SERVICE INSTRUCTIONS **SI-R511A**

Rear 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	ALIVIO	ACERA-X
EZ-fire SL	ST-EF28	
Outer casing	SP40	
Rear derailleur	RD-MC16	RD-M291
Type	GS	
Freehub	FH-MC12 / FH-R050	FH-M290
Sprockets	7	
Cassette sprocket	CS-IG50	CS-HG50-C
Chain	CN-IG51	CN-HG50
Bottom bracket cable guide	SM-SP18 / SM-BT18	

Specifications

Rear Derailleur

Model number	RD-MC16	RD-M291
Type	GS	
Sprockets	7	
Total capacity	37T	35T
Largest sprocket	30T	28T
Smallest sprocket	11T	
Front chainwheel tooth difference	18T	
Applicable front chainwheel	FC-MC16	FC-M291
chainring tooth configuration	42T - 34T - 24T	

Cassette sprocket tooth combination

Type	Sprockets	Group name	Tooth combination
IG	7	aj	11 - 13 - 15 - 18 - 21 - 24 - 28T
		am	11 - 13 - 15 - 18 - 21 - 24 - 30T
HG	7	ac	11 - 13 - 15 - 18 - 21 - 24 - 28T

⚠ CAUTION

*** Be sure to use a Shimano IG chain with the CS-IG50 sprocket set, and use a Shimano HG chain with the CS-HG50-C sprocket set.**

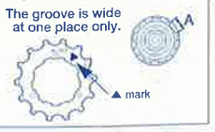
Note

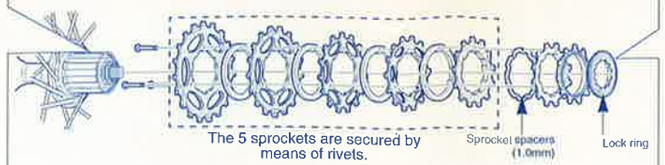
* Always be sure to use the IG sprocket set bearing the same group marks. Never use in combination with a sprocket bearing a different group mark.
* Because the high cable resistance of a frame with internal cable routing would impair the SIS function, this type of frame should not be used.
* Use an 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.
* For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.



Installation of the sprockets

For each sprocket, the surface that has the group mark should face outward and be positioned so that the triangle (▲) mark on each sprocket and the A part (where the groove width is wide) of the freewheel body are aligned.

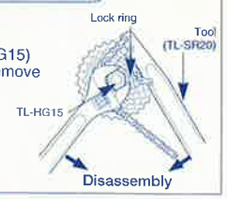




• For installation of the sprockets, use the special tool (TL-HG15) to tighten the lock ring.

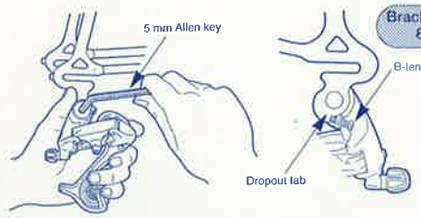
Tightening torque: 30 - 50 Nm {261 - 434 in. lbs.}

• To replace the sprockets, use the special tool (TL-HG15) and TL-SR20 to remove the lock ring.



Installation of the rear derailleur

When installing, be careful that deformation is not caused by the B-tension adjustment screw coming into contact with the dropout tab.

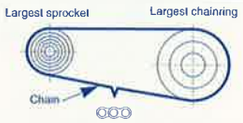


Bracket spindle tightening torque: 8 - 10 Nm {70 - 86 in. lbs.}

B-tension adjustment screw

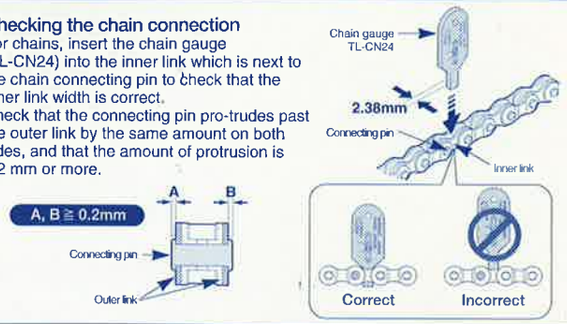
Chain length

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



Checking the chain connection

For chains, insert the chain gauge (TL-CN24) into the inner link which is next to the chain connecting pin to check that the inner link width is correct.
Check that the connecting pin pro-trudes past the outer link by the same amount on both sides, and that the amount of protrusion is 0.2 mm or more.



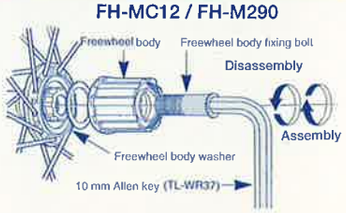
Replacement of the freewheel body

After removing the hub axle, remove the freewheel body fixing bolt (inside the freewheel body), and then replace the freewheel body.

Note:
Do not attempt to disassemble the freewheel body, because it may result in a malfunction.

