

Service Instructions

ST-6400

Shimano
Total
Integration

For proper and safe performance, read and follow these instructions carefully.

SHIMANO
TOTAL
INTEGRATION

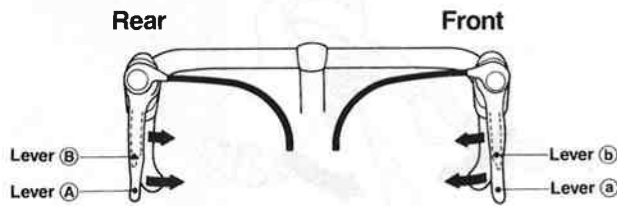
SHIMANO 600 ULTEGRA

Shimano Total Integration Features

Shimano Total Integration features a dual action control lever which actuates the brakes like a conventional brake lever, and shifts the gears when moved inward toward the center line of the bicycle. Gear shifting is now possible without ever taking your hands off the brake hoods or drops.

Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.

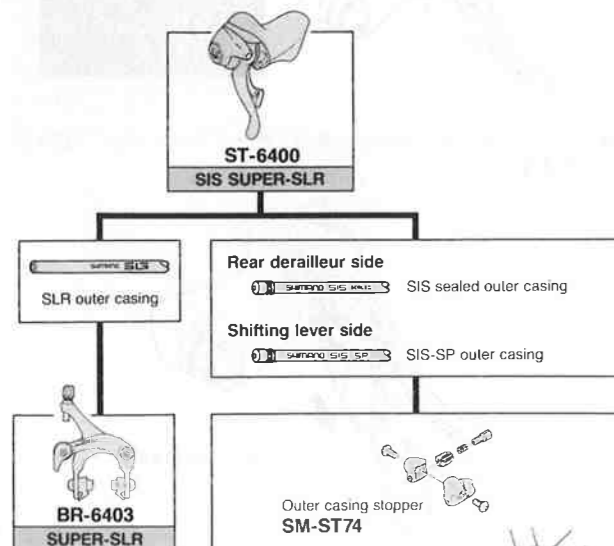
Operation



Lever (A): Shifts from smaller to larger rear sprocket.
Lever (B): Shifts from larger to smaller rear sprocket.
Lever (a): Shifts from smaller to larger chainwheel.
Lever (b): Shifts from larger to smaller chainwheel.

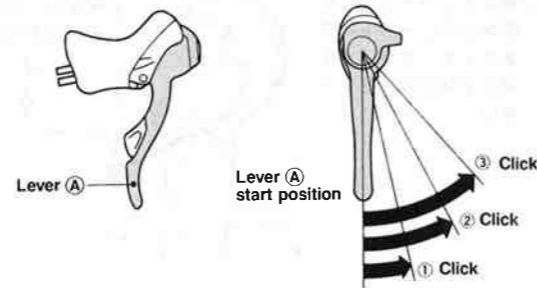
All levers return to the starting position when released.

Combinations Chart



Operation of rear derailleur levers

• **Lever (A):** Shifts from smaller to larger rear sprocket. Lever (A) has click stops at positions ①, ②, and ③.



①: Shifts one sprocket
Ex.: from 3rd to 4th

②: Quick-shifts two sprockets
Ex.: from 3rd to 5th

③: Quick-shifts three sprockets
Ex.: from 3rd to 6th

• **Lever (B):** Shifts from larger to smaller rear sprocket. Press lever (B) once to shift from a larger to one smaller sprocket.



Ex.: from 4th to 3rd

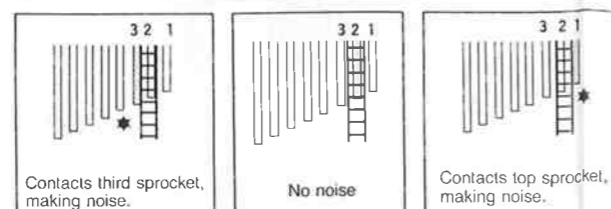
Caution on operation

Lever (B) will also move when lever (A) is operated, but be careful not to apply pressure to lever (B). Similarly, be careful not to press lever (A) when operating lever (B). Gears will not shift when both levers are pressed simultaneously.

Adjustment

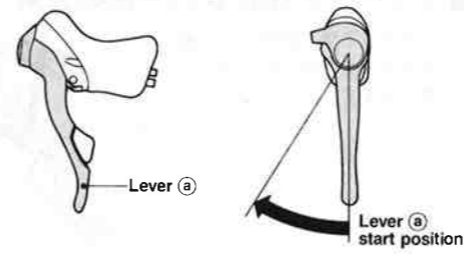
SIS adjustment

Operate lever (A) to set the chain to the second from top sprocket.



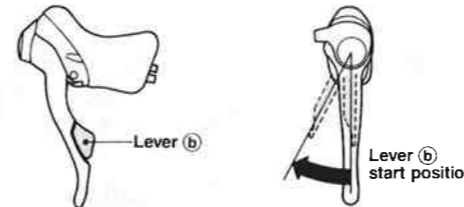
Operation of front derailleur levers

• **Lever (a):** Shifts from smaller to larger front chainring.



If operation of lever (a) does not complete the chainring shift stroke, operate lever (a) again for the distance (x') to complete that part of the lever stroke (x) which was short.

• **Lever (b):** Shifts from larger to smaller front chainring.

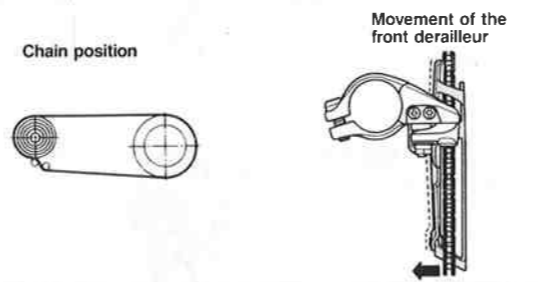


When lever (b) is operated, there is one click when trimming (the noise prevention mechanism) engages, and a second stronger click when the gear shift stroke is completed. After trimming, the next push will complete the gear shift stroke to the smaller front chainring.



Trimming (noise prevention operation)

If the chain is on the large front chainwheel and the large rear sprocket, the chain will rub against the front derailleur plate, producing a characteristic noise. When this happens, press lever (b) lightly (to the point where it clicks); this causes the front derailleur to move slightly towards the smaller chainwheel, thereby eliminating the noise.

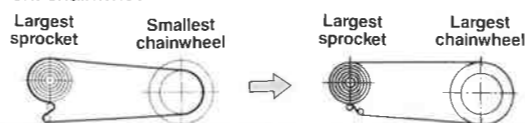


Cautions on operation

Lever (b) will also move when lever (a) is operated, but be careful not to apply pressure to lever (b). Similarly, be careful not to press lever (a) when operating lever (b). Gears will not shift when both levers are pressed simultaneously.

