

# Dealer's Manual

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

## Front chainwheel

### ROAD

#### SORA

FC-3503  
FC-3550

#### Claris

FC-2403  
FC-2450

#### Non-Series

FC-R350  
FC-RS200  
FC-RS500

#### Tourney A070

FC-A070  
FC-A073

### MTB

#### DEORE XT

FC-M780  
FC-M782  
FC-M785  
FC-M8000

#### SLX

FC-M670  
FC-M672  
FC-M675  
FC-M677

#### ZEE

FC-M640  
FC-M645  
FC-M610  
FC-M612  
FC-M615  
FC-M617

#### ALIVIO

FC-M4000  
FC-M4050  
FC-M4060

#### Tourney

FC-TX801  
FC-TY701

#### ACERA

FC-M3000  
FC-M3000-8

#### Non-Series

FC-M351  
FC-M371  
FC-M522  
FC-M523  
FC-M552  
FC-M622  
FC-M625  
FC-M627  
FC-MT700

### Trekking

#### DEORE XT

FC-T780  
FC-T781

#### DEORE LX

FC-T671

#### DEORE

FC-T611

#### ACERA

FC-T3010  
FC-T3010-8

#### ALIVIO

FC-T4010  
FC-T4060

#### Non-Series

FC-T521

### Comfort

#### ALFINE

FC-S501

#### NEXUS

FC-C6000

### Bottom bracket

SM-BB52  
SM-BB93  
SM-BB94-41A  
SM-BB72  
SM-BBR60  
BB-UN100  
BB-ES300  
BB-MT500-PA  
BB-MT800  
BB-MT800-PA  
BB-RS500  
BB-RS500-PB

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## IMPORTANT NOTICE

- **This dealer's manual is intended primarily for use by professional bicycle mechanics.**

Users who are not professionally trained for bicycle assembly should not attempt to install the components themselves using the dealer's manuals.

If any part of the information on the manual is unclear to you, do not proceed with the installation. Instead, contact your place of purchase or a local bicycle dealer for their assistance.

- Make sure to read all instruction manuals included with the product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All dealer's manuals and instruction manuals can be viewed on-line on our website (<http://si.shimano.com>).
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

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

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

 **DANGER**

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

 **WARNING**

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

 **CAUTION**

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


## TO ENSURE SAFETY

### WARNING

- **Be sure to follow the instructions provided in the manuals when installing the product.**

It is recommended to use genuine Shimano parts only. If parts such as bolts and nuts become loose or damaged, the bicycle may suddenly fall over, which may cause serious injury.

In addition, if adjustments are not carried out correctly, problems may occur, and the bicycle may suddenly fall over, which may cause serious injury.

-  Be sure to wear safety glasses or goggles to protect your eyes while performing maintenance tasks such as replacing parts.
- After reading the dealer's manual thoroughly, keep it in a safe place for later reference.

Be sure to also inform users of the following:

- ***Intervals between maintenance depend on the use and riding circumstances. Clean the chain with an appropriate chain cleaner regularly. Never use alkali based or acid based solvents, such as rust cleaners. If those solvents are used the chain might break and cause serious injury.***
- Check that there are no cracks in the crank arms before riding the bicycle. If there are any cracks, the crank arm may break and you may fall off the bicycle.
- Check the chain for any damage (deformation or crack), skipping, or other abnormalities such as unintended gear shifting. If any problems are found, consult a dealer or an agency. The chain may break, and you may fall.
- Be careful not to let the hemming of your clothes get caught in the chain while riding. Otherwise you may fall off the bicycle.

#### ■ SAINT/ZEE

- **Downhill bicycle riding and freeriding are inherently dangerous activities. There is a risk of being involved in an accident that can result in a serious injury or even death. It is strongly recommended that riders wear protective head and body gear and perform thorough safety checks of their bicycles before riding. Please remember that you are riding at your own risk and that you have to consider your experience and your skills very carefully.**

For Installation to the Bicycle, and Maintenance:

#### ■ HOLLOWTECH II type

- If the inner cover is not installed correctly, the axle may rust and become damaged, and the bicycle may fall over and serious injury may occur as a result.
- The two left crank arm mounting bolts should be tightened in stages rather than fully tightened at once. Use a torque wrench to check that the final tightening torques are within the range of 12 - 14 N·m. Furthermore, after riding approximately 100km (60 miles), use a torque wrench to re-check the tightening torques. It is also important to periodically check the tightening torques. If the tightening torques are too weak or if the mounting bolts are not tightened alternately in stages, the left crank arm may come off and the bicycle may fall over, and serious injury may occur as a result.

### CAUTION

Be sure to also inform users of the following:

- Be careful to keep body parts away from the sharp teeth of chainrings.









**NOTE**

**Be sure to also inform users of the following:**

- Before riding the bicycle, check that there is no play or looseness between connecting parts. Also, be sure to retighten the crank and pedals at periodic intervals.
- Be sure to keep turning the crank arm during the lever operation.







**■ MTB/Trekking**

- When the chain is in any of the positions shown in the illustration, the chain may come into contact with the front chainring or front derailleur and generate noise. If noise is a problem, shift the chain onto the next largest rear sprocket or the one after if the chain is in the position shown in Figure 1. Shift the chain onto the next smallest sprocket or the one after if it is in the position shown in Figure 2.

	Figure 1			Figure 2
	Double	Triple		
Front chainring				
Rear sprocket				

**■ ROAD**

- When the chain is in any of the positions shown in the illustration, the chain may come into contact with the front chainring or front derailleur and generate noise. If the noise is a problem, shift the chain onto the next largest sprocket or the one after.

	Double	Triple	
Front chainring			
Rear sprocket			

- Use a neutral detergent to clean the crank arm and the bottom bracket. Using alkaline or acidic detergents may cause discoloration.
- If pedaling performance does not feel normal, check the bicycle once more.
- Do not wash the bottom bracket with high-pressure jets of water. Water may enter the bearing section and cause noise or adhesion.
- The gears should be periodically washed with a neutral detergent. In addition, cleaning the chain with neutral detergent and lubricating it can be an effective way of extending the life of the gears and the chain.
- The cuffs of your clothing may get dirty from the chain while riding.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.

**For Installation to the Bicycle, and Maintenance:**

- When installing the pedals, apply a small amount of grease to the threads to prevent the pedals from sticking. Use a torque wrench to securely tighten the pedals. Tightening torque: 35 - 55 N·m. The right-hand crank arm has a right-hand thread, and the left-hand crank arm has a left-hand thread.
- If the bottom bracket shell is not parallel, gear shifting performance will drop.
- If the chain keeps coming off the gears during use, replace the gears and the chain.

**■ HOLLOWTECH II/2 piece crank**

- When installing the left and right adapters, apply grease and be sure to install the inner cover. Otherwise the waterproofing performance will worsen.
- To ensure the best performance, be sure to use only the specified type of chain.
- If a squeaking noise is heard coming from the bottom bracket axle and the left crank arm connector, apply grease to the connector and then tighten it to the specified torque.
- If you feel any looseness in the bearings, the bottom bracket should be replaced.
- Be sure to use the specified gear tooth combination. If an unspecified gear is used, the dimension between the gears changes, and the chain may fall in between the gears.

**■ OCTALINK type/SQUARE type**

- Be sure to use only the applicable chain and bottom bracket.
- Apply grease to the bottom bracket before installing it.
- If you feel any looseness in the bottom bracket axle, the bottom bracket should be replaced.

