

## Dealer's Manual

# ROAD Front Chainwheel

FC-9000  
FC-6800  
FC-5800  
FC-4700  
FC-4703

SM-BB9000  
SM-BBR60

SM-BB92-41B  
SM-BB72-41B  
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.
- Be careful not to let the hemming of your clothes get caught in the chain while riding. Otherwise 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.

For Installation to the Bicycle, and Maintenance:

- 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 fixing bolts should be tightened at the same time rather than each fully tightened separately. A torque wrench should be used to check that the tightening torques are within the range of 12 - 14 N·m {105 - 122 in. lbs.}. 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:

- Be sure to keep turning the crank during lever operation.
- 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		

- Before riding the bicycle, check that there is no play or looseness between connecting parts. Also, be sure to retighten the crank arms and pedals at periodic intervals.
- 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.
- This product is not warranted against damage resulting from improper use, such as jumping while riding or if the bicycle falls over, except if such malfunctions are caused by manufacturing methods.
- 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 {306 - 480 in. lbs.}. 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.
- 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.

Front chainwheel	Recommended chain
FC-9000	CN-9000
FC-6800	CN-6800
FC-5800	CN-HG600-11
FC-4700 FC-4703	CN-HG54

- 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 chain may fall in between the gears, damaging them.

FC-9000		Top					
		55T-ME	54T-ME	53T-MD	52T-MC	52T-MB	50T-MA
Low	42T-ME	X	X	-	-	-	-
	39T-MD	-	-	X	-	-	-
	38T-MC	-	-	-	X	-	-
	36T-MB	-	-	-	-	X	-
	34T-MA	-	-	-	-	-	X

FC-6800		Top			
		53T-MD	52T-MB	50T-MA	46T-MB
Low	39T-MD	X	-	-	-
	36T-MB	-	X	-	X
	34T-MA	-	-	X	-

FC-5800		Top		
		53T-MD	52T-MB	50T-MA
Low	39T-MD	X	-	-
	36T-MB	-	X	-
	34T-MA	-	-	X

FC-4700		Top	
		52T-ML	50T-MK
Low	36T-ML	X	-
	34T-MK	-	X

FC-4703		
Top	Middle	Low
50T-MM	39T-MM	30T-MM








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 Allen key		17mm spanner		Hexalobular[#30]
	8mm Allen key		Plastic mallet	 	TL-FC16/ TL-FC18

The tools required for installing and removing the bottom bracket differ by model. Use the tools in the table in combination.








### SM-BB9000

Tool		Tool	
 	TL-FC24& TL-FC32		TL-FC34
 	TL-FC24& TL-FC33		TL-FC35
 	TL-FC24& TL-FC36		

#### NOTE

When using TL-FC24&TL-FC33, an impact wrench cannot be used.




### SM-BBR60

Tool		Tool	
 	TL-FC25& TL-FC32	 	TL-FC25& TL-FC36
 	TL-FC25& TL-FC33		TL-FC37

#### NOTE

When using TL-FC25&TL-FC33, an impact wrench cannot be used.



## BB-RS500

Tool		Tool	
 TL-FC32	TL-FC32	 TL-FC36	TL-FC36
 TL-FC33	TL-FC33		

**NOTE**

When using TL-FC32&TL-FC36, an impact wrench cannot be used.

## SM-BB92-41B/SM-BB72-41B/BB-RS500-PB

Tool		Tool	
 TL-BB12	TL-BB12	 TL-BB13	TL-BB13

# INSTALLATION

# INSTALLATION

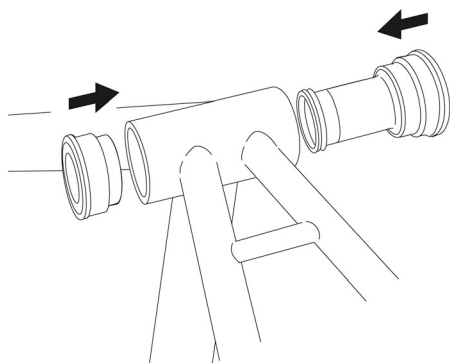
## Bottom bracket

### ■ SM-BB92-41B/SM-BB72-41B/BB-RS500-PB

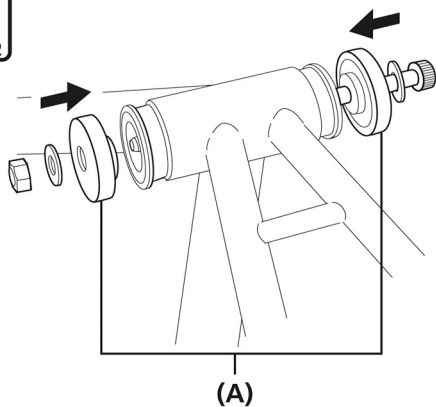
#### Installation

Press the bottom bracket into the bottom bracket shell using TL-BB12.

