

**WARNING**

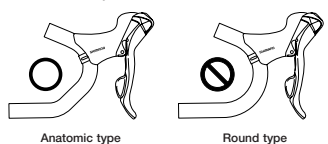
- Obtain and read the service instructions carefully prior to installing the parts. Loose, worn or damaged parts may cause the bicycle to fall over and serious injury may occur as a result. We strongly recommend only using genuine Shimano replacement parts.
- Obtain and read the service instructions 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.
- Use the ST-4600/4603, BL-4600/R780 with the BR-4600. Do not use the BR-4600 in combination with previous ST1 levers for road riding or with the BL-R770/BL-R550 brake levers for flat handlebars, otherwise the braking performance provided will be much too strong.
- Read these Technical Service Instructions carefully, and keep them in a safe place for later reference.

**Note**

- For triple front chainwheel specifications, be sure to read these Service Instructions in conjunction with the Service Instructions for the ST-4603 and FD-4603.
- Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.
- For smooth operation, use the specified outer casing and the bottom bracket cable guide.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- Because the high cable resistance of a frame with internal cable routing would impair the SIS function, this type of frame should not be used.
- 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.
- 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.

**Note when using the reach adjustment block (Pad spacer)**

When installing the 8-degree reach adjustment block, use an anatomic-type handlebar. If a round-type handlebar is used, the cable stroke may become too short and this can result in insufficient braking force.



Technical Service Instructions

SI-6UM0A-001

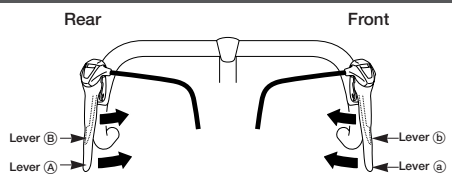
**ST-4600**

Shimano Total Integration

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

Series		TIAGRA	
Dual control lever	Front	ST-4600 (Double)	ST-4603 (Triple)
	Rear	ST-4600	
Shifting lever		SL-4600	SL-4603
Brake lever		BL-4600	
Outer casing		OT-SP41	
Gears		20	30
Front derailleur		FD-4600	FD-4603
Front chainwheel		FC-4600 / 4650	FC-4603
Bottom bracket		SM-FC4500	
Rear derailleur		RD-4600-SS	RD-4600-GS
Freehub		FH-4600	
Cassette sprocket		CS-4600	
Chain		CN-4601	CN-5600
Bottom bracket cable guide		SM-SP17	

**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 chainring.
- Lever b: Shifts from larger to smaller chainring.

All levers return to the starting position when released.

**SHIMANO**

SHIMANO AMERICAN CORPORATION  
One Holland, Irvine, California 92618, U.S.A. Phone: +1-949-951-5003

SHIMANO EUROPE B.V.  
Industrieweg 24, 8071 CT Nunspeet, The Netherlands. Phone: +31-341-272222

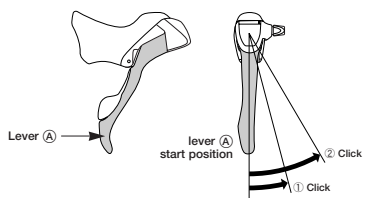
SHIMANO INC.  
3-77 Oimatsu-cho, Sakai-ku, Sakai-shi, Osaka 590-8577, Japan

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

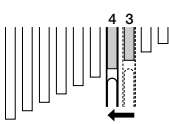
Please note: specifications are subject to change for improvement without notice. (English)  
© Jan. 2011 by Shimano Inc. XBC SZK-Printed in Japan.

**Operation of rear derailleur lever**

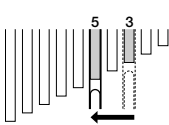
- Lever A: Shifts from smaller to larger rear sprocket. Lever A has a click stop at positions 1 and 2.



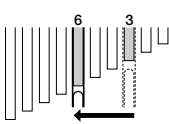
- 1: Shifts one sprocket  
E.x.: from 3rd to 4th



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

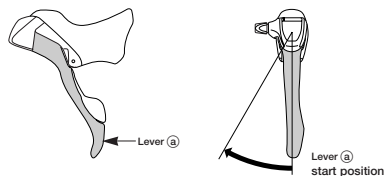


- 3: Quick-shifts three sprockets  
E.x.: from 3rd to 6th



**Operation of front derailleur levers (FD-4600 / 4603)**

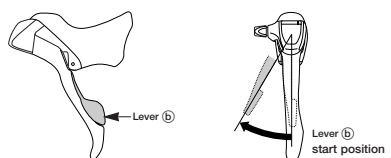
- Lever a: Shifts from smaller to larger front chainring.



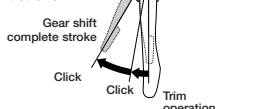
If operation of lever a does not complete the chainring shift stroke, operate lever a again for the distance (X) to complete that part of the lever stroke (X) which was short.

< FD-4600, ST-4600 >

- Lever b: Shifts from larger to smaller front chainring.

