

## WARNING

It is important to completely understand the operation of your bicycle's brake system. Improper use of your bicycle's brake system may result in a loss of control or an accident, which could lead to severe injury. Because each bicycle may handle differently, be sure to learn the proper braking technique (including brake lever pressure and bicycle control characteristics) and operation of your bicycle. This can be done by consulting your professional bicycle dealer and the bicycle's owners manual, and by practicing your riding and braking technique.

## SERVICE INSTRUCTIONS

SI-4R31B

**SG-4R31** Inter-4 Hub  
**BR-IM31-R** Inter-M Brake  
**CJ-7S40** Cassette Joint

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

**SHIMANO**  
**NEXUS**

- Be sure to read these service instructions in conjunction with the service instructions for the Inter-4 shifting lever before use.
- The CJ-7S40 cassette joint should only be used with sprockets from 16T to 22T.

## CAUTION

- The Shimano Inter-M brake system cannot be used with mountain bikes. If you try to use it with mountain bikes, hard braking operation will cause the internal brake parts to become very hot, and this may weaken braking performance. It may also cause a reduction in the amount of brake grease inside the brake, and this can lead to problems such as abnormally sudden braking.
- If any of the following occur while using the brakes, stop riding immediately and ask the place of purchase to carry out inspection and repairs.
  - 1) If abnormal noise is heard when the brakes are applied
  - 2) If braking force is abnormally strong
  - 3) If braking force is abnormally weak

In the case of 1) and 2), the cause might be not enough brake grease, so ask the place of purchase to grease the mechanism with special roller brake grease.
- In order to get the best performance from the Shimano Inter-M brake, be sure to use Shimano brake cables and brake levers as a set.
 

(The amount of movement of the inner cable must be 14.5 mm or more when the brake lever is depressed. If it is less than 14.5 mm, braking performance will suffer, and the brakes may fail to work.)
- Check that the brake arm is securely fastened to the chainstay by the brake arm clip. If it is not installed correctly, braking performance will suffer.
- If the brakes are used frequently, the brake drum may become hot. Do not touch the brake drum for at least 30 minutes after you finish riding the bicycle.
- If the brake cable becomes rusted, braking performance will suffer. If this happens, replace the brake cable with a genuine Shimano brake cable and re-check the braking performance.
- The BR-IM31-R brake unit should never be disassembled. If it is disassembled, it will no longer work properly.

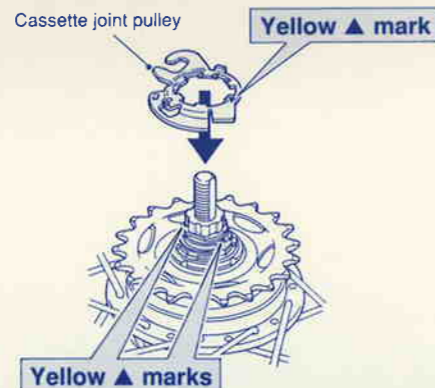


## NOTE:

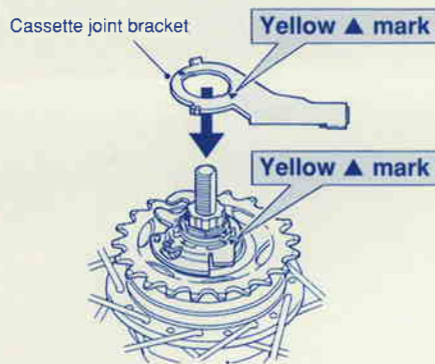
- The Inter-M brake is different from conventional brakes in that the inside of the brake drum is filled with grease. This may cause the turning of the wheel to be slightly heavier than usual, particularly in cold weather.
- For any questions regarding methods of handling or adjustment, please contact the place of purchase.