Tightening torque: 35 - 50 Nm {305 - 434 in. lbs.}

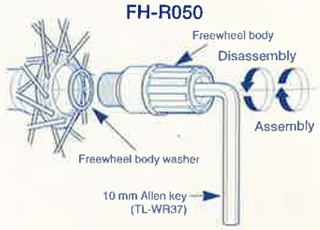
FH-MC12 / FH-M290



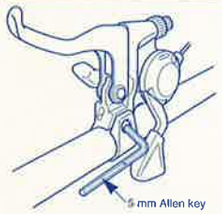
Note:
Do not attempt to disassemble the freewheel body, because it may result in a malfunction.
Special grease is used inside the freewheel body.
Do not lubricate the freewheel body with ordinary grease or oil, as this may cause problems with the operation of the clutch mechanism.

Tightening torque: 150 Nm {1300 in. lbs.}

FH-R050



Installation of the brake lever

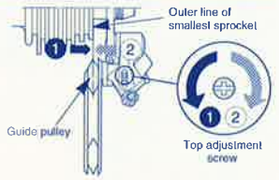


Use a handlebar grip with a maximum outer diameter of 32 mm.

Allen key tightening torque: 6 - 8 Nm {53 - 69 in. lbs.}

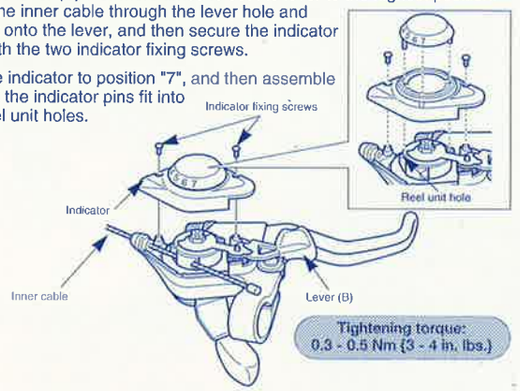
SIS Adjustment

1. Top adjustment
Turn the top adjustment screw to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear.



2. Connection and securing of the cable
Remove the two indicator fixing screws which are securing the indicator, and then remove the indicator unit as shown in the illustration.
Operate lever (B) 7 or more times to set the lever to the highest position.
Pass the inner cable through the lever hole and hook it onto the lever, and then secure the indicator unit with the two indicator fixing screws.

Set the indicator to position "7", and then assemble so that the indicator pins fit into the reel unit holes.



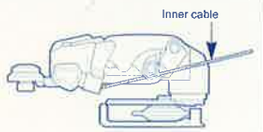
Tightening torque: 0.3 - 0.5 Nm {3 - 4 in. lbs.}

Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.



Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}

Note: Be sure to secure the inner cable as shown in the illustration below.



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

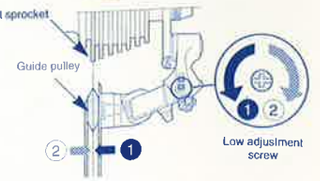
When cutting the outer casing, cut the opposite end to the end with the marking. After cutting the outer casing, makPd round so that the inside of the hole has a uniform diameter.



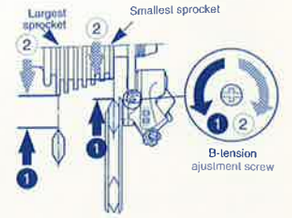
Attach the same outer end cap to the cut end of the outer casing.



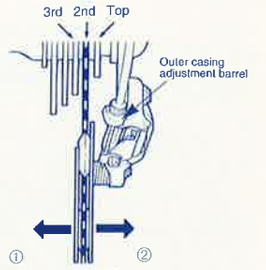
3. Low adjustment
Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



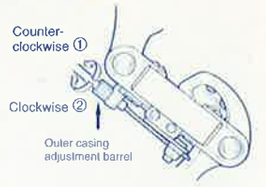
4. How to use the B-tension adjustment screw
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.



5. SIS Adjustment
(1) Operate the shifting lever to move the chain from the top gear to the 2nd gear.
* If the chain will **not move to the 2nd gear,** turn the outer casing adjustment barrel to increase the tension-----① **(counter clockwise)**
* If the chain **moves past the 2nd gear,** decrease the tension---② **(clockwise)**



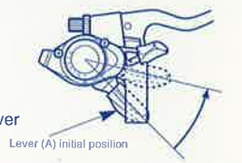
(2) Next with the chain on the 2nd gear, increase the inner cable tension ① while turning the crank arm forward. Stop turning the outer casing adjustment barrel **just before the chain makes noise against the 3rd gear.**
This completes the adjustment.



For the best SIS performance, periodically lubricate all power-transmission parts.

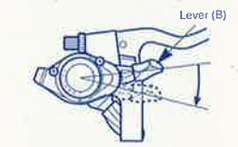
Gear shifting operation

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 sprocket to a larger sprocket

One-step shifting only is possible each time the lever is pressed.



To shift from a large sprocket to a smaller sprocket

Press once to shift one step from a larger to a smaller sprocket.

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.

SHIMANO

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