

## Dealer's Manual

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

# Crankset

## XTR

FC-M9100  
FC-M9120  
FC-M9125  
FC-M9130

## DEORE XT

FC-M8100  
FC-M8120  
FC-M8130

## SLX

FC-M7100  
FC-M7120  
FC-M7130

## DEORE

FC-M6100  
FC-M6120  
FC-M6130  
FC-M5100  
FC-M4100

## Bottom Bracket

SM-BB93  
BB-MT800  
BB-MT501  
SM-BB52  
SM-BB94-41A  
BB-MT800-PA  
BB-MT500-PA

## Non-Series

FC-MT900  
FC-MT611  
FC-MT610  
FC-MT511  
FC-MT510

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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 distributor for assistance.
- Make sure to read all manuals included with each product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All manuals and technical documents are accessible online at <https://si.shimano.com>.
- For consumers who do not have easy access to the internet, please contact a SHIMANO distributor or any of the SHIMANO offices to obtain a hardcopy of the User's Manual.
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

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


The following instructions must be observed at all times in order to prevent personal injury and physical damage to equipment and surroundings.

The instructions are classified according to the degree of danger or damage which may occur if the product is used incorrectly.

 <b>DANGER</b>	Failure to follow the instructions will result in death or serious injury.
 <b>WARNING</b>	Failure to follow the instructions could result in death or serious injury.
 <b>CAUTION</b>	Failure to follow the instructions could cause personal injury or physical damage to equipment and surroundings.

# TO ENSURE SAFETY

## **WARNING**

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

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

- Clean the chain with an appropriate chain cleaner regularly. Intervals between maintenance depend on the use and riding circumstances.
- Never use alkali- 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 cracking), skipping, or other abnormalities such as unintended gear shifting. If any problems are found, consult your place of purchase or a distributor. 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.

### For installation to the bicycle and maintenance

- Install the inner cover correctly. If it 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 screws should be tightened alternately in stages rather than each fully tightened at once. Use a torque wrench to check that the tightening torques are within the range of 12 - 14 N·m. Also, after riding approximately 100 km (60 miles), use a torque wrench to re-check the tightening torques. Thereafter, continue to check the tightening torques periodically. If the tightening torques are too weak or if the mounting screws are not tightened alternately in stages, the left crank may come off and the bicycle may fall over, and serious injury may occur as a result.
- Re-checking the tightening torque of the crank is necessary when the crank is subjected to strong blows from a fall. If riding when the tightening torque is weak due to a strong blow, the crank could detach and you may fall off the bicycle.

## ⚠ CAUTION





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

- Be careful not to touch the teeth of chainrings. There is a danger of injury.

## NOTICE

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

- Check that there is no excess play or looseness in any fastening sections before riding the bicycle. Also, be sure to retighten the crank arm and pedals at periodic intervals.
- Be sure to keep turning the crank arm during the shift lever operation.
- When the chain is in any of the positions shown in the figures, the chain may come into contact with the chainring or front derailleur and generate noise. If noise is a problem, shift the chain onto the next largest sprocket or the one after it.

	Double	
	XTR M9100 series / FC-MT900	DEORE XT M8100 series / SLX M7100 series / FC-M5100 / FC-M4100 / FC-MT610
Chainring		
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, contact your place of purchase.
- Do not wash the surrounding area of the bottom bracket with a high-pressure washer. 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 is 35 - 55 N·m. The right crank has a right-hand thread, and the left crank has a left-hand thread.
- If the bottom bracket shell is not parallel, gear shifting performance will drop.
- If the chain keeps skipping, replace the gears and chain.
- When installing the left- and right-hand cups, 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 axle of the right crank arm unit and the fastening section of the left crank arm, apply grease to the fastening section, then tighten it firmly with the specified torque.
- If you feel any excess play in the bearing section, 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.
- Use FC-M9120-B2/FC-M9125/FC-M9130 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

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

Tool			
	5 mm hexagon wrench		TL-FC32
	8 mm hexagon wrench		TL-FC33
	17 mm spanner		TL-FC34
	32 mm spanner		TL-FC36
	Soft face mallet		TL-FC37
	TL-FC16		TL-FC41
	TL-FC18		TL-BB12
	TL-FC24		TL-BB13
	TL-FC25		Hexalobular [#30]

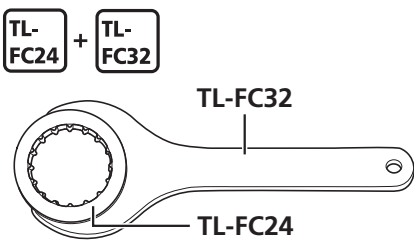
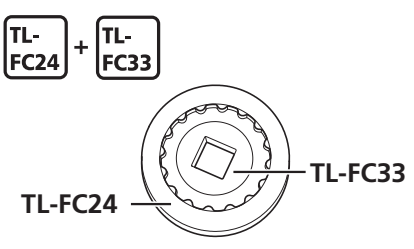
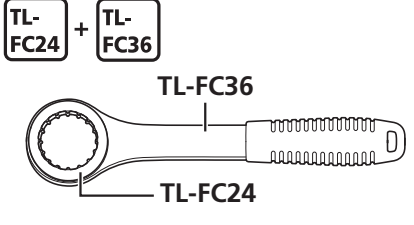
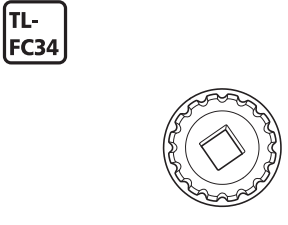
# Installation/removal

## Installing/removing the bottom bracket

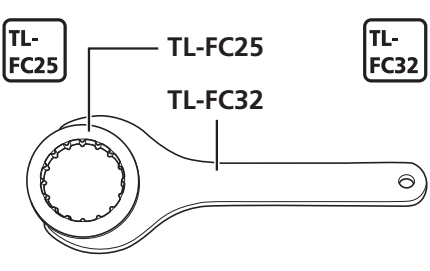
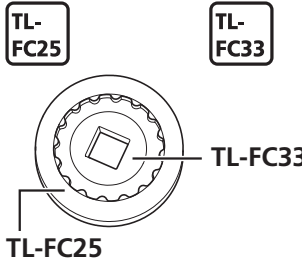
### Tool combination chart

Use the tool combinations specified in the table.

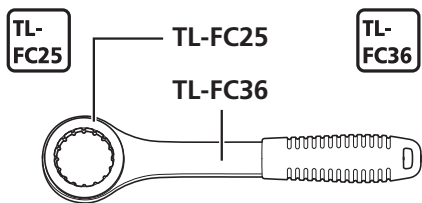

#### SM-BB93

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

#### BB-MT800

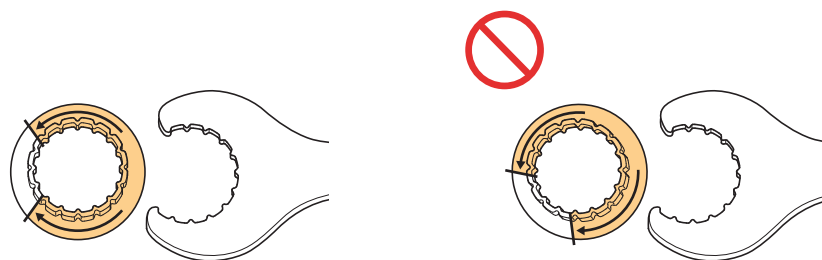
TL-FC25 & TL-FC32	TL-FC25 & TL-FC33
 <p>TL-FC25 + TL-FC32</p> <p>TL-FC25</p> <p>TL-FC32</p>	 <p>TL-FC25 + TL-FC33</p> <p>TL-FC25</p> <p>TL-FC33</p>



TL-FC25 & TL-FC36	TL-FC37
	

### NOTICE

- When using an impact wrench on SM-BB93, use it in combination with TL-FC34. Using any other combinations will damage the tool.
- When using an impact wrench on BB-MT800, use it in combination with TL-FC37. Using any other combinations will damage the tool.
- TL-FC24/TL-FC25 may become damaged and unusable after repeated use.
- Check the possible installation positions when setting TL-FC24 or TL-FC25 in TL-FC32.



