SHIMANO TOTAL INFORMATION

PURE SHIMANO® GUTS

STI '99

Everything you always wanted to know about Shimano ....but were afraid to ask.

SHIMANO®

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

Introduction

"Everything You Always Wanted to Know About Shimano, . . . but were afraid—or too busy—to ask."

"Just as STI (Shimano Total Integration®) gets all the parts in a system of components to work together and make the bike easier, more efficient and fun to ride, the ***STI (Shimano Total Information) Manual*** gets together all the important information you'll need to make your work in the shop a lot easier. At least that's our hope.

"Our goal with the STI manual is to include 'Everything You Always Wanted to Know About Shimano' products and policies, but were either afraid, or—more than likely—too busy to ask. The 1999 Trade Sales and Support Manual, of course, contains all the features and benefits of the entire line of Shimano bicycle components, shoes, pedals, and tools. But the catalog leaves a lot of technical questions unanswered. And that's where the new STI manual comes in.

"Shimano's Multi-Service™ Team spent a lot of time talking to people in the shops trying to find out what kinds of information they needed the most to make their relationship with Shimano run more smoothly. STI is the result of those conversations. Check out the table of contents and you'll see we briefly cover the new products for '99; explain what Shimano's Multi-Service is all about and how to use it to your advantage; we include warranty policies and procedures, sales information, how to become an SPD dealer, how to submit a proposal for sponsorship, products you can get from your Shimano sales rep., how to order by phone or fax, and a ton of technical information from the most commonly ordered service parts to instructions on how to install and adjust the new products for '99.

"By including as much information as possible in one book, we hope you will begin to think of the STI manual as a handy reference that will help you with lots of different issues that come up in the shop. The answers to the most frequently asked questions are all here. And like any good reference, STI can save you a lot of time and money, if you use it."

Jessie Gascon
Customer Service Manager

SHIMANO®

New Stuff for '99

SHIMANO®

ADVANTAGES OF SHIMANO SYSTEMS ENGINEERING

IT'S ONE THING THAT'S NOT NEW

There's a lot of cool stuff that's new for '99, including the Mega-9 Drive Train for XTR, XT & LX. One thing that's not new, however, is Shimano Systems Engineering. It's a design philosophy that guides the development of all of Shimano's bicycle components. With improved performance as the ultimate goal, each individual part is made the best that it can be and then refined and field tested to make sure it fits into the component system as a whole. System engineering has always set Shimano apart from rest of the field because it's not a single component—a derailleur, a set of cantis, or a particular hub—that achieves peak performance, it's when you get all the components working together. Anyone can develop a cool shifter or set of cantis, but if the shifter hasn't been designed and tested to work precisely with the cables, derailleur and even the hub; or the cantis with the internal mechanism of the levers; if the parts don't work together to achieve a specific standard of performance, then the ultimate result remains a total unknown. The bike is just a bunch of parts: ***Put Together, but not Working Together.***

YOU CAN FEEL THE DIFFERENCE

That's why Shimano has always approached component design from a systems point of view. You feel the difference of course with STI, (Shimano Total Integration™), in our SPD™ systems, Dual-Control Levers™, M-System Brakes™, HG and IG drivetrains. The lean, ergonomic SL shift lever, for example, is just the beginning of Shimano's "Rapidfire™" shifting performance. Indexing is calibrated and field tested not just to account for the movement of the derailleur, but for the resistance of the cable, and the tolerances of the hub, crank, cogset and chainwheel. You feel it in the new Servo Wave Action inside our V-brake™ levers. Because it's been System Engineered, it's the only "canti-lever" assembly that enables you to adjust the awesome V-Brake power without compromising the pad-to-rim clearance or bottoming out the lever. No matter what kind of ride your customers are looking for—high end precision or a fun, comfortable recreational ride—the engineering principles are the same: Design each part to contribute to your overall performance goal. When you do that, the bike is more efficient. Shifting works better. Brakes work better. Things wear and stay in adjustment longer. The TOTAL standard of performance ratchets up and your customers enjoy the sport a whole lot more.

IT WOULDN'T BE XTR®

Ironically, Shimano gets slammed sometimes for building a system that is so beautifully integrated that no one else can touch the performance profile. "They're trying to monopolize the industry," say some. "It's not interchangeable," cry others. "And it limits our creativity." Hey, if everything on the Mega-9 XTR system was compatible with everything else on the market, it wouldn't be XTR. It would just be a bike with a bunch of parts.

MORE COMPATIBILITY INCREASES YOUR OPTIONS

In '99, Shimano continues to apply its System Engineering genius to achieve the interchangeability that makes life better for customers and easier in the shop. The NEW Mega-9 drive train for XTR, XT and LX have a wide compatibility latitude. The 4- and 5-arm crank options for XTR and XT, for example, are interchangeable between the two groups which enables super-low gear combinations. The LX crankset is compatible with previous XT, LX & STX systems. There is also total interchangeability between all 9-speed road systems: Dura-Ace, Ultegra and now the NEW 105. Two assembly positions also make the 9-speed Dura-ace rear derailleur compatible with Ultegra (8-speed), XTR (8-speed) and the 8-speed Dura-Ace. Shops can also retro-fit a 9-speed 105 to an existing bike with only minor cable re-routing. Integrated AND separate shifters are available for XTR, XT, LX, STX-RC, STX and Alivio. The ultra-interchangeability of the last year's 4-arm spiderless crank enables customized bikes with almost any gearing configuration. So we're workin' on it. Striving to bring you the peak performance and value of Shimano's system engineering with a lot more room for individual creativity and innovation.

SHIMANO® MULTI-SERVICE™

NEW PRODUCTS FOR '99

Just about every Shimano group has been improved this year. The 1999 Dealer Catalog has a complete description of all the new stuff for '98, but here's a quick summary just to get you started.

✸ Mega-9 ®

XTR, XT and LX have received that ninth gear that creates the wider, lower gearing many pros and enthusiast riders have asked for, without creating those big gaps in gears, or the premature wear and chainsuck that are common with 20 tooth inner chainring solutions. All three groups receive a wide array of other upgrades as well, like the NEW V-brake design, more ball bearings in XTR and XT, Flight Deck-ready levers, and more.

✸ SHIMANO 105

We dropped the SC from the name and added a 9th gear. Now you can offer world-class performance levels at a sport-level price point, expanding your market for mid-range buyers looking for performance and affordability.

✸ FLIGHT DECK™ Computer

Does what no other computer can do. And now there's one for just about every bike on the road or trail.

✸ SHIMANO Alivio

Upgraded this season from 7- to 8-speeds, Alivio offers real MTB performance, elegant styling and it's totally affordable.

✸ ACERA SHIMANO

Upgrades galore this season, with the NEW V-brake design, E-set front derailleur, 4-arm crank, and sterling new look; with very little out of pocket damage.

✸ SHIMANO RSX

7-speed RSX is now 8-speed, with a ton of new upgrades. Professional performance at a quarter of the cost.

✸ NEXUS Auto-D

Shimanos NEW electronic shifting system, expanding the market for lifestyle bikes by transforming the cycling experience.

✸ NEXAVE T300

New 7-speed version enables more riders to experience the pleasure of cycling as a life style.

✸ SPD / SPD-R

Awesome new line of footwear for '99, and four new pedals: PD-6600 for road; PD-M434, PD-M545 and PD-M515 for off-road.

✸ Shimano's Closet

Three new jerseys, plus a ton of other clothing and cool accessories. The Dura-Ace 25th Anniversary jersey will be a collector's item, so stock up.

✸ Shimano's Workshop

Lubes, degreasers, solvents and hand cleaners can be an important profit center for the store.

SHIMANO'S DEALER DIRECT PRODUCTS

$$$ Direct to YOU! A little more profit here; a little there IT ADDS UP! $$$

There's a bunch of stuff you can order directly from Shimano or from Shimano's Rep. in your area (check out list in this manual). For example: SPD Shoes and Pedals (check out list in this manual), Jerseys, Shorts, Socks, Hats, Accessories, the V-Brake Booster, Lubes, Degreasers, Handcleaners, AND ALL THOSE HARD-TO-FIND SERVICE PARTS!

NEW The Dura-Ace 25th Anniversary Jersey

The brilliant red checks symbolize the flag of victory for Shimano's legendary Dura-Ace road group. This will be a collector's item.

SHIMANO® MULTI-SERVICE™

NEW The XTR Jersey

Mean Mountain Green. Green, for the environment. Mountains, for the premier MTB group of the planet. Mean, just for the hell of it.

NEW The DX Jersey

They say lightening never strikes twice in the same place. Check again!

Shimano T's

Continued.

8-Panel Road Short

Continued.

Zuma MTB Shorts

Continued.

CHECK OUT THE CHANGES FOR '99

(See Trade Sales and Support Manual for details)

MTB

GROUPS	98	99
XTR	8-SPD	V-BRAKE ↑
XT	8-SPD	V-BRAKE ↑
LX	8-SPD	V-BRAKE ↑
STX-RC	NO CHANGE	
STX	NO CHANGE	
ALIVIO	7-SPD	8-SPD V-BRAKE ↑
ACERA	7-SPD "X"	7-SPD V-BRAKE ↑ (drop the "X")
ALTUS		↑
TOURNEY-TY40		Revo-Shift Mega Range

↑ = lots of upgrades

ROAD

GROUPS	98	99
DURA-ACE road	NO CHANGE	
DURA-ACE track		Track Upgarde ↑
ULTEGRA	NO CHANGE	
105	8-SPD "SC"	9-SPD ↑ (drop the "SC")
RX-100	NO CHANGE	
RSX	7-SPD	8-SPD ↑
300-EX	NO CHANGE	

LIFESTYLE

GROUPS	98	99
NEXAVE	T-400 8-SPD	T-400 8-SPD T-300 7-SPD NEW
NEXUS	I-4 I-7	I-3 NEW I-4 I-7 AUTO-D NEW

SERVICE WHAT YOU SELL
KEEP THOSE HARD-TO-FIND SMALL PARTS IN STOCK
ORDER 'EM DIRECT FROM SHIMANO MULTI-SERVICE

Multi-Service Means What it Says: Lots of Service

SHIMANO®

WHAT IS MULTI-SERVICE

On the phones, in your shop and at the races; Shimano Multi-Service™ means exactly what it says: we'll provide you with every service we can think of to make your life easier and your business better.

Multi-Service means toll-free phone access to dealers ONLY: 1-800-423-2420. It means a dedicated staff of experts ready to answer your technical questions and fill your small part, footwear and pedal orders. It means responsive warranty service, and a 24-hour, toll-free FAX ordering system that will save you a lot of time and money: 1-800-206-0010

Multi-Service also means at-your-door support with training, seminars and new product orientation across the nation.

At the races, Multi-Service teams support the sport with technical back-up and just plain good advice about how to get your bicycle to perform at its highest possible level.
Time is money: on the race course, and in your shop. So you don't want to waste it waiting.

SHIMANO®
MULTI-SERVICE

IN THE UNITED STATES:

Phone: **800-423-2420** (Dealers only)
949-951-5003 (Consumers)
7:00 a.m. to 5:00 p.m. (pst) Mon.–Fri.
Fax: **800-206-0010**
spare parts, footwear, pedal orders, 24 hrs.

IN CANADA:

Phone: **800-361-6215**
Fax: **800-619-9067**

How to Use Multi-Service

Multi-Service is dedicated to providing efficient, hassle-free service to our customers at all levels.

Did you know that with Multi-Service you can order small parts, SPD (shoes and pedals), clothing, lube products, promotional items, product manuals, current Technical Books, service instructions, and consumer catalogues. You can also receive the following information using the ultra convenient phone/fax service:

SHIMANO® MULTI-SERVICE™

Technical Stuff

- Tech information for all your service and repair needs
- Product Availability and Pricing
- What's in stock as well as other product sources
- Warranty/RA (Return Authorization)
- Priority warranty shipping 24 hour turnaround and UPS 3-day return
- All SPD items (shoes and pedals) must be warrantied through Shimano only

How to Use Shimano's Multi-Service

For faster order processing please have the following information ready when you call:

- Customer number
- Shimano part numbers with quantities
- Length of usage and a basic description of problem on all warranty issues

PLEASE TRY TO CONSOLIDATE ALL ORDERS TO A SINGLE WEEKLY ORDER, OR: FOR EVEN FASTER SERVICE USE THE 24-HOUR FAX ORDERING SYSTEM.

How to Contact Shimano Multi-Service

BY PHONE: 800-423-2420
BY FAX: 800-206-0010 (24 Hours!)

By Mail:: Shimano American Corporation • One Holland Drive • Irvine, CA 92618

TOUCH TONE INQUIRY SYSTEM SAVES TIME. IT'S FREE. IT'S 24 HOURS AND WEEKENDS.

(800) 423-2420

Time is money: on the race course, and in your shop. So you don't want to waste it waiting on the phone. Shimano's Telephone Touch Tone Inquiry System enables you to check ***Order Status***, ***Available Credit*** and ***Inventory Availability*** **INSTANTLY!** No Wait. Here's how you do it:

- Call (800) 423-2420
- At the prompt, Press one to access automated services
- At the prompt, Press two for bicycle information
- At the prompt, Enter your six digit customer # (if you don't have 6 digits put zeros in front)
- At the prompt, Press One for Order Status, or
- Press Two for Available Credit, or
- Press Three for Inventory Availability

Sometimes Purchase Order numbers are alpha/numeric. Use the chart below to convert the letters to numbers when entering your PO number with telephone keypad. Do not enter spaces, dashes, periods, etc. In Item Numbers, omit periods and spaces, and do not use asterisk (*) to indicate letters. Here's an example:

Example: M136.5 converts to: M1365, which converts to: 611365

A	*21	J	*51	S	*73
B	*22	K*	*52	T	*81
C	*23	L	*53	U	*82
D	*31	M	*61	V	*83
E	*32	N	*62	W	*91
F	*33	O	*63	X	*92
G	*41	P	*71	Y	*93
H	*42	Q	*1	Z	*0
I	*43	R	*72		

SHIMANO®

TOLL FREE FAX ORDER FORM

PLEASE PRINT USING BLACK INK ONLY

SHOP PHONE # _____ ACCT # _____

SHOP NAME _____

SHIPPING ADDRESS _____
(NO P.O. BOXES)

CITY/STATE/ZIP _____

CONTACT NAME _____

TODAY'S DATE _____ P.O. # (IF NEEDED) _____

SHIPPING TYPE (CHECK ONE)

☐ GROUND ☐ ORANGE (3 DAY AIR) ☐ BLUE (TWO DAY) ☐ RED (NEXT BUSINESS DAY)

☐ SHIP AS IS

☐ CONFIRMATION NEEDED PHONE NO. (____) _____ ASK FOR: _____

METHOD OF PAYMENT:

☐ OPEN ACCOUNT ☐ COD ☐ CREDIT CARD ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ EXP. DATE ___/___

☐ VISA ☐ MASTERCARD SIGNATURE: _____

	Part Number	Qty	Cat Pg. No.	Description
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

NOTE: ALL PARTS WILL BE SHIPPED BY UPS OR FREIGHT.
*DEALER SERVICE PARTS CAN ONLY BE ORDERED BY DEALERS IN THE UNITED STATES.

FAX PLUS (800) 206-0010

PLEASE MAKE ADDITIONAL COPIES FOR FUTURE USE.

Shimano Multi-Service travels North America working at cycling events from the Redlands Classic stage race to BMX Grand Nationals. In between we're at NORBA NCS events, USA Cycling National Championships, century rides, bike rallies and fat tire festivals. Over the past six seasons, we've learned volumes about bikes, bike riders, and turning wrenches. From this, we have developed a process and checklist for continued improvement and professional work.

1. Read the service instructions included with all new parts. Not only will these instructions provide proper set-up techniques, but they can also point to any changes that may have been made.

2. Use a torque wrench and refer to manufacturers recommended settings. Proper installation eliminates doubt, builds trust, and reflects professionalism. Employers and customers will value your work without question. Use recommended setting guidelines to check all assemblies, including pre-assembled parts and bikes. Proper assembly builds better, faster bicycles. (See Shimano recommended tightening torque values in the Technical Support section.)

Over the past six seasons, we've learned volumes about bikes, bike riders, and turning wrenches

3. As the bikes, equipment, and events evolve, stay ahead by educating yourself in all areas. Use service instructions, manuals, tech guides, magazines, and even the Internet to learn more. Attend seminars, trade schools, and ask questions at trade shows. Better still; volunteer to work with the Multi-Service program at one of our events. Make a commitment to learn about bikes, not just mountain bikes or road bikes or BMX bikes, but all types of bikes and bike riders. We're all in the same gang.

Multi-Service is always available for assistance, give us a call!.

Chris DiStefano
Multi-Service Manager

Warranty Issues

SHIMANO
Authorized
Warranty
Center

SHIMANO®

If you haven't heard, we've changed our warranty! We've always felt that we are making the best cycling components available and now we're backing them with what we think is the best warranty. Effective immediately, all Dura-Ace and XTR components are covered by a 3-year warranty, while all other cycling components are covered by a 2-year warranty. Shoes and other soft goods are covered for one year. We call it ***3-2-1***, you'll call it added value to help make sales, and your customers will call it peace of mind. Read on through the next few pages for detail about how to submit a warranty claim and how the new warranty may affect the way that you handle claims.

Devin Walton
Warranty & Quality Assurance Manager
Bicycle Components Division

SHIMANO®
MULTI-SERVICE

SHIMANO WARRANTY GUIDELINES

1) When a customer walks into your shop with a part that is no longer functioning properly or even broken, don't assume that the failure was due to defect. In many cases, the product may simply be worn out, providing an opportunity to gain a new customer through explanation of the component system, the cause of the failure or lack of performance, and the benefits of replacing the product with new components. The worst thing to do to your customer is tell them that "it's worth a try" and send the product in as potentially defective when you're uncertain of the outcome yourself. If the product is not found to be warrantable and is sent back to your shop, you'll be back at square one with a customer who's been waiting, anticipating a free replacement. Remember, we've all seen JRA; at the same time, if you submit something that you feel truly falls under warranty, chances are we will too.

2) When submitting older model product, always send a receipt with it showing the purchase date. Such documentation always makes it easier for us to determine if a product should be covered by warranty. Because the warranty has been, extended information regarding purchase date is becoming more relevant and, in many cases, receipts will be required before a warranty decision is made.

3) Don't assume we can see what you can. Always provide as much information regarding the defect as possible. For example, if a front derailleur is sent in with a note that says, "doesn't work" with no visible flaws, how do you suppose we'll determine the defect?

4) Warranty Center. Plain and simple. That is where you will get your one stop shopping done. Call them up, place your orders for shop inventory and then get RA#'s for any Shimano product that you would like to submit for warranty. One phone call and they'll ship it out to you the next day. You can't beat the convenience.

5) If there are signs that indicate a part may have been damaged during shipping, then contact the distributor or OEM that you purchased the part from because that is a shipping problem that they should be made aware of. The claim can be handled through any warranty channel, but be aware that if the OEM does not know about the problem, other bikes may arrive damaged. The signs include: a damaged shipping carton; a broken, protruding assembly such as a cracked shift lever housing or non-functioning shift indicator. Since it is not likely that the OEM shipped a broken part, any damage that you note should be suspected as shipping damage.

SHIMANO®

Authorized Warranty Center

SHIMANO®

Introduces its NEW 3-2-1 Warranty

3 **Full Years on all Dura-Ace and XTR Components**

2 **Full Years on all other Shimano Components**

1 **Full Year on all footwear and clothing**

ADDED VALUE TO HELP MAKE SALES

PEACE OF MIND FOR YOUR CUSTOMERS

Making a Claim

CONSUMER HAS A PROBLEM

Your customer can contact Shimano American Corporation

...or...

You may choose to handle the claim for your customer.

SHIMANO AMERICAN CORPORATION
Always use an insured traceable carrier.

DEALER
According to claim, send part thru any of these channels

AUTHORIZED WARRANTY CENTER
Your nearest Shimano Authorized Warranty Center is likely to be the fastest source for replacement parts and might be the distributor you currently deal with. The Warranty Center will have the fastest turn-around.

DISTRIBUTOR
You can always contact the company that sold you the product.

OEM
OEM bike manufacturers are ready to support the complete bicycle. The OEM should always be contacted when shipping damage is suspected.

SHIMANO AMERICAN CORPORATION
If returning a part to Shimano, make sure that you have complete information about brand and model of bicycle. Once received, most warranty items get 24 hr. turnaround and 3-day ups return shipping. Remember that in cases of suspected shipping damage, the OEM needs to know about the problem.

Note: *Footwear warranty claims must go to Shimano American Corporation or your footwear rep.*

SHIMANO'S AUTHORIZED WARRANTY CENTERS

For USA

Merry Sales (CA)	(800) 245-9955
Quality Bicycle Products (MN)	(800) 346-0004
Quentin Distributors (IL)	(800) 323-1741
Riteway East (NY)	(800) 487-2453
Riteway Products Central (MO)	(800) 366-3966
Riteway Products Midwest (WI)	(800) 588-7787
Riteway Products West (CA)	(800) 869-9866
Seattle Bike Supply (WA & TX)	(800) 283-2453
Trek (Nationwide)	(800) 879-8735
United Bicycle Products (OR)	(800) 482-1984

For Canada

(CL)	Cycles Lambert	(800) 463-4452

SHIMANO®

Authorized Warranty Center

SHIMANO®
MULTI-SERVICE

POLICIES & PROCEDURES

When utilizing Shimano Multi-Service, the following policies and procedures apply:

- **WHO MAY ORDER & CALL**
  Only bicycle retailers in the United States of America, with a current Shimano account.

- **ORDERING**
  When ordering small parts, please use the Shimano 9 digit part numbers that are listed in the exploded view catalog (Shimano Dealer Parts Catalog). If you need additional small parts catalog, one may be purchased at the time of ordering. Footwear dealers should direct all policy & procedure inquiries to a Shimano Independent Footwear Rep. If you do not know who your local Footwear rep. is, check the list of reps. in this manual.

- **ORDERING BY FAX**
  If you would like to order more efficiently, please use our 24-hour toll free line for ordering (800) 206-0010. There is a sample in this manual.

- **MINIMUM ORDER**
  There is no minimum order. However, there is a $5.00 service charge on any order under $10.00. This is in addition to your regular shipping charges.

- **SHIPPING/FREIGHT**
  All orders are shipped within 24 hours from the time the order is placed with a Multi Service rep. All orders will be shipped UPS Ground or motor freight (our choice), unless you specifically request and thereby agree to pay for air shipment by Orange, Blue or Red Label service.
  - UPS Ground: 2-3 days—West Coast, 5-7 days—East Coast
  - UPS Orange: 3 days
  - UPS Blue: 2nd day air (Shipments to AK, HI and PR are shipped 2nd day air—no parcel post.)
  - UPS Red: Overnight delivery

- **PRICING**
  Prices are only given for small parts, SPD® pedals and footwear. We can quote dealer cost excluding freight.

- **BACKORDERS**
  We do not accept backorders for small parts. Please re-order any zeroed items. Footwear & SPD can be backordered.

- **WARRANTY RETURNS/AUTHORIZED WARRANTY CENTERS**
  All warranty returns must be authorized by Shimano warranty or warranty center personnel. All returns must have a Return Authorization (RA) number on the outside of the box. All parts not listed on the RA will be returned. Shimano American Corporation and Authorized Warranty Centers can not assume responsibility for any parts not listed on the RA. Please read the official Shimano warranty policy for details. All approved product will be shipped UPS 3-day no charge when returned to retailer.

- **RETURNS/MISSHIPMENTS**
  A) You must notify us by phone of ordering or shipping discrepancies within 5 working days of receipt of your order.
  B) All returns must have a Shimano Return Authorization (RA) number with only pre-authorized parts.
  C) All returns must be accompanied by a copy of the packing slip. Please retain all packaging materials until we have been notified.
  D) A 15% restocking fee will be charged for all un-approved returns.
  E) No product will be accepted for return after 90 days.

- **BILLING**
  All orders for small parts, SPD & Footwear are shipped direct and billed direct. Payment methods available to approved retailers are Credit Card (Mastercard® or VISA®), COD, or open account.

- **BUSINESS HOURS**
  7 a.m. - 5 p.m. (Pacific Time)

Thank you - - - from Shimano Multi-Service

SHIMANO AMERICAN CORPORATION
Product Shipping Address: One Holland Drive • Irvine, CA 92618
Mailing Address: P. O. Box 19615 • Irvine, CA 92713-9615
Multi-Service: (800) 423-2420
Fax: (800) 206-0010 24-Hour Ordering

Shimano Bicycle Division Limited 3-2-1 Warranty

Shimano warrants to the original retail purchaser that the Shimano bicycle division product for which they received this warranty, is free from defects in material and workmanship for a period of two years and their Dura-Ace and/or XTR components, for a period of three years from the date of original retail purchase. Shimano shoe products and soft goods are warranted for a period of one year.

LIMITS OF THE WARRANTY

Shimano's sole obligation under this warranty is to repair or replace the product, at Shimano's option.

LIMITATIONS OF IMPLIED WARRANTIES

The duration of any implied warranty or condition, of merchantability, fitness for a particular purpose, or otherwise, on this product shall be limited to the duration of the express warranty set forth above. In no event shall Shimano be liable for any loss, inconvenience or damage, whether direct, incidental, consequential or otherwise resulting from breach of any express or implied warranty or condition, of merchantability, fitness for a particular purpose, or otherwise with respect to this product except as set forth herein. Some locations may not allow limitations on how long an implied warranty lasts and some locations may not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you.

To obtain service under this warranty, you must send your Shimano product together with the retail seller's original bill, your charge or credit receipt or other satisfactory proof of the date of purchase of the product to Shimano American Corporation, Attn: Bicycle Warranty Dept., One Holland, Irvine, CA 92618. Any postage, insurance or shipping costs incurred in sending your Shimano product for service are your responsibility.

This warranty gives you specific legal rights, and you may also have other rights which may vary from location to location.

WARRANTY EXPLANATION

This warranty in no way replaces or is an extension of a complete bicycle manufacturer's warranty. Retailers and wholesale outlets for Shimano products are not authorized to modify this warranty in any way.

It is the consumer's responsibility to regularly examine the product to determine the need for normal service or replacement.

This warranty does not cover the following:

1. Shimano products that have been modified, neglected or poorly maintained, used in competition or for commercial purposes, misused or abused or involved in accidents.
2. Damage occurring during shipment of the products (such claims must be presented directly to the carrier).
3. Damage to products resulting from improper assembly or repair.
4. Damage resulting from causes other than defects in materials and workmanship, including but not limited to lack of technical skill, competence, or experience of the user.
5. Damage or deterioration to the surface finish, aesthetics or appearance of the product.
6. The labor required to remove and/or re-fit and re-adjust the product within the bicycle assembly.
7. Normal wear to the product.

SHIMANO AMERICAN CORPORATION
ONE HOLLAND
IRVINE, CA 92618

THIS WARRANTY APPLIES SPECIFICALLY TO THE UNITED STATES AND CANADA. FOR COUNTRIES OTHER THAN THE UNITED STATES OR CANADA PLEASE CONTACT YOUR DISTRIBUTOR OR AGENT, OR SHIMANO AMERICAN CORPORATION FOR FURTHER INFORMATION.

Sales & Marketing

SALES

Shimano's Sales and Marketing Departments are committed to helping distributors and dealers succeed. Sales works closely with OEMs and distributors to inform and support their efforts, as well as supply quality products promptly. Since dealers deal so frequently with distributors, we thought it might be helpful to include a list of all the distributors in the country who offer Shimano after-market, system-engineered components. We've also included a list of the 50 most frequently ordered small parts. If you keep these parts in stock, you'll save money in time and shipping.

MARKETING

The marketing department supports dealers in several ways. The award-winning ad campaigns maintain a strong consumer awareness of Shimano products which of course helps sales in the store. The sustained public relations program within the industry and general market also lets the public know about our company and the quality that goes into each product. One big way in which we support the sport is through our sponsorship program. Shimano sponsors some of the best teams and riders in the world and we are often asked by dealers and others for sponsorship support. If you are interested in finding out about a Shimano sponsorship for a team, rider or event, make a copy of the form that we have included in the manual and send it to us. We'll evaluate it and get back to you.

Also, remember Shimano's Youth Series Races. Shimano started the Youth Series events in 1993 with seven venues where 525 kids had a total blast! Today, over 3400 young riders are pounding pedals at 23 events. It's a total team effort with involvement from many of our best pro teams, local dealers, the NORBA organization, a bunch of cool parents and of course the KIDS. For more information about the future of the series AND the sport, call Shimano in Irvine, California.

SHIMANO®

AUTHORIZED SHIMANO DISTRIBUTORS

Shimano "Authorized" Distributors are your exclusive business partners for consistent product availability and reliable, up-to-date sales and technical information. In addition, only these companies have a direct connection with Shimano and can provide the professional warranty services to back up your business. Support your "Authorized" Shimano Distributors!

Action Bicycle
217 Washington Avenue
Carlstadt, NJ 07072
800-284-2453

Allied Cycle Distributors, Inc.
50 Sun Street
Waltham, MA 55401
800-233-2453 (Dealers only)

Diamondback
4030 Via Pescador
Camarillo, CA 93010
800-776-7641

Downeast Bicycle Specialists
226 Porter Road
Fryeburg, ME 04037
800-242-1043

Euro-Asia Imports
3935 Foothill Blvd.
La Crescenta, CA 91214
818-248-1814

G. Joannou Cycle Company, Inc.
151 Ludlow Avenue
Northvale, NJ 07647
800-222-0570

Giant Bicycle, Inc.
737 West Artesia Boulevard
Rancho Dominguez, CA 90220
800-779-BIKE

Hans Johnsen Company
8901 Chancellor Row
Dallas, TX 75247
800-879-1515

HLF Distributing, Inc.
1812 Brittmore
Houston, TX 77043
800-392-3337

Island Cycle Supply Company, Inc.
425 Washington Avenue North
Minneapolis, MN 55401
800-627-BIKE

J & B Importers, Inc.
11925 S.W. 128th Street
Miami, FL 33186
800-666-5000

KHS, Inc.
1264 East Walnut Street
Carson, CA 90746
800-347-7854

Merry Sales Company
1415 San Mateo Avenue
S. San Francisco, CA 94080
800-245-9959

Olympic Supply Company
5711 West Douglas Avenue
Milwaukee, WI 53218
800-236-8380

Quality Bicycle Products
6400 W. 105th Street
Bloomington, MN 55438-2554
800-346-0004

Quentin Distributors, Inc.
845 Carol Court
Carol Stream, IL 60188
800-323-1741

Raleigh USA Bicycle Company
22710 72nd Avenue South
Kent, WA 98032
800-222-5527

Riteway Products
2001 East Dyer
Santa Ana, CA 92705
800-869-9866

Schwinn Cycling and Fitness
1690 38th Street
Boulder, CO 80301
800-636-0391

Seattle Bike Supply, Inc.
7620 South 192nd Street
Kent, WA 98032
800-283-2453

Security Bicycle Accessories
32 Intersection Street
Hempstead, NY 11551
800-645-2990

Sinclair Imports, Inc.
2465 Highway 40
Verde, NV 89439
800-654-8052

System Cycle Supply / DK Products
201 Shotwell
Franklin, OH 45005
800-332-9237 (Dealers only)

The Hawley Company
1 Hawley Drive
Lexington, SC 29073
800-822-1980

Trek Components Group
801 W. Madison Street
Waterloo, WI 53594
800-879-8735

United Bicycle Parts
691 Washington Street
Ashland, OR 97520
800-482-1984

Wilson Bicycle Sales, Inc.
31157 Wiegman Rd.
Hayward, CA 94544
800-877-0077

Worldwide Cycle Supply
100-D Executive Drive
Edgewood, NY 11717
800-330-2550

SHIMANO®
MULTI-SERVICE

SHIMANO'S MOST FREQUENTLY ORDERED SERVICE PARTS

We get a lot of calls from our dealers asking for information about small parts orders. A frequent request is for a list of the most commonly shipped replacement parts. The information can help with ordering. If the stuff is inventoried it can greatly speed up warranty replacements. Keeping the items on-hand also saves time because you don't have to order as frequently. It saves money because time IS money.

SHIMANO'S MOST FREQUENTLY ORDERED PARTS

Part No.	*Description*
BRAKE	
Y8BM98100	BR-M600 LX V-Brake Shoe Set (Pair)
Y8AA98200	BR-M950/739/750/570 "Severe Condition" Brake Shoe Set (Pair)
Y8AA98130	BR-M950/739/750/570 Labeled "On Road Use" Standard Replacement Shoe (Pair)
Y8AA98070	BR-M950/739/750/570/600 V-Brake Cable "Noodle" 90 Degrees
Y8AA98110	BR-M950/739 V-Brake Tune Kit (Shims)
Y8AA27000	V-Brake Shoe Cotter Pin
Y8AA98030	BR-M950/739 V-Brake Ceramic Shoes (Pair)
Y8AA43000	BR-M739 V-Brake Fixing Bolt
Y8AA49000	V-Brake Fixing Bolt Washer
Y8AA98300	BR-M739 XT V-Brake Rebuild Kit (Parallel Push Mechanism)
Y8AB98090	BR-M950/1 XTR V-Brake Rebuild Kit (Parallel Push Mechanism
Y8FA98020	BR-7700/6500/5500 Brake Pads (Standard)
Y8CF98040	BR-MC16 Alivio Cable Fixing Bolt
Y8AA98050	V-Brake Pad Fixing Nut Assembly
SHIFTER	
Y6AR98010	ST-M739 RH Shifter Pod ("Guts" Only)
Y6AU43000	ST-M950/1 XTR Indicator Screws
Y6AR98070	ST-M739 RH Shifter Wire Hook Cover & Screws
KSLM569R	SL-M569 LX 8 Spd. RH Shift Lever
Y6AU98090	ST/BL-M950/1 Lever Clamp Bolt
FREEHUB	
Y30R98010	FH-M565 LX 8 Spd. Freehub Body
Y32P98010	FH-M737 XT 8 Spd. Freehub Body
Y3AP98020	7-Spd. FH Body for FH-M290/MC12/32/33
Y32V98010	FH-6402 Ultegra 600 8 Spd. Freehub Body
SPD	
Y42Z00070	PD-M747/636/545/535/323 Tension Screws
Y42Z04000	PD-M747 Top Plate & Screws
Y42Z11000	SPD Cleat Washer

Part No.	*Description*
Y41704030	SPD Cleat Fixing Bolts
Y42698050	SM-SH71 Road SPD Rotational Cleat (6 Degrees)
Y42498300	SM-SH55 SPD Multiple Release Cleat (Pair)
Y42498200	SM-SH51 SPD Single Release Cleat (Pair)
CABLE & HOUSING	
Y60098600	Teflon Coated Die-Extruded Shift Cable (XTR)
Y6Y098010	Transparent Sealed Cap Kit
Y6Z298010	SIS-SP40 6MM Plastic Sealed Outer Cap (100 Pcs)
Y6AM98080	SIS-SP40 Sealed Cap With Rubber Boot Kit (3-Pc Kit)
Y6Z298100	SIS-SP40 Derailleur Housing (Black) (1 Roll–25 Ft)
Y6Z298110	SIS-SP40 Derailleur Housing (Grey) (1 Roll–25 Ft)
Y69291040	Positron Cable Assembly 1620mm (Black)
Y60098510	SIS 1.2MMX2000MM Stainless Steel Derailleur Cables
Y80Y00263	SLR Brake Cable Housing (Grey) (1 Roll – 98.5 Ft)
CRANK/CHAIN	
Y06998020	Chain Connecting Pins For HG 9 Spd. Chain (50 Pcs)
Y04598020	Chain Connecting Pins For HG/IG Chain (50 Pcs)
Y06998010	CN-7700/HG92/HG72 9-Spd Chain Connecting Pin (5 Pc Set)
Y1AV98010	Chain Guard Fixing Bolts
Y1CR13010	Chain Guard For FC-MC14/16 Alivio Crank
Y16T39000	FC-6500 Ultegra 39T Chainring
Y1BD98320	FC-M569 4-Arm 32T Chainring
Y1BC93200	FC-M563 LX 32T IG Chainring
Y17L98020	FC-M950 XTR Crank Arm Fixing Bolt & Washer
Y17L98010	FC-M950 XTR Crank Arm Dust Cap & Plastic Washer
Y16M93200	FC-M737 XT 32T IG Chainring
MISC.	
Y57Y91100	SM-AD15 34.9 Clamp Band for Braze-On FD
Y04120400	Nexus Hub Roller Brake Grease
Y57Y92100	SM-AD11 31.8 Clamp Band for Braze-On FD

SERVICE WHAT YOU SELL • STOCK SMALL PARTS • BOOST PROFITS

SHIMANO®

1999 SPONSORSHIP REQUEST

HOW TO SUBMIT A PROPOSAL FOR SHIMANO TEAM SPONSORSHIP

Shimano receives a lot of requests for full and partial sponsorships. We sponsor many teams, individuals and events, but of course we cannot sponsor everyone. If you would like to submit a proposal requesting Shimano sponsorship for your team, individual, or event, please send a typewritten proposal that contains the following information and send it to us. We'll get back to you. Remember, we only accept proposals between September 1, and November 31.

Name _____ Phone _____

Address _____ City_____ State _____ Zip _____

Are you requesting sponsorship for:

___Team ___Individual ___Event ___MTB ___Road ___Triathlete ___BMX ___Other

Why are you requesting sponshorship from Shimano? Be clear and include details: _____

_____

_____

Give us some background (history) of the race, event, team, etc. Be sure to attach a schedule:

_____

_____

What benefits do you anticipate for Shimano in return for its support? _____

_____

Describe any marketing activities that are associated with the race, team, or event: _____

_____

What media exposure do you anticipate for the race, team or event?_____

_____

Also: Attach your resume and any other supporting documentation that will help us evaluate your proposal

Send the completed proposal to:

Shimano American Corporation

One Holland Drive

Irvine, CA 92623

Attn. Bruce Galloway

Proposals will ONLY be accepted between September 1 and November 31.

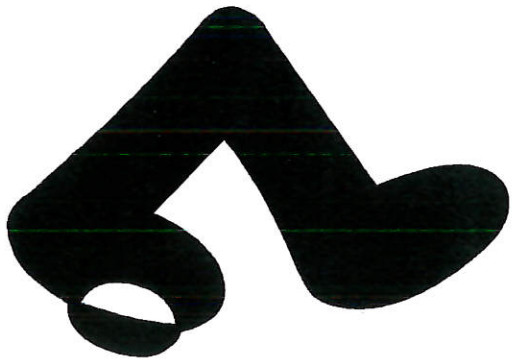
Shimano Direct to You

SHIMANO®

A FEW GOOD THINGS ABOUT

SPD

- Power Boost
- More Comfort
- Better Ergonomics
- Better Performance
- Bike It, or Hike It
- Longer Ride with Less Fatigue
- Win More Races
- **HAVE MORE FUN!**



SHIMANO

MORE PROFIT HERE; MORE PROFIT THERE. IT ALL ADDS UP

'99 PRODUCTS DIRECT TO YOU!

There's a bunch of Shimano stuff you can order DIRECT from your Shimano Rep. For example: **SPD Shoes and Pedals.** From Shimano's Closet: **NEW Jerseys. Shorts. Socks. Hats. Accessories. Lubes, Degreasers and Hand cleaners** From Shimano's Workshop. And don't forget **The V-Brake Booster.**

Call your area rep. and set up a personal showing of the entire line.

1999 SALES REPS

TERRITORY	REP	PHONE	FAX
AL, GA, NC, SC, TN, VA	Henry Creagh	(770) 466-7003	(770) 466-0038
DE, MD, NJ, NY, PA,WVA PUERTO RICO	Goodzies: Bill Zager	(215) 836-5852	(215) 233-3482
	Goodzies: Marty Kusmider	(215) 836-5852	(215) 233-3482
	Goodzies: Derek Rausch	(215) 836-5852	(215) 233-3482
MT, WY, UT	Mike & Sara Myer	(406) 587-1121	(406) 587-0109
ARIZONA	Jack Giudilli	(602) 978-2597	(602) 978-6353
COLORADO	Stacy Young	(303) 432-8219	(303) 432-8219
ILLINOIS	Michael Foley	(630) 325-7125	(630) 325-7128
WISCONSIN	Dominic Petit	(920) 490-9287	(920) 434-5147
ND, SD, MN, IA	Rick Carpenter	(612) 388-4579	(612) 388-5399
NE, KS, MO	Thomas Howe	(785) 843-1495	(785) 843-1484
NH, VT, NORTH MA	Steve Marcus	(617) 965-3735	(617) 965-3263
CT, RI, SOUTH EAST MA, ME	Todd Mullholland	(401) 943-4944	(401) 943-5545
NORTH TX, NORTH LA, OKLAHOMA, AR	Chris Watson	(817) 921-6868	(817) 922-8409
SOUTH TX, SOUTH LA, MS	Matt Wurth	(713) 688-6472	(713) 688-2156
IN, KY, OH	Rick Harnisch	(616) 949-8277	(616) 949-8430
ID, OR	David Colby	(503) 590-2566	(503) 590-3744
WASHINGTON	Tim Burks	(206) 285-2465	(206) 285-2368
SOUTH ORANGE CO., SAN DIEGO, NV	Jim Rasmussen	(760) 749-1298	(760) 749-1298
LOS ANGELES CO, ORANGE CO.	Darin Motoda	(310) 540-4547	(310) 540-4547
NORTH CA, NORTH NV	Ed Tyler	(415) 389-8833	(415) 389-8844
HAWAII, ALASKA	Glen Mako	(888) 395-6256	(808) 396-0125
FLORIDA	Dennis Lee	(407) 255-7679	(407) 255-7679
MICHIGAN	Bob McKee	(616) 874-7386	(616) 874-9430

What is SPD?

S•P•D™ ('es-'pe-'de) *n. also known as* Shimano Pedaling Dynamics™. 1: Comprehensive cycling shoe and pedal system that works as well on the bike as well as off. 2: Created by Shimano with separate systems for MTB and road cycling. 3: Comfortable shoes with performance enhancing "cleat" recessed into the sole (MTB shoes) or "cleat" with "pontoon" (road shoes) for easier walking. 4: Pedals *(also known as "spuds")*, which are attached to a crank, have cleat retention mechanisms that connect the rider easily and efficiently to the bike, allowing for fluid transfer of power. 5: Creates cycling harmony. *See also:* Coherence.

Most Commonly Asked Questions About SPD.

"How often should I grease/service SPD Pedals?"

Depends on how often and in what conditions the pedals are ridden in. Under harsh muddy conditions, lube all the pivot points before each ride with a chain lube that doesn't evaporate. A good rule of thumb is to lube your pedals whenever you have to lube your chain.

When to lube the axel:
- Once or twice a year for "race mileage" riders.
- When you can hear that the bearings are dry.
- If the axle develops more than a fraction of play.

To lube the axle, just remove the axle from the pedal body, adjust the bearings, and dab some grease in the pedal body axle hole. As the axle is reinserted into the pedal body, the new grease will squish the old grease out. If you want to take the bearing assembly all apart, it's pretty easy. If you run into some problems, give us a call on the Multi Service 800 number.

When removing the axle from the pedal body, make sure you are twisting the sleeve in the right direction. We get lots of pedals sent back with broken sleeves because they were twisted the wrong way *(this is not a valid warranty claim)*. A good way to remember which way to twist the sleeve, is that they unscrew the same way you would unscrew pedals from the crank arms: right pedal - counter clockwise, left pedal - clockwise.

If the top plate screws become loose, use some red or blue Loctite™ and re-tighten them.

"How often should SPD cleats be replaced and why?"

It depends on how often and in what types of conditions you ride in. "Race mileage" riders may need to change their cleats as often as 2 to 3 times a year. A good rule of thumb is that cleats should be replaced when there is a change in the release/engagement effort. If the cleat "floats" more and releases at a greater angle, inspect the cleat for wear. Usually the cleat will begin to release easier, due to the wear of the cleat. Eventually, if the cleat becomes too worn, the vertical tab on the cleat that opens the retention mechanism won't push it open enough to release the cleat and the rider will become stuck in his/her pedals.

Cleat wear is seldom the cause of difficult release. If the pedals are lubed properly and there are still release problems, then cleat wear is most likely the cause. Also, for muddy and severe riding conditions, set the release tension several clicks lower than you would use in normal riding conditions. This way it will be easier to get in and out of the pedals.

"What's the difference between rotation and float?"

The PD-M737's were designed with a "pre-release" tension feature, much like ski bindings, that allows the foot to move slightly without releasing. We call this "rotation". "Float" is free rotation independent of the cleat retention mechanism's spring tension. PD-M747's, PD-M535's, PD-M323's, PD-7410's, and PD-6500's all have "float". If you use the SM-SH70 cleat with them the rotation becomes fixed. All of our other pedals have "rotation". See the SPD Pedal & Cleat compatibility chart in this manual for more details

"How does Shimano size shoes?"

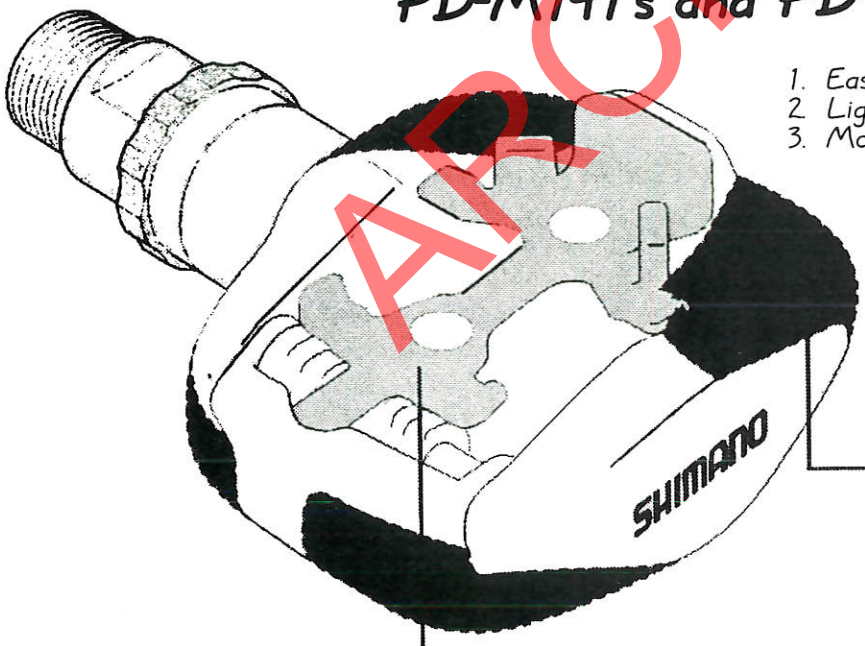
Our current last is based on the average foot. That is a B/C width. Since it is impossible to make a shoe fit everyone, we make ours to fit the majority of the feet out there.

"What happens if I back the tension adjuster bolt completely off?"

It should not come out due to a stop on the bolt. If it does, it can be put back together. Give it a try. If you have any problems, give us a call on the Multi-Service 800 number.

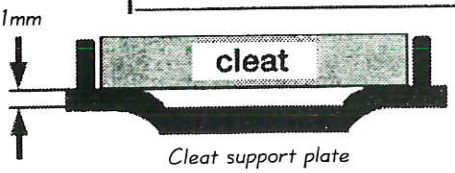
"What's New About PD-M747's and PD-M535?"

