210	Ball Retainer J (7/32" x 8)
9	Y33R90500	Right Hand Cone w/Dust Seal
10	Y33R08100	Right Hand Lock Nut (5 mm) for Axle Length 170.3 mm / 189.4 mm
	Y32530100	Right Hand Lock Nut (9.9 mm) for Axle Length 176.8 mm
11	Y22015010	Flange Nut for Axle Length 170.3 mm / 176.8 mm
	Y32170020	Hub Nut (7 mm) for Axle Length 189.4 mm
12	Y20003000	Hub Nut (9 mm) for Axle Length 189.4 mm
	Y22006000	Washer (2 mm) for Axle Length 189.4 mm
13	Y22006040	Washer (3.2 mm) for Axle Length 189.4 mm
	Y33Z20200	Non-turn Washer 2 (Yellow)
15	Y75V13000	Brake Unit Fixing Nut (8.2 mm) for Axle Length 170.3 mm / 189.4 mm
	Y75V13010	Brake Unit Fixing Nut (9.7 mm) for Axle Length 176.8 mm
16	Y75F11000	Grease Hole Cap
17	Y75M98050	Brake Arm Clip Unit ( $\phi$ 15 mm)
	Y33F98090	Brake Arm Clip Unit (5/8")
	Y75M98060	Brake Arm Clip Unit (11/16")
	Y33F98100	Brake Arm Clip Unit (3/4")
18	Y75Y98050	Brake Cable Adjusting Bolt & Nut

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
19	Y75Y98060	Inner Cable Fixing Bolt & Nut
20	Y31Z06020	Lock Nut for Left Hand Cone
21	Y33M37000	Left Hand Cone
22	Y31Z07000	Left Hand Dust Cap
23	Y32190220	Ball Retainer A (1/4" x 7)
24	Y33R05000	Right Hand Dust Cap A
25	Y33R52001	Right Hand Dust Cap B
26	Y32203200	Sprocket Wheel 16T (Black)
	Y73T21830	Sprocket Wheel 18T (Black)
	Y73T21930	Sprocket Wheel 19T (Black)
	Y73T22030	Sprocket Wheel 20T (Black)
	Y73T22130	Sprocket Wheel 21T (Black)
	Y73T22230	Sprocket Wheel 22T (Black)
27	Y73T22330	Sprocket Wheel 23T (Black)
	Y32120100	Snap Ring C
28	Y33R98080	Push Rod (81.85 mm) for Axle Length 170.3 mm
	Y33S98180	Push Rod (86.85 mm) for Axle Length 176.8 mm
	Y33S98290	Push Rod (90.75 mm) for Axle Length 189.4 mm
29	Y6P198030	SM-BC06 Bell Crank Unit
	Y33S95100	Bell Crank 3 Unit
30	Y33S98010	Cable Adjusting Bolt & Nut
31	Y33S74000	Bell Crank Body Fixing Bolt for SM-BC06
	Y33S57000	Bell Crank Body Fixing Bolt for Bell Crank 3
32	Y33S98030	Inner Cable Fixing Bolt Unit
33	Y6P198040	Bell Crank Cover & Fixing Screw for SM-BC06
	Y33S98020	Bell Crank Cover & Fixing Screw for Bell Crank 3
34	Y04120800	Internal Hub Grease (Net. 100g)
	Y04120400	Roller Brake Grease (Net. 100g)
35	Y04140020	Roller Brake Grease (Net. 10g)

Spare parts list

NEXUS 3-SPEED HUB w/Coaster Brake

SG-3C41 inter -3 Hub / Left Side Non-turn Washer Spec.