1. Insert the bottom bracket into the bottom bracket shell.

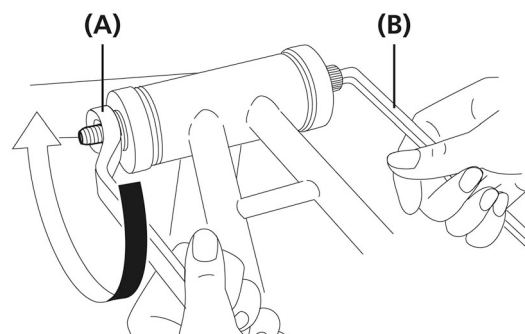


2. Insert the installation tool into the bottom bracket.



(A) TL-BB12

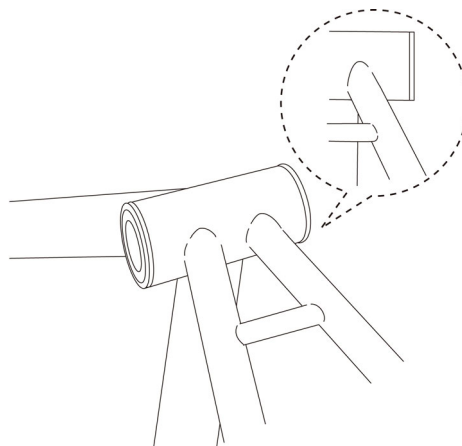
3. Press-fit the bottom bracket by tightening with a spanner while making sure that the rim of the bottom bracket stays parallel to the rim of the bottom bracket shell.



(A) 17mm spanner

(B) 8mm Allen key

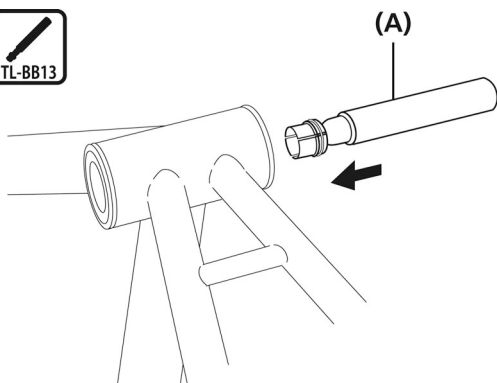
4. Check to confirm that there is no gap between the bottom bracket and the bottom bracket shell.



## Removal

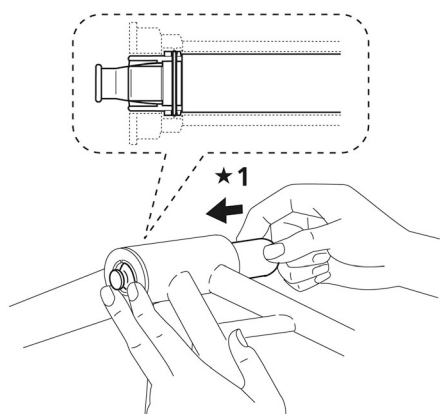
When removing the bottom bracket, use TL-BB13.

1. Insert the removal tool into the bottom bracket.



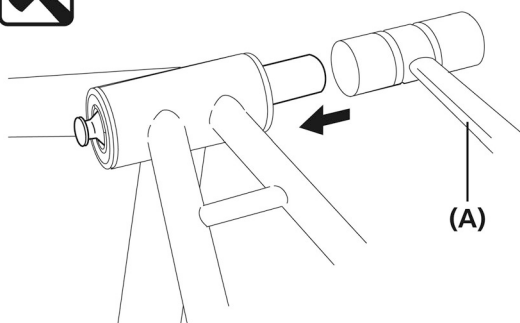
(A) TL-BB13

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.)