1. Easier to step into
2. Lighter in weight
3. More resistant to mud build-up



This area has been eliminated in the new PD-M747 and PD-M535 pedal.

New cleat plate cross section helps prevent mud build-up PD-M747 and PD-M535 pedal.



Cleat support plate

The 1mm gap between the cleat and the support plate helps prevent mud from becoming trapped between the shoe and the pedal.

"How do I handle a warranty?"

For pedals, call any of the Authorized Shimano Warranty Centers, or call us directly on the Multi Service 800 number. (See the phone list towards the back of this manual.)

For shoes, your footwear rep can handle your warranty claim when he or she comes to visit your shop or call us directly on the Multi Service 800 number.

Please make sure you get a Return Authorization (RA) number for your claim and write it on a piece of paper with a brief description of the problem and place it inside the box. Also, please write the number on the outside of the box. When the box shows up at our warehouse, this will help speed up the processing and tracking of your warranty claim. Also, we recommend you keep a record of the RA number handy so we can help you quicker should you need to call Multi Service.

"How long does a warranty claim take?"

Once the item is received in our warehouse, a replacement is sent within 24 hours. If the item is not in stock, it will be kept on back-order and shipped once we have it *(This is where knowing your RA number comes in handy for tracking the order).*

"What the heck is the Spd logo supposed to be?"

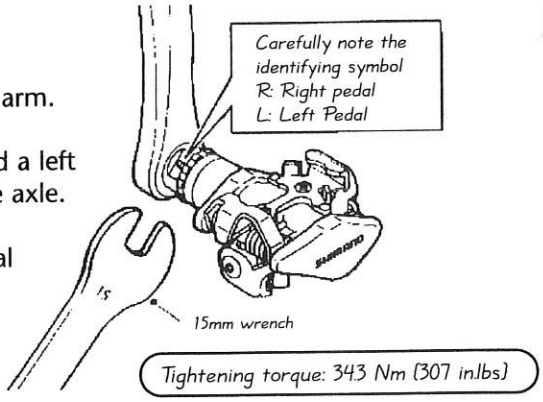
Believe it or not, we get asked this all the time. Even some Shimano employees aren't quite sure what it is, but here's the answer. It's a pair of legs and feet, and one of the feet has a pedal attached to it and the other doesn't. This represents the "bike and hike" idea of SPD.

Pedal Installation Instructions

1. Grease the axle threads before attaching pedals to crank arm.

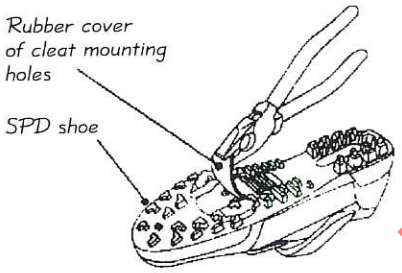
2. You guys already know this, but there is a right hand and a left hand pedal, indicated by a "R" or a "L" engraved on the axle.

   Tighten the pedals on the crank arm with a 15-mm pedal wrench and torque to about 307 inch pounds (25 foot pounds). For those without a torque wrench, this means 25 pounds of force on a 12 inch lever, or 50 pounds of force on a 6 inch lever.



Simple Cleat Installation Instructions

1. Use a bladed screw driver to loosen a corner of the rubber cleat mounting hole cover. *(Sometimes you might need to use a knife to cut around the cover before pulling it off. Either way, be careful not to stab yourself while cutting with the knife or prying with the screwdriver.)*

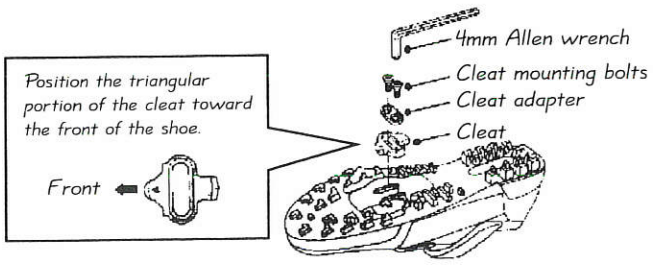


2. Grab the cover with your hands and peel it off. Use a pair of pliers if needed. Scrape leftover glue from the cleat mounting area.

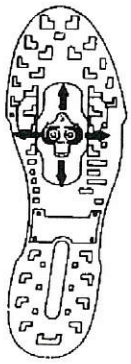
3. The service instructions with the pedals mention a two-hole cleat nut and a four hole cleat nut. The two hole cleat nut is designed for and is included in the sole of all of our road shoes. The four hole cleat nut is designed for all Shimano MTB shoes. The SH-M210 and SH-M110 have the four hole cleat nut embedded in the sole. All of our other MTB SPD shoes have the four hole cleat nut zip-tied to the outside of the shoe.

   From the bottom of the soles, position the SPD cleat over two of the holes. Make sure the cleat is pointed forwarded (A small Δ engraved on the cleat indicates the front). Also, choose two holes that will line the center of the cleat under or slightly behind with the ball of the foot.

4. Place the two hole cleat adapter on the cleat and then loosely tighten the bolts.



5. SPD cleats in Shimano shoes have an adjustment range of 20 mm front to back and 5 mm left to right. Position the cleat so the center of it is under or slightly behind the middle of the ball of the foot. To determine the angle of the cleat, have your customer stand with their feet about shoulder width apart on a slick floor in their socks. Have them do a couple squats. After they have stopped, look at the angle their feet take to an imaginary line drawn down the center of their leg. Set the cleats to this angle as a starting point.

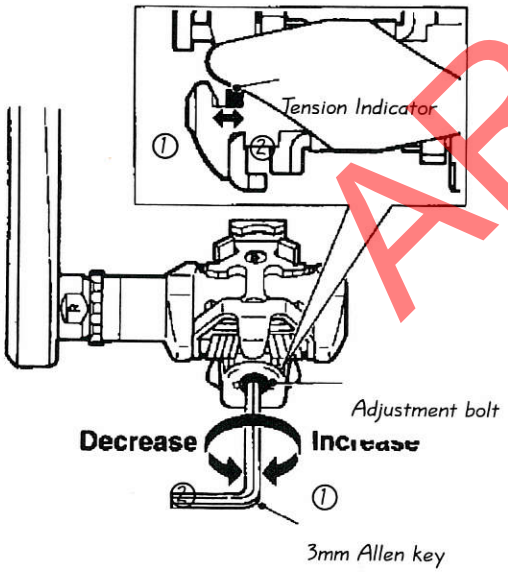


   Tighten the bolts to a temporary torque of about 22 inch pounds with a 4-mm Allen wrench.

6. Use a wind trainer or let your customer ride around the parking lot to check the cleat alignment. *(It's a good idea to have new SPD riders practice releasing 20 times on each foot. Explain to them to kick out their heel to the side ,not up or down, but by twisting while exerting slight inward and forward pressure with the toe to release. Also, suggest that they think about releasing their foot earlier than they normally would to avoid falling over when they stop.)* Make subtle cleat adjustments until the cleats feel "right". If one pedal is more difficult to locate and engage than the other, or, if the rider is pre-releasing during pedaling, the cleat alignment may be wrong.

   Once the cleats are "dialed in", tighten the bolts to about 45 to 52 inch pounds.

SIMPLE PEDAL TENSION ADJUSTMENT INSTRUCTIONS



1. Adjust the spring tension for each side of the pedal by turning the 3-mm Allen bolt on each end of the pedal. Clockwise increases spring tension and counter clockwise loosens spring tension.

Most NORBA riders find the initial setting out of the box is good. Less experienced riders should start out with a lower spring tension (or the SM-SH55 multi-release cleat) and then increase the spring tension as they get better. For new riders, never max the spring tension unless they are very large (over 180 to 200 pounds). Just like with ski binding tension adjustments, set the spring tension for the weight, ability, and, riding conditions the rider will use the pedals in.

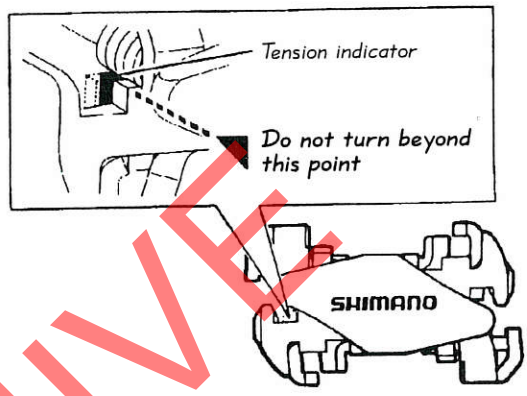
Be careful not to over tighten or loosen the adjustment bolt all the way out of the mechanism. (See most commonly asked questions section for what to do if the bolt is unscrewed all the way out.)

Spring tension on each side of the pedal and on both pedals must be equal. If the spring tensions are not equal, a different side of one pedal will be harder to get in and out of than another. This will make the pedals unpredictable to use.

Use the tension indicators to help make sure the spring tensions are equal. Or, another easy way to make sure the spring tensions are equal is to count the number of dents each adjustment bolt is turned. (There is a detent at each third of a turn of the adjustment bolt.) Turn the adjustment screws clockwise until they're in all the way (the tightest spring tension), then back each one out the same number detents to the desired spring tension.

TENSION INDICATORS:

PD-M747's & PD-M535's have a red tension indicator on the side. More red showing means more tension. Less red showing means...



PD-M323's spring tension indicator is on the bottom. The window has a small piece of metal. As the spring tension increases, that piece moves towards the back of the pedal and moves in the opposite direction as spring tension is decreased.

PD-M737's and PD-M525's spring tension is indicated by a red dot on the top and bottom of the pedals. As the spring tension increases, the red dot moves towards the back of the pedal and moves in the opposite direction as spring tension is decreased.

PD-7410's have a tension indicator on the back of the pedal with a small piece of metal. As the spring tension increases, that piece moves towards the bottom of the pedal and moves towards the top as spring tension is decreased.

PD-6500's & PD-A525's work the same way as PD-7410's, but they have numbers on the indicator windows for consumers who are used to ski binding type tension ratings.

SPD® cleat application table

The table below shows the recommended cleats for each SPD® and SPD-R™ pedal. Cleats listed under "usable cleat" can be substituted for the recommended cleat, but with certain restrictions as listed.

Pedal / Shoe	PD-7700/PD-6600/PD-5500		PD-6500		PD-A525/PD-M323		PD-M747/PD-M636/PD-M545 PD-M434/PD-M535/PD-M515	
	recommended cleat	usable cleat	recommended cleat	usable cleat	recommended cleat	usable cleat	recommended cleat	usable cleat
SH-R211/SH-R121* SH-R095*/SH-R072*	**SM-SH80, SM-SH90 SM-SH81, SM-SH91 SM-SH82, SM-SH92**		**SM-SH70 SM-SH71**					
SH-M320/SH-M150 SH-M080/SH-M057 SH-M035/SH-M035W SH-M032/SH-T090 SH-FR80/SH-FR70 SH-MP60/SH-MP50 SH-MX80/SH-MX70 SH-D100/SH-SD60					**SM-SH51 SM-SH55**	SM-SH71**	**SM-SH51**	SM-SH55 SM-SH70** SM-SH71**

*SH-R121/R095/R072 can also take LOOK® cleats. LOOK® is a registered trade mark of LOOK S.A.
**SM-SH70/71 road cleats can be used with non-road SPD® shoes but without pontoons.

SPD® pedal & cleat sets:

1. PD-7700 pedal packages include SM-SH81 cleat set.
2. PD-6600 and PD-5500 pedal packages include SM-SH91 cleat sets.
3. PD-6500 pedal packages include SM-SH70 and SM-SH71 cleat sets.
4. SM-SH51 cleat set is included with PD-M747,PD-M636,PD-M545,PD-M434,PD-M535,PD-M515, and PD-MA525, pedal packages.
5. SM-SH55 cleat set is included with PD-M323 pedal packages.

Footwear Accessories and Replacement Parts

SM-SH51
SPD® Cleat Sets

SM-SH51 for single direction release,and for "Easy step-in" feature.

code No.424 9820

SM-SH55
SPD® Cleat Sets

SM-SH55 for multi-directional release.

code No.424 9830

SM-SH90 SM-SH81/91 SM-SH82/92
SPD-R™ Cleat Sets

New SPD-R™ road racing cleat sets.
Side pontoons included.

- SM-SH90 for fixed binding.
- SM-SH81/91self aligning (6° of swing)
- SM-SH82/92self aligning (10° of swing)

code No. SM-SH90 43Y 9801
SM-SH81 42X 9802
SM-SH91 43Y 9802
SM-SH82 42X 9803
SM-SH92 43Y 9803

SM-SH70/SM-SH71
SPD® Cleat Sets

SPD® road shoe cleat sets. SM-SH70 is fixed retention type; SM-SH71is rotational retention type.

code No. SM-SH70 426 9804
SM-SH71 426 9805

Spikes

Removable sole spikes for SH-M320 and SH-M150 shoes.

SM-PD51
Reflector Set

For use with PD-7410 and PD-6500 pedals.

code No.40R 98011

SM-PD30
Reflector Set

For PD-A525 pedals.

code No.425 9801

SM-PD40
Reflector Set

For PD-M545 and PD-M434 pedals.

SM-PD21
Reflector Set

For PD-M747 and PD-M535 pedals.

code No.40S 9801

SM-PD20
Reflector Set

For PD-M525 pedals.

code No.41A 9804

Shoe Insoles

Available in sizes to fit all SHIMANO® shoes.

SPD® Seal

Available in S, M, L and XL.

code No.40E 9801

SPD FOOTWEAR AND PEDALS

"Power to the Pedal!"

Shimano Pedaling Dynamics (SPD) creates the perfect shoe/pedal platform for transferring power from your body to your bike. There's an SPD Shoe/Pedal combination for road and off-road; for racing and rambling; for the obsessed and the frivolous. And remember, SPD is simply unbeatable.

9 New Shoes in '99

Nine NEW SPD shoes, and the continuation of the most popular models from last year, will provide a footwear and pedal combination that's just right for the riding style, performance level, and comfort demands of your customers.

MTB SHOES

NEW SH-M320 / Kilazilla

Racers, Peak Performers, People who like to WIN!

The X-O skeleton enables a stiffer, lighter sole. The foot is cinched for security and fit with three retention straps and buckle. Neoprene ankle collar keeps stuff out, adding to security and comfort within. Molded heel cup contours to the foot. Aggressive tread with spike option for ultimate traction. Synthetic leather and nylon mesh stays in shape. It's 100% SPD. Made to WIN.
SRP US$189

SH-M150 / Rokasaki

SRP US$130 /(continued)

SH-M080 / Terrazoid

SRP US$100 /(continued)

NEW SH-M057 - Zillaroid

Sport Performer / Outdoor Adventurist / Free and Casual Riders
High-cut upper of weather-proof polyurethane leather and nylon cloth. Great ankle protection. Laces and strap for ease and secure fit. New outsole design and neoprene tendon pad for that Dr. Scholl-feel. The NEW hiking style "look" opens a wide panorama of uses. It's 100% SPD.
SRP US$99

SH-M035 / Megagam

(Men's and Women's)
SRP US$79 (continued)

SH-M032 / Heelamonster

SRP US$65.99 /(continued)

SH-SD60 / Grooveasaurus

Everybody needs these sandals

MULTI-PURPOSE SHOES

NEW SH-FR80 / Lavadron

All weather, outdoor enthusiasts and free riders with style

Fashion and Function combined, with camel brown high-cut Nubak leather upper for durability and resistance to water. Cup molded Cambrelle(r) inner for air exchange and comfort. Leather insulation for warmth in cold weather. It's 100% SPD. It feels as good as it looks.

SRP US$139

NEW SH-FR70 / Valadron

All riders who want a "cool" shoe

The nylon mesh upper adds a breath of fresh air to the sweatiest ride. Cup molded Cambrerlle(r) inner sole caresses the foot for comfort, and the lace and strap cinch the foot into a secure, confident fit. Light weight means less fatique and much more enjoyable ride.

SRP US$99

NEW SH-MP60 / Zorath

Casual riders, commuters, 2nd pair, BMX, shop folks

A sigh of comfort with every pair, this multi-purpose shoe is totally versatile. Low cut allows wide range of movement. "Dot" tread design grips tight. Laces and strap for secure, adjustable fit. Surf/Skake design appeals to Gen Xers. Totally SPD.

SRP US$69.99

NEW SH-MP50 / Reconorath

Riders. Non-riders. Everyone with feet.

Shimano's first non-cleated shoe for everything from casual cycling to fitness riding and downhill. The massive super-sole creates a security zone between the rider (or walker) that will defend against the elements, whether on or off the bike; cruising or careening down the mountain. It's got style, plus attitude. It's not an SPD shoe, but it is 100% Shimano.

SRP US$59.99

ROAD SHOES

SH-R211 / Megapavemantis

For the pro and quality-minded performance rider
SRP US$219 /(continued)

SH-R121 / Acceleraptor

Ultegra and 105 Level Sport and Competition rider
SRP US$134/(continued)

NEW SH-R095 / Velocipede

Sport / Fitness Riders
SPD, SPD-R and LOOK compatible, this versatile new "performance" roadie has a polyurethane-coated split leather and nylon mesh upper that keeps its shape and breathes when you need it. Two velcro straps for a secure, comfortable and adjustable fit. The versatility, range of features and neutral color will appeal to a lot of customers. 100% SPD & SPD-R.

NEW SH-R072 / Cleetrah

Sport, Fitness, Touring, and Indoor Group Cycling
Shimano's first entry level SPD road shoe that sports the versatile SPD-R cleat design. A stealth-looking polyurethane coated split leather and nylon mesh upper secures the foot, ventilates and keeps its shape. 100% SPD and SPD-R. Perfect shoe to introduce new riders to the long list of benefits that comes with SPD: better transfer of power; less fatigue; longer, more enjoyable rides.

NEW

SH-T090 / Megaspin

Recreational, Touring, Commuter & Indoor Group Cycling

Molded heel cup and two-strap cinch creates a better fit, more comfort and welcome adjustability. The recessed SPD outsole makes it totally walkable. And the sleek rubber sole is perfect for gym floors. Reflective toe and heel area are highly visible. Great new mid-range road shoe for under a $100. 100% SPD. SRP US$99

THREE NEW MTB PEDALS

PD-M545, PD-M434, PD-M515

The red DX caged pedal (PD-M646) was hot last season, but we had requests to include a more compact pedal with a smaller cage, and less weight. The three NEW MTB pedals for '99 are an answer to that call.

The M545, M434 and M515 are smaller, contoured, and lighter. Each one uses a cartridge bearing axle which increases durability, reduces friction, and makes rebuilding a breeze. (See Tech Tip section.) The M545 has a light alloy cage and weighs in at 546g. The 468g M434 has an impact absorbing resin cage. The M515, at 406g, has no cage, at all. The cages are modular and interchangeable between pedals. The three pedals answer a call from consumers and fill an important need, so stock up.

PD-M747
High-end racing pedal (continued)

PD-M535
Sport / Performance Pedal (continued)

NEW **PD-M515**
Sport / Performance pedal with no cage

PD-M636
Red BMX Pedal with cage (continued)

SHIMANO® MULTI-SERVICE

NEW **PD-M545**
Sport with alloy cage

NEW **PD-M434**
Sport with resin cage (New)

PD - M323
Multi-Purpose pedal

PEDALS FOR THE ROAD

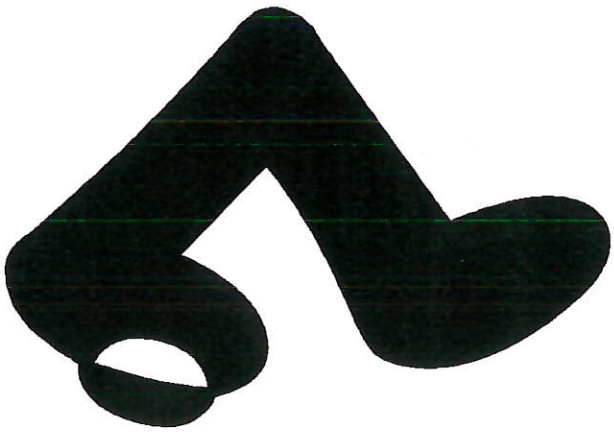
PD-7700
SPD-R High end road racing pedal (continued)

NEW **PD-6600**
SPD-R Sport / Competition Pedal (NEW)

PD-6500 – Sport / Competition Pedal (continued)

NEW **PD-5500**
SPD-R High performance Sport Pedal (NEW)

PD-A525
Sport Pedal (continued)



PURE SHIMANO GUTS

What is Shimano's Closet and Workshop all about?

Shimano's Closet is a clothing and accessory line that celebrates the incomparable quality of Shimano's world-class cycling technologies: Dura-Ace, XTR, and the new DX line of products. You cannot only ride XTR-equipped bikes, you can wear "stylin'" XTR socks, jerseys, and hats.

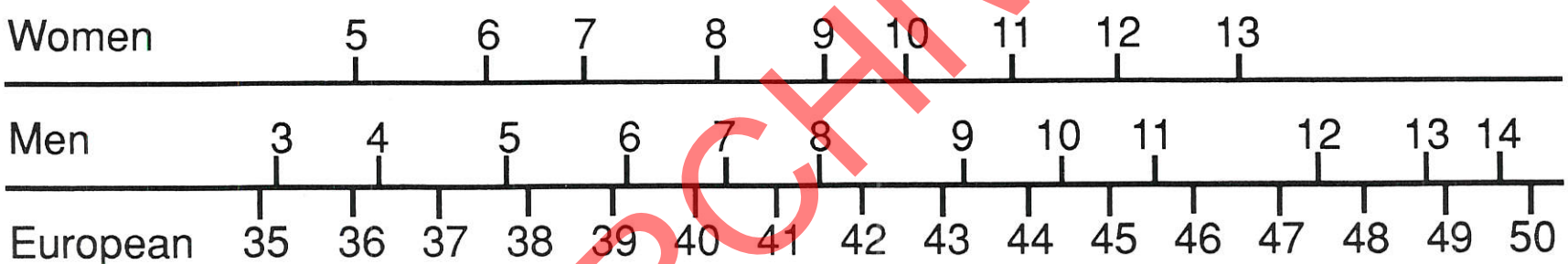
Robert Bush
Shimano Sales

P.S. Keep that Shimano-equipped bike working the way you expect with the line of lubricants, degreasers and hand cleaners from Shimano's Workshop.

SHIMANO®
MULTI-SERVICE

SHIMANO
CYCLING FOOTWEAR

Comparison of Shoe Sizes



This chart can be used as an initial guide in comparing American shoe sizes to European shoe sizes. Because of the wide variances in shoe design, this chart is intended to give the Shimano Footwear customer an approximate comparison of sizing.

SPD
SHIMANO PEDALING DYNAMICS

SHIMANO

1999 Shop Employee Purchase Program

No one appreciates the quality design and manufacturing that goes into Shimano SPD systems like the people working at the shops. To make sure you get the Shimano SPD products you deserve, we have created a Shop Employee Purchase Program which provides significant discounts to eligible bike shop employees. And it's pretty simple to qualify. First, you have to be employed at a shop with a current account with Shimano (it doesn't have to be a footwear dealer). Second, you have to have feet, or at least it's preferable. And that's it. We only accept FAX or mail-in orders (which means we don't take Employee Purchases over the phone), or give the order to your Shimano Footwear Rep. We prefer credit cards or COD. There's a limit of two pairs of shoes and pedals per employee per year. Just fill out the FAX form on the following page and mail it or fax it. Shimano's Pedaling Dynamics are on the way.

SHIMANO®

SHIMANO® 1999 Shop Employee Purchase Form

Customer Information

Ship To Cust No: _____

Ship To Cust Name: _____

_____

_____

Bill To Cust No: _____

Manager Signature _____

Order Information

Employee Name: _____

Shop Phone: _____

_____

Ship Method _____

_____

P.O. Number _____

Payment Terms:

_____ C.O.D. _____ Net 15 days

Credit Card

Visa _____ MC

Name on Card _____

_____

SHOES

Model	Prefix	36	37	37.5	38	38.5	39	39.5	40	40.5	41	41.5	42	42.5	43	43.5	44	44.5	45	45.5	46	46.5	47	48	Total Prs	Emp Price	Reg.	Ext.
SH-R211	(R211)																									$104.00	130	=
SH-R121	(R121)																									$56.00	70	=
SH-R095	(R95)																									$38.40	48	=
SH-R072	(R72)																									$28.80	36	=
SH-T090	(T09)																									$40.00	50	=
		36	37	37.5	38	38.5	39	39.5	40	40.5	41	41.5	42	42.5	43	43.5	44	44.5	45	45.5	46	46.5	47	48				
SH-M320	(M320)																									$80.00	100	=
SH-FR80	(FR8)																									$58.40	73	=
SH-M150	(M15)																									$52.00	65	=
SH-M080	(M08)																									$41.60	52	=
SH-M080 R	(M08R)																									$41.60	52	=
SH-M057	(M57)																									$40.00	50	=
SH-M057 B	(M57B)																									$40.00	50	=
SH-FR70	(FR7)																									$41.60	52	=
SH-M035	(M35)																									$32.00	40	=
SH-M035W	(M35W)																									$32.00	40	=
SH-MP60	(MP6)																									$28.00	35	=
SH-MP50	(MP5)																									$24.00	30	=
SH-M032	(M32)																									$26.40	33	=
		36	37	37.5	38	38.5	39	39.5	40	40.5	41	41.5	42	42.5	43	43.5	44	44.5	45	45.5	46	46.5	47	48				
SH-SD60 Sandal	(SD63738)	☐			(SD63940)		☐			(SD64142)		☐			(SD64344)		☐			(SD64546)		☐			(SD64748)		$29.60	37	=

50

<--- Women's last, cosmetics. Sizes 36-42 only

Cleats & Accessories

Model	Part No.	Qty	Reg	Emp Price	Ext.
SM-SH70 ROAD CLEAT	Y42698040	_____	12.50	$10.00	= _____
SM-SH71 ROAD CLEAT	Y42698050	_____	12.50	$10.00	= _____
SM-SH51 ATB CLEAT	Y42498200	_____	9.00	$7.20	= _____
SM-SH55 ATB CLEAT	Y42498300	_____	9.00	$7.20	= _____
SM-SH80 PD-7700 +/- 0	Y42X98010	_____	15.00	$12.00	= _____
SM-SH81 PD-7700 +/- 3	Y42X98020	_____	15.00	$12.00	= _____
SM-SH85 PD-7700 +/- 5	Y42X98030	_____	15.00	$12.00	= _____
SM-N DESIGN LOOK CLEAT	Y40B98110	_____	7.75	$6.20	= _____
SPD LOOK ADAPTER	Y42698070	_____	11.75	$9.40	= _____
PONTOONS FOR ROAD	Y42698060	_____	3.00	$2.40	= _____
SPIKES (2 W./TOOL)	PM210SPIKE	_____	5.00	$4.00	= _____

Pedals

Model	Qty		Reg	Emp Price	Ext.
PD-7700	_____	x	126	$100.80	_____
PD-6600	_____	x	82.00	$65.60	_____
PD-5500	_____	x	56.00	$44.80	_____
PD-A525S	_____	x	59.00	$47.20	_____
PD-M747	_____	x	83.00	$66.40	_____
PD-M535	_____	x	43.00	$34.40	_____
PD-M636	_____	x	53.50	$42.80	_____
PD-M545	_____	x	50.00	$40.00	_____
PD-M434	_____	x	42.00	$33.60	_____
PD-M323	_____	x	31.00	$24.80	_____
PD-M515	_____	x	31.00	$24.80	_____

Total Pedal Qty _____ Total Pedal $ _____

Total Shoe Pairs _____ Shoe $ _____

Total Pedal Pairs _____ Pedal $ _____

Total $ Accessories _____

Total Order: _____

Shimano's Workshop

The following are descriptions of the new lube and hand cleaner products being offered from Shimano's Workshop. Everyone knows good lubricants can extend the life and performance of your bike, and you'll have the confidence of knowing these lube products have all met the rigorous standards the world has come to expect from Shimano. Since mechanics get dirty, we've also added some very effective hand cleaners. Check out the Shimano's House brochure for pictures and some more hype.

Spin Doctor

Grease used in XTR, XT, Dura-Ace and Ultegra parts. This stuff has always been popular in the past, but it was pretty pricey because we had to import it. Now we're making it in the States (Texas) which makes the much-sought-after grease much more accessible. Sizes: 2 oz Tub / 4 oz. Tube / 32 oz. Tub

Slippery Spitt

A dry condition lube which is great for cables, pivot points, wheel building, etc. The petroleum-based product contains polymers and co-polymers. It sticks to itself and other stuff, but dirt doesn't stick to it. Size: 4.0 oz bottle w/applicator

Hypo Spitt

The same as Slippery Spitt, but it comes in a handy "mechanic-friendly" hypodermic applicator. The "Spitt" goes right where you want it to go. No waste. Great for home, shop, or your seat bag during a ride. Size: .25 oz syringe/24 pack

Gritt Spitt

A super citrus-based hand cleaner that is lanolin fortified and uses small plastic balls instead of sand or pumice as an abrasive. It smells great, and it doesn't feel like sandpaper when you clean up. Sizes: 8 oz Tube for consumer use. 11 oz can w/spray head for high volume use.

Sludge Off

This citrus based degreaser quickly cuts through grit and grime. You save time. And time, as you know, equals labor dollars. Size: 11 oz can

No Sweat Slide

This wet lube spray for chains and cables is one of the best moly-based products available. No Sweat. No CFCs! Just a lot of easy slide. Size: 10.5 oz can

Cream Cheeze

A small, modern miracle – this hand cleaner is waterless, non-abrasive, and biodegradable. Just rub the foam into your hands and the dirt and grease just flake off. Size: 7 oz can

Shine

Bikes are an investment. Customers spend "good" money for quality and they want it to work right – and they want it to "shine". Shimano Systems Engineering does the first; this polish does the second.

Lok Not

When dissimilar metals connect, galvanic corrosion will occur. Aluminum seat posts in a steel frame; steel anchor bolts in an aluminum derailleur, etc. Lok Not anti-seize prevents expensive corrosion. The bike is saved. So is your day.

SHIMANO® 1999 Season SHIMANO Workshop Order Form

Ship to Customer #:_____
Shop Name:_____
Shop Address_____
_____
Bill to Customer #:_____
Purchaser Name:_____

Order Date:_____
Rqstd Ship Date:_____
Payment Terms:_____
P.O. Number:_____
Rep Name/#:_____
UPS (Circle One): Ground 3-Day 2-Day 1-Day

CASE QUANTITIES

50% DEALER MARGIN ON CASE QUANTITY PURCHASES

Description	Case	Size	Part #	Order Qty	Price	Sug Retail-EA	Extension
Dura Ace Spin Doctor Grease	12	22 oz.	DASPINBBCS		$126.00	$21.00	
	24	4 oz.	DASPINBCS		$76.50	$6.00	
	30	2 oz.	DASPINSCS		$75.00	$5.00	
No Sweat Slide Dry Chain Lube	12	10.5 oz	SWEATCS		$48.00	$8.00	
Slippery Spitt Wet Lube	16	4 oz.	SLIPPSPITCS		$40.00	$5.00	
Hypospitt wet lube in squeeze tube	12	.5 oz.	SPITTREF		$18.00	$3.00	
Gritt Spitt handcleaner	15	8 oz.	GRITTSCS		$41.25	$5.50	
	4	1 gal.	GRITTBCS		$71.00	$35.50	
Cream Cheez waterless handcleaner	12	7 oz.	CREAMCS		$36.00	$6.00	
Sludge Off degreaser	12	11 oz.	SLUDGECS		$42.00	$7.00	
Get-A-Grip Penetrating Oil	12	16 oz.	GETAGRIPCS		$48.00	$8.00	
Shine Bike Polish	12	15 oz.	SHINECS		$36.00	$6.00	
Lok-Not Anti Seize	12	16 oz.	LOKNOTCS		$66.00	$11.00	

NON-CASE QUANTITIES

Description	Size	Part #	Order Qty	Price	Sug Retail	Extension
Dura Ace Spin Doctor Grease	22 oz.	DASPINBB		$12.60	$21.00	
	4 oz.	DASPINB		$3.60	$6.00	
	2 oz.	DASPINS		$3.00	$5.00	
No Sweat Slide Dry Chain Lube	10.5 oz	SWEAT		$4.80	$8.00	
Slippery Spitt Wet Lube	4 oz.	SLIPPSPIT		$3.00	$5.00	
Hypospitt wet lube in squeeze tube	.5 oz.	SPITTREF		$18.00	$3.00	
Gritt Spitt handcleaner	8 oz.	GRITTS		$3.30	$5.50	
	1 gal.	GRITTB		$21.30	$35.50	
Cream Cheez waterless handcleaner	7 oz.	CREAM		$3.60	$6.00	
Sludge Off degreaser	11 oz.	SLUDGE		$4.20	$7.00	
Get-A-Grip Penetrating Oil	16 oz.	GETAGRIP		$4.80	$8.00	
Shine Bike Polish	15 oz.	SHINE		$3.60	$6.00	
Lok-Not Anti Seize	16 oz.	LOKNOT		$6.60	$11.00	

SHIMANO WORKSHOP DISPLAY PACKAGE

Product shipped with package	Qty	Size	Part # (must use two numbers)	Price	Order Qty	Ext.
No Sweat Slide Dry Lube	12	10.5 oz.	WORKSHOPDISP	$299.99		
Slippery Spitt Wet Lube	24	4 oz.	WORKSHOPKIT			
Hypospitt wet lube in squeeze tube	24	.5 oz.				
Sludge Off degreaser	12	11 oz.				
Get A Grip Penetrating Oil	4	16 oz.				
Gritt Spitt handcleaner	6	8 oz.				
Shine Bike Polish	12	15 oz.				
Cream Cheez handcleaner	6	7 oz.				
Spin Doctor Grease	4	2 oz.				
Spin Doctor Grease	6	4 oz.				
Gritt Spitt handcleaner	1	1 gal.				
Spin Doctor Grease	1	22 oz.				
Lok Not Anti seize	1	16 oz.				

Display may be used on shelf, slatwall
kit has product for retail and shop use

SHIMANO CARBON V-BRAKE BOOSTER

		Part #	Order Qty	Price	Sug Retail	Extension
V-Booster w/hardware (100% Carbon)		VBOOSTER		$30.00	$60.00	

Order Total: $

Shimano American Corporation
Phone: (800)423-2420 Fax (800)206-0010
Prices listed effective August 1, 1998 and are subject to change.

SHIMANO'S CLOSET

This year's clothing line celebrates the incomparable quality of Shimano's world-class cycling technologies: Dura-Ace, XTR, and the new DX line of products. Pride of ownership is one of the reasons so many people ask for Shimano-equipped bikes. Your customers will take a lot of pride in the cool, new jerseys, too.

NEW The Dura-Ace Jersey

The brilliant red checks symbolize the flag of victory for Shimano's legendary Dura-Ace road group. This will be a collector's item.

NEW The XTR Jersey

Mean Mountain Green. Green, for the environment. Mountains, for the premier MTB group of the planet. Mean, just for the hell of it.

NEW The DX Jersey

They say lightening never strikes twice in the same place. Check again!

Shimano T-Shirt

The "futuristic" Shimano T is the "trickest" of the century. Basic black with no trim on collar or sleeves and basic white with black trim. Understated Saturn rings logo on front and back. Heavy duty 100% cotton.

8-Panel Shimano Road Short

Style, Comfort, and Function are synthesized in the '98 8-panel Lycra "Shimano" shorts. Black with "Shimano" in white.

MTB Baggy Shorts

8-Panel Lycra ain't for everyone. Shimano's new "Zuma, 'rip-tide' nylon, surf-style" look adds a fashion option. They're baggy on the outside with a mesh short inside.

Caps: XTR, DX, Dura-Ace, and SPD, plus the Snow Beanie

Embroidered and fully adjustable hats which make a statement about one's commitment to quality.

Socks: by DE-FECT

Assorted socks with popular "Shimano" themes (Power to the Pedal, etc.) add comfort, confidence and pride of ownership.

Shimano Shop Apron

Shimano logo on super durable flat black apron, with huge front pockets.

Shimano Water Bottle

Quench that thirst with an easy squeeze, large mouth Shimano Bottle. (24 oz.)

Grips: DX BMX and DX MTB

These are the latest style and add a distinctive and functional detail to your bike.

XTR Keychain

A miniature reproduction of the great SXT derailleur: good place to keep the "Key to Success".

SHIMANO

1999 Season SHIMANO CLOSET Order Form

Ship to Customer #:_____

Shop Name:_____

Shop Address_____

_____

Bill to Customer #:_____

Purchaser Name:_____

Order Date:_____

Rqstd Ship Date:_____

Payment Terms:_____

P.O. Number:_____

Rep Name/#:_____

UPS (Circle One): Ground 3-Day 2-Day 1-Day

Description	Size	Part #	Qty	Price	Sug Retail	Extension
Dura Ace Jersey (Short Sleeve, 3 Pockets)	MD	DA99MD		$32.50	$64.99	
	LG	DA99LG		$32.50	$64.99	
	XL	DA99XL		$32.50	$64.99	
	XXL	DA99XXL		$32.50	$64.99	
XTR Jersey (Short Sleeve, 3 Pockets)	MD	XTR99MD		$32.50	$64.99	
	LG	XTR99LG		$32.50	$64.99	
	XL	XTR99XL		$32.50	$64.99	
	XXL	XTR99XXL		$32.50	$64.99	
DX Jersey (Long Sleeve, Elbow Pads)	MD	DX99MD		$32.50	$64.99	
	LG	DX99LG		$32.50	$64.99	
	XL	DX99XL		$32.50	$64.99	
	XXL	DX99XXL		$32.50	$64.99	
Shimano 8-Panel Road Short	MD	RDSRTMD		$32.00	$63.99	
	LG	RDSRTLG		$32.00	$63.99	
	XL	RDSRTXL		$32.00	$63.99	
XTR Baggy Short	MD	XTRSRTMD		$28.00	$55.99	
	LG	XTRSRTLG		$28.00	$55.99	
	XL	XTRSRTXL		$28.00	$55.99	
	XXL	XTRSRTXXL		$28.00	$55.99	
Shimano T-Shirt (Black)	LG	SMNT99LG		$11.00	$21.99	
	XL	SMNT99XL		$11.00	$21.99	
	XXL	SMNT99XXL		$11.00	$21.99	
Shimano Ringer T-Shirt (White)	LG	RINGERT99LG		$11.00	$21.99	
	XL	RINGERT99XL		$11.00	$21.99	
	XXL	RINGERT99XXL		$11.00	$21.99	
Dura Ace Cap	ONE	DA99HAT		$10.00	$19.99	
XTR Cap	ONE	XTR99HAT		$10.00	$19.99	
SPD Cap	ONE	SPD99HAT		$10.00	$19.99	
DX Cap	ONE	DX99HAT		$10.00	$19.99	
Shimano Snow Beanie	ONE	BEANIE99		$6.00	$11.99	
XTR Pure Guts Sock (Black Sock with XTR Logo)	MD	XTRBLKMD		$5.00	$9.99	
	LG	XTRBLKLG		$5.00	$9.99	
	XL	XTRBLKXL		$5.00	$9.99	
SPD Pwr to the Pdl Sock (Black Sock with SPD Logo)	MD	SPDBLKMD		$5.00	$9.99	
	LG	SPDBLKLG		$5.00	$9.99	
	XL	SPDBLKXL		$5.00	$9.99	
SPD-R/Power to the Pedal Sock (White Sock with SPD-R Logo)	MD	SPDRMD		$5.00	$9.99	
	LG	SPDRLG		$5.00	$9.99	
	XL	SPDRXL		$5.00	$9.99	
Shimano Traditional Sock (White Sock with Tri-Color Shimano)	MD	SMNWHTMD		$5.00	$9.99	
	LG	SMNWHTLG		$5.00	$9.99	
	XL	SMNWHTXL		$5.00	$9.99	
Shimano Tri-Color Sock (Black Sock with Tri-Color Shimano)	MD	SMNBLKMD		$5.00	$9.99	
	LG	SMNBLKLG		$5.00	$9.99	
	XL	SMNBLKXL		$5.00	$9.99	
XTR/Mega-9 Sock (Black Sock/Black Cuff/XTR Logo and Mega-9 Logo)	MD	X9BLKMD		$5.00	$9.99	
	LG	X9BLKLG		$5.00	$9.99	
	XL	X9BLKXL		$5.00	$9.99	
Shimano Shop Apron by JandD	ONE	SMNAPRON		$17.00	$33.99	
Shimano Water Bottle (50/case)	24 oz.	H20TOGO24OZ		$107.00	$3.99	
DX BMX Grip - RED	ONE	BMXGRIPR		$4.00	$7.99	
DX BMX Grip - BLACK	ONE	BMXGRIPB		$4.00	$7.99	
DX MTB Grip - BLACK	ONE	MTBGRIPB		$4.00	$7.99	
XTR Mini RD Keychain	ONE	XTRKEYCHN		$5.50	$10.99	
					Order Total	

Shimano American Corporation
Phone: (800)423-2420 Fax: (800)206-0010

Prices listed effective September, 1998 and are subject to change

'99 Technical Information

™

SHIMANO®

SHIMANO

XTR

Bold and built for the business of racing, sets XTR apart from the competition.

Cassette:

- All new design, only 255g (12-34t), 9-speed, the ultimate in lightweight durability.
- Cold forged, 5 arm alloy carrier
- Top 3 sprockets made from lightweight, durable titanium

Rear Derailleur (M952/M953):

- 11t pulleys improves durability and 9-speed performance
- Medium and long cage available
- RapidRise and Top Normal designs to address all riders needs
- 200g makes it 7g lighter than M950

Front Derailleur (M952 / M953):

- Top swing version features higher rigidity, improved link plate and differential plate design for crisp, fast shifts.
- High clamp option (M953) allows more choice in frame placement, compatibility with all Mega-9 system front cranksets and 9-speed ultranarrow chain

Shift lever:

- Rapidfire-9 Shimano Total Integration lever set (M952)
- RapidRise and Top-Normal compatible for any combination
- Durable, high performance 8 bearing construction
- V-brake, Rapidfire Remote, and Flight Deck compatible
- Brake levers feature adjustable reach to accommodate different hand sizes

Chain (CN-7700):

- Silver Nickel-plated pin and roller link plates developed on pro-level Dura-Ace road group for long life and reduced friction
- 30g lighter than 8-speed chain

Crankset - Mega-9 (M952):

- 4 arm, 24/34/46 chainring, 5arm 26/36/48, Interchangeable spider with XT for super-low combination
- Hollow forged design and splined BB offer the lightweight performance expected with XTR

V-Brakes (M951):

- Improved durability and modulation with new beefier parallel link and spring design
- Square return spring provides more linear, consistent power.

Hubset (M950):

- Titanium rear axle and Freeehub body offer light weight with no compramise in durability
- Frant hub has an oversized aluminum axle, saving weight while retaining strength

SHIMANO DEORE XT

The original high performance MTB group get's an expedition / hard-core image!

Cassette (M750):
- Extruded 4 arm spider, 4 cog aluminum alloy carrier shaves weight
- 11-32t, 12-34t and 11-34t offer versatile gear combinations
- At 290g it's 56g lighter than M900, 12-32t 8-speed

Rear Derailleur:
- 11t pulleys improves durability, weighing in at only 255g
- Sculpted, organic design displays no-nonsense, muscular performance

Front Derailleur (M750):
- High Clamp option allows more choice in frame placement
- Compatibility with Mega-9 front cranks and ultra-narrow 9-speed chain
- Top swing version features improved rigidity, link plate design for crisp shifts
- Aluminum E-Bracket Top Swing version is available

Shift lever:
- High performance construction features 2 bearing design with gear indicators
- Rapidfire-9 Shimano Total Integration lever set (M750)
- RapidRise and Top-Normal compatible
- V-brake, Rapidfire Remote, and flight deck compatible for easy upgrades
- Adjustable reach accomdates various hand sizes

Chain (CN-HG92):
- 30g lighter than 8-speed
- Nickel plated pin and roller link plates feature XT-grey finish, same as Ultegra

Crankset - Mega-9 (M750):
- 4 and 5 arm design, 22/32/44t chainrings, 5arm has 26/36/48 option
- Arms feature lightweight, sculpted, XT design
- 7000 series alloy construction with precision machined rings

V-Brakes (M750):
- Beefier Wide Link parallel links and strong, sculpted XT design position XT V-brakes as true "expedition ready" components.
- New V-Brake design gives 15% more power with improved modulation control

Hubs
- New cosmetic shape and lightened Freehub body similar to Ultegra design
- Muscular look with shell flanges angled toward rim
- Aluminum or steel front axle option

DEORE LX SHIMANO

Serious performance!

Cassette (M570):
- Race ready 11-32t cogset, 350g

Rear Derailleur (M570):
- 11t pulleys improves durability at only 285g

Front Derailleur (M570):
- Top swing features improved rigidity, link plate design for competition level performance
- High Clamp (M571) option gives placement choice and performance
- Compatibile with Mega-9 front cranks and ultra-narrow 9-speed chain
- E-Bracket Top-Swing version available

Shift lever:
- Rapidfire-9 Shimano Total Integration lever set (M570)
- V-brake and flight deck compatible
- Longer "3-finger" lever with aggressive blade shape

Chain (CN-HG72):
- 30g lighter than 8-speed chain
- Grey finish, all business and durability, same as 105 chain

Crankset - Mega-9 (M570):
- 4 and 5 arm design, 22/32/44t chainrings interchangeable with previous XT, LX and STX chainrings
- 6000 series alloy with precision stamped chainrings

V-Brakes (M570):
- Parallel-push mechanism keeps pads square to rim for even pad wear and improved stopping performance

V-Brake Lever (M570):
- Servo-Wave action aids in smooth modulation of the V-brake power
- Adjustable reach and 3 position power setting customize to your needs

Hubs
- New shell cosmetic design with flanges angled toward rim

SHIMANO

Introducing 8-speeds to the Alivio group.

Cassette (HG50-8I):

- 11-30t 8-speed cogset, shifting performance and versatility

Rear Derailleur (RD-MC18):

- 8 speed IG compatible

Front Derailleur (MC18-E):

- E-set design requires NO stabilizer boss, no frame additions, and it positions itself!
- Integrated chain drop protector and inner chainguard
- Weightsaving aluminum BB plate
- Band type available

Crankset (MC18):

- 4 arm designs bolder appearance features more rigid design,
- wider 42-32-22t ratios, replaceable chainrings and smooth IG shifting
- Bolt pattern compatible with XT/LX/STV-RC

V-Brakes (M330):

- Low-flex V-brake design gives excellent stopping power
- Conventional side-fixed post mount pads, and spring tension adjustment give full adjustability
- Linear spring for consistent feel
- M-System pads, M600 style, give excellent all condition performance
- MC18 brake lever with reach adjustment and two-step power adjustment matched to V-Brake performance is available

Shift Levers:

- 8-speed RapidFire-Plus design combines light touch shifting with easy to use ergonomics

ACERA
SHIMANO

Quality and performance!