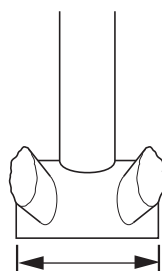
- Any installation position is possible for TL-FC33/FC36.

## Installation

### ► Threaded bottom bracket

#### 1. Place the spacers.

- (1) Check the width of the bottom bracket shell.



Bottom bracket shell width

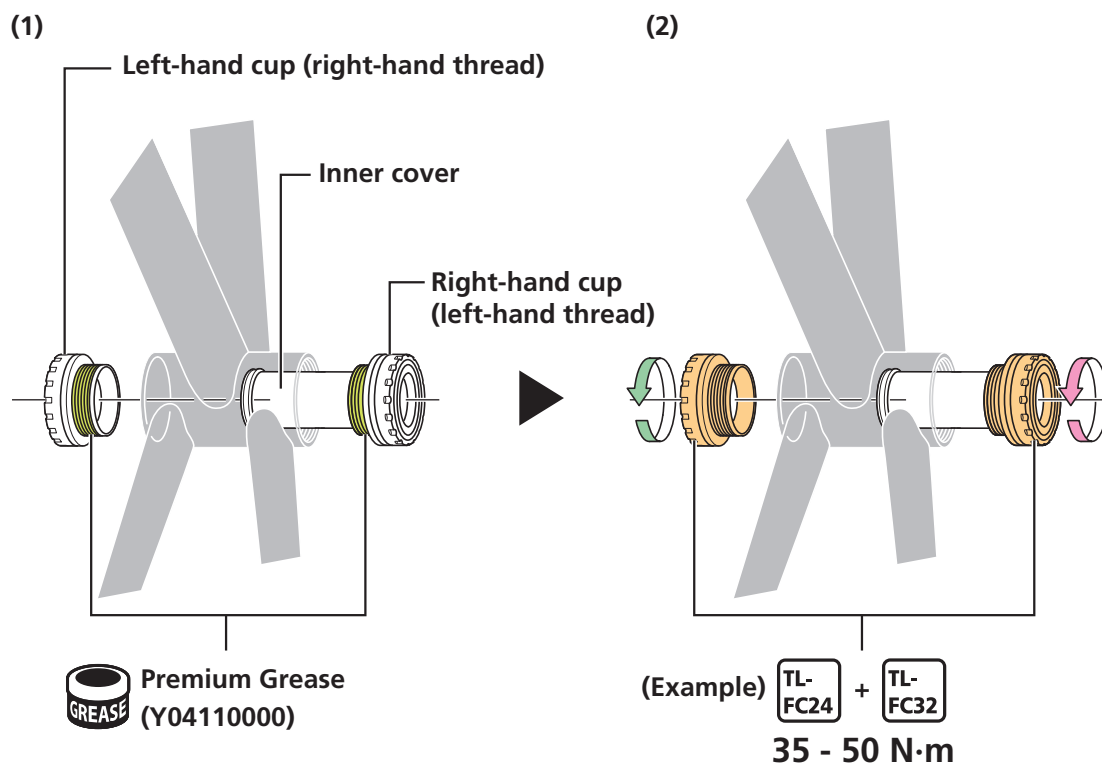
- (2) Prepare a spacer (2.5 mm) for the position indicated in the table.

Bottom bracket shell width	
68 mm	73 mm
<p>Left Right</p> <p>Spacer Spacer</p> <p>The diagram shows a side view of a bottom bracket assembly. Two vertical orange lines, representing spacers, are positioned on either side of the central bottom bracket body. The left side is labeled 'Left' and the right side is labeled 'Right'.</p>	<p>Left Right</p> <p>Spacer</p> <p>The diagram shows a side view of a bottom bracket assembly. A single vertical orange line, representing a spacer, is positioned in the center between the left and right sides of the bottom bracket body. The left side is labeled 'Left' and the right side is labeled 'Right'.</p>

#### 2. Install the inner cover, cups, and spacers.

- (1) Apply grease to the left- and right-hand cups.

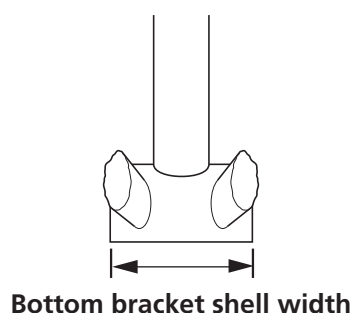
- (2) Use the SHIMANO original tools (refer to "Tool combination chart" in "Installing/removing the bottom bracket") to tighten the left- and right-hand cups.



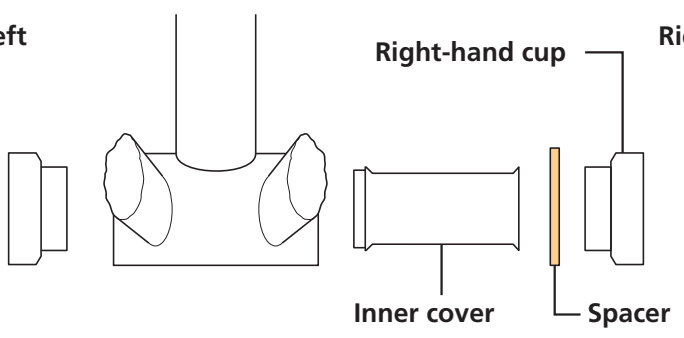
## ▶ Press-fit bottom bracket

### 1. Set the bottom bracket in the bottom bracket shell.

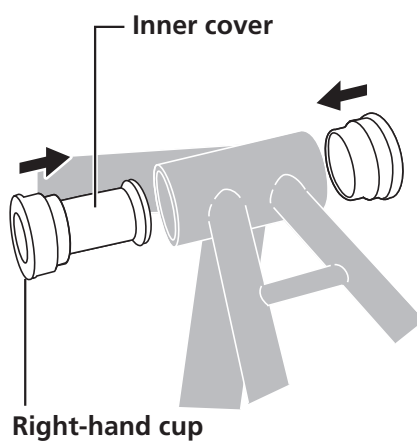
- (1) Check the width of the bottom bracket shell.



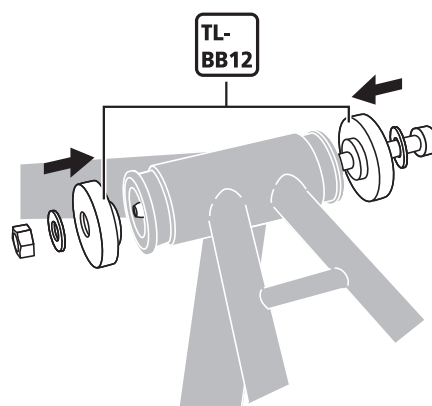
- (2) Prepare a spacer (2.5 mm) for the position indicated in the table.

Bottom bracket shell width	
89.5 mm	92 mm
<p>Left</p>  <p>Right-hand cup</p> <p>Right</p> <p>Inner cover</p> <p>Spacer</p>	<p>No spacer needed</p>

(3) Set the inner cover and cups.



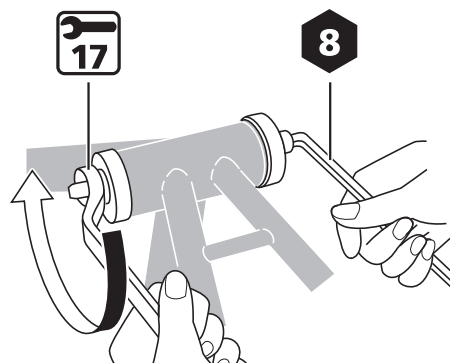
**2.** Insert the SHIMANO original tool into the bottom bracket.



### 3. Use the specified spanner and hexagon wrench to press-fit the bottom bracket.

Make sure that the contact surface of the bottom bracket is parallel with the contact surface of the bottom bracket shell.

\* Press-fit until there is no more gap between the bottom bracket and the bottom bracket shell.