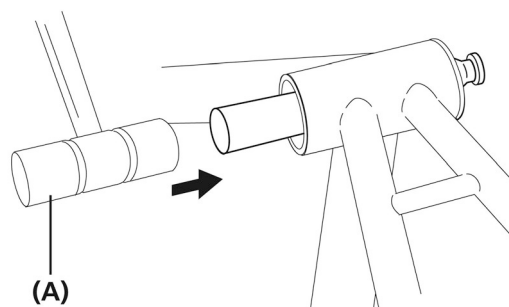
★1 While holding down the flaps at the end of the removal tool, push the tool in from the other side until it locks in place.

3. Tap the removal tool with a plastic mallet until the end of the bottom bracket protrudes.



(A) Plastic mallet

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



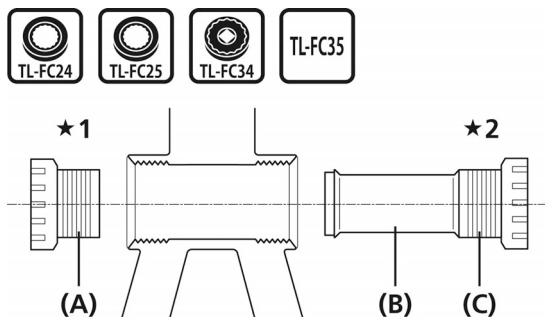
(A) Plastic mallet

## NOTE

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

## ■ SM-BB9000/SM-BBR60

1. Use the Shimano original tool TL-FC24/FC25/FC34/FC35 to install the right adapter (left-hand thread), the inner cover and the left adapter (right-hand thread).



★1 Left-hand thread

★2 Clockwise thread (right-hand thread) for 70mm [M36] bottom brackets

- (A) Left-hand adapter  
(B) Inner cover  
(C) Right hand adapter

### Tightening torque

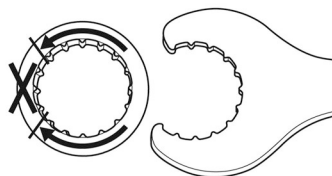
TL-FC24/FC25/FC34/FC35

**35 - 50 N·m**

**{306 - 437 in. lbs.}**

### NOTE

- For an impact wrench, use TL-FC34 for SM-BB9000 and TL-FC37 for SM-BBR60. Using other tools may damage the tool.
- When setting TL-FC24/FC25 in TL-FC32, check the possible setting position.
- TL-FC24/FC25 may become damaged and unusable after repeated use.
- Any position is possible when setting to TL-FC33/FC36.





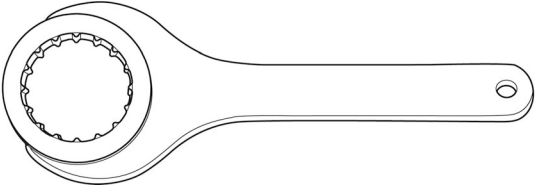


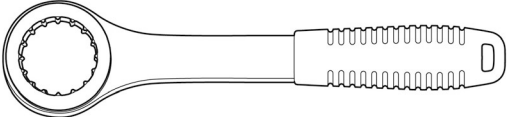


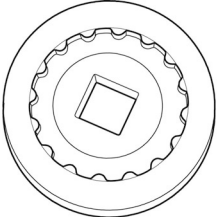
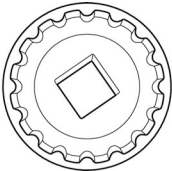

★1

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



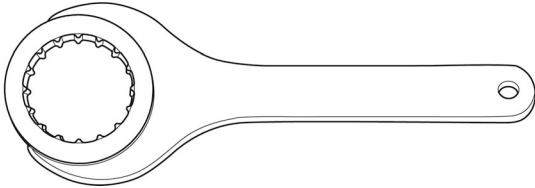


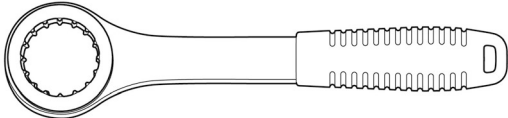


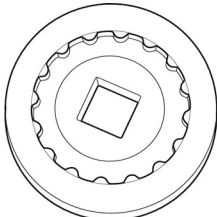
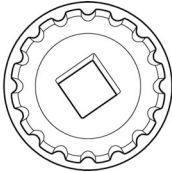

List of tool combinations

When installing or removing the bottom bracket, use the Shimano original tools that are to be used in combination.