Cassette:
- Workhorse 7-speed IG for broad 11-28t gear range and great shifts

Rear Derailleur (RD-M330):
- 8 speed IG compatible

Front Derailleur (M330):
- E-set design requires NO stabilizer boss, no frame additions, and it positions itself with steel BB mounting plate with Integrated chain drop protector and inner chainguard

Crankset (FC-M350):
- 4 arm performance designs with replaceable
- 42-32-22t riveted chainring group

V-Brakes (M330):
- Low-flex V-brake design gives excellent stopping power
- Conventional side-fixed post mount pads, and spring tension adjustment give full adjustability with strong cold forged construction
- New arm design offer increased wheel clearance
- Linear Spring for consistent control
- M-System pad compound option

Shift Levers (ST-EF33):
- Easy to use performance shifting with new ST-EF33 EZ-Fire-Plus shifters
- Performance matched to the new M330 V-Brake
- Multiple shift capability and improved trigger location for RapidFire style ergonomics and performance

SHIMANO TOURNEY

Value and performance!

Cassette:

- 7 or 6 speeds with 34t ultra-low MegaRange gear for easy hillclimbing

Rear Derailleur (RD-MR40):

- Designed to handle the wide MegaRange gearing with 11t guide pulley and 13t MegaRange-red tension pulley

Front Derailleur (TY32-A):

- Top swing design for impressive SIS shifts

Crankset (TY30-A):

- Positive shifting SIS design
- Wide ration 48-38-28t chainrings

- TY40 option offers 42-34-24 gear range

Shift Levers:

- New Revo-Shift (SL-RS40-L, SL-RS30-L, SL-RS40-7, SL-RS40-6) Easy twist shift performance in 21, 18 and 15 speed systems
- Accurate SIS shifting with light action for an extremely user-friendly shifting system

- SL-TY22-A, SL-TY22-7 offer budget 7-speed performance with SIS accuracy in a conventional thumb-shifter design

All components feature integrated red logo markings that set Shimano MagaRange apart from the competition

DURA-ACE
TRACK

The competitive advantage

Crankset (FC-7710):

- Hollow forged crank arms save weight and strength, 165 ~ 175 length
- Splined crank increases mounting surface area
- 46-54t available

Bottom Bracket (BB-7700 / 6500 (7710)):

- 109.5mm pipe billet spindle resist flexing while reducing weight
- Spindle crank mount gives more surface area to make crank to BB a more rigid unit
- BB-7710 (6500 style) with steel lockrings for Keirin
- BB-7700 is lightest for all other competition

Hubset (HB-7710-F/R

- Highly polished stainless steel balls offer smooth low friction movement
- 28,32,36,40H with low flange design, 5% more resistant to side deflection with 3x wheel lacing, lighter weight and better ride quality than large flange hubs as confirmed by static machine testing and extensive test use by Keirin racers

SHIMANO 105

A new standard for the enthusiast racer.

Cassette (CS-HG70-9):
- Ready for competition with 9 speed HG cassettes in 12-23, 12-25, 13-23, and 13-25 tooth combinations

Rear Derailleur (RD-5500-ss, gs):
- 11t pulleys improve durability
- 9-speed (8-speed compatible same as RD-7700 conversion) Advanced Light Action precise shifting performance
- Short and medium cage available for triple chainring versatility

Front Derailleur (FD-5500 / FD-5503):
- Wider link provides improved durability and shifting performance
- Light Action spring compliments shifter for positive shifts

Shift lever (ST-5500):
- Versatile, hands-on Dual-Control lever design accommodate double and triple FC
- Flight Deck compatible (ST-5500-C)

Chain (CN-HG-72):
- HyperGlide chain with 9-speed precision

Crankset (FC-5500 / FC-5503):
- Race oriented appearance in cold forged 5 arm design, 162.5 + 165 ~ 175
- 53-42, 52-39, 53-39, 50-39t (New), 52-42-30t Triple

Bottom Bracket (BB-5500):
- Rigid, weight-saving splined design
- Sealed cartridge unit similar to 6500

Brakes (BR5500):
- Compact rigid design offers braking power with pro-racer looks and light weight
- "Rimsaver" cartridge pad holder to protects rim from damage when pad wears out

Hubs (FH-5500, HB-5500)
- Alloy quick-release levers and sealed cartridge bearings complete the competition ready package

Headset (HP-5500):
- Sealed cartridge bearing in steel cups for durability and long life

SHIMANO RSX

Enhanced Quality in the sport-performance road group.

Cassette (CS-HG50-8):
- 8-Speed HG shifting performance

Rear Derailleur (RD-A416-ss, gs):
- SS and GS models for close ratio and wide ratio applications
- 8-speed precision with sintered alloy pulley bushings

Front Derailleur (FD-A416 / FD-A417):
- Sport, close ratio style and touring, wide ratio style, bottom pull designs give double or triple chainring performance with conventional cable routing

Shift lever (ST-A416):
- Dual-Control lever shifting integrated with braking for hands-on control

Crankset (FC-A416 / FC-A417):
- 5 arm alloy design is strong and light to reduce flex, 52/42, 52,42,30t

Brakes (BR-A416):
- Dual pivot brake design offers excellent stopping power
- One-piece pad/holder design features wheel guides to facilitate wheel changes

Hubs (FH-A416, HB-A416):
- Rigid alloy hubshell with alloy Quick-Release skewer makes these hubs durable and lightweight

SHIMANO
NEXAVE
T-300
For the expanding Sport / Touring segment

Shift lever (ST-T300):
- V-Brake compatible with power modulator, or hub roller brake and cantilevers to offer virtually any braking design combination
- 7 speed Tap-Fire intuitive push button shifting
- Optical Gear Display shows gear selection at a glance
- Flight Deck (SC-6500-T) compatible

Brakes (BR-T300):
- Powerful Vbrake design featuring 3-step adjustable power modulator
- Linear spring design gives consistent feel
- M-System brake shoe provides excellent all weather performance
- Side threaded shoe mounting for easy setup

Hubs (HBT300 / FH T300, HB-IM45 / FH-IM45):
- HB-IM45 features a braking power modulator slip clutch for excellent control, used with HRB
- FH-IM45 is 7-speed ready
- HB-T300 / FH-T300 7-speed Freehub body with Roller clutch

Crankset (FC-T300 / FC-T301):
- Positive, SIS shifting performance in a triple chainring design
- FC-T300 features 42-34-24t chainrings with integrated chainguard
- FC-T301 features 48-38-28t with chainguard

Front Derailleur (FD-T300-E / FD-T301):
- Shifting performance available in conventional band clamp and E-set integrated BB bracket designs

Rear Derailleur (RD-T300):
- Rapid-Rise action with Shift Pre-select arm for precise, no-worry shifting
- MegaRange compatible gives extra-wide gear range to handle any terrain

Cassette (CS-HG50):
- 7-speed MegaRange design allows easier hill climbing with ultra-low 34t sprocket

AUTO-D

Electronic Gear Changing, the future of NEXUS

Shift Console (SE-4S40):

- Auto-D Console controls P parking lock mode, D drive mode, DS early upshift, and Manual gear shifting
- LCD speedometer
- PIN code adds security for parking lock mode

CPU & Battery (CR-P2, 6V)

- Compact, protected, lightweight design minimizes impact to bicycle style
- Long battery life, 1 year @ 1hr/day of use means miles of worry free riding

Hub (SG-4R40):

- Auto-D controlled shifting with AI-4S40 (M) shift motor featuring 4-speeds, internally geared for trouble free operation

NEXUS

INTER-4 INTER-3

NEXUS means easier cycling at all levels

NEXUS INTER-4

Shifter (SB-4S35):

- 4-speed Revo Shift twist style shifter features extremely easy, light feeling
- Integrated gear display shows which gear you are using

Hub (SG-4R35):

- 4 speed internally geared hub has versatile gear range
- Shift while pedaling or even at a stop, makes cycling worry free

NEXUS INTER-3

Shifter (SB-3S30 / SB-3S30J):

- Integrated 3-speed Revo Shift twist shifter and Gear display
- Light touch shifting at any time, even standing still

Brake Lever (BL-IM32 / BL-IM32J):

- Compliments Revo shifter, providing compatibility with Cantilever, Hub Roller brakes, and V-brakes with Power Modulator

Hub (SG-3C40):

- 3-speed internally geared hub features ability to shift at any time and light shifting touch
- Improved braking performance is independent of gearing

New SPD

PD-6600

- At only 354g, PD-6600's are 50g lighter than PD-7700's
- Wide platform supports foot while bringing shoe closer to axle for better power transfer
- Attach with 6mm hexagon wrench or 15mm pedal wrench
- Easy access cleat adjustment through pedal with 4mm hexagon wrench

PD-M545

- Easy step-in Pop-Up light alloy cage, 564g
- Cartridge bearing axle for durability
- Replaceable modular cage system (PD-M545/434/515 interchangeable)

PD-M515

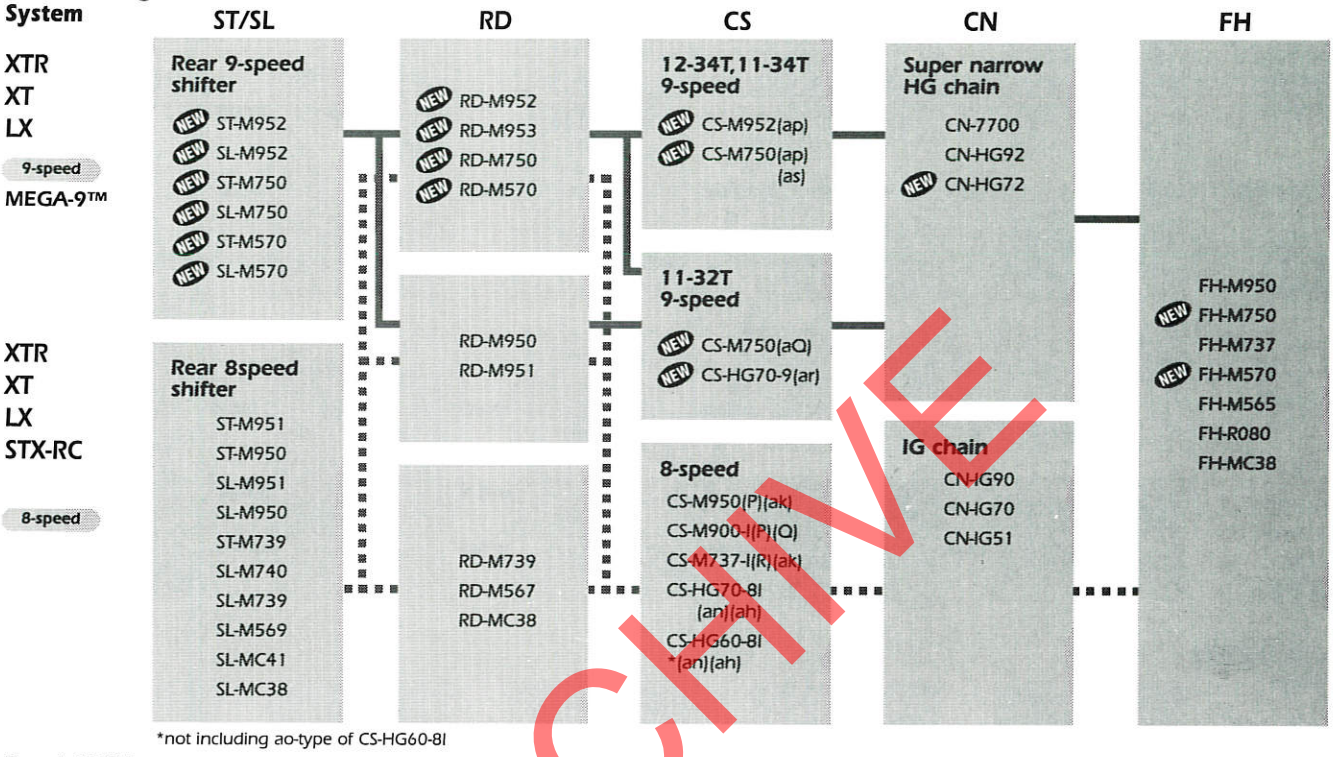
- Compact lightweight design, 406g
- Cartridge bearing axle for durability

PD-M434

- Easy step-in Pop-Up resin cage, 468g
- Resin cage absorbs impacts

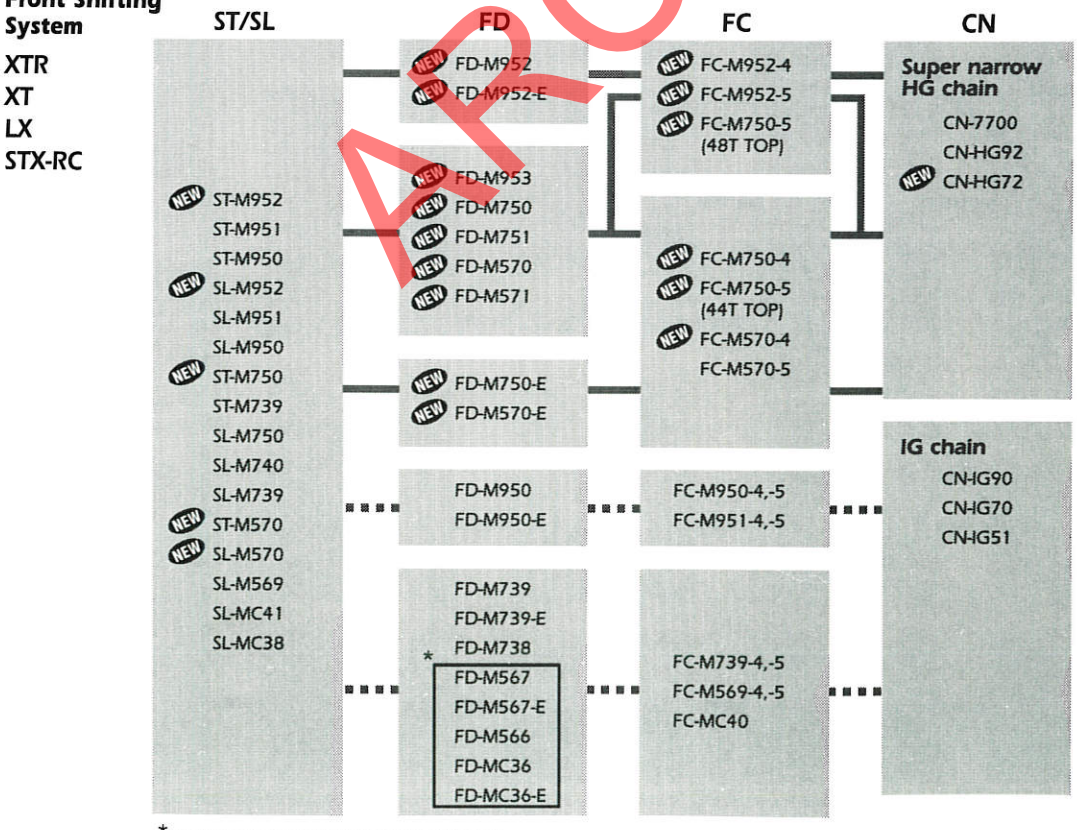
Mountain Bike Component Interchangeability

Rear Shifting System



*not including ao-type of CS-HG60-8I

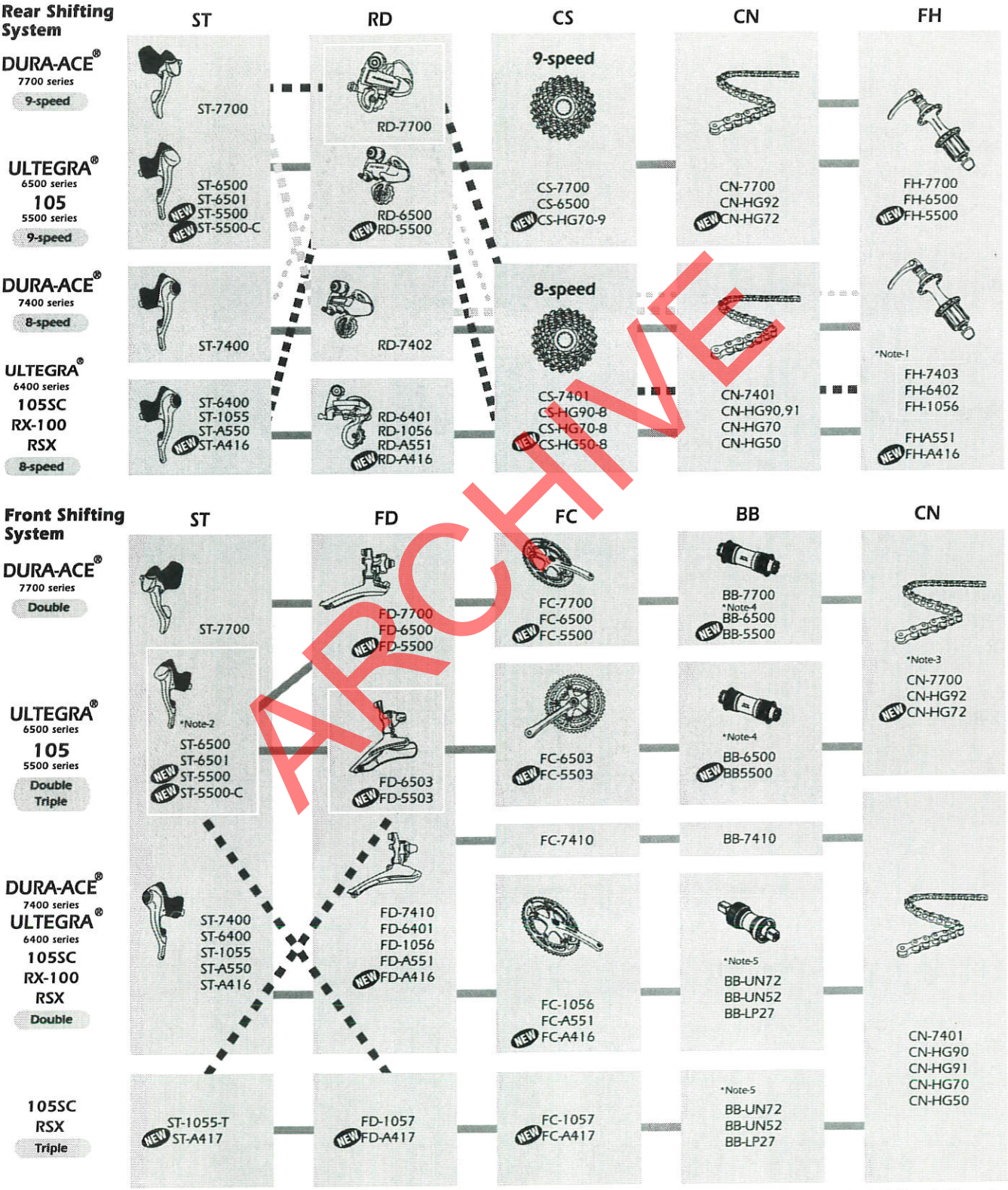
Front Shifting System



*Only for use with 42-teeth large chainrings.

9-speed MEGA-9™
8-speed

Road Bike Component Interchangeability



***Note 1:** Not compatible with 11T top sprockets. ***Note 2:** Left side ST-6500,ST-6501,ST-5500 ST-5500-C, Dual Control Levers can be used with both double and triple cranksets.
***Note 3:** Super-narrow CN-7700, CN-HG92 or CN-HG72 chain must be used with FC-7700, FC-6500, FC-6503, FC-5500 and FC-5503 cranksets.
***Note 4 and Note 5:** Axle length is different.
DURA-ACE® down tube (SL-7700) and bar end (SL-BS77) shifters can be used for the ULTEGRA® and new 105 group.

Crankset, bottom bracket and chain line

The chart below shows the chainwheel and bottom bracket combinations that establish the recommended chain lines. It is important to set up the chain line as recommended in order to maintain top SIS® shifting performance.

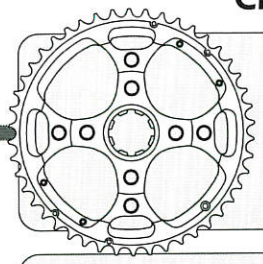
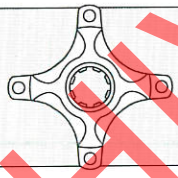
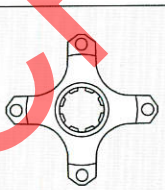
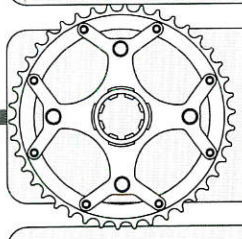
MTB

Series	Front chainwheel model number	Chain line 47.5mm Model No.	47.5mm Axle length	Chain line 50mm Model No.	50mm Axle length
XTR	NEW FC-M952-4arm NEW FC-M952-5arm	NEW BB-M952 BB- M950	112.5mm	NEW BB-M952 BB-M950	116mm
DEORE XT®	NEW FC-M750-4arm NEW FC-M750-5arm	BB-UN72(-E) BB-UN52(-E) BB-LP27(-E)	110.5mm (MM110)	BB-UN72(-E) BB-UN52(-E) BB-LP27(-E)	113mm (LL113)
DEORE LX®	NEW FC-M570-4arm NEW FC-M570-5arm				
STX-RC	FC-MC40				
NEXAVE	FC-T400 FC-T401				
	NEW FC-T300	BB-CT92(-E)	116mm (YL116)	BB-CT92(-E)	121mm (ZL121)
	NEW FC-T301	BB-CS15(-E)	122.5mm (D-NL)	BB-CS15(-E)	127.5mm (D-EL)
Alivio	NEW FC-MC18	BB-LP27(-E)	110.5mm (MM110)	BB-LP27(-E)	113mm (LL113)
ACERA™	NEW FC-M330				
ALTUS®	NEW FC-CT93	BB-CT92	116mm (YL116)	BB-CT92	121mm (ZL121)
TOURNEY®	NEW FC-TY40				
	NEW FC-TY30-A FC-TY30	BB-TY30	122.5mm (D-NL)	—	—
	FC-C500-I	BB-CS12			

Road

Series	Front chainwheel model number	Chain line 43.5mm Model No.	43.5mm Axle length	Chain line 45mm Model No.	45mm Axle length
DURA-ACE®	FC-7700	BB-7700	109.5mm	—	—
ULTEGRA® (Double)	FC-6500	BB-6500			
105 (Double)	FC-5500	BB-5500			
ULTEGRA® (Triple)	FC-6503	—	—	BB-6500	118.5mm
105 (Triple)	FC-5503			BB-5500	
RX100 (Double)	FC-A551	BB-UN52	107mm (MM107)	—	—
RSX (Double)	FC-A416	BB-LP27	110.5mm (MM110)	—	—
300EX (Double)	FC-A300	BB-CS15	115mm (D-H)	—	—
RX100 (Triple)	FC-A550-T	—	—	BB-UN52	122.5mm (D-NL)
RSX (Triple)	FC-A417	—	—	BB-LP27	118mm (XL118)

XTR, DEORE XT®, DEORE LX®, STX-RC
Crank Arm and Chainring Adapter Interchangeability

Crank Arm	Chainring Adapter		
SHIMANO XTR FC-M952 *		FC-M952-4	MEGA-9™ Compatible
		FC-M951-4	8-speed Compatible
		FC-M950-4	8-speed Compatible
FC-M951		FC-M952-5	MEGA-9™ Compatible
		FC-M951-5	8-speed Compatible
FC-M950		FC-M950-5	8-speed Compatible
		FC-M750-5	MEGA-9™ Compatible
SHIMANO DEORE XT® FC-M750		FC-M750-4	MEGA-9™ Compatible
FC-M570		FC-M570-4	MEGA-9™ Compatible
		FC-M739-4	8-speed Compatible
		FC-M569-4	8-speed Compatible
SHIMANO STX RC FC-MC40		FC-MC40	8-speed Compatible
		FC-M570-5	MEGA-9™ Compatible
		FC-M739-5	8-speed Compatible
		FC-M569-5	8-speed Compatible
FC-M739		FC-M739-4	8-speed Compatible
		FC-M569-4	8-speed Compatible
FC-M569		FC-M739-5	8-speed Compatible
		FC-M569-5	8-speed Compatible

Note: Chainrings can be used with any adapter shown in the chart.
Adapter interchangeability is limited to FC-M951-4 and FC-M950-4, and to FC-M739 5and FC-M569-5.

* The FC-M950-5 adapter cannot be used with the FC-M952 and FC-M951 crank arms.

Chainring-Chain-Sprocket Interchangeability MTB

The chart below shows the recommended chainring, chain, and sprocket combinations. Because certain chains are incompatible with certain cassette sprockets and chainwheels, be sure to use this chart to verify that you are using a recommended combination.

FC/CS / Chain	MEGA-9™		IG		HG	
	Cassette sprocket	Front chainwheel	Cassette sprocket	Front chainwheel	Cassette sprocket	Front chainwheel
	CS-M952 CS-M750 CS-HG70-9	FC-M952 FC-M750 FC-M570	CS-IG50 CS-IG60	FC-M951 FC-M739 FC-M737-IG FC-M569 FC-M563-IG FC-MC40 FC-MC36 FC-MC34 FC-MC33 FC-MC32 FC-MC18 FC-MC16 FC-MC14 FC-MC12 FC-M330	CS-M950 CS-M900-I CS-M737-I CS-HG70-8I CS-HG60-8I CS-HG50 CS-HG30	FC-M900 FC-M737 FC-M563 FC-M291 FC-M290 FC-CT93 FC-CT92 FC-CT91 FC-CT90 FC-T301 FC-T300 FC-TY40 FC-TY30 FC-TY30A
MEGA-9™ Super Narrow HG chain CN-7700 CN-HG92 CN-HG72	Good	Good	No good	No good	No good	No good
IG Chain (Note 1) CN-IG90 CN-IG70 CN-IG51 CN-IG31	No good	No good	Good	Good	Good (Note 3)	No good poor performance
HG Chain CN-7401 CN-HG91 CN-HG90 CN-HG70 CN-HG50 CN-UG50	No good	No good	No good poor performance	No good Will not work (Note 2)	Good	Good

Note1: The IG chain cannot be used with the ALTUS® class rear derailleurs.
Note2: This combination must be avoided because sudden chain separation may occur resulting in possible accident.
Note3: Use of an IG chain with CS-M737 or CS-HG70-8 HyperGlide cassette sprockets will make the derailleur adjustment more critical than usual.

SHIMANO

SC-6500 CYCLE COMPUTER

CALIBRATION CHART

Marking on Side of Tire	Rim Size	Tire Width	Calibration Number*
700 X 18C	700	18	2070
700 X 19C	700	19	2075**
700 X 20C	700	20	2085**
700 X 23C	700	23	2105
700 X 25C	700	25	2115
700 X 28C	700	28	2135
26 X 1 3/8	26	1.375	2075
26 X 1 1/2	26	1.5	2100
26 X 1.0	26	1	1970
26 X 1.4	26	1.4	2005
26 X 1.5	26	1.5	2030**
26 X 1.75	26	1.75	2050
26 X 1.9	26	1.9	2070
26 X 1.95	26	1.95	2075
26 X 2.0	26	2	2080**
26 X 2.1	26	2.1	2090
26 X 2.2	26	2.2	2095
26 X 2.35	26	2.35	2100

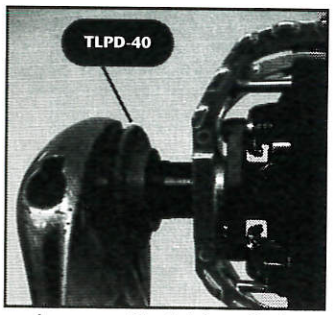
***Note: Calibration numbers are for quick reference and easy set up. Calibration can be significantly affected by tire brand, rim width, rider weight and tire pressure. For most accurate results read section 8.1 Measuring the Tire Circumference.**

**** Calibration numbers displayed with this note will NOT match the reference number on the computer display. This revised number will be more accurate for most cases.**

Replacing the Outer Cage on PD•M545 and PD•M434

Due to extreme offroad riding styles, the cage on this pedal will probably need to be replaced at some point. The following instructions are for removing and replacing the alloy and resin cage. We're using the M545, with alloy cage, but the process is the same for the M434.
Tools: Adjustable wrench, vice, TLPD-40 Plastic Tool, #2 Phillips screw driver.

Remove the Cartridge Unit

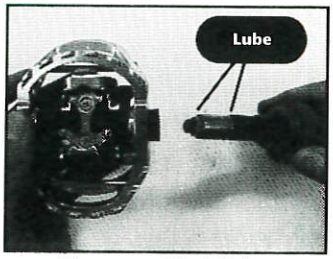


Loosen Cartridge Unit

1. Secure the pedal and use the TL-PD40 to loosen the cartridge unit from the pedal body.

NOTE: Be sure to use the TLPD-40. It will protect the plastic sleeve of the axle from damage by steel wrenches.

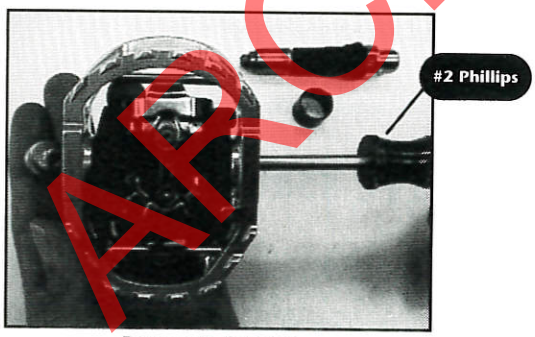
2. Remove the cartridge unit. Note the bearing area to be lubricated when lubricating.



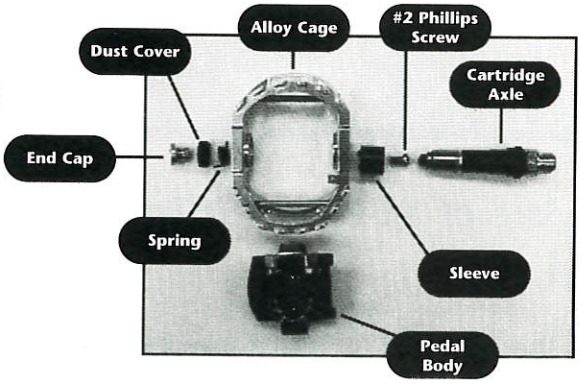
Remove Cartridge Unit and Sleeve

3. Remove the plastic sleeve from the cage housing.

Separate Cage from Pedal Body



Remove Screw



1. Use #2 Phillips screwdriver to remove the screw located inside the pedal body. The screw attaches to the small end cap with the SPD logo.
2. Remove the end cap.
3. Remove the plastic dust cover.
4. Remove the popup spring. Check the spring for abnormalities.
5. Separate the cage from the pedal body.

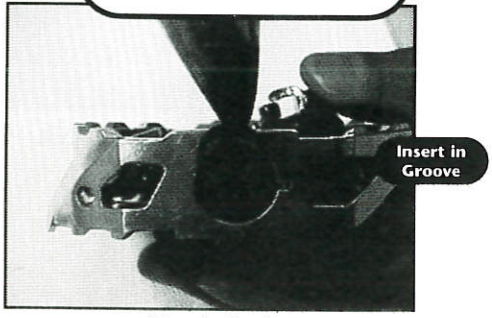
Reassemble Pedal

1. Place cage back into body. Pay attention to proper angle.
2. Insert the spring.

Note the groove in the cage into which the spring must fit.

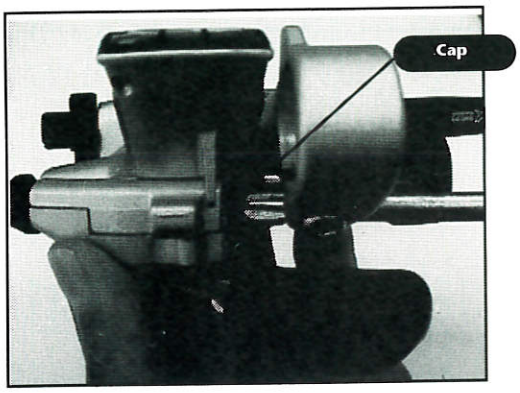
3. Insert the dust cover.
4. Insert the end cap with logo upright.
5. Secure the assembly with the Phillips screwdriver.
6. Reassemble the Cartridge Unit.

NOTE: Check the spring tension. If tension is inadequate, use needle nose pliers to "wind" the spring a little tighter.



Check Spring

Cable Replacement Mega-9 XTR, XT, LX



It's easier to install and replace cables with the new Mega-9 shifters for XTR, XT and LX. Instead of the small removable door that covered the cable housing on previous shifters, there is a cap with a Phillips head. Unscrew and remove the cap and it's easy to access the cable.

Cable Replacement for 7-spd Revo-Shift

1. Shift to 7th position.
2. Locate and remove two screws on back side of gear indicator cover.
3. Remove the cover.
4. Install or replace shifter cable.

Use of TL-FC15 (JD Tool) to Remove FC-5500 & FC5503

Use the TL-FC15 (JD Tool) to provide resistance when removing FC-5500 & FC-5503

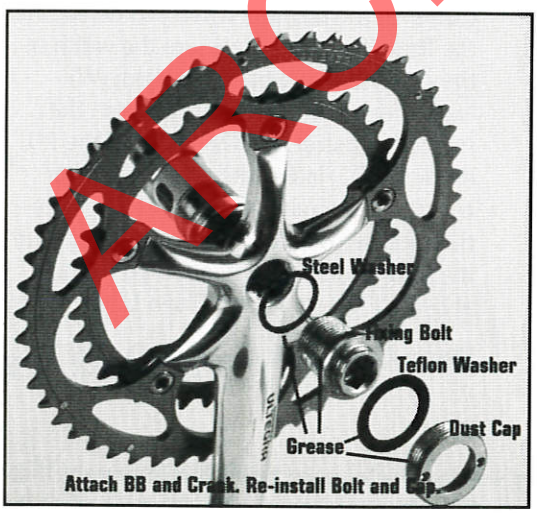
1. Turn the crank arm fixing bolt and remove.
2. Insert TL-FC15 into bottom bracket spindle

3. Use a crankarm extractor against the plug to remove chainwheel.

Installation of Splined BBs and Crankarms (BB-7700, BB-6500, BB-M950)

When installing crankarms for Dura-Ace, Ultegra and XTR sometimes it's difficult to match the splines of the crankarm with the splines of the bottom bracket. If the splines are not properly aligned, the crankarm may slip and damage the splines inside.

The problem occurs when you attach the crank to the installed BB. Since the fixing bolt and dust cap are on the crankarm when you tighten down the bolt, you can't really see the splines inside. As you tighten the bolt, it may feel like the splines have meshed, but it's hard to be certain. Sometimes they are. Sometimes they may not be. If the splines are not meshed and the rider puts torque to the crank, it will slip and damage the crankarm splines (which can be costly). The solution is to install these assemblies in a slightly different way, namely by removing the dust cap and fixing bolt from the crankarm first (which is how all new product is being shipped now), then sliding it (the crankarm) onto the BB in such way that you can actually see the splines mesh correctly. Then insert and tighten down the bolt and dust cap.



1. **Grease the Spindle**
2. **Slide Crankarm into position**
3. **Make Sure Splines are Aligned**
4. **Grease and Insert Washer**
5. **Grease and Insert Fixing Bolt**
6. **Tighten F. Bolt to 305 - 435 in.lbs.**
7. **Insert Teflon® washer**
8. **Grease Inside of Dust Cap**
9. **Insert and Tighten Dust Cap**
10. **Retorque after 50 miles (Check torque periodically)**

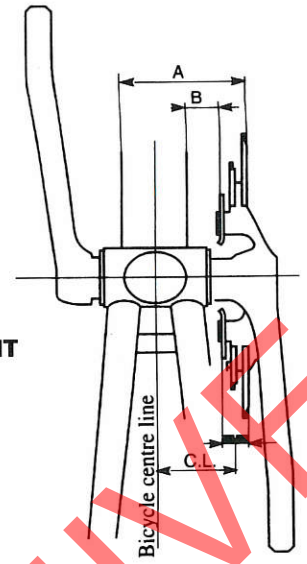
Note: ONE KEY RELEASE FEATURE: When the Dust Cap is threaded securely to the crankarm, it provides resistance to the fixing bolt as the bolt is withdrawn. The bolt and cap provide the leverage necessary to separate the crankarm from the bottom bracket. In a way the two work together as an extraction tool (Thus, "one-key release"). To avoid stripping threads during removal, it is important to tighten the dust cap securely; And also to lubricate the inside of the cap so it does not bind up against the bolt (which is why the Teflon® washer is there.)

Splined BBs and Crankarms

Chain Line: Get out Your Calculator

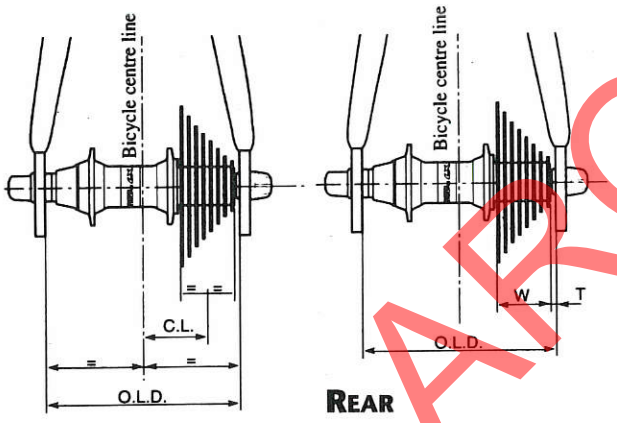
Front Chain Line

Front chain line is pretty easy. It refers to the distance from the centerline of the bike (center of the dropouts) to the midpoint of the chainwheel set. The easiest way to find the front chain line is to measure the distance from the left side of the seat tube/down tube to the outside of the outer chainring (A), and the distance from the right side of the seat tube/down tube to the inside of the inner chainring (B). Add the two measures and then divide by two and you'll have your chain line.



FRONT

Front Chain Line = $\frac{A + B}{2}$



REAR

Rear Chain Line

The Rear Chain Line is a little trickier. It consists of the line from the center of the dropouts to the midpoint of the cassette cluster or multiple freewheel. To determine the Rear Chain Line, measure the width of the cassette or multiple freewheel (W). Next measure the distance between the smallest sprocket and the inside of the RD dropout (T). Finally, determine the Over Locknut Dimension (O.L.D.), which is the distance between both dropouts. Plug your measurements into the following formula and you'll get your Rear Chain Line.

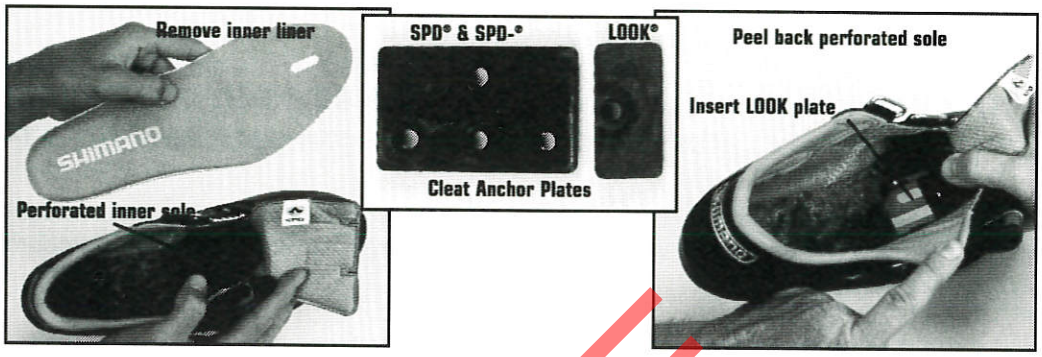
Rear Chain Line = $\frac{O.L.D - W}{2}$ - T

Notes on Chain Line:

For bicycles that do not use a derailleur (track racing, Nexus, single-speed bikes) it is important that the chainline at the front and rear be almost the same. Otherwise the chain will make a lot of noise, or, at worst, derail.

For bicycles that use a derailleur, the chain line in the front and rear should be as close to equal as possible, though it will be impossible of course for them to be absolutely equal. Bikes with different cranksets and cog clusters have different chain lines. Make sure to follow the recommendations Shimano makes for crankset, bottom bracket, rear hub and sprockets.

Adapter for Look Cleat Pattern

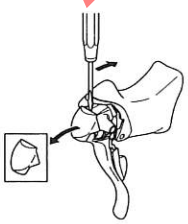


Shimano's NEW Accelaraptor (SH-R121) is probably the most versatile road shoe on the market. It replaces SH-R111, and is compatible with both of Shimano's cleat patterns: SPD and SPD-R, as well as the LOOK cleat pattern. The shoe will be shipped SPD and SPD-R compatible. If you need to adapt the shoe to a LOOK cleat pattern, just call us and we'll send you a new anchor plate with the LOOK configuration. This adaptor will be included in future shipments.

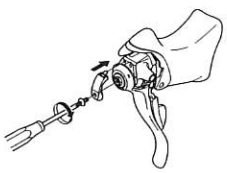
To install the LOOK cleat anchor plate:

- First, remove the inner sole liner.
- Peel back the perforated portion of the inner sole, which covers the cleat anchor plate.
- Remove the SPD/SPD-R anchor plate and install the LOOK anchor plate (make sure it's positioned toward the toe.)
- Replace the perforated portion of the inner sole, and the inner sole liner.

Ultegra Dual-Control Levers

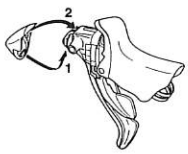


We've heard that some name plates on Ultegra Dual Control Levers (ST-6500 & 6501) are rattling. If it happens to any of your customers, just pop off the name plate cap (see diagram).



Locate the Phillips head screw that secures the bracket. Apply a little lock-tight material. Torque the screw back down.

And replace the cap.



SHIMANO® FAQs

1) What are the features of the new SC-6500 Flight Deck Cycling Computer? Will the computer be compatible with ST-6500 or other STI levers?

A) The ST-6501 and ST-5500C levers incorporate an integral shift sensor that allows the computer to display, not only the current gear selection but the gear ratio as well. The cycle computer also provides displays of:

1.) Current Speed
2.) Maximum Speed
3.) Average Speed
4.) Clock
5.) Trip Time
6.) Trip Distance
7.) Stopwatch
8.) Odometer
9.) Virtual Cadence
10.) Lap Counter
11.) Gear Number
12.) Gear Ratio
13.) Gear Indicator
14.) Gear Ratio
15.) Low Battery Display
16.) Sleep mode (battery saver)

The mode select button on the STI lever lets you call up the desired function without taking your hands off the bars. You can also start the computer as you start your ride without changing hand position on the bars. The Flight Deck not only tells you how you're riding; it helps you ride better and more efficiently. It's a new milestone in user-friendly component design.

B) To utilize all functions of the Flight Deck computer, you will need to use the ST-6501 or ST-5500C STI levers for road and ST/SL-M950/1/2,ST/SL-M750/570 and ST-T400/300 for MTB. The other options available are for ST-7700 / 7400 / 6500 / 6400 / 5500 / 1055 / A550 / A416 / A410 and a universal switch. When using this configuration, the computer will not show Virtual Cadence, Gear Number, Gear Ratio, and Gear Indicator. See web page for model and compatibility chart.

2) Will there be a Flight Deck computer available for mountain bikes?

Yes, there will be a Flight Deck computer for use with mountain bikes. This computer will be available in late fall '98.

3) Is there a trim adjustment on the ST-6500 lever for double usage?

Yes, there is a trim adjustment for both the inner and outer rings with a double. If the chain is on the large front chainring and the large rear sprocket, the chain will rub on the front derailleur plate, producing a characteristic noise. When this happens, press the downshift lever (small lever) lightly, to the point where it clicks. This causes the front derailleur to move slightly towards the smaller chainring, which will eliminate the noise.

4) Will the new 9-speed cassette gears fit my 8-speed hub?

Yes, the new CS-7700 9-speed Dura-Ace cassette will fit current 8 speed hubs. However, if you are using an 11-21, or an 11-23 cassette, it may not be compatible with some 8-speed hubs. The first production runs of the CS-6500 9-speed cassette are not compatible with the 8-speed Ultegra freehub bodies due to

the alloy carrier flange going on too far on some cassettes. This makes the lock ring bottom out before the cogs are properly tightened. Future production of these cassettes will be compatible. The new Mega-9 nine speed cassettes are fully compatible with all current 8-speed MTB Parallax design hubs.

5) What is the weight difference between the Shimano 105, ULTEGRA, DURA-ACE 9 speed groups?

The groups include the following ST(pair),RD, CS(12-23),CN(116 links),FD (braze-on),FC (175mm/53-39t),BB(68mm),FH/HB(w/quick release) and BR(pair) . The total group weight for DURA-ACE is 2720 grams and the ULTEGRA is 3062 grams for a difference of 342 grams. The weight of the New 105 9-speed group is 3337 grams.

6) I have an older road crank set. Can I just replace the inner chain-ring to get the closer spacing required for the thinner 9-speed chain?

Yes, for optimum shifting performance replace it with an ULTEGRA 6500 OR DURA-ACE 7700 inner chain ring. Contrary to popular rumor, the thinner chain will not jam between the older rings. It may hesitate slightly during a downshift. If you don't replace the inner chain ring, just remember to sit down before shifting from big to small ring.

7) How do I maintain my Dura Ace and XTR splined bottom bracket? How often should maintenance be done on my splined non-cartridge bottom bracket?

A) First, remove the crank arms by keeping the crank bolt and crank arm caps installed in the crank. Then loosen the 8mm crank bolt., This will remove the crank arm from the splined B/B. Loosen the lock ring on the left cup, and then remove the left cup from the B/B shell. Now, remove the right side cup with the spindle, and inner plastic seal. Make sure all debris is cleaned from the spindle and the left and right cups. Before reinstalling the cups, grease all bearing surfaces and cup threads with Dura Ace Spin-Doctor grease. Install the spindle and the inner plastic seal into the right side cup. Now install the right cup into the B/B shell completely. Install the left cup until there is no side to side movement of the spindle and you are able to turn the spindle. Then, lock down the lock-ring flush to the B/B shell. Put grease on the splines of the spindle. Take the crank caps and bolts out of the crank arms, and push the arm onto the splines, making sure they are properly aligned. Lastly, grease the threads of the crank bolt and grease under the crank cap, then install the bolt and cap.

B) Maintenance on these bottom brackets really depends on riding conditions. On road, in normal dry conditions it should be maintained at least once a year. If riding in wet conditions on the road, you may want to do it every 3 months or more often. For off road use, in dry conditions, it should be done once every 6 months. In wet, muddy conditions, this should be done once a month or immediately after a muddy ride. Keeping your non-cartridge B/B clean and well lubricated will extend the life of your B/B.

C) It is also good to grease the splines, to ease removal and keep moisture away from the crank and B/B interface.

SHIMANO®

FAQs

8) Does Shimano offer road-touring components?

Yes, there are three groups. 105SC triple and RSX triple offer the wide range of gearing required for touring. Additionally the new ULTEGRA and 105 9 speed groups will be available with a triple chain ring option. These groups will be available with a 52-42-30 tooth chain ring combination matched with a 9 speed 11-23, 12-23, 12-25 or 12-27 rear cassette for 27 speeds!

9) What do I need to convert 16 speed 105SC group to a 24 speed?

You will need the following components: FD-1057, FC-1057, BB-UN52 with 118mm spindle, RD-1056GS long cage rear derailleur and left hand side STI dual control lever blade, part #65F98010.

10) My V-Brakes have excessive play, is there anything I can do?