## Removal

### ▶ Threaded bottom bracket

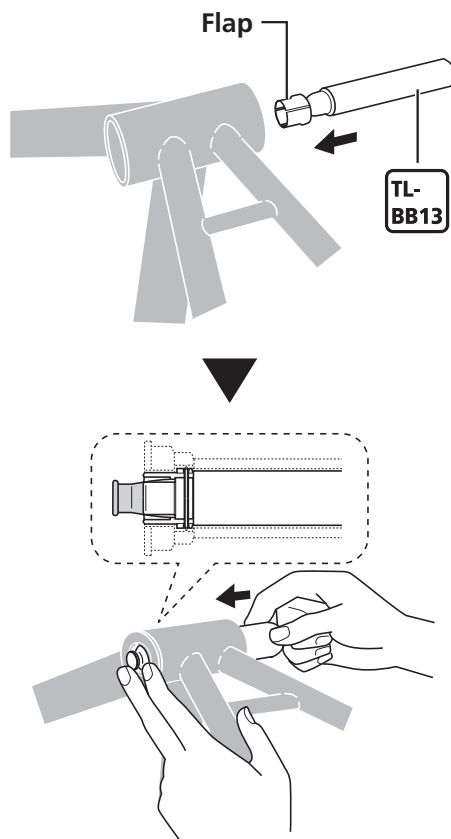
1. Perform the removal in the reverse order from "Installation" in "Installing/removing the bottom bracket."

### ▶ Press-fit bottom bracket

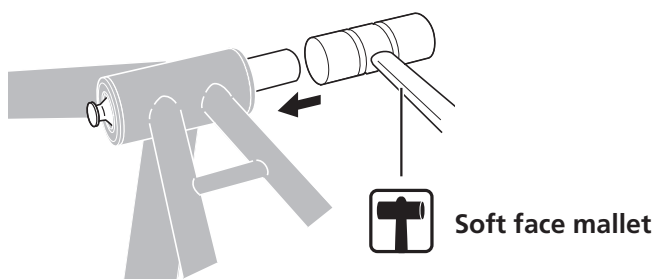
1. Insert the SHIMANO original tool into the bottom bracket.

- (1) Extend the flaps to taper the tip of the SHIMANO original tool.
- (2) Insert the SHIMANO original tool from the opposite side of the cup you wish to remove.
- (3) As shown in the figure, press down on the protruding portion of the tip with your hand to expand the flaps.

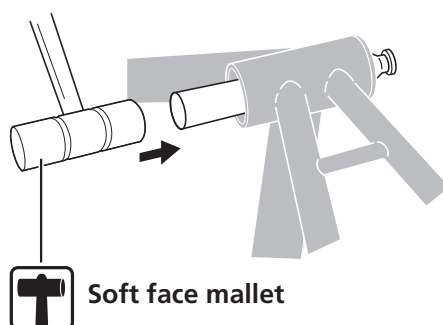
- (4) Push the tool in further while continuing to press down on the tip, until the flanges on the flaps engage with the cup.



- 2.** Tap the SHIMANO original tool with a soft face mallet to push out the cup.



- 3.** Remove the cup on the opposite side in a similar manner.



**NOTICE**

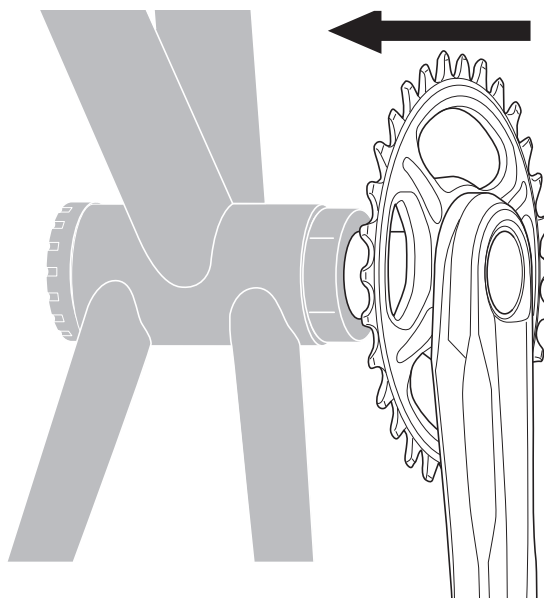
- Do not reuse the cups as they can be damaged during removal.

## Installing/removing the cranks

### Installation

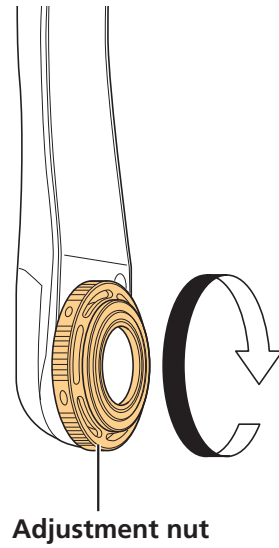
#### ▶ FC-M9100/FC-M9120/FC-M9125/FC-M9130

1. Fully insert the right crank arm unit until it touches the bottom bracket.



## 2. Completely tighten the adjustment nut of the left crank arm.

Turn in the direction shown in the figure to tighten it.



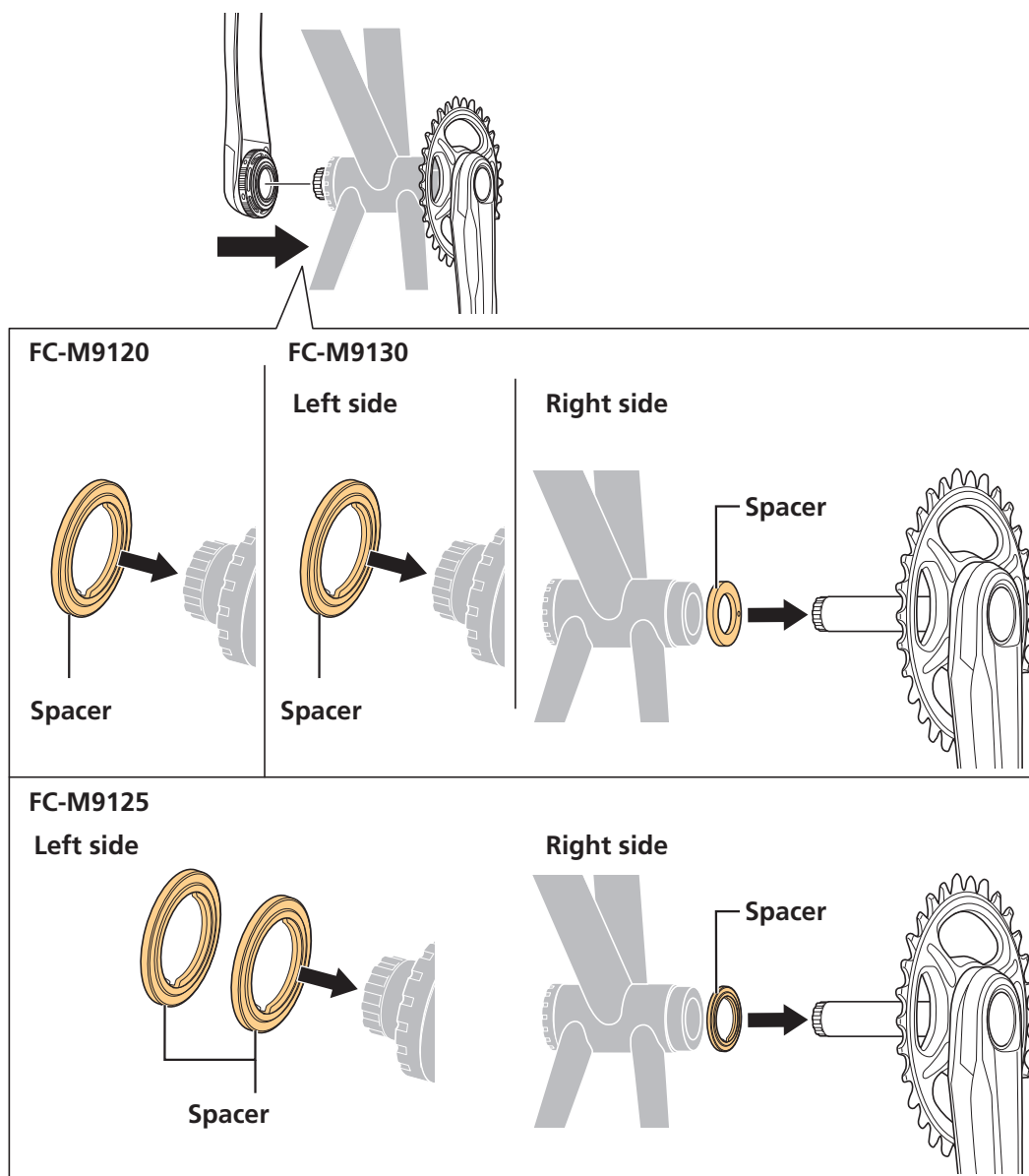


### 3. Set the left crank arm onto the axle of the right crank arm.

As shown in the figure, be sure to set the left and right crank arms so that they are aligned.