SM-BB9000

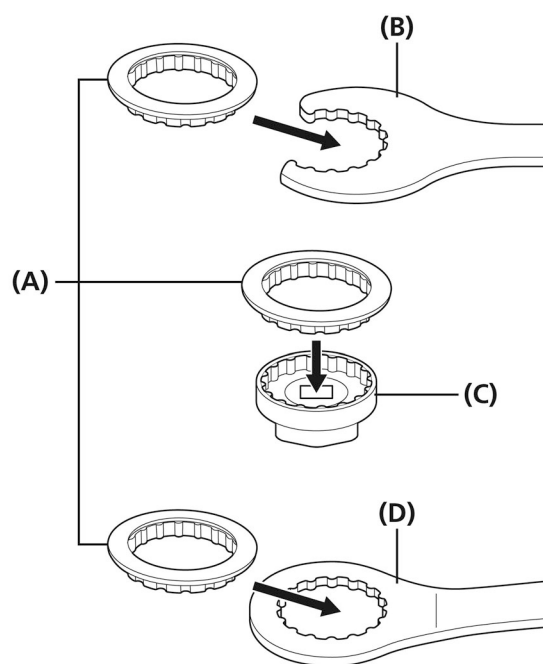
TL-FC24&TL-FC32	
	
	
TL-FC24&TL-FC36	
	
	
TL-FC24&TL-FC33	
	
	
TL-FC34	
	
	

SM-BBR60

TL-FC25&TL-FC32	
	
	
TL-FC25&TL-FC36	
	
	
TL-FC25&TL-FC33	
	
	
TL-FC37	
	
	

## Installation of the front chainwheels

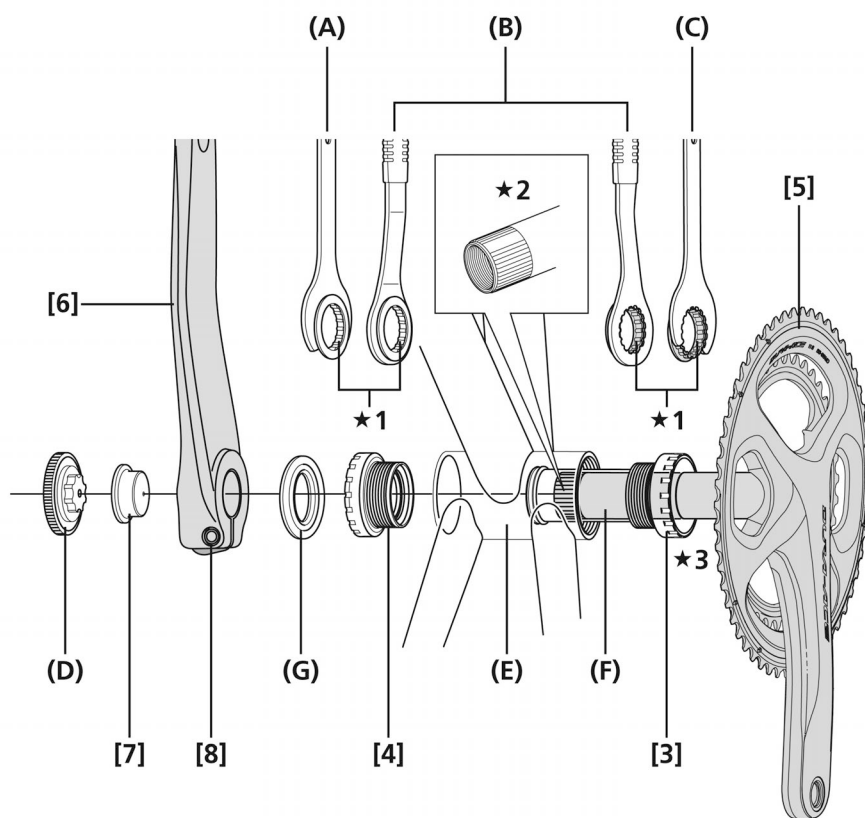
1. Combine the Shimano original tools as in the illustration.