Over time, XT and XTR V-Brakes will develop some extra play in the parallel push mechanism. This system is subject to wear and tear just like any other component and should at sometime be recalibrated or tuned up. A tune-up kit (shims) part #Y8AA98110 and a rebuild kit (parallel push mechanism and shims) part #Y8AB98090 (XTR) and Y8AA98300 (XT) are produced by Shimano for this purpose and may be obtained through a local bicycle dealer. The precise interval at which a V-Brake may need servicing is highly variable due to differences in riding conditions and frequency. Need should be determined more by monitoring the actual amount of play in the parallel mechanism while keeping in mind that a small amount of play is necessary to insure smooth operation. If a V-Brake seems to have excessive play (3-5mm) when new, or develops play within a period that seems premature please notify your bicycle dealer and specifically state this as being the problem, or contact Shimano directly. These kits are for models, BR-M950/1 (XTR) and BR-M739 (XT).

11) How can I stop the noise/squeal from my brakes?

There are several possible solutions you may try to alleviate the noise. First check for proper rim/shoe interface; pad must contact the rim squarely with at least 1-2mm toe-in (for v-brakes: make sure all the play of the parallel push mechanism is eliminated by applying forward pressure on the brake shoe). Second, check all fixing bolts for looseness. Third clean the rim surface with a scouring pad (scotch brite style). Also check for the following; make sure you're using a special brake pad for a ceramic rim. Also excessive play in the parallel push mechanism may create reverse toe-in. (good time for a tune-kit). You may also consider a brake booster (Shimano part #VBOOSTER) to damp out vibration on lightweight steel or titanium frames. However, due to current frame, fork and brake designs it may be almost impossible to completely eliminate noise, especially after crossing streams or in damp, foggy conditions due to the aggressive multi-condition pad compound. Additionally, we offer a brake shoe (part # Y8AA98130) labeled "On Road Use" originally designed for European Trekking bikes utilizing a compound which will have less tendency to squeal, particularly in wet/damp conditions. This brake shoe is currently the recommended replacement shoe for both on and off road use.

12) What is Nexus?

Nexus is a collection of components whose design concept can be summed up in one simple phrase, "Everything's Inside". Nexus eliminates the need for derailleurs by putting the gear shifting inside of the rear hub. Currently a 7-, 4- and 3-speed version with a roller brake and coaster brake option are available. This creates a virtually maintenance free gear system that requires almost no readjustments.

SHIMANO®

FAQ^{S}

13) What is NEXAVE?

Nexave is short for Next Avenue. Nexave specifically targets the features and benefits for the casual entry-level cyclist. Nexave is what hybrid or cross components should be, not just a cosmetic rework of mountain bike parts. It is also a higher performance version of the Nexus concept, with a wider range of gearing, easier, more intuitive shifting and two brake options; v-brake with modulator or a hub roller brake. The new Rapid Rise rear derailleur makes shifting worry-free and super intuitive. Push the right hand bottom lever to shift from an easier to a harder gear, and push the left-hand bottom lever to shift the chain to a harder gear. MegaRange gearing runs 24 gears with an 11-34 tooth rear cassette, rather than the more conventional 11-28 tooth cog set. It's designed for more enjoyable casual cycling.

14) Does Shimano manufacture tandem hubs?

Yes, there are two models, the HF07, XT quality, 8 speed, 48/40 hole high flange hub shell available in 145/140 mm axle spacing. The HF05, ALIVIO quality, 7-speed, 48/40 holes high flange hub shell available in 145/140 mm axle spacing. Additionally, we offer a tandem specific version of the FC-1057 crankset.

15) Does Shimano offer BMX specific components?

Yes, currently Shimano offers the BR-M600MX brake set, PD-M636 pedals, MX70 and MX80 BMX Shoe, and the FH-MX66 DX Hubset which features an integrated freehub body with 4 individual cogs for quick race day changes and wider gear options. The classic SF-MX30 single freewheel is also still available.

16) What is SPD-R?

The ultimate road racing pedal system, SPD-R is a completely new shoe and pedal system that is part of the new DURA-ACE 7700 group. Features include; larger shoe contact than PD-7410, the inside bearings are positioned closer to the crank arm to reduce flex, outer bearings are positioned closer to the crank arm to reduce flex, the outer bearings are positioned directly under the cleat binder for even load distribution. Pedal to spindle distance is 6.5mm closer than PD-7410 allowing a lower seat position. A float and play adjuster allows setting flotation freedom to personal preference. Three separate cleats are available for further customizing; SM-SH 90 for fixed, SM-SH81/91 for self aligning with 6 degrees of rotation and the SM-SH82/92 self aligning with 10 degrees of rotation. The SM-SH81 cleats are packaged with the PD-7700. For 1999 we have introduced two new pedals, PD-6600 Ultegra and PD-5500 105 level, which feature most of the SPD-R benefits.

17) Are there any other shoes that are compatible with the new SPD-R pedals?

For 1999 model year there will be 4 models; R211, R121, R095 and R072. The latter three will be compatible with conventional SPD, SPD-R, and LOOK style cleat patterns. Other shoe manufacturers will be making shoes in the near future that will be compatible with our new SPD-R pedal.

18) Will there be an adapter to convert the standard SPD shoes to be used with the new SPD-R pedal?

Yes, there will be an adapter produced for the conventional style SPD shoes to convert them to the new SPD-R bolt pattern. The release date of this product has not yet been determined.

SHIMANO®

FAQs

19) What cleats work with which pedals?

The SM-SH70 and SM-SH71 work best with both the PD-7410, and PD-6500. The SM-SH51 and SM-SH55 work with the PD-M747, M636, M545, M535, M515, M434, M323, A525, M737 and M525. There are a couple usable combinations which can be substituted for the recommended cleat, PD-M747, M636 M545, M535, M515, M434 can use all cleats (70,71,51,55). The PD-A525 and PD-M323 work with all cleats except SM-SH70. The new SH-90, SH-81/91 and SH-82/92 are only compatible with the PD-7700, PD-6600 and PD-5500 SPD-R type pedals.

20) How can I prevent the top plate screws on my pedals from falling out?

To keep the top plate from coming loose, do not lubricate the top plate area with any aerosol or drip type lube. The lubricant makes its way into the threads and deteriorates the threading compound used to keep the screws from vibrating loose. The alternative is to use a light grease to lube the cleat and the retention springs for easier step-in. Additionally, periodically check the screws to assure they are tightened to proper torque. (pft)

21) What is IG?

IG stands for Interactive Glide. IG is an integrated drive train engineered to link the derailleurs, crank set, chain and sprockets to increase the shifting performance. Specifically, the IG system controls the chain for smoother outward shifting in the rear, (smooth shifting in both directions) and reduced chain jamming in the front. The chain is only allowed to separate from the IG sprocket at the designated shift gate release points.

22) Can I use an IG chain with a HG cassette?

All current HG cassette cogs are specifically profiled to be HG or IG chain compatible. Any Shimano IG chain will work with any HG cassette. If you use a HG chain with a 7-speed IG cassette (CS-IG50 and CS-IG60) the rear derailleur adjustment becomes more critical. One significant compatibility issue is always avoid using a HG chain with an IG-only crank set. Why? The chain will release from the large (outer) chain ring too easily while in the rear cog. It may be potentially dangerous as the chain may drop off the outer ring without shifting under full power.

23) What are the advantages of the Rapid Rise rear derailleur? Is it compatible with any shift lever?

A) The RD-M951 and RD-M953 rear derailleur makes every shift lever work in the opposite direction. This design allows the release lever to be used to downshift, and uses derailleur spring pressure to aid in completing the downshift. The result is faster, smoother, and more precise downshifts, especially when pedaling uphill. The derailleur also uses a roller-type cable guide that reduces shifting friction by 10 percent. It's a new standard of shifting performance for off-road riding.

B) The Rapid Rise rear derailleur is completely compatible with any current Shimano 8 speed shift lever. Keep in mind the indicator will display the wrong gear due to its reverse action if not used with the XTR ST-M951/2 or SL-M951/2 or the NEXAVE ST-T400 shifting levers.

SHIMANO®

FAQ^{S}

24) Do I need to use the Rapid Rise rear derailleur in conjunction with the Rapidfire Remote?

No, it is not necessary to use the Rapid Rise rear derailleur with the Rapidfire Remote shifter. The Remote shifter will also work with any conventional rear derailleur.

25) What do I need to make my ST-M950 levers compatible with the Rapidfire Remote shifter?

You will need to get the Remote Upgrade Kit 1 for the ST-M950. This kit includes the shifter pod guts, cables, and Rapidfire Remote lever unit. If you have the SL-M950, you will need to get the Upgrade Kit 2, which includes the complete SL-M951 right shifter, cables, and Rapidfire Remote lever unit. Furthermore, the following models are compatible; ST/SL-M951, ST/SL-M952, ST/SL-M750.

26) When will the Shimano Airlines components become available?

As part of our SKUNK development, the Shimano Airlines Downhill Project 2000 is currently being tested in the World Cup & NORBA racing circuit. It uses a revolutionary designed derailleur system that uses pressurized gas instead of cables for far more precise shifting. Tentatively scheduled to be released for Downhill Racing only in the year 2000.

27) I have a potentially defective product, How can I warranty it?

The quickest way is to return the product to the original place of purchase for help in obtaining a replacement.

28) What model cranks are involved in the Crank Recall, and where can I have them replaced?

Shimano is voluntarily recalling the following cranks due to a potential safety problem, where the crank could break causing loss of control of the bicycle. These cranks will have the model number, FC-CT90, FC-M290, or FC-MC12 on the back side of the right hand crank arm. These cranks are in the ALTUS, ACERA-X and ALIVIO component groups. The quickest way to obtain a replacement is to contact your local bicycle dealer to make arrangements for a replacement. The crank set will be replaced with a current model at no cost to the consumer.

29) Are there road cassettes for Junior racing regulations?

Yes, we offer the CS-UG70 in 7 and 8 speeds, with the first position cog available in 14,15,16 and 18 tooth. Furthermore for 9-speed we offer the CS-6500 in the following combinations; 13-25, 13-25 and 14-25.

30) Are the new Revo twist shifters compatible with other systems than the TY40-Megarange series?

The 5 speed Revo shifter (SL-RS30) is only compatible with the Tourney 15 rear derailleur (RD-TY15). The SL-RS40 both 7 and 6 speed are fully compatible with any existing Shimano drivetrain as long as the number of gears are the same as the shifters.

31) What components are compatible between 8 speed and Mega-9?

First, Shimano only guarantees index performance with an entire 9 speed drivetrain which includes shift levers, front derailleur, crankset, 9-speed chain, cassette and rear derailleur. The hubs are the same dimensions. Although several 8 and 9 speed combinations are rideable the performance and durability will not

be up to Shimano standards. The following rideable combinations have potential drivetrain problems. 1) When using an 8 speed rear derailleur it may not clear the 34 tooth cog on some frames. 2) The 9 speed chain is ~0.5 mm narrower and so is the front derailleur cage so, A) using a 9 speed chain with 8 speed front derailleur and crankset will result in sluggish shifting and the adjustment is more critical. Worst case is you can not release thumb lever until shift is complete. B) The 8-speed chain is too wide for 9 speed front derailleur; the chain will rub during cross shifts (large/mid ring/large cog). C) 9-speed chain should be no problem for an 8-speed rear drivetrain. 3) The 9 speed chainring pick-up teeth are reprofiled for narrower chains, therefore you can not use an 8-speed chain, and the pick-up teeth will make noise against the chain during minor cross chaining. Furthermore success with one bike may not guarantee the same result with another bike due to the different dimensions between frames and production tolerances of components. Finally, although you may be partially upgrading to 9 speed you may downgrade the shifting performance.

32. My Dura Ace or Ultegra brake shoes are grinding my rims? Is there an alternative compound?

Originally, Shimano developed 9-speed Dura Ace and Ultegra brake pads to have the most stopping power for most wet and dry conditions encountered during road riding, with a further emphasis placed on durability. We tested the new compound thoroughly with a cross section of rims for compatibility and performance. Lately, however we've had reports that although the new pads were more powerful and durable than the 8-speed pads, they caused excessive noise and grinding on some rims. Due to these reports, we've made a running change to the BR-7700 and BR-6500. Since December '97, these pads have been and will be made of a compound similar to the earlier Dura Ace 8-speed compound. In addition, the recently introduced "high performance" compound will still be available as an aftermarket product for those riders who demand the most performance, regardless of durability or noise issues (competitive professional cyclists). The different pad compounds can be identified by the following markings: the "Standard" (improved) pad will have "Shimano" stamped on the back and one small raised dot on the rim side close to the hole for the fixing bolt. Part #Y8FA98020 (pair). The "High Performance" pad will have "Dura Ace" stamped on the back and two closely spaced raised dots on the rim side. Part #Y8FA98021 (pair).

Service Instructions

SHIMANO®

SERVICE INSTRUCTIONS SI-F660A

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.

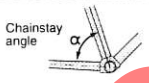
Series	XTR
Rapidfire M9	ST-M952 / SL-M952
Outer casing	SP40 sealed
Front derailleur	FD-M952 / FD-M953
Front chainwheel	FC-M952
Bottom bracket	BB-M952
Chain	CN-7700
Bottom bracket cable guide	SM-SP17 / SM-BT17

Specifications

Front Derailleur

Model number	FD-M952 / FD-M952-E	FD-M953
Normal type	○	○
Top route type	○	○
Front chainwheel tooth difference	22T	22T
Min. difference between top and intermediate	12T	12T
Front derailleur installation band diameter	S, M, L	S, M, L
Chainstay angle (α)	66° - 69°	66° - 69°
Applicable chain line	47.5mm, 50.0mm	47.5mm, 50.0mm
Applicable Bottom Bracket	BB-M952	BB-M952

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



Chainwheel

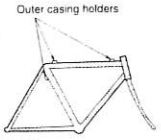
Model number	FC-M952-4 Arm	FC-M952-5 Arm
Chainwheel tooth combination	46-34-24T	48-36-26T
Bolt circle diameter	112 mm / 68 mm	110 mm / 74 mm
Crank arm length	165 mm, 170 mm, 175 mm	165 mm, 170 mm, 175 mm
Pedal thread dimensions	BC 9/16" x 20 T.P.I.	BC 9/16" x 20 T.P.I.

Bottom Bracket

Model number	BB-M952
Spindle length	112.5 mm, 116 mm
Chain line	47.5 mm, 50 mm
Shell width	68, 73 mm
Thread dimensions	BC1.37 (68, 73mm)

Note

- Apply grease to the bottom bracket before installing it.
- 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.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- Use only the applicable chain and bottom bracket mentioned above.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.



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®

These service instructions are printed on recycled paper and can be recycled again

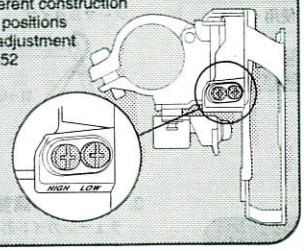
SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 949-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

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

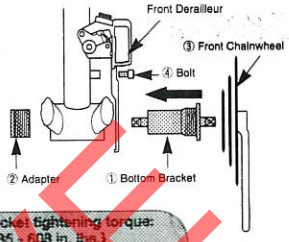
FD-M952 Adjustment Bolts
Because of the different construction of the new link, the positions of the top and low adjustment bolts on the FD-M952 are reversed from the positions on previous front derailleurs.



Installation of the Front Derailleur, Bottom Bracket and Front Chainwheel

● FD-M952-E

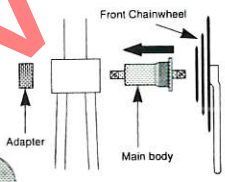
Use the special tools (TL-UN65 and TL-UN74) to install the bottom bracket ① and the front derailleur so that they face as shown in the illustration. Install the adapter ②, and then use an 8 mm Allen key ③ to install the front chainwheel. Secure by using the bolt ④.



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

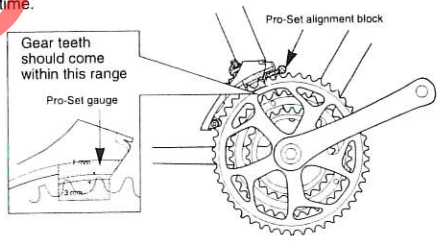
● FD-M952 / FD-M953

Install using the special tool TL-UN74.
First install the main body, then the adapter.

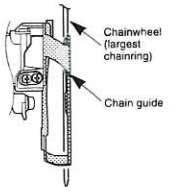


Adapter / bottom bracket tightening torque:
50 - 70 Nm {435 - 608 in. lbs.}

Adjust and then install the front derailleur as shown in the illustration. Do not remove the Pro-Set alignment block at this time.

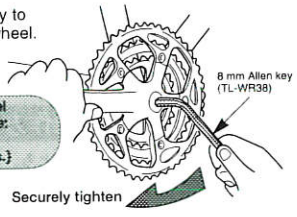


The level section of the chain guide outer plate should be directly above and parallel to the largest chainring. Secure using a 5 mm Allen key.



Tightening torque:
5 - 7 Nm {44 - 60 in. lbs.}

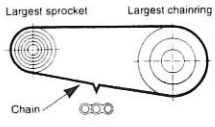
Use an 8 mm Allen key to install the front chainwheel.



Front chainwheel tightening torque:
35 - 50 Nm {305 - 435 in. lbs.}

Chain length

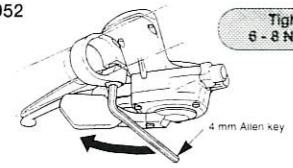
Add 2 links (with the chain on both the largest sprocket and the largest chainring)



Mounting the shifting lever

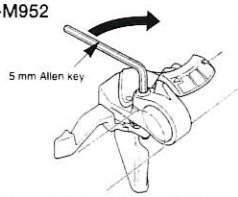
Use a handlebar grip with a maximum outer diameter of 32 mm.

ST-M952



Tightening torque : 6 - 8 Nm {53 - 69 in. lbs.}

SL-M952



Tightening torque : 5 Nm {44 in. lbs.}

SL-M952

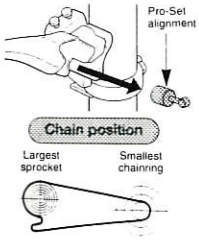
Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.

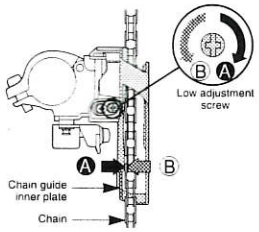
SIS adjustment

Be sure to follow the sequence described below.

1. Low adjustment

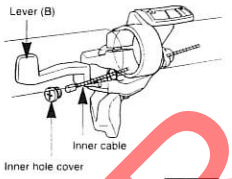
First remove the Pro-Set alignment block .
Next, set so that the clearance between the chain guide inner plate and the chain is 0-0.5 mm.



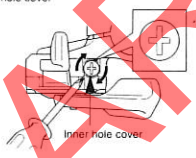


2. Connecting and securing the inner cable

Operate lever (B) two times or more, and check on the indicator that the lever is at the lowest position. Then remove the inner hole cover and connect the inner cable.



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 screw thread.



Tightening torque: 0.3 - 0.4 Nm {3 - 4 in. lbs.}

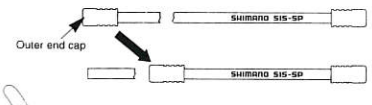
Inserting the inner cable

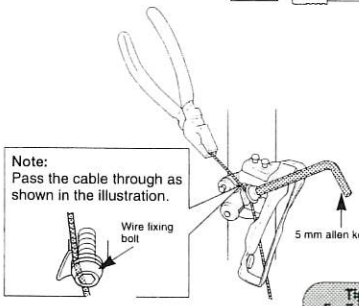
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.

Cutting the outer casing

When cutting the outer casing, cut the opposite end to the end with the marking. After cutting 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.

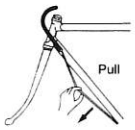




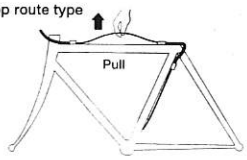
Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}

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

Normal type

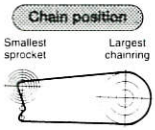


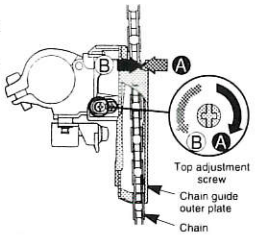
Top route type



3. Top adjustment

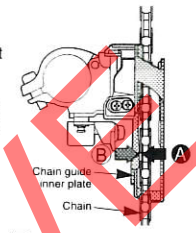
Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.

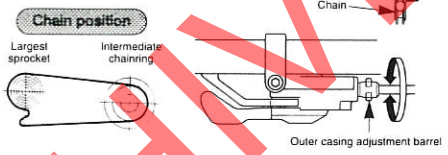




4. Adjustment of the intermediate chainring

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.





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).

SERVICE INSTRUCTIONS SI-R660A

Rear 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	XTR
Rapidfire M9	ST-M952 / SL-M952
Outer casing	SP40 sealed outer casing / Rubber shield
Rear derailleur	RD-M952 / RD-M953
Type	SGS / GS
Freehub	FH-M950
Gears	9
Cassette sprocket	CS-M952
Chain	CN-7700
Bottom bracket guide	SM-SP17 / SM-BT17

Specifications

Rear Derailleur

Model number	RD-M952 / RD-M953	
Type	SGS	GS
Gears	9	
Total capacity	45T (44T M953)	33T
Largest sprocket	34T	34T
Smallest sprocket	11T	11T
Front chainwheel tooth difference	22T	22T

Cassette sprocket tooth combination

Model number	Group name	Gears	Tooth combination
CS-M952	ap	9	12, 14, 16, 18, 20, 23, 26, 30, 34T

Shifting lever

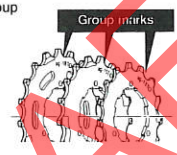
Model number	ST-M952 / SL-M952
Gears	9

Freehub

Model number	FH-M950
Gears	9
No. of spoke holes	36 / 32

Note

- Adjust the RD-M953 Rapid Rise rear derailleur (reverse spring type) from the low side.
- 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.
- Always be sure to use the sprocket set bearing the same group marks. Never use in combination with a sprocket bearing a different group mark.
- 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 smooth operation, use the specified outer casing and the bottom bracket cable guide.**
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.



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®

These service instructions are printed on recycled paper and can be recycled again

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 949-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

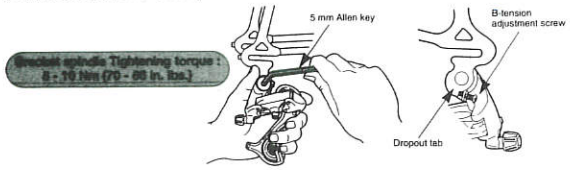
SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

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

Installation of the rear derailleur

When installing, be careful not to let the B-tension adjustment screw come into contact with the dropout tab, otherwise deformation may result.

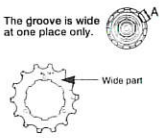
For the RD-M953
Do not remove the Pro-Set alignment block at this time.



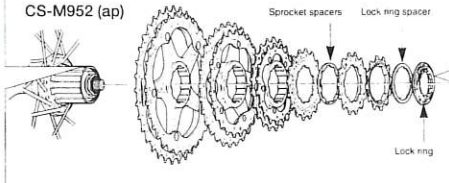
Installation of the sprockets

For each sprocket, the surface that has the group mark should face outward and be positioned so that the wider part of each sprocket and the A part (where the groove width is wide) of the freewheel body are aligned.

The groove is wide at one place only.



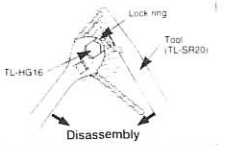
CS-M952 (ap)



- For installation of sprockets, use the special tool (TL-HG16) to tighten the lock ring.

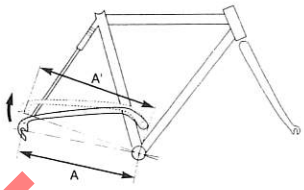
Tightening torque : 30 - 50 Nm {261 - 434 in. lbs.}

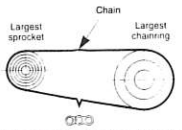
- To replace sprockets, use the special tool (TL-HG16) and TL-SR20 to remove the lock ring.



Chain length on bicycles with rear suspension

The length of A will vary depending on the movement of the rear suspension. Because of this, an excessive load may be placed on the drive system if the chain length is too short. Set the length of the chain by adding two links to the chain when the rear suspension is at a position where dimension "A" is longest and the chain is on the largest sprocket and the largest chainring. If the amount of movement of the rear suspension is large, the slack in the chain may not be taken up properly when the chain is on the smallest chainring and smallest sprocket.



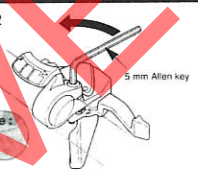


Add 2 links (with the chain on both the largest sprocket and the largest chainring)

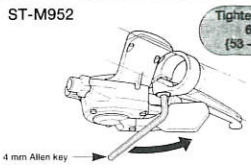
Installation of the brake lever

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

SL-M952



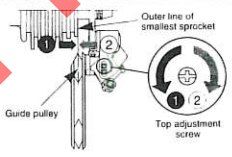
ST-M952



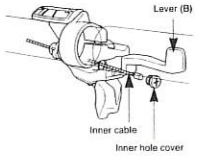
SL-M952
Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.

SIS Adjustment (RD-M952)

1. Top adjustment
Turn the top adjustment screw to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear.

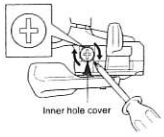


2. Connecting and securing the inner cable
Operate lever (B) eight times or more, and check on the indicator that the lever is at the highest position. Then remove the inner hole cover and connect the inner cable.



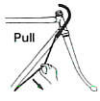
Install the inner hole cover by turning it as shown in the illustration until it stops.
Do not turn it any further than this, otherwise it may damage the screw thread.

Tightening torque : 0.3 - 0.5 Nm {3 - 4 in. lbs.}

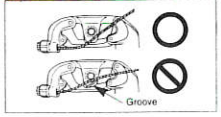


Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.

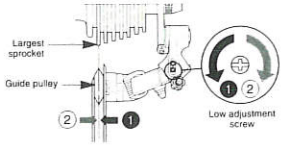
Tightening torque : 5 - 7 Nm {44 - 60 in. lbs.}



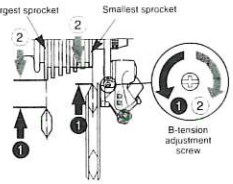
Note: Be sure that the cable is securely in the groove.



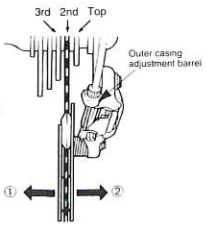
3. Low adjustment
Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



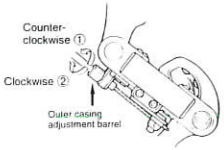
4. How to use the B-tension adjustment screw
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.



5. SIS Adjustment
(1) Operate the shifting lever to move the chain from the top gear to the 2nd gear.
- If the chain will not move to the 2nd gear, turn the outer casing adjustment barrel to increase the tension-----① (counter clockwise)
- If the chain moves past the 2nd gear, decrease the tension---② (clockwise)



(2) Next with the chain on the 2nd gear, increase the inner cable tension ① while turning the crank arm forward. Stop turning the outer casing adjustment barrel just before the chain makes noise against the 3rd gear.
This completes the adjustment.



For the best SIS performance, periodically lubricate all power-transmission parts.

Replacement of the shifting lever unit and indicator

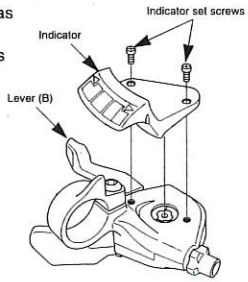
Disassembly and reassembly should only be carried out when replacing the indicator.

Removal of the indicator

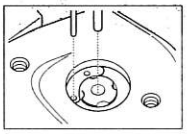
1. Remove the two indicator set screws which are securing the indicator.

Tightening torque : 0.3 - 0.5 Nm {3 - 4 in. lbs.}

2. Remove the indicator unit as shown in the illustration.
3. Operate lever (B) two times or more to set the lever to the lowest position.



4. After checking that the indicator needle is at the right edge, install the indicator as shown in the illustration.
5. 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 4.

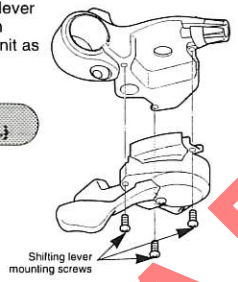


Disassembly and reassembly should only be carried out when replacing the shifting lever unit.

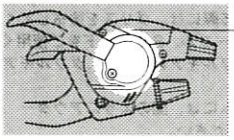
Replacement of the shifting lever unit

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. Carry out steps 1 - 2 for replacement of the indicator.
3. Remove the three shifting lever mounting screws, and then remove the shifting lever unit 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 and then secure the shifting lever mounting screws.
5. Carry out steps 3 - 4 for replacement of the indicator.



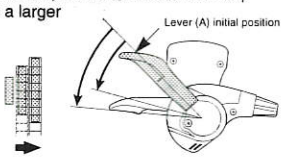
Do not disassemble the indicator and shifting lever unit, as this may damage them or cause mis-operation.

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.

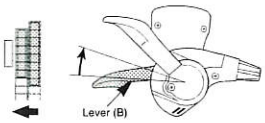
To shift from a small chainring to a larger chainring

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

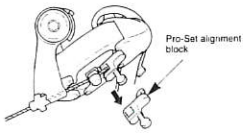
When lever (B) is pressed once, there is a shift of one step from a large chainring to a smaller chainring.
Example:
from largest chainring to intermediate chainring.



SIS Adjustment (RD-M953)

Installation of the chain

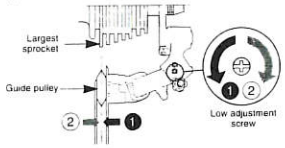
Install the chain with the Pro-Set alignment block still attached. After installing, remove the Pro-Set alignment block.



Turn the crank arm to set the derailleur to the low position.

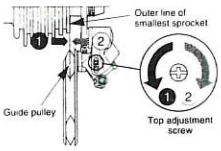
1. Low adjustment

Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



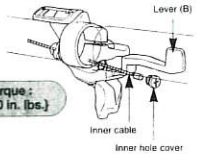
2. Top adjustment

Turn the crank arm while pulling the derailleur with your hand to move the derailleur to the top position, and then turn the top adjustment screw to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear. Turn the crank arm to set the derailleur to the low position.

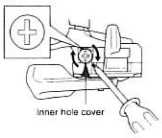


3. Connecting and securing the inner cable

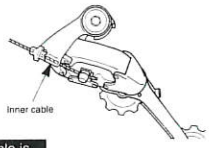
Operate lever (B) eight times or more, and check on the indicator that the lever is at the lowest position. Then remove the inner hole cover and connect the inner cable.



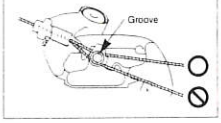
Install the inner hole cover by turning it as shown in the illustration until it stops.
Do not turn it any further than this, otherwise it may damage the screw thread.



Connect the inner cable to the derailleur as shown in the illustration.



Note: Be sure that the cable is securely in the groove.

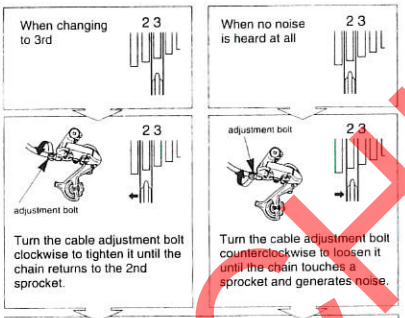


Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the rear derailleur as shown in the illustration.

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

4. SIS adjustment

Push lever (B) while turning the crank arm to move the derailleur to the largest sprocket. Then operate lever (A) once to move the derailleur to the 2nd-gear sprocket. After this, operate lever (A) just as far as the extent of play, and then turn the crank arm.



Best setting

The best setting is when the cable adjustment bolt is tightened (turned clockwise) until noise occurs without lever (A) being operated, and then loosened (turned counterclockwise) 90 - 180 degrees from that point.

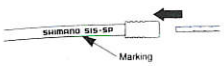
Operate lever (A) to change gears, and check that no noise occurs in any of the gear positions.

For the best SIS performance, periodically lubricate all power-transmission parts.

(RD-M952 / RD-M953)

Inserting the inner cable

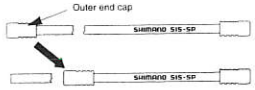
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



Cutting the outer casing

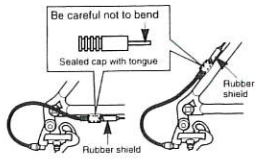
When cutting the outer casing, cut the opposite end to the end with the marking. After cutting the outer casing, make the end round so that the inside of the hole has a uniform diameter.

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



Note regarding the sealed cap with tongue and rubber shield

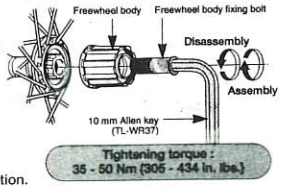
The sealed cap with tongue and the rubber shield should be installed to the outer casing stopper of the frame.



Replacement of the freewheel body

After removing the hub axle, remove the freewheel body fixing bolt (inside the freewheel body), and then replace the freewheel body.

Note: Do not attempt to disassemble the freewheel body, because it may result in a malfunction.

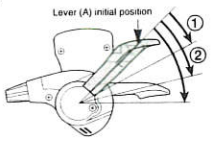


Gear shifting operation

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.

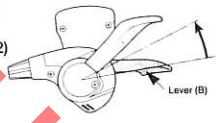
To shift from a large sprocket to a smaller sprocket (RD-M953)
To shift from a small sprocket to a larger sprocket (RD-M952)

To shift one step only, press lever (A) to the (1) position. To shift two steps at one time, press to the (2) position.
A maximum four-step shift can be made in this manner.



To shift from a small sprocket to a larger sprocket (RD-M953)
To shift from a large sprocket to a smaller sprocket (RD-M952)

Press lever (B) once to shift one step from a larger to a smaller sprocket.



Replacement of the shifting lever unit and indicator

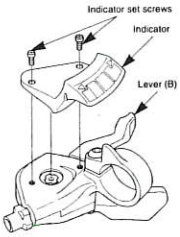
Disassembly and reassembly should only be carried out when replacing the indicator.

Removal of the indicator

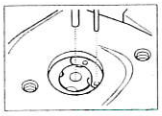
1. Remove the two indicator set screws which are securing the indicator.

Tightening torque : 0.3 - 0.5 Nm (3 - 4 in. lbs.)

2. Remove the indicator unit as shown in the illustration.
3. Operate lever (B) at least eight times to set the lever to the highest position.



4. After checking that the indicator needle is at the left edge, install the indicator as shown in the illustration.
5. Check the operation of the indicator. If it does not operate correctly, re-install the indicator while taking particular note of steps 3. to 4.

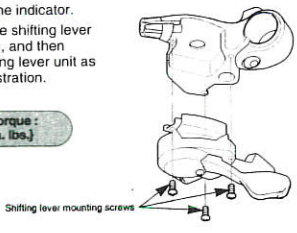


Disassembly and reassembly should only be carried out when replacing the shifting lever unit.

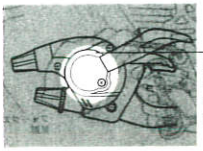
Replacement of the shifting lever unit

1. Loosen the cable fixing bolt (nut) of the rear derailleur, and then pull the inner cable out of the shifting lever unit in the same way as when installing the inner cable.
2. Carry out steps 1 - 2 for replacement of the indicator.
3. Remove the three shifting lever mounting screws, and then remove the shifting lever unit as shown in the illustration.

Tightening torque : 0.5 Nm (4 in. lbs.)



4. To assemble, align the shifting lever unit and the brake lever bracket and then secure the shifting lever mounting screws.
5. Carry out steps 3 - 4 for replacement of the indicator.



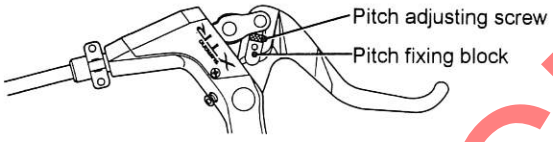
Do not disassemble the indicator and shifting lever unit, as this may damage them or cause mis-operation.

⚠ 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.
- The M951 brake system is equipped with a pitch adjusting screw in the wire hooking unit of the ST-M952 / BL-M950 brake levers which allows the rider to change the relationship between the brake input and output. If the pitch adjustment screw is turned clockwise, the braking force will be dramatically increased, so that a high level of braking performance can be achieved from only a small amount of lever movement. Accordingly, normal braking operation may cause a greater-than-expected amount of braking force to be applied, which could make the bicycle fall forward, causing serious injury to the rider. To avoid this, please read the following instructions thoroughly before turning the pitch adjusting screw clockwise.

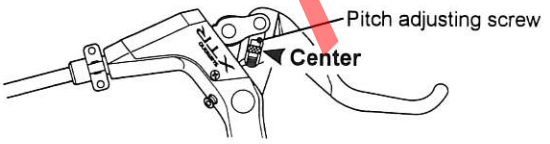
After removing the pitch fixing block, make sure that you are completely used to the new braking characteristics before riding the bicycle, otherwise the bicycle might fall forward if you have to apply the brakes suddenly, such as when a vehicle appears.

1) With the pitch fixing block in place (standard specifications for shipment)



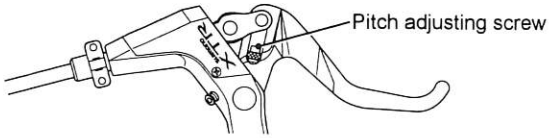
2) With the pitch fixing block removed and the pitch adjusting screw tightened to the position in the illustration

An ample degree of braking force can be obtained from a small amount of brake lever input, to provide a high level of brake performance. However, if the brakes are operated suddenly, there is the danger that the bicycle may fall forward. After removing the pitch fixing block and turning the pitch adjusting screw clockwise, first ride the bicycle at a speed of less than 6 mph (10 km/h) while applying the brakes repeatedly in order to get a feel for the difference in braking characteristics before riding at higher speeds. Beginners should be particularly careful.



3) With the pitch adjusting screw fully tightened

An ample degree of braking force can be obtained from an even smaller amount of brake lever input than in 2) above, to provide the highest level of brake performance. However, because the braking force is even more sensitive to the amount of lever input than in 2), be sure to practice using the brakes as described above. Beginners or those who are not fully confident should not use the brakes in this configuration.



- ***Use the BR-M951 V-brake with SERVO WAVE ACTION and adjustable V-brake-compatible levers such as the BL-M950/ST-M952/ST-M951/ BL-M739/ST-M739/BL-M601 brake levers.***

SERVICE INSTRUCTIONS **SI-B660A**

Multi-Condition Brake System

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

Multi-Condition Brake System
By providing superior wet weather braking performance (control and modulation), braking performance will not vary in a multitude of conditions when using this brake system.

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

Series	**XTR**
Brake lever	**ST-M952 / BL-M950**
V-brake	**BR-M951**
Brake cable	

NOTE:

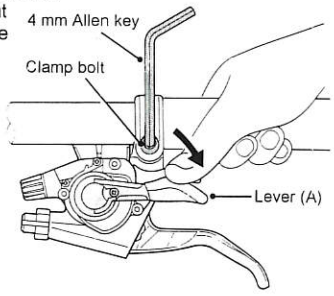
- By using these parts as a set, the optimum efficiency of the Multi-Condition Brake System can be realized.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.

Installation of the brake lever

Move lever (A) so that the clamp bolt can be seen, and then use a 4 mm Allen key to install the brake lever.
Insert the 4 mm Allen key so that it goes as far into the head of the bolt as possible at this time.

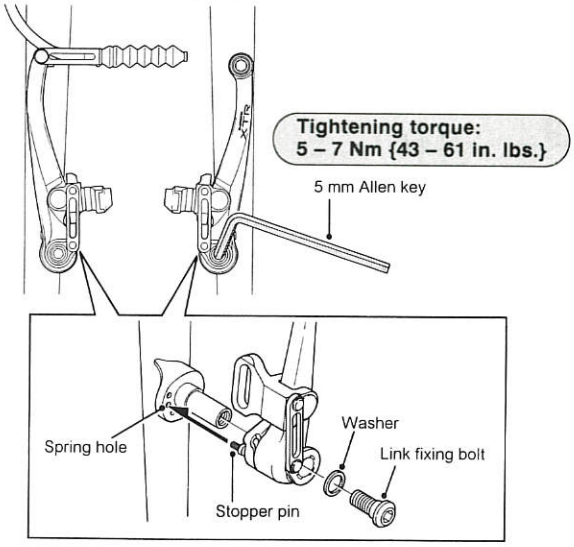
Tightening torque:
6 – 8 Nm
{52 – 69 in. lbs.}

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

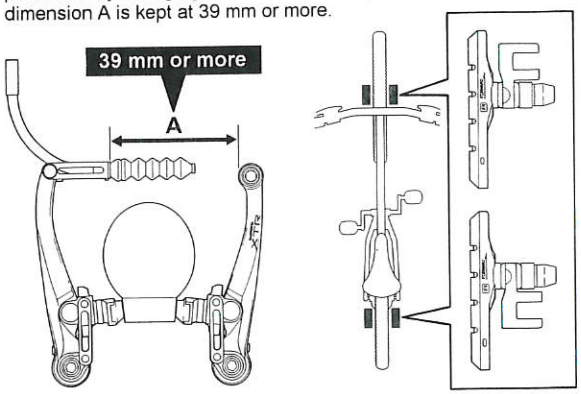


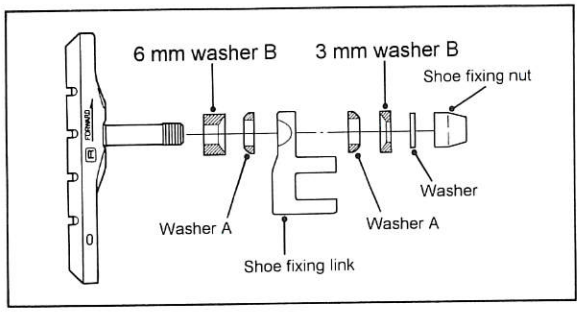
Installation of the V-brake

1. Insert the stopper pin of the brake body into the center spring hole in the frame mounting boss, and then secure the brake body to the frame with the link fixing bolt.

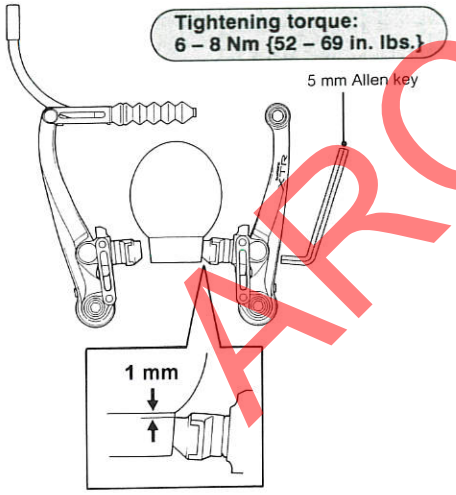


2. While holding the shoe against the rim, adjust the amount of shoe protrusion by changing over the washer B (6 mm or 3 mm) so that dimension A is kept at 39 mm or more.

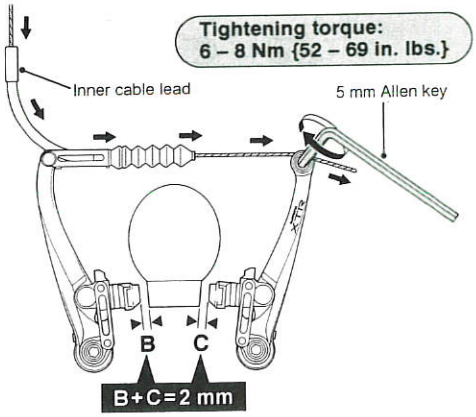




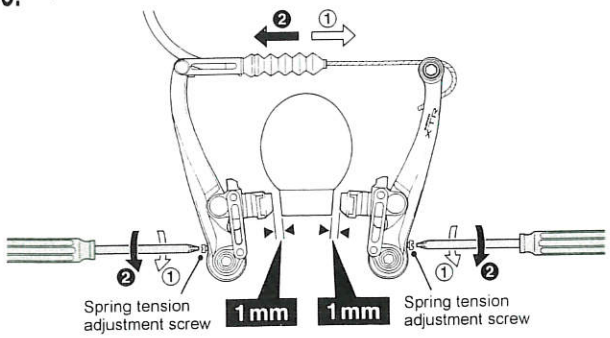
3. While holding the shoe against the rim, tighten the shoe fixing nut.



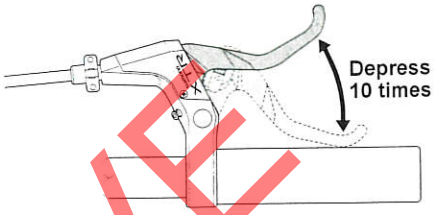
4. Pass the inner cable through the inner cable lead, and after setting so that the total of the clearances between the left and right shoes and the rim is 2 mm, tighten the cable fixing bolt.



5. Adjust the balance with the spring tension adjustment screws.

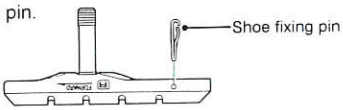


6. Depress the brake lever about 10 times as far as the grip and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.

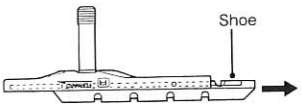


Replacement of the cartridge shoe

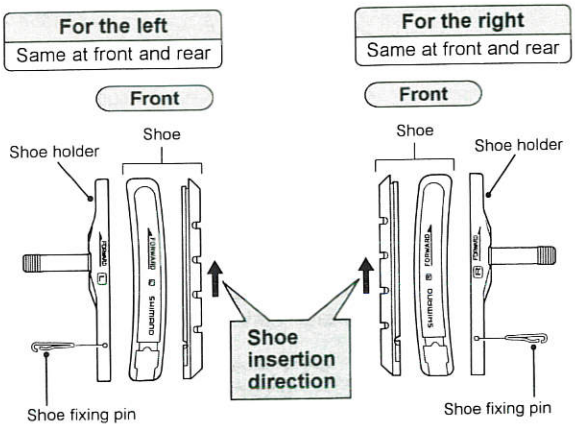
1. Remove the shoe fixing pin.



2. Remove the shoe by sliding it along the groove of the shoe holder.



3. There are two different types of shoe and shoe holder to be used in the left and right positions respectively. Slide the new shoes into the grooves on the shoe holders while taking note of the correct directions and pin hole positions.



4. Insertion of shoe fixing pin is very critical to keep shoe properly fixed in place.

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

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO®

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222

SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

SERVICE INSTRUCTIONS SI-F650A

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.