Front gear shift adjustment

1. Set the chain on the largest rear sprocket and the largest front chainwheel.

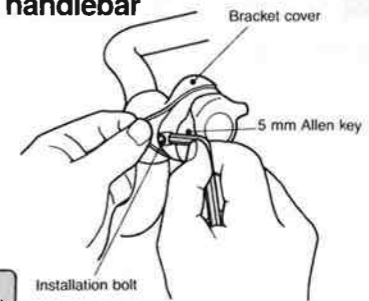


2. Complete the trimming operation.

Installation

Installation to the handlebar

Secure the assembly with the installation bolt on the outside of the bracket. Pull the bracket cover back and use a 5 mm Allen key to tighten the bolt.



Tightening torque:
60 ~ 80 kgfcm (50 ~ 70 in.lbs.)

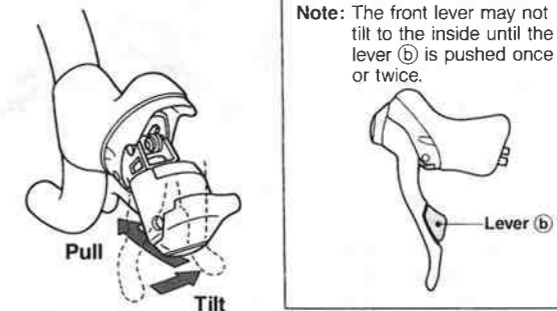
Installation of the brake cable

Cable used



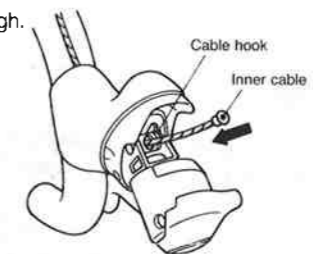
Be sure to leave some excess cable, even if cutting it to the full length of the handlebars.

1. Tilt the lever in (as when shifting) to make it easier to pass the cable through the cable hook.



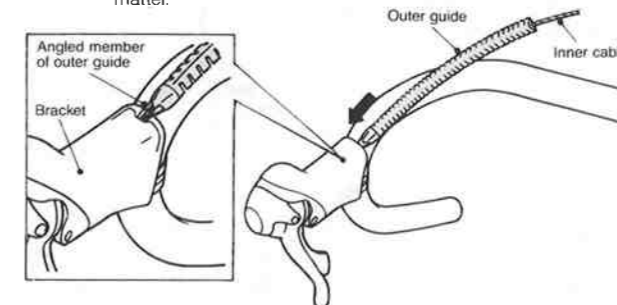
Note: The front lever may not tilt to the inside until the lever (b) is pushed once or twice.

2. Pass the inner cable through.



3. Fix the outer guide to the inner cable, and set the angled member in the bracket.

Note: Do not wipe off the grease on the inner cable. Also, be careful that the inner cable does not pick up dust and foreign matter.



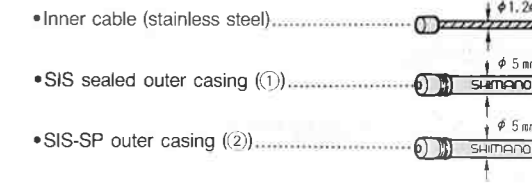
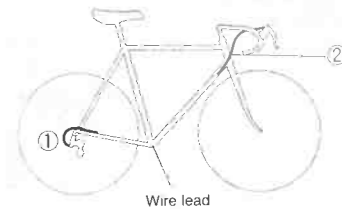
4. Set the outer casing on the inner cable, and in the bracket along the outer guide.

Make sure that the inner end is firmly seated in the cable hook.



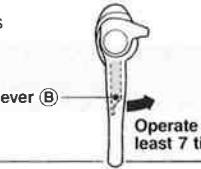
Installing the shifting cable

Cable used

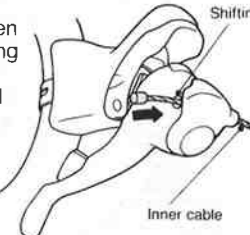


• **Rear lever**

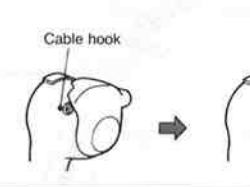
Push lever (B) at least seven times to make sure the mechanism is in top gear before installing.



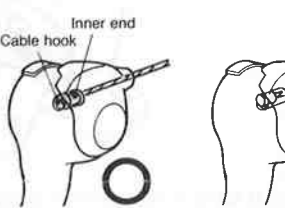
Pull the brake lever (as when braking) to reveal the shifting cable hole. Pass the inner cable through this hole and set it in the outer casing.



If the cable hook does not align with the shifting cable hole, press lever (B) again until it does, and then install the cable.

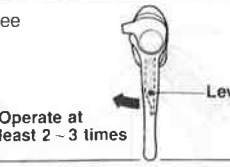


Note: Make sure that the inner end is firmly set inside the cable hook.

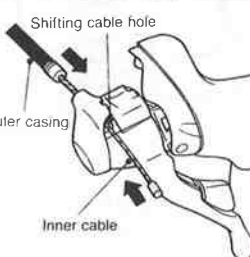


• **Front lever**

Push lever (a) at least two ~ three times before installing.

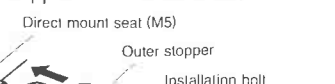


Pull the brake lever (as when braking) to pass the inner cable through the shifting cable hole, and set it in the outer casing.



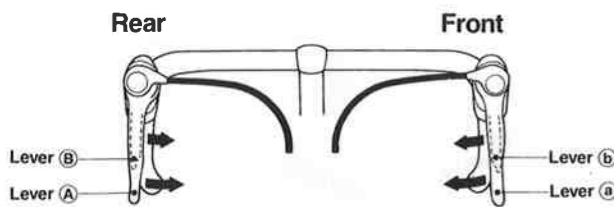
• **Outer stopper**

1. Install the outer stopper to the down tube.



Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.

