Front Chainwheel

**MTB**
- **XTR**
  - FC-M9000
  - FC-M9020
- **DEORE XT**
  - FC-M780
  - FC-M782
  - FC-M785
  - FC-M8000
- **SLX**
  - FC-M670
  - FC-M672
  - FC-M675
  - FC-M677
- **ZEE**
  - FC-M640
  - FC-M645
- **DEORE**
  - FC-M610
  - FC-M612
  - FC-M615
  - FC-M617
- **ALIVIO**
  - FC-M4000
  - FC-M4050
  - FC-M4060

**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

**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

**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

• When installing components, be sure to follow the instructions that are given in the instruction manuals. 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:

• **WARNING**

• Intervals between maintenance depend on the use and riding circumstances. Clean regularly the chain with an appropriate chaincleaner. Never use alkali based or acid based solvents, such as rust cleaners. If those solvent be used 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 (105 - 122 in. lbs.). Furthermore, after riding approximately 100 km (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.
TO ENSURE SAFETY

⚠️ 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 gap or looseness in the connection. Also, be sure to retighten the crank arms and pedals at periodic intervals.
- Be sure to keep turning the crank arm during the lever operation.

< MTB / Trekking >

- When the chain is in the position shown in the illustration, the chain may contact the front chainrings or front derailleur and generate noise. If noise is a problem, shift the chain onto the next larger 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.

< ROAD >

- When the chain is in the position shown in the illustration, the chain may contact the front chainrings or front derailleur and generate noise. If noise is a problem, shift the chain onto the next larger rear sprocket or the one after.

- 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 it 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.
TO ENSURE SAFETY

- The chainrings 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 chainrings 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 left and right adapters, apply grease and be sure to install the inner cover. 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 chainrings during use, replace the chainrings 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-M9000 / FC-M9020 >

Fixing nuts are available for use with single and double types. Each has a different shape.


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

**List of tools to be used**

The following tools are needed to assemble this product:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm Allen key</td>
<td>TL-FC25</td>
</tr>
<tr>
<td>8 mm Allen key</td>
<td>TL-FC31</td>
</tr>
<tr>
<td>10 mm Allen key</td>
<td>TL-FC32</td>
</tr>
<tr>
<td>Adjustable wrench</td>
<td>TL-FC33</td>
</tr>
<tr>
<td>15 mm spanner</td>
<td>TL-FC34</td>
</tr>
<tr>
<td>16 mm spanner</td>
<td>TL-FC36</td>
</tr>
<tr>
<td>17 mm spanner</td>
<td>TL-BB12</td>
</tr>
<tr>
<td>19 mm spanner</td>
<td>TL-BB13</td>
</tr>
<tr>
<td>32 mm spanner</td>
<td>TL-UN66</td>
</tr>
<tr>
<td>TL-FC10</td>
<td>TL-UN74-S</td>
</tr>
<tr>
<td>TL-FC11</td>
<td>Hexalobular #27</td>
</tr>
<tr>
<td>TL-FC16</td>
<td>Hexalobular #30</td>
</tr>
<tr>
<td>TL-FC18</td>
<td>Plastic mallet</td>
</tr>
<tr>
<td>TL-FC24</td>
<td></td>
</tr>
</tbody>
</table>
**INSTALLATION**

List of tool combinations

Use the tools in the correct combination.

