

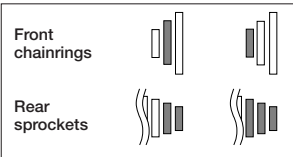
## General Safety Information

### ⚠ WARNING

- Be careful not to let the cuffs of your clothes get caught in the chain while riding, otherwise you may fall off the bicycle.
- Check that the tension of the chain is correct and that the chain is not damaged. If the tension is too weak or the chain is damaged, the chain should be replaced. If this is not done, the chain may break and cause serious injury.
- The two left crank arm mounting bolts should be tightened alternately in stages rather than each bolt being fully tightened all 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 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.
- 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.
- 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.
- **Obtain and read the service instructions carefully prior to installing the parts.** Loose, worn or damaged parts may cause the bicycle to fall over and serious injury may occur as a result. We strongly recommend only using genuine Shimano replacement parts.
- **Obtain and read the service instructions carefully prior to installing the parts.** If adjustments are not carried out correctly, the chain may come off and this may cause you to fall off the bicycle which could result in serious injury.
- Read these Technical Service Instructions carefully, and keep them in a safe place for later reference.

### Note

- In addition, if pedaling performance does not feel normal, check this once more.
- Before riding the bicycle, check that there is no play or looseness in the connection. Also, be sure to retighten the crank arms and pedals at periodic intervals.
- 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.
- Do not wash the bottom bracket with high-pressure jets of water.
- If you feel any looseness in the bearings, the bottom bracket should be replaced.
- If the amount of looseness in the links is so great that adjustment is not possible, you should replace the derailleur.
- You should periodically wash the chainrings in a neutral detergent and then lubricate them again. In addition, cleaning the chain with neutral detergent and lubricating it can be an effective way of extending the useful life of the chainrings and the chain.
- If the chain keeps coming off the chainrings during use, replace the chainrings and the chain.
- 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 the noise is a problem, shift the chain onto the next-larger rear sprocket or the one after.
- Apply grease to the left and right adapters before installing them.
- Be sure to read the service instructions for the Front Drive System in conjunction with these service instructions.
- Parts are not guaranteed against natural wear or deterioration resulting from normal use.
- For maximum performance we highly recommend Shimano lubricants and maintenance products
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.



## Technical Service Instructions

SI-0093A-001

# Front Chainwheel (2-piece crank)

**SHIMANO**

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Please note: specifications are subject to change for improvement without notice. (English) © Jan. 2009 by Shimano Inc. XBC IZM Printed in Malaysia.

## Specifications

### Chainwheel

Model number	FC-M590 / FC-M591-K	FC-M532 / FC-M533-K	FC-M542	FC-M543-K
Chainwheel tooth combination	44-32-22T / 48-36-26T	44-32-22T / 48-36-26T	44-32-22T	44-32-22T / 48-36-26T
Bolt circle diameter	104 mm / 64 mm			
Crank arm length	170 mm, 175 mm			
Chain line	50 mm			
Bottom bracket shell width (Thread dimensions)	68, 73 mm (1.37 X 24 T.P.I.)			
Applicable bottom bracket	SM-BB51	SM-BB50		

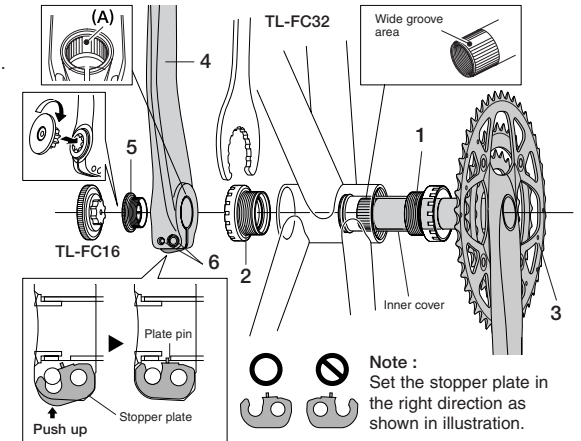
### Bottom Bracket

Model number	SM-BB51	SM-BB50
Applicable front chainwheel	FC-M590 / FC-M591-K	FC-M543-K / FC-M542 / FC-M533-K / FC-M532
Bottom bracket shell width (Thread dimensions)	68, 73 mm (1.37 X 24 T.P.I.)	

## Installation of the Front Chainwheel

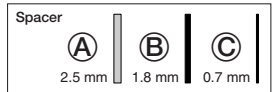
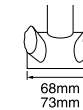
Follow the procedure in the figure.

- 1, 2 Use the special tool TL-FC32/36 to install the right adapter (counterclockwise thread) and the left adapter (clockwise thread). Tightening torque: 35 - 50 N·m {305 - 435 in. lbs.}
- 3 Insert the right crank unit.
- 4 Set section A of the left crank into the axle of the right crank unit where the groove is wide.
- 5 Use the TL-FC16 to tighten the cap. Tightening torque: 0.7 - 1.5 N·m {6 - 13 in. lbs.}
- 6 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. (5 mm Allen key)  
**Note :** Each of the bolts should be evenly and equally tightened to 12 - 14 N·m {106 - 122 in. lbs.}.

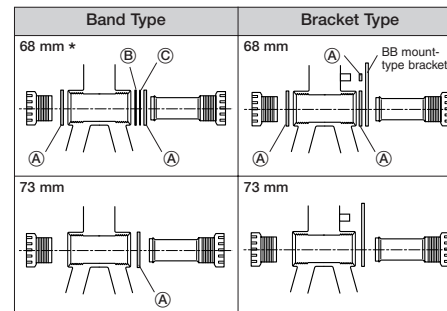


### ■ Spacer installation method

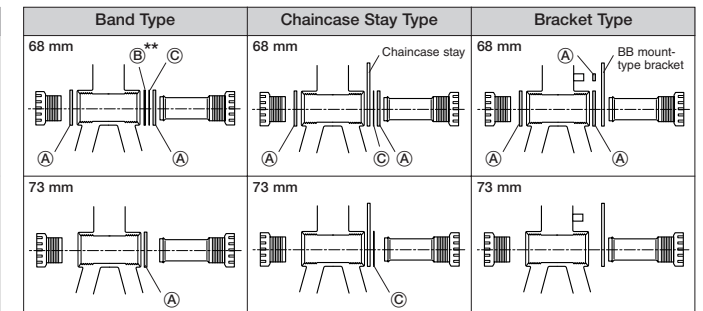
- (1) Check whether the width of the bottom bracket shell is 68 mm or 73 mm.
- (2) Next, install the adapter while referring to the illustrations below.



### < Normal type >



### < Chain case specifications >



\* 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.