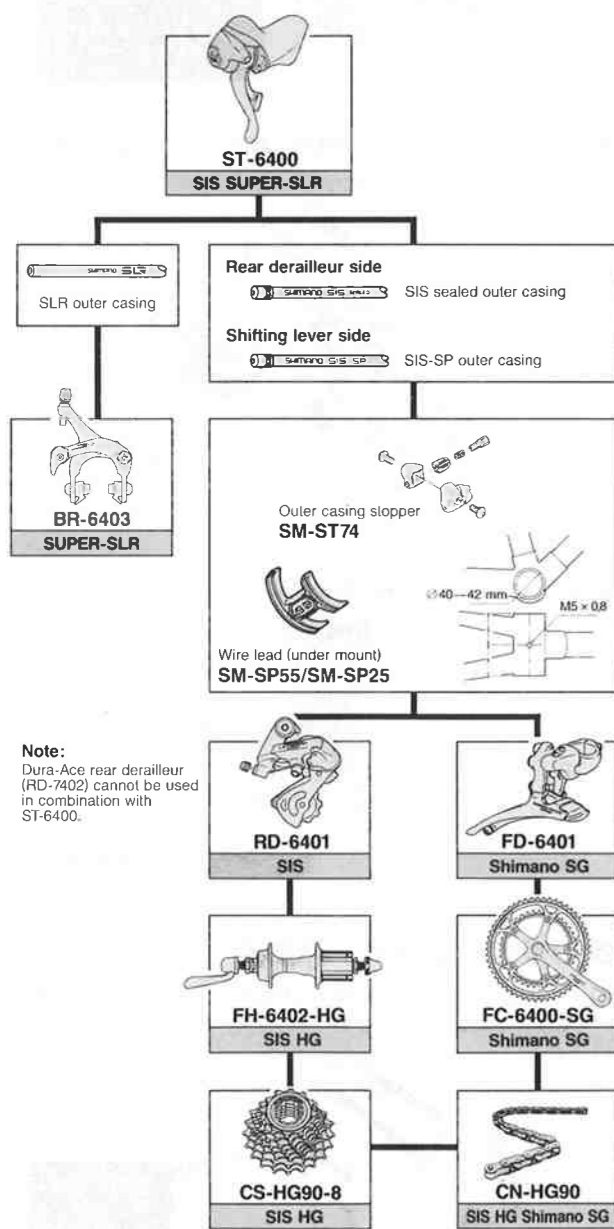
Operation



- Lever A:** Shifts from smaller to larger rear sprocket.
- Lever B:** Shifts from larger to smaller rear sprocket.
- Lever a:** Shifts from smaller to larger chainwheel.
- Lever b:** Shifts from larger to smaller chainwheel.

All levers return to the starting position when released.

Combinations Chart



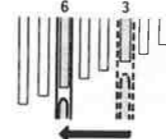
Note: Dura-Ace rear derailleur (RD-7402) cannot be used in combination with ST-6400.

Please note: specifications are subject to change for improvement without notice. (English)

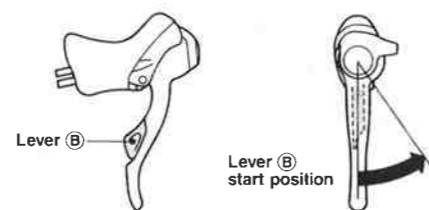
SHIMANO

SHIMANO AMERICAN CORPORATION
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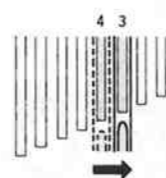
③: Quick-shifts three sprockets
Ex.: from 3rd to 6th



- Lever B:** Shifts from larger to smaller rear sprocket. Press lever B once to shift from a larger to one smaller sprocket.



Ex.: from 4th to 3rd



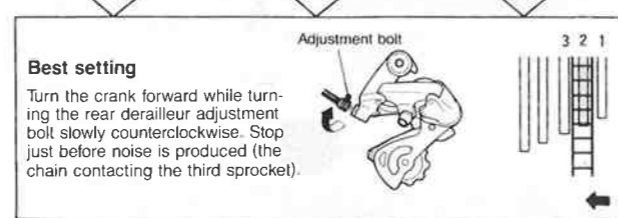
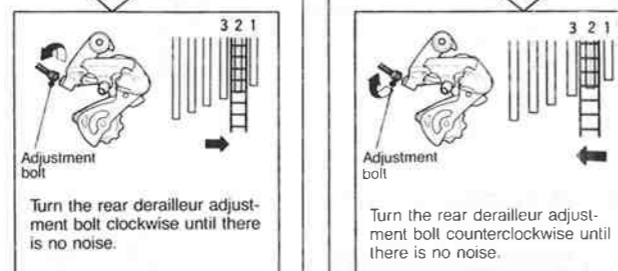
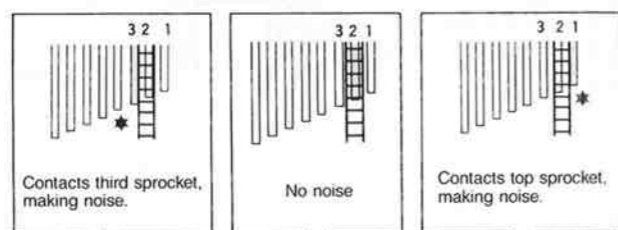
Caution on operation

Lever B will also move when lever A is operated, but be careful not to apply pressure to lever B. Similarly, be careful not to press lever A when operating lever B. Gears will not shift when both levers are pressed simultaneously.

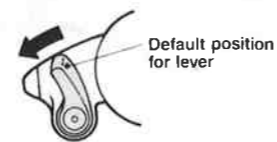
Adjustment

SIS adjustment

Operate lever A to set the chain to the second from top sprocket.



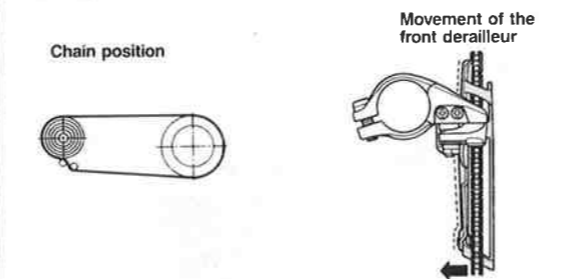
- Adjustment with the outer casing stopper is also possible while riding. If the rear outer casing stopper lever is tilted, the same effect as turning the rear derailleur adjustment bolt counterclockwise is achieved. However, SIS adjustment should basically be made with the adjustment bolt of the rear derailleur.



When lever B is operated, there is one click when trimming (the noise prevention mechanism) engages, and a second stronger click when the gear shift stroke is completed. After trimming, the next push will complete the gear shift stroke to the smaller front chainring.

Trimming (noise prevention operation)

If the chain is on the large front chainwheel and the large rear sprocket, the chain will rub against the front derailleur plate, producing a characteristic noise. When this happens, press lever B lightly (to the point where it clicks); this causes the front derailleur to move slightly towards the smaller chainwheel, thereby eliminating the noise.



Cautions on operation

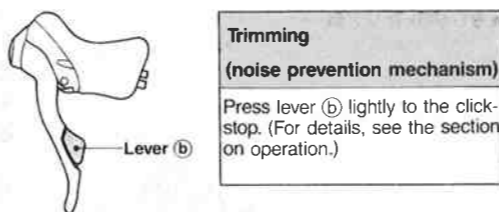
Lever B will also move when lever A is operated, but be careful not to apply pressure to lever B. Similarly, be careful not to press lever A when operating lever B. Gears will not shift when both levers are pressed simultaneously.

Front gear shift adjustment

- Set the chain on the largest rear sprocket and the largest front chainwheel.



- Complete the trimming operation.