- (A) TL-FC24/FC25
- (B) TL-FC32
- (C) TL-FC33
- (D) TL-FC36



2. Follow the procedure in the illustration.  
Install TL-FC24/FC25 with the collar facing the adapter.

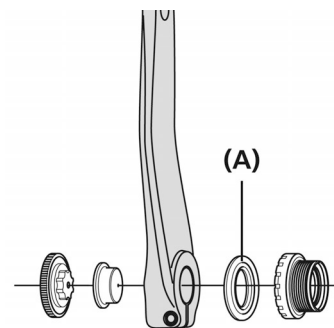


- ★1 Collar side
- ★2 Wide part
- ★3 Right hand adapter  
Clockwise thread  
(right-hand thread) for  
70mm [M36] bottom bracket-  
ets

- (A) TL-FC24/FC25&TL-FC32
- (B) TL-FC24/FC25&TL-FC36
- (C) TL-FC24/FC25&TL-FC32
- (D) TL-FC16/FC18
- (E) Bottom bracket shell
- (F) Inner cover
- (G) Spacer

## NOTE

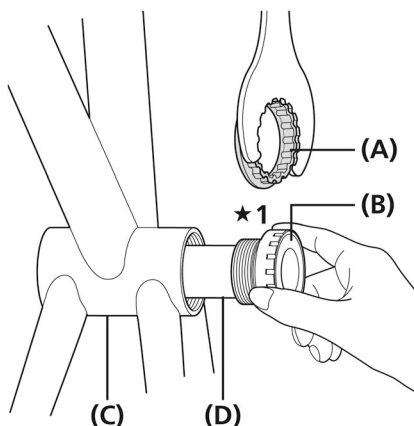
For front triples, include a spacer.



- (A) Spacer

3. Check that the inner cover is installed to the right adapter unit, insert the right adapter from the right side of the bottom bracket shell, and tighten 2 to 3 turns with your hand.

Use TL-FC24/FC25 or TL-FC34/FC37 to tighten the right adapter.



★1 70mm [M36] is a right-handed screw

- (A) TL-FC24/FC25
- (B) TL-FC34/FC37
- (C) Bottom bracket shell
- (D) Inner cover

## Tightening torque

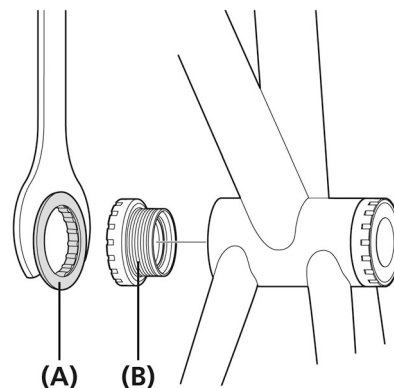
TL-FC24/FC25 or TL-FC34/FC37

**35 - 50 N·m**  
**{306 - 437 in. lbs.}**

## TECH TIPS

When using TL-FC24/FC25, set it into the compatible Shimano original tool, as in the illustration, and install it with the collar facing the adapter.

4. Install the left adapter (clockwise thread).



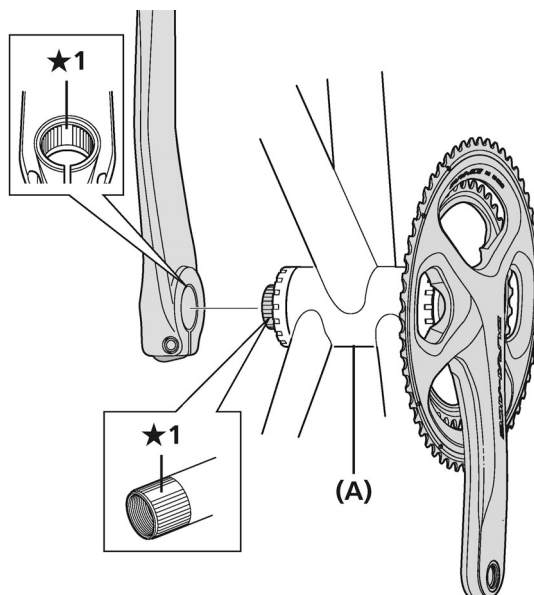
- (A) TL-FC24/FC25
- (B) TL-FC34/FC37

## Tightening torque

TL-FC24/FC25 or TL-FC34/FC37

**35 - 50 N·m**  
**{306 - 437 in. lbs.}**

5. Insert the right crank unit.
6. Set with the wide section of the left crank aligned with the wide section of the axle of the right crank unit.



