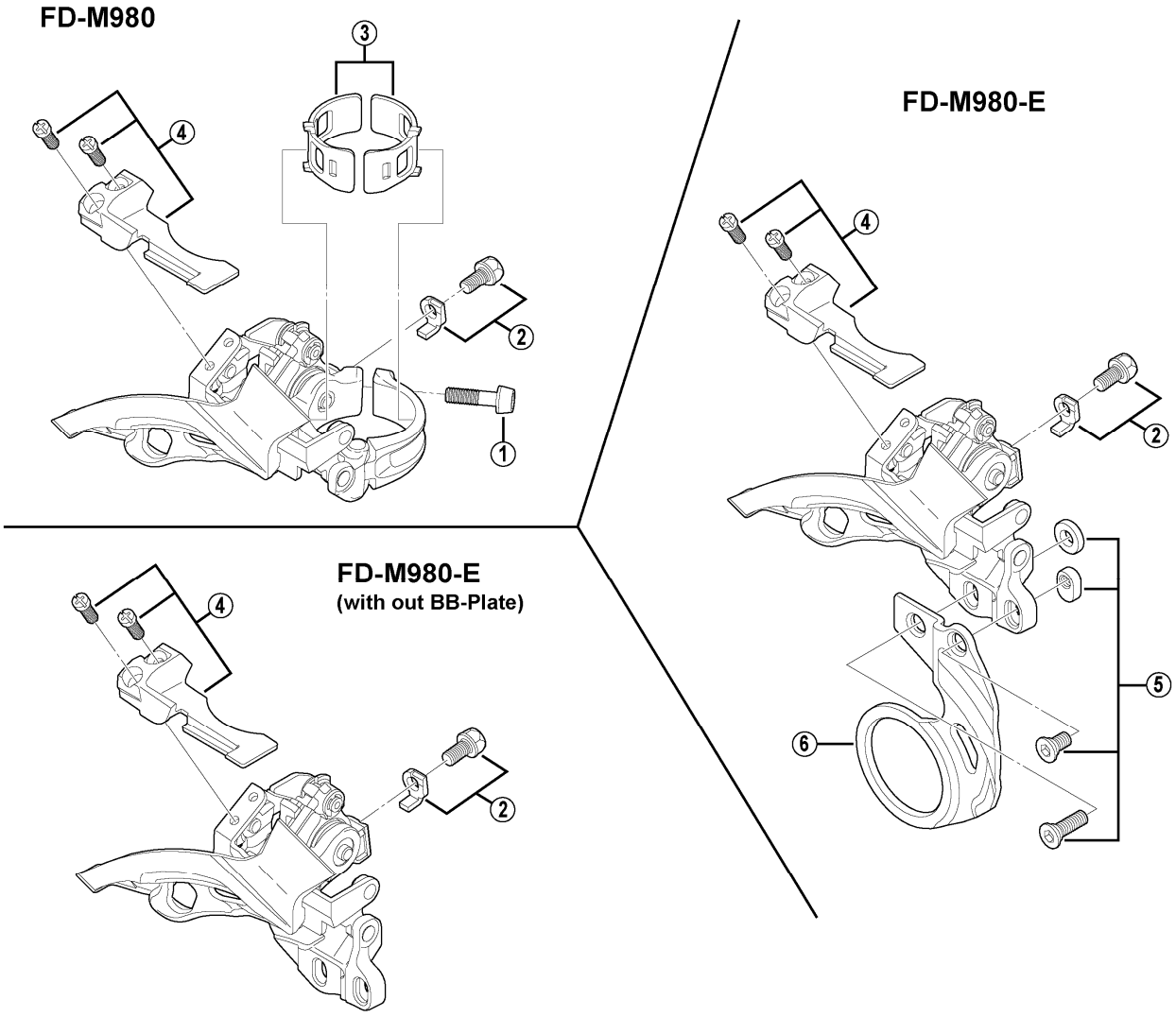
XTR Front Derailleur for Triple

FD-M980

FD-M980-E Bracket Type



ITEM NO.	SHIMANO CODE NO.	DESCRIPTION	INTERCHANGEABILITY		
				FD-M970-E	FD-M770-10
1	**Y5M407000**	Clamp Bolt (M5 x 17)			
2	**Y5M498010**	Cable Fixing Plate & Bolt (M5 x 9)		A	
3	**Y57Y98030**	SM-AD17S Clamp Band Adapters for S-size / ϕ28.6 mm (1-1/8")		A	
	Y57Y98040	SM-AD17M Clamp Band Adapters for M-size / ϕ31.8 mm (1-1/4")		A	
4	**Y5M498020**	Stroke Adjust Screws (M4 x 8.5) & Plate			
5	**Y5K498020**	Bracket Fixing Bolt Unit	A		
6	**Y5M550000**	BB-Plate			

A: Same parts.
B: Parts are usable, but differ in materirals, appearance, finish, size, etc.
Absence of mark indicates non-interchangeability.