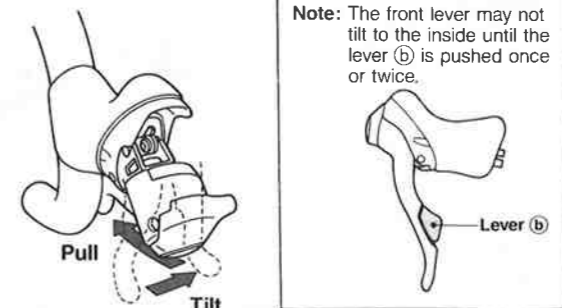


- After trimming, adjust the gap between the chain and chain guide to the minimum setting (0 ~ 0.5 mm) using the cable stopper outer adjustment bolt.



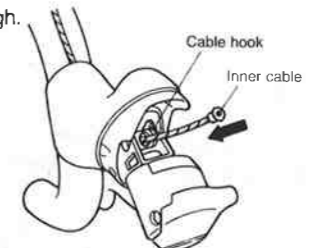
Cable adjustment bolt

- Tilt the lever in (as when shifting) to make it easier to pass the cable through the cable hook.



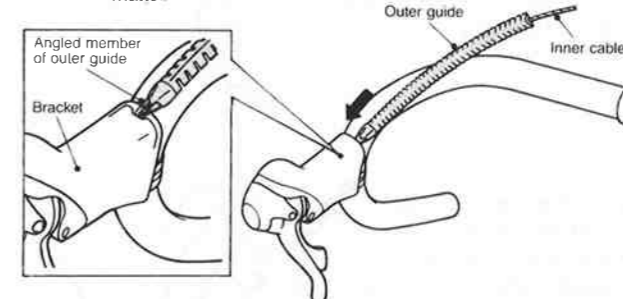
Note: The front lever may not tilt to the inside until the lever B is pushed once or twice.

- Pass the inner cable through.

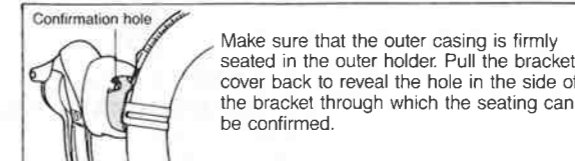
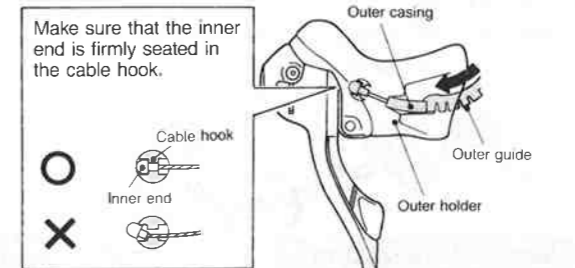


- Fix the outer guide to the inner cable, and set the angled member in the bracket.

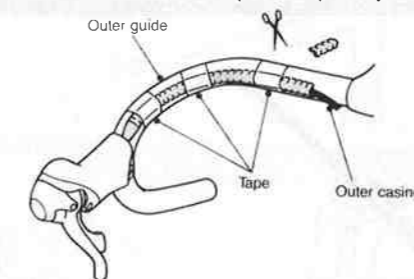
Note: Do not wipe off the grease on the inner cable. Also, be careful that the inner cable does not pick up dust and foreign matter.



- Set the outer casing on the inner cable, and in the bracket along the outer guide.

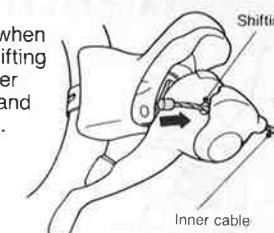


- Bring the outer casing along the front of the handlebar and cover it with the outer guide. Now cut the outer guide to the length of the handlebar, and tape it temporarily in place.

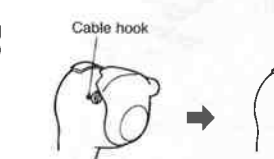


- Finally, wrap the handlebar with the finish tape.

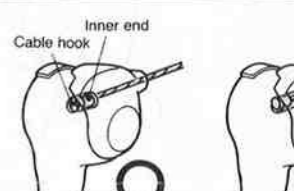
Pull the brake lever (as when braking) to reveal the shifting cable hole. Pass the inner cable through this hole and set it in the outer casing.



If the cable hook does not align with the shifting cable hole, press lever B again until it does, and then install the cable.



Note: Make sure that the inner end is firmly set inside the cable hook.

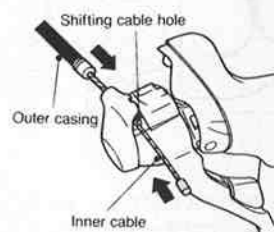


Front lever

Push lever B at least two - three times before installing.

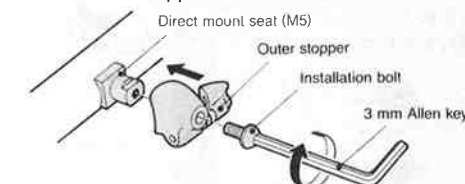


Pull the brake lever (as when braking) to pass the inner cable through the shifting cable hole, and set it in the outer casing.



Outer stopper

- Install the outer stopper to the down tube.



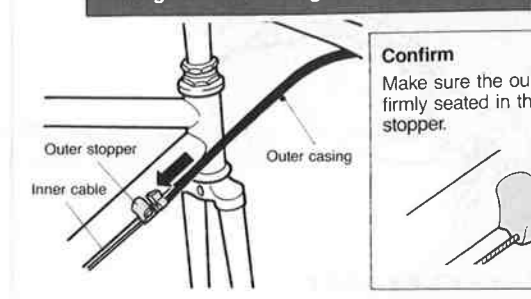
Tightening torque: 15 - 20 kgfcm (13 - 18 in.lbs.)

Install the outer stopper for the rear chainwheels with the handle in the default position.



- Pass the inner cable through, and set the outer casing.

Be sure to leave some slack in the outer casing cutting it to the full length of the handlebars.

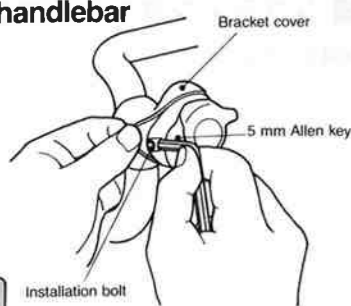


Confirm
Make sure the outer casing is firmly seated in the stopper.

