SERVICE INSTRUCTIONS SI-R561D

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	SHIMANO XTR
Rapidfire SL	SL-M951
Rapidfire Remote	SL-SS95
Outer casing	SIS-SP40 sealed outer casing / Rubber shield
Rear derailleur	RD-M951
Freehub	FH-M950
Sprockets	8
Cassette sprocket	CS-M950 / CS-M900-I
Chain	CN-IG90 / CN-HG91
Bottom bracket guide	SM-SP18

Specifications

Rear Derailleur

Type	GS
Total capacity	33 T or less
Largest sprocket	32 T
Smallest sprocket	11 T
Front chainwheel tooth difference	22 T

Cassette Sprocket Tooth Combination

Group name	Sprockets	Tooth combination
P	8	12, 14, 16, 18, 21, 24, 28, 32 T
Q	8	12, 13, 14, 16, 18, 21, 24, 28 T
ak	8	11, 13, 15, 17, 20, 23, 26, 30 T

Rapidfire SL

Model number	Sprockets
SL-M951	8

Freehub

Model number	Sprockets	No. of spoke holes
FH-M950	8	36 / 32

⚠ CAUTION

- **Be sure to use only the Shimano IG chain with the FC-M950 IG front chainwheel. The HG or UG type of chain cannot be used.**
- **Be sure to use only the Shimano HG chain with the FC-M950 HG front chainwheel. The IG type of chain cannot be used.**

Note

- Adjust the RD-M951 Rapid Rise rear derailleur (reverse spring type) from the low side.
- 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.
- Always be sure to use the HG/IG sprocket set bearing the same group marks. Never use in combination with a sprocket bearing a different group mark.

- 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 smooth operation, always be sure to use the SIS-SP sealed outer casing and the bottom bracket cable guide.**
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Installation of the brake lever

< SL-M951 >

Use a 5 mm Allen key to install.

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.

Note: If the brake lever is installed to the handlebar before the inner cable is installed, the handlebars will obstruct the wire end hooking cover and it will become more difficult the install the inner cable. Install the brake lever after installing the inner cable.

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

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

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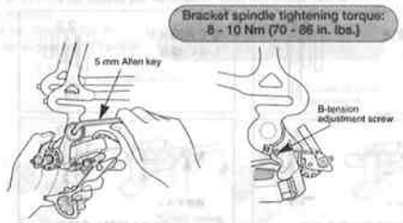
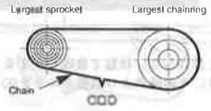
Installation of the rear derailleur

When installing, be careful that deformation is not caused by the B-tension adjustment screw coming into contact with the dropout tab. Do not remove the Pro-Set alignment block at this time.



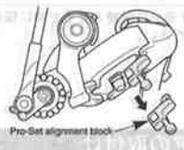
Chain length

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



Installation of the chain

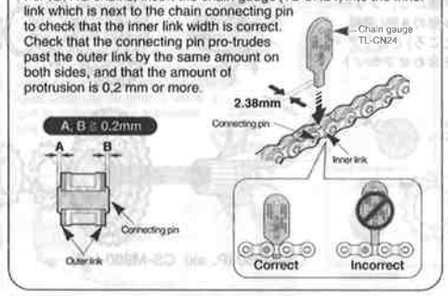
1. Install the chain with the Pro-Set alignment block still attached. After installing, remove the Pro-Set alignment block.



2. Turn the crank arm to set the derailleur to the low position.

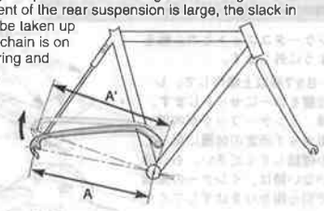
Checking the chain connection

For IG/HG 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.



Chain length on bicycles with rear suspension

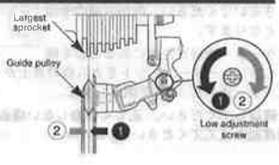
The length of A will vary depending on the movement of the rear suspension. Because of this, an excessive load may be placed on the drive system if the chain length is too short. Set the length of the chain by adding two links to the chain when the rear suspension is at a position where dimension "A" is longest and the chain is on the largest sprocket and the largest chainring. If the amount of movement of the rear suspension is large, the slack in the chain may not be taken up properly when the chain is on the smallest chainring and smallest sprocket.