Jun.-2010-3079

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Specifications are subject to change without notice.

SHIMANO

SI-5M40A-003-00

General Safety Information

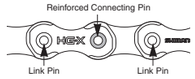
⚠ WARNING

"Maintenance interval depends on the usage and riding circumstances. Clean regularly the chain with an appropriate chaincleaner. Never use alkali based or acid based solvents such as rust cleaners. If those solvent be used chain might break and cause serious injury."

- **In order to obtain good gear shifting performance, applicable chains have a forward side and a reverse side, and the sides are marked so that the chains will face the correct way when installed. The proper design performance will be obtained when the chains are installed so that they face the correct way. If the chains are installed so that they face the opposite way, they may come off and the bicycle may fall over and serious injury may occur as a result.**
- Use the reinforced connecting pin only for connecting the narrow type of chain.
- 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
10-speed super narrow chain for MTB	with groove (3) with groove (2)	TL-CN32 TL-CN23 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. The chain will be damaged if it is cut at a place where it has been joined with a reinforced connecting pin.



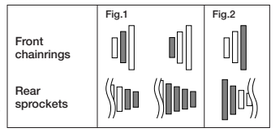
- Be careful not to let the cuffs of your clothes get caught in the chain while riding, otherwise you may fall off the bicycle.
- Check that the tension of the chain is correct and that the chain is not damaged. If the tension is too weak or the chain is damaged, the chain should be replaced. If this 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.

⚠ CAUTION

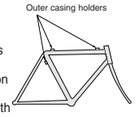
- If the chain is on the smallest or intermediate chainring, there is the danger of injury from the tips of the teeth on the largest chainring.

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.
- When installing the pedals, apply a small amount of grease to the threads to prevent the pedals from sticking. Use a torque wrench to securely tighten the pedals. Tightening torque: 35 - 55 N·m {305 - 479 in. lbs.}. The right-hand crank arm has a right-hand thread, and the left-hand crank arm has a left-hand thread.
- 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.
- Use a neutral detergent to clean the crank arm and the bottom bracket. Using alkaline or acidic detergents may cause discoloration.
- 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 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 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 if the chain is in the position shown in Figure 1. Shift the chain onto the next-smaller sprocket or the one after if it is in the position shown in Figure 2.



- For frames with suspension, the chain stay angle will vary depending on whether the bicycle is being ridden or not being ridden. When the bicycle is not being ridden and the chain is positioned on the largest/larger chainring and on the smallest sprocket, the chain guide outer plate of the front derailleur may touch the chain.
- The cuffs of your clothing may get dirty from the chain while riding.
- Apply grease to the left and right adapters before installing them.
- 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.
- A special grease is used for the gear shifting cable. 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.
- Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.
- If the brake fluid used in the oil disc brakes is of a type which tends to adhere to the plastic parts of the shifting lever, this may cause the plastic parts to crack or become discolored. Therefore, you should make sure that the brake fluid does not adhere to these plastic parts. The mineral oil which is used in SHIMANO disc brakes does not cause cracking or discoloration if it adheres to plastic parts, but such parts should be cleaned with alcohol beforehand to prevent foreign particles from adhering.
- Do not disassemble the shifting lever unit, as this may damage it or cause mis-operation.
- Be sure to read the service instructions for the Rear Drive System in conjunction with these service instructions (SL-M980-I).
- 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.