Some models may require spacers to be installed between the bottom bracket and the crank arm. For information on the number required, refer to the table.

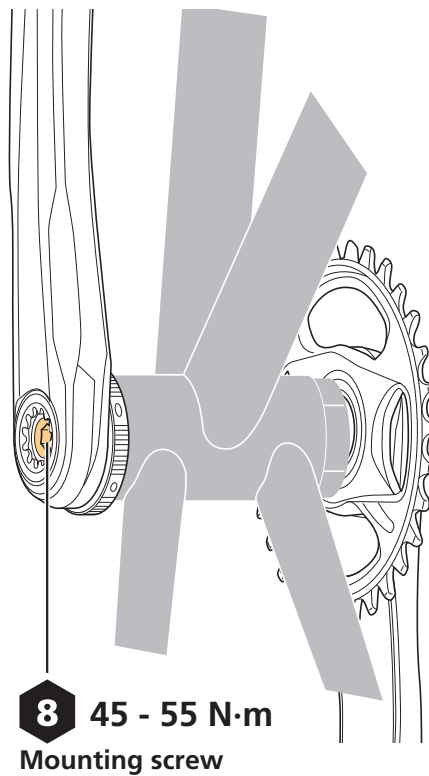
Set the spacer with the rubber surface side facing inward.



Model	Spacer	
	Left side	Right side
FC-M9120	3 mm spacer	-
FC-M9125	3 mm spacer (x 2)	3 mm spacer
FC-M9130	4.5 mm spacer	4.5 mm spacer

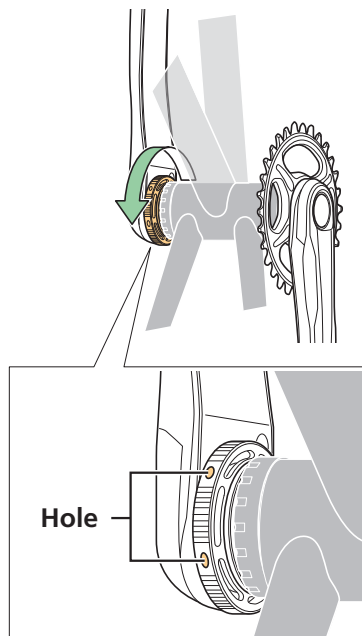
**NOTICE**

- When using FC-M9120, if the right crank arm and frame interfere, set the spacer between the right crank arm and bottom bracket instead of between the left crank arm and bottom bracket.

**4. Tighten the mounting screw of the left crank arm.**

## 5. Turn the adjustment nut of the left crank arm to remove any excess play between the crank and bottom bracket.

\* Turn the adjustment nut directly by hand or by inserting a tool such as a thin hexagon wrench into one of the holes.



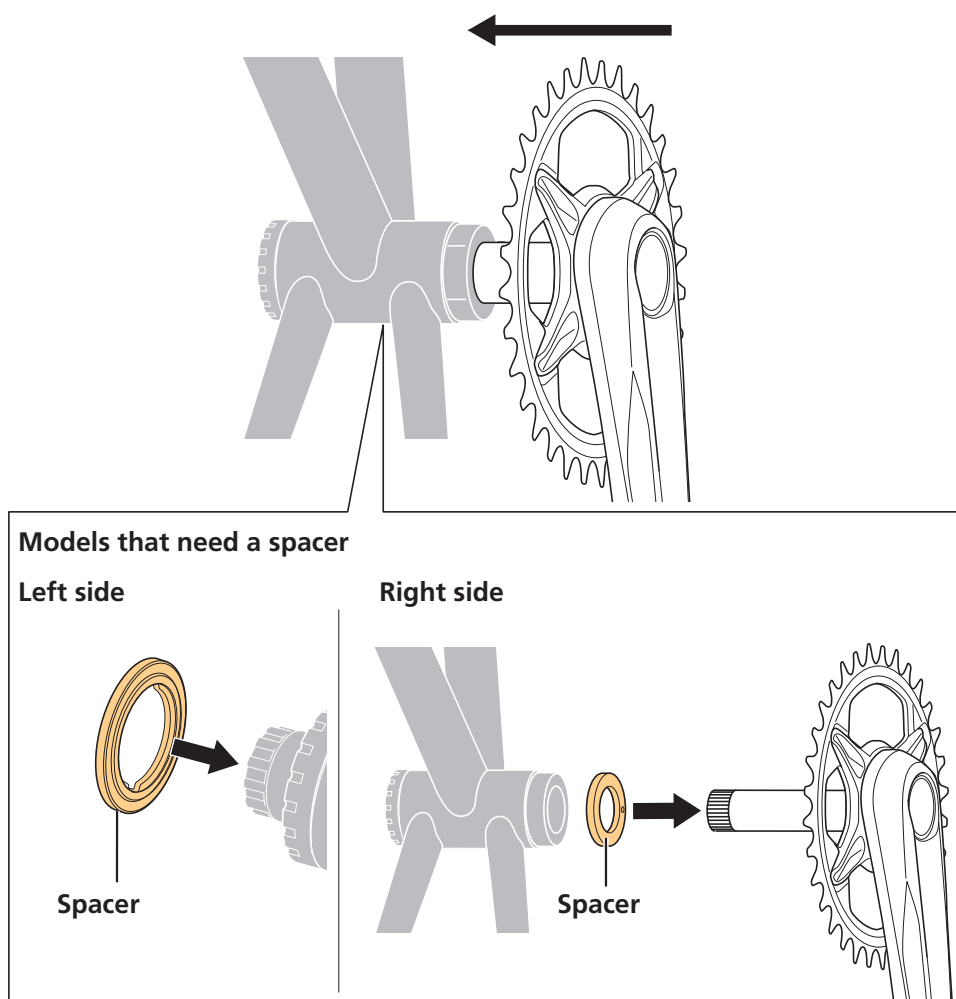
## ► Standard type

### 1. Fully insert the right crank arm unit until it touches the bottom bracket.

For the following models, be sure to place a spacer between the bottom bracket and the left and right crank arms.

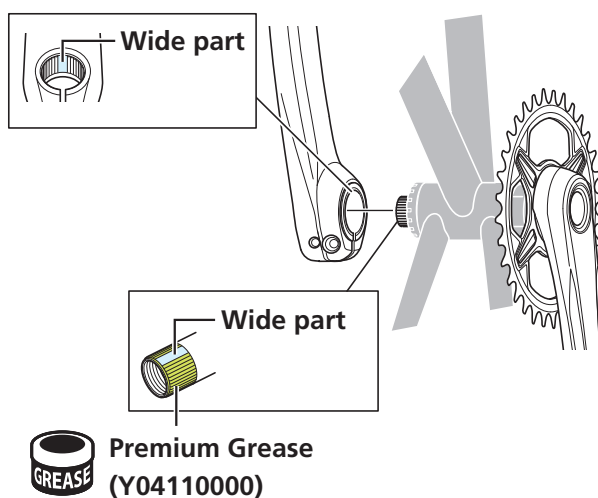
Set the spacer with the rubber surface side facing inward.

Model	Spacer
FC-M8120 / FC-M7120 / FC-M6120 / FC-MT610-B2	3 mm spacer
FC-M8130 / FC-M7130 / FC-M6130	4.5 mm spacer
Other than those mentioned above	Not necessary



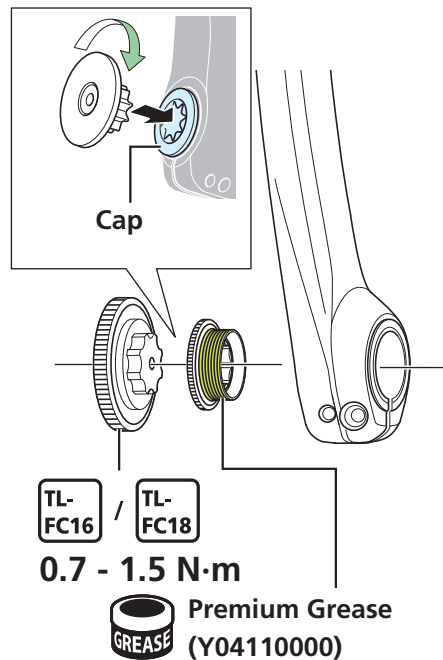
## 2. Set the left crank arm onto the axle of the right crank arm.