**■ FC-M8000-B1/FC-M8000-B2**





























- Use FC-M8000-B1/FC-M8000-B2 with a specially designed frame.

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

# **LIST OF TOOLS TO BE USED**

## LIST OF TOOLS TO BE USED

The following tools are needed for installation, adjustment, and maintenance purposes.

Tool		Tool		Tool	
	5mm hexagon wrench		TL-FC10		TL-FC36
	8mm hexagon wrench		TL-FC11		TL-FC37
	10mm hexagon wrench		TL-FC16		TL-BB12
	15mm spanner		TL-FC18		TL-BB13
	16mm spanner		TL-FC24		TL-UN66
	17mm spanner		TL-FC25		TL-UN74-S
	19mm spanner		TL-FC31		Hexalobular[#27]
	32mm spanner		TL-FC32		Hexalobular[#30]
	Adjustable wrench		TL-FC33		
	Plastic mallet		TL-FC34		



# INSTALLATION

# INSTALLATION

## List of tool combinations

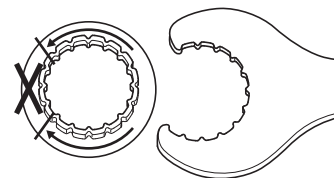
Use the tools in the correct combination.

### SM-BB93

<p>TL-FC24 &amp; TL-FC32</p>	<p>TL-FC24 &amp; TL-FC33</p>
<p>TL-FC24 &amp; TL-FC36</p>	<p>TL-FC34</p>

### NOTE

- For an impact wrench, use TL-FC34 for SM-BB93. Use TL-FC37 for SM-BBR60/BB-MT800. Using other tools may damage the tool.
- TL-FC24/FC25 may become damaged and unusable after repeated use.
- When setting TL-FC24/FC25 in TL-FC32, check the possible setting position.



When setting in TL-FC32, check the possible setting position.

- Any position is possible when setting to TL-FC33/FC36.

### SM-BBR60/BB-MT800

<p>TL-FC25 &amp; TL-FC32</p>	<p>TL-FC25 &amp; TL-FC33</p>
<p>TL-FC25 &amp; TL-FC36</p>	<p>TL-FC37</p>

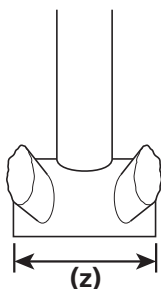
**INSTALLATION**

▶▶ HOLLOWTECH II/2 piece crankset

**HOLLOWTECH II/2 piece crankset**

**Spacer installation method**

**1**



Check whether the width of the bottom bracket shell is 68mm, 73mm, or 83mm.

**(z)** Bottom bracket shell width

**2**

Install the adapter.

See the illustrations for band type, bracket type, and chain case stay type.

**Band type**

68mm	73mm
83mm	

**(A)** 2.5mm spacer

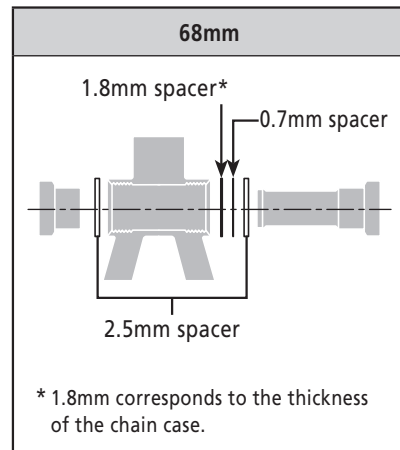
**NOTE**

When installing the recommended ROAD bottom bracket, a spacer is not needed.



If using three 2.5mm spacers with a band type and a bottom bracket shell having a width of 68mm, install the three spacers so that there are two on the right and one on the left.

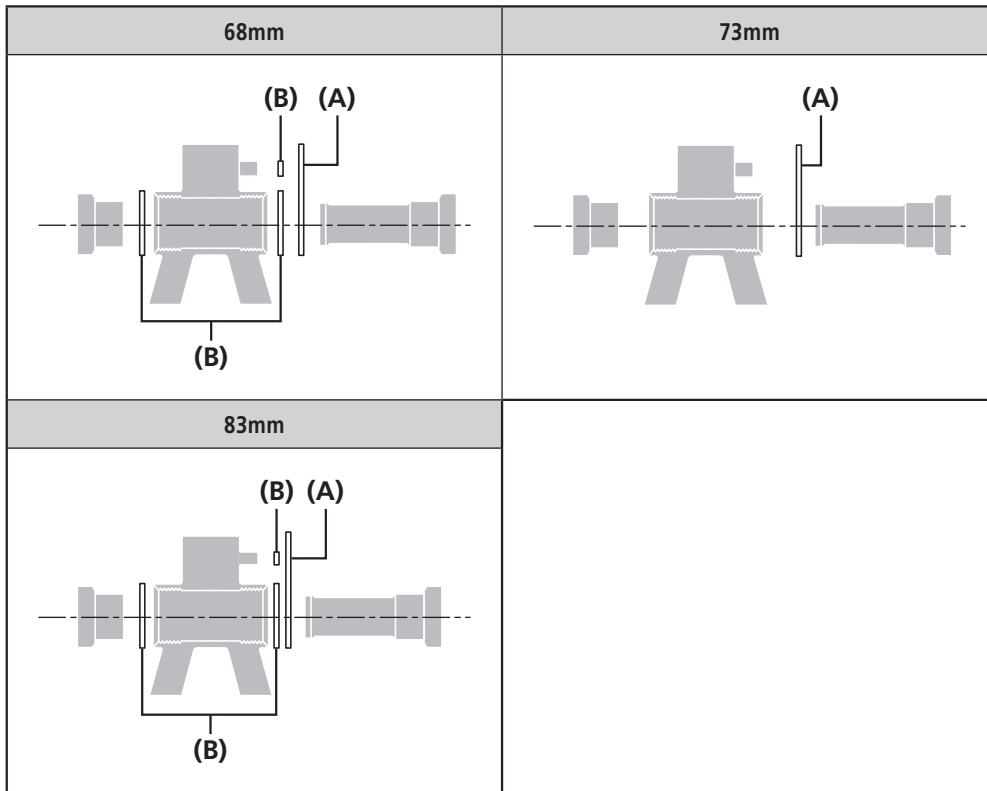
\* SM-BB93 is an aluminum spacer.