## Installation of the cassette joint to the hub

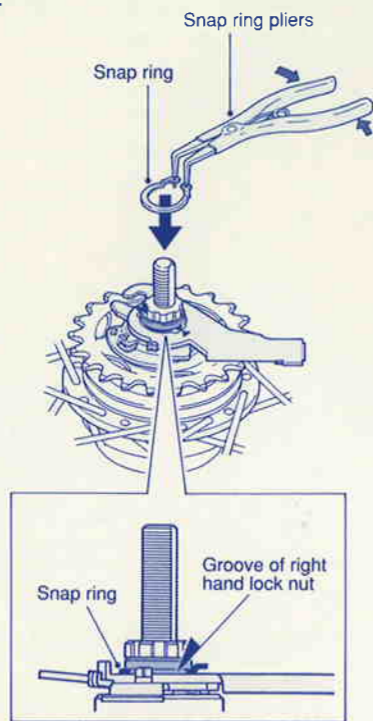
- Align the yellow ▲ mark on the cassette joint pulley with the yellow ▲ marks on the right side of the hub body.



- Align the yellow ▲ mark on the cassette joint bracket with the yellow ▲ mark on the cassette joint pulley.

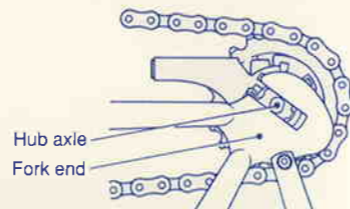


- Secure the cassette joint to the hub with the snap ring. Insert the snap ring securely into the groove of the right hand lock nut at this time.

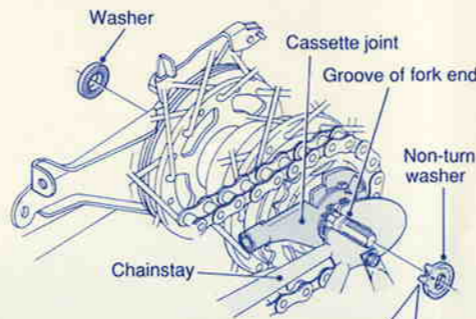


## Installation of the hub to the frame

- Mount the chain on the sprocket, and then set the hub axle into the fork ends.



- Install the non-turn washer onto the right side of the hub axle. At this time, turn the cassette joint so that the projecting part of the non-turn washer fits into the groove of the fork end. If this is done, the cassette joint can be installed so that it is almost parallel to the chainstay. Furthermore, install a washer with no projecting part onto the left side of the hub axle.



- Two types of non-turn washer are provided for use with standard and reversed fork ends. Use whichever non-turn washer is suitable.

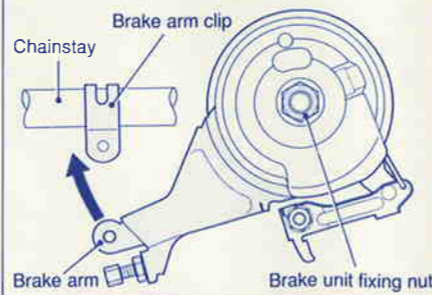
Fork end	Non-turn washer		
	Mark	Color	Size
Standard	1	Black	$20^\circ \leq \theta \leq 38^\circ$
Reversed	2	Gold	$\theta = 0^\circ$



- The projecting part should be on the fork end side.
- Install the non-turn washer so that the projecting part is securely in the fork end groove on either side of the hub axle.

- Install the brake arm of the Inter-M brake to the chainstay with the brake arm clip, provisionally tighten the clip bolt and clip nut, and then tighten the brake unit fixing nut.

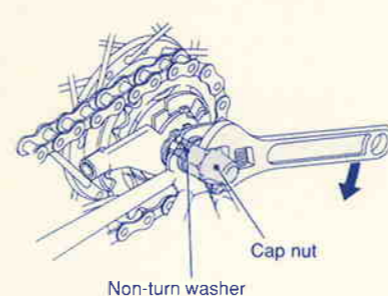
**Note:**  
 If the brake arm is in the incorrect position as shown in the illustration so that it cannot be provisionally installed to the chainstay, loosen the brake unit fixing nut and turn the brake arm. Then, after provisionally securing the brake arm to the chainstay, tighten the brake unit fixing nut.