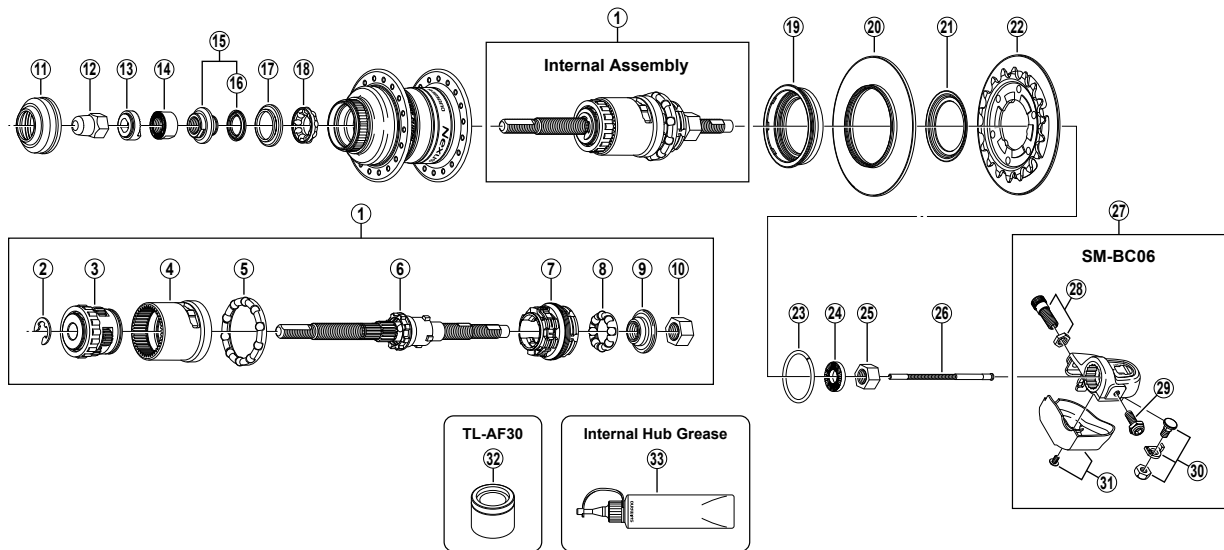
ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y35U98010	Internal Assembly (Axle Length 168 mm)
	Y33R98020	Internal Assembly (Axle Length 175 mm)
	Y35U98020	Internal Assembly (Axle Length 178 mm)
2	Y33R90600	Brake Shoe Unit
3	Y32532000	Stop Ring (ø9 mm)
4	Y33R90700	Carrier Unit
5	Y33R90800	Ring Gear Unit
6	Y35U98060	Ball Retainer K (7/32" x 11)
7	Y33R98050	Axle Unit (Axle Length 168 mm)
	Y33R98040	Axle Unit (Axle Length 175 mm)
	Y35U98030	Axle Unit (Axle Length 178 mm)
8	Y33R90400	Driver Unit
9	Y35U98070	Right Hand Cone w/Dust Seal
10	Y33R90500	Right Hand Lock Nut (5 mm) for Axle Length 170.3 mm / 189.4 mm
11	Y32139040	Right Hand Lock Nut (4.5 mm) for Axle Length 168 mm/178 mm
	Y32530100	Right Hand Lock Nut (9.9 mm) for Axle Length 175 mm
12	Y32170020	Flange Nut
13	Y33Z20200	Non-turn Washer 2 (Yellow)
14	Y33R49010	Left Hand Lock Nut (3 mm) for Axle Length 168 mm/178 mm
	Y33R49020	Left Hand Lock Nut (5 mm) for Axle Length 175 mm
15	Y33R48010	Stop Nut (3 mm)
16	Y35U98040	Brake Arm Unit
17	Y33F98090	Brake Arm Clip Unit (5/8")
	Y33F98100	Brake Arm Clip Unit (3/4")

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
18	Y75M06000	Clip Screw (M6 x 16)
19	Y31727200	Clip Nut
20	Y33R90200	Ball Retainer L (3/16" x 14)
21	Y33R05000	Right Hand Dust Cap A
22	Y33R52001	Right Hand Dust Cap B
23	Y32203200	Sprocket Wheel 16T (Black)
	Y73T21830	Sprocket Wheel 18T (Black)
	Y73T21930	Sprocket Wheel 19T (Black)
	Y73T22030	Sprocket Wheel 20T (Black)
	Y73T22130	Sprocket Wheel 21T (Black)
	Y73T22230	Sprocket Wheel 22T (Black)
	Y73T22330	Sprocket Wheel 23T (Black)
24	Y32120100	Snap Ring C
25	Y33R98080	Push Rod (81.85 mm) for Axle Length 168 mm
	Y33S98180	Push Rod (86.85 mm) for Axle Length 175 mm/178 mm
26	Y6P198030	SM-BC06 Bell Crank Unit
	Y33S95100	Bell Crank 3 Unit
27	Y33S98010	Cable Adjusting Bolt & Nut
28	Y33S74000	Bell Crank Body Fixing Bolt for SM-BC06
	Y33S57000	Bell Crank Body Fixing Bolt for Bell Crank 3
29	Y33S98030	Inner Cable Fixing Bolt Unit
30	Y6P198040	Bell Crank Cover & Fixing Screw for SM-BC06
	Y33S98020	Bell Crank Cover & Fixing Screw for Bell Crank 3
31	Y04120800	Internal Hub Grease (Net. 100g)