★1 Wide part

- (A) Bottom bracket shell

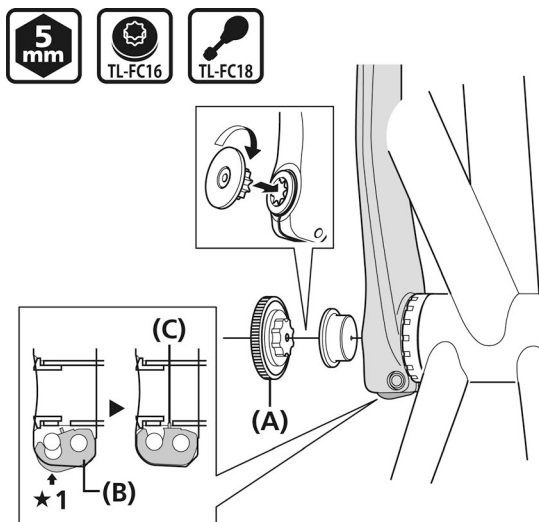
## NOTE

For front triples, include a spacer.

7. Use TL-FC16/FC18 to tighten the cap.

Tightening torque
TL-FC16/FC18
<b>0.7 - 1.5 N·m</b>
<b>{6.2 - 13 in. lbs.}</b>

8. 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.



★1 Push up

(A) TL-FC16/FC18

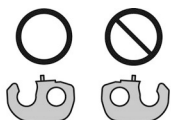
(B) Stopper plate

(C) Plate pin

Tightening torque
5mm Allen key
<b>12 - 14 N·m</b>
<b>{105 - 122 in. lbs.}</b>

## NOTE

- The two bolts should be tightened at the same time rather than each bolt being fully tightened separately.
- Set the stopper plate in the correct direction as shown in illustration.



# MAINTENANCE

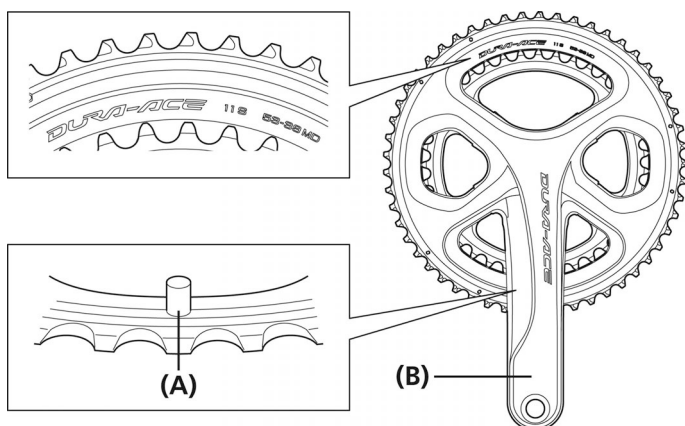
# MAINTENANCE

## Installation of the chainrings

- Gear shifting performance will be reduced if the installation positions of the chainrings are incorrect. Be sure to install the chainrings in the correct positions.
- Use the correct combination of genuine Shimano bolts, chainrings and crank arm, otherwise the large chainring may become damaged by the bolts.

### Outer side

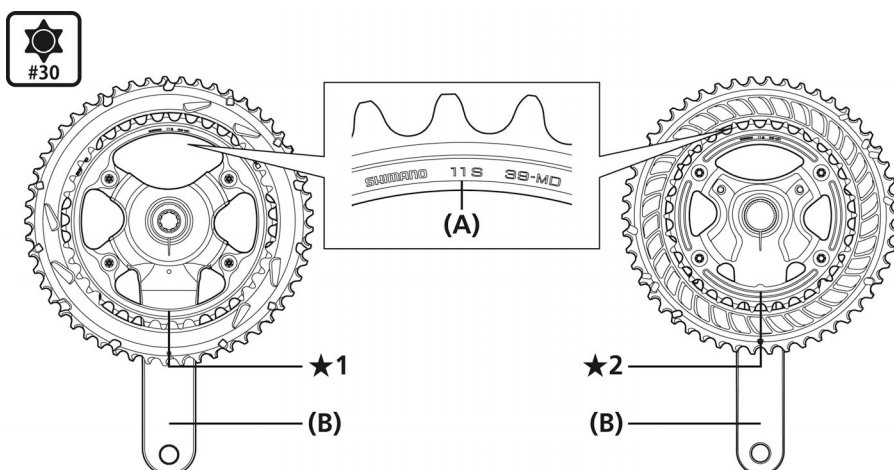
1. With the marked surface of the largest chainring facing outward, set the chainring with the chain drop prevention pin aligned with the crank arm.



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

### Inner side

1. With the marked surface of the smallest chainring facing away from the crank arm, set the chainring with the  $\Delta$  marking or convex section aligned with the crank arm.



