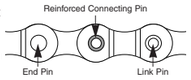
General Safety Information

⚠ WARNING

- Check that the wheels are fastened securely before riding the bicycle. If the wheels are loose in any way, they may come off the bicycle and serious injury may result.
- 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 pins 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	6.5mm	Silver	TL-CN32 / TL-CN27
8- / 7- / 6-speed narrow chain such as CN-HG50 / CN-HG40	7.1mm	Black	TL-CN32 / TL-CN27

- 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.



- 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.
- 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.
- **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

- If gear shifting operations do not feel smooth, wash the derailleur and lubricate all moving parts.
- If the amount of looseness in the links is so great that adjustment is not possible, you should replace the derailleur.
- You should periodically clean the derailleur and lubricate all moving parts (mechanism and pulleys).
- If gear shifting adjustment cannot be carried out, check the degree of parallelism at the rear end of the bicycle. Also check if the cable is lubricated and if the outer casing is too long or too short.
- If you hear abnormal noise as a result of looseness in a pulley, you should replace the pulley.
- If the wheel becomes stiff and difficult to turn, you should lubricate it with grease.
- Do not apply any oil to the inside of the hub, otherwise the grease will come out.
- You should periodically wash the sprockets in a neutral detergent and then lubricate them again. In addition, cleaning the chain with neutral detergent and lubricating it can be a effective way of extending the useful life of the sprockets and the chain.
- If the chain keeps coming off the sprockets during use, replace the sprockets and the chain.
- Use a frame with internal cable routing is strongly discouraged as it has tendencies to impair the SIS shifting function due to its high cable resistance.
- Always be sure to use the 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.
- A special grease is used for the gear shifting cable (SIS-SP41). Do not use DURA-ACE grease or other types of grease, otherwise they may cause deterioration in gear shifting performance.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- For smooth operation, use the specified outer casing and the bottom bracket cable guide.
- Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.
- Do not disassemble the indicator and shifting lever unit, as this may damage them or cause mis-operation.
- 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-6S90A-001

Rear Drive System

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

Series	Deore
RAPIDFIRE-Plus (Shift brake lever)	ST-M590
Outer casing	SIS-SP41
Rear derailleur	RD-M591
Type	SGS
Freehub	FH-M529 / FH-M590 / FH-M595 / FH-M629
Gears	9
Cassette sprocket	CS-HG61
Chain	CN-HG53
Bottom bracket guide	SM-SP17 / SM-BT17

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

Specifications

Rear Derailleur

Model number	RD-M591
Type	SGS
Gears	9
Total capacity	45T
Applicable sprocket combination	11 - 28T, 11 - 32T, 11 - 34T
Smallest sprocket	11T
Front chainwheel tooth difference	22T

Cassette sprocket tooth combination

Model number	Group name	Gears	Tooth combination
CS-HG61	**ar**	9	11, 12, 14, 16, 18, 21, 24, 28, 32T
	au	9	11, 13, 15, 17, 20, 23, 26, 30, 34T
	bg	9	11, 12, 13, 14, 16, 18, 21, 24, 28T

Freehub

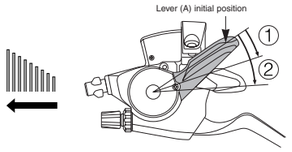
Model number	FH-M529 / FH-M590 / FH-M595 / FH-M629
Gears	9
No. of spoke holes	36 / 32

Gear shifting operation

This release lever is equipped with a 2-way release mechanism which allows release operations to be carried out by either pushing or pulling the lever.
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.

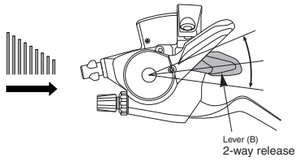
To shift from a small sprocket to a larger sprocket (Lever A)

To shift one step only, press lever (A) to the (1) position.
To shift two steps at one time, press to the (2) position.



To shift from a large sprocket to a smaller sprocket (Lever B)

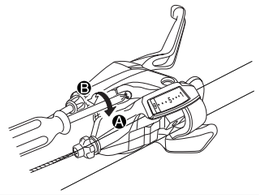
Press lever (B) once to shift one step from a larger to a smaller sprocket.



Adjusting the grip width

It is recommended that you adjust the grip widths of the levers to the most comfortable widths for gear shifting and braking.

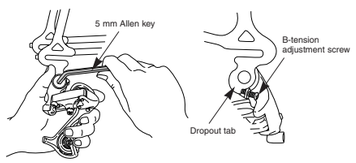
Ⓐ : Becomes narrower
Ⓑ : Becomes wider



Installation of the rear derailleur

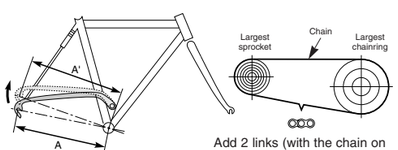
When installing, be careful not to let the B-tension adjustment screw come into contact with the dropout tab, otherwise deformation may result.

