

# Front Drive System

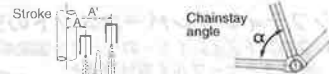
Before use, read these instructions carefully, and follow them for correct use.

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

Series	DEORE-XT
Rapidfire SL	SL-M740
Outer casing	SP40 sealed / Rubber shield
Front derailleur	FD-M739
Front chainwheel	FC-M739
Bottom bracket	BB-UN72
Chain	CN-IG90
Bottom bracket cable guide	SM-SP17

## Specifications

Front Derailleur	FD-M739	FD-M739-E
Model number	FD-M739	FD-M739-E
Normal type		○
Top route type		○
Front chainwheel tooth difference	22T	
Min. difference between top and intermediate	12T	
Front derailleur installation band diameter	S, M, L	
Stroke (A-A')	38 - 58	
Chainstay angle (α)	63°-66°, 66°-69°	
Applicable chain line	47.5mm, 50.0mm	
Applicable Bottom Bracket	BB-UN72	BB-UN72-E
Installation band diameters: S (28.6 mm), M (31.8 mm), L (34.9 mm)		



Chainwheel	FC-M739-4 Arm	FC-M739-5 Arm
Model number	FC-M739-4 Arm	FC-M739-5 Arm
Chainwheel tooth combination	42-32-22T	42-32-22T
Bolt circle diameter	104 mm / 64 mm	94 mm / 58 mm
Crank arm length	175 mm, 170 mm	
Pedal thread dimensions	BC 9/16" x 20 T.P.I. (English thread)	

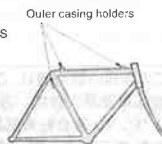
Bottom Bracket	BB-UN72	BB-UN72-E
Model number	BB-UN72	BB-UN72-E
Applicable Front derailleur	FD-M739/FD-M738	FD-M739-E
Stamped marking	MM110	MM113
Spindle length	110 mm (68.73)	113 mm (68.73)
Chain line	47.5 mm	50.0 mm
Thread dimensions	BC 1.37" X 24 T.P.I. (68, 73 mm)	

## CAUTION

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

## Note

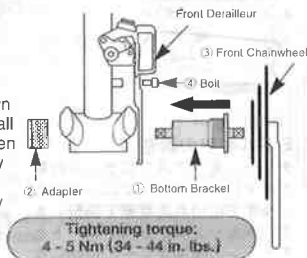
- Apply grease to the bottom bracket before installing it.
- For smooth operation, always be sure to use the specified outer casing and the bottom bracket cable guide.
- This front derailleur is for triple front chainwheel use only. It cannot be used with the double front chainwheel, as the shifting 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.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.



## Installation of the Front Derailleur, Bottom Bracket and Front Chainwheel

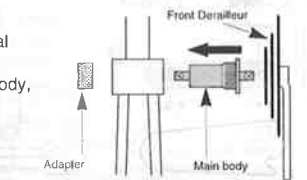
### FD-M739-E (a special frame with mounting bosses is required)

Use the special tools (TL-UN70 and TL-UN73) to install the bottom bracket (1) and the front derailleur so that they face as shown in the illustration. Install the adapter (2), and then use an 8 mm Allen key (3) to install the front chainwheel. Secure by using the bolt (4).



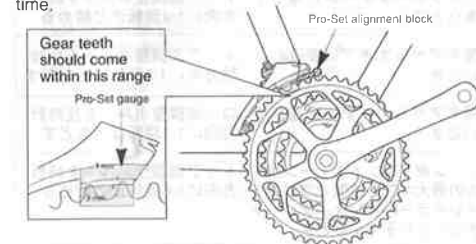
### FD-M739

Install using the special tool TL-UN73. First install the main body, then the adapter.



Adapter / bottom bracket tightening torque: 50 - 70 Nm (435 - 608 in. lbs.)  
Front chainwheel tightening torque: 35 - 50 Nm (305 - 435 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.



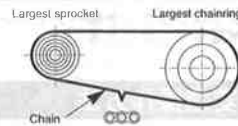
The level section of the chain guide outer plate should be directly above and parallel to the largest chainring. Secure using a 5 mm Allen key.