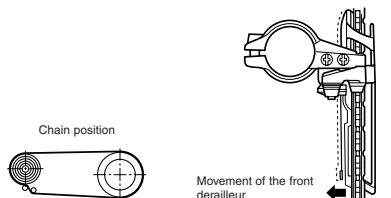


When lever b is operated, there is one click where trimming (the noise prevention mechanism) engages, and a second stronger click when the gear shift stroke is completed. After trimming, the next push will complete the gear shift stroke.

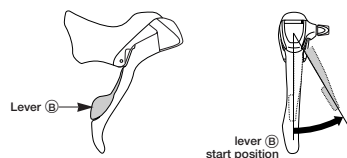


**Trimming (noise prevention operation)**

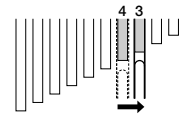
If the chain is on the large or intermediate chainring and the largest rear sprocket, the chain will rub on the front derailleur inner plate, producing a characteristic noise. When this happens, press lever b slightly (to the point where it clicks); this causes the front derailleur to move slightly toward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



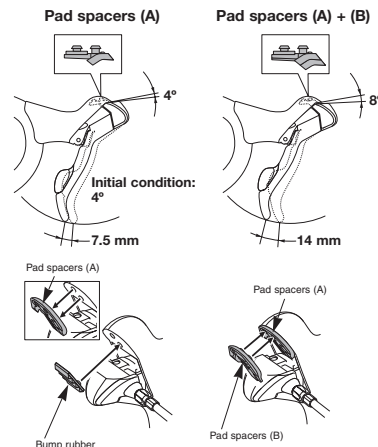
- Lever B: Shifts from larger to smaller rear sprocket. Press lever B once to shift from a larger to one smaller sprocket.



E.x.: from 4th to 3rd



**Lever stroke adjustment**



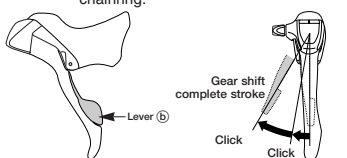
**To increase the lever stroke**  
Remove the pad spacer (A) and install the bump rubber.

**To decrease the lever stroke**  
Insert pad spacer (B) as far as it will go and so that the projections fit into the holes in pad spacer (A).

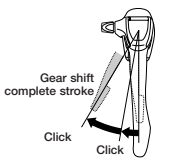
\* Apply a small amount of grease to the projections when installing the pad spacer and the bump rubber.

< FD-4603, ST-4603 >

- Lever b: Shifts from largest chainring to intermediate chainring.



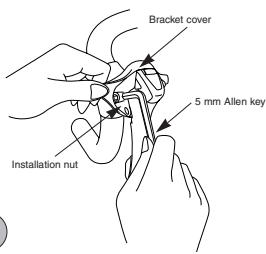
- Lever b: Shifts from intermediate chainring to smallest chainring.



**Installation**

**Installation to the handlebar**

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



Tightening torque:  
6 - 8 N·m (50 - 70 in. lbs.)

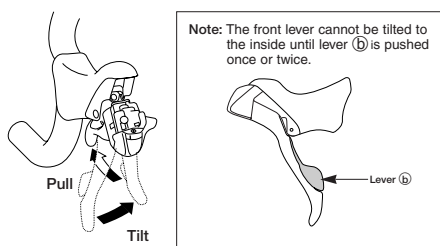
**Installation of the brake cable**

**Cable used**

- Inner cable:  $\phi 1.6 \text{ mm}$
- SLR outer casing:  $\phi 5 \text{ mm}$

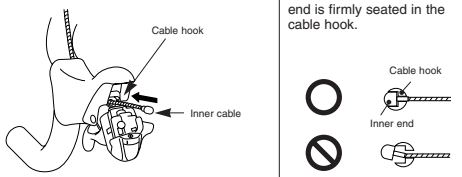
Be sure to leave some excess cable, even if cutting it to the full length of the handlebars.

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



Note: The front lever cannot be tilted to the inside until lever b is pushed once or twice.

- Pass the inner cable through.



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

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

- Finally, wrap the handlebar with the finish tape.

**Installing the shifting cable**

**Cable used**

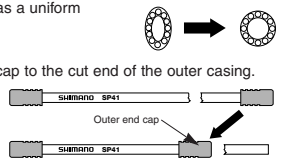
- Inner cable (stainless steel):  $\phi 1.2 \text{ mm}$
- SP41 sealed outer casing (1):  $\phi 4 \text{ mm}$

- SP41 outer casing (2):  $\phi 4 \text{ mm}$

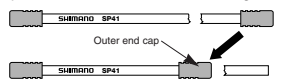


**Cutting the outer casing**

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.

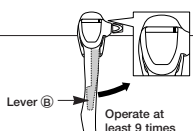


Attach the same outer end cap to the cut end of the outer casing.

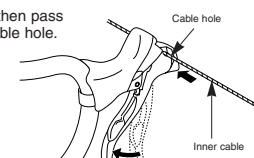


**Rear lever**

Operate lever B 9 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.