Bracket spindle Tightening torque : 8 - 10 N·m {70 - 86 in. lbs.}



Chain length on bicycles with rear suspension

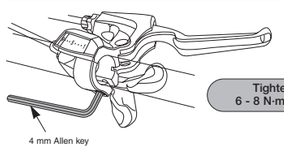
The length of A will vary depending on the movement of the rear suspension. Because of this, an excessive load may be placed on the drive system if the chain length is too short. Set the length of the chain by adding two links to the chain when the rear suspension is at a position where dimension "A" 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)

Installation of the lever

Use a handlebar grip with a maximum outer diameter of 36 mm.



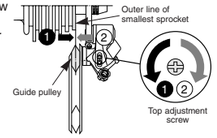
Tightening torque : 6 - 8 N·m {53 - 69 in. lbs.}

When installing the components to carbon frame/handle bar surfaces, verify with the manufacturer of the carbon frame/parts for their recommendation on tightening torque in order to prevent over tightening that can cause damage to the carbon material and/or under tightening that can cause lack of fixing strength for the components.

SIS Adjustment

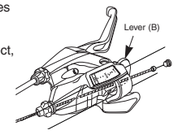
1. Top adjustment

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.

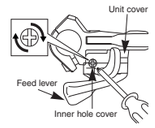


2. Connection and securing of the inner cable

Operate lever (B) 8 or more times to set the lever to the highest position, check on the indicator that the highest position is correct, and then install and adjust the inner cable.

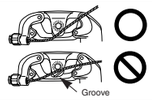


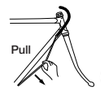
Install the inner hole cover by turning it as shown in the illustration until it stops. Do not turn it any further than this, otherwise it may damage the screw thread.



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.

Note: Be sure that the cable is securely in the groove.

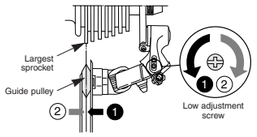




Tightening torque : 5 - 7 N·m {44 - 60 in. lbs.}

3. Low adjustment

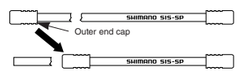
Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



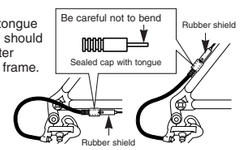
Cutting the outer casing

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.

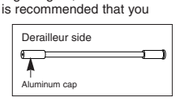


The sealed cap with tongue and the rubber shield should be installed to the outer casing stopper of the frame.



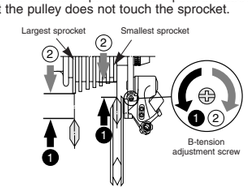
* If the rear derailleur moves to a large degree, such as in bicycles with rear suspension, it is recommended that you replace the cap with the accessory aluminum cap.

The end of the outer casing which has the aluminum cap should be at the derailleur side.



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.

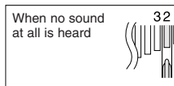


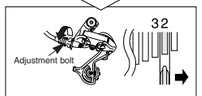
5. SIS Adjustment

Operate the shifting lever several times to move the chain to the 2nd sprocket. Then, while pressing the lever just enough to take up the play in the lever, turn the crank arm.

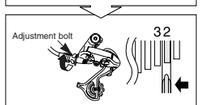
When shifting to 3rd

When no sound at all is heard





Tighten the outer casing adjustment barrel until the chain returns to the 2nd sprocket. (clockwise)



Loosen the outer casing adjustment barrel until the chain touches the 3rd sprocket and makes noise. (counter clockwise)

Best setting

The best setting is when the shifting lever is operated just enough to take up the play and the chain touches the 3rd sprocket and makes noise.

* Return the lever to its original position (the position where the lever is at the 2nd sprocket setting and it has been released) and then turn the crank arm clockwise. If the chain is touching the 3rd sprocket and making noise, turn the outer casing adjustment barrel clockwise slightly to tighten it until the noise stops and the chain runs smoothly.

Operate lever 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.

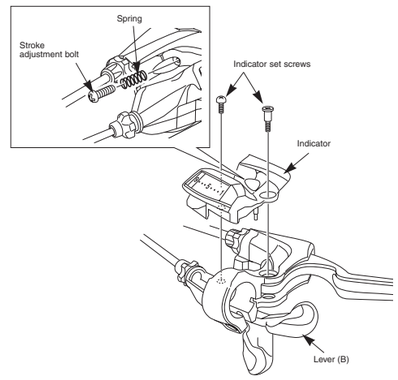
Replacement of the indicator

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

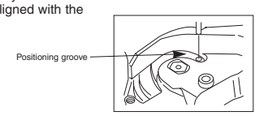
1. Remove the stroke adjustment bolt and the three indicator stopper screws which are securing the spring and the indicator.

Tightening torque : 0.3 - 0.5 N·m {3 - 4 in. lbs.}

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



3. Operate lever (B) at least eight times to set the lever to the highest position.
4. After checking that the indicator needle is at the left edge, install the indicator from directly above. Push the indicator downward from above until it is aligned with the positioning groove.



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

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

■ **Be sure to read these service instructions in conjunction with the service instructions for the FH-M529 / FH-M590 / FH-M595 / FH-M629, CS-HG61 before use.**