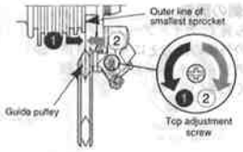
Add 2 links (with the chain on both the largest sprocket and the largest chainring)

SIS Adjustment

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



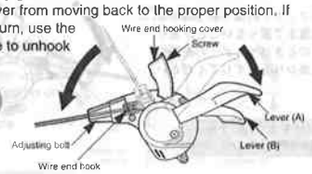
2. **Top adjustment**
Turn the top adjustment screw to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear.



3. **Connection and securing of the inner cable**
Operate lever (B) seven times or more. After checking on the indicator that the lever is at the lowest position, turn the cable adjusting barrel until the slit is on the same side as the handlebar.Remove the screw, open the wire end hooking cover as shown in the illustration, and then pull the wire end hook toward you (if lever (A) is moved as shown in the illustration to take up the play, the wire end hook will be easier to pull out), and then insert the inner cable from the bottom. Place the inner cable into the slit and then close the wire end hooking cover.

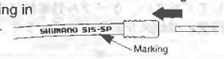
Note : The wire end hook may get hooked inside the lever mechanism, which will stop the lever from moving back to the proper position. If the lever does not return, use the end of the inner cable to unhook the wire end hook.

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



Inserting the inner cable

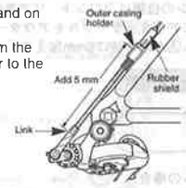
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



Place the outer casing so that it does not touch the basket and mudguard, otherwise it may cause a problem with the performance of the derailleur.

Set the outer casing so that its length is as follows.

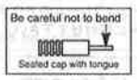
•If routing the casing upward:
(The chain should be on the largest chainring and on the largest sprocket.)
Add 5 mm to the length of the outer casing from the end that is inserted into the outer casing holder to the end which is inserted into the link.



•If routing the casing downward:
(The chain should be on the largest chainring and on the largest sprocket.)
Set so that the link stops in the position just before it touches the link stop.

Note regarding the sealed cap with tongue and rubber shield

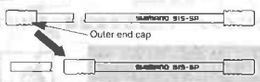
The sealed cap with tongue and the rubber shield should be installed to the outer casing stopper of the frame.



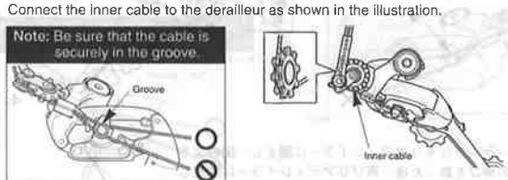
Cutting the outer casing

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.

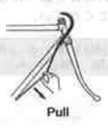


Connect the inner cable to the derailleur as shown in the illustration.

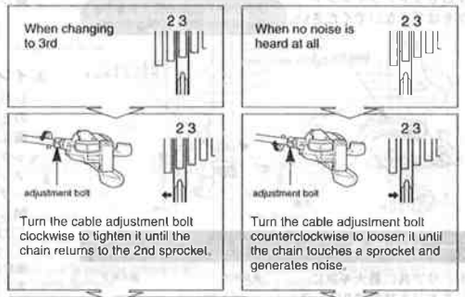


Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the rear derailleur as shown in the illustration.

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



4. **SIS adjustment**
Push lever (B) while turning the crank arm to move the derailleur to the largest sprocket. Then operate lever (A) once to move the derailleur to the 2nd-gear sprocket. After this, operate lever (A) just as far as the extent of play, and then turn the crank arm.



Best setting
The best setting is when the cable adjustment bolt is tightened (turned clockwise) until noise occurs without lever (A) being operated, and then loosened (turned counterclockwise) 90 - 180 degrees from that point.

Operate lever (A) to change gears, and check that no noise occurs in any of the gear positions.

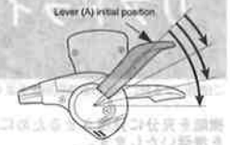
For the best SIS performance, periodically lubricate all power-transmission parts.

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.

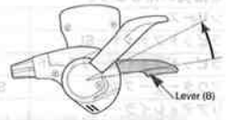
To shift from a large sprocket to a smaller sprocket

To shift one step only, press lever (A) to the (1) position. To shift two steps at one time, press to the (2) position. A maximum three-step shift can be made in this manner.



To shift from a small sprocket to a larger sprocket

Press lever (B) once to shift one step from a smaller to a larger sprocket.