SI-5M40A-003 Technical Service Instructions

Front Drive System

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

Series	XTR
Rapidfire (Shifting lever)	SL-M980-L / SL-M980-IL
Outer casing	OT-SP41 (SIS-SP41)
Front derailleur	FD-M980 / FD-M980-E / FD-M981 / FD-M981-D
Front chainwheel	FC-M980
Chain	CN-M980
Bottom bracket cable guide	SM-SP17

Specifications

Front Derailleur

X = Available

Model number	FD-M980	FD-M980-E	FD-M981	FD-M981-D
Normal type	X			
Top route type	X			
Front chainwheel tooth difference	18T			
Min. difference between top and intermediate	10T			
Front derailleur installation band diameter	S, M, L	–	S, M, L	–
Chainstay angle (α)	66° - 69°			
Applicable chain line	50 mm			

Chainwheel

Model number	FC-M980
Chainwheel tooth combination	42-32-24T
Bolt circle diameter	104 mm / 64 mm
Crank arm length	165 mm, 170 mm, 175 mm, 180 mm
Chain line	50 mm
Bottom bracket shell width	68, 73 mm
Thread dimensions	BC1.37 (68, 73mm)
Bottom bracket adapters	SM-BB90-A

Installation band diameters:
S (28.6 mm), M (31.8 mm), L (34.9 mm)

When using the S, M size, use an installation band with a diameter of 28.6 mm, 31.8mm and install it to a L size adapter.

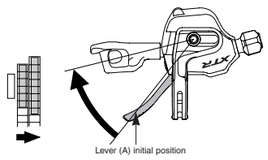


Gear shifting operation

The INSTANT RELEASE mechanism makes fast releasing possible because cable tension is released immediately when a lever is depressed.
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.

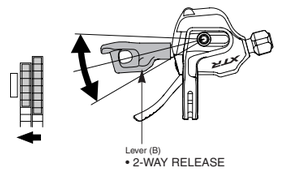
To shift from a small chainring to a larger chainring (Lever A)
When lever (A) is pressed once, there is a shift of one step from a small chainring to a larger chainring.

Example:
from intermediate chainring to largest chainring.



To shift from a large chainring to a smaller chainring (Lever B)
When lever (B) is pressed once, there is a shift of one step from a large chainring to a smaller chainring.

Example:
from largest chainring to intermediate chainring.



Installation of the Front Chainwheel

Follow the procedure in the figure.

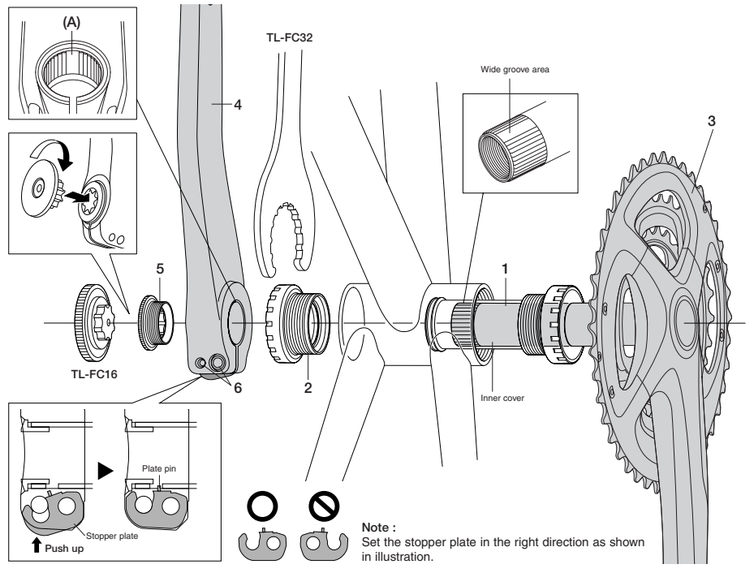
1, 2 Use the TL-FC32/33/36 special tool to install the right adapter (counterclockwise thread) of the bottom bracket, the inner cover and the left adapter (clockwise thread) of the bottom bracket.
Tightening torque: 35 - 50 N·m {305 - 435 in. lbs.}
Note : Spacers may be necessary depending on the bottom bracket shell width. For details, refer to "Spacer installation method".

3 Insert the right crank arm unit.

4 Set section A of the left crank arm into the axle of the right crank arm unit where the groove is wide.

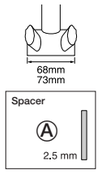
5 Use the TL-FC16/18 to tighten the cap.
Tightening torque: 0.7 - 1.5 N·m {6 - 13 in. lbs.}

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.}.

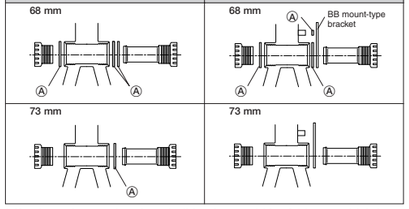


■ Spacer installation method

(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.