<table>
<thead>
<tr>
<th>&lt;SM-BB93&gt;</th>
<th>TL-FC24 &amp; TL-FC32</th>
<th>TL-FC24 &amp; TL-FC33</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-FC24</td>
<td>TL-FC24</td>
<td>TL-FC33</td>
</tr>
<tr>
<td>TL-FC32</td>
<td>TL-FC32</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL-FC24 &amp; TL-FC36</th>
<th>TL-FC34</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-FC24</td>
<td>TL-FC34</td>
</tr>
<tr>
<td>TL-FC36</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>&lt; SM-BBR60/BB-MT800 &gt;</th>
<th>TL-FC25 &amp; TL-FC32</th>
<th>TL-FC25 &amp; TL-FC33</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-FC25</td>
<td>TL-FC25</td>
<td>TL-FC33</td>
</tr>
<tr>
<td>TL-FC32</td>
<td>TL-FC32</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TL-FC25 &amp; TL-FC36</th>
<th>TL-FC37</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-FC25</td>
<td>TL-FC37</td>
</tr>
<tr>
<td>TL-FC36</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**

- For an impact wrench, use TL-FC34 for SM-BB93. For SM-BBR60/BB-MT800 use TL-FC37. Using other tools causes the tool to be damaged.
- When setting TL-FC24/25 to TL-FC32, check the installable position.
- TL-FC33/36 can be installed at any position.

When setting to TL-FC32, check the installable position.
HOLLOWTECH II / 2 piece crankset

Spacer installation method

1. Check whether the width of the bottom bracket shell is 68 mm or 73 mm.
   (a) Bottom bracket shell width

2. See the illustration for the normal type or chain case type, depending on the specification.

<table>
<thead>
<tr>
<th></th>
<th>68 mm</th>
<th>73 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(I)</td>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
</tr>
<tr>
<td>(II)</td>
<td><img src="image3" alt="Diagram" /></td>
<td><img src="image4" alt="Diagram" /></td>
</tr>
<tr>
<td>(III)</td>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
</tbody>
</table>

(a) Band Type
(b) Bracket Type
(c) Chaincase Stay Type

TECH TIPS

Spacer

- 2.5 mm
- 1.8 mm
- 0.7 mm

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

* 1.8 mm corresponds to the thickness of the chain case.

* SM-BB93 is an aluminum spacer.

NOTE

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

1. Grease the left and right adapters and use the Shimano original tool (A) to install the right hand adapter (C) of the bottom bracket, the inner cover (B) and the left hand adapter (D) of the bottom bracket.

   (A) TL-FC32
   (B) Inner cover
   (C) Right hand adapter (counterclockwise thread)
   (D) Left hand adapter (clockwise thread)
   (E) Apply grease
      Premium grease
      (Y-04110000)

   **Tightening torque:**
   
<table>
<thead>
<tr>
<th>TL-FC24</th>
<th>TL-FC25</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 - 50 N·m</td>
<td></td>
</tr>
<tr>
<td>(306 - 437 in. lbs.)</td>
<td></td>
</tr>
</tbody>
</table>

   **NOTE**
   TL-FC24/FC25 can be tightened by combining it with TL-FC32/36.

   **TECH TIPS**
   Turn the right adapter clockwise when the 70 mm [M36] bottom bracket is used.
   (Clockwise thread)

2. Insert the right crank arm unit.
Set the wide groove area of the crank arm (F) into the axle of the right crank arm unit where the groove is wide (G).

(F) Wide groove area on the left crank arm  
(G) Wide groove area on the axle  
(H) Apply grease  
Premium grease  
(Y-04110000)

NOTE
Insert a spacer for the road bike triple specification, for the comfort bike double guard specification and for FC-M9000-B1.

Use the Shimano original tool (I) to tighten the cap (J).

(I) TL-FC16  
(J) Cap  
(K) Apply grease  
Premium grease  
(Y-04110000)

<table>
<thead>
<tr>
<th>Tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7 - 1.5 N·m</td>
</tr>
<tr>
<td>{6.2 - 13 in. lbs.}</td>
</tr>
</tbody>
</table>
Push in the stopper plate (M) and check that the plate pin (L) is securely in place, and then tighten the bolt of the left crank arm.

(L) Plate pin
(M) Stopper plate

**NOTE**

- For MTB/Trekking
  Spacers may be necessary depending on the bottom bracket shell width. For details, refer to “Spacer installation method”.
- Set the stopper plate in the right direction as shown in figure.