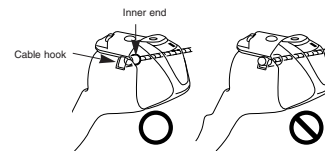
Depress the brake lever, and then pass the inner cable through the cable hole.



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

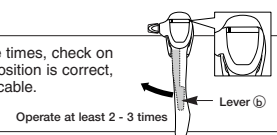


Make sure that the inner end is firmly seated in the cable hook.

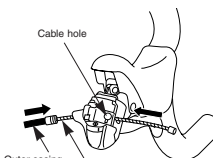


**Front lever**

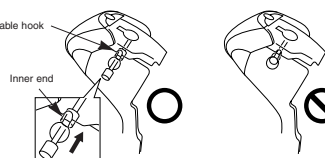
Operate lever b 2 or more times, check on the indicator that the low position is correct, and then secure the inner cable.



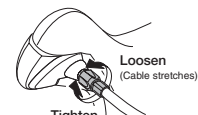
Depress the brake lever, and then pass the inner cable through the cable hole.



If the cable hook does not align with the shifting cable hole, press lever b again until it does, and then install the cable. Make sure that the inner end is firmly seated in the cable hook.



**Cable adjuster**

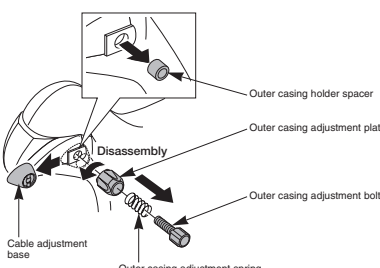


The adjustment margin for the cable adjuster is five turns from its fully-tightened position. The initial condition is loosened by one turn from the fully-tightened position.

**Reassembling without a cable adjuster (cap sold separately)**

**\* When using an outer stopper**

Disassemble the cable adjuster as shown in the illustration.



\* Insert a thin bar-shaped object to remove the outer casing holder spacer.

Install the outer casing holder cap (sold separately).

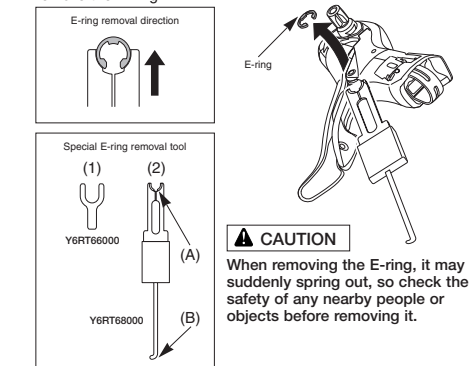


**Maintenance**

\* The illustration shows the right-hand lever.

**Bracket and lever disassembly**

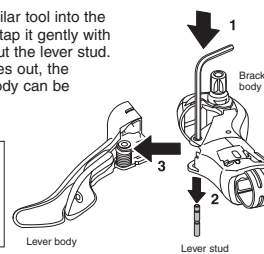
- First use the special tool (sold separately) to remove the E-ring. Use part (B) of the special tool (2) to align the E-ring with the direction of removal. Next, set part (A) against the E-ring and remove the E-ring.



**CAUTION**  
When removing the E-ring, it may suddenly spring out, so check the safety of any nearby people or objects before removing it.

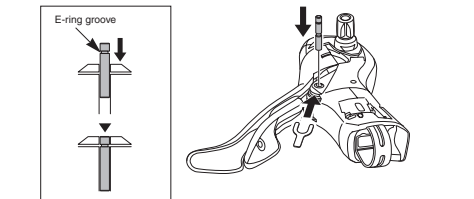
- Insert an Allen key or similar tool into the lever stud hole, and then tap it gently with a plastic mallet to push out the lever stud. When the lever stud comes out, the bracket body and lever body can be disassembled.

Always be sure to remove the lever stud in this direction. If it is removed in the opposite direction, it may damage the bracket body.



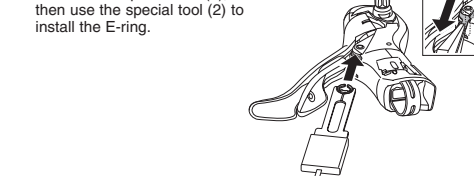
**Assembling the bracket body and lever body**

- Align the stud holes, and then set the special tool (1) in the position shown in the illustration to press-fit the lever stud.



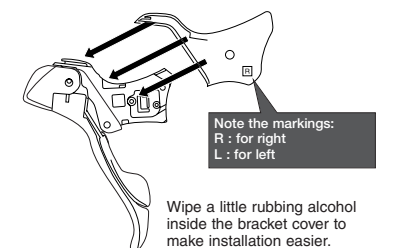
- The correct direction for the lever stud to face is with the E-ring groove at the top.
- Check that the surface of the bracket body is flush with the top of the lever stud to ensure that the E-ring can fit into the groove.

- Remove the special tool (1), and then use the special tool (2) to install the E-ring.



**Replacing the bracket cover**

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



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

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