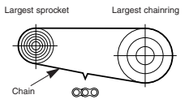
Band Type	Bracket Type
68 mm	68 mm
73 mm	73 mm



* If using a bottom bracket shell having a width of 68 mm which is a band type, an 1.8 mm spacer and a 0.7 mm spacer can be used together instead of a 2.5 mm spacer.

Chain length

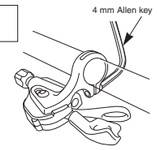
Add 2 links (with the chain on both the largest sprocket and the largest chainring)



Installation of the shifting lever

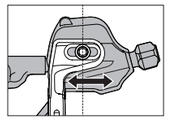
Use a handlebar grip with a maximum outer diameter of 32 mm.

Tightening torque : 3 N·m {27 in. lbs.}



The shifting lever position can be adjusted by sliding it to the left or right.

Tightening torque : 2.5 N·m {22 in. lbs.}



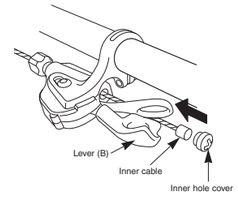
- Install the shifting lever in a position where it will not obstruct brake operation and gear shifting operation.
- Do not use in a combination which causes brake operation to be obstructed.

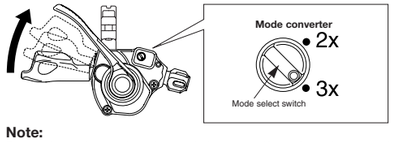
Note:
When installing the components to carbon frame/handle bar surfaces, verify with the manufacturer of the carbon frame/parts for their recommendation on tightening torque in order to prevent over tightening that can cause damage to the carbon material and/or under tightening that can cause lack of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

Refer to the FD-M980 / M980-E / M981 / M981-D (Front Derailleur) Service Instructions for details on installing the front derailleur and SIS adjustment.

Connecting and securing the inner cable

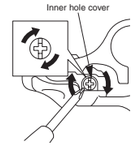
Switch the mode converter to the 3x (triple mode) position, and then check the lowest position. Operate lever B two times or more to set the lever to the lowest position. Remove the inner hole cover, and install the cable.





Note:
Do not force the mode select switch to turn. If you force it to turn, it will break.

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 thread on the cover.

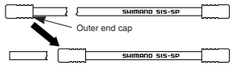


Cutting the outer casing

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.

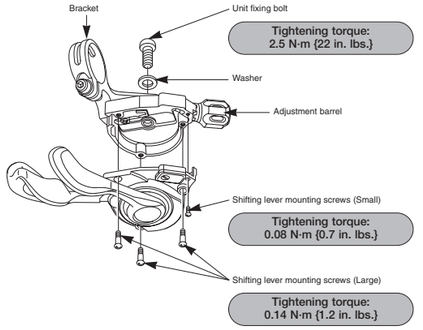


Attach the same outer end cap to the cut end of the outer casing.



Replacement of the shifting lever unit

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



1. Loosen the cable fixing bolt (nut) of the front derailleur, and then pull the inner cable out of the shifting lever unit in the same way as when installing the inner cable.
2. Remove the adjustment barrel.
3. First remove the unit fixing bolt.
4. Remove the four shifting lever mounting screws, and then remove the shifting lever unit as shown in the illustration.
5. To assemble, align the shifting lever unit and the bracket and then secure the shifting lever mounting screws.
6. Place the washer onto the bolt, and then secure the unit fixing bolt.
7. Install the adjustment barrel.

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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* Service Instructions in further languages are available at :
http://techdocs.shimano.com

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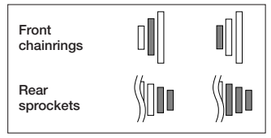
General Safety Information

⚠ 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.
- **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

- 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.
- 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.
- 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.
- For frames with suspension, the chain stay angle will vary depending on whether the bicycle is being ridden or not being ridden. When the bicycle is not being ridden and the chain is positioned on the largest/larger chainring and on the smallest sprocket, the chain guide outer plate of the front derailleur may touch the chain.
- Shimano does not provide the bottom bracket mount fixing bolts.
- For smooth operation, use the specified outer casing and the bottom bracket cable guide.
- 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.
- Be sure to read the service instructions for the Front Drive System in conjunction with these service instructions.