**INSTALLATION**

▶ HOLLOWTECH II/2 piece crankset

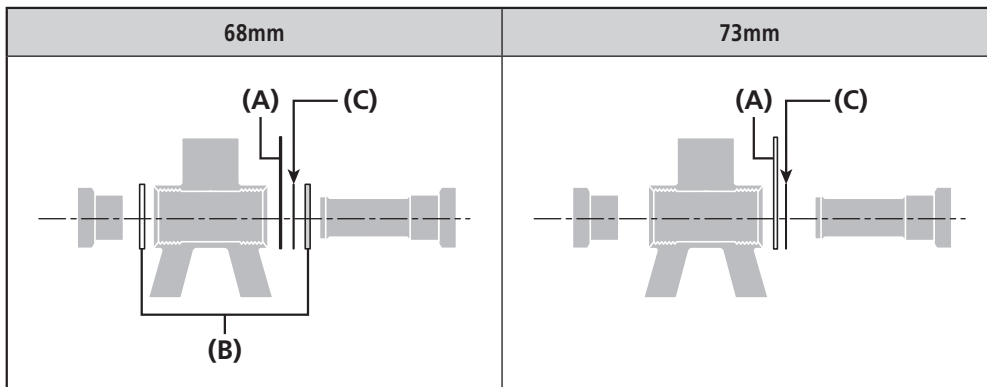
**Bracket type**



(A) BB mount-type bracket

(B) 2.5mm spacer

**Chain case stay type**



(A) Chain case stay

(B) 2.5mm spacer

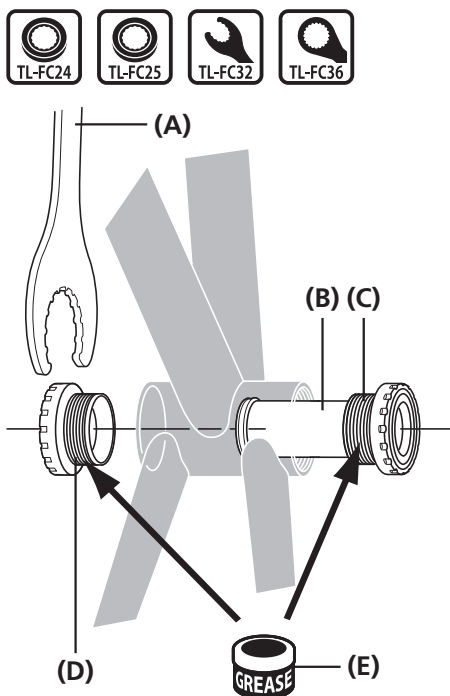
(C) 0.7mm spacer

**NOTE**

If not using a chain case, use a 1.8mm spacer.

**Installation of the crank**

**1**



Grease the left and right hand adapters and use the Shimano original tool to install the right hand adapter of the bottom bracket, the inner cover and the left hand adapter of the bottom bracket.

- (A) TL-FC32
- (B) Inner cover
- (C) Right hand adapter (counterclockwise thread) (for 70mm [M36], turn clockwise (clockwise thread))
- (D) Left hand adapter (clockwise thread)
- (E) Apply grease: Premium grease (Y-04110000)

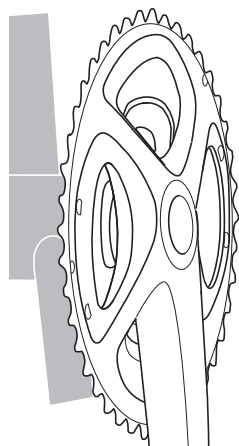
**Tightening torque**

		<b>35 - 50 N·m</b>

**NOTE**

TL-FC24/FC25 are tightened by combining with TL-FC32/FC36.

**2**

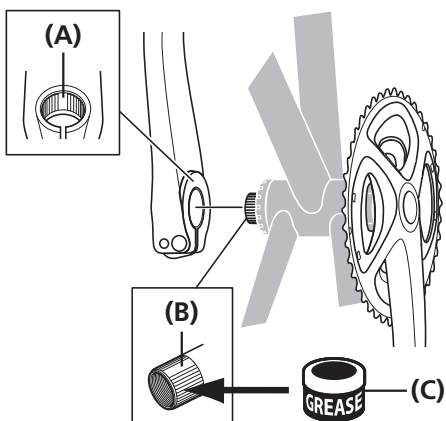


Insert the right crank arm unit.

# INSTALLATION

## ▶ HOLLOWTECH II/2 piece crankset

3

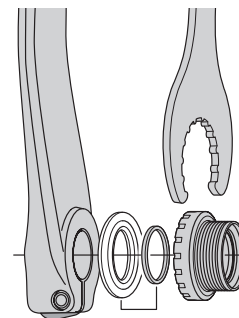


Set the wide groove area of the left crank arm into the axle of the right crank arm unit where the groove is wide.

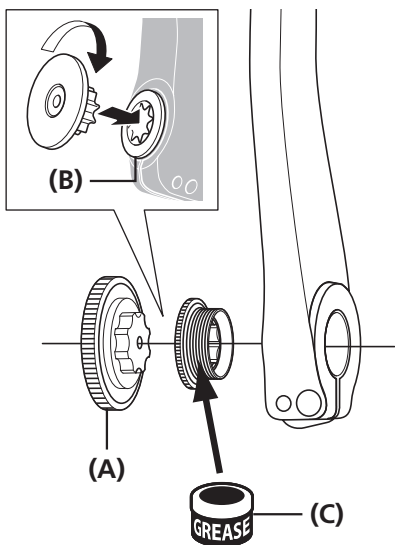
- (A) Wide groove area (left crank arm)
- (B) Wide groove area (axle)
- (C) Apply grease: Premium grease (Y-04110000)

### NOTE

Insert a spacer for the road bike triple specification and the comfort bike double guard specification.



4



Use the Shimano original tool to tighten the cap.

- (A) TL-FC16
- (B) Cap
- (C) Apply grease: Premium grease (Y-04110000)

### Tightening torque

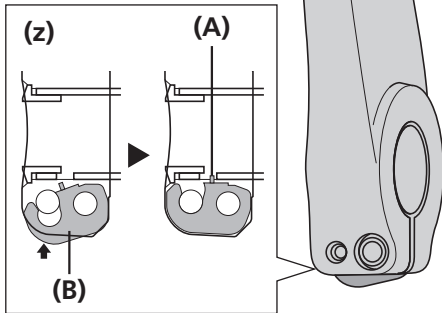


0.7 - 1.5 N·m

## INSTALLATION

### ▶▶ HOLLOWTECH II/2 piece crankset

5



Push in the stopper plate and check that the plate pin is securely in place, and then tighten the bolt of the left crank arm.

**(z)** The illustration is of the left crank arm (cross-section)

- (A)** Plate pin
- (B)** Stopper plate
- (C)** Left crank arm

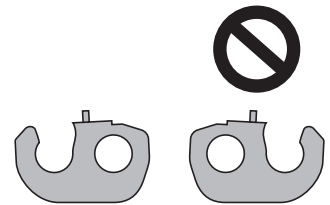
#### Tightening torque



12 - 14 N·m

#### NOTE

- **For MTB/Trekking**  
Spacers used vary according to the width of the bottom bracket shell. For details, refer to "Spacer installation method".
- Set the stopper plate in the correct direction as shown in illustration.

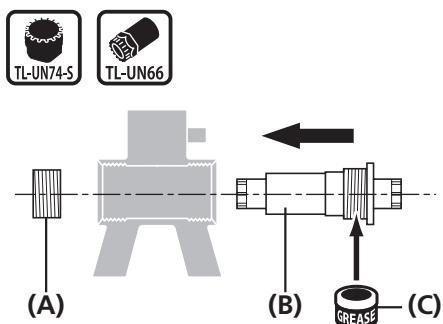


## INSTALLATION

▶ OCTALINK type

### ■ OCTALINK type

#### Installation of the bottom bracket



Apply grease to the main body, and install using the Shimano original tool.

First install the main body, then the adapter.

- (A) Adapter
- (B) Body
- (C) Apply grease:  
Premium grease  
(Y-04110000)

#### Tightening torque



TL-UN74-S



TL-UN66

50 - 70 N·m

#### NOTE

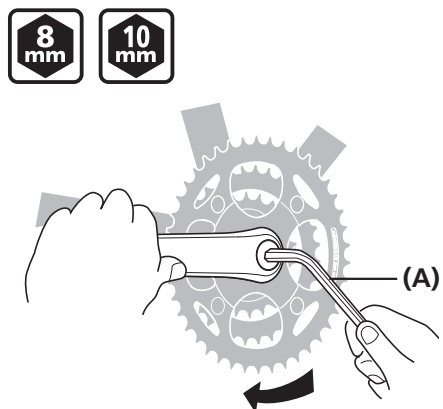
If the adapter is made of aluminum or steel  
Apply grease to the adapter.