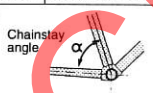
Series	DEORE-XT	DEORE-LX
Rapidfire M9	ST-M750 / SL-M750	ST-M570 / SL-M570
Outer casing	SP40 sealed	SP40 sealed
Front derailleur	FD-M750	FD-M570
Front chainwheel	FC-M750	FC-M570
Bottom bracket	BB-UN72	BB-UN52
Chain	CN-HG92	CN-HG72
Bottom bracket cable guide	SM-SP17 / SM-BT17	SM-SP17 / SM-BT17

Specifications

Front Derailleur

Model number	FD-M751/FD-M750/ FD-M570	FD-M750-E / FD-M570-E	FD-M571
Normal type	○	○	○
Top route type	○	○	○
Front chainwheel tooth difference	22T	22T	22T
Min. difference between top and intermediate	12T	12T	12T
Front derailleur installation band diameter	S, M, L	S, M, L	S, M, L
Chainstay angle (α)	66° - 69°	66° - 69°	63° - 66°, 66° - 69°
Applicable chain line	47.5mm, 50.0mm	47.5mm, 50.0mm	47.5mm, 50.0mm
Applicable Bottom Bracket	BB-UN72/BB-UN52	BB-UN72E/BB-UN52E	BB-UN72/BB-UN52

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



Chainwheel

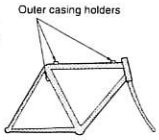
Model number	FC-M750-4 Arm FC-M570-4 Arm	FC-M750-5 Arm FC-M570-5 Arm	FC-M750-5 Arm
Chainwheel tooth combination	44-32-22T	44-32-22T	48-36-26T
Bolt circle diameter	104 mm / 64 mm	94 mm / 58 mm	110 mm / 74 mm
Crank arm length	170 mm, 175 mm		
Pedal thread dimensions	BC 9/16" x 20 T.P.I.		

Bottom Bracket

Model number	BB-UN72/BB-UN52	BB-UN72/BB-UN52	BB-UN72E/BB-UN52E	BB-UN72E/BB-UN52E
Stamped marking	MM110	LL113	MM110	LL113
Spindle length	110 mm	113 mm	110 mm	113 mm
Chain line	47.5 mm	50 mm	47.5 mm	50 mm
Shell width	68, 70, 73 mm	68, 70, 73 mm	68 mm	73 mm
Thread dimensions	BC1.37 (68, 73mm) M36 (70mm)	BC1.37 (68, 73 mm) M36 (70 mm)	BC1.37 (68 mm)	BC1.37 (73 mm)

Note

- Apply grease to the bottom bracket before installing it.
- 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.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- Use only the applicable chain and bottom bracket mentioned above.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.



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®

These service instructions are printed on recycled paper and can be recycled again

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 949-951-5003

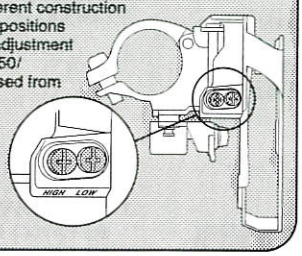
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

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

FD-M750/FD-M570 Adjustment Bolts

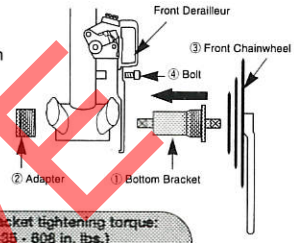
Because of the different construction of the new link, the positions of the top and low adjustment bolts on the FD-M750/ FD-M570 are reversed from the positions on previous front derailleurs.



Installation of the Front Derailleur, Bottom Bracket and Front Chainwheel

● FD-M750-E / FD-M570-E

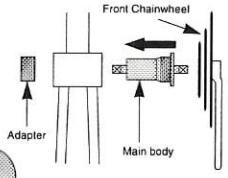
Use the special tools (TL-UN70 and TL-UN74) to install the bottom bracket ① and the front derailleur so that they face as shown in the illustration. Install the adapter ②, and then use an 8 mm Allen key ③ to install the front chainwheel. Secure by using the bolt ④.



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

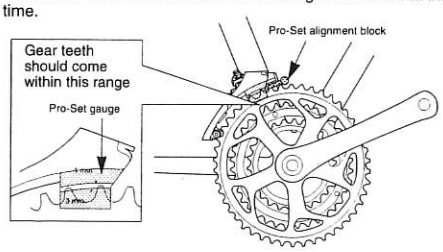
● FD-M570 / 571 FD-M750 / 751

Install using the special tool TL-UN74. First install the main body, then the adapter.

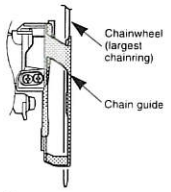


Adapter / bottom bracket tightening torque: 50 - 70 Nm {435 - 608 in. lbs.}

Adjust and then install the front derailleur as shown in the illustration. Do not remove the Pro-Set alignment block at this time.

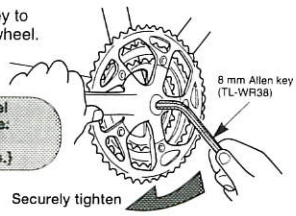


The level section of the chain guide outer plate should be directly above and parallel to the largest chainring. Secure using a 5 mm Allen key.



Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}

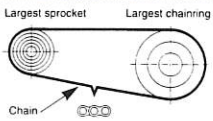
Use an 8 mm Allen key to install the front chainwheel.



Front chainwheel tightening torque: 35 - 50 Nm {305 - 435 in. lbs.}

Chain length

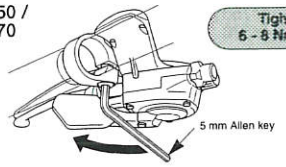
Add 2 links (with the chain on both the largest sprocket and the largest chainring)



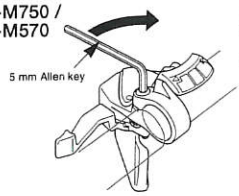
Mounting the shifting lever

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

ST-M750 / ST-M570



SL-M750 / SL-M570



SL-M750 / SL-M570

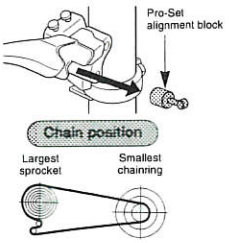
Install the brake lever in a position where it will not obstruct brake operation. Do not use in a combination which causes brake operation to be obstructed.

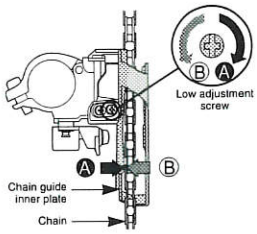
SIS adjustment

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.

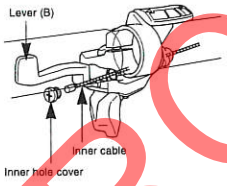




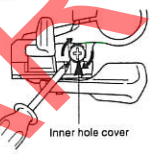
2. Connecting and securing the inner cable

Operate lever (B) two times or more, and check on the indicator that the lever is at the lowest position. Then remove the inner hole cover and connect the inner cable.

Tightening torque:
5 - 7 Nm {44 - 60 in. lbs.}

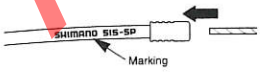


Install the inner hole cover as shown in the illustration by turning it you feel a clicking.



Inserting the inner cable

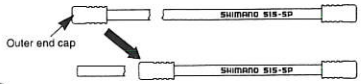
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



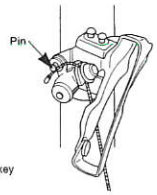
Cutting the outer casing

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

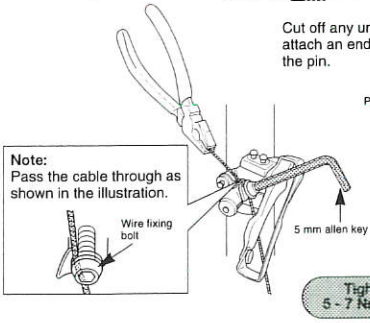
Attach the same outer end cap to the cut end of the outer casing.



Cut off any unnecessary cable, attach an end cup and hook it onto the pin.

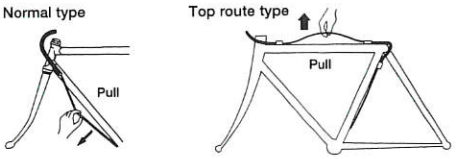


Note:
Pass the cable through as shown in the illustration.



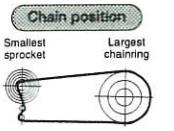
Tightening torque:
5 - 7 Nm {44 - 60 in. lbs.}

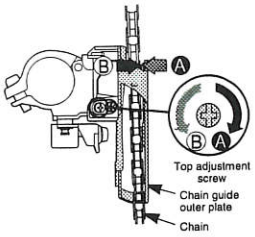
After taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.



3. Top adjustment

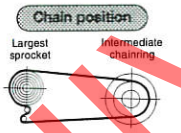
Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.

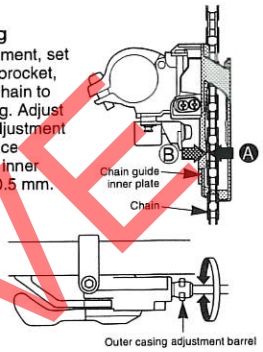




4. Adjustment of the intermediate chainring

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.





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).

Replacement of the shifting lever unit and indicator

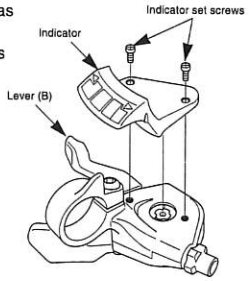
Disassembly and reassembly should only be carried out when replacing the indicator.

Removal of the indicator

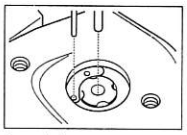
1. Remove the two indicator set screws which are securing the indicator.

Tightening torque : 0.3 - 0.5 Nm (3 - 4 in. lbs.)

2. Remove the indicator unit as shown in the illustration.
3. Operate lever (B) two times or more to set the lever to the lowest position.



4. After checking that the indicator needle is at the right edge, install the indicator as shown in the illustration.
5. 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 4.

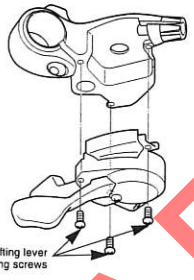


Disassembly and reassembly should only be carried out when replacing the shifting lever unit.

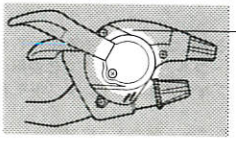
Replacement of the shifting lever unit

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. Carry out steps 1 - 2 for replacement of the indicator.
3. Remove the three shifting lever mounting screws, and then remove the shifting lever unit 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 and then secure the shifting lever mounting screws.
5. Carry out steps 3 - 4 for replacement of the indicator.



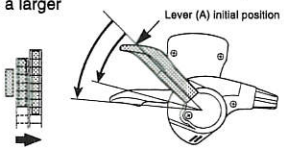
Do not disassemble the indicator and shifting lever unit, as this may damage them or cause mis-operation.

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.

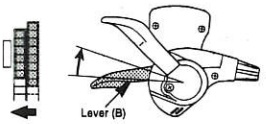
To shift from a small chainring to a larger chainring

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.



Rear 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	DEORE LX
Rapidfire M9	ST-M750 / SL-M750	ST-M570 / SL-M570
Outer casing	SP40 sealed	SP40 sealed
Rear derailleur	RD-M750	RD-M570
Type	SGS / GS	SGS
Freehub	FH-M750	FH-M570
Gears	9	9
Cassette sprocket	CS-M750	CS-HG70-9
Chain	CN-HG92	CN-HG72
Bottom bracket guide	SM-SP17	SM-SP17

Specifications

Rear Derailleur

Model number	RD-M750		RD-M570
Type	SGS	GS	SGS
Gears	9		9
Total capacity	45T	33T	45T
Largest sprocket	34T	34T	34T
Smallest sprocket	11T	11T	11T
Front chainwheel tooth difference	22T	22T	22T

Cassette sprocket tooth combination

Model number	Group name	Gears	Tooth combination
CS-M750	as	9	11, 13, 15, 17, 20, 23, 26, 30, 34T
CS-M750	aq	9	11, 12, 14, 16, 18, 21, 24, 28, 32T
CS-M750	ap	9	12, 14, 16, 18, 20, 23, 26, 30, 34T
CS-HG70-9	ar	9	11, 12, 14, 16, 18, 21, 24, 28, 32T

Shifting lever

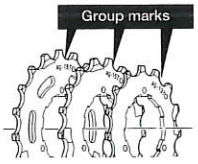
Model number	ST-M750 / SL-M750	ST-M570 / SL-M570
Gears	9	9

Freehub

Model number	FH-M750	FH-M570
Gears	9	9
No. of spoke holes	36 / 32	36 / 32

Note

- 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.
- Always be sure to use the HG/IG sprocket set bearing the same group marks. Never use in combination with a sprocket bearing a different group mark.

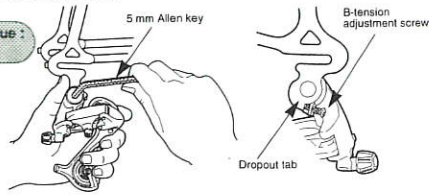


- Use an outer casing which still has some length to spare even when the handlebars are turned all the way to both sides. Furthermore, check that the shifting lever does not touch the bicycle frame when the handlebars are turned all the way.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- **For smooth operation, use the specified outer casing and the bottom bracket cable guide.**
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Installation of the rear derailleur

When installing, be careful that deformation is not caused by the B-tension adjustment screw coming into contact with the dropout tab.

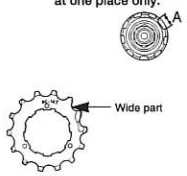
Bracket spindle Tightening torque : 8 - 10 Nm {70 - 86 in. lbs.}



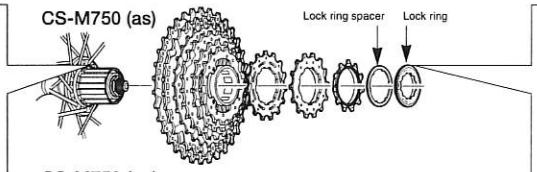
Installation of the sprockets

For each sprocket, the surface that has the group mark should face outward and be positioned so that the wider part of each sprocket and the A part (where the groove width is wide) of the freewheel body are aligned.

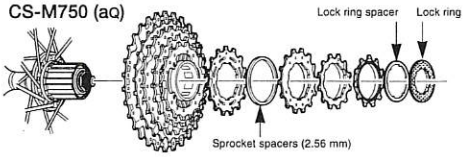
The groove is wide at one place only.



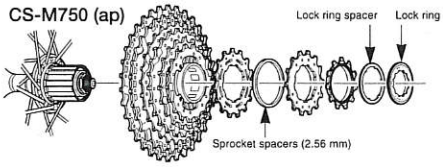
CS-M750 (as)



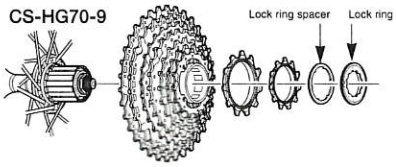
CS-M750 (aq)



CS-M750 (ap)



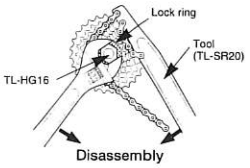
CS-HG70-9



- For installation of sprockets, use the special tool (TL-HG16) to tighten the lock ring.

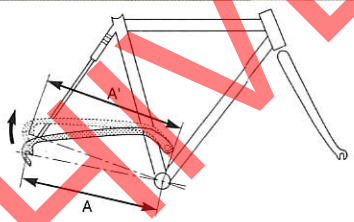
Tightening torque : 30 - 50 Nm {261 - 434 in. lbs.}

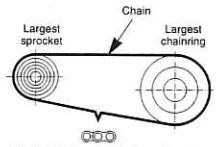
- To replace sprockets, use the special tool (TL-HG16) and TL-SR20 to remove the lock ring.



Chain length on bicycles with rear suspension

The length of A will vary depending on the movement of the rear suspension. Because of this, an excessive load may be placed on the drive system if the chain length is too short. Set the length of the chain by adding two links to the chain when the rear suspension is at a position where dimension "A" is longest and the chain is on the largest sprocket and the largest chainring. If the amount of movement of the rear suspension is large, the slack in the chain may not be taken up properly when the chain is on the smallest chainring and smallest sprocket.



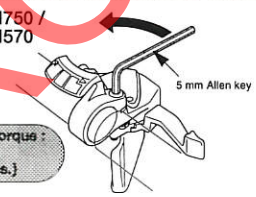


Add 2 links (with the chain on both the largest sprocket and the largest chainring)

Installation of the brake lever

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

SL-M750 / SL-M570



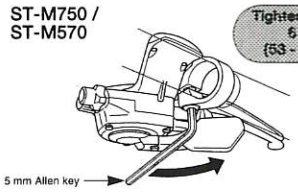
Tightening torque : 5 Nm {44 in lbs.}

SL-M750 / SL-M570

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.

ST-M750 / ST-M570

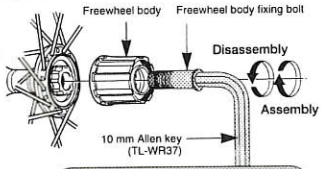
Tightening torque : 6 - 8 Nm {53 - 69 in. lbs.}



Replacement of the freewheel body

After removing the hub axle, remove the freewheel body fixing bolt (inside the freewheel body), and then replace the freewheel body.

Note: Do not attempt to disassemble the freewheel body, because it may result in a malfunction.



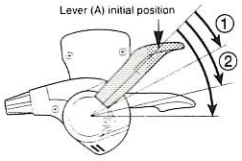
Tightening torque : 35 - 50 Nm {305 - 434 in. lbs.}

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.

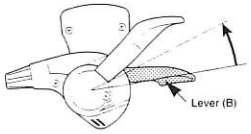
To shift from a small sprocket to a larger sprocket

To shift one step only, press lever (A) to the (1) position. To shift two steps at one time, press to the (2) position.
A maximum three-step shift can be made in this manner.



To shift from a large sprocket to a smaller sprocket

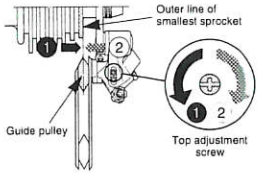
Press lever (B) once to shift one step from a larger to a smaller sprocket.



SIS Adjustment

1. Top adjustment

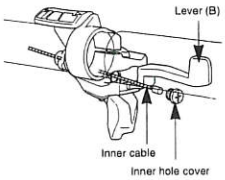
Turn the top adjustment screw to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear.



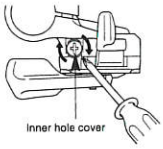
2. Connecting and securing the inner cable

Operate lever (B) eight times or more, and check on the indicator that the lever is at the highest position. Then remove the inner hole cover and connect the inner cable.

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

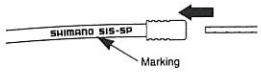


Install the inner hole cover as shown in the illustration by turning it you feel a clicking.



Inserting the inner cable

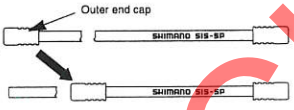
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



Cutting the outer casing

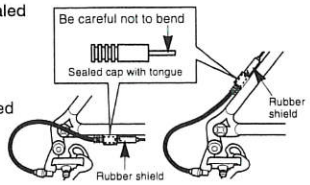
When cutting the outer casing, cut the opposite end to the end with the marking. After cutting the outer casing, make the end round so that the inside of the hole has a uniform diameter.

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

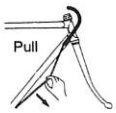


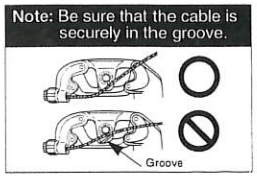
Note regarding the sealed cap with tongue and rubber shield

The sealed cap with tongue and the rubber shield should be installed to the outer casing stopper of the frame.



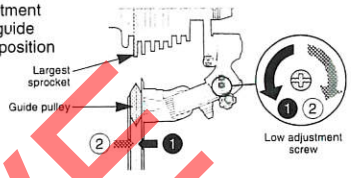
Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.





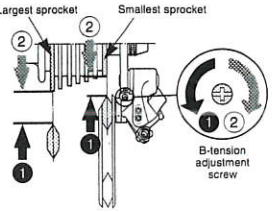
3. Low adjustment

Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



4. How to use the B-tension adjustment screw

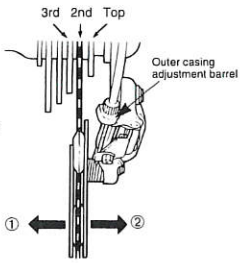
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.



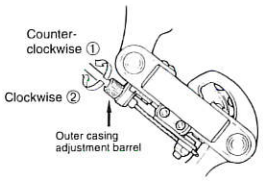
5. SIS Adjustment

(1) Operate the shifting lever to move the chain from the top gear to the 2nd gear.

* If the chain will not move to the 2nd gear, turn the outer casing adjustment barrel to increase the tension-----① (counter clockwise)
* If the chain moves past the 2nd gear, decrease the tension---② (clockwise)



(2) Next with the chain on the 2nd gear, increase the inner cable tension ① while turning the crank arm forward. Stop turning the outer casing adjustment barrel just before the chain makes noise against the 3rd gear. This completes the adjustment.



For the best SIS performance, periodically lubricate all power-transmission parts.

Replacement of the shifting lever unit and indicator

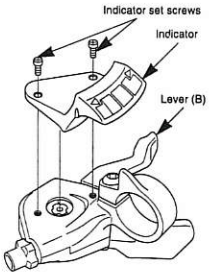
Disassembly and reassembly should only be carried out when replacing the indicator.

Removal of the indicator

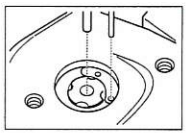
1. Remove the two indicator set screws which are securing the indicator.

Tightening torque : 0.3 - 0.5 Nm (3 - 4 in. lbs.)

2. Remove the indicator unit as shown in the illustration.
3. Operate lever (B) at least eight times to set the lever to the highest position.



4. After checking that the indicator needle is at the left edge, install the indicator as shown in the illustration.
5. Check the operation of the indicator. If it does not operate correctly, re-install the indicator while taking particular note of steps 3. to 4.

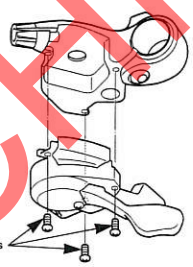


Disassembly and reassembly should only be carried out when replacing the shifting lever unit.

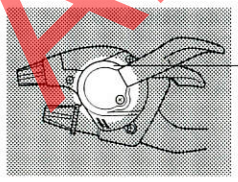
Replacement of the shifting lever unit

1. Loosen the cable fixing bolt (nut) of the rear derailleur, and then pull the inner cable out of the shifting lever unit in the same way as when installing the inner cable.
2. Carry out steps 1 - 2 for replacement of the indicator.
3. Remove the three shifting lever mounting screws, and then remove the shifting lever unit 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 and then secure the shifting lever mounting screws.
5. Carry out steps 3 - 4 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.

SHIMANO®

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 949-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

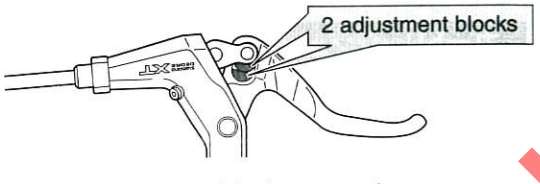
These service instructions are printed on recycled paper and can be recycled again

⚠ 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.
- The M750 brake system is equipped with adjustment blocks in the wire hooking unit of the ST-M750 / BL-M739 brake levers which allows the rider to change the relationship between the brake input and output. If the adjustment blocks are removed, the braking force will be dramatically increased, so that a high level of braking performance can be achieved from only a small amount of lever movement. Accordingly, normal braking operation may cause a greater-than-expected amount of braking force to be applied, which could make the bicycle fall forward, causing serious injury to the rider. To avoid this, please read the following instructions thoroughly before removing the adjustment blocks.

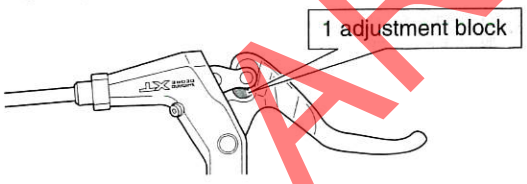
After removing the adjustment blocks, make sure that you are completely used to the new braking characteristics before riding the bicycle, otherwise the bicycle might fall forward if you have to apply the brakes suddenly, such as when a vehicle appears.

1) With no adjustment blocks removed (standard specifications for shipment)



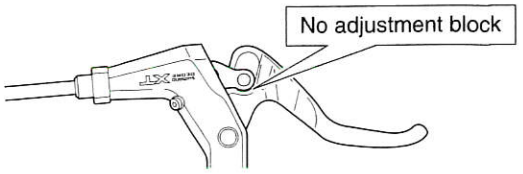
2) With one adjustment block removed

An ample degree of braking force can be obtained from a small amount of brake lever input, to provide a high level of brake performance. However, if the brakes are operated suddenly, there is the danger that the bicycle may fall forward. After removing one of the adjustment blocks, first ride the bicycle at a speed of less than 6 mph (10 km/h) while applying the brakes repeatedly in order to get a feel for the difference in braking characteristics before riding at higher speeds. Beginners should be particularly careful.



3) With two adjustment blocks removed

An ample degree of braking force can be obtained from an even smaller amount of brake lever input than in 2) above, to provide the highest level of brake performance.
However, because the braking force is even more sensitive to the amount of lever input than in 2), be sure to practice using the brakes as described above. Beginners or those who are not fully confident should not use the brakes in this configuration.



- ***Use the BR-M750 V-brake with SERVO WAVE ACTION and adjustable V-brake-compatible levers such as the BL-M739 / ST-M750 / BL-M950 / ST-M951 / BL-M601 brake levers.***

SERVICE INSTRUCTIONS **SI-B650A**

Multi-Condition Brake System

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

Multi-Condition Brake System

By providing superior wet weather braking performance (control and modulation), braking performance will not vary in a multitude of conditions when using this brake system.

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

Series	**DEORE XT**
Brake lever	**ST-M750/BL-M739**
V-brake	**BR-M750**
Brake cable	

NOTE:

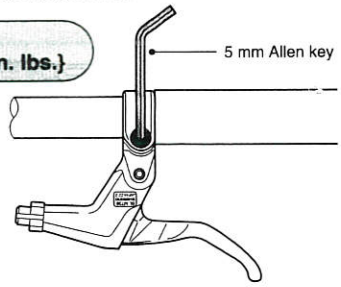
- By using these parts as a set, the optimum efficiency of the Multi-Condition Brake System can be realized.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.

Installation of the brake lever

Use a 5 mm Allen key to install the brake lever.

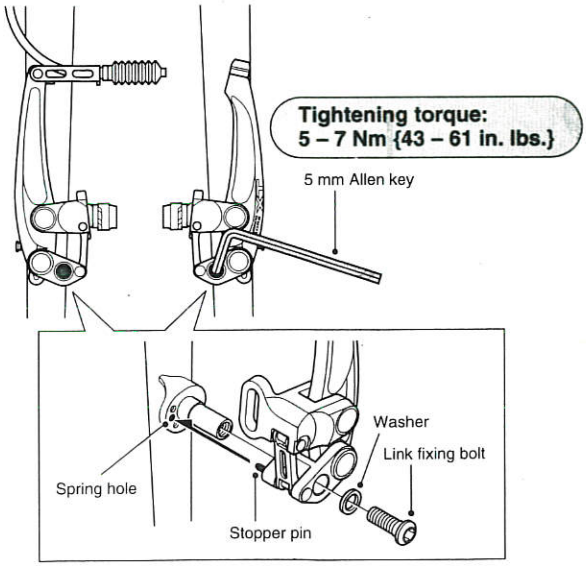
Tightening torque: 6 – 8 Nm {52 – 69 in. lbs.}

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

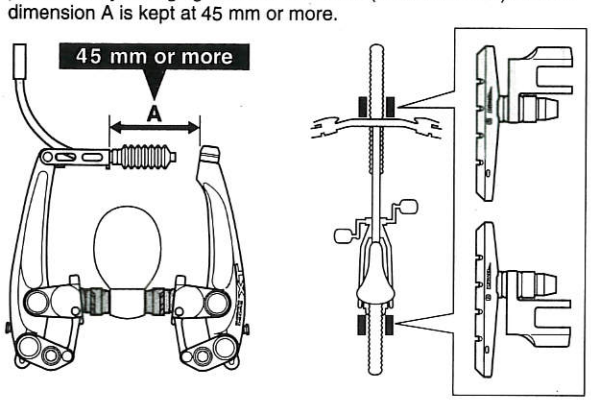


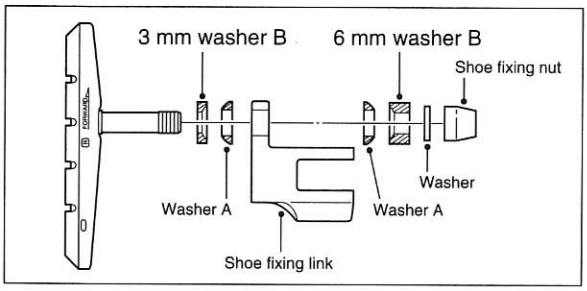
Installation of the V-brake

1. Insert the stopper pin of the brake body into the center spring hole in the frame mounting boss, and then secure the brake body to the frame with the link fixing bolt.

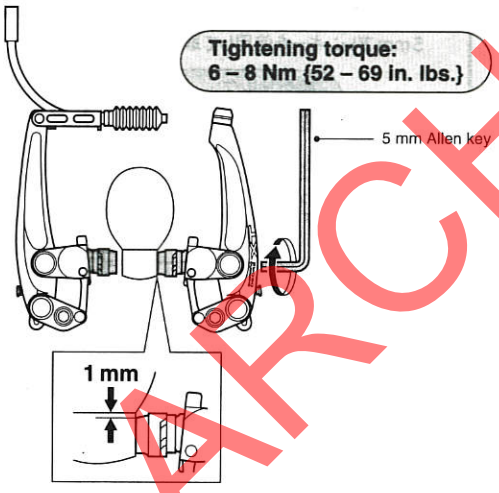


2. While holding the shoe against the rim, adjust the amount of shoe protrusion by changing over the washer B (6 mm or 3 mm) so that dimension A is kept at 45 mm or more.

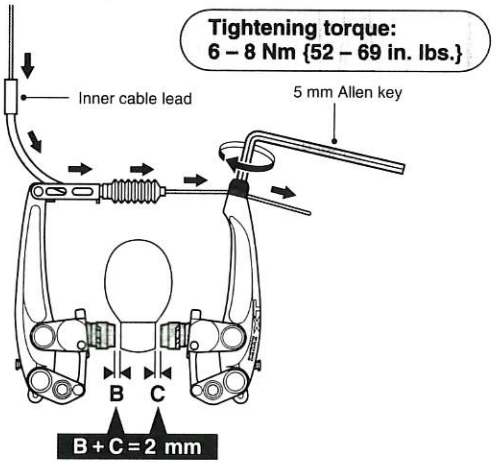




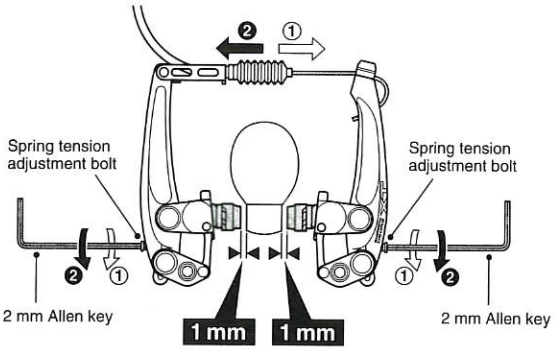
3. While holding the shoe against the rim, tighten the shoe fixing nut.



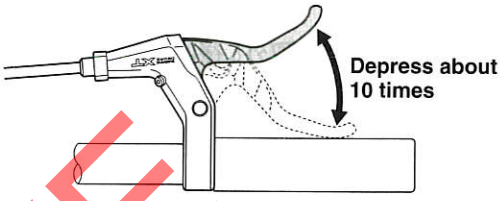
4. Pass the inner cable through the inner cable lead, and after setting so that the total of the clearances between the left and right shoes and the rim is 2 mm, tighten the cable fixing bolt.



5. Adjust the balance with the spring tension adjustment bolts.

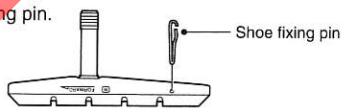


6. Depress the brake lever about 10 times as far as the grip and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.

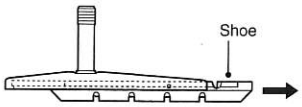


Replacement of the cartridge shoe

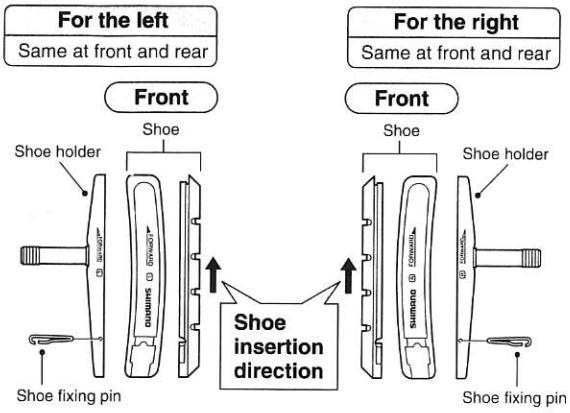
1. Remove the shoe fixing pin.



2. Remove the shoe by sliding it along the groove of the shoe holder.



3. There are two different types of shoe and shoe holder to be used in the left and right positions respectively. Slide the new shoes into the grooves on the shoe holders while taking note of the correct directions and pin hole positions.



4. Insertion of shoe fixing pin is very critical to keep shoe properly fixed in place.

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

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222

SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

Rear 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	ALIVIO
Rapidfire Plus	ST-MC18 / SL-MC18
Outer casing	SP40
Rear derailleur	RD-MC18
Type	SGS
Freehub	FH-MC18 / FH-R080
Sprockets	8
Cassette sprocket	CS-HG50-8I
Chain	CN-IG51
Bottom bracket cable guide	SM-SP17 / SM-BT17 / SM-SP18 / SM-BT18

Specifications

Rear Derailleur

Model number	RD-MC18
Sprockets	8
Total capacity	39T
Largest sprocket	30T
Smallest sprocket	11T
Front chainwheel tooth difference	20T
Applicable front chainwheel (chainring tooth configuration)	FC-MC18 (42T-32T-22T)

Cassette sprocket tooth combination

Sprockets	Group name	Tooth combination
8	ah	11, 12, 14, 16, 18, 21, 24, 28T

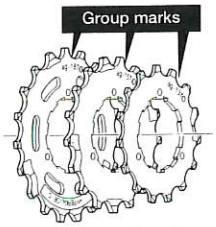
Rapidfire Plus

Model number	ST-MC18 / SL-MC18
Sprockets	8

Freehub

Model number	FH-MC18 / FH-R080
Sprockets	8
No. of spoke holes	36 / 32

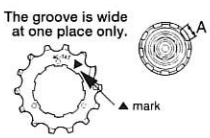
Note

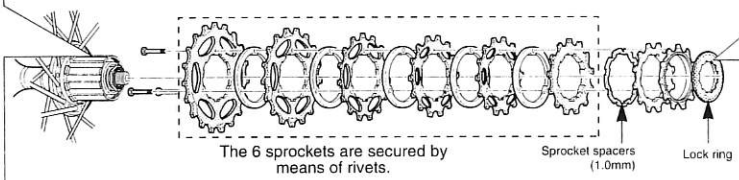


* Always be sure to use the sprocket set bearing the same group marks. Never use in combination with a sprocket bearing a different group mark.
* Because the high cable resistance of a frame with internal cable routing would impair the SIS function, this type of frame should not be used.
* Use an outer 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 sprockets

For each sprocket, the surface that has the group mark should face outward and be positioned so that the triangle (▲) mark on each sprocket and the A part (where the groove width is wide) of the freewheel body are aligned.

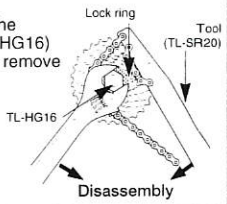




- For installation of the sprockets, use the special tool (TL-HG16) to tighten the lock ring.

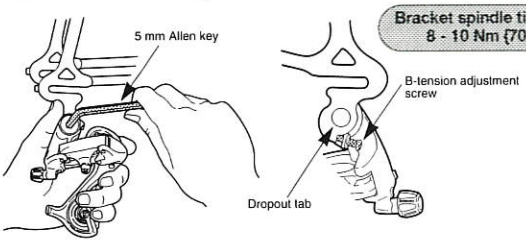
Tightening torque: 30 - 50 Nm {261 - 434 in. lbs.}

- To replace the sprockets, use the special tool (TL-HG16) and TL-SR20 to remove the lock ring.



Installation of the rear derailleur

When installing, be careful that deformation is not caused by the B-tension adjustment screw coming into contact with the dropout tab.



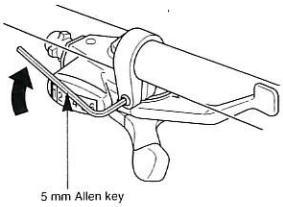
Bracket spindle tightening torque: 8 - 10 Nm {70 - 86 in. lbs.}

Installation of the brake lever

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

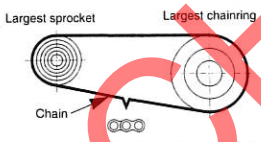
Tightening torque: 5 Nm {44 in. lbs.}

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.



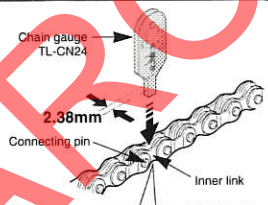
Chain length

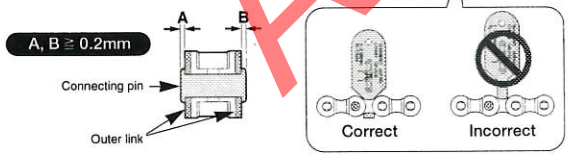
Add 2 links (with the chain on both the largest sprocket and the largest chainring)



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 pro-trudes past the outer link by the same amount on both sides, and that the amount of protrusion is 0.2 mm or more.



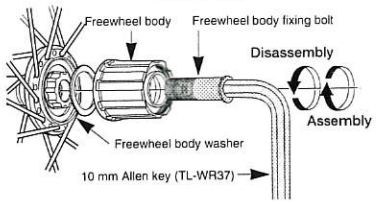


Replacement of the freewheel body

After removing the hub axle, remove the freewheel body fixing bolt (inside the freewheel body), and then replace the freewheel body.
Note:
Do not attempt to disassemble the freewheel body, because it may result in a malfunction.

Tightening torque: 35 - 50 Nm {305 - 434 in. lbs.}

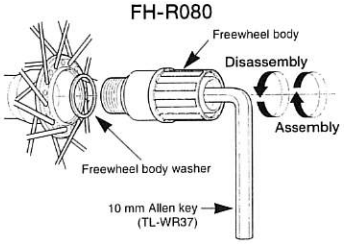
FH-MC18



Note:
Do not attempt to disassemble the freewheel body, because it may result in a malfunction.
Special grease is used inside the freewheel body.
Do not lubricate the freewheel body with ordinary grease or oil, as this may cause problems with the operation of the clutch mechanism.

Tightening torque: 150 Nm {1300 in. lbs.}

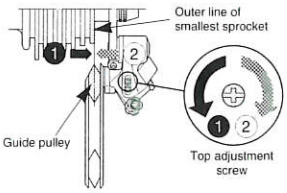
FH-R080



Adjustment

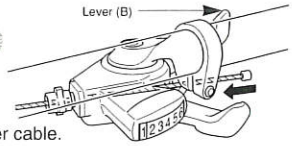
1. Top adjustment

Turn the top adjustment screw to adjust so that the guide pulley is in line with the outer line of the smallest sprocket when looking from the rear.



2. Connection and securing of the inner cable

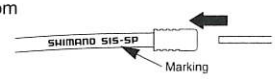
Tightening torque : 5 - 7 Nm {44 - 60 in. lbs.}



Operate lever (B) 8 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.

Inserting the inner cable

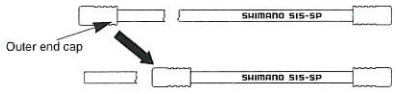
Insert the inner cable into the outer casing from the end with the marking on it. Apply grease from the end with the marking in order to maintain cable operating efficiency.



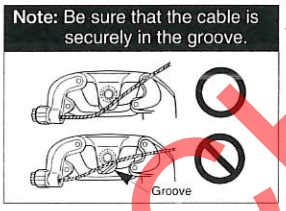
Cutting the outer casing

When cutting the outer casing, cut the opposite end to the end with the marking. After cutting 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.

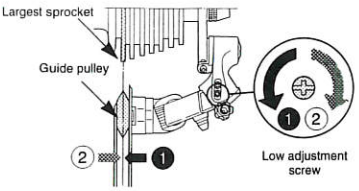


Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the front derailleur as shown in the illustration.



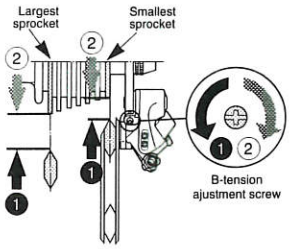
3. Low adjustment

Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



4. How to use the B-tension adjustment screw

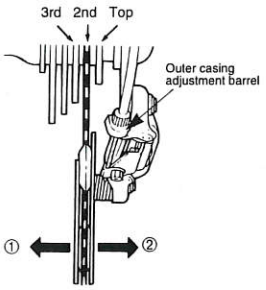
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.



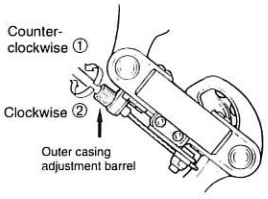
5. SIS Adjustment

(1) Operate the shifting lever to move the chain from the top gear to the 2nd gear.

* If the chain will **not move to the 2nd gear,** turn the outer casing adjustment barrel to increase the tension-----① **(counter clockwise)**
* If the chain **moves past the 2nd gear,** decrease the tension---② **(clockwise)**



(2) Next with the chain on the 2nd gear, increase the inner cable tension ① while turning the crank arm forward. Stop turning the outer casing adjustment barrel **just before the chain makes noise against the 3rd gear.**
This completes the adjustment.



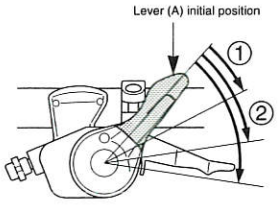
For the best SIS performance, periodically lubricate all power-transmission parts.

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 sprocket to a larger sprocket

To shift one step only, press lever (A) to the (1) position. To shift two steps at one time, press to the (2) position. A maximum three-step shift
can be made in this manner.



To shift from a large sprocket to a smaller sprocket

Press lever (B) once to shift one step from a larger to a smaller sprocket.

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®

These service Instructions are printed on recycled paper and can be recycled again

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

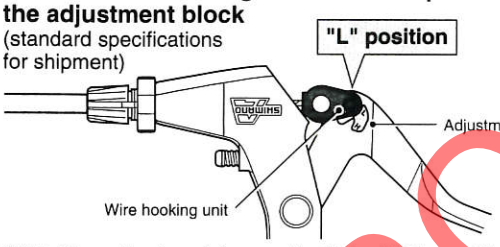
Please note: specifications are subject to change for improvement without notice. (English)

⚠ WARNING

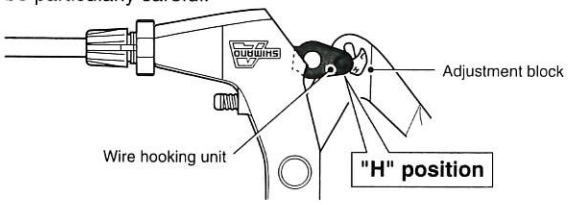
- It is important to completely understand the operation of your bicycle's brake system. Improper use of your bicycle's brake system may result in a loss of control or an accident, which could lead to severe injury. Because each bicycle may handle differently, be sure to learn the proper braking technique (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.
- The MC18 brake system has setting positions on the wire hooking unit of the ST-MC18/BL-MC18 brake lever which allow the rider to change the relationship between the brake input and output. If the wire hooking unit is set to the "H" position on the adjustment block, the braking force will be dramatically increased, so that a high level of braking performance can be achieved from only a small amount of lever movement. Accordingly, normal braking operation may cause a greater-than-expected amount of braking force to be applied, which could make the bicycle fall forward, causing serious injury to the rider.
  To avoid this, please read the following instructions thoroughly before setting the wire hooking unit to the "H" position on the adjustment block.

After setting the wire hooking unit to the "H" position on the adjustment block, make sure that you are completely used to the new braking characteristics before riding the bicycle, otherwise the bicycle might fall forward if you have to apply the brakes suddenly, such as when a vehicle appears.

1) With the wire hooking unit at the "L" position on the adjustment block
(standard specifications for shipment)



2) With the wire hooking unit at the "H" position on the adjustment block
An ample degree of braking force can be obtained from a small amount of brake lever input, to provide a high level of brake performance. However, if the brakes are operated suddenly with a normal amount of brake lever input, there is the danger that the bicycle may fall forward. After setting the wire hooking unit to the "H" position on the adjustment block, first ride the bicycle at a speed of less than 6 mph (10 km/h) while applying the brakes repeatedly in order to get a feel for the difference in braking characteristics before riding at higher speeds. Beginners should be particularly careful.



- ***Use the BR-MC18 V-brake with V-brake-compatible brake levers such as the BL-MC18 / ST-MC18 / BL-MC40 / BL-M601 brake levers.***
- ***Do not use the BR-MC18 V-brake with mode switching-type brake levers such as the BL-T400 / ST-T400 / SB-7S45 / BL-IM45, as these brake levers are only for use with V-brakes with power modulator, cantilever brakes and roller brakes.***

SERVICE INSTRUCTIONS **SI-B620A**

Multi-Condition Brake System

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

Multi-Condition Brake System

By providing superior wet weather braking performance (control and modulation), braking performance will not vary in a multitude of conditions when using this brake system.

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

Series	ALIVIO
Brake lever	ST-MC18/BL-MC18
V-brake	BR-MC18
Brake cable	

NOTE:

- By using these parts as a set, the optimum efficiency of the Multi-Condition Brake System can be realized.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.

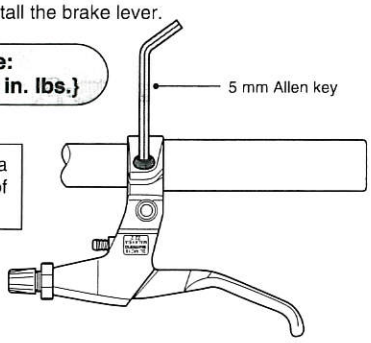
Installation of the brake lever

Use a 5 mm Allen key to install the brake lever.

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

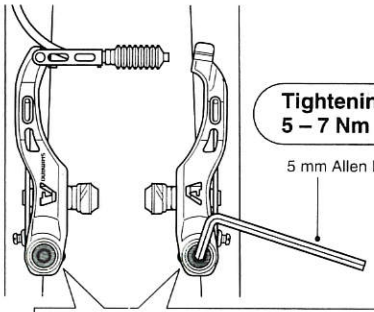
5 mm Allen key

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



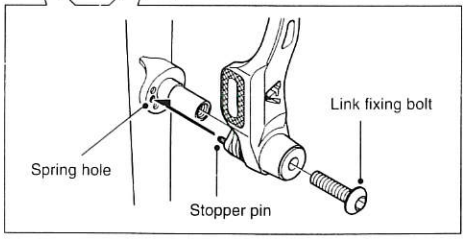
Installation of the V-brake

1. Insert the stopper pin of the brake body into the center spring hole in the frame mounting boss, and then secure the brake body to the frame with the link fixing bolt.