Installation

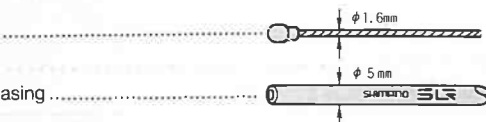
Installation to the handlebar

Assembly
Installation bolt
End of the
the bracket
and use a
key to tighten



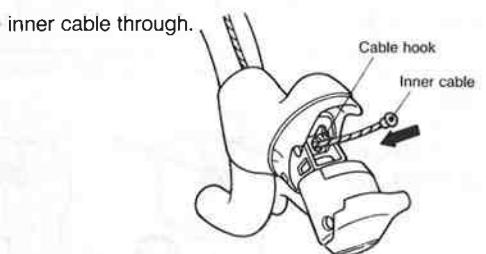
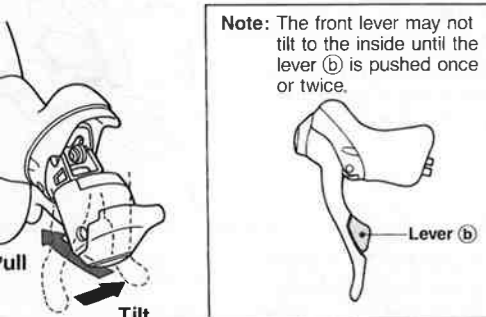
Torque:
(50 - 70 in.lbs.)

Installation of the brake cable

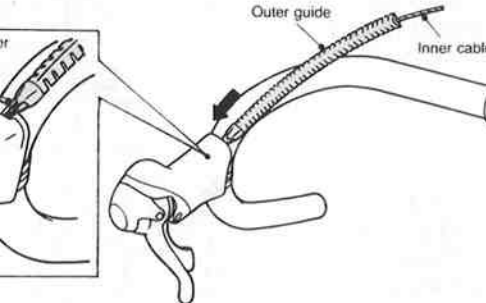


Leave some excess cable, even if cutting it to the full length of the handlebars.

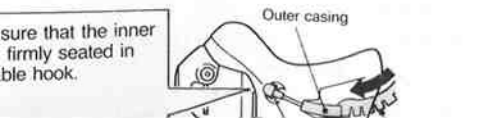
Push the lever in (as when shifting) to make it easier to pass the cable through the cable hook.



Slide the outer guide to the inner cable, and set the angled end of the outer guide in the bracket. Do not wipe off the grease on the inner cable. Also, be careful that the inner cable does not pick up dust and foreign matter.

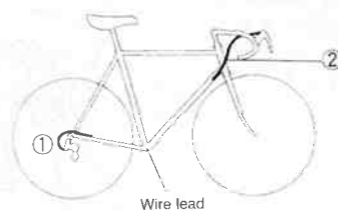


Slide the outer casing on the inner cable, and in the bracket and the outer guide.



Installing the shifting cable

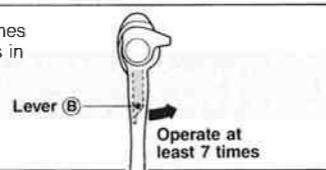
Cable used



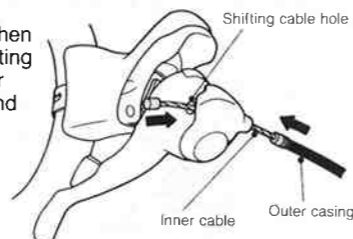
- Inner cable (stainless steel)..... $\phi 1.2\text{mm}$
- SIS sealed outer casing (1)..... $\phi 5\text{mm}$ SHIMANO SIS SEALED
- SIS-SP outer casing (2)..... $\phi 5\text{mm}$ SHIMANO SIS SP

• Rear lever

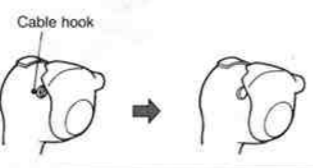
Push lever (b) at least seven times to make sure the mechanism is in top gear before installing.



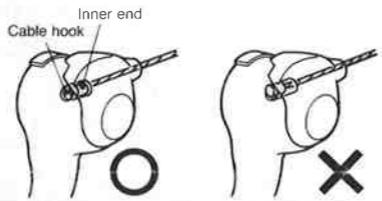
Pull the brake lever (as when braking) to reveal the shifting cable hole. Pass the inner cable through this hole and set it in the outer casing.



If the cable hook does not align with the shifting cable hole, press lever (b) again until it does, and then install the cable.

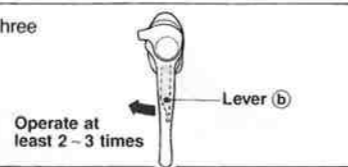


Note: Make sure that the inner end is firmly set inside the cable hook.

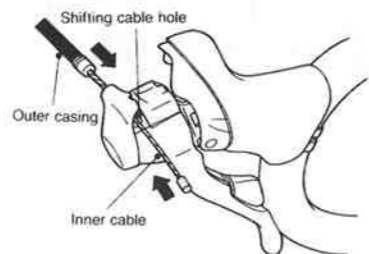


• Front lever

Push lever (b) at least two - three times before installing.

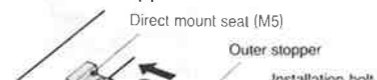


Pull the brake lever (as when braking) to pass the inner cable through the shifting cable hole, and set it in the outer casing.



• Outer stopper

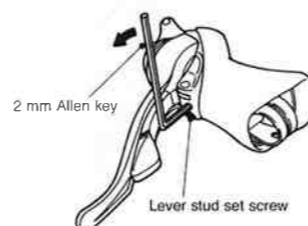
1. Install the outer stopper to the down tube.



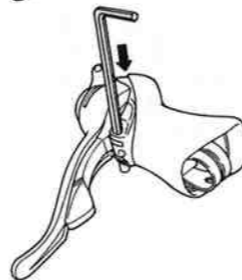
Disassembly and reassembly

Bracket and lever disassembly

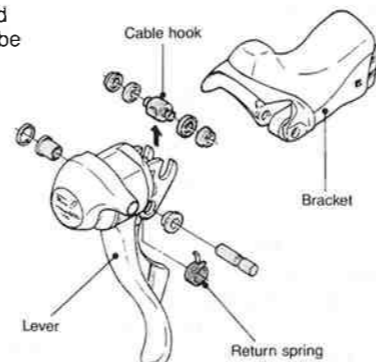
1. Loosen the lever stud set screw on the bottom of the bracket with a 2 mm Allen key.



2. Insert the Allen key or a similar tool to push the lever stud out. The bracket and lever will come apart.

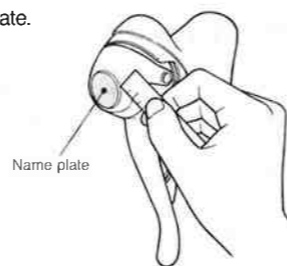


3. The return spring and cable hook can also be disassembled.

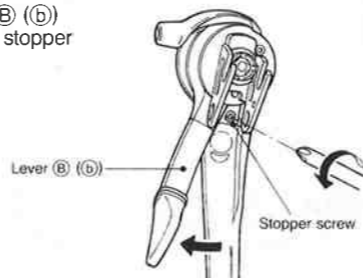


Lever disassembly

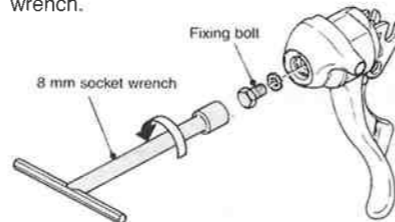
1. Remove the name plate.