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

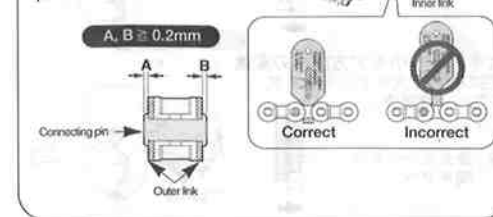
## Chain length

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



## Checking the chain connection

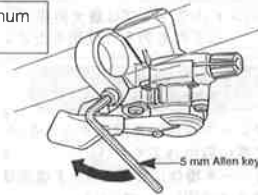
For IG chains, insert the chain gauge (TL-CN24) into the inner link which is next to the chain connecting pin to check that the inner link width is correct. Check that the connecting pin protrudes past the outer link by the same amount on both sides, and that the amount of protrusion is 0.2 mm or more.



## Mounting the shifting lever

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

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



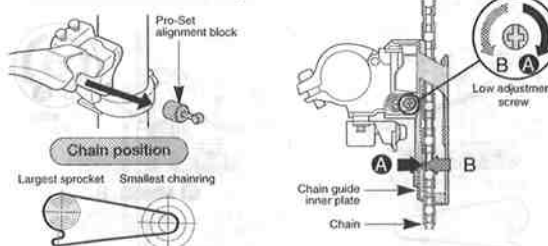
Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.

## 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.

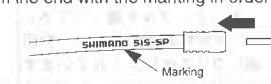


### 2. Connection and securing of the inner cable

Operate lever (B) two times or more. After checking on the indicator that the lever is at the lowest position, turn the cable adjusting bolt until the slit is on the same side as the handlebar. 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.

### Inserting the inner cable

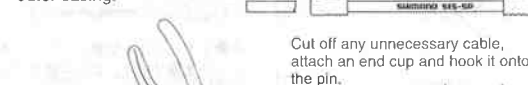
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



### Cutting the outer casing

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

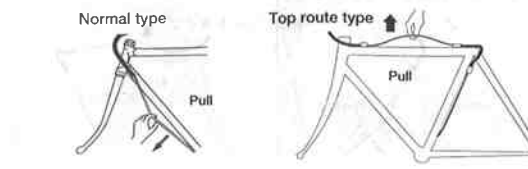
Attach the same outer end cap to the cut end of the outer casing.



Note: Pass the cable through as shown in the illustration.



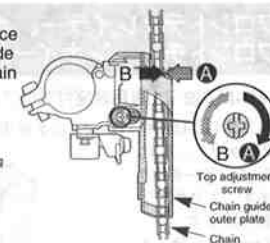
After taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.



### 3. Top adjustment

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

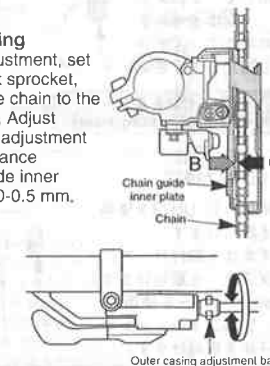
Chain position: Smallest sprocket, Largest chainring



### 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).

## Gear shifting operation

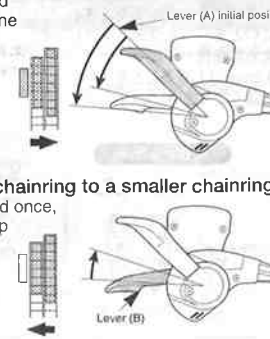
Both lever (A) and lever (B) always return to the initial position when they are released after shifting. When operating one of the levers, always be sure to turn the crank arm at the same time.

### 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.

### To shift from a large chainring to a smaller chainring

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.



## Replacement of the shifting lever unit and 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 and cam plate as shown in the illustration.

3. Operate lever (B) two times or more 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 right 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 by while taking particular note of steps 3. and 5.

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

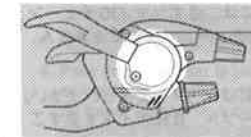
## Replacement of the shifting lever unit

- 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.
- Carry out steps 1 - 2 for replacement of the indicator.
- 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.

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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