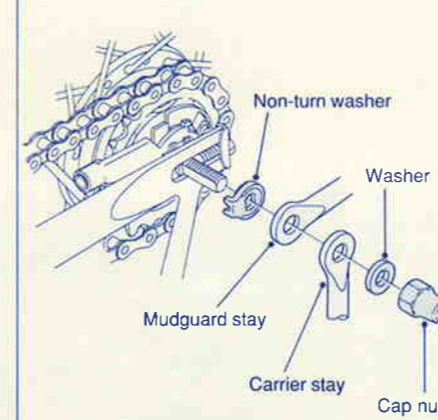
**Tightening torque:**  
**20 – 25 Nm {174 – 217 in. lbs.}**

- Take up the slack in the chain and secure the wheel to the frame with the cap nuts.

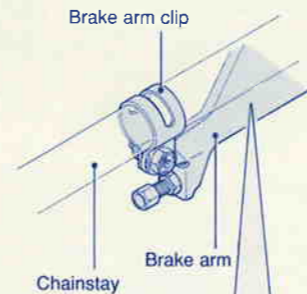
**Tightening torque:**  
**30 – 45 Nm {260 – 390 in. lbs.}**



**Note:**  
 When installing a part such as a mudguard stay to the hub axle, install in the order shown in the illustration below.



- Fix the brake arm of the Inter-M brake securely to the chainstay with the brake arm clip.



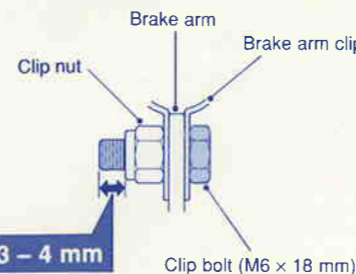
If excessive force is applied to the brake arm, the wheel will become difficult to turn. Make sure that you don't apply excessive force when installing.

## NOTE:

- When installing the brake arm clip, securely tighten the clip bolt while holding the clip nut with a 10 mm spanner.

**Tightening torque:**  
**2 – 3 Nm {17 – 26 in. lbs.}**

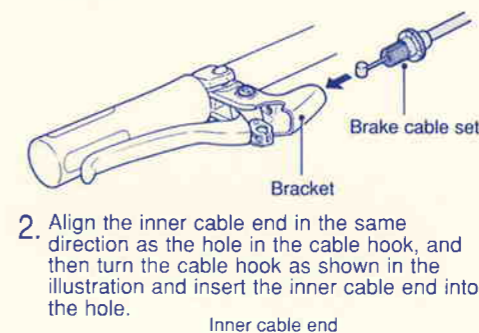
- After installing the brake arm clip, check that the clip bolt protrudes about 3 – 4 mm from the surface of the clip nut.



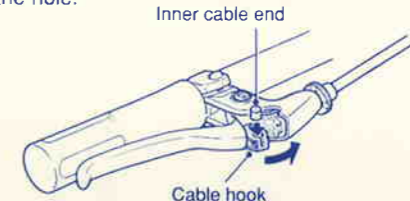
**3 – 4 mm**  
 Clip bolt (M6 x 18 mm)

## Installing the brake cable

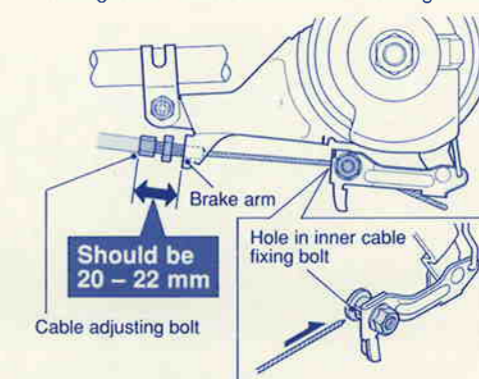
- While depressing the brake lever, pass the brake cable set through the hole in the bracket.