Technical Service Instructions **SI-5M50A-002**

FD-M980 / FD-M980-E FD-M981 / FD-M981-D

Front derailleur

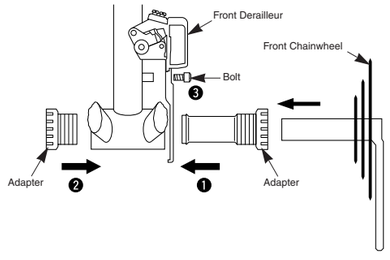
Specifications

X = Available

Model number	FD-M980	FD-M980-E	FD-M981	FD-M981-D
Normal type	X			
Top route type	X			
Front chainwheel tooth difference	18T			
Min. difference between top and intermediate	10T			
Front derailleur installation band diameter	S, M, L	–	S, M, L	–
Chainstay angle (α)	66° - 69°			
Applicable chain line	50 mm			
Applicable front chainwheel	For triple chainwheel only (42-32-24T)			

Installation of the front derailleur

For bracket type
Install as shown in the illustration.



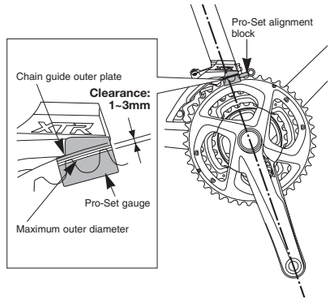
❶, ❷ Tightening torque : 35 - 50 N·m {305 - 435 in. lbs.}

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

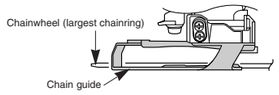
Note:
When installing the components to carbon frame/handle bar surfaces, verify with the manufacturer of the carbon frame/parts for their recommendation on tightening torque in order to prevent over tightening that can cause damage to the carbon material and/or under tightening that can cause lack of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

• FD-M980 / M981

Install the front derailleur as shown in the illustration. At this time, adjust the position of the front derailleur while installing it so that there is a clearance of 1 - 3 mm between the chain guide outer plate and the maximum outer diameter of the larger chainring.

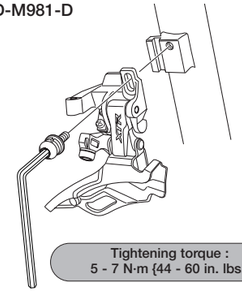


Set the height of the front derailleur. The flat section of the chain guide outer plate should be directly above and parallel to the largest chainring. Secure using a 5 mm allen key.

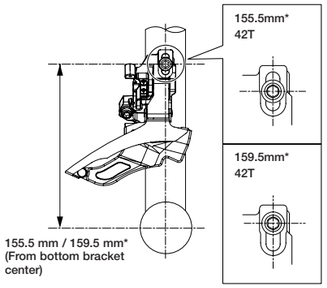


Tightening torque : 5 - 7 N·m {44 - 60 in. lbs.}

• FD-M981-D



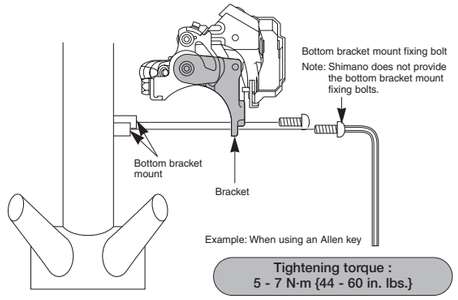
Tightening torque : 5 - 7 N·m {44 - 60 in. lbs.}



* The installation height will vary depending on the position of the frame washer.

Models without BB plate

• FD-M980-E

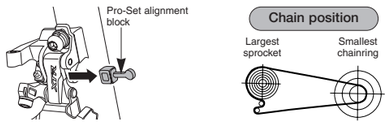


Tightening torque : 5 - 7 N·m {44 - 60 in. lbs.}

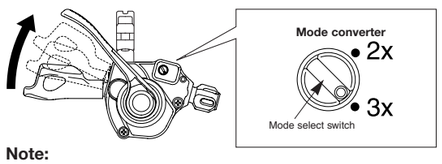
SIS Adjustment

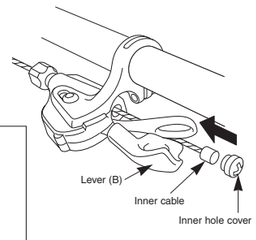
Be sure to follow the sequence described below.