If the adapter is made of plastic  
Do not apply grease to the adapter.



#### Installation of the front chainwheel



Use a hexagon wrench to install the front chainwheel.

- (A) 8mm hexagon wrench/  
10mm hexagon wrench

#### Tightening torque



8 mm



10 mm

35 - 50 N·m

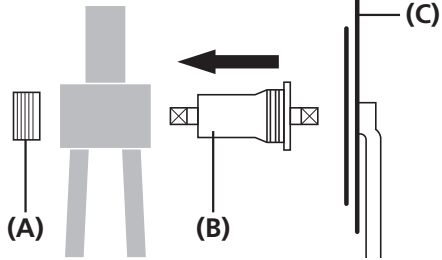


## INSTALLATION

### ► SQUARE type

## ■ SQUARE type

### Installation of the bottom bracket



Install using the Shimano original tool.

First install the main body, then the adapter.

- (A) Adapter
- (B) Body
- (C) Front chainwheel

#### Tightening torque



50 - 70 N·m

#### NOTE

**If the main body and adapter are made of aluminum or steel**  
Apply grease to the main body and adapter.



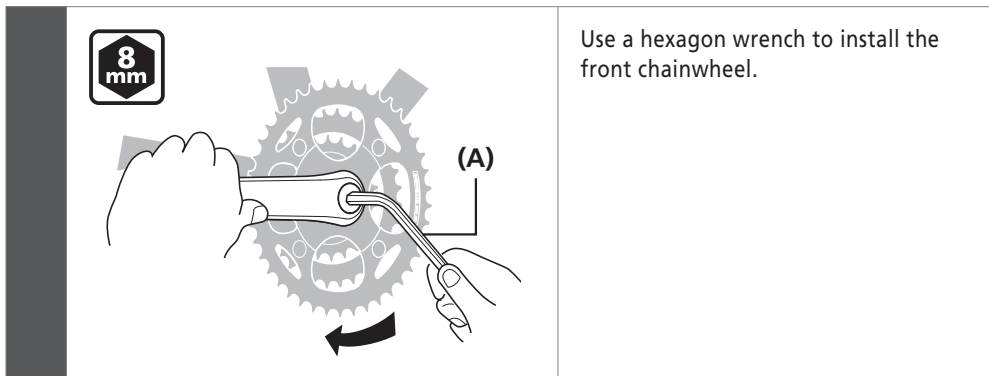
Apply grease:  
Premium grease (Y-04110000)

**If the main body and adapter are made of plastic**  
Do not apply grease to the main body or adapter.




## Installation of the front chainwheel

### When using a hexagon wrench

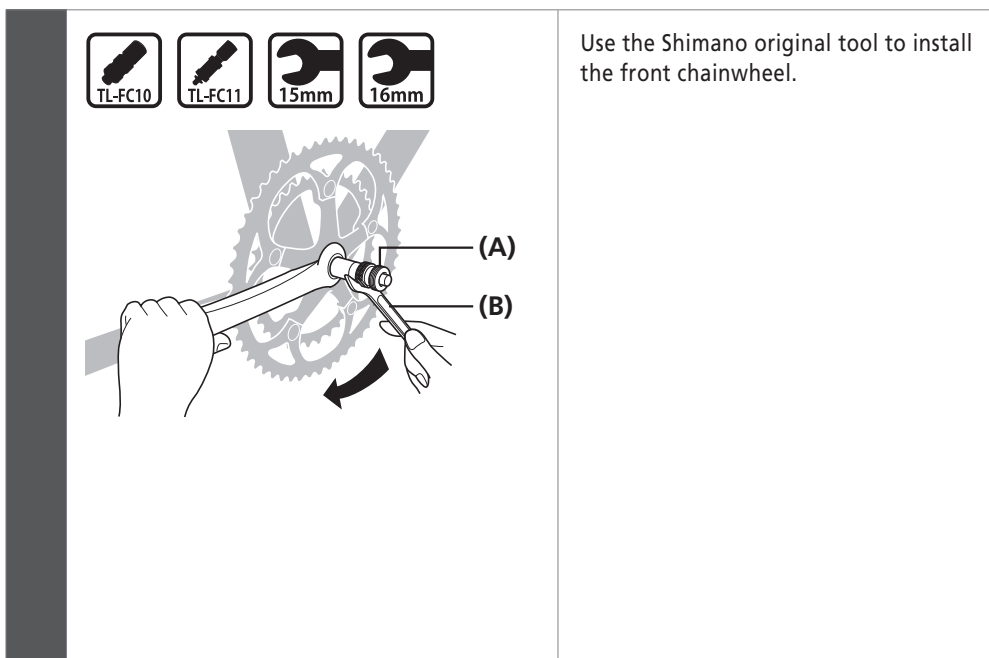


Use a hexagon wrench to install the front chainwheel.

(A) 8mm hexagon wrench

Tightening torque	
	35 - 50 N·m





### When using Shimano original tools



Use the Shimano original tool to install the front chainwheel.

(A) TL-FC10/TL-FC11

(B) 15mm spanner/16mm spanner

Tightening torque	
 	35 - 50 N·m
 	

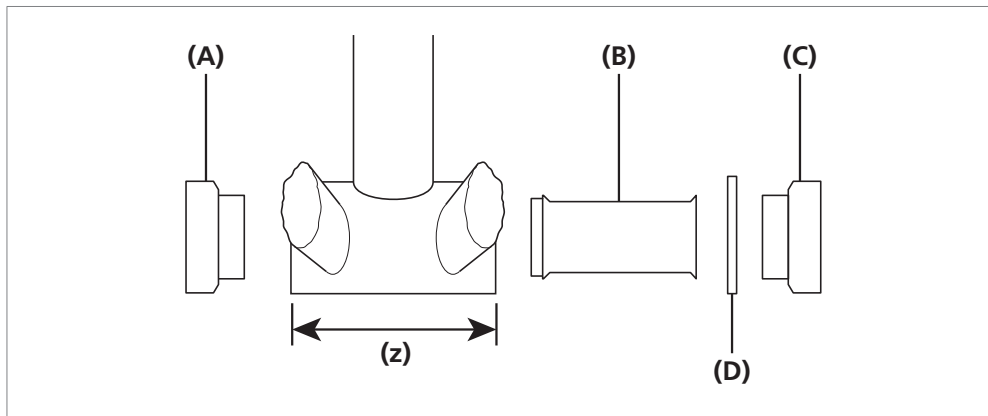
#### TECH TIPS

- When using TL-FC10, use a 16mm spanner.
- When using TL-FC11, use a 15mm spanner.

**PRESS-FIT BB**

# PRESS-FIT BB

## Adapter



(z) Bottom bracket shell width

- (A) Left-hand adapter
- (B) Inner cover
- (C) Right hand adapter
- (D) 2.5mm spacer

### NOTE

Some models do not need spacers.