- (1) Apply grease to the axle of the right crank arm unit.
- (2) Align the wide part of the left crank arm spline with the wide part of the spline on the crank axle.



### 3. Install the cap.

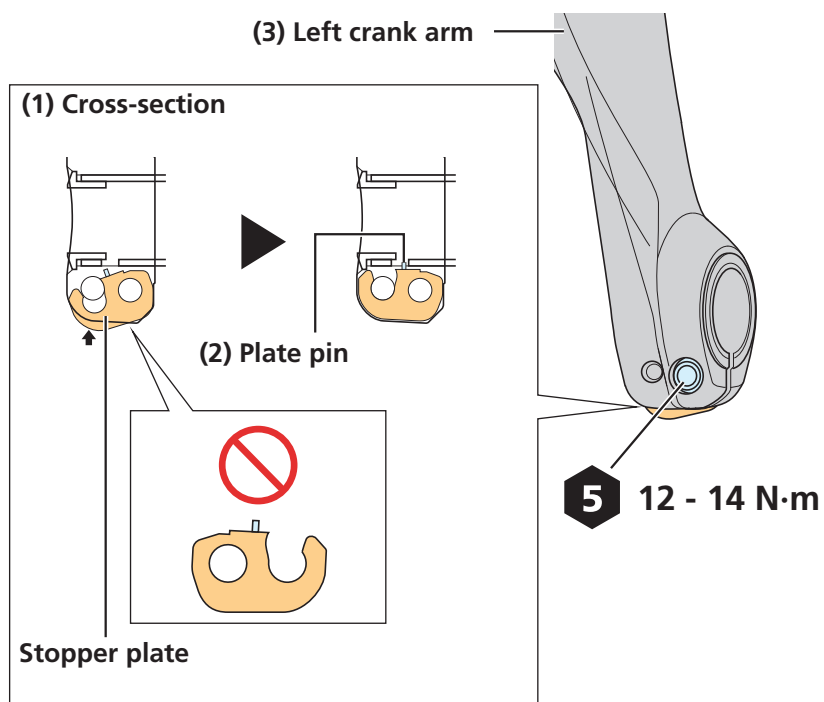
- (1) Apply grease to the cap as specified in the figure.
- (2) Tighten using the SHIMANO original tool.



### 4. Tighten the mounting screws to secure the crank arm.

- (1) Set the stopper plate in the direction shown in the figure and push it in.
- (2) Check that the plate pin is securely inserted.

- (3) Tighten the left crank arm screws alternately until the 2 screws reach the specified torque.



#### TECH TIPS

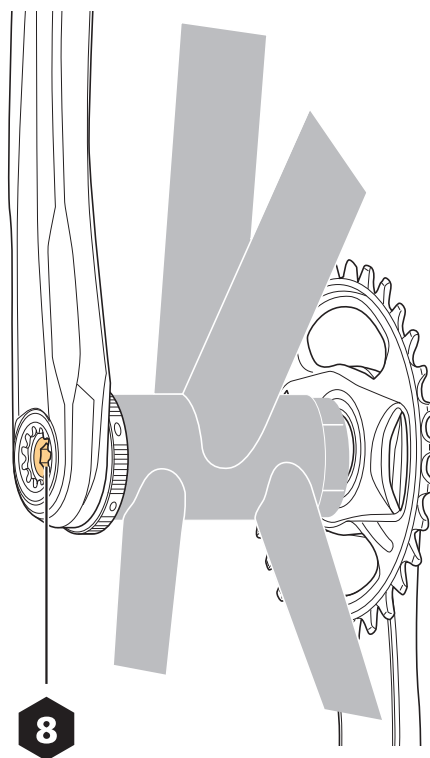
- Confirm that there is no gap or excess play between the crank arm and the bottom bracket, and perform the operation from step 3 again if there is.

## Removal

### ► FC-M9100/FC-M9120/FC-M9125/FC-M9130

#### 1. Loosen the mounting screw of the left crank arm.

As the mounting screw is loosened, the left crank arm will extract itself from the axle.  
For FC-M9120, remove the spacer once the crank arm is off.



#### 2. Remove the right crank arm unit from the bottom bracket.

### ► Standard type

#### 1. Perform the removal in the reverse order from "Installation" in "Installing/removing the cranks."

# Maintenance

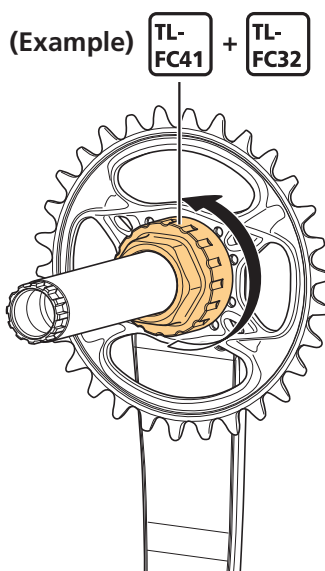
## Replacing the chainring

Perform the steps of the removal procedure for chainring replacement in the reverse order from the installation procedure.

### Single gear types

#### ► Direct mount type

#### 1. Remove the chainrings from the crank arm.

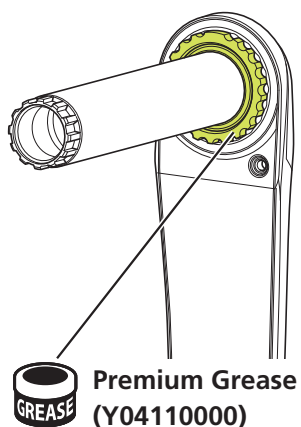


#### Tool combinations

Tool combinations		
TL-FC41 + TL-FC32	TL-FC41 + TL-FC36	TL-FC41 + 32



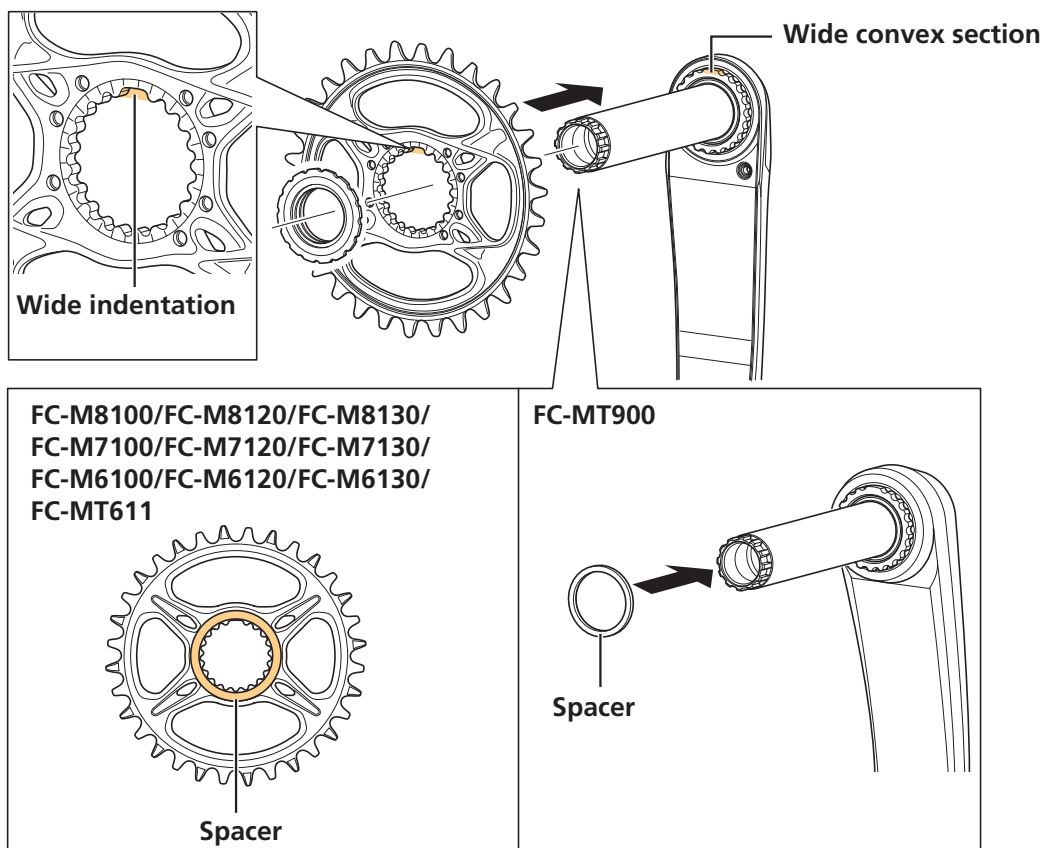
## 2. Apply grease to the inset portion of the crank arm.