Spare parts list

NEXUS 3-Speed Internal Hub

SG-3D55

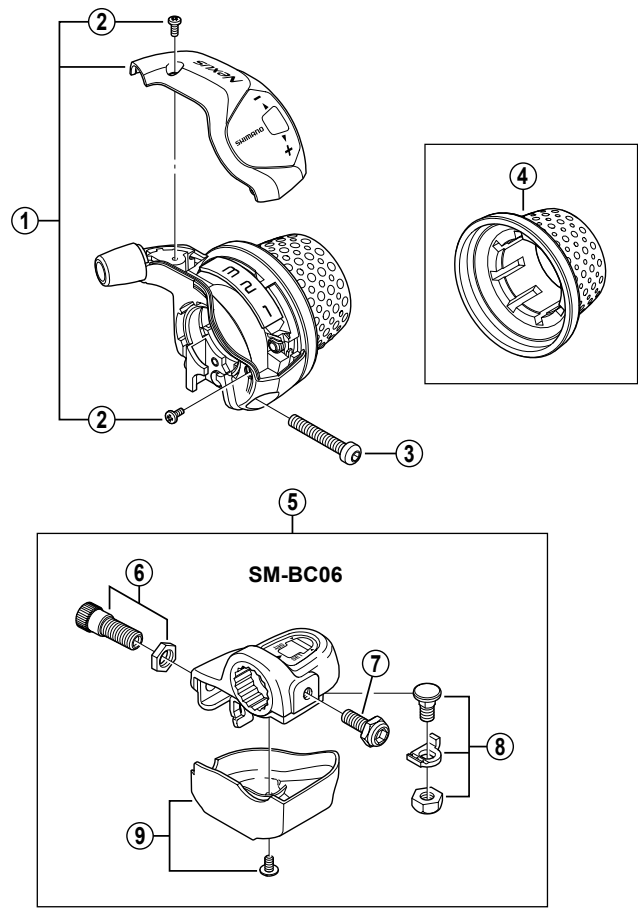


ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y-36U 98010	Internal Assembly (Axle Length 192.6 mm)
2	Y-33Y 19000	Stop Ring ( 9.6 mm)
3	Y-35E 98020	Carrier Unit
4	Y-35H 90300	Ring Gear Unit
5	Y-33R 90220	Ball Retainer K (7/32" x 10)
6	Y-36U 98020	Axle Unit (Axle Length 192.6 mm)
7	Y-33S 90200	Driver Unit
8	Y-33R 90210	Ball Retainer J (7/32" x 8)
9	Y-33R 90500	Right Hand Cone w/Dust Seal
10	Y-325 30120	Right Hand Lock Nut (9.9 mm)
11	Y-24Z 02000	Rotor Mount Cover
12	Y-314 14010	Cap Nut (3/8")
13	Y-34R 85000	Non-turn Washer 8L (Dark Green)
	Y-33Z 20200	Non-turn Washer 2 (Yellow)
14	Y-35Z 19000	Left Hand Serrated Lock Nut (10.7 mm)
15	Y-35Z 98060	Left Hand Cone w/Dust Cap & Seal Ring
16	Y-377 10000	Seal Ring
17	Y-32T 08100	Left Hand Inner Dust Cap

ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
18	Y-36U 98030	Ball Retainer (7/32" x 9)
19	Y-36U 09000	Right Hand Dust Cap A
20	Y-36U 10000	Chain Guard
21	Y-33R 52001	Right Hand Dust Cap B
22	Y-1ZN 98010	Sprocket Wheel 18T w/Guard Plate (CS-S500)
	Y-1ZN 98020	Sprocket Wheel 20T w/Guard Plate (CS-S500)
23	Y-321 20100	Snap Ring C
24	Y-220 06010	Washer (3.2 mm)
25	Y-200 03000	Hub Nut (9 mm)
26	Y-33S 98290	Push Rod (90.75 mm)
27	Y-6P1 98030	SM-BC06 Bell Crank Unit
28	Y-33S 98010	Cable Adjusting Bolt & Nut
29	Y-33S 74000	Bell Crank Body Fixing Bolt
30	Y-33S 98030	Inner Cable Fixing Bolt Unit
31	Y-6P1 98040	Bell Crank Cover & Fixing Screw
32	Y-708 11000	TL-AF30 Left Hand Inner Dust Cap Installation Tool
33	Y-041 20800	Internal Hub Grease (Net. 100g)