## Assembly example

ROAD	Bottom bracket shell with 86.5mm width	<ul style="list-style-type: none"> <li>• Use for a bottom bracket shell width of 86.5mm. The 2.5mm spacer is not necessary.</li> <li>• Use the inner cover.</li> </ul>
MTB	Bottom bracket shell with 92mm width	<ul style="list-style-type: none"> <li>• The 2.5mm spacer is not needed for a bottom bracket shell width of 92mm.</li> <li>• Use the inner cover.</li> </ul>
MTB	Bottom bracket shell with 89.5mm width	<ul style="list-style-type: none"> <li>• For a bottom bracket shell width of 89.5mm, insert the 2.5mm spacer into the right hand side (between the frame and the right hand adapter).</li> <li>• Use the inner cover.</li> </ul>

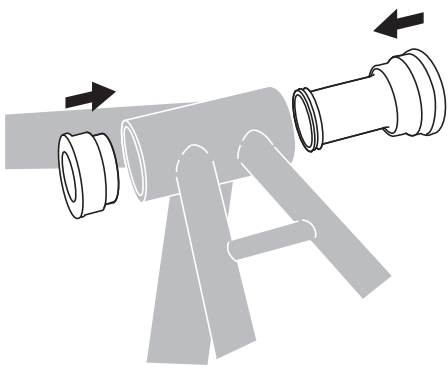
(A) 2.5mm spacer

### NOTE

- If the frame has openings inside the bottom bracket shell, it should be installed with the inner cover sleeve to prevent possible contamination.
- If the frame has no openings inside the bottom bracket shell, it can be installed without the inner cover sleeve.

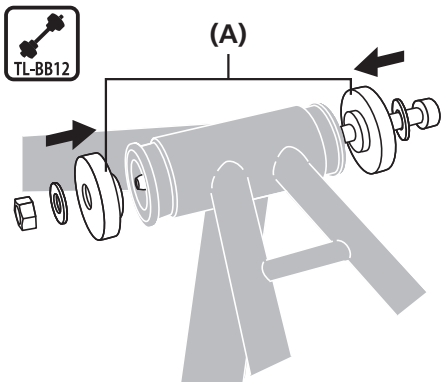
## ■ Installation

**1**



Insert the bottom bracket into the bottom bracket shell.

**2**

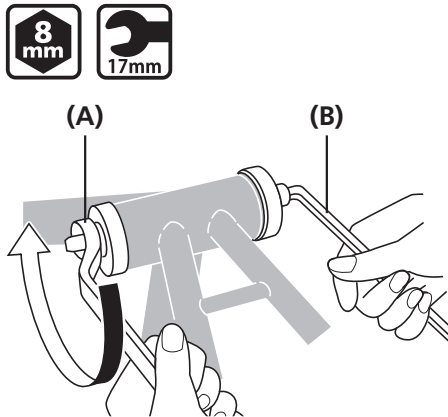


Insert the Shimano original tool into the bottom bracket.

(A)

(A) TL-BB12

**3**

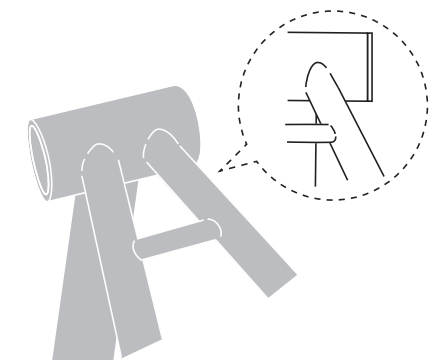


Press fit the bottom bracket by tightening with a spanner while making sure that the contact surface of the bottom bracket stays parallel to the contact surface of the bottom bracket shell.

(A) 17mm spanner  
(B) 8mm hexagon wrench

(A) 17mm spanner  
(B) 8mm hexagon wrench

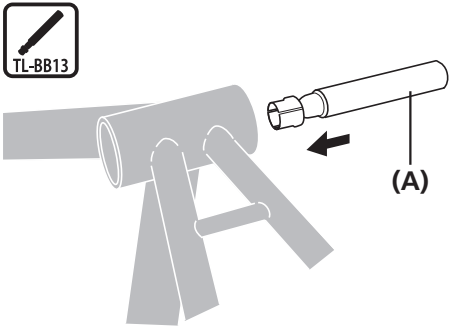
**4**



Check to confirm that there is no gap between the bottom bracket and the bottom bracket shell.

## ■ Removal

**1**



Insert the Shimano original tool into the bottom bracket.

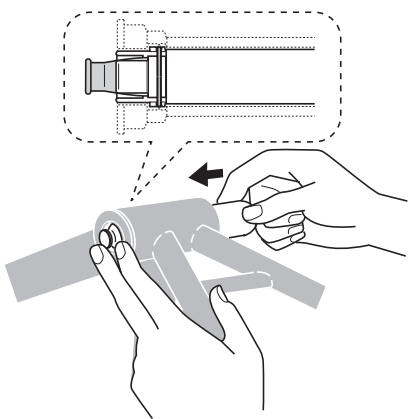
(A)

(A) TL-BB13

### NOTE

Do not reuse the adapters as they can be damaged during removal.

**2**

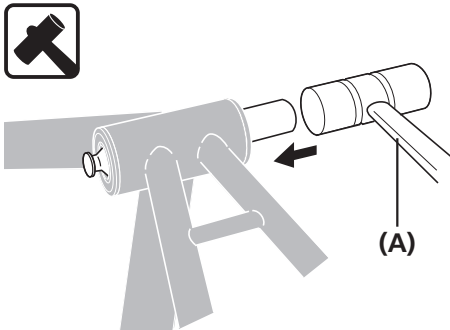


As shown in the illustration, hold down the flap with your fingers and push it in from the opposite side. (When pushed in, the flap opens.)

### TECH TIPS

While holding down the end of the removal tool, push the tool in from the other side until it locks in place.

**3**

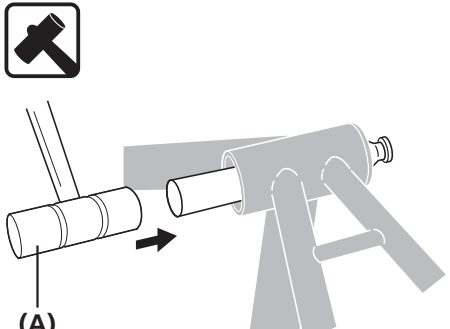


Tap the Shimano original tool with a plastic mallet until the end of the bottom bracket is ejected.

(A)

(A) Plastic mallet

**4**



Tap the opposite end of the bottom bracket in the same way and remove it.

(A)

(A) Plastic mallet

# MAINTENANCE

# MAINTENANCE

## ■ Replacing chainrings

### NOTE

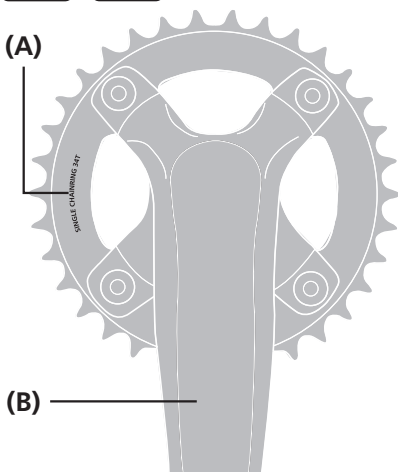
For models that are not described here, refer to the section "INSTALLATION (CHAINRINGS)" in General Operations.

### Single gear type

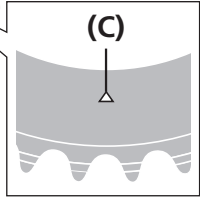
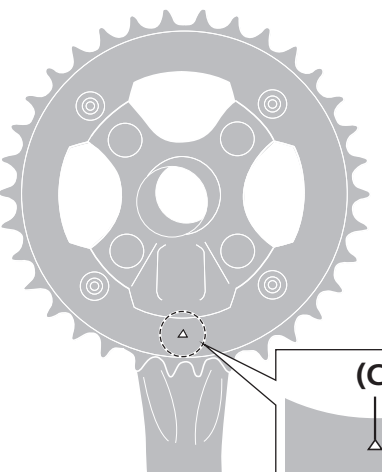
The marked side of the chainring is the front and it should be set so that the Δ mark is positioned under the crank arm.