**Tightening torque:**

<table>
<thead>
<tr>
<th>12 - 14 N·m</th>
</tr>
</thead>
<tbody>
<tr>
<td>{105 - 122 in. lbs.}</td>
</tr>
</tbody>
</table>
OCTALINK TYPE

Installation of the Bottom Bracket

Install using the Shimano original tool. First install the main body (B), then the adapter (A).

- **(A)** Adapter
- **(B)** Main body
- **(C)** Apply grease

Premium grease (Y-04110000)

**Tightening torque:**

| 50 - 70 N·m |
| {437 - 611 in. lbs.} |

**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 an Allen key (A) to install the front chainwheel.

- **(A)** 8 mm / 10 mm Allen key

**Tightening torque:**

| 35 - 50 N·m |
| {306 - 437 in. lbs.} |
Installation of the Bottom Bracket

Install using the Shimano original tool. First install the main body (B), then the adapter (A).

- Adapter (A)
- Main body (B)
- Front Chainwheel (C)
- Apply grease Premium grease (Y-04110000)

Tightening torque:

<table>
<thead>
<tr>
<th></th>
<th>50 - 70 N·m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>{437 - 611 in. lbs.}</td>
</tr>
</tbody>
</table>

**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 an Allen key (A) to install the front chainwheel.

- 8 mm Allen key (A)

Tightening torque:

<table>
<thead>
<tr>
<th></th>
<th>35 - 50 N·m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>{306 - 437 in. lbs.}</td>
</tr>
</tbody>
</table>
Use the Shimano original tool (B) to install the front chainwheel.

(B) TL-FC10/TL-FC11
(C) 15 mm spanner / 16 mm spanner

<table>
<thead>
<tr>
<th>Tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TL-FC10</td>
</tr>
<tr>
<td>TL-FC11</td>
</tr>
<tr>
<td>15mm</td>
</tr>
<tr>
<td>16mm</td>
</tr>
<tr>
<td>35 - 50 N·m</td>
</tr>
<tr>
<td>(306 - 437 in. lbs.)</td>
</tr>
</tbody>
</table>

TECH TIPS

When using TL-FC10 use a 16 mm spanner.
When using TL-FC11 use a 15 mm spanner.
PRESS-FIT BB
### PRESS-FIT BB

#### Adapter

- **(A)** Left hand adapter
- **(B)** Inner cover
- **(C)** Right hand adapter
- **(D)** Bottom bracket shell width
- **(E)** 2.5 mm spacer

| NOTE | Some models do not need spacers. |

#### Assembly example

<table>
<thead>
<tr>
<th>ROAD</th>
<th>Use for a bottom bracket shell width of 86.5 mm. The 2.5 mm spacer is not needed. Use the inner cover.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTB</td>
<td>The 2.5 mm spacer is not needed for a bottom bracket shell width of 92 mm. Use the inner cover.</td>
</tr>
<tr>
<td>MTB</td>
<td>For a bottom bracket shell width of 89.5 mm, insert the 2.5 mm spacer into the right hand side (between the frame and the right hand adapter). Use the inner cover.</td>
</tr>
</tbody>
</table>

| 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 (BB) into the hanger.

2. Insert the Shimano original tool (A) into the BB. (A) TL-BB12

3. Press fit the BB by tightening with a wrench while making sure that the contact surface of the BB stays parallel to the contact surface of the hanger.