2. Move the lever (b) and remove the stopper screw.



3. Remove the fixing bolt with an 8 mm socket wrench.

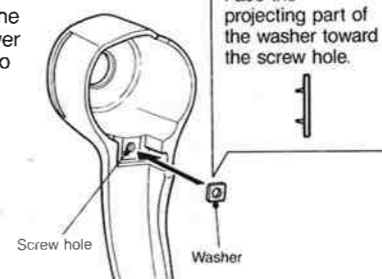


4. Disassembly is possible as shown below.

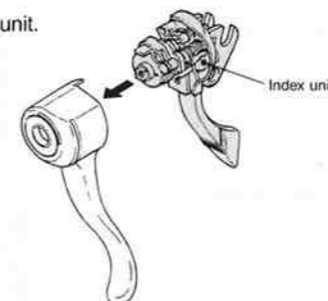
Do not disassemble any further as reassembly may not be possible.

Lever reassembly

1. Set the washer into the screw hole on the lever (a) (a). Use grease to stick it on.

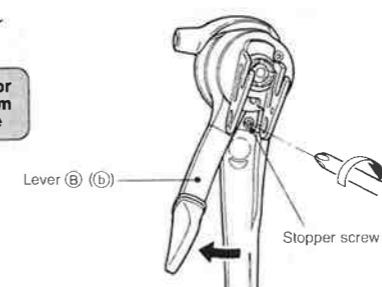


2. Attach the index unit.

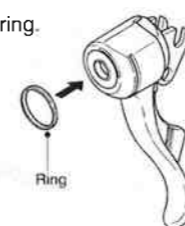


3. Tighten the stopper screw to secure it.

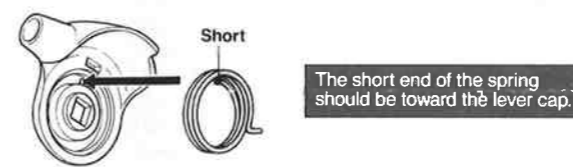
Tightening torque for installation: 16 kgfcm (14 in.lbs.) or more



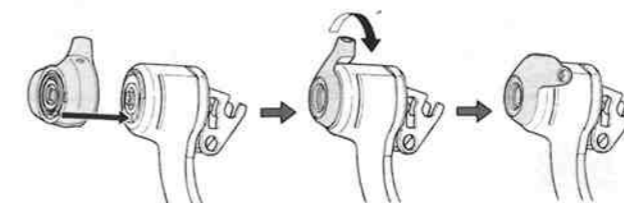
4. Attach the ring.



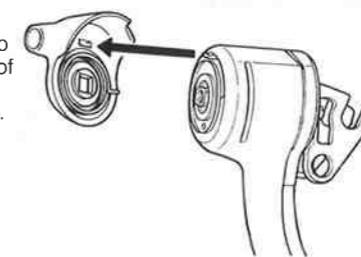
5. Attach the spring to the lever cap.



6. Insert the long end of the spring into the lever, and attach the lever by turning the lever cap.

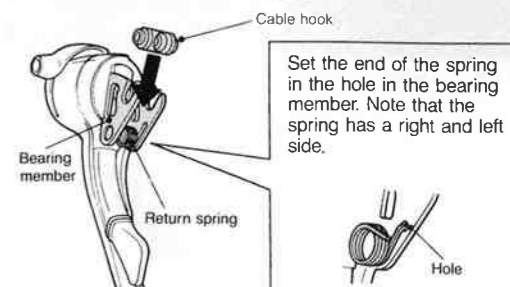


• With the ST-6400-R for rear sprockets, attach so that the projecting part of the lever is aligned with the tab on the lever cap.

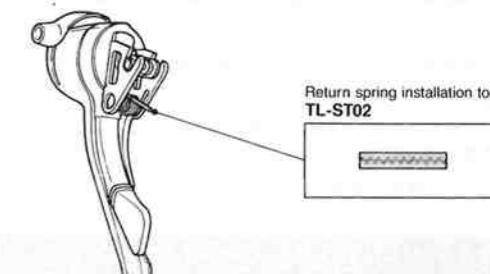


Assembling the bracket and lever

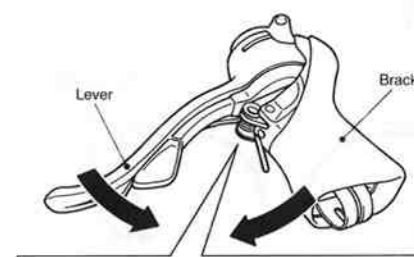
1. Put the cable hook into the bearing member, and set the return spring.



2. Set the special installation tool for the return spring.



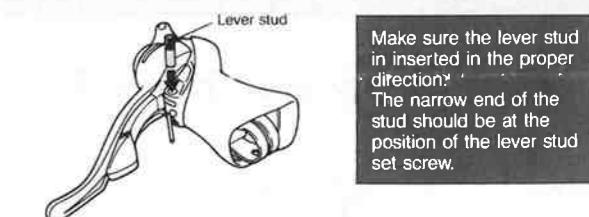
3. Assemble the bracket and lever. Be careful that the end of the return spring does not protrude from the hole in the bearing member at this time.



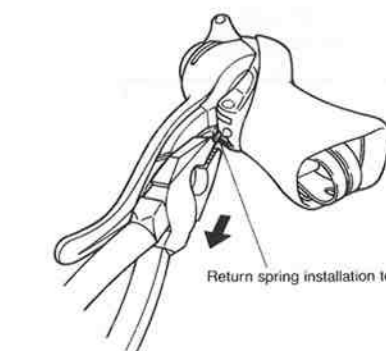
Make sure the spring is properly positioned.



4. Align the stud holes, and insert the lever stud.

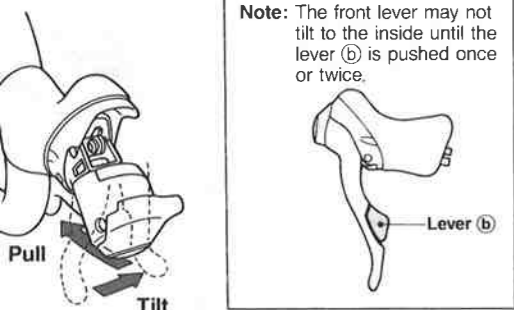


5. Remove the return spring installation tool with pliers.



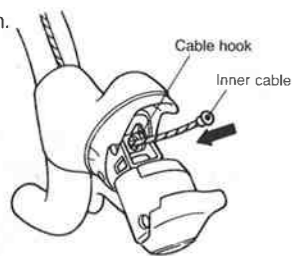
6. Tighten the lever stud set screw to complete the assembly.

lever in (as when shifting) to make it easier to pass the through the cable hook.