(A)



(B)



(C)

- (A) Mark
- (B) Crank arm
- (C) Δ mark

#### Tightening torque



12 - 14 N·m

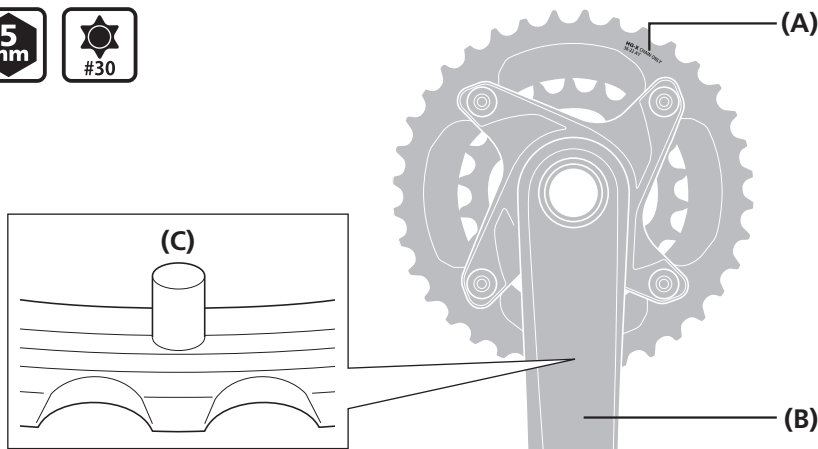


**Double gear type**

With the marked side of the largest chainring facing outward, set the largest chainring so that the chain drop prevention pin is positioned under the crank arm.



**1**



- (A) Mark
- (B) Crank arm
- (C) Chain drop prevention pin

**Tightening torque**



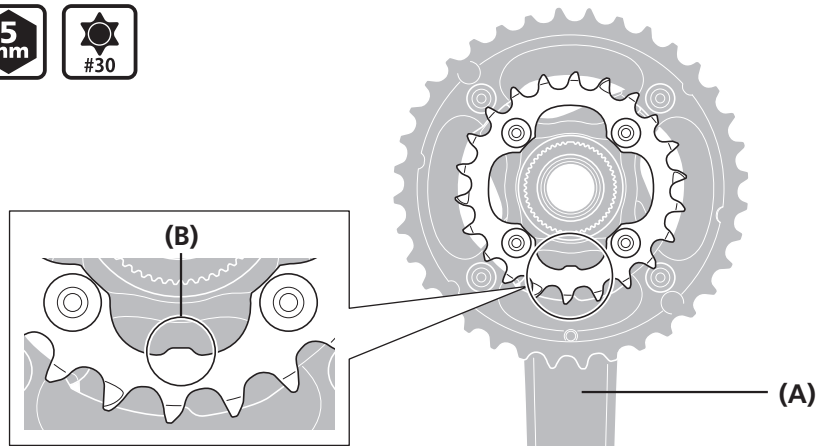
**12 - 14 N·m**



With the marked side of the smallest chainring facing inward, set the smallest chainring so that the convex section is positioned under the crank arm.



**2**



- (A) Crank arm
- (B) Convex section

**Tightening torque**

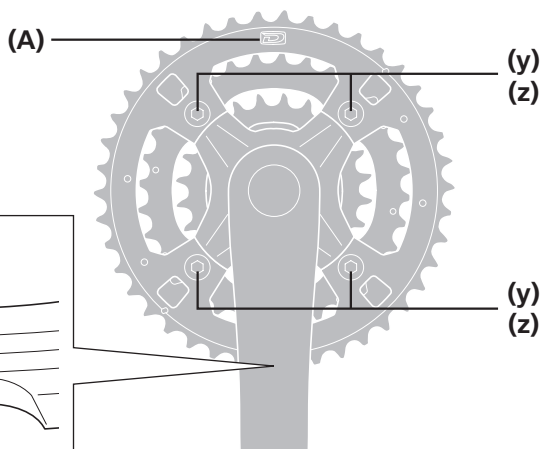


**16 - 17 N·m**



Triple gear type

With the marked side of the largest chainring facing outward, set the largest chainring so that the chain drop prevention pin is positioned under the crank arm.



1

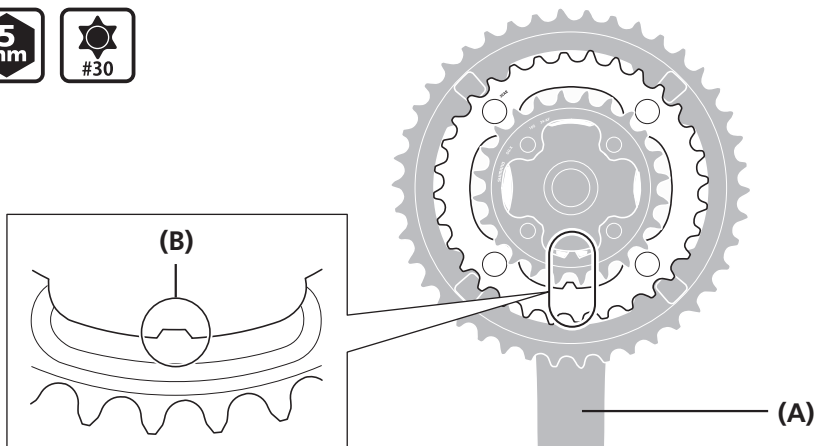
(y) 5mm hexagon wrench

(z) Hexalobular[#30]

(A) Mark

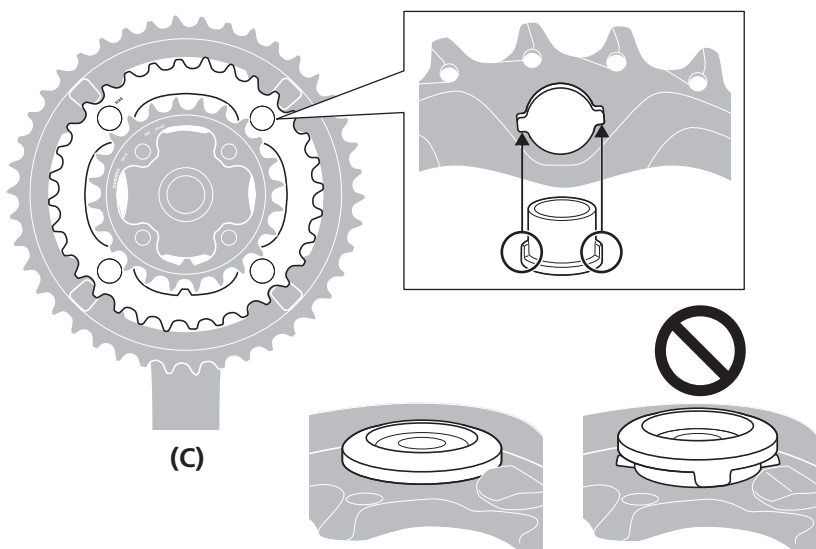
(B) Chain drop prevention pin

Set the middle chainring and the smallest chainring so that the marked sides face inward and the convex section on each chainring is positioned under the crank arm.