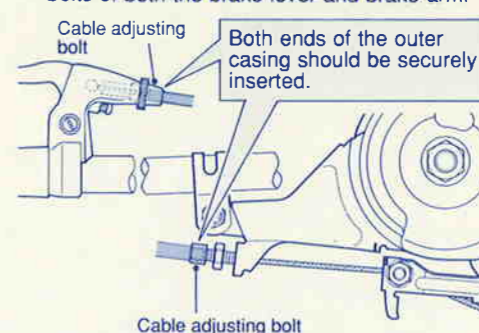
- Align the inner cable end in the same direction as the hole in the cable hook, and then turn the cable hook as shown in the illustration and insert the inner cable end into the hole.



- Place the cable adjusting bolt so that it is 20 – 22 mm from the end of the brake arm, and then pass the inner cable through the cable adjusting bolt of the brake arm and then through the hole in the inner cable fixing bolt.

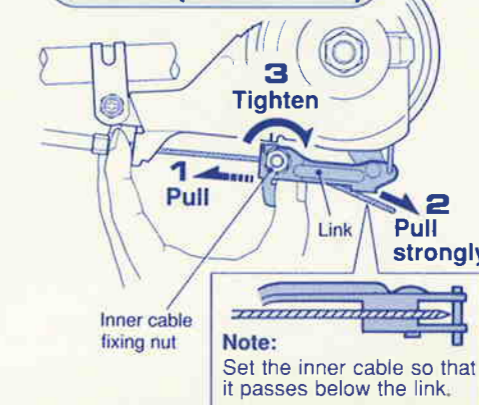


- Check that both ends of the outer casing are securely inserted into the cable adjusting bolts of both the brake lever and brake arm.



- Pull the link back until it stops. Then, while pulling the inner cable to apply the full amount of tension to the cable, tighten the inner cable fixing nut.

**Tightening torque:**  
**6 – 8 Nm {52 – 69 in. lbs.}**



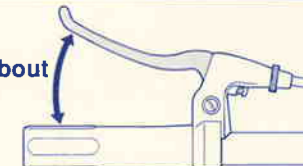
**Note:**  
 Set the inner cable so that it passes below the link.

## Adjusting the brake cable

- After checking that the wheel does not easily turn while the brake cable is being pulled, depress the brake lever about 10 times as far as the grip in order to run in the brake cable.

**Note:**  
 If the brake cable is not run in, it will need to be adjusted again after only a short period of use.

**Depress about 10 times**



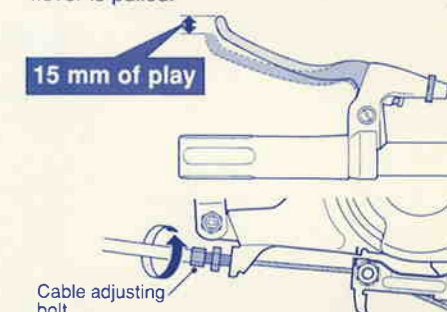
- There are two methods of adjusting the brake cable: the one below is for use when readjusting just the brake cable, and the other one is for use when replacing the brake unit with a new unit.

### When readjusting

Turn the cable adjusting bolt so that there is about 15 mm of play in the brake lever.

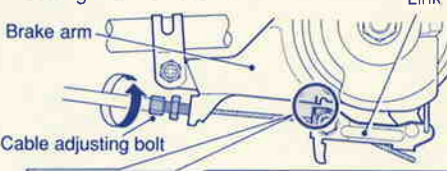
(The amount of brake lever play is the distance from the position where the brake lever is not operated to the position where a force is felt suddenly when the brake lever is pulled.)

**15 mm of play**



### When replacing the brake unit

Turn the cable adjusting bolt to align the setting mark on the brake arm with the setting mark on the link.



**Note:**  
 These setting marks are guides for adjusting when the brake unit is being replaced with a new unit, and cannot be used again once the brakes themselves have been used.

- After depressing the brake lever to check the braking performance, secure the cable adjusting bolt with the cable adjusting nut.

**Tightening torque:**  
**1 – 2 Nm {9 – 17 in. lbs.}**

These service instructions explain 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.

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

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