4. Check to confirm that there is no gap between the BB and the hanger.
## Removal

<table>
<thead>
<tr>
<th>Step</th>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image" alt="Insert the Shimano original tool (A) into the bottom bracket (BB)." /></td>
<td>Insert the Shimano original tool (A) into the bottom bracket (BB).</td>
</tr>
<tr>
<td>2</td>
<td><img src="image" alt="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.)" /></td>
<td>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.)</td>
</tr>
<tr>
<td>3</td>
<td><img src="image" alt="Tap the Shimano original tool with a plastic mallet (B) until the end of the bottom bracket (BB) is ejected." /></td>
<td>Tap the Shimano original tool with a plastic mallet (B) until the end of the bottom bracket (BB) is ejected.</td>
</tr>
<tr>
<td>4</td>
<td><img src="image" alt="Tap out the other end of the bottom bracket (BB) in the same way." /></td>
<td>Tap out the other end of the bottom bracket (BB) in the same way.</td>
</tr>
</tbody>
</table>

### (A) TL-BB13

**NOTE**

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

### (B) Plastic mallet

**TECH TIPS**

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

Replacing chainrings

* For models that are not described here, refer to the chainrings installation section of General Operations.

Single gear type

Set the chainring so that the marked side (A) faces the front and the Δ mark (C) is on the inner side of the crank arm (B).

<table>
<thead>
<tr>
<th>(A) Mark</th>
<th>(B) Crank arm</th>
<th>(C) Δ mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tightening torque:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 - 14 N·m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{105 - 122 in. lbs.}</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Double gear type

1. Set the largest chainring so that the marked side (A) faces the front and the position of the chain drop prevention pin (C) is on the inner side of the crank arm (B).

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

<table>
<thead>
<tr>
<th>Tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm</td>
</tr>
<tr>
<td>#30</td>
</tr>
<tr>
<td>12 - 14 N·m</td>
</tr>
<tr>
<td>{105 - 122 in. lbs.}</td>
</tr>
</tbody>
</table>

2. Set the smallest chainring so that the convex sections (E) are on the inner side of the crank arm (D).

   - (D) Crank arm
   - (E) Convex section

<table>
<thead>
<tr>
<th>Tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm</td>
</tr>
<tr>
<td>#30</td>
</tr>
<tr>
<td>16 - 17 N·m</td>
</tr>
<tr>
<td>{140 - 148 in. lbs.}</td>
</tr>
</tbody>
</table>
Replacing chainrings

Triple gear type

1

Set the largest chainring so that the marked side (A) faces the front and the position of the chain drop prevention pin (B) is on the inner side of the crank arm.

(A) Mark
(B) Chain drop prevention pin

2

Set the middle chainring and the smallest chainring so that the convex sections (D) are on the inner side of the crank arm (C).

(C) Crank arm
(D) Convex section

＜Smallest chainring＞

<table>
<thead>
<tr>
<th>Tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 - 17 N·m</td>
</tr>
<tr>
<td>{140 - 148 in. lbs.}</td>
</tr>
</tbody>
</table>

＜Largest chainring / Middle chainring＞

<table>
<thead>
<tr>
<th>Tightening torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 - 14 N·m</td>
</tr>
<tr>
<td>{105 - 122 in. lbs.}</td>
</tr>
</tbody>
</table>

(E) Inner side

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 into the holes of the chainring.
MAINTENANCE
Replacing chainrings

Chain guide type

(A) Top guard
(B) Crank arm

NOTE
Set the top guard so that the surface of the top guard with the raised section around the hole faces outside, and so that the inside convex section is at the crank arm position.

Without chain guide type

(C) △ mark
(D) Mark
(E) Convex section

TECH TIPS
• For 45T/42T gear, install so that the marked surface faces outside, and so that the △ mark is at the crank arm position.
• For 39T gear, install so that the marked surface faces inside, and so that the inside convex section is at the crank arm position.
Replacing chainrings

Single gear type FC-M8000

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

(A) Mark
(B) Crank arm

Tightening torque:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tightening torque:</td>
<td></td>
</tr>
<tr>
<td>12 - 14 N·m</td>
<td>(105 - 122 in. lbs.)</td>
</tr>
</tbody>
</table>
Double gear type FC-M8000

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

<table>
<thead>
<tr>
<th>Low</th>
<th>Top</th>
<th>34T-BB</th>
<th>36T-BC</th>
<th>38T-BD</th>
</tr>
</thead>
<tbody>
<tr>
<td>24T-BB</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>26T-BC</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>28T-BD</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

1. Set the largest chainring so that the marked side (A) faces the front and the position of the chain drop prevention pin (C) is on the inner side of the crank arm (B).