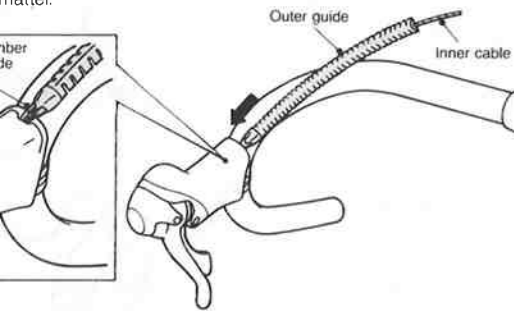
Note: The front lever may not tilt to the inside until the lever (B) is pushed once or twice.

the inner cable through.

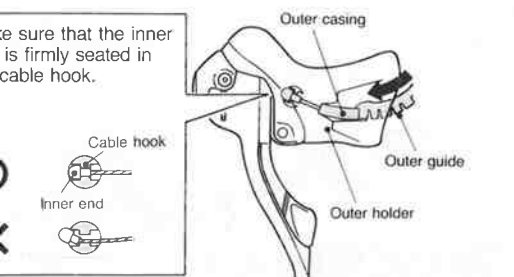


the outer guide to the inner cable, and set the angled lever in the bracket.

Do not wipe off the grease on the inner cable. Also, be careful that the inner cable does not pick up dust and foreign matter.

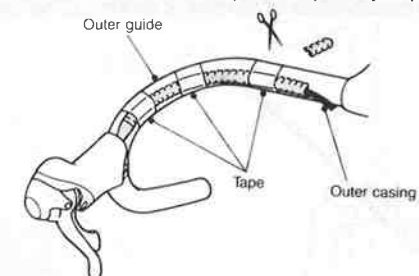


the outer casing on the inner cable, and in the bracket and the outer guide.



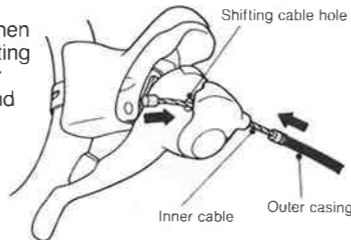
Make sure that the outer casing is firmly seated in the outer holder. Pull the bracket cover back to reveal the hole in the side of the bracket through which the seating can be confirmed.

the outer casing along the front of the handlebar and it with the outer guide. Now cut the outer guide to the of the handlebar, and tape it temporarily in place.

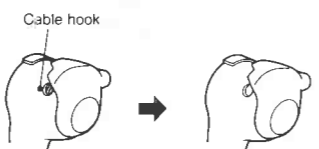


wrap the handlebar with the finish tape.

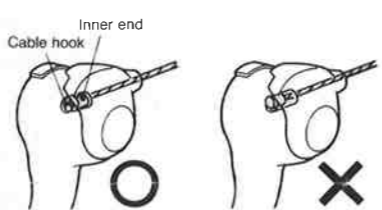
Pull the brake lever (as when braking) to reveal the shifting cable hole. Pass the inner cable through this hole and set it in the outer casing.



If the cable hook does not align with the shifting cable hole, press lever (B) again until it does, and then install the cable.

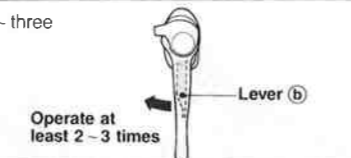


Note: Make sure that the inner end is firmly set inside the cable hook.

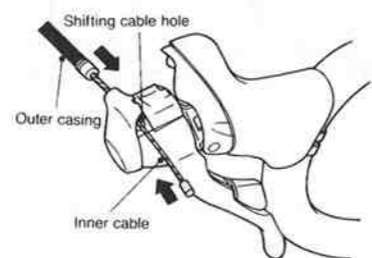


•Front lever

Push lever (B) at least two - three times before installing.

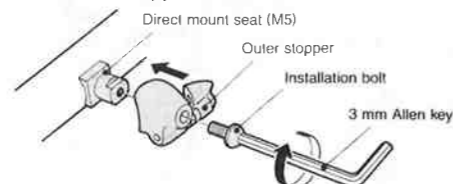


Pull the brake lever (as when braking) to pass the inner cable through the shifting cable hole, and set it in the outer casing.



•Outer stopper

1. Install the outer stopper to the down tube.



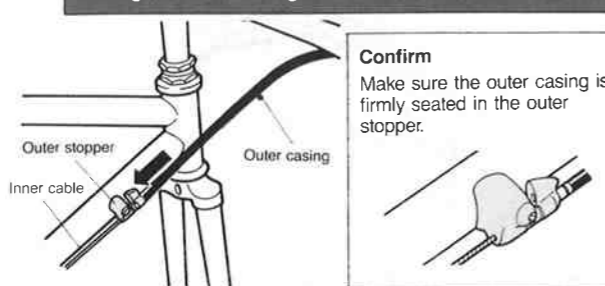
Tightening torque: 15 - 20 kgfcm (13 - 18 in.lbs.)

Install the outer stopper for the rear chainwheels with the handle in the default position.



2. Pass the inner cable through, and set the outer casing.

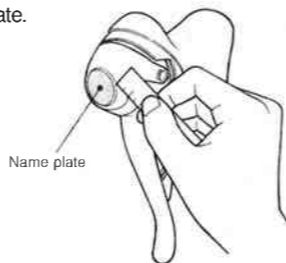
Be sure to leave some slack in the outer casing, even if cutting it to the full length of the handlebars.



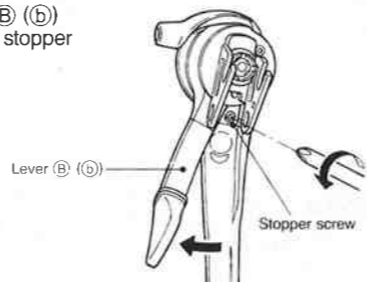
Confirm
Make sure the outer casing is firmly seated in the outer stopper.

Lever disassembly

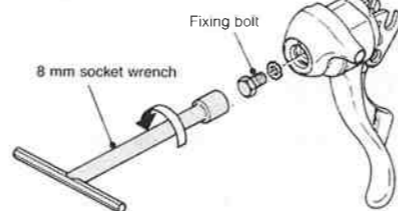
1. Remove the name plate.