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.



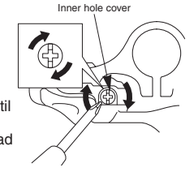
2. Connecting and securing the inner cable
Switch the mode converter to the 3x (triple mode) position, and then check the lowest position. Operate lever B two times or more to set the lever to the lowest position. Remove the inner hole cover, and install the cable.





Note:
Do not force the mode select switch to turn. If you force it to turn, it will break.

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 thread on the cover.

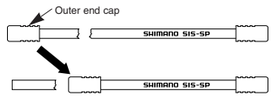


Cutting the outer casing

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.



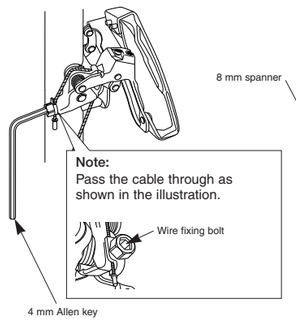
Attach the same outer end cap to the cut end of the outer casing.



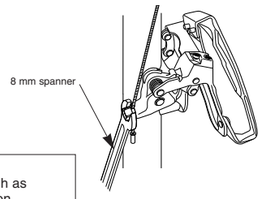
• FD-M980 / FD-M980-E FD-M980-E (Models without BB plate)

Use an 8 mm spanner or a 4 mm Allen key to tighten the wire fixing bolt.

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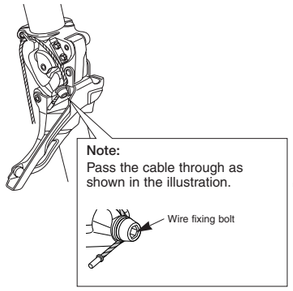


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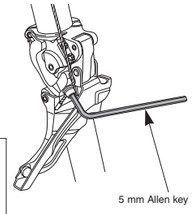


• FD-M981

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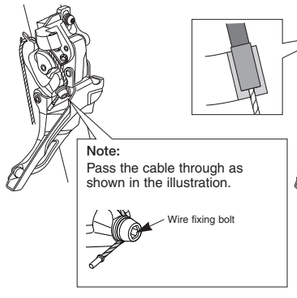


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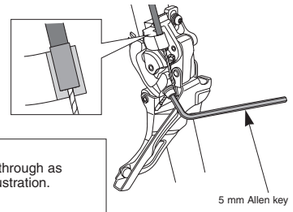


• FD-M981-D

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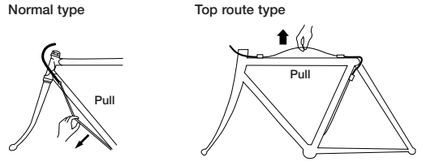


< Top route type >



Tightening torque : 6 - 7 N·m {52 - 60 in. lbs.}

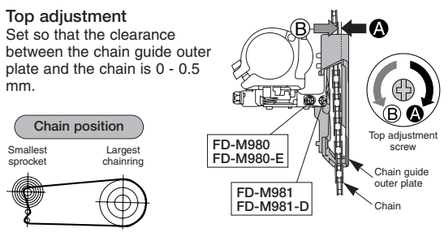
After taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.



3. Top adjustment

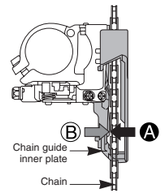
Set so that the clearance between the chain guide outer plate and the chain is 0 - 0.5 mm.

Chain position
Smallest sprocket
Largest chainring

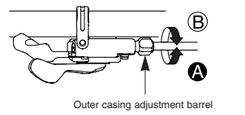


4. Adjustment of the intermediate chainring

When carrying out adjustment, set the chain to the largest sprocket, and at the front, set the chain to the intermediate chainring. 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 chainring



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 chainring to the largest chainring.	Loosen the top adjustment screw counterclockwise (about 1/8 turn).
If shifting is difficult from the intermediate chainring to the smallest chainring.	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 chainring.	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 chainring.	Loosen the top adjustment screw counterclockwise (about 1/8 turn).
If the intermediate chainring is skipped when shifting from the largest chainring.	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 when the chainwheel is at the intermediate chainring 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).
If the lever is stiff when shifting from the intermediate chainring to the largest chainring	Loosen the top adjustment screw counterclockwise (about 1/4 turn).

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