## 3. Set the chainring on the crank arm.

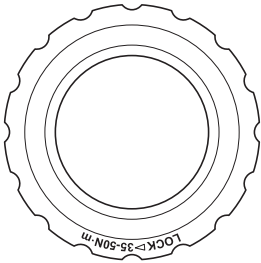
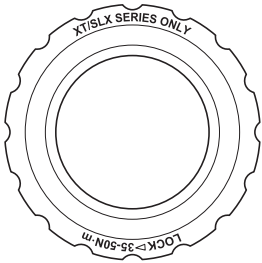
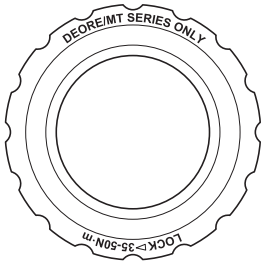
Set it so that the wide indentation on the inset portion of the chainring is aligned with the wide convex section of the crank arm.

- \* When using FC-MT900, install a spacer between the crank arm and chainring.
- \* When using the FC-M8100/FC-M8120/FC-M8130/FC-M7100/FC-M7120/FC-M7130/FC-M6100/FC-M6120/FC-M6130/FC-MT611, this spacer is attached to the chainring.



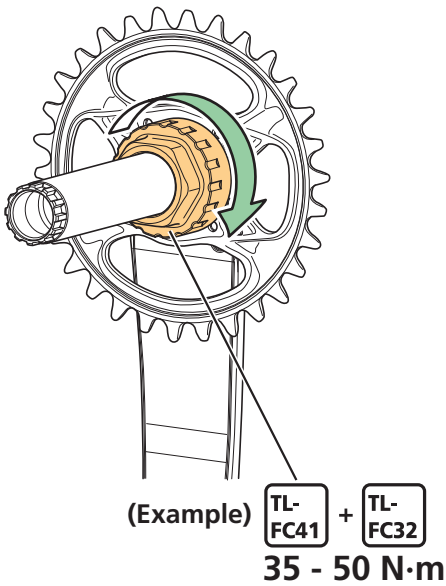
NOTICE







- The lock ring included with the XTR M9100 series can be used with all series.
- The lock ring of the XT/SLX/DEORE/MT series cannot be used with the XTR series.
- Refer to the lock ring compatibility table below when replacing the chainring.

	Included with the XTR M9100 series (no series name mark)	Included with the DEORE XT M8100 series / SLX M7100 series	Included with the DEORE / MT series
Lock ring			
Compatibility	Can be used with all series.	The lock ring cannot be used with the XTR M9100 series.	

4. Secure the chainring.

Tighten using the tool combinations specified in the following table.



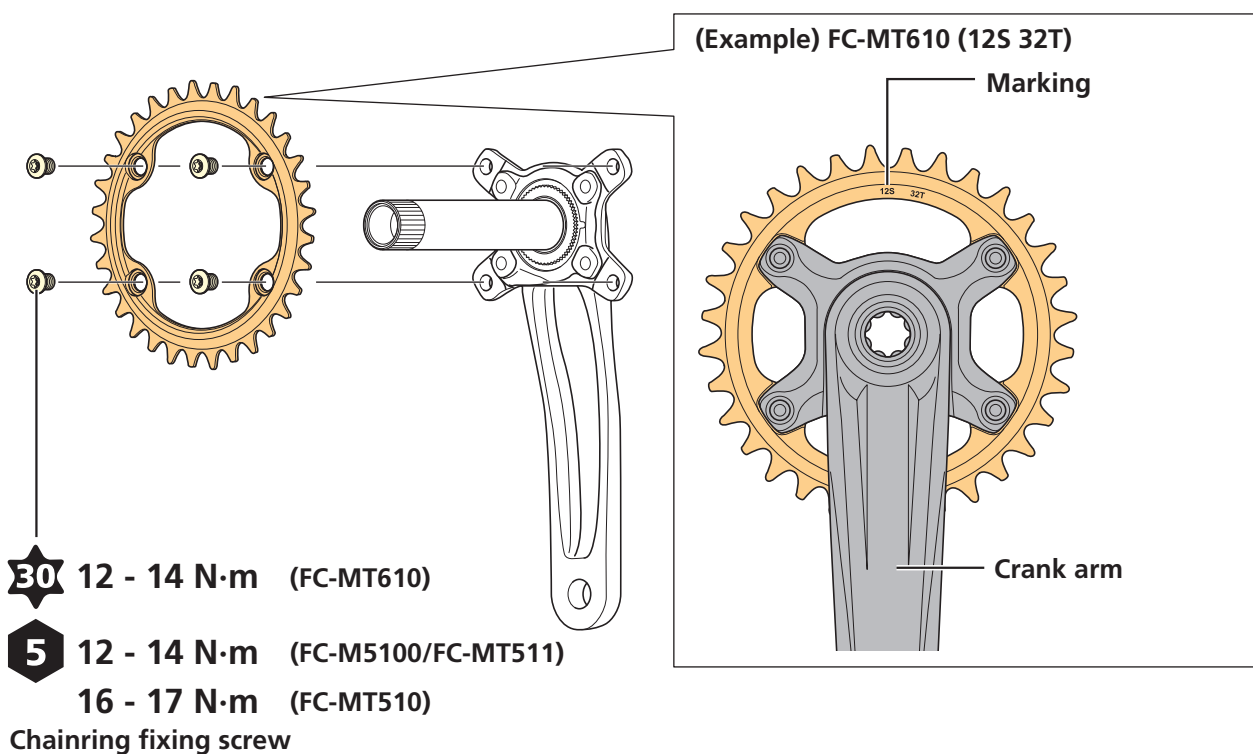
Tool combinations		
 + 	 + 	 + 

## ▶ Standard type

**1.** Remove the chainrings from the crank arm.

**2.** Install the chainring on the crank arm.

With the side with the tooth number marking facing outward, secure it with a fixing screw.



## Double gear types

### NOTICE

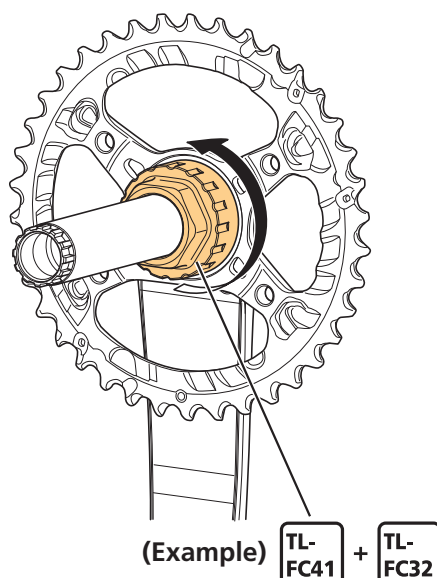
- Only use chainring combinations listed below. If other chainring combinations are used, it can create poor shifting and cause the chain to jam, resulting in damage to the bicycle.

Crank arm	Top	Low
FC-M9100	38T-BH	28T-BH
FC-M9120	38T-BH B	
FC-M8100	36T-BJ	26T-BJ
FC-M8120		
FC-M7100		
FC-M7120		
FC-MT610		
FC-M5100	36T-BC	26T-BC
FC-M4100	36T-BF	26T-BF

## ► Direct mount type

### 1. Remove the chainrings from the crank arm.


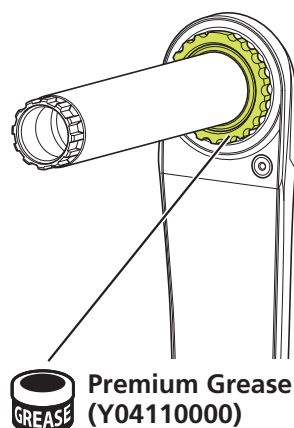
After removing the smallest chainring, remove the largest chainring as shown in the figure.