2. Move the lever (B) and remove the stopper screw.



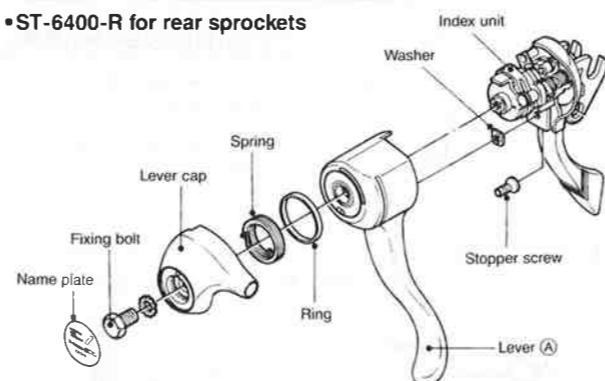
3. Remove the fixing bolt with an 8 mm socket wrench.



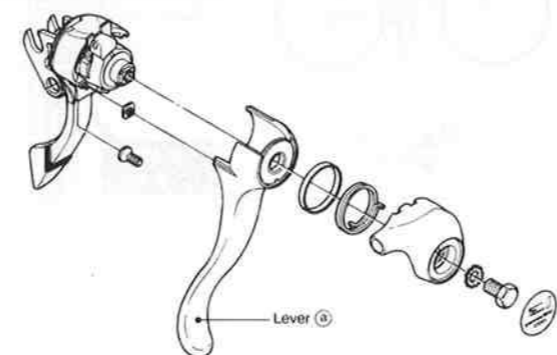
4. Disassembly is possible as shown below.

Do not disassemble any further as reassembly may not be possible.

•ST-6400-R for rear sprockets

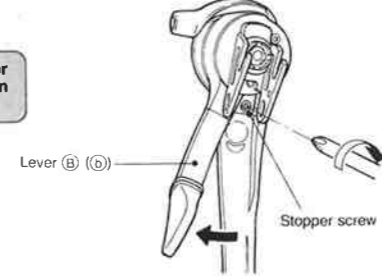


•ST-6400-F for chainwheel

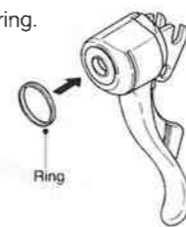


3. Tighten the stopper screw to secure it.

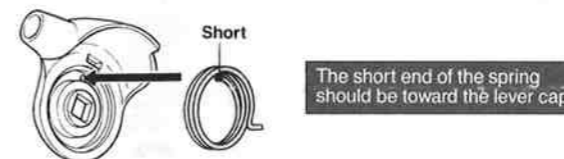
Tightening torque for installation: 16 kgfcm (14 in.lbs.) or more



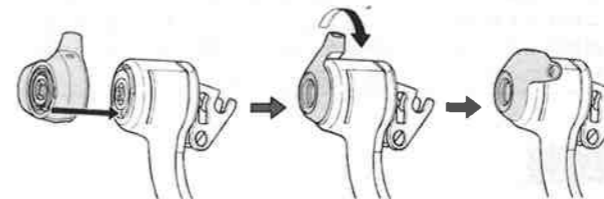
4. Attach the ring.



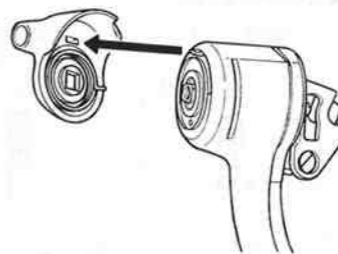
5. Attach the spring to the lever cap.



6. Insert the long end of the spring into the lever, and attach the lever by turning the lever cap.



•With the ST-6400-R for rear sprockets, attach so that the projecting part of the lever is aligned with the tab on the lever cap.

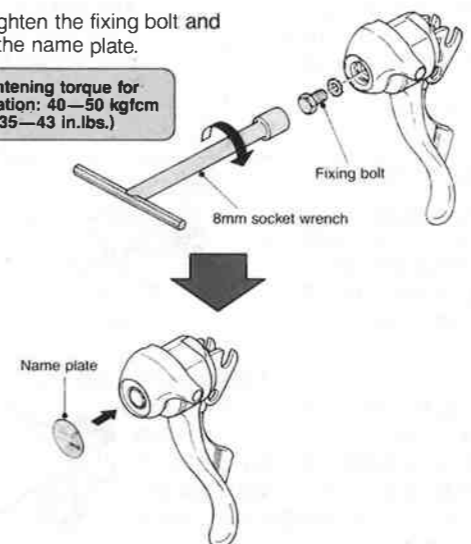


•With the ST-6400-F for chainwheel, attach so that the projecting parts of the lever are interlocked with the tabs on the lever cap.

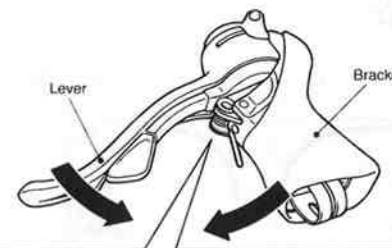


7. Then tighten the fixing bolt and attach the name plate.

Tightening torque for installation: 40 - 50 kgfcm (35 - 43 in.lbs.)



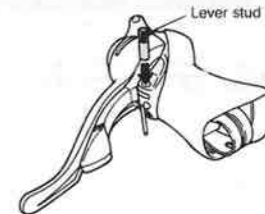
3. Assemble the bracket and lever. Be careful that the end of the return spring does not protrude from the hole in the bearing member at this time.



Make sure the spring is properly positioned.

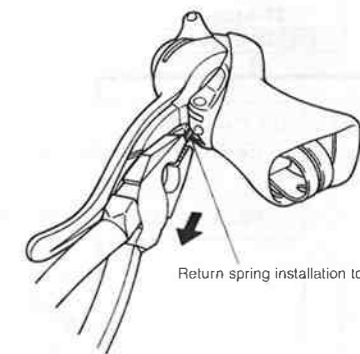


4. Align the stud holes, and insert the lever stud.

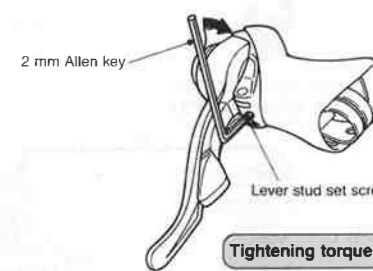


Make sure the lever stud is inserted in the proper direction. The narrow end of the stud should be at the position of the lever stud set screw.

5. Remove the return spring installation tool with pliers.



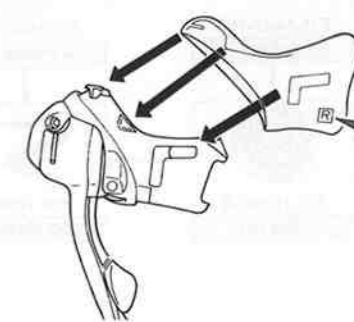
6. Tighten the lever stud set screw to complete the assembly.



Tightening torque: 10 kgfcm (9 in.lbs.)

Replacing the bracket cover

The tabs on the bracket cover each fit into a matching slot on the bracket.



Note the markings: R: for right L: for left

Put a little rubbing alcohol inside the bracket cover to make installation easier.