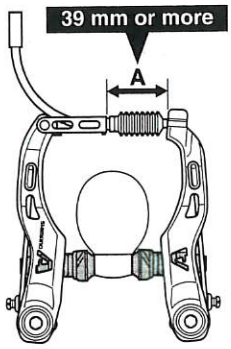


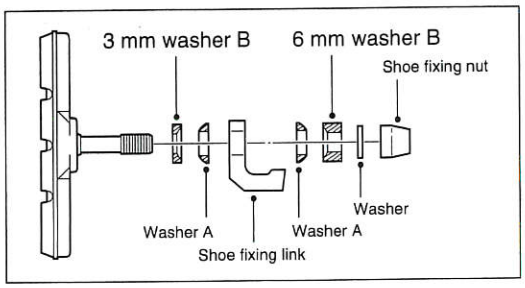
Tightening torque:
5 – 7 Nm {43 – 61 in. lbs.}

5 mm Allen key

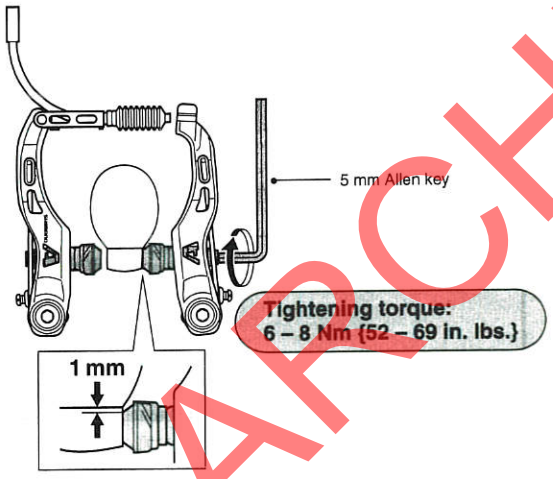


2. While holding the shoe against the rim, adjust the amount of shoe protrusion by changing over the washer B (6 mm or 3 mm) so that dimension A is kept at 39 mm or more.

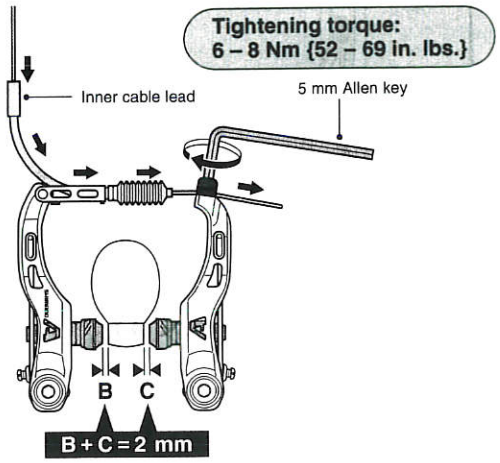




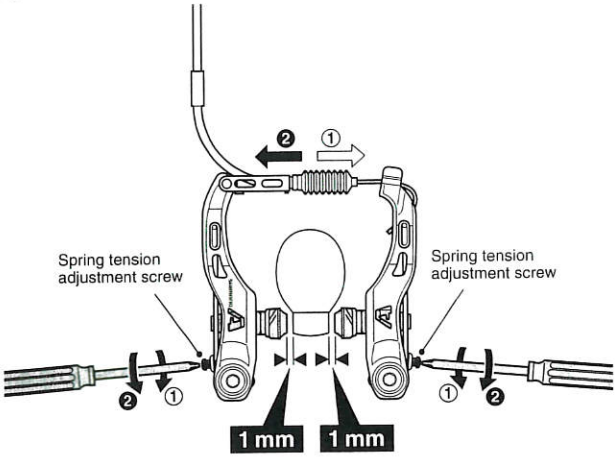
3. While holding the shoe against the rim, tighten the shoe fixing nut.



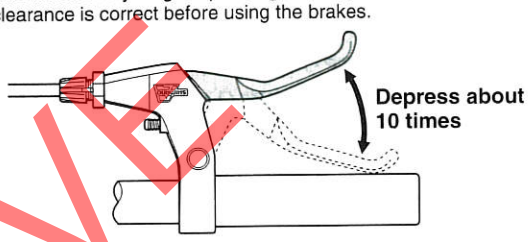
4. Pass the inner cable through the inner cable lead, and after setting so that the total of the clearances between the left and right shoes and the rim is 2 mm, tighten the cable fixing bolt.



5. Adjust the balance with the spring tension adjustment screws.



6. Depress the brake lever about 10 times as far as the grip and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.



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)

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222
SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

⚠ 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.
- ***Use the BR-M330 V-brake with V-brake-compatible brake levers such as the ST-EF33 / BL-MC40 brake levers.***

SERVICE INSTRUCTIONS **SI-B610A**

Multi-Condition Brake System

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

Multi-Condition Brake System

By providing superior wet weather braking performance (control and modulation), braking performance will not vary in a multitude of conditions when using this brake system.

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

Series	**ACERA**
Brake lever	**ST-EF33**
V-brake	**BR-M330**
Brake cable	

NOTE:

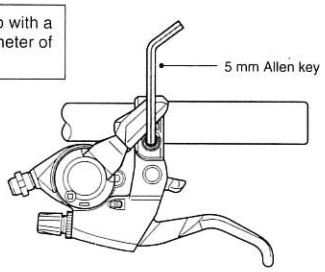
- By using these parts as a set, the optimum efficiency of the Multi-Condition Brake System can be realized.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.

Installation of the brake lever

Use a 5 mm Allen key to install the brake lever.

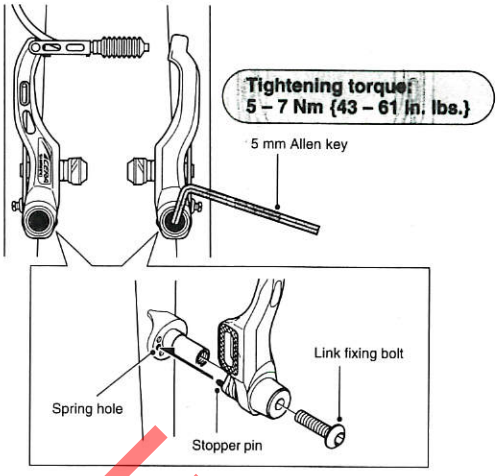
Tightening torque: 6 – 8 Nm {52 – 69 in. lbs.}

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

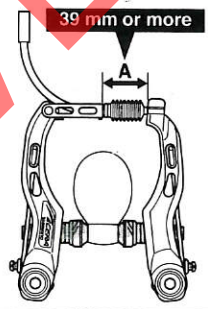


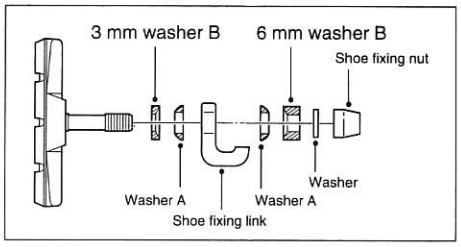
Installation of the V-brake

1. Insert the stopper pin of the brake body into the center spring hole in the frame mounting boss, and then secure the brake body to the frame with the link fixing bolt.

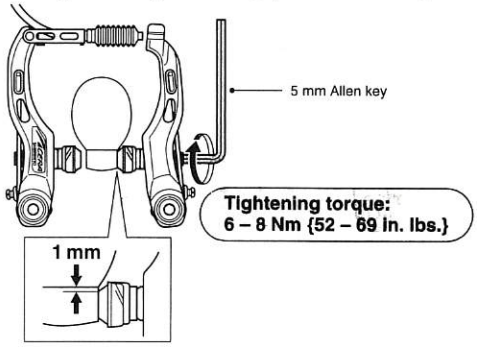


2. While holding the shoe against the rim, adjust the amount of shoe protrusion by changing over the washer B (6 mm or 3 mm) so that dimension A is kept at 39 mm or more.

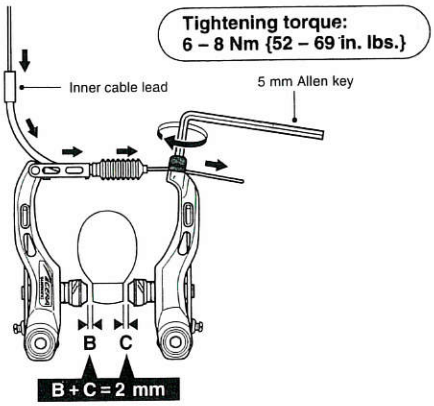




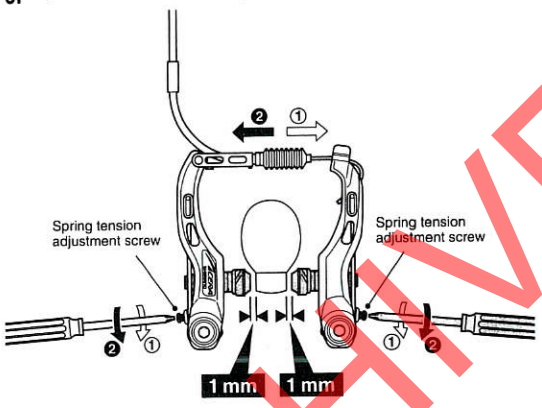
3. While holding the shoe against the rim, tighten the shoe fixing nut.



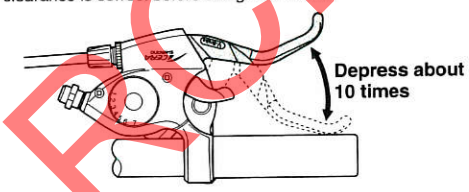
4. Pass the inner cable through the inner cable lead, and after setting so that the total of the clearances between the left and right shoes and the rim is 2 mm, tighten the cable fixing bolt.



5. Adjust the balance with the spring tension adjustment screws.



6. Depress the brake lever about 10 times as far as the grip and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.



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)

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222

SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

ST-5500 ST-5500-C

Shimano Total Integration

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

SHIMANO TOTAL INTEGRATION

SHIMANO 105

Shimano Total Integration Features

The Shimano Total Integration 105 series features a dual action control rever 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.

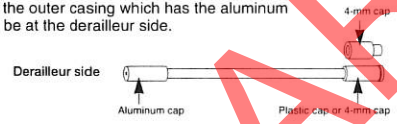
Operation of the levers related to gear shifting should be made only when the front chainwheel is turning.

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

Series	SHIMANO 105	
Shifting lever	ST-5500	ST-5500-C
Outer casing	SIS SP40	
Gears	18	27
Front derailleur	FD-5500	FD-5503
Front chainwheel	FC-5500	FC-5503
Bottom bracket	BB-5500	
Rear derailleur	RD-5500	RD-5500GS
Freehub	FH-5500	
Cassette sprocket	CS-HG70-9	
Chain	CN-HG72	
Bottom bracket cable guide	SM-SP17	

Note

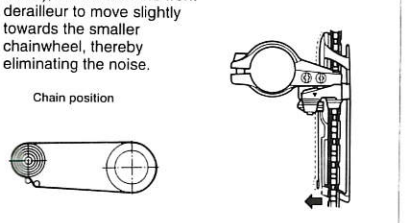
- For smooth operation, always be sure to use the specified outer casing and the bottom bracket cable guide.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- Because the high cable resistance of a frame with internal cable routing would impair the SIS function, this type of frame should not be used.
- The end of the outer casing which has the aluminum cap should be at the derailleur side.



- Use the ST-5500-C in combination with the SC-6500 cycle computer.
  Be sure to read these service instructions in conjunction with the service instructions for the SC-6500 before use.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Trimming (noise prevention opration)

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

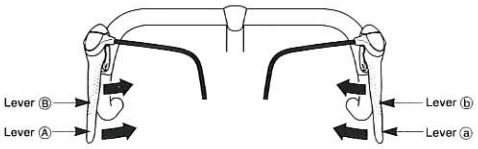


Caution on operation (FD-5500/FD-5503)

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

Be sure to read these service instructions in conjunction with the service instructions for the FD-5500 / FD-5503 before use.

Operation

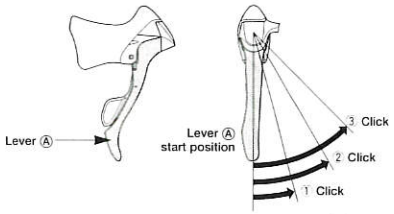


Lever Ⓐ : Shifts from smaller to larger rear sprocket.
Lever Ⓑ : Shifts from larger to smaller rear sprocket.
Lever ⓐ : Shifts from smaller to larger chainring.
Lever ⓑ : Shifts from larger to smaller chainring.

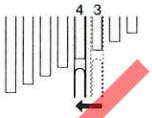
All levers return to the starting position when released.

Operation of rear derailleur lever

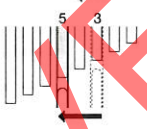
- Lever Ⓐ : Shifts from smaller to lager rear sprocket.
  Lever Ⓐ has a click stop at positions ①, ②,and ③.



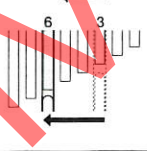
① : Shifts one sprocket
E.x. : from 3rd to 4th



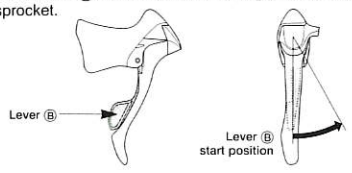
② : Quick-shifts two sprockets
E.x. : from 3rd to 5th



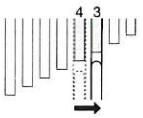
③ : Quick-shifts three sprockets
E.x. : from 3rd to 6th



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



E.x. : from 4th to 3rd



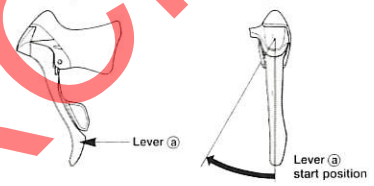
Caution on operation

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

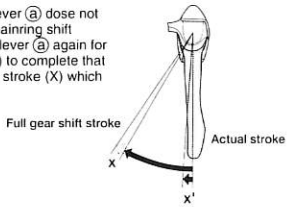
Be sure to read these service instructions in conjunction with the service instructions for the RD-5500 / RD-5500GS before use.

Operation of front derailleur levers (FD-5503)

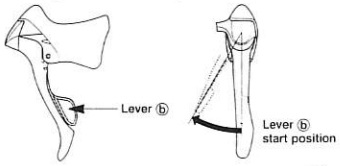
- Lever ⓐ : Shifts from smaller to larger front chainring.



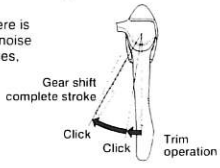
If operation of lever ⓐ dose not complete the chainring shift stroke, operate lever ⓐ again for the distance (X') to complete that part of the lever stroke (X) which was short.



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

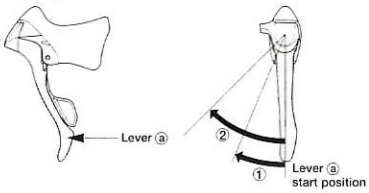


When lever ⓑ is operated, there is one click where trimming (the noise prevention mechanism) engages, and a second stronger click when the gear shift stroke is completed. After trimming, the next push will complete the gear shift stroke to the smaller front chainring.

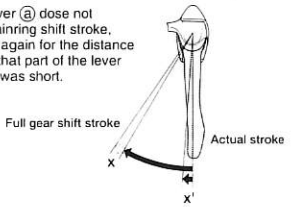


Operation of front derailleur levers (FD-5500)

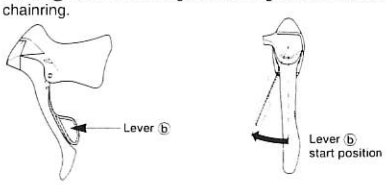
- Lever ⓐ : Shifts from smaller to larger front chainring.



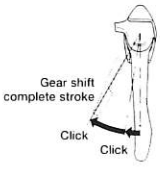
If operation of lever ⓐ dose not complete the chainring shift stroke, operate lever ⓐ again for the distance (X') to complete that part of the lever stroke (X) which was short.



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



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



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 Nm {50 - 70 in. lbs.}

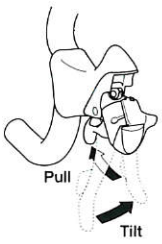
Installation of the brake cable

Cable used

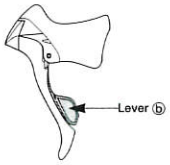
- Inner cable (stainless steel) ϕ1.6mm
- SLR outer casing ..... ϕ5 mm SLR

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

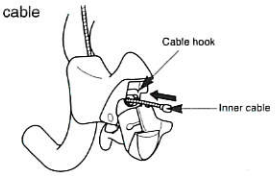
1. Tilt the lever in (as when shifting) to make it easier to pass the cable though the cable hook.



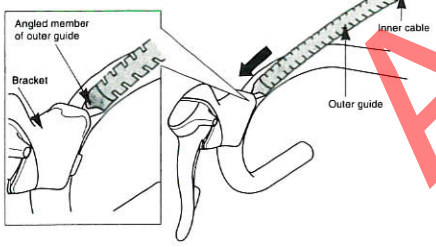
Note: The front lever cannot be tilted to the inside until lever ⓑ is pushed once or twice.



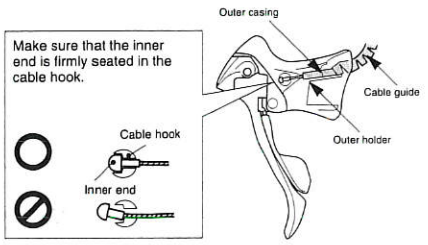
2. Pass the inner cable through.

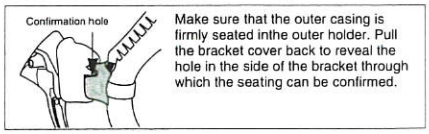


3. Fix the outer guide to the inner cable, and set the angled member in the bracket.
   Note: Do not wipe the grease on the inner cable off. Also, be careful that the inner cable does not pick up dust and foreign matter.



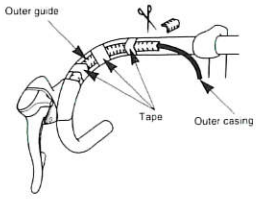
4. Set the outer casing on the inner cable, and in the bracket along the outer guide.





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

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

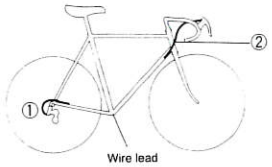


6. Finally, wrap the handlebar with the finish tape.

Installing the shifting cable

Cable used

- Inner cable (stainless steel) ϕ1.2 mm
- SP40 sealed outer casing (①) ϕ4 mm SHIMANO SP40 SEALED
- SP40 outer casing (②) ϕ4 mm SHIMANO SP40



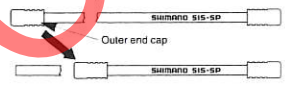
Inserting the inner cable

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

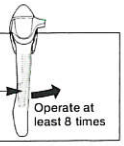
When cutting the outer casing, cut the opposite end to the end with the marking. After cutting the outer casing, make the end round so that the inside of the hole has a uniform diameter.

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

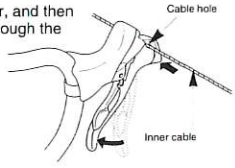


- Rear lever

Push lever Ⓑ at least 8 times to make sure the mechanism is in top gear before installing.

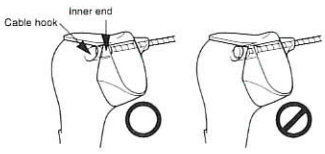


Depress the brake lever, and then pass the inner cable through the cable hole.



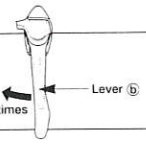
If the cable hook does not align with the shifting cable hole, press lever Ⓑ again until it does, and then install the cable.

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

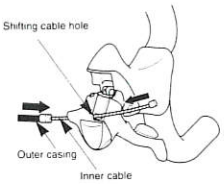


- Front lever

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

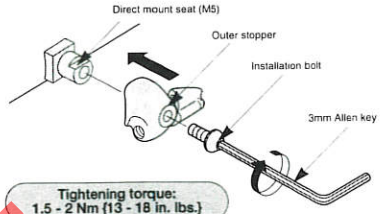


Pull the brake lever (as when braking) to pass the inner cable through the shifting cable hole, and set it in the outer casing.



- Outer stopper

1. Install the outer stopper to the down tube.

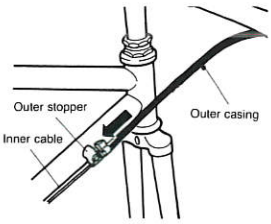


Tightening torque:
1.5 - 2 Nm {13 - 18 in. lbs.}

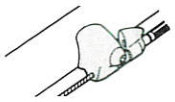
Install the outer stopper for the rear chainwheels with the handle in the default position.

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

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



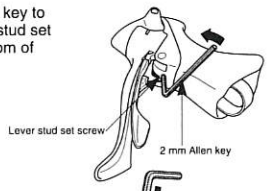
Confirm
Make sure the outer casing is firmly seated in the outer stopper.



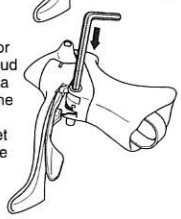
Maintenance

Bracket and lever disassembly

1. Use a 2 mm Allen key to remove the lever stud set screw on the bottom of the bracket.

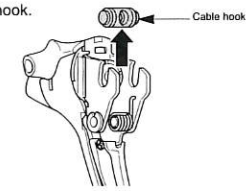


2. Insert a 2.5 mm Allen key or similar tool into the lever stud hole, and tap it gently with a plastic mallet to push out the lever stud. When the lever stud comes out, the bracket body and lever body can be disassembled.

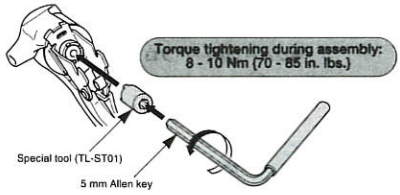


Lever and bearing assembly disassembly

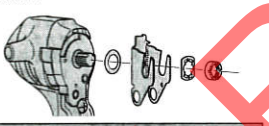
1. Remove the cable hook.



2. Disassemble using the special tool and a 5 mm Allen key.



3. Disassemble as shown.

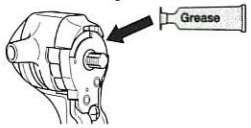


Do not disassemble any futher as reassembly may not be possible.

- Use kerosene to wash the lever index member as shown below.

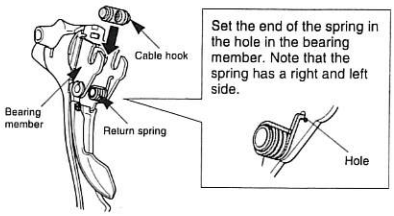
Do not smoke or use any open flames when cleaning with kerosene.

- Be sure to regrease after cleaning.

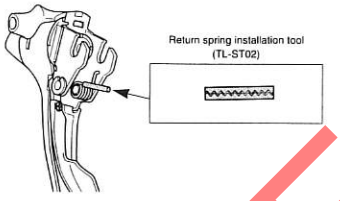


Assembling the bracket and lever

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

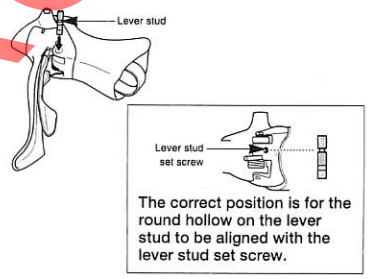


2. Set the special installation tool for the return spring.

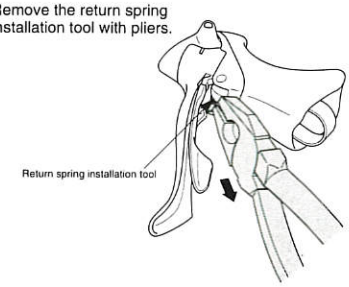


3. Assemble the bracket and lever. Be careful that the end of the return spring does not protrude from the hole in the bearing member at this time.

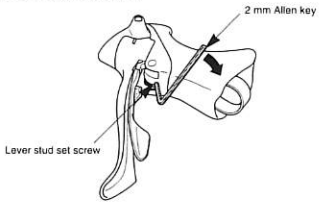
4. Align the stud holes, and then press-fit the lever stud.



5. Remove the return spring installation tool with pliers.

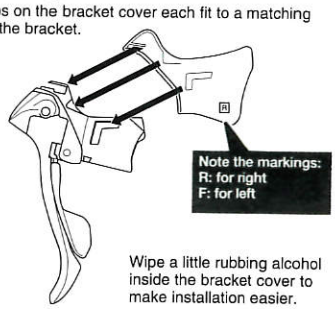


6. Tighten the lever stud set screw until it is even with the surface of the bracket.



Replacing the bracket cover

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



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

SERVICE INSTRUCTIONS SI-5TKOA

RD-5500 Rear Derailleur

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.

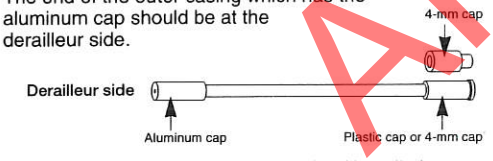
Series	SHIMANO 105	
Shifting lever	ST-5500 / ST-5500-C	
Gears	18	27
Outer casing	SIS-SP40	
Rear derailleur	RD-5500	RD-5500-GS
Type	SS	GS
Front chainwheel	FC-5500	FC-5503
Freehub	FH-5500	
Cassette sprocket	CS-HG70-9	
Chain	CN-HG72	
Bottom bracket cable guide	SM-SP17	

Specifications

Type	SS	GS
Total capacity	29T teeth or less	37T teeth or less
Largest sprocket	27T	27T
Smallest sprocket	11T	11T
Front chainwheel tooth difference	14T	22T

Note

- For smooth operation, always be sure to 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.
- The end of the outer casing which has the aluminum cap should be at the derailleur side.

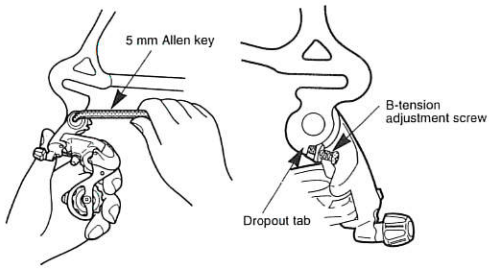


- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Installation of the rear derailleur

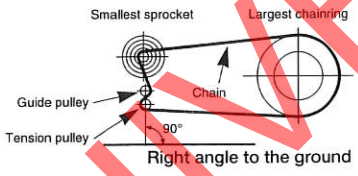
When installing, be careful that deformation is not caused by the B-tension adjustment screw coming into contact with the dropout tab.

Bracket spindle tightening torque: 8 - 10 Nm {70 - 86 in. lbs.}



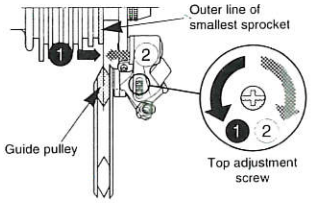
Chain length

GS type, SS type



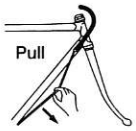
Stroke adjustment and cable securing

1. Top adjustment
   Turn the top adjustment screw to adjust so that the guide pulley is below the outer line of the smallest sprocket when looking from the rear.



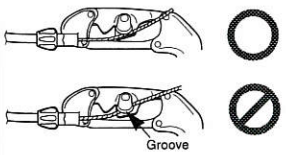
2. Connection and securing of the cable

Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the rear derailleur as shown in the illustration.



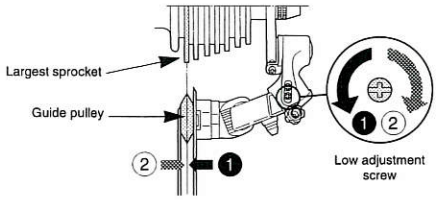
Tightening torque: 5 - 7 Nm (44 - 60 in. lbs.)

Note:
Be sure that the cable is securely in the groove.



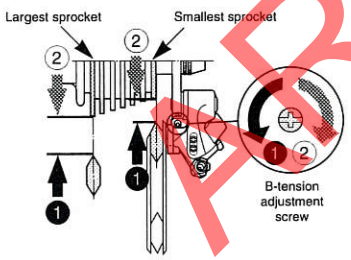
3. Low adjustment

Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



4. How to use the B-tension adjustment screw

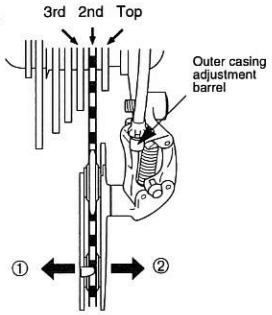
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.



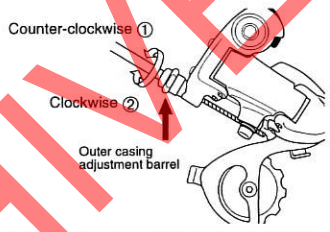
5. SIS Adjustment

(1) Operate the shifting lever to move the chain from the top gear to the 2nd gear.

* If the chain will **not move to the 2nd gear,** turn the outer casing adjustment barrel to increase the tension-----① **(counter clockwise)**
* If the chain **moves past the 2nd gear,** decrease the tension---② **(clockwise)**



(2) Next with the chain on the 2nd gear, increase the inner cable tension ① while turning the crank arm forward. Stop turning the outer casing adjustment barrel **just before the chain makes noise against the 3rd gear.**
This completes the adjustment.



For the best SIS performance, periodically lubricate all power-transmission parts.

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

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

SERVICE INSTRUCTIONS SI-59GOA

FD-5500 Front derailleur

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	SHIMANO105
Shifting lever	ST-5500
Outer casing	SP40
Gears	18
Front derailleur	FD-5500
Front chainwheel	FC-5500
Bottom bracket	BB-5500
Rear derailleur	RD-5500
Freehub	FH-5500
Cassette sprocket	CS-HG70-9
Chain	CN-HG72
Bottom bracket cable guide	SM-SP17

Specifications

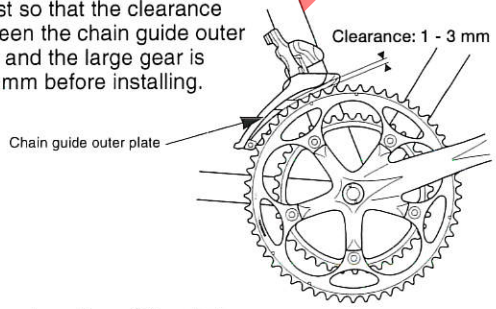
Type	Band type / Brazed on type
Front derailleur installation band diameter	S (28.6mm). M (31.8mm)
Chainstay angle (α)	61° - 66°
Chain line	43.5mm

Note

- For smooth operation, always be sure to 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.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

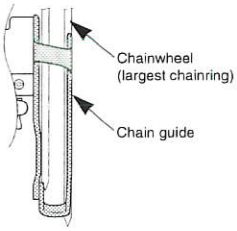
Installation of the front derailleur

1. Adjust so that the clearance between the chain guide outer plate and the large gear is 1 - 3 mm before installing.



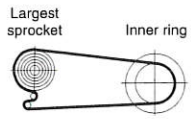
2. The level section of the chain guide outer plate should be directly above and parallel to the largest chainring.
3. Secure using a 5mm Allen key.

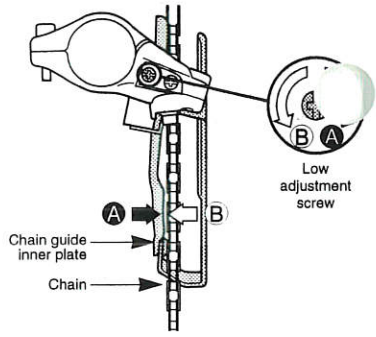
Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}



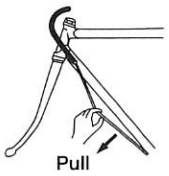
SIS adjustment

1. **Low adjustment**
Set so that the clearance between the chain guide inner plate and the chain is 0-0.5 mm.



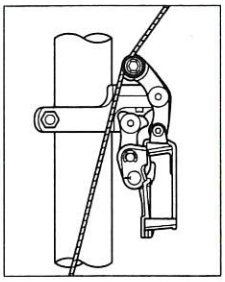


2. **Connection and securing of cable**
While pulling the inner cable, tighten the wirw fixing bolt with a 5 mm allen key to secure the cable.

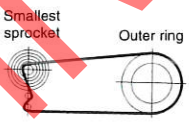


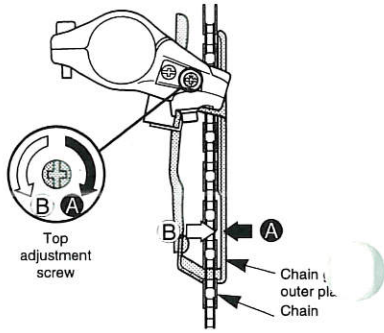
Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}

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

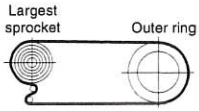


3. **Top adjustment**
Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.

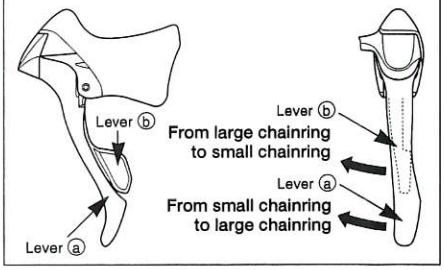




4. **Adjustment of the cable tention**
(1) Set the chain to the largest rear sprocket, and shift the front to top gear.



■ Front shifting (ST-5500)

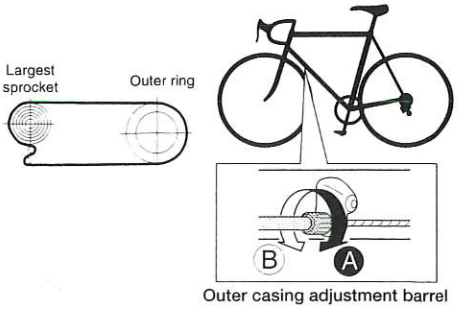


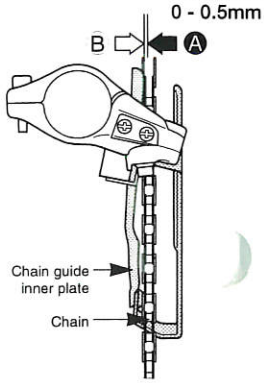
(2) Perform the trimming.

■ Trimming (noise-prevention mechanism)
Gently press the lever ⓑ.
(A "click" sound will be heard.)

(3) After trimming, adjust the clearance (by using the cable-adjustment bolt) of the chain and chaib guide yo the minimum (0-0.5mm).

Clearance: 0 - 0.5mm





SERVICE INSTRUCTIONS SI-57ZOA

FD-5503 Front derailleur

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

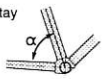
In order to realize the best performance, we recommend that the following combination be used.

Series	SHIMANO105
Shifting lever	ST-5500
Outer casing	SP40
Gears	27
Front derailleur	FD-5503
Front chainwheel	FC-5503
Bottom bracket	BB-5500
Rear derailleur	RD-5500
Freehub	FH-5500
Cassette sprocket	CS-HG70-9
Chain	CN-HG72
Bottom bracket cable guide	SM-SP17

Specifications

Type	Band type / Brazed on type
Front chainwheel tooth difference	22 teeth or less
Min. difference between top and intermediate	10T
Front derailleur installation band diameter	S (28.6mm). M (31.8mm)
Chainstay angle (α)	63° - 66°
Chain line	45mm

Stroke 

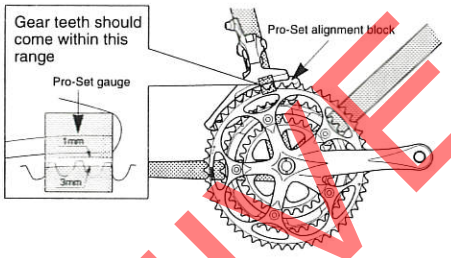
Chainstay angle 

Note

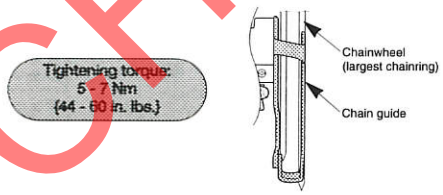
- If attaching the FD-5503 (brazed-on type) to a seat tube with a thickness of more than 31.8 mm, the derailleur may come into contact with the seat tube and interfere with normal gear shifting performance.
- For smooth operation, always be sure to use the specified outer casing and the bottom bracket cable guide.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- 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.
- For the chain, be sure to use only the Shimano narrow type chain. The wide type chain cannot be used.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Installation of the front derailleur

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 5mm Allen key.



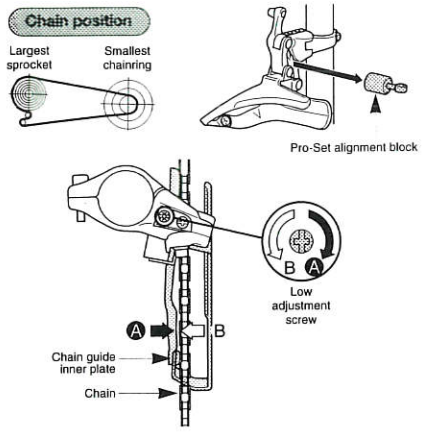
SHIMANO®
SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222
SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243
These service instructions are printed on recycled paper and can be recycled again

SIS adjustment

Be sure to follow the sequence described below.

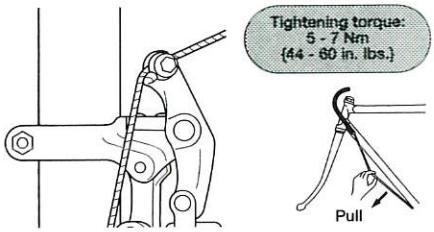
1. Low adjustment

First remove the Pro-Set alignment block .Next, set so that the clearance between the chain guide inner plate and the chain is 0-0.5mm.



2. Connection and securing of cable

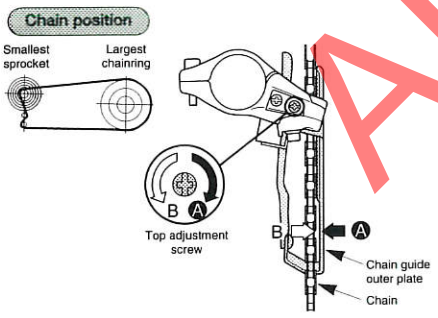
While pulling the inner cable, tighten the wirw fixing bolt with a 5 mm allen key to secure the cable.



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

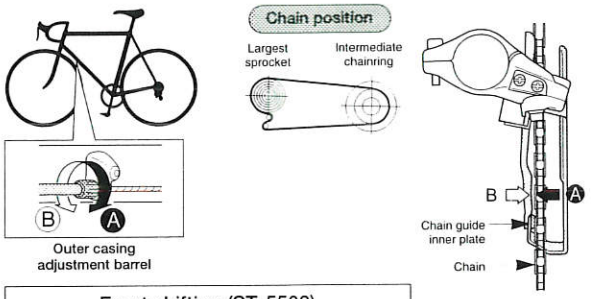
3. Top adjustment

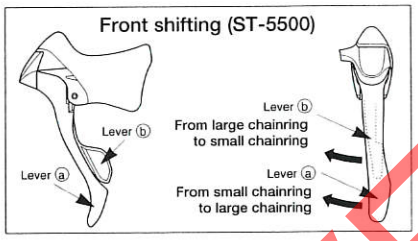
Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.



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.





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).

Be sure to read these service instructions in conjunction with the service instructions for the ST-5500 before use.

SERVICE INSTRUCTIONS SI-16VOA

FC-5500 FC-5503 Front Chainwheel

BB-5500 Bottom Bracket

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

Product specifications

Front Chainwheel

Model number	FC-5500	FC-5503
SG chainwheel teeth*	A-53 / 42T, B-53 / 39T, B-52 / 39T, B50 / 39T	52 / 42 / 30T
Bolt circle diameter	130 mm	130 / 74 mm
Crank length	165, 167.5, 170, 172.5, 175 mm	165, 170, 175 mm
Pedal threads	B.C. 9/16" x 20T.P.I. (English thread)	
Applicable chain	CN-HG72 / CN-HG92 / CN-7700	
Applicable bottom bracket	BB-5500	

Bottom Bracket

Model number	BB-5500	
Type	double	Triple
Spindle length	109.5 mm	118.5 mm
Chain line	43.5 mm	45 mm
Thread dimensions	68 mm (1.37 X 24 T.P.I.) 70 mm (M36 X 24 T.P.I.)	68 mm (1.37 X 24 T.P.I.) 70 mm (M36 X 24 T.P.I.)

Note

- Be sure to use only the FC-5500 / 5503 chainrings. If any other type of chainrings are used, the distance between the chainrings will be incorrect and the chain might slip off and get caught in between them.
- *If the smaller chainring has 39 teeth, use B-53,B-52 or B-50 as the larger chainring. If the smaller chainring has 42 teeth, use A-53 as the larger chainring.
- Be sure to use only the applicable chain and bottom bracket mentioned above.
- For any questions regarding methods of handling or maintenance, please contact the place of purchase.

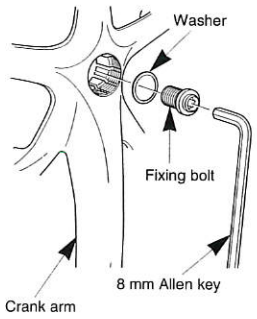
SHIMANO®
SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222
SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

These service instructions are printed on recycled paper and can be recycled again

Installation of the front chainwheel

1. Place the crank arm onto the bottom bracket spindle so that it meshes with the serrations on the spindle.
2. Install the washer and fixing bolt and tighten the fixing bolt.

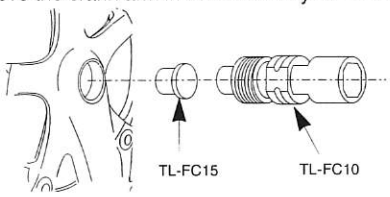
Tightening torque:
35 - 50 Nm {305 - 435 in. lbs.}



Replacing the FC-5500/FC-5503 front chainwheel

● Use the special plug tool (TL-FC15) to remove the FC-5500/FC-5503 crank arm.

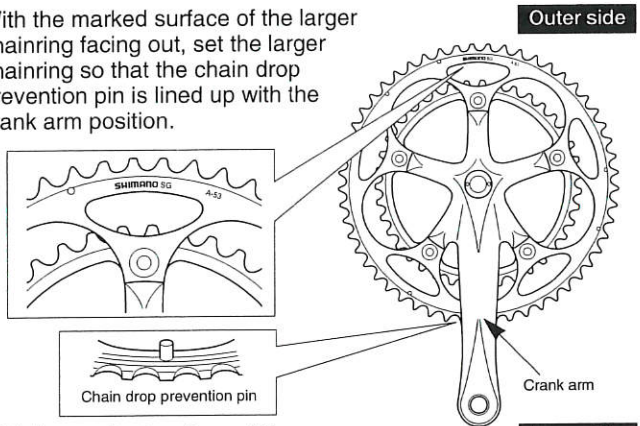
1. Turn the crank arm fixing bolt counterclockwise to remove the screw.
2. Insert the TL-FC15 into the hole of the bottom bracket axle.
3. Then, screw the cotterless crank arm extractor (TL-FC10) into the crank arm, and then remove the crank arm in the same way as normal.



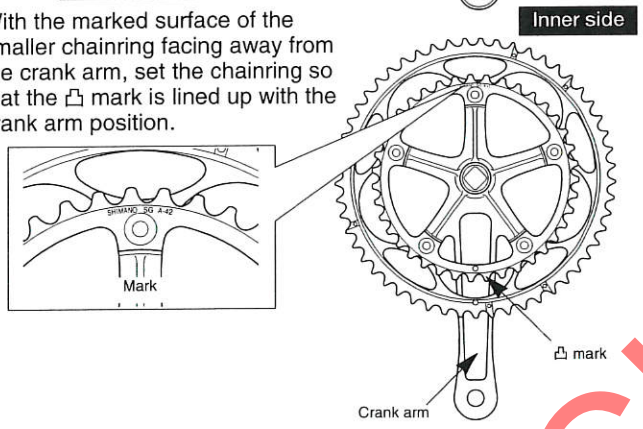
Installation of the chainrings

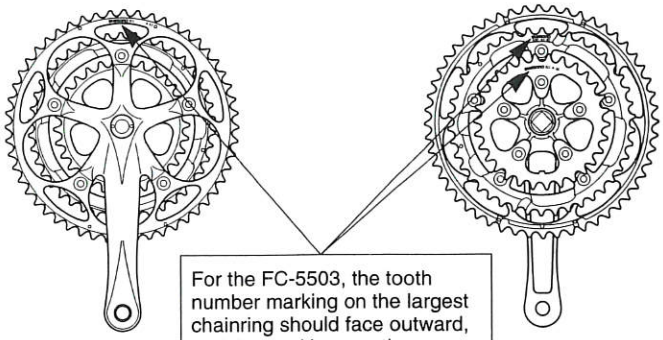
Smooth shifting will not be possible if the chainrigs are incorrectly installed, so be sure to install the chainrings in the correct positions.

With the marked surface of the larger chainring facing out, set the larger chainring so that the chain drop prevention pin is lined up with the crank arm position.



With the marked surface of the smaller chainring facing away from the crank arm, set the chainring so that the ⏃ mark is lined up with the crank arm position.



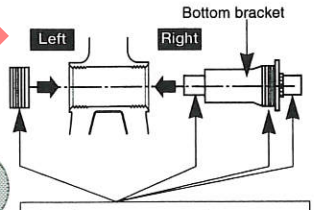


For the FC-5503, the tooth number marking on the largest chainring should face outward, and the markings on the intermediate and smallest chainrings should face inward.

Installation of the Bottom Bracket

1. Use the special tool (TL-UN74-S) to install the bottom bracket. First install the main body, then the adapter.

Adapter/bottom bracket tightening torque:
50 - 70 Nm {435 - 608 in. lbs.}



Apply grease to the bottom bracket before installing it.

⚠ 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-83J0A**

BR-5500 Caliper Brake

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

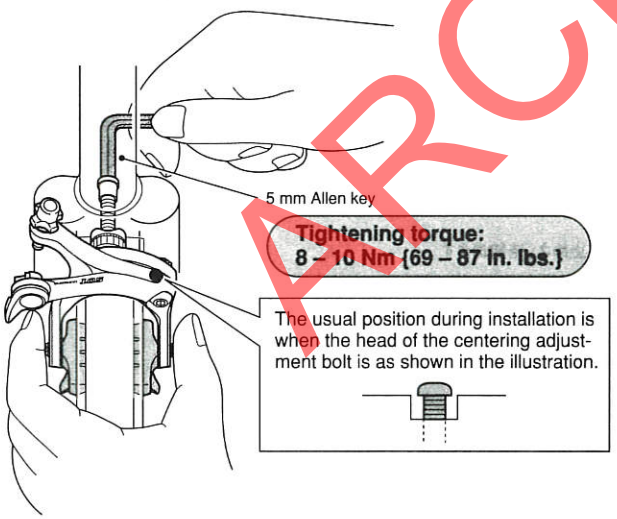
In order to realize the best performance, we recommend that the folowing combination be used.