2

FC-M782/M672/M622/M612/M3000/M4000/M4050



(A) Crank arm

(B) Convex section

(C) Inner side

Smallest chainring Tightening torque

 	16 - 17 N·m
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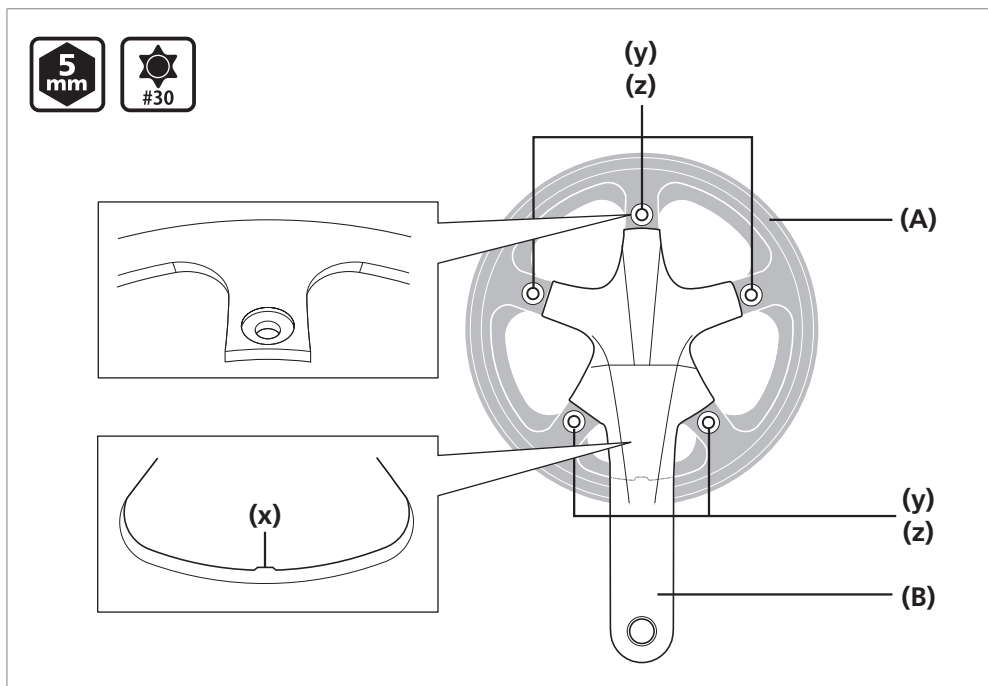
Largest chainring/ Middle chainring Tightening torque

 	12 - 14 N·m
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NOTE

Set the largest chainring and the middle chainring of FC-M782/M672/M622/M612/M3000/M4000/M4050 so that the convex sections of the nuts fit the notches in the holes of the chainring.

Chain guide type



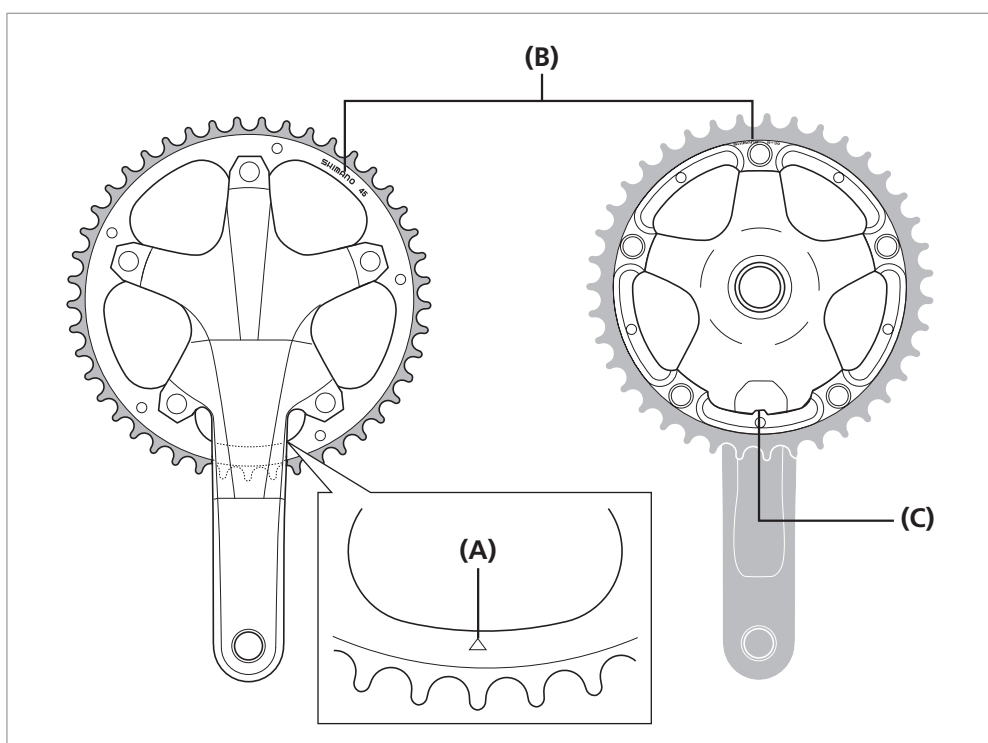
- (x) Convex section
- (y) 5mm hexagon wrench
- (z) Hexalobular[#30]

- (A) Top guard
- (B) Crank arm

NOTE

The side with indentations around the holes is the front of the top guard and it should be set so that the inside convex section of the chainring is at the crank arm position.

No chain guide type



- (A) Δ mark
- (B) Mark
- (C) Convex section

 TECH TIPS

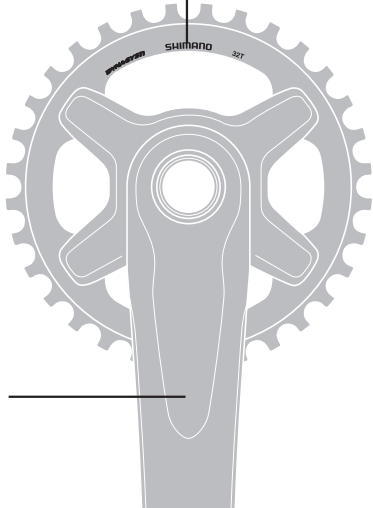
- For 45T/42T  
The marked side of the chainring is the front and it should be set with the Δ mark lined up with position of the crank arm.
- For 39T  
The marked side of the chainring is the reverse and it should be set so that the inside convex section of the chainring is at the crank arm position.

**FC-M8000 Single gear type**

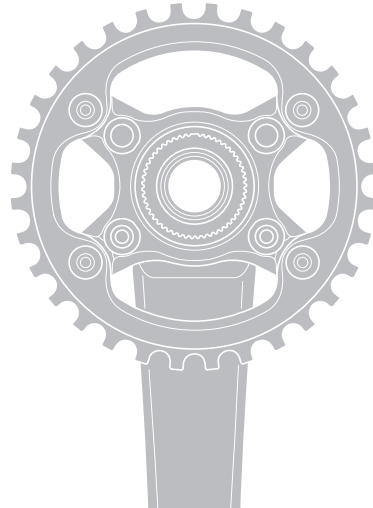
Set the chainring so that the marked side faces the front, and set the crank arm as shown in the illustration.