- ★1  $\Delta$  marking  
★2 Convex section

- (A) Mark  
(B) Crank arm

### Tightening torque

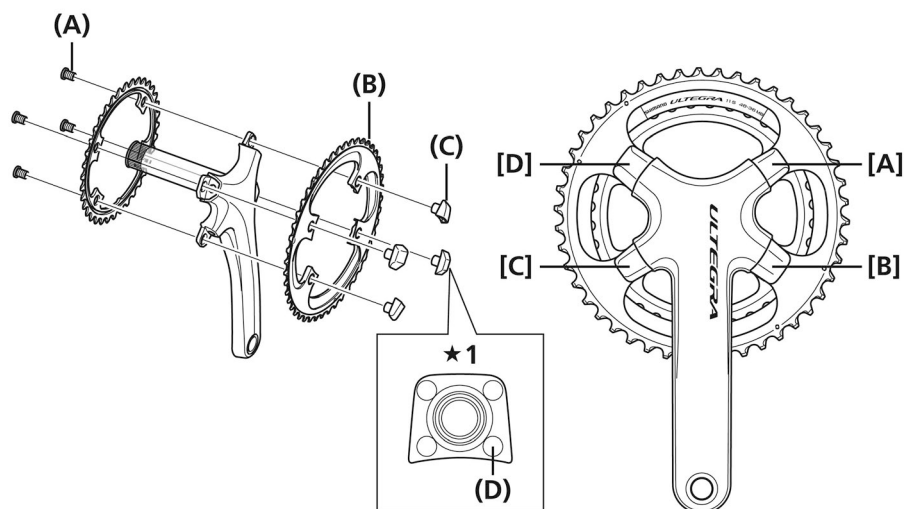
Hexalobular[#30]

12 - 16 N·m

{105 - 139 in. lbs.}

## FC-6800 (46-36)

- For this model only, the fixing nuts are separate from the largest chainring.  
All four fixing nuts have different shapes. Check the positioning mark on the reverse side of the nut before mounting.  
\* Mounting in a position other than the specified one will not affect function.



★1 Reverse side of the fixing nut

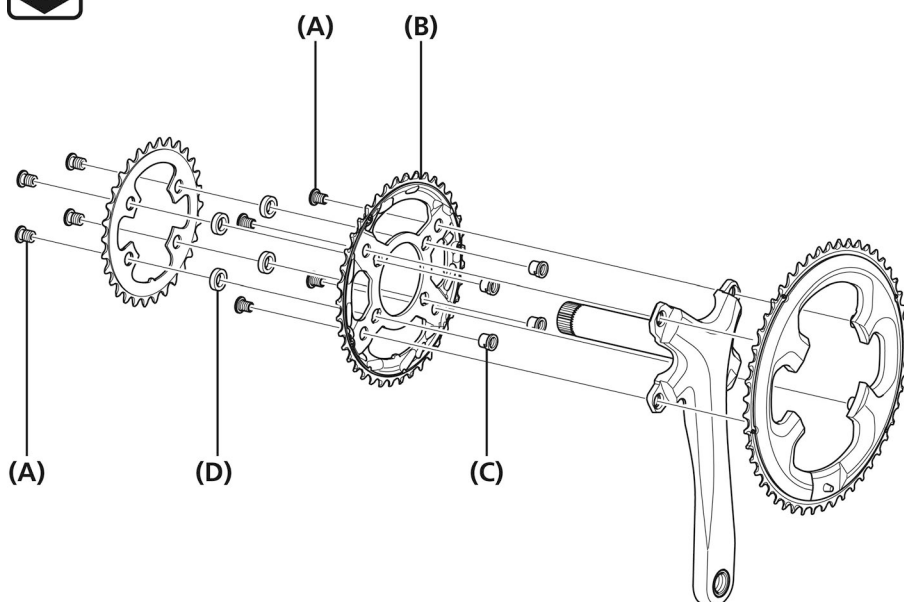
- (A) Mounting bolt  
(B) Chainring  
(C) Fixing nut  
(D) Positioning marks  
[A] [B] [C] [D]

### Tightening torque

Hexalobular[#30]

**12 - 16 N·m**  
**{105 - 139 in. lbs.}**

## FC-4703



- (A) Mounting bolt  
(B) Chainring  
(C) Fixing nut  
(D) Spacer

### Tightening torque

5mm Allen key

**12 - 16 N·m**  
**{105 - 139 in. lbs.}**

# SHIMANO

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

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