Series	105
Brake lever	ST-5500
Caliper Brake	BR-5500
Brake cable	

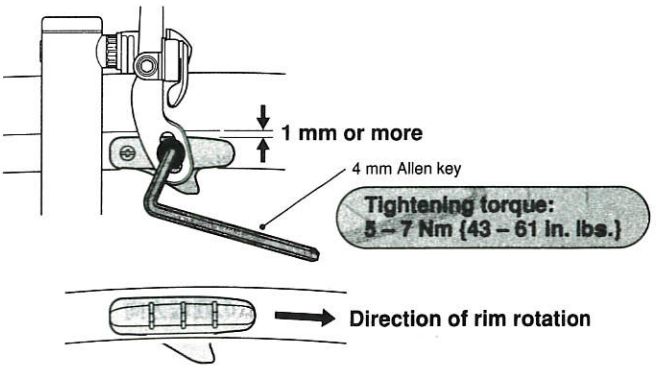
Installation of the brake

1. Installation of the brake itself

Compress the arch, and set while the shoe is in firm contact with the rim.



2. Brake shoe setting position



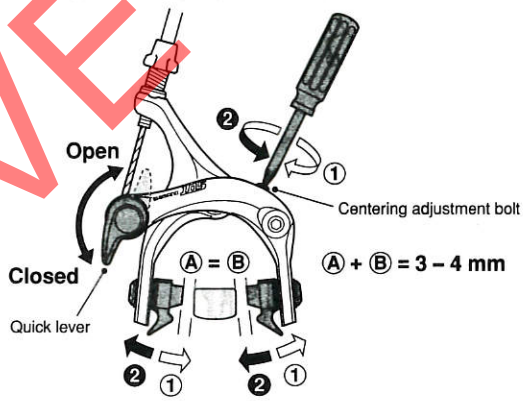
3. Cable connection

Set the quick lever to the closed position; then adjust the shoe clearance (as shown in the illustration below) and secure the cable.

Cable bolt tightening torque: 6 – 8 Nm {52 – 69 in. lbs.}

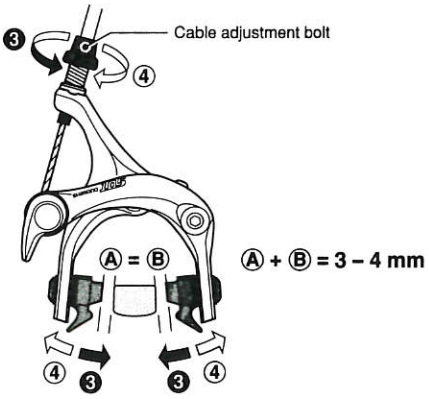
4. Centering of the brake shoe

Make a minor adjustment by using the centering adjustment bolt.



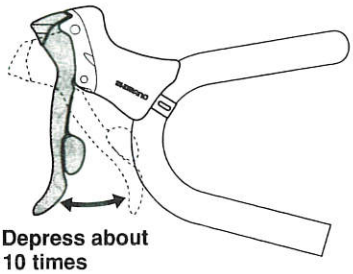
5. Readjustment of the shoe clearance

Turn the cable adjustment bolt to readjust the shoe clearance.



6. Check

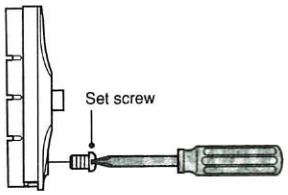
Depress the brake lever about 10 times as far as the grip and check that everything is operating correctly and that the shoe clearance is correct before using the brakes.



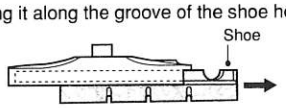
Depress about 10 times

Replacement of the cartridge shoe

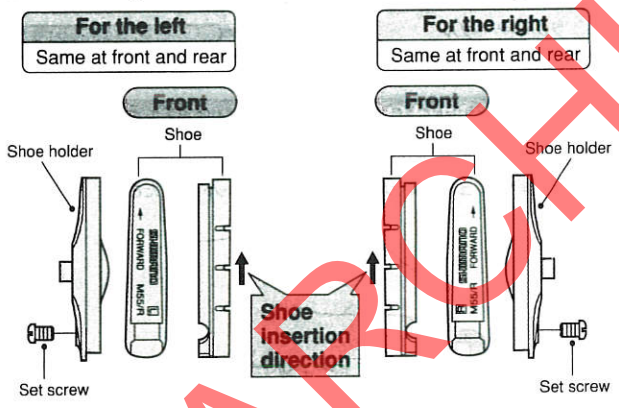
1. Remove the set screw.



2. Remove the shoe by sliding it along the groove of the shoe holder.



3. There are two different types of shoe and shoe holder to be used in the left and right positions respectively. Slide the new shoes into the grooves on the shoe holders while taking note of the correct directions and screw hole positions.



4. Tighten the set screw.

Tightening torque: 1 – 1.5 Nm {9 – 13 in. lbs.}

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

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222
SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

SERVICE INSTRUCTIONS SI-32XOA

FH-5500 Freehub

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

Product specifications

Freehub

Model No.	FH-5500
Gears	9
No. of spoke holes	32 / 36
Overlock nut dimensions	130 mm

Cassette sprocket

Model No.	CS-HG70-9
Sprocket tooth configuration	
12T - 23T	12T, 13T, 14T, 15T, **16T, 17T, 19T, 21T, 23T**
12T - 25T	12T, 13T, 14T, 15T, **17T, 19T, 21T, 23T, 25T**
13T - 23T	13T, 14T, 15T, **16T, 17T, 18T, 19T, 21T, 23T**
13T - 25T	13T, 14T, 15T, **16T, 17T, 19T, 21T, 23T, 25T**

Sprockets marked by ☐ are secured.

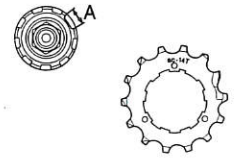
Note

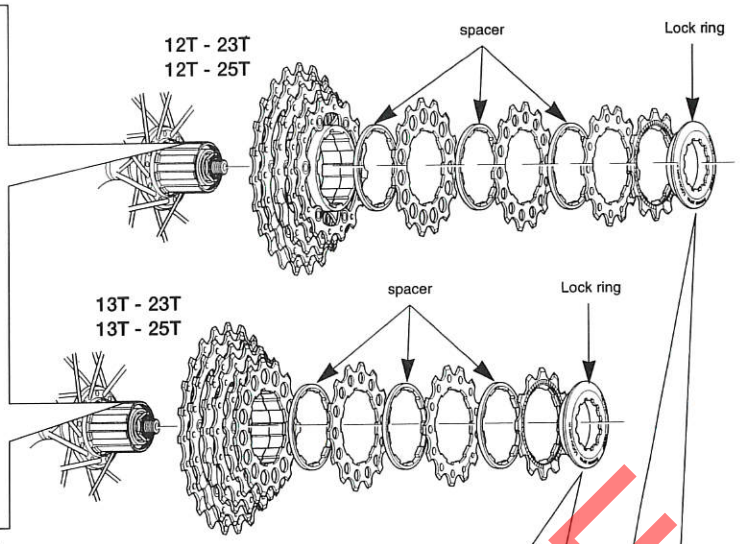
- Do not use the CS-HG70-9 in any combination other than with the CN-HG72, CN-HG92, CN-7700. Other chains cannot be used as the sizes do not match.

Installation of the HG sprockets

For each sprocket, the surface that has the group mark should face outward and be positioned so that the wide parts of the gear projections on each sprocket and the A part (where the groove width is wide) of the freewheel body are aligned.

The groove is wide at one place only.

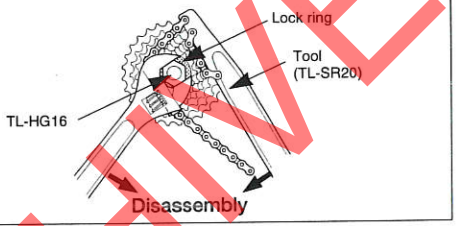




- For installation of the HG sprockets, use the special tool (TL-HG16) to tighten the lock ring.

Tightening torque: 30 - 50 Nm {261 - 434 in. lbs.}

- To replace the HG sprockets, use the special tool (TL-HG16) and TL-SR20 to remove the lock ring.



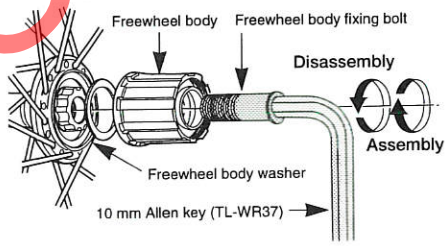
Replacement of the freewheel body

After removing the hub axle, remove the freewheel body fixing bolt (inside the freewheel body), and then replace the freewheel body.

Note:

Do not attempt to disassemble the freewheel body, because it may result in a malfunction.

Tightening torque: 35 - 50 Nm {305 - 434 in. lbs.}



HP-5500

Head Parts
Steuersatz
Pièces de direction
Balhoofdstel

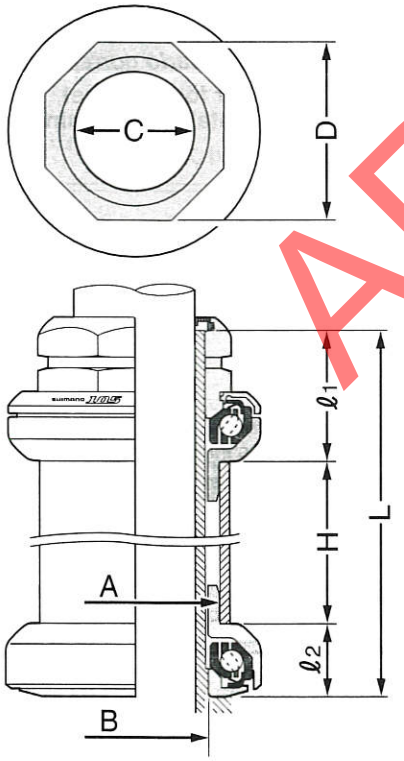
SERVICE INSTRUCTIONS
Before use, read these instructions carefully, and follow them for correct use.

EINBAUANLEITUNG
Lesen Sie bitte zuerst diese Einbauanleitung sorgfältig durch und befolgen Sie die darin beschriebenen Anweisungen genau.

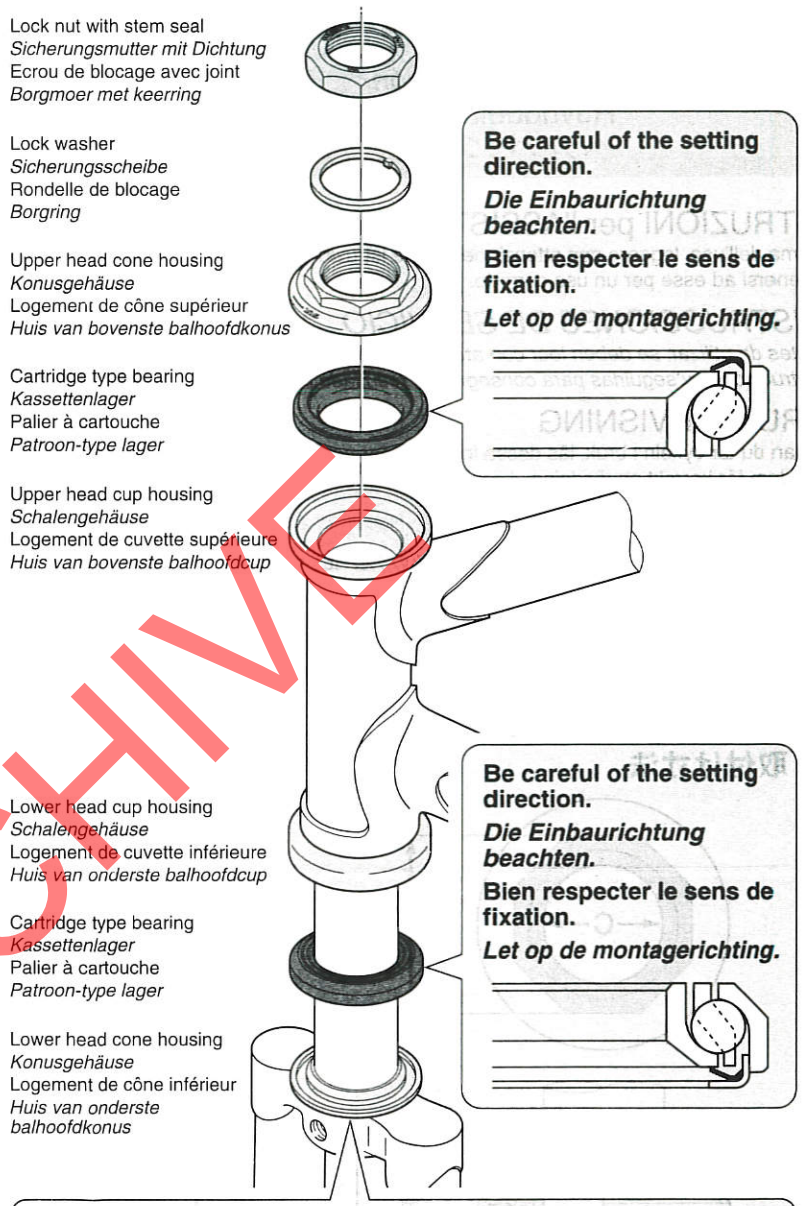
INSTRUCTIONS DE MONTAGE
Avant utilisation, lire soigneusement ces instructions et les respecter de façon à assurer une utilisation correcte.

MONTAGE-INSTRUCTIES
Alvorens dit onderdeel te monteren de instructies zorgvuldig doorlezen en nauwgezet opvolgen.

- **Assembly dimensions**
- ***Einbauanleitung***
- **Dimensions d'assemblage**
- ***Montage-afmetingen***



Assembly notes
Zusammenbauhinweise
Remarques concernant l'assemblage
Voorsorgsmaatregelen tijdens montage



Use the press-fitting tool (sold separately) to install the lower head cone housing.
Verwenden Sie zum Einbauen des unteren Konusgehäuses das Einpresswerkzeug (separat erhältlich).
Utiliser la presse de montage (vendue séparément) pour monter le logement de cône inférieur.
Gebruik het perspasgereedschap (afzonderlijk leverbaar) voor het monteren van het huis van de onderste balhoofdconus.

TL-HP50 (1")

JIS: Japanese Industrial Standards
JIS: Japanische Industrienorm
JIS: Standard industriels japonais
JIS: Japanse Industrie Standaard

H: Head tube length
H: Lenkerrohrlänge
H: Longueur du tube de direction
H: Lengte van balhoofdbuis

Thread dimensions *Gewinde* Dimensions de filet *Schroefdraada-fmetingen*	Lock washer *Sicherungsscheibe* Rondelle de blocage *Borgring*	A	B	C	D	ℓ1	ℓ2	L
B.C.1″ × 24T		ϕ 30.0 mm (JIS)	ϕ 27.0 mm (JIS)	ϕ 22.3 mm	32.0 mm	24.1 mm	13.5 mm	H + 37.6 mm
		ϕ 30.2 mm	ϕ 26.4 mm					
			ϕ 27.0 mm					

SERVICE INSTRUCTIONS SI-8TKOD

ST-1055-T
ST-A417

Shimano Total Integration

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

STI
SHIMANO TOTAL INTEGRATION

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.

For any questions regarding methods of handling or maintenance, please contact the place of purchase.

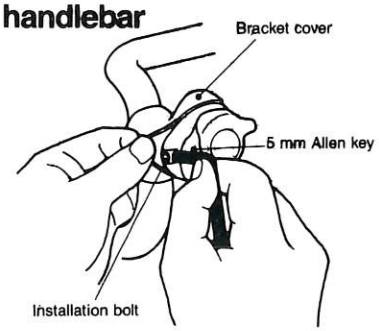
In order to realize the best performance, we recommend that the following combination be used.

Series	105-SC	RSX
Shifting lever	ST-1055-T/ST-1055	ST-A417/ST-A416/ ST-A410
Front derailleur	FD-1057	FD-A417
Front chainwheel	FC-1057	FC-A417
Rear derailleur	RD-1056GS	RD-A416GS
Freehub	FH-1056	FH-A416
Cassette sprocket	CS-HG70-8	CS-HG50-8
Chain	CN-HG70 / CN-HG50	
Bottom bracket cable guide	SM-SP17	SM-SP18
Bottom bracket	BB-UN52	BB-LP27

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: 6 - 8 Nm {50 - 70 in. lbs.}

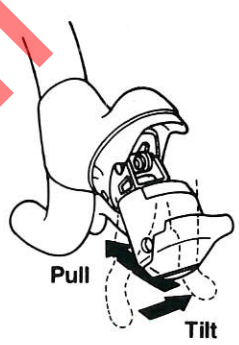
Installation of the brake cable

Cable used

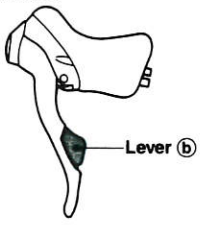
- Inner cable..... ϕ1.6mm
- SLR outer casing..... ϕ5 mm

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

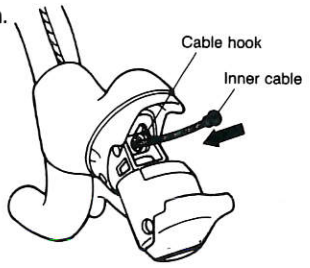
1. Tilt the lever in (as when shifting) to make it easier to pass the cable through the cable hook.



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

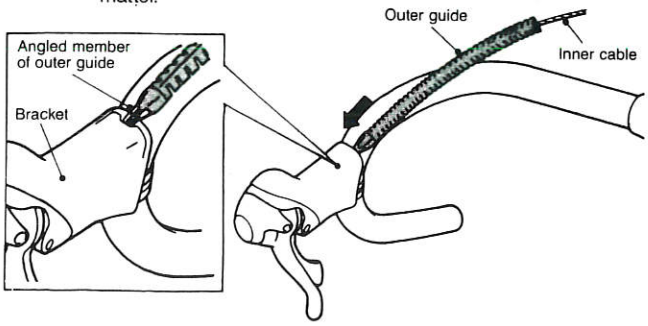


2. Pass the inner cable through.



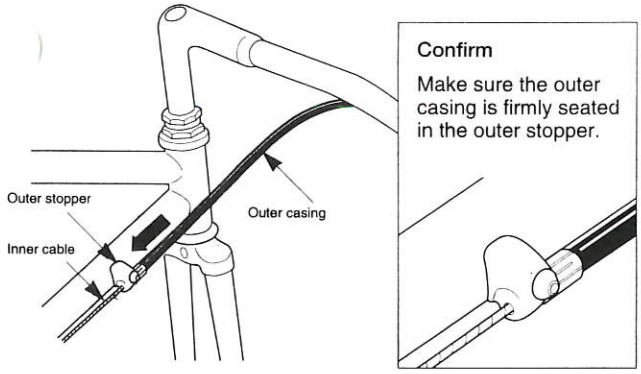
3. Fix the outer guide to the inner cable, and set the angled member in the bracket.

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.



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

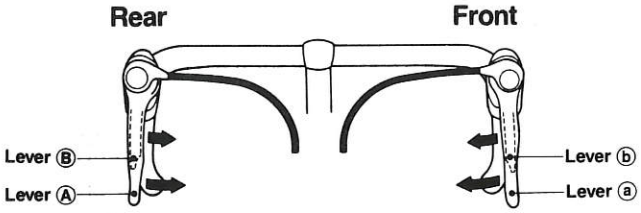
Be sure to leave some slack in the outer casing, even if cutting it to the full length of the handlebars.



Confirm

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

Operation

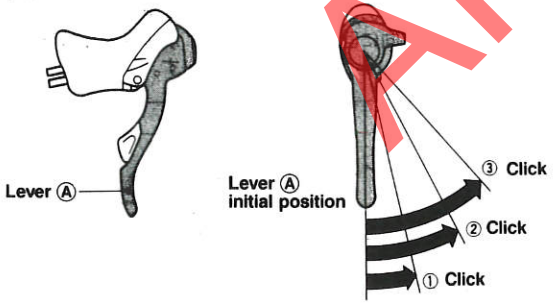


Lever Ⓐ: To shift from a small sprocket to a larger sprocket.
Lever Ⓑ: To shift from a large sprocket to a smaller sprocket.
Lever ⓐ: To shift from a small chainring to a larger chainring.
Lever ⓑ: To shift from a large chainring to a smaller chainring.

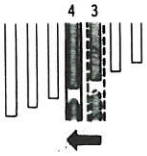
All levers return to the starting position when released.

Operation of rear derailleur levers

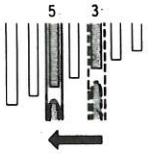
- **Lever Ⓐ:** To shift from a small sprocket to a larger sprocket.
  Lever Ⓐ has click stops at positions ①, ②, and ③.



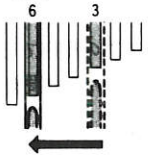
①: Shifts one sprocket.
Ex.: from 3rd to 4th.



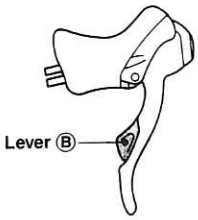
②: Quick-shifts two sprockets.
Ex.: from 3rd to 5th.

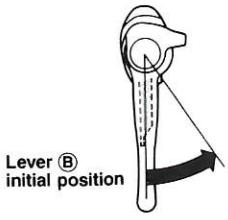


③: Quick-shifts three sprockets.
Ex.: from 3rd to 6th.

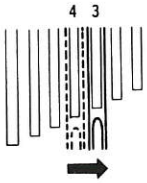


- **Lever Ⓑ:** To shift from a large sprocket to a smaller sprocket.
  Press lever Ⓑ once to shift from a larger to one smaller sprocket.





Ex.: from 4th to 3rd

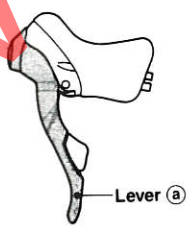


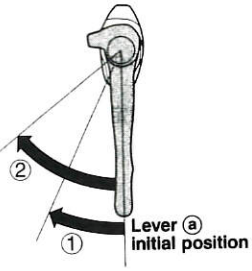
Caution on operation

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

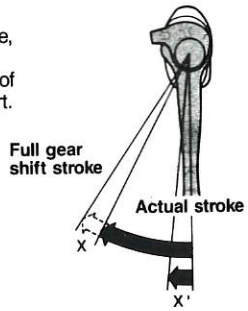
Operation of front derailleur levers

- **Lever ⓐ:** To shift from a small chainring to a larger chainring.

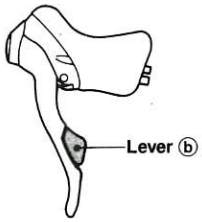




If operation of lever ⓐ does not complete the chainwheel shift stroke, operate lever ⓐ again for the distance (x′) to complete that part of the lever stroke (x) which was short.



- **Lever ⓑ:** To shift from a large chainring to a smaller chainring.

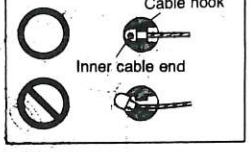


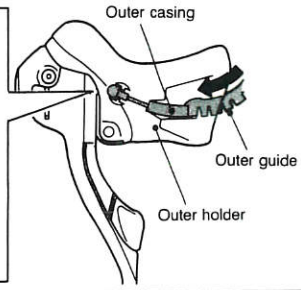
Caution on operation

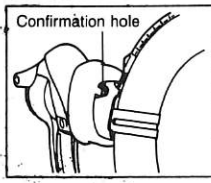
Lever ⓑ will also move when lever ⓐ is operated, but be careful not to apply pressure to lever ⓑ. Similarly, be careful not to press lever ⓐ when operating lever ⓑ. Gears will not shift when both levers are pressed simultaneously.

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

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

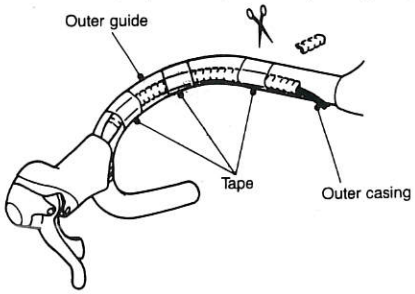






Make sure that the outer casing is firmly seated in the outer holder. Pull the bracket cover back to reveal the hole in the side of the bracket through which the seating can be confirmed.

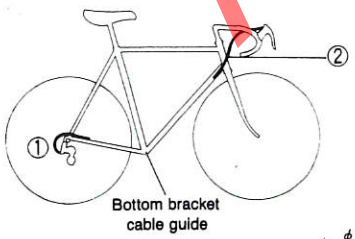
5. Bring the outer casing along the front of the handlebar and cover it with the outer guide. Now cut the outer guide to the length of the handlebar, and tape it temporarily in place.



6. Finally, wrap the handlebar with the finish tape.

Installation of the shifting cable

Cable used

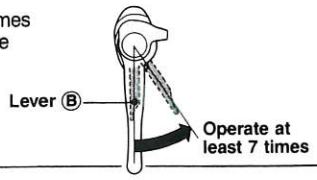


- Inner cable (stainless steel) ..... φ 1.2 mm
- SIS-SP40 sealed outer casing (①)..... φ 4 mm
- SIS-SP40 outer casing (②)..... φ 4 mm

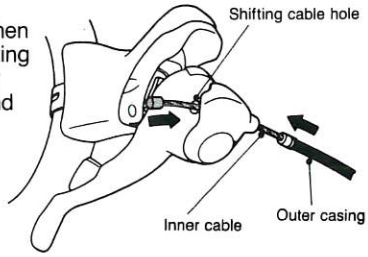
Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.

• Rear lever

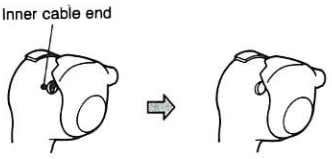
Push lever Ⓑ at least seven times before installing to set the cable hook to the top gear position. Be sure to push lever Ⓑ to the full stroke.



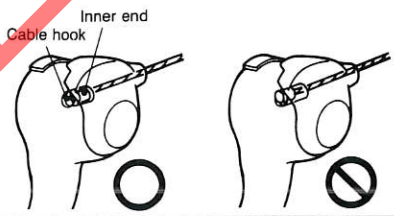
Pull the brake lever (as when braking) to reveal the shifting cable hole. Pass the inner cable through this hole and set it in the outer casing.



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

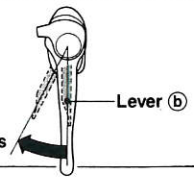


Note: Make sure that the inner end is firmly set inside the cable hook.

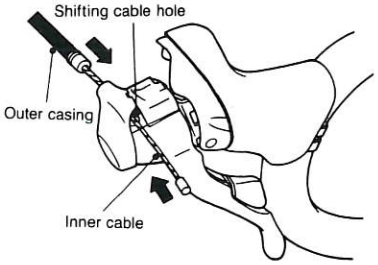


• Front lever

Push lever ⓑ two-three times before installing to set the cable hook to the top gear position. Push lever ⓑ to the full stroke.

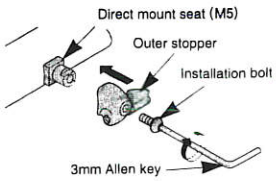


Pull the brake lever (as when braking) to pass the inner cable through the shifting cable hole, and set it in the outer casing.

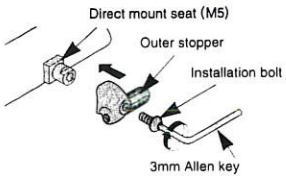


• Outer stopper

1. Install the outer stopper to the down tube.



SM-ST74 (for ST-1055)



SM-CS50 (ST-A410/A416/A417)

Install the outer stopper for the rear derailleur with the lever in the default position.

Brake System

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

Installation of the brake

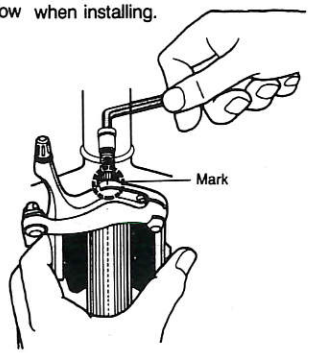
Be sure to follow the sequence described below when installing.

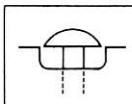
1. Installation of the brake itself

Compress the arch, and set while the shoe is in firm contact with the rim.

The position at which the mark on the upper part of the brake arm is facing directly upward is the quide for the installation position.

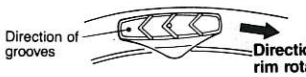
Tightening torque: 7.8 - 9.8 Nm {69 - 87 in.lbs.}

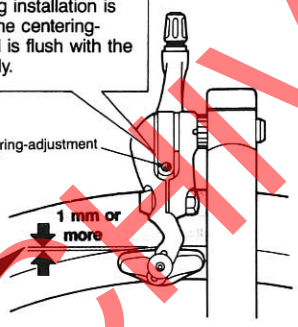




The usual position during installation is when the lower part of the centering-adjustment screw's head is flush with the surface of the brake body.

2. Brake shoe setting position





Shoe bolt tightening torque: 4.9 - 6.9 Nm {44 - 60 in.lbs.}

Due to the configuration of the dual-pivot brake, a minimum clearance of 1 mm is necessary.

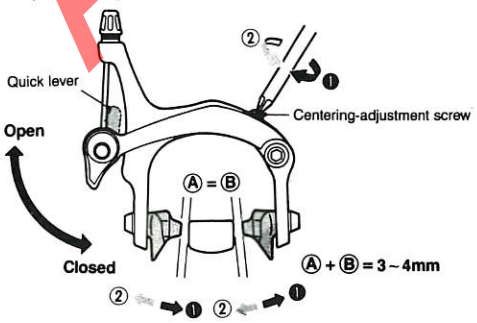
3. Cable connection

Set the quick lever to the closed position; then adjust the shoe clearance (as shown in the illustration below) and secure the cable.

Cable bolt tightening torque: 5.9 - 7.8 Nm {53 - 69 in.lbs.}

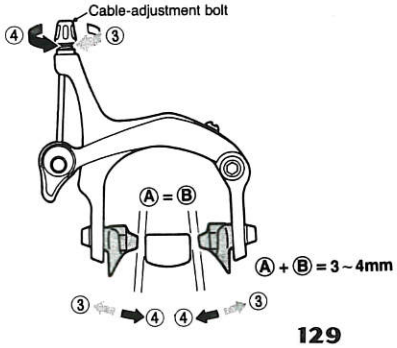
4. Centering of the brake shoe

Make a minor adjustment by using the centering-adjustment screw.



5. Readjustment of the shoe clearance

Turn the cable-adjustment bolt to readjust the shoe clearance.



SERVICE INSTRUCTIONS SI-1C20A

FC-A416
FC-A417

Front Chainwheel

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

Product specifications

Front Chainwheel

Model number	FC-A416	FC-A417
Chainwheel teeth	52 / 42T	52 / 42 / 30T
Bolt circle diameter	130 mm	130 / 74 mm
Crank length	165, 170, 175 mm	165, 170, 175 mm
Pedal threads	BC 9/16"×20 T.P.I.	BC 9/16"×20T.P.I.
Applicable chain	CN-HG50	CN-HG50
Applicable bottom bracket	BB-LP27	BB-LP27

Bottom Bracket

Model number	BB-LP27	BB-LP27
Type	double	Triple
Spindle length	110 mm	118 mm
Chain line	43.5 mm	45 mm
Thread dimensions	68 mm (1.37 X 24 T.P.I.) 70 mm (M36 X 24 T.P.I.)	68 mm (1.37 X 24 T.P.I.) 70 mm (M36 X 24 T.P.I.)

Note

- Apply grease to the bottom bracket before installing it.
- To ensure the best performance, be sure to use only the specified type of chain. The wide type of chain cannot be used.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

SHIMANO

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

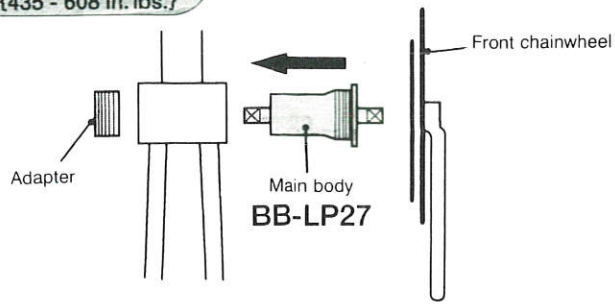
SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

These service instructions are printed on recycled paper and can be recycled again

Installation of the bottom bracket

Install using the special tool TL-UN74. First install the main body, then the adapter.

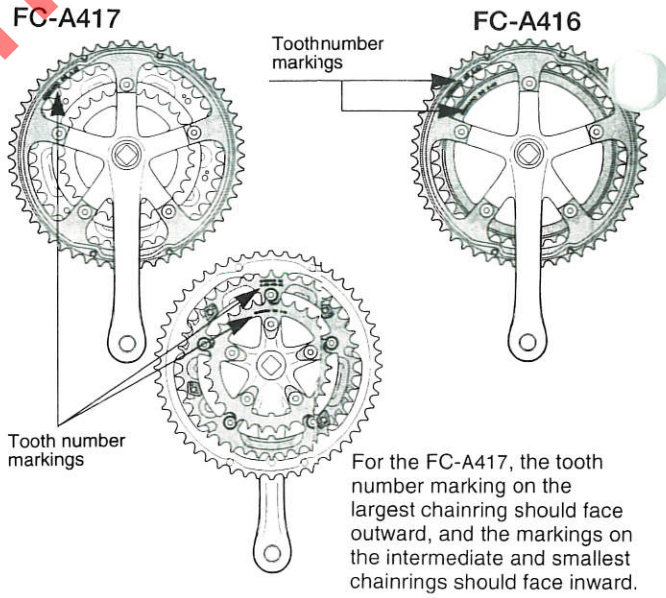
Tightening torque:
50 - 70 Nm
{435 - 608 in. lbs.}



Installation of the chain rings

Smooth shifting will not be possible if the chain rings are incorrectly installed, so be sure to install them in the correct positions.

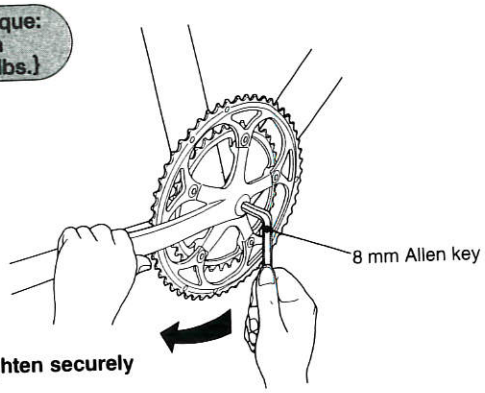
For both the large and small chainrings, the surfaces that have the tooth number markings should face outward. Install so that the markings are in the positions shown in the illustration.



For the FC-A417, the tooth number marking on the largest chainring should face outward, and the markings on the intermediate and smallest chainrings should face inward.

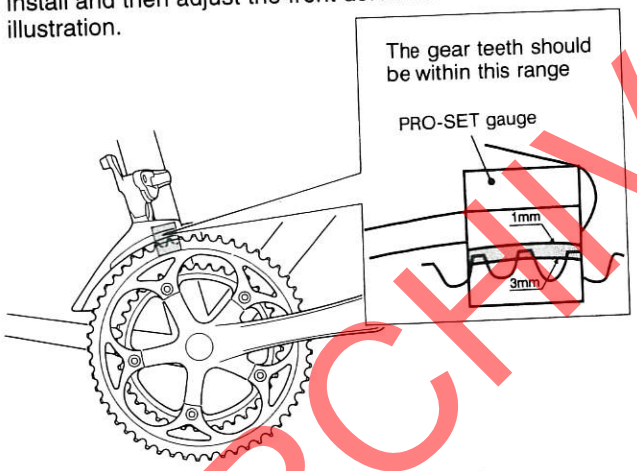
Installation of the front chainwheel

Tightening torque:
35 - 50 Nm
(305 - 435 in. lbs.)



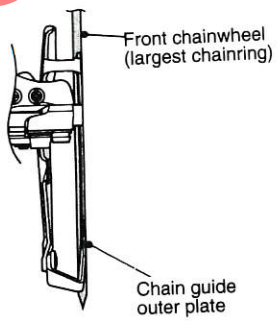
Installation to the frame

1. Install and then adjust the front derailleur as shown in the illustration.



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

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



SERVICE INSTRUCTIONS SI-5ET0A

FD-A416 Front derailleur

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	RSX
Shifting lever	ST-A416
Outer casing	SIS SP40
Gears	16
Front derailleur	FD-A416
Front chainwheel	FC-A416
Bottom bracket	BB-LP27
Rear derailleur	RD-A416
Freehub	FH-A416
Cassette sprocket	CS-HG50-8
Chain	CN-HG50
Bottom bracket cable guide	SM-SP17

Specifications

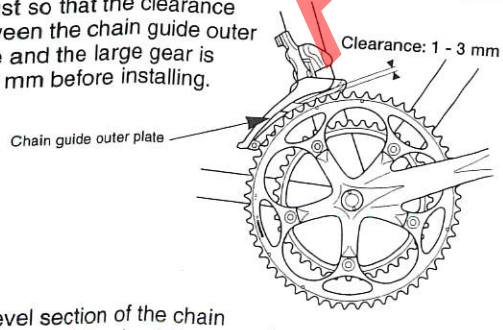
Type	Band type / Brazed on type
Front derailleur installation band diameter	S (28.6mm). M (31.8mm)
Chainstay angle (α)	61° - 66°
Chain line	43.5mm

Note

- For smooth operation, always be sure to 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.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

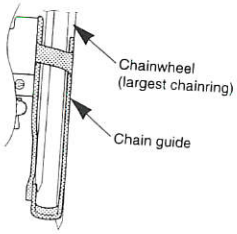
Installation of the front derailleur

1. Adjust so that the clearance between the chain guide outer plate and the large gear is 1 - 3 mm before installing.



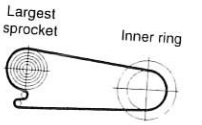
2. The level section of the chain guide outer plate should be directly above and parallel to the largest chainring.
3. Secure using a 5mm Allen key.

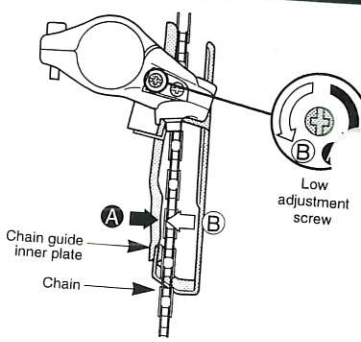
Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}



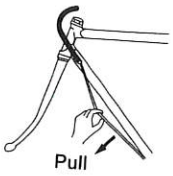
SIS adjustment

1. Low adjustment
Set so that the clearance between the chain guide inner plate and the chain is 0-0.5 mm.



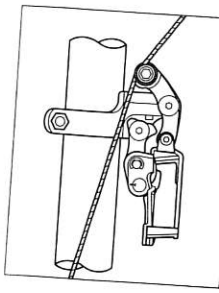


2. Connection and securing of cable
While pulling the inner cable, tighten the wirw fixing bolt with a 5 mm allen key to secure the cable.

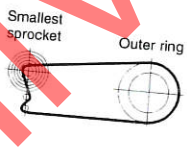


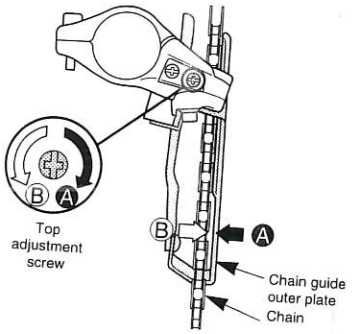
Tightening torque: 5 - 7 Nm {44 - 60 in. lbs.}

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

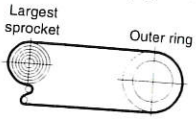


3. Top adjustment
Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.



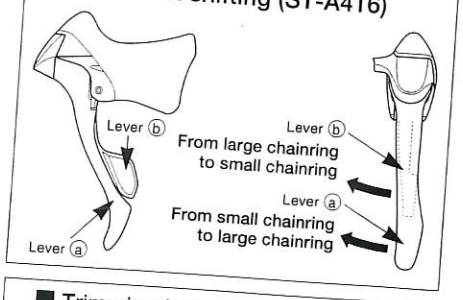


4. Adjustment of the cable tention
(1) Set the chain to the largest rear sprocket, and shift the front to top gear.



(2) Perform the trimming.

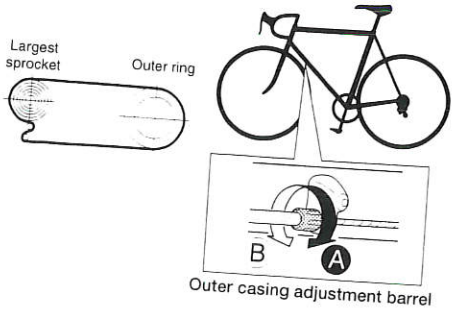
■ Front shifting (ST-A416)

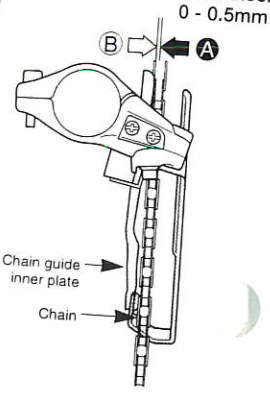


■ Trimming (noise-prevention mechanism)
Gently press the lever ⓑ.
(A "click" sound will be heard.)

(3) After trimming, adjust the clearance (by using the cable-adjustment bolt) of the chain and chaib guide yo the minimum (0-0.5mm).

Clearance: 0 - 0.5mm





Be sure to read these service instructions in conjunction with the service instructions for the ST-A416 before use.

SERVICE INSTRUCTIONS SI-5EU0A

FD-A417 Front derailleur

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	RSX
Shifting lever	ST-A417____
Outer casing	SIS SP40
Gears	24
Front derailleur	FD-A417
Front chainwheel	FC-A417
Bottom bracket	BB-LP27
Rear derailleur	RD-A416-GS
Freehub	FH-A416
Cassette sprocket	CS-HG50-8
Chain	CN-HG50
Bottom bracket cable guide	SM-SP17

Specifications

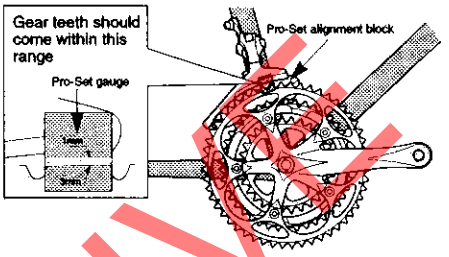
Type	Band type / Brazed on type
Front chainwheel tooth difference	22 teeth or less
Front derailleur installation band diameter	S (28.6mm), M (31.8mm)
Chainstay angle (α)	63° - 66°

Note

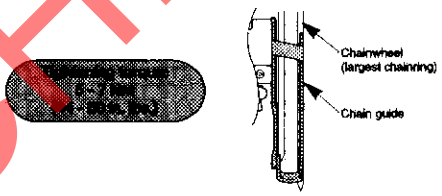
- If attaching the FD-A417 (brazed-on type) to a seat tube with a thickness of more than 31.8 mm, the derailleur may come into contact with the seat tube and interfere with normal gear shifting performance.
- For smooth operation, always be sure to use the specified outer casing and the bottom bracket cable guide.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.
- 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.
- For the chain, be sure to use only the Shimano narrow type chain. The wide type chain cannot be used.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Installation of the front derailleur

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 5mm Allen key.



SHIMANO

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

These service instructions are printed on recycled paper and can be recycled again

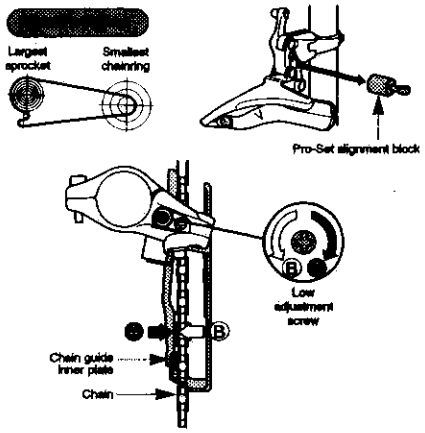
Please note: specifications are subject to change for improvement without notice. (English)

SIS adjustment

Be sure to follow the sequence described below.

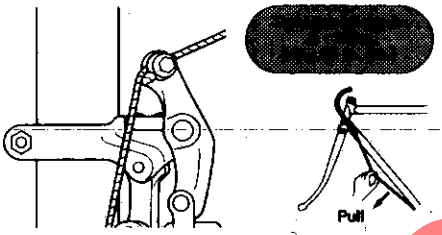
1. Low adjustment

First remove the Pro-Set alignment block .Next, set so that the clearance between the chain guide inner plate and the chain is 0-0.5mm.



2. Connection and securing of cable

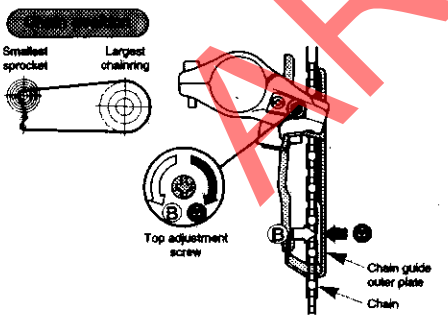
While pulling the inner cable, tighten the wirw fixing bolt with a 5 mm allen key to secure the cable.



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

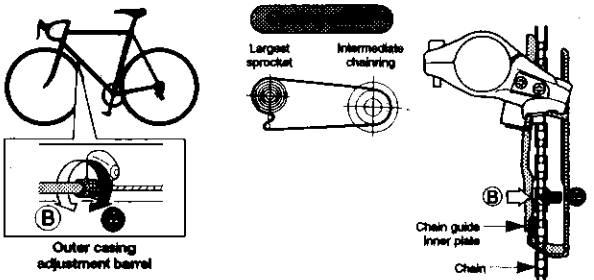
3. Top adjustment

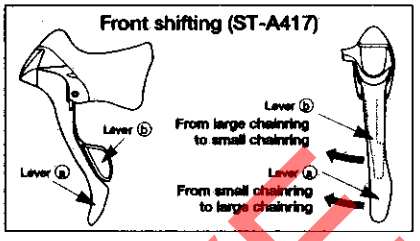
Set so that the clearance between the chain guide outer plate and the chain is 0-0.5 mm.



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.





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).

Be sure to read these service instructions in conjunction with the service instructions for the ST-A417 before use.

SERVICE INSTRUCTIONS SI-5US0A

RD-A416 Rear Derailleur

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.

	RSX	
Series	ST-A416	ST-A417
Shifting lever	SIS SP40	SIS SP40
Outer casing	16	24
Gears		
Front derailleur	FD-A416	FD-A417
Front chainwheel	FC-A416	FC-A417
Bottom bracket	BB-LP27	BB-LP27
Rear derailleur	RD-A416	RD-A416-GS
Freehub	FH-A416	FH-A416
Cassette sprocket	CS-HG50-8	CS-HG50-8
Chain	CN-HG50	CN-HG50
Bottom bracket cable guide	SM-SP17	SM-SP17

Specifications

Rear Derailleur

Model number	RD-A416	RD-A416-GS
Type	SS	GS
Gears	8	8
Total capacity	28T	36T
Largest sprocket	28T	30T
Smallest sprocket	11T	11T
Front chainwheel tooth difference	14T	22T

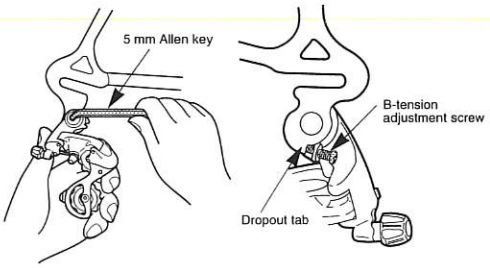
Note

- For smooth operation, always be sure to 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.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact a professional bicycle dealer.