(A)



(B)



(A) Mark

(B) Crank arm

**Tightening torque**



**12 - 14 N·m**

**FC-M8000 Double gear type**

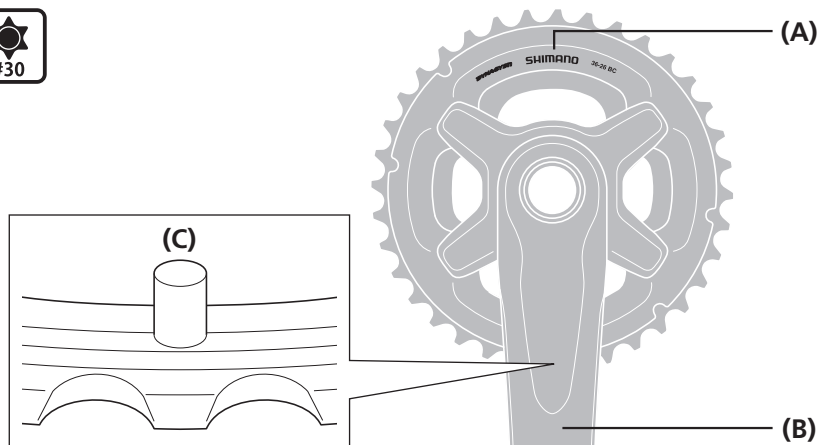
Be sure to use the specified gear tooth combination. If an unspecified gear is used, the chain may fall in between the gears, damaging them.

		Top		
		34T-BB	36T-BC	38T-BD
Low	24T-BB	X	-	-
	26T-BC	-	X	-
	28T-BD	-	-	X

With the marked side of the largest chainring facing outward, set the largest chainring so that the chain drop prevention pin is positioned under the crank arm.



**1**



- (A) Mark
- (B) Crank arm
- (C) Chain drop prevention pin

**Tightening torque**

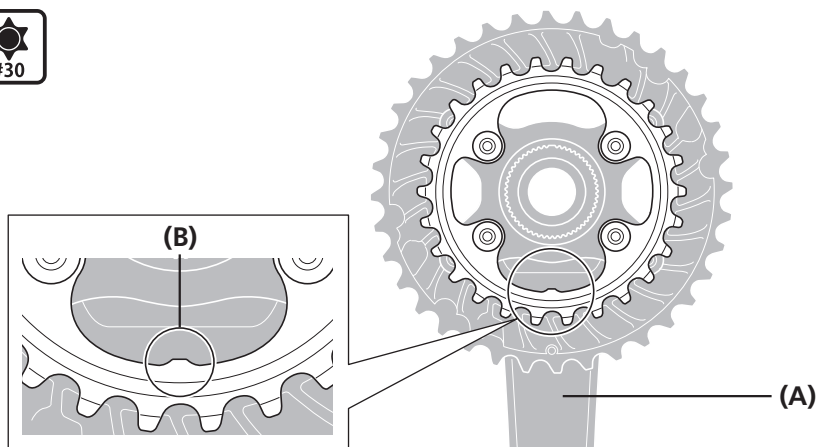


**12 - 14 N·m**

With the marked side of the smallest chainring facing inward, set the smallest chainring so that the convex section is positioned under the crank arm.



**2**



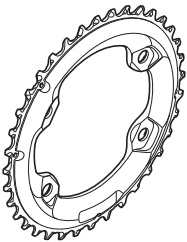
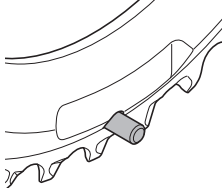
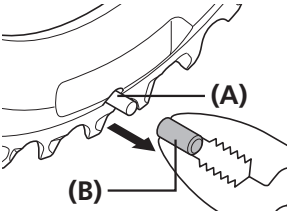
- (A) Crank arm
- (B) Convex section

**Tightening torque**



**16 - 17 N·m**

**About FC-M8000-2/FC-M8000-B2 maintenance gears**

Part	Model	Chain drop prevention pin
<p>Chainring</p> 	<p>FC-M8000-2</p>	<p>Use with chain drop prevention pin cover.</p> 
	<p>FC-M8000-B2</p>	<p>Remove chain drop prevention pin cover.</p> 

- (A) Chain drop prevention pin
- (B) Chain drop prevention pin cover

**NOTE**

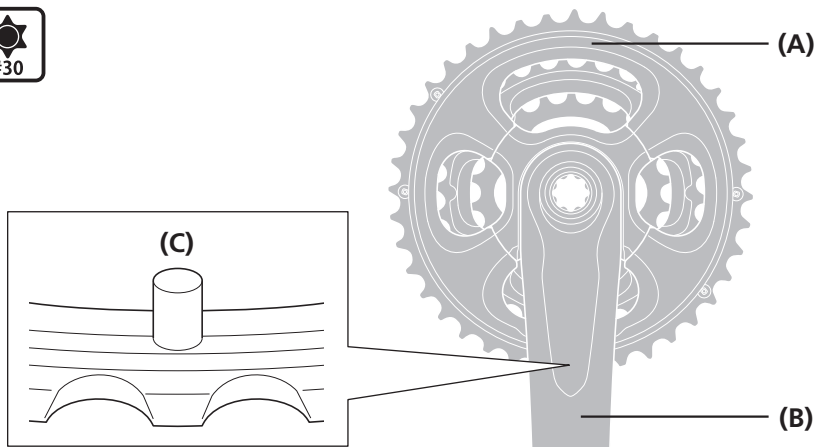
- If combined with a standard specification front chainwheel with the chain drop prevention pin cover off, when the chain falls on the outside of the front chainwheel, the chain may get caught between the crank and the top gear.
- If combined with a B specification front chainwheel with the chain drop prevention pin cover on, the cover will interfere with the crank, and it will not be possible to assemble the gear correctly. It may cause the chain to fall, etc.
- Removed chain drop prevention pin covers cannot be reused.

**FC-M8000 Triple gear type**

With the marked side of the largest chainring facing outward, set the largest chainring so that the chain drop prevention pin is positioned under the crank arm.



**1**



- (A) Mark
- (B) Crank arm
- (C) Chain drop prevention pin

**Largest chainring/ Middle chainring  
Tightening torque**

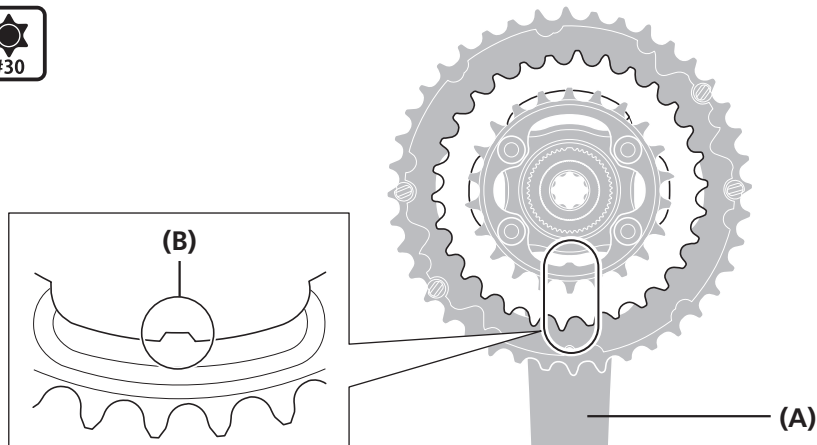


**10 - 12 N·m**

Set the middle chainring and the smallest chainring so that the marked sides face inward and the convex section on each chainring is positioned under the crank arm.



**2**



- (A) Crank arm
- (B) Convex section

**Smallest chainring Tightening torque**



**16 - 17 N·m**

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Please note: specifications are subject to change for improvement without notice. (English)

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