## Tool combinations

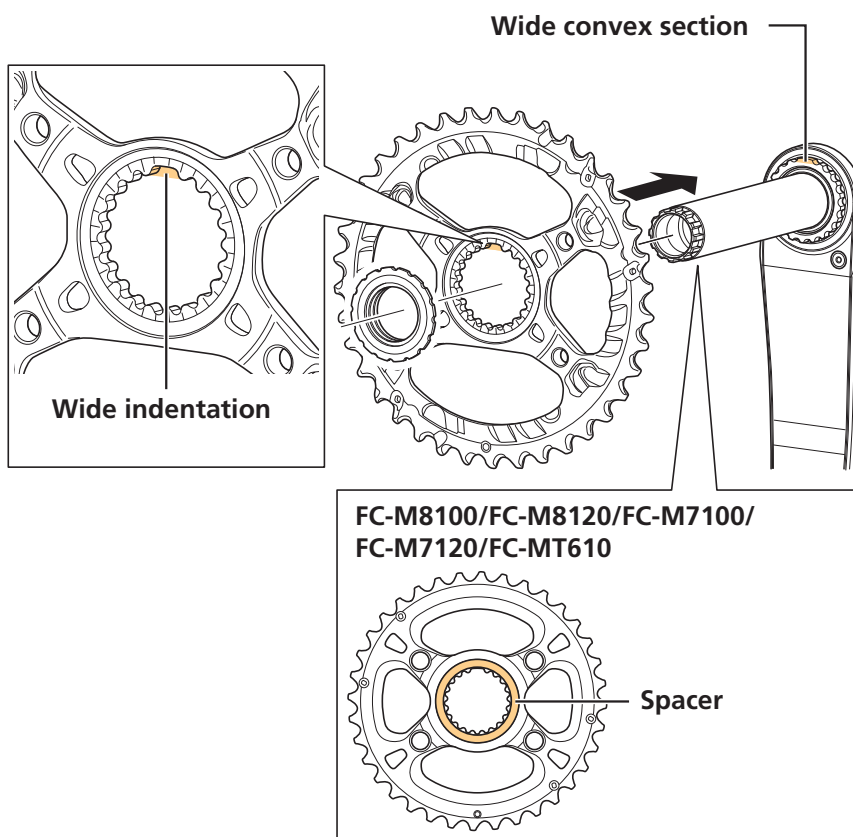
TL-FC41 + TL-FC32

TL-FC41 + TL-FC36

TL-FC41 + **2. Apply grease to the inset portion of the largest chainring.****3. Set the largest chainring on the crank arm.**

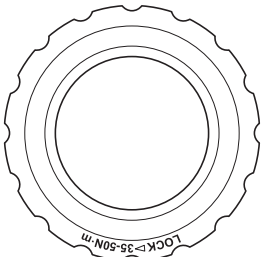
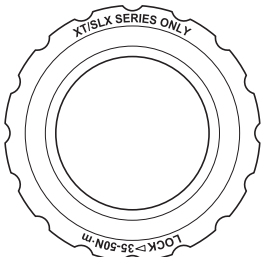
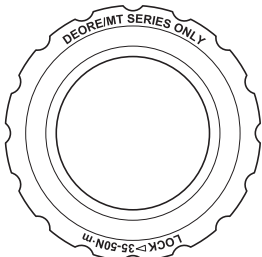
Set it so that the wide indentation on the inset portion of the largest chainring is aligned with the wide convex section of the crank arm.

\* For FC-M8100/FC-M8120/FC-M7100/FC-M7120/FC-MT610, the spacer is attached to the chainring.



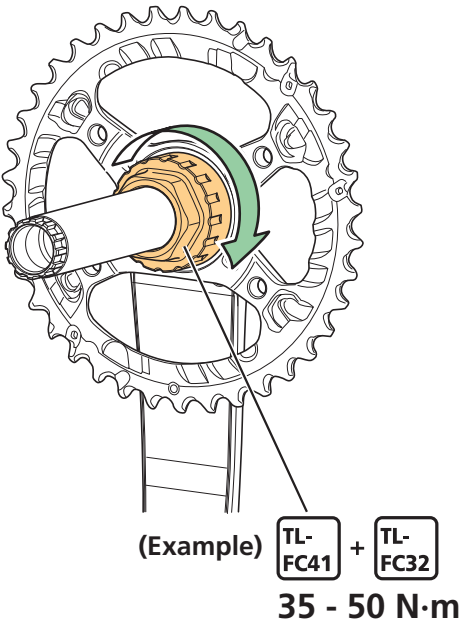
NOTICE

- The lock ring included with the XTR M9100 series can be used with all series.
- The lock ring of the XT/SLX/DEORE/MT series cannot be used with the XTR series.
- Refer to the lock ring compatibility table below when replacing the chainring.

	Included with the XTR M9100 series (no series name mark)	Included with the DEORE XT M8100 series / SLX M7100 series	Included with the DEORE / MT series
Lock ring			
Compatibility	Can be used with all series.	The lock ring cannot be used with the XTR M9100 series.	

4. Secure the largest chainring.


Tighten using the tool combinations specified in the following table.