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

   Tightening torque:
   12 - 14 N·m
   {105 - 122 in. lbs.}

2. Set the smallest chainring so that the convex sections (E) are on the inner side of the crank arm (D).

   (D) Crank arm
   (E) Convex section

   Tightening torque:
   16 - 17 N·m
   {140 - 148 in. lbs.}
Replacing chainrings

About FC-M8000-2, FC-M8000-B2 maintenance gears

<table>
<thead>
<tr>
<th>Small parts</th>
<th>Model No.</th>
<th>Chain drop prevention pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chainring</td>
<td>FC-M8000-2</td>
<td>Use with chain drop prevention pin cover.</td>
</tr>
<tr>
<td>Chainring</td>
<td>FC-M8000-B2</td>
<td>Remove chain drop prevention pin cover.</td>
</tr>
</tbody>
</table>

**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, it 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.
MAINTENANCE

Replacing chainrings

Triple gear type FC-M9020

NOTE

- FC-M9000 does not support triple gear types.
- Always use the gear in combinations of 40T-AR, 30T-AR and 22T-AR. If an unspecified gear is used, the chain may enter between the gears, damaging them.

1. Set the largest chainring so that the marked side (A) faces the front and the position of the chain drop prevention pin (C) is at the back of the crank arm (B).

2. Set the middle chainring and the smallest chainring so that the convex sections (E) are on the inner side of the crank arm (D).

Tightening torque:

8 - 10 N·m
{70 - 87 in. lbs.}

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

(D) Crank arm
(E) Convex section
Double gear type FC-M9000 / M9020

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

<table>
<thead>
<tr>
<th>Low</th>
<th>34T-AS</th>
<th>36T-AT</th>
<th>38T-AW</th>
</tr>
</thead>
<tbody>
<tr>
<td>24T-AS</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>26T-AT</td>
<td>-</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>28T-AW</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

Set the largest chainring so that the marked side faces the front and the position of the chain drop prevention pin (A) is on the inner side of the crank arm (B).

Set the smallest chainring so that the convex sections (C) are on the inner side of the crank arm (B).

- Each fixing nuts (F) has a different shape. Be sure to check the shape and attachment position of the fixing nuts before removing them.
- Attach the fixing nut (F) carefully in the correct position. If the attachment position of the fixing nut is incorrect, they cannot be installed.
- If the fixing nut (F) have a positioning marks (A, B, C, D) on their back, attach them according to the positioning mark as shown in the diagram.

WARNING
Fixing nuts are available for use with single and double types. Each has a different shape. Use the fixing nuts designed for use with double types.

Tightening torque:
8 - 10 N·m
(70 - 87 in. lbs.)
MAINTENANCE

Replacing chainrings

Single gear type FC-M9000 / M9020

1

Set the chainring so that the marked side (A) faces the front, as shown in the illustration.

(A) Mark
(B) Crank arm
(C) Fixing nut

Tightening torque:

<table>
<thead>
<tr>
<th></th>
<th>8 - 10 N·m</th>
</tr>
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<tbody>
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<td></td>
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</tbody>
</table>

2

(D) Fixing bolt
(E) Chainring
(F) Fixing nut
(G) Crank arm
(H) Spacer

WARNING

Fixing nuts are available for use with single and double types. Each has a different shape. Use the fixing nuts designed for use with single types.

NOTE

For 34T/36T, install the spacer between the gear and the crank.

All 4 fixing nuts (F) have different shapes so please check the back side for positioning marks (A, B, C, D) when attaching them according to the positions in the diagram.