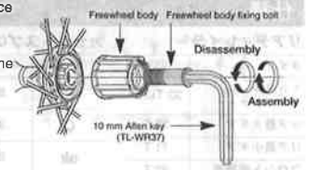
Note: Both operation methods are for when using in combination with the RD-M951. If using the RD-M950, the levers to be operated are opposite.

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.

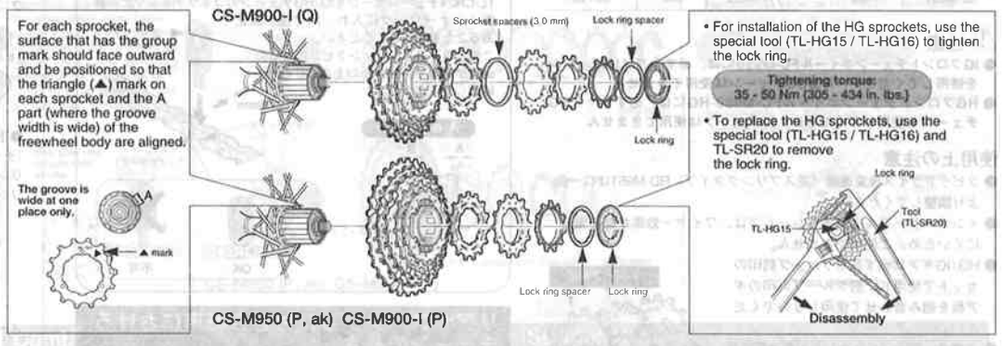
Note:
Do not attempt to disassemble the freewheel body, because it may result in a malfunction.

Tightening torque: 35 - 50 Nm (305 - 434 in. lbs.)



Installation of the HG 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 HG sprockets, use the special tool (TL-HG15 / TL-HG16) to tighten the lock ring.

Tightening torque: 35 - 50 Nm (305 - 434 in. lbs.)

- To replace the HG sprockets, use the special tool (TL-HG15 / TL-HG16) and TL-SR20 to remove the lock ring.

Replacement of the shifting lever unit and indicator (SL-M951)

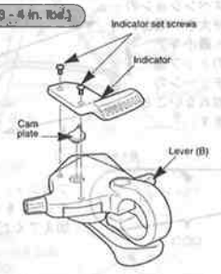
Disassembly and reassembly should only be carried out when replacing the indicator.

Removal of the indicator

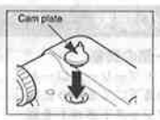
1. Remove the two indicator set screws which are securing the indicator.

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

2. Remove the indicator unit and cam plate as shown in the illustration.
3. Operate lever (B) at least seven times to set the lever to the lowest position. At this time, check that the lever returns to the proper position without the wire end hook becoming hooked inside the lever. If the lever does not return, use the end of the inner cable to unhook the wire end hook.



4. Push the cam plate onto the hexagonal end of the shaft so that the plate is in the position shown in the illustration.
Note: Do not deliberately turn this hexagonal shaft with any tools, as this will damage the internal mechanism.



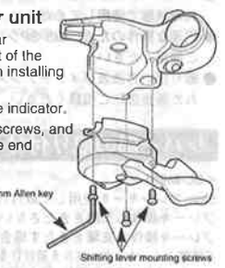
5. After checking that the indicator needle is at the left edge, set the indicator so that it is directly above the cam plate, and then secure it with the two indicator set screws.
6. Check the operation of the indicator. If it does not operate correctly, re-install the indicator while taking particular note of steps 3. to 5.

Disassembly and reassembly should only be carried out when replacing the shifting lever unit.

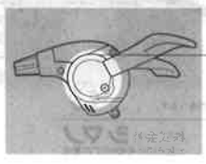
Replacement of the shifting lever unit

1. Loosen the cable fixing bolt (nut) of the rear derailleur, and then pull the inner cable out of the shifting lever unit in the same way as when installing the inner cable.
2. Carry out steps 1 - 2 for replacement of the indicator.
3. Remove the three shifting lever mounting screws, and then remove the shifting lever unit and wire end hooking cover as shown in the illustration.

Tightening torque : 0.5 - 0.8 Nm (4 - 7 in. lbs.)



4. To assemble, align the shifting lever unit and the brake lever bracket, install the wire end hooking cover while being careful that the pins at both ends go into their respective holes, and then secure the shifting lever mounting screws.
5. Carry out steps 3 - 5 for replacement of the indicator.



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