

WARNING

- Use neutral detergent to clean the chain. Do not use alkali-based or acid based detergent such as rust cleaners as it may result in damage and/or failure of the chain.
- Use the reinforced connecting pin only for connecting the narrow type of chain.
- There are two different types of reinforced connecting pin available. Be sure to check the table below before selecting which pin to use. If connecting pins other than reinforced connecting pins are used, or if a reinforced connecting pin or tool which is not suitable for the type of chain is used, sufficient connection force may not be obtained, which could cause the chain to break or fall off.

Chain	Reinforced connecting pin	Chain tool
9-speed super narrow chain such as CN-7701 / CN-HG93	Silver	TL-CN31/TL-CN22
B-/7-/6-speed narrow chain such as CN-HG50 / CN-IG51	Black	TL-CN31/TL-CN22 and TL-CN30/TL-CN21

- If it is necessary to adjust the length of the chain due to a change in the number of sprocket teeth, make the cut at some other place than the place where the chain has been joined using a reinforced connecting pin or an end pin. The chain will be damaged if it is cut at a place where it has been joined with a reinforced connecting pin or an end pin.



- Obtain, read and carefully service instructions when installing parts. A loose, worn, or damaged parts may cause injury to the rider. We strongly recommend that only genuine Shimano replacement parts be used.

CAUTION

- Use a front chainwheel which is compatible with 9-speed chains in conjunction with Shimano CN-7701, CN-HG93 and CN-HG73 chains. If a chainwheel for an 8-speed chain or less is used, front chainwheel gear shifting problems may occur, or the chain pins might fall out, causing the chain to break.

Note

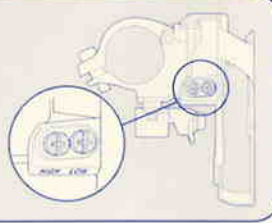
- Apply grease to the bottom bracket before installing it.
- For smooth operation, use the specified outer casing and the bottom bracket cable guide.
- This front derailleur is for triple front chainwheel use only. It cannot be used with the double front chainwheel, as the shifting points do not match.
- When installing the top route type, choose a frame that has three outer casing holders as shown in the illustration at right.
- Use an outer casing which still has some length to spare even when the handlebars are turned all the way to both sides. Furthermore, check that the shifting lever does not touch the bicycle frame when the handlebars are turned all the way.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- Use only the applicable chain and bottom bracket mentioned above.
- If using a chain case, use the FC-M510-K / BB-ES50-K combination.
- Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.
- For maximum performance we highly recommend Shimano lubricants and maintenance products.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.

Outer casing holders



FD-M510 Adjustment Bolts

Because of the different construction of the new link, the positions of the top and low adjustment bolts on the FD-M510 are reversed from the positions on previous front derailleurs.



SERVICE INSTRUCTIONS

SI-F740F

Front Drive System

Before use, read these instructions carefully, and follow them for correct use.

In order to realize the best performance, we recommend that the following combination be used.

Series	DEORE
Rapidfire M9	ST-M510, SL-M510
Outer casing	SP40 sealed
Front derailleur	FD-M510
Front chainwheel	FC-M510 / FC-M440
Bottom bracket	BB-ES50
Chain	CN-HG73
Bottom bracket cable guide	SM-SP17 / SM-BT17

Specifications

Front Derailleur	FD-M510
Model number	FD-M510
Applicable to both normal type and top route type	○
Front chainwheel tooth difference	22T
Min. difference between top and intermediate	12T
Front derailleur installation band diameter	S, M, L
Chainstay angle (°)	63°-66°, 66°-69°
Applicable chain line	47.5mm, 50.0mm
Applicable Bottom Bracket	BB-ES50

Installation band diameters:
S [28.6 mm], M [31.8 mm], L [34.9 mm]
(Use the adapter for S and M sizes.)