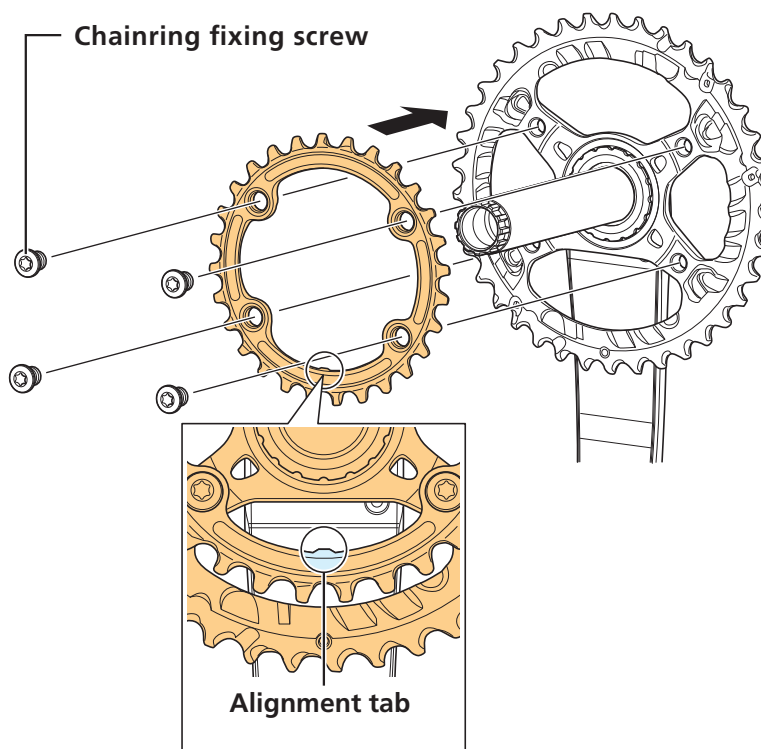
## Tool combinations

TL-FC41 + TL-FC32

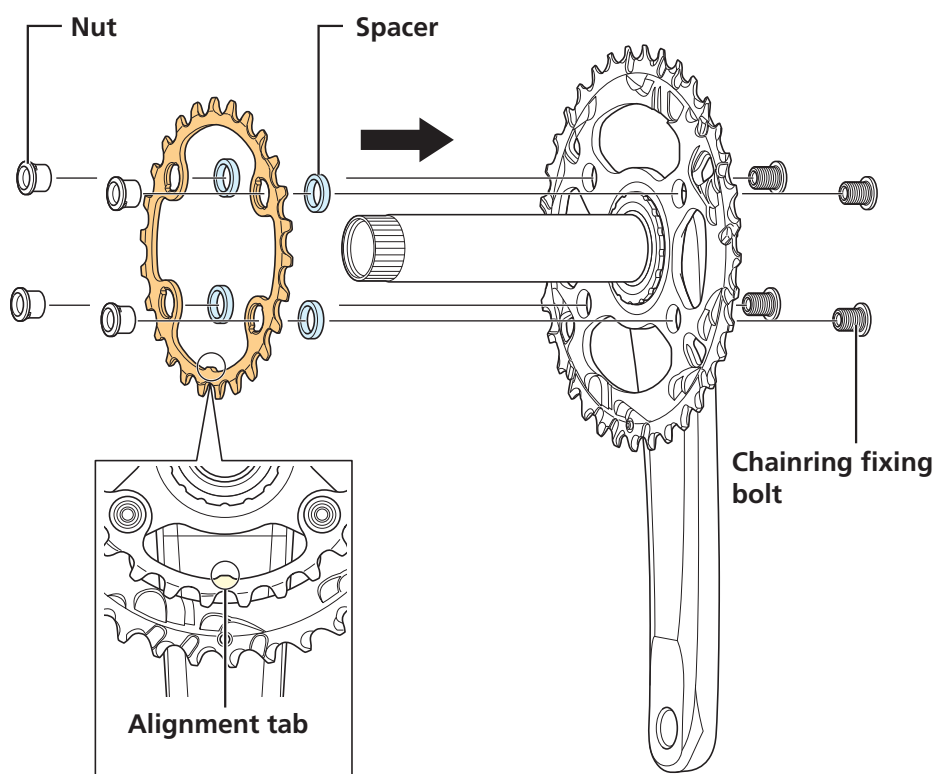
TL-FC41 + TL-FC36

TL-FC41 + **5. Set the smallest chainring.**

With the marked side facing inward, set the smallest chainring so that the alignment tab is positioned inside the crank arm.

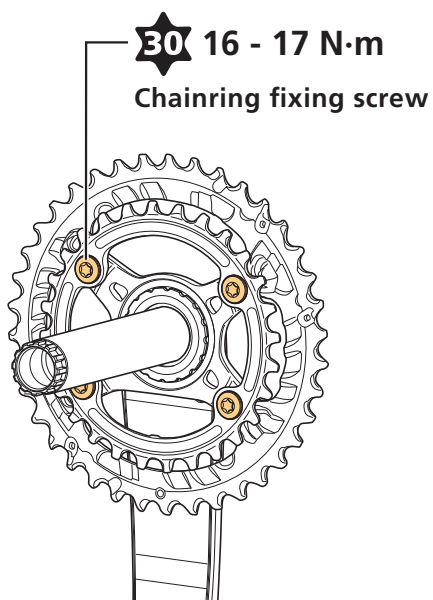
**FC-M9100/FC-M9120**

## FC-M8100/FC-M8120/FC-M7100/FC-M7120/FC-MT610

**6. Secure the smallest chainring.**

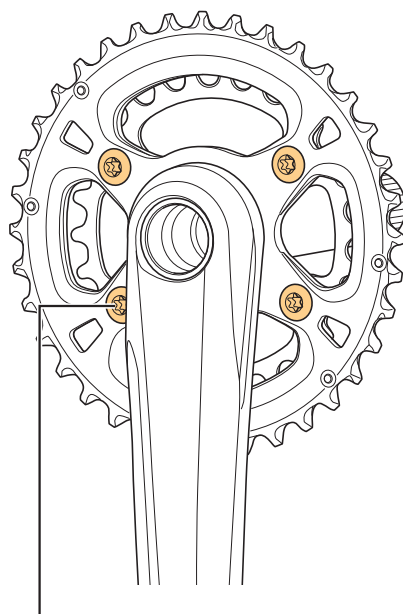
Tighten using the SHIMANO original tool.

FC-M9100/FC-M9120





FC-M8100/FC-M8120/FC-M7100/FC-M7120/FC-MT610



**30** 16 - 17 N·m  
(FC-M8100/FC-M8120/FC-M7100/FC-M7120)

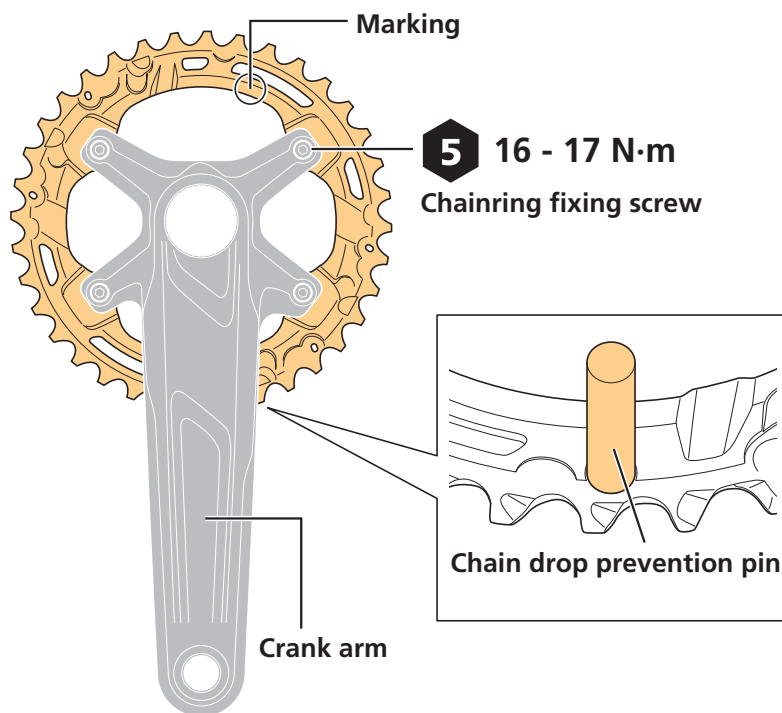
**5** 16 - 17 N·m  
(FC-MT610)

Chainring fixing bolt

## ► Standard type

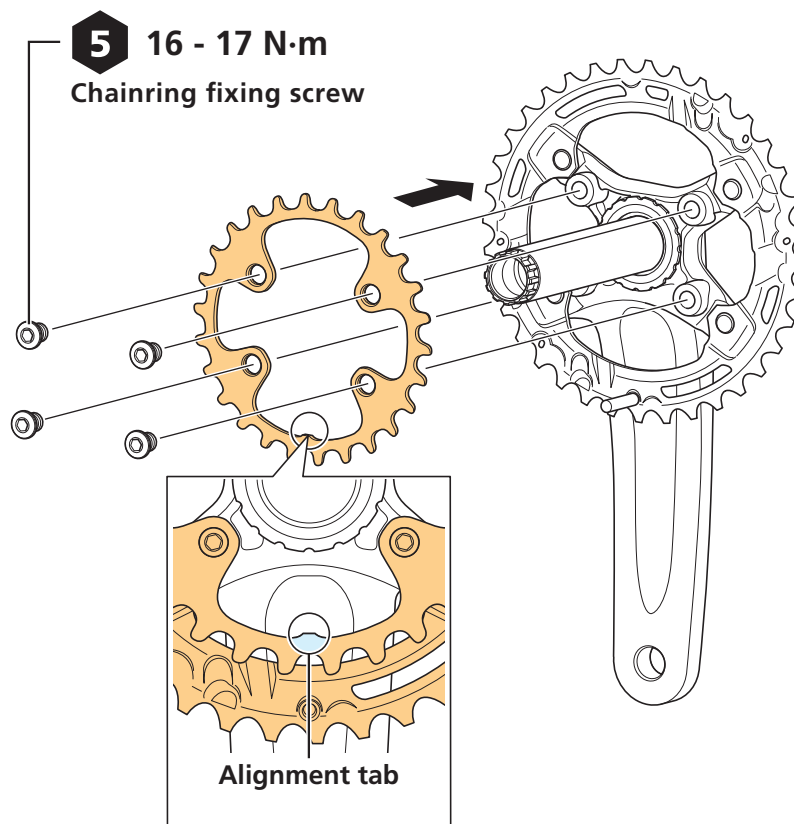
### 1. Install the largest chainring.

The marked side is the front and it should be set so that the chain drop prevention pin is positioned inside the crank arm.



## 2. Install the smallest chainring.

With the marked side facing inward, set the smallest chainring so that the alignment tab is positioned inside the crank arm.





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

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