Spare parts list

NEXUS REVOSHIFT Lever (For 3-Speed)  
SL-3S41E / SL-3S42E

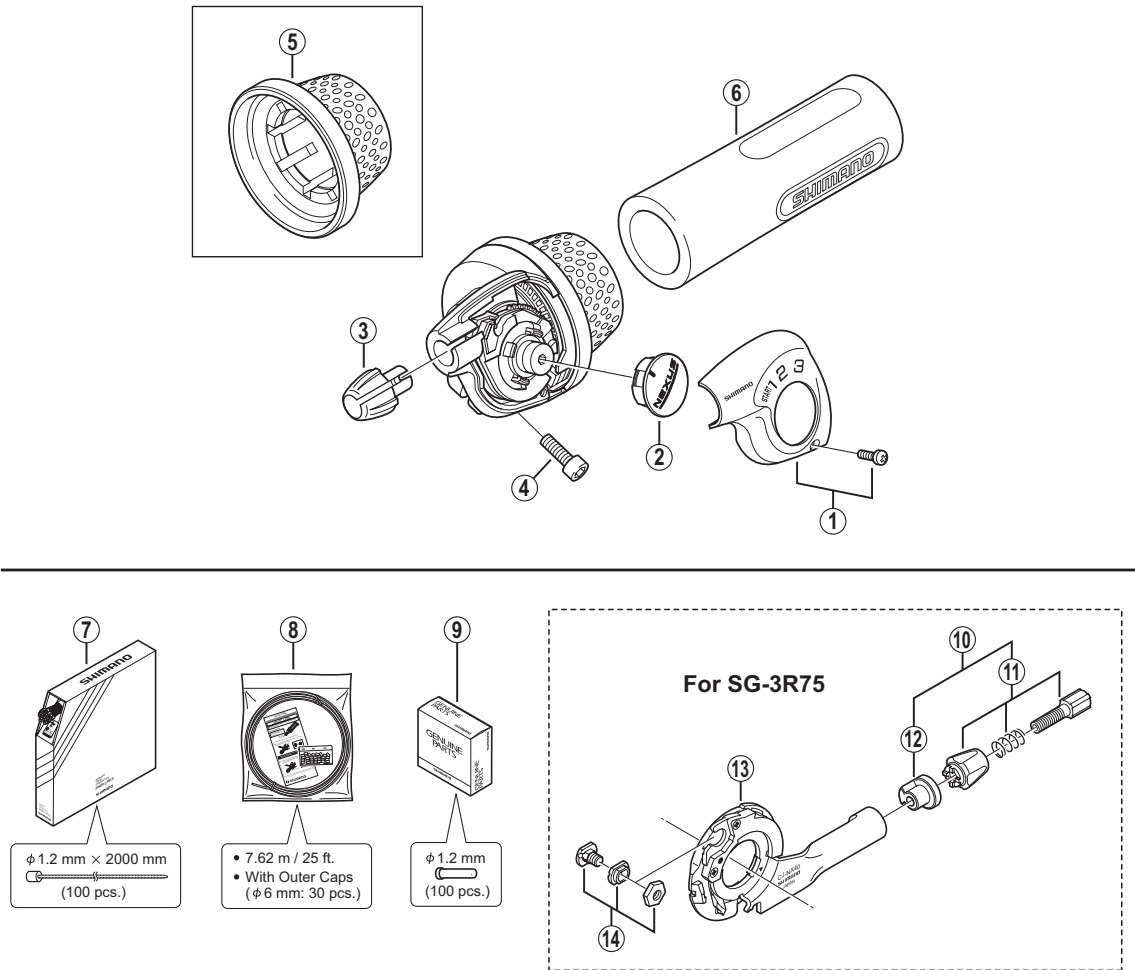


ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y-6P1 98010	Cover & Fixing Screw
2	Y-6F0 04000	Cover Fixing Screw
3	Y-6F4 09000	Clamp Screw (M4 x 23.5)
4	Y-65P 03110	Grip for SL-3S41E
	Y-6FD 14000	Grip for SL-3S42E
5	Y-6P1 98030	SM-BC06 Bell Crank Unit
6	Y-33S 98010	Cable Adjusting Bolt & Nut
7	Y-33S 74000	Bell Crank Body Fixing Bolt
8	Y-33S 98030	Inner Cable Fixing Bolt Unit
9	Y-6P1 98040	Bell Crank Cover & Fixing Screw



Spare parts list

NEXUS REVOSHIFT Lever  
SL-3S35-E For 3-speed



ITEM NO.	SHIMANO CODE NO.	DESCRIPTION
1	Y6E898010	Indicator Cover & Fixing Screw (M2.5 x 7)
2	Y65P98040	Indicator
3	Y65U04000	Outer Casing Holder
4	Y6CK10000	Clamp Bolt (M4 x 16)
5	Y65P03110	Shift Actuator (Black)
6	Y61X14000	Half Grip (ø22.2 mm / Gray)
	Y61X14010	Half Grip (ø22.2 mm / Black)
7	Y60098630	Inner Cable Box (Stainless / 100 pcs.)
8	Y60B98030	SIS-SP Outer Casing (Black) w/Outer Caps
	Y60B98020	SIS-SP Outer Casing (Silver) w/Outer Caps
9	Y62098030	Inner End Caps (ø1.2 mm / 100 pcs.)
10	Y65J98060	Cable Adjusting Bolt Unit & Outer Casing Holder
11	Y61W98030	Cable Adjusting Bolt Unit
12	Y65J03000	Outer Casing Holder
13	Y74Y98170	CJ-NX40 Cassette Joint
14	Y74Y98030	Inner Cable Fixing Bolt Unit