Installation of the rear derailleur

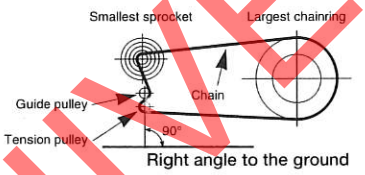
When installing, be careful that deformation is not caused by the B-tension adjustment screw coming into contact with the dropout tab.

Bracket spindle tightening torque: 8 - 10 Nm {70 - 86 in. lbs.}



Chain length

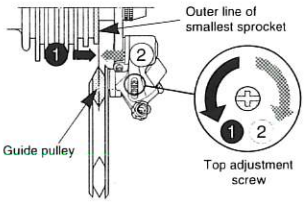
GS type, SS type



Stroke adjustment and cable securing

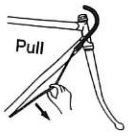
1. Top adjustment

Turn the top adjustment screw to adjust so that the guide pulley is below the outer line of the smallest sprocket when looking from the rear.



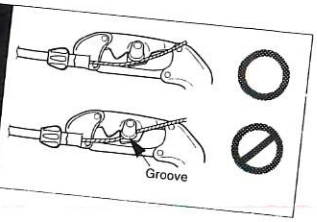
2. Connection and securing of the cable

Connect the cable to the rear derailleur and, after taking up the initial slack in the cable, re-secure to the rear derailleur as shown in the illustration.



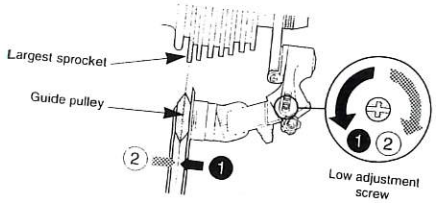
Tightening torque: 5 - 7 Nm (44 - 60 in. lbs.)

Note:
Be sure that the cable is securely in the groove.



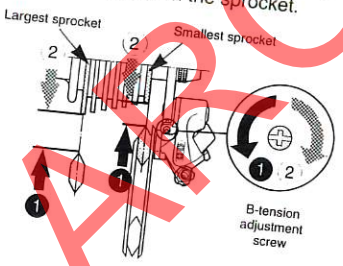
3. Low adjustment

Turn the low adjustment screw so that the guide pulley moves to a position directly in line with the largest sprocket.



4. How to use the B-tension adjustment screw

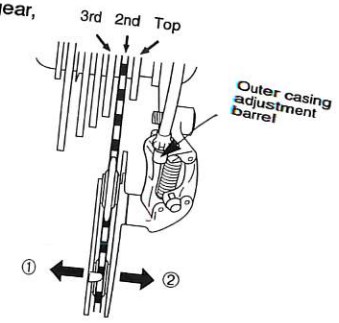
Mount the chain on the smallest chainring and the largest sprocket, and turn the crank arm backward. Then turn the B-tension adjustment screw to adjust the guide pulley as close to the sprocket as possible but not so close that it touches. Next, set the chain to the smallest sprocket and repeat the above to make sure that the pulley does not touch the sprocket.



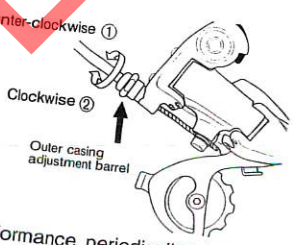
5. SIS Adjustment

(1) Operate the shifting lever to move the chain from the top gear to 2nd gear.

* If the chain will not move to the 2nd gear, turn the outer casing adjustment barrel to increase the tension-----① (counter clockwise)
* If the chain moves past the 2nd gear, decrease the tension---② (clockwise)



(2) Next with the chain on the 2nd gear, increase the inner cable tension ① while turning the crank arm forward. Stop turning the outer casing adjustment barrel just before the chain makes noise against the 3rd gear.
This completes the adjustment.



For the best SIS performance, periodically lubricate all power-transmission parts.

SHIMANO®

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet Holland Phone 31-3412-72222

SHIMANO INC.
77 Oimatsu-cho 3-cho Sakai Osaka 590-8577 Japan Phone 0722-23-3243

These service instructions are printed on recycled paper and can be recycled again

SERVICE INSTRUCTIONS SI-43Y0A

PD-6600
PD-5500

SPD-R Pedals

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

⚠ WARNING

- **Use only SPD-R shoes with this product. Other types of shoes may not release from the pedals, or may release unexpectedly.**
- **Use only Shimano cleats (SM-SH90/SH91/SH92/SH80/SH81/SH82) and tighten the mounting bolts securely to the shoes.**
- **Before attempting to ride with these pedals and shoes, make sure you understand the operation of the engagement/release mechanism for the pedals and cleats (shoes).**
- **Before you attempt to ride with these pedals and shoes, apply the brakes, then place one foot on the ground and practice engaging and releasing each shoe from its pedal until you can do so naturally and with minimal effort.**
- **Ride on level ground first until you become adept at engaging and releasing your shoes from the pedals.**
- **Before riding, adjust the spring tension of the pedals to your liking.**
- **When riding at low speed or when there is a possibility that you might need to stop riding, (for example, when doing a U-turn, nearing an intersection, riding uphill or turning a blind curb), release your shoes from the pedal beforehand so that you can quickly put your feet onto the ground at any time.**
- **Use a lighter spring tension for attaching the pedal cleats when riding in adverse conditions.**
- **Keep cleats and bindings clear of dirt and debris to ensure engagement and release.**
- **Remember to check the cleats periodically for wear. When the cleats are worn, replace them. Always check the spring tension after replacing the pedal cleats and before riding.**
- **If you have any questions concerning your pedals, contact a professional dealer.**

Be sure to read and follow the above warnings carefully, otherwise your shoes may not release from the pedals, or they may release unexpectedly and slip from the pedals, causing a fall that could result in severe injury.

An optional reflector set (SM-PD51) is available. Please contact a professional dealer for details.

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

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 949-951-5003

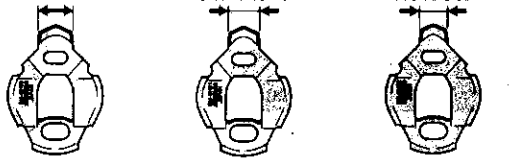
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222

SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

Cleat types

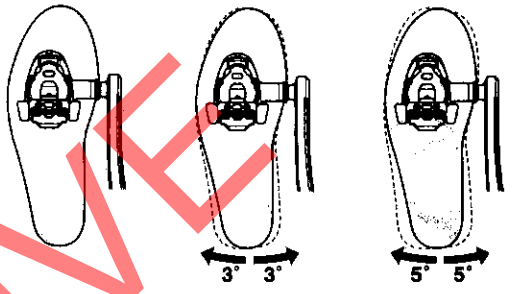
The cleats below (SM-SH90/SH91/SH92/SH80/SH81/SH82) for SPD-R racing shoes should be used together with the pontoon (cleat rubbers) as a set.

SM-SH90 (Option)	SM-SH91	SM-SH92 (Option)
Wide	Standard	Narrow



Fixed mode
There is no play when the shoes are firmly engaged with the pedals.

Self-aligning mode
There is some sideways play when the shoes are firmly engaged with the pedals.

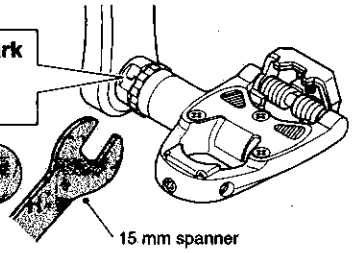


Mounting the pedals on the crank arms

Use a 15 mm wrench or a 6 mm Allen key to mount the pedals on the crank arms. The right pedal has a right-hand thread; the left pedal has a left-hand thread.

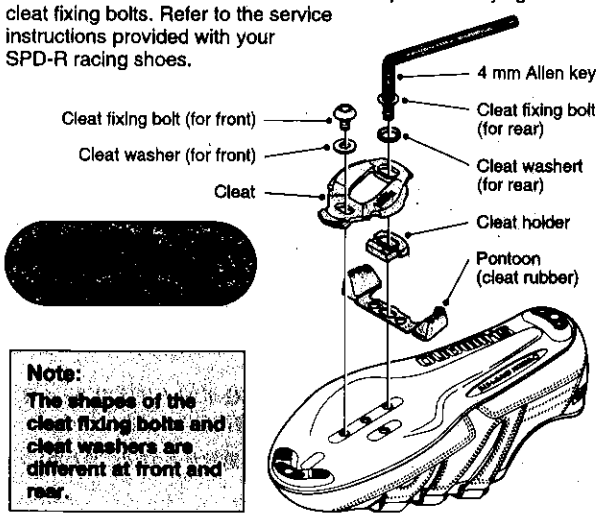
Pay attention to the mark
R: right pedal
L: left pedal

Tightening torque: 35 Nm (304 in. lbs.) min.



Attaching the cleats

Set a pontoon (cleat rubber), cleat holder, cleat and cleat washer in order on the bottom of each shoe and then provisionally tighten the cleat fixing bolts. Refer to the service instructions provided with your SPD-R racing shoes.

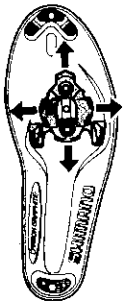


Note:
The shapes of the cleat fixing bolts and cleat washers are different at front and rear.

Adjusting the cleat position

1. The cleat has an adjustment range of 15 mm front to back and 5 mm right to left. After provisionally tightening the cleat, adjust it until the optimum cleat position is obtained. Adjustment can also be carried out with the shoes already attached to the pedals.

2. After you have determined the best cleat position, firmly tighten the cleat fixing bolts with a 4 mm Allen key.

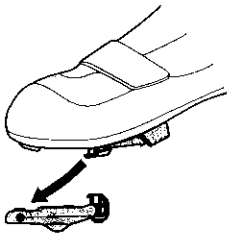


Tightening torque: 5 – 6 Nm (43 – 52 in. lbs.)

Using the pedals

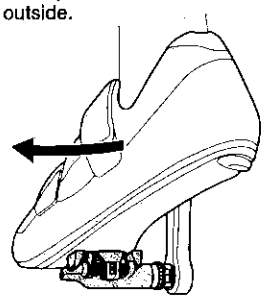
■ To engage

Press the cleat into the pedal.



■ To release

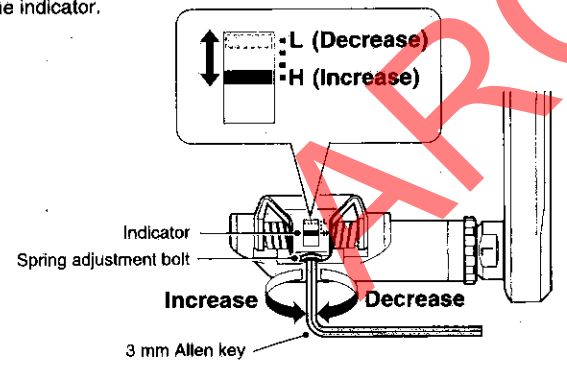
Twist your feet to the outside.



* Place one foot on the ground, apply the brakes, and practice engaging and releasing the cleat from the pedal several times to determine the spring tension you prefer.

Adjusting the spring tension

Adjust the spring tension with the spring adjustment bolt located on the underside of the pedal. Move the cleat in the release direction when carrying out this adjustment. The spring tension will be displayed on the indicator.

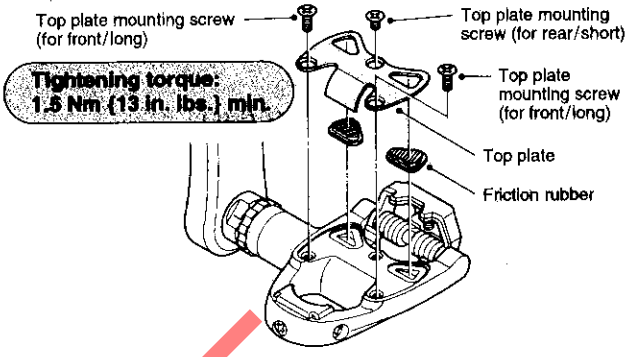


Note:

- **A click stop at each 90° turn of the bolt marks an incremental change in the spring tension. The bolt can be turned up to three complete revolutions. Do not turn the bolt past the point at which the indicator shows the maximum or minimum tension. If the bolt is turned too far in the direction of minimum tension, it will slip out.**
- **If the spring adjustment bolt is completely withdrawn from the spring plate, disassembly and reassembly will be required. If this occurs, ask a professional dealer for assistance.**
- **If the spring tensions are unequal, a different amount of effort will be required to engage and release the cleats from the right and left pedals, and from both sides of the pedal. As a result, unexpected difficulty will arise because of the unfamiliar effort required for engagement and release.**

Adjusting the friction and clearance between the pedals and cleats

At the time of shipment from the factory, this product is fitted with L (low) -sized friction rubbers. If you prefer, you can replace these with the accessory H (high) -sized friction rubbers, so that when using the cleats in self-aligning mode (SM-SH91/SH92/SH81/SH82), the lateral friction between the pedal and the cleat can be made greater and the vertical clearance can be made smaller, and when using the cleats in fixed mode (SM-SH90/SH80), the vertical clearance between the pedal and the cleat can be made smaller.

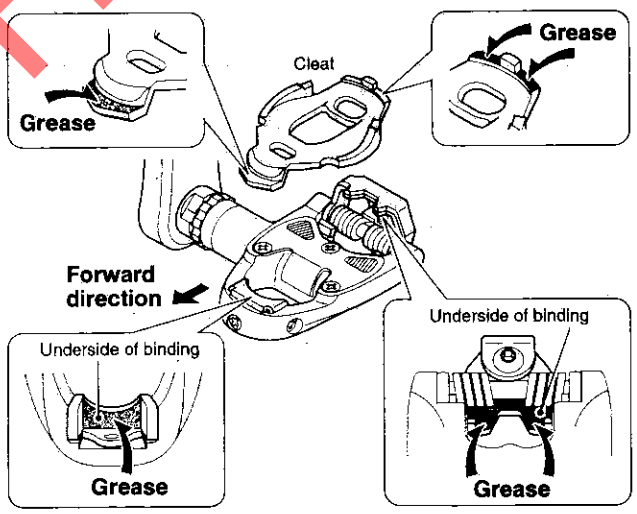


Note:

- **When replacing the friction rubber, be sure to use the accessory top plate mounting screws. If these screws are re-used, their self-tightening effectiveness diminishes.**
- **The top plate mounting screws have different lengths for use at the front and rear.**

Preventing noise

If noise can be heard, apply grease to the points shown in the illustration.



Cleat replacement

Cleats wear out over time and must be replaced. Replace your cleats when you find it difficult to engage or release.

If you do not maintain your shoes and cleats in good condition, your shoes may not properly release from the pedals, resulting in a fall or other mishap.

Maintenance of the axle units

If you experience any trouble with the rotating parts of the pedal, the pedal may require adjustment. Obtain advice from a professional dealer.

SERVICE INSTRUCTIONS SI-PD52A

SM-PD52 Reflector-M2

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

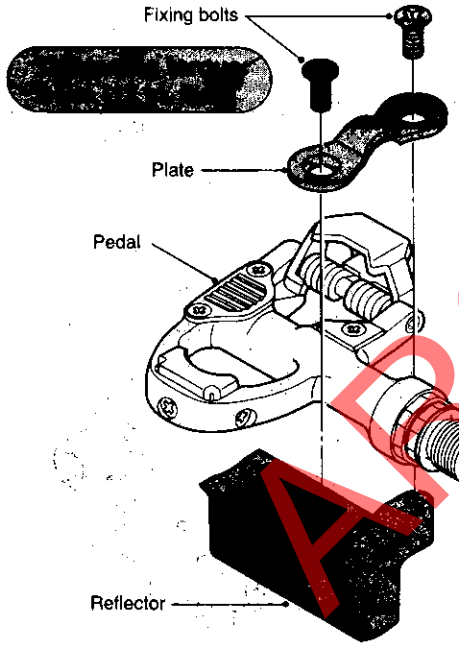
Note:

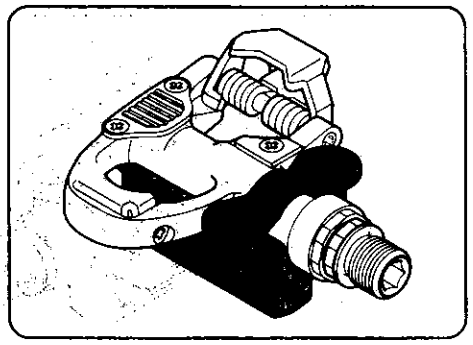
- **This reflector (SM-PD52) is for use with the PD-7700 pedals only.**
- **The reflector can be installed on either a left or right pedal.**

Installation

Position the reflector on the pedal as shown in the illustration. Secure the reflector with the fixing bolts and plate provided.

★ The illustration shows how to install the reflector on the right pedal.





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

SHIMANO AMERICAN CORPORATION
One Shimano Drive, P.O. Box 19615, Irvine, California U.S.A. 92623-9615 Phone 714-951-5003

SERVICE INSTRUCTIONS SI-41E0C

PD-M636/M545/M434

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

⚠ WARNING TO PARENT/ GUARDIAN

USE OF THIS PRODUCT IN ACCORDANCE WITH THESE SERVICE INSTRUCTIONS IS ESSENTIAL FOR YOUR CHILD'S SAFETY. MAKE SURE YOU AND YOUR CHILD UNDERSTAND THESE SERVICE INSTRUCTIONS. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY.

⚠ WARNING

- **Use only SPD shoes with this product. Other types of shoes may not release from the pedals, or may release unexpectedly.**
- **Use only Shimano cleats (SM-SH51 or SM-SH55) and tighten the mounting bolts securely to the shoes.**
- **Before attempting to ride with these pedals and shoes, make sure you understand the operation of the engagement / release mechanism for the pedals and cleats (shoes).**
- **Before you attempt to ride with these pedals and shoes, apply the brakes, then place one foot on the ground and practice engaging and releasing each shoe from its pedal until you can do so naturally and with minimal effort.**
- **Ride on level ground first until you become adept at engaging and releasing your shoes from the pedals.**
- **Before riding, adjust the spring tension of the pedals to your liking.**
- **When riding at low speed or when there is a possibility that you might need to stop riding, (for example, when doing a U-turn, nearing an intersection, riding uphill or turning a blind curb), release your shoes from the pedal beforehand so that you can quickly put your feet onto the ground at any time.**
- **Use a lighter spring tension for attaching the pedal cleats when riding in adverse conditions.**
- **Keep cleats and bindings clear of dirt and debris to ensure engagement and release.**
- **Remember to check the cleats periodically for wear. When the cleats are worn, replace them. Always check the spring tension after replacing the pedal cleats and before riding.**
- **If you have any questions concerning your pedals, contact a professional dealer.**

Be sure to read and follow the above warnings carefully, otherwise your shoes may not release from the pedals, or they may release unexpectedly and slip from the pedals, causing a fall that could result in severe injury.

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

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO®

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222

SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

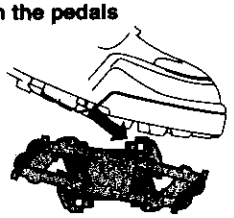
Cleat types and using the pedals

⚠ WARNING

Do not use the pedals and cleats in any way other than as described in these Service Instructions. The cleats are designed to engage and disengage from the pedals when the cleats and pedals are facing forward. See below for instructions on how to install the cleats. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS PERSONAL INJURY.

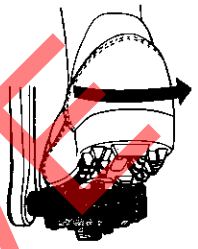
- **Engaging the cleats with the pedals**

Press the cleats into the pedals with a forward and downward motion.



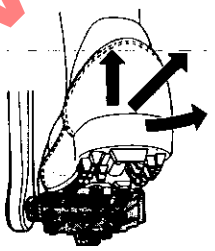
- **Releasing the cleats from the pedals**

The method of release varies according to the type of cleats you are using. (Check the model number and color of your cleats to determine the proper method of release.)



[redacted]

Single release mode
Release the cleats from the pedals by twisting your heels to the outside.



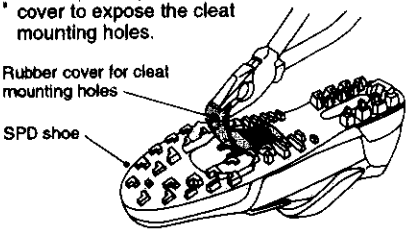
[redacted]

Multiple release mode (Optional accessory)
Release the cleats from the pedals by twisting your heels in any direction.

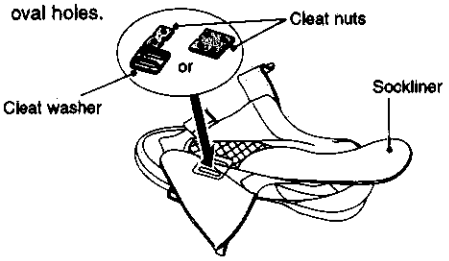
Note:
In multiple release mode, it is necessary to practice releasing until you become accustomed to the technique. Releasing by lifting your heel requires particular practice.

Attaching the cleats

1. With a pair of pliers or a similar tool, pull off the rubber cover to expose the cleat mounting holes.

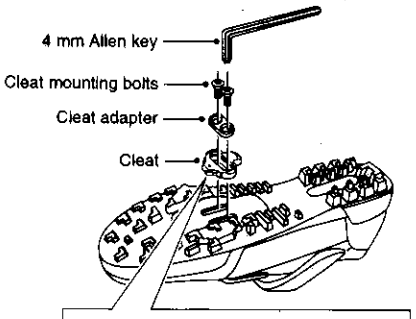


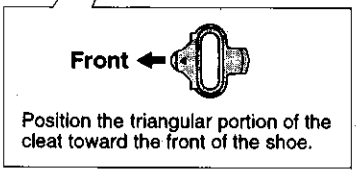
2. Remove the sockliner and position a cleat washer and a two-hole cleat nut or a four-hole cleat nut over the oval holes.



3. From the bottom of the shoe, position a cleat and then a cleat adapter over the cleat holes. The cleats are compatible with both left and right pedals. Provisionally tighten the cleat mounting bolts.

Provisional tightening torque for cleat mounting bolts: 2.5 Nm {22 in. lbs.}

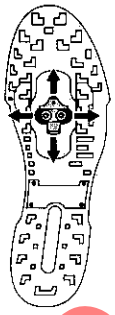




Position the triangular portion of the cleat toward the front of the shoe.

Adjusting the cleat position

1. The cleat has an adjustment range of 20 mm front to back and 5 mm right to left. After provisionally tightening the cleat, practice engaging and releasing, one shoe at a time. Readjust to determine the best cleat position.

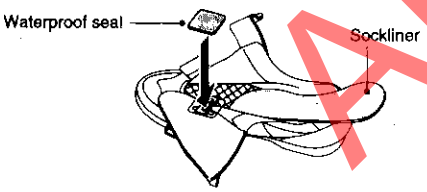


2. After you have determined the best cleat position, firmly tighten the cleat mounting bolts with a 4 mm Allen key.

Tightening torque: 5 – 6 Nm {43 – 52 in. lbs.}

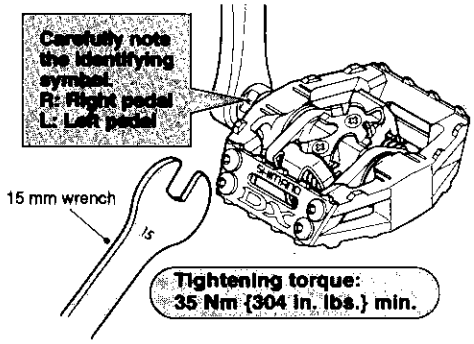
Waterproof seal

Remove the sockliner and attach the waterproof seal.



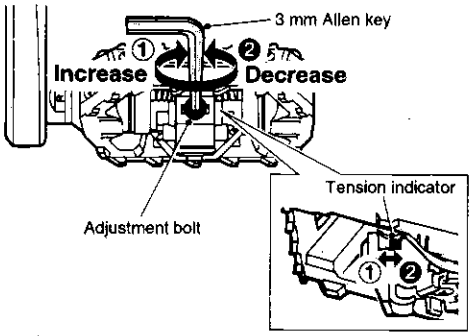
Mounting the pedals on the crank arms

Mount the pedals on the crank arms with a 15 mm wrench. The right pedal has a right-hand thread; the left pedal has a left-hand thread.



Adjusting the spring force of the binding

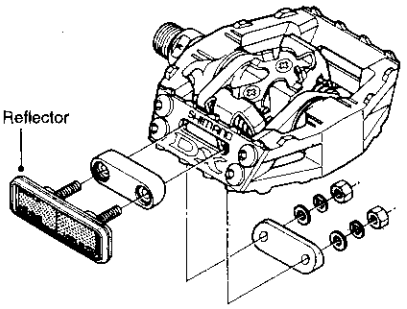
The spring force is adjusted by means of adjustment bolts. The adjustment bolts are located behind each of the bindings, and there are two adjustment bolts on each pedal. Equalize the tensions by referring to the tension indicators and by counting the number of turns of the adjustment bolts. The spring tension can be adjusted in three steps for each turn of the adjustment bolt.



When the bolt is turned clockwise, the spring tension increases and the red part of the tension indicator becomes larger. When the bolt is turned all the way clockwise, it will suddenly become hard to turn. Do not turn the bolt beyond this point. When the bolt is turned counterclockwise, the spring tension decreases and the red part of the tension indicator becomes smaller. Once the red part of the tension indicator can no longer be seen, do not turn the bolt counterclockwise any further.

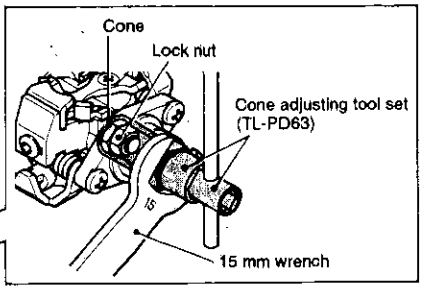
Note:
- If the spring tensions are unequal, a different amount of effort will be required to engage and release the cleats from the right and left pedals, and from both sides of the pedal. As a result, unexpected difficulty will arise because of the unfamiliar effort required for engagement and release.
- If the adjustment bolt is completely withdrawn from the spring plate, disassembly and reassembly will be required. If this occurs, ask a professional dealer for assistance.

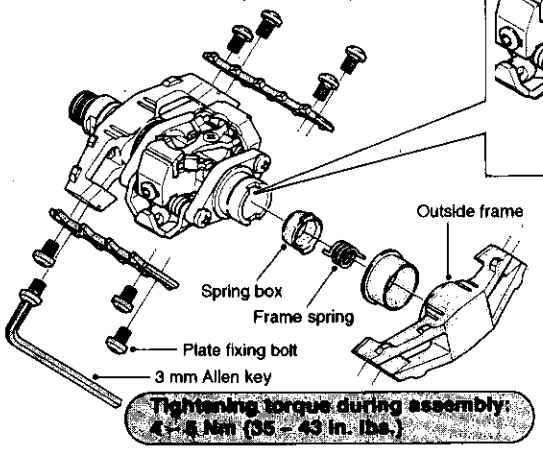
Mounting the reflectors (PD-M636)



- **Adjusting the cone**

Remove the plate fixing bolts, and then disassemble as shown in the illustration. After disassembly, use the cone adjusting tool set (TL-PD63) to adjust the cone so that the mechanism turns smoothly without any play.

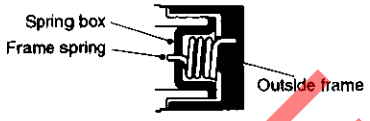




Tightening torque during assembly: 4 – 6 Nm (35 – 43 in. lbs.)

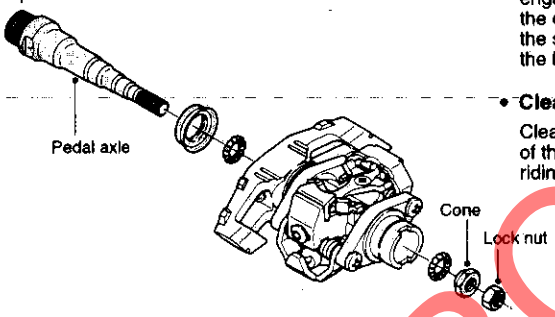
Note when assembling:

Set the frame spring so that it is securely in the spring holes in the spring box and outside frame.



- **Replacing the pedal axle**

Use the cone adjusting tool set (TL-PD63) to remove the lock nut and the cone. Then pull out the old pedal axle and replace it with the new pedal axle.



- **Replacing the cleats**

Cleats wear out over time and must be replaced. Replace your cleats when you find it difficult to engage or release the cleats from the pedals. After the cleats have been replaced, be sure to adjust the spring tension of the pedal cleats before riding the bicycle.

- **Cleaning**

Clean off any mud and other debris from the cleats of the shoes and from the pedal bindings before riding the bicycle.

SERVICE INSTRUCTIONS SI-7S10A

SL-7S10 Revo-shift Lever
CJ-NX10 Cassette Joint

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

SHIMANO®
NEXUS
INTER·S

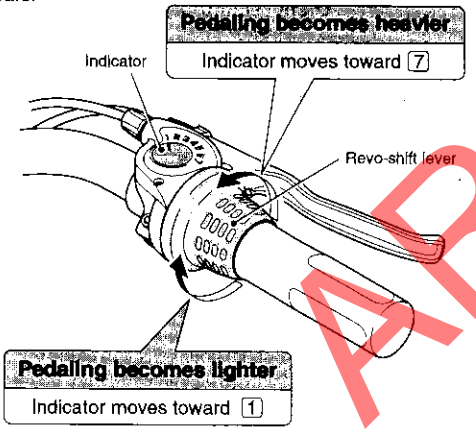
Be sure to read these service instructions in conjunction with the service instructions for the Inter-7 hub before use.

⚠ CAUTION

Be sure to shift the lever one gear at a time, and reduce the force being applied to the pedals during shifting. If you try to force operation of the shifting lever while the pedals are being turned strongly, your feet may come off the pedals and the bicycle may topple over, which could result in serious injury.

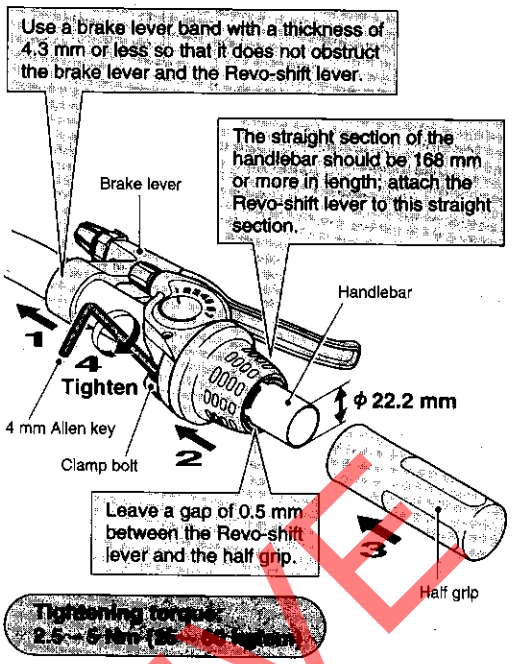
Revo-shift lever operation

Turn the Revo-shift lever to shift to each of the seven gears.



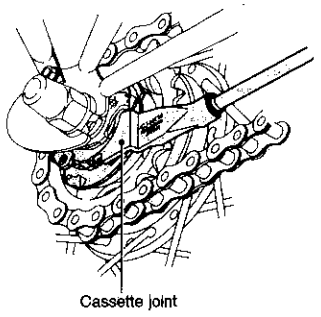
Installation of the lever

Install the lever as shown in the illustration.

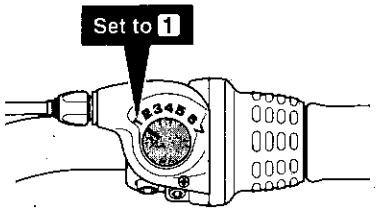


Disconnecting the shifting cable when removing the rear wheel from the frame

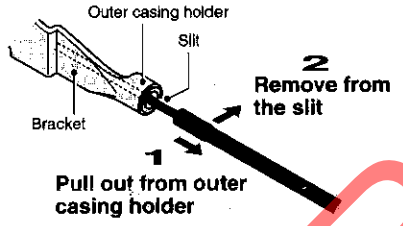
Disconnect the cable from the cassette joint when removing the rear wheel from the frame.



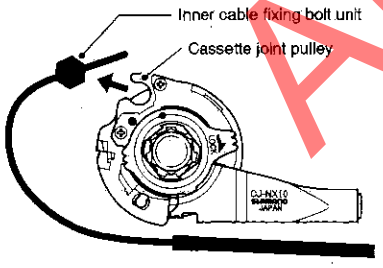
1. Set the Revo-shift lever to 1.



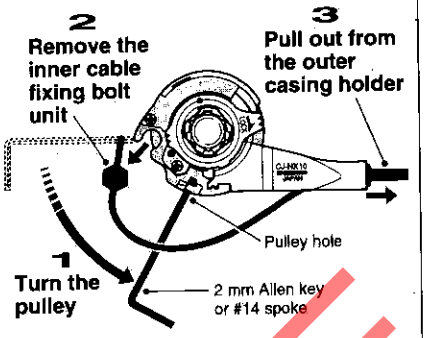
2. Pull the outer casing out from the outer casing holder of the cassette joint, and then remove the inner cable from the slit in the bracket.



3. Remove the inner cable fixing bolt unit from the cassette joint pulley.



If it is difficult to pull the outer casing out from the outer casing holder of the cassette joint, insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley to loosen the inner cable. Then remove the inner cable fixing bolt unit from the pulley first, and after this remove the outer casing from the outer casing holder.

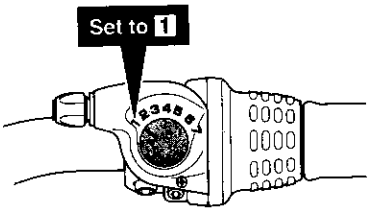


Note:
If reusing the cable, refer to steps 6 to 8 in "Installation of the shifting cable".

Installation of the shifting cable

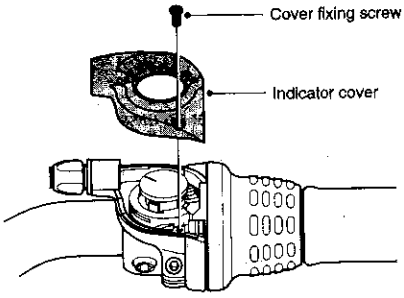
Use a shifting cable with one inner cable drum.
Cable with one inner cable drum / SIS-SP (5 mm dia.)

1. Set the Revo-shift lever to 1.

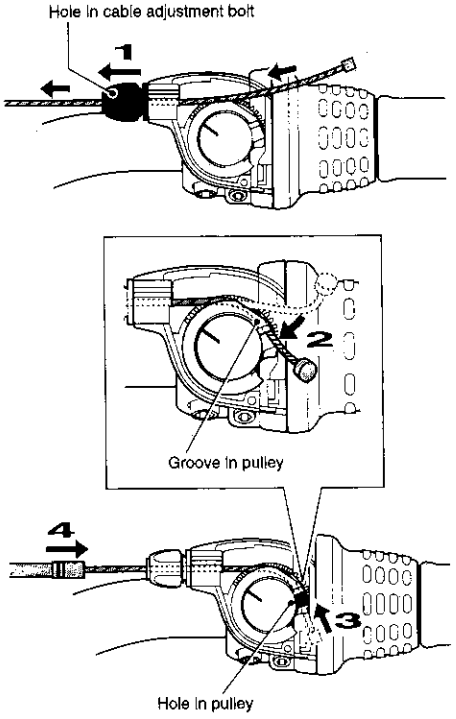


■ Revo-shift lever side

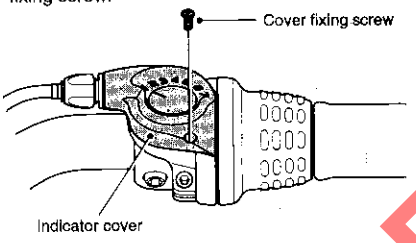
2. Loosen the cover fixing screw, and then remove the indicator cover.



3. Pass the inner cable through the hole in the cable adjustment bolt. Next, hook the inner cable into the groove of the pulley, and pull the inner cable so that the inner cable drum fits into the hole in the pulley. After this, insert the outer casing into the cable adjustment bolt.

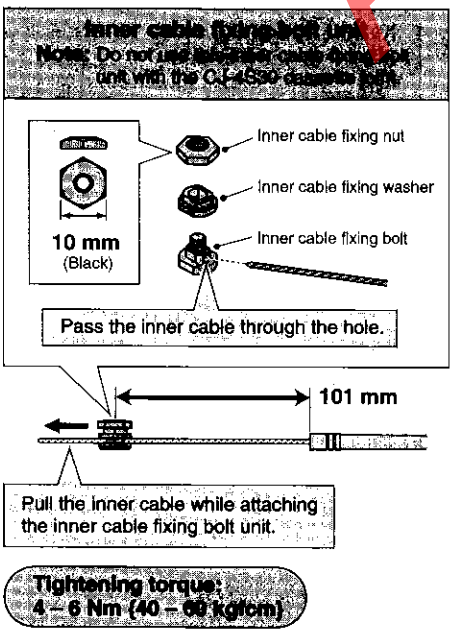


4. Replace the indicator cover and tighten the cover fixing screw.



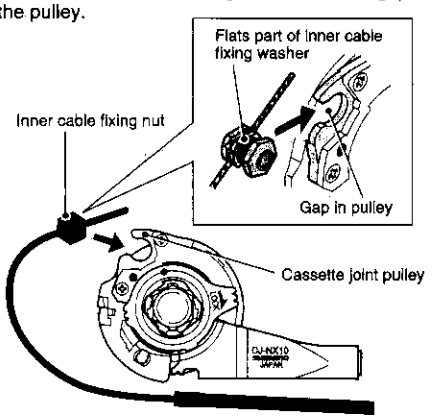
■ Cassette joint side

5. After checking that the end of the outer casing is sitting securely in the cable adjustment bolt of the Revo-shift lever, attach the inner cable fixing bolt unit to the inner cable.

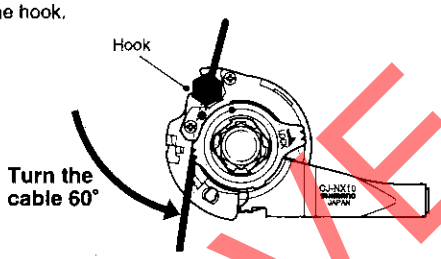


Tightening torque:
4 – 6 Nm (40 – 60 kgfcm)

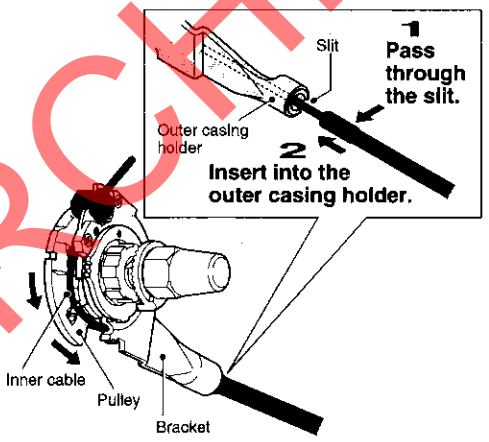
6. Bring the cable around to the cassette joint pulley, hold so that the inner cable fixing nut is facing to the outside (toward the fork end), and then slide the flats part of the inner cable fixing washer into the gap in the pulley.



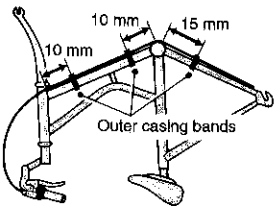
7. Turn the cable 60° counterclockwise and attach it to the hook.



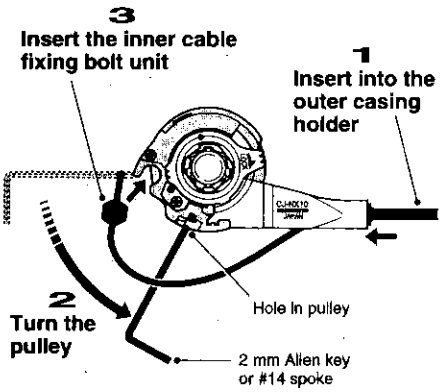
8. Attach the inner cable to the pulley as shown in the illustration, pass the inner cable through the slit in the cassette joint bracket, and then insert the end of the outer casing securely into the outer casing holder.



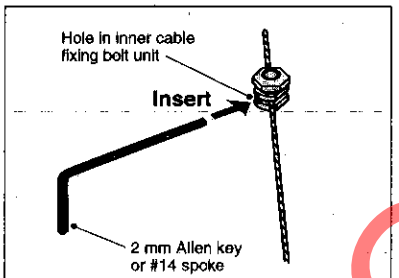
9. Secure the cable to the frame with the outer casing bands.

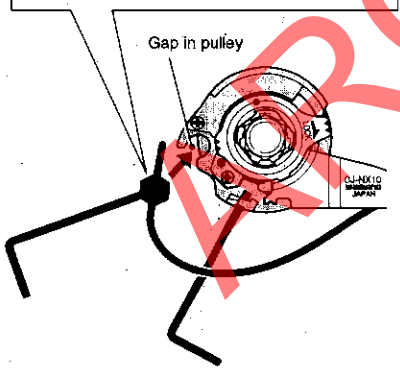


If first inserting the outer casing into the outer casing holder is easier, then first insert the outer casing into the outer casing holder, and then insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley so that the inner cable fixing bolt unit fits into the gap in the pulley.

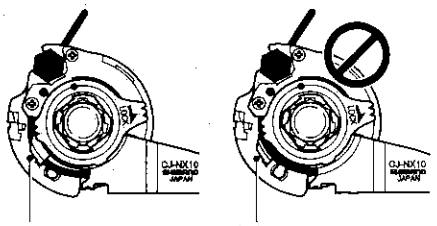


If the inner cable fixing bolt unit cannot easily be pushed into the gap in the pulley using a finger, insert a 2 mm Allen key or a #14 spoke into the hole in the inner cable fixing bolt unit, and then insert the inner cable fixing bolt unit into the gap in the pulley.



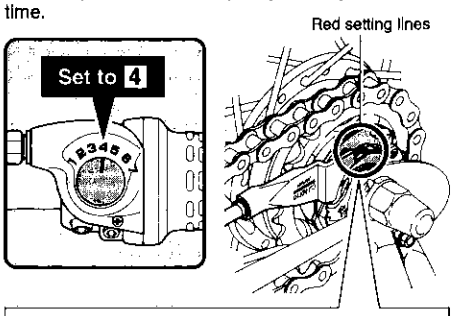


Note:
Check that the inner cable is correctly seated inside the pulley guide.



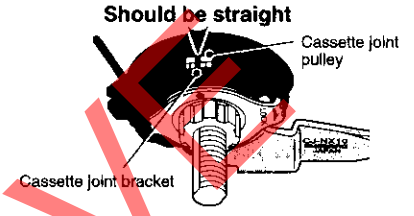
Adjusting the cassette joint

1. Set the Revo-shift lever to 4.
Check to be sure that the red setting lines on the cassette joint bracket and pulley are aligned at this time.

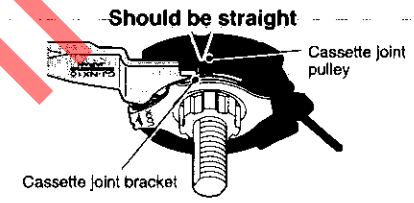


The red setting lines on the cassette joint are located in two places. Use the one that is easiest to see.

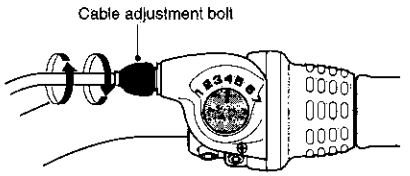
When bicycle is upside down



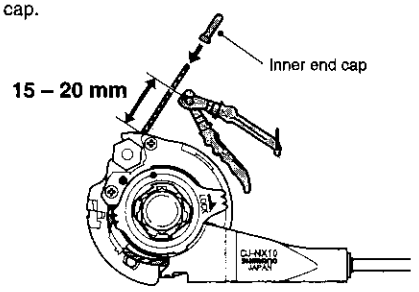
When bicycle is standing up



If the red setting lines are not aligned, turn the cable adjustment bolt of the Revo-shift lever to align the setting lines. After this, move the Revo-shift lever once more from 4 to 1 and then back to 4, and then re-check to be sure that the red setting lines are aligned.



2. After adjusting the cassette joint, cut off the excess length of inner cable and then install the inner end cap.



SERVICE INSTRUCTIONS **SI-4S10A**

SL-4S10
CJ-NX10

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

SHIMANO®
NEXUS

INTER•S

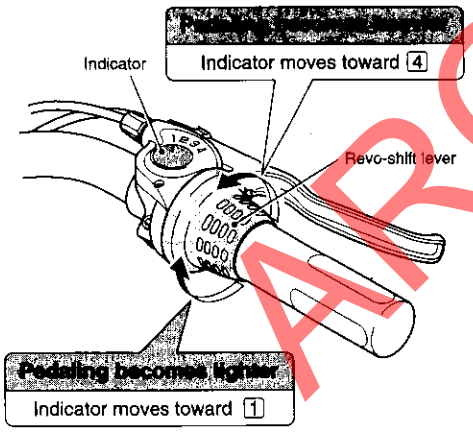
Be sure to read these service instructions in conjunction with the service instructions for the Inter-4 hub before use.

⚠ CAUTION

Be sure to shift the lever one gear at a time, and reduce the force being applied to the pedals during shifting. If you try to force operation of the shifting lever while the pedals are being turned strongly, your feet may come off the pedals and the bicycle may topple over, which could result in serious injury.

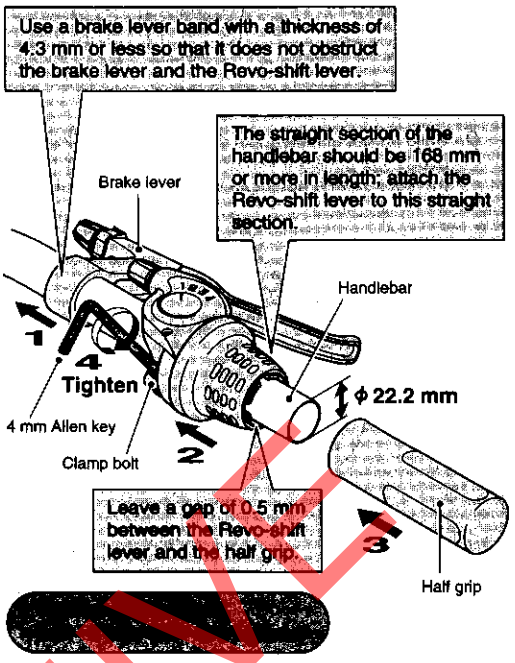
Revo-shift lever operation

Turn the Revo-shift lever to shift to each of the four gears.