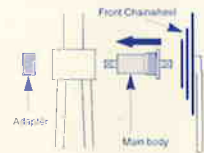
Chainwheel	FC-M510	FC-M510-K	FC-M440
Model number	FC-M510	FC-M510-K	FC-M440
Chainwheel tooth combination	44-32-22T	44-32-22T	44-32-22T
Bolt circle diameter	104 mm / 64 mm	104 mm / 64 mm	104 mm / 64 mm
Crank arm length	170 mm, 175 mm	170 mm, 175 mm	170 mm, 175 mm
Pedal thread dimensions	BC 9/16" x 20 T.P.I.	BC 9/16" x 20 T.P.I.	BC 9/16" x 20 T.P.I.
Applicable Bottom Bracket	BB-ES50	BB-ES50-K	BB-ES50

Bottom Bracket	BB-ES50	BB-ES50-K
Model number	BB-ES50	BB-ES50-K
Stamped marking	MM 110	LL 113
Spindle length	110 mm	113 mm
Chain line	47.5 mm	50 mm
Shell width	68, 70, 73 mm	68, 70, 73 mm
Thread dimensions	BC1.37 (68, 73mm) M36 (70 mm)	BC1.37 (68, 73mm) M36 (70 mm)

Installation of the Front Derailleur, Bottom Bracket and Front Chainwheel

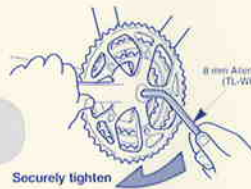
Install using the special tool TL-UN74-S.
First install the main body, then the adapter.

Adapter / bottom bracket
tightening torque:
50 - 70 Nm (435 - 608 in. lbs.)



Use an 8 mm Allen key to install the front chainwheel.

Front chainwheel
tightening torque:
35 - 50 Nm
(305 - 435 in. lbs.)



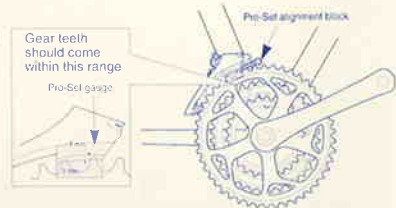
The level section of the chain guide outer plate should be directly above and parallel to the largest chainring. Secure using a 5 mm Allen key.

Tightening torque:
5 - 7 Nm (44 - 60 in. lbs.)



Adjust and then install the front derailleur as shown in the illustration. Do not remove the Pro-Set alignment block at this time.

Gear teeth should come within this range



Chain length

Add 2 links (with the chain on both the largest sprocket and the largest chainring)



Installation of the lever

Use a handlebar grip with a maximum outer diameter of 32 mm.

SL-M510

Tightening torque:
5 Nm (44 in. lbs.)



Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.

Tightening torque:
6 - 8 Nm (53 - 69 in. lbs.)

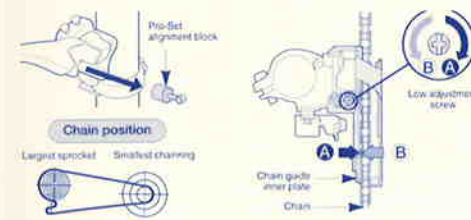


SIS adjustment

Be sure to follow the sequence described below.

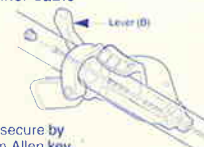
1. Low adjustment

First remove the Pro-Set alignment block.
Next, set so that the clearance between the chain guide inner plate and the chain is 0-0.5 mm.



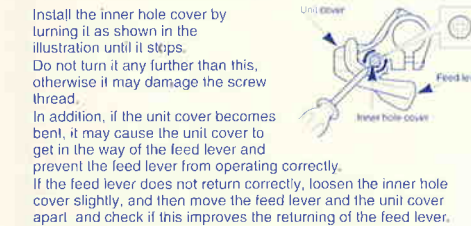
2. Connecting and securing the inner cable

Operate lever (B) 2 or more times, check on the indicator that the low position is correct, and then secure the inner cable.



While firmly pulling the inner cable, secure by tightening the fixing bolt with a 5 mm Allen key.

Tightening torque:
5 - 7 Nm (44 - 60 in. lbs.)



Tightening torque:
0.3 - 0.4 Nm (3 - 4 in. lbs.)

Inserting the inner cable

Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



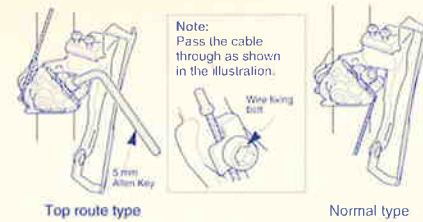
Cutting the outer casing

When cutting the outer casing, cut the opposite end to the end with the marking. After cutting the outer casing, make the end round so that the inside of the hole has a uniform diameter.

Attach the same outer end cap to the cut end of the outer casing.



Cut off the excess length of inner cable and then install the inner end cap.



Top route type

Normal type

Tightening torque:
5 - 7 Nm (44 - 60 in. lbs.)

After taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.

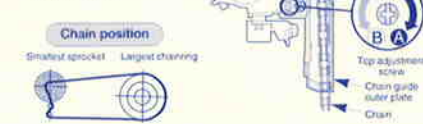
Normal type

Top route type



3. Top adjustment

Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.



Chain position

Smallest sprocket Largest chainring

Top adjustment screw Chain guide outer plate Chain

Replacement of the indicator

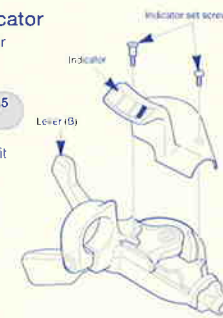
Disassembly and reassembly should only be carried out when replacing the indicator.

Removal of the indicator

1. Remove the two indicator set screws which are securing the indicator.

Tightening torque : 0.3 - 0.5 Nm (3 - 4 in. lbs.)

2. Remove the indicator unit as shown in the illustration.



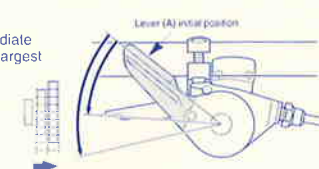
Gear shifting operation

Both lever (A) and lever (B) always return to the initial position when they are released after shifting. When operating one of the levers, always be sure to turn the crank arm at the same time.

To shift from a small chainring to a larger chainring
When lever (A) is pressed once, there is a shift of one step from a small chainring to a larger chainring.

Example:

from intermediate chainring to largest chainring.



4. Adjustment of the intermediate chaining

When carrying out adjustment, set the chain to the largest sprocket, and at the front, set the chain to the intermediate chaining. Adjust using the outer casing adjustment barrel so that the clearance between the chain guide inner plate and the chain is 0-0.5 mm.

Chain position

Largest sprocket Intermediate chaining

Outer casing adjustment barrel

Chain

Chain

Chain

5. Troubleshooting chart

After completion of steps 1 - 4, move the shifting lever to check the shifting. (This also applies if shifting becomes difficult during use.)

If the chain falls to the crank side,	Tighten the top adjustment screw clockwise (about 1/4 turn).
If shifting is difficult from the intermediate chaining to the largest chaining.	Loosen the top adjustment screw counterclockwise (about 1/8 turn).
If shifting is difficult from the intermediate chaining to the smallest chaining.	Loosen the low adjustment screw counterclockwise (about 1/4 turn).
If there is interference between the chain and the front derailleur inner plate at the largest chaining.	Tighten the top adjustment screw clockwise (about 1/8 turn).
If there is interference between the chain and the front derailleur outer plate at the largest chaining.	Loosen the top adjustment screw counterclockwise (about 1/8 turn).
If the intermediate chaining is skipped when shifting from the largest chaining.	Loosen the outer casing adjustment barrel counterclockwise (1 or 2 turns).
If there is interference between the chain and front derailleur inner plate when the rear sprocket is shifted to the largest sprocket at the intermediate chaining position.	Tighten the outer casing adjustment barrel clockwise (1 or 2 turns).
If the chain falls to the bottom bracket side,	Tighten the low adjustment screw clockwise (about 1/2 turn).

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ST-M510



5. Check the operation of the indicator. If it does not operate correctly, re-install the indicator by while taking particular note of steps 3. and 4.

Do not disassemble the indicator and shifting lever unit, as this may damage them or cause mis-operation.

This service instruction explains how to use and maintain the Shimano bicycle parts which have been used on your new bicycle. For any questions regarding your bicycle or other matters which are not related to Shimano parts, please contact the place of purchase or the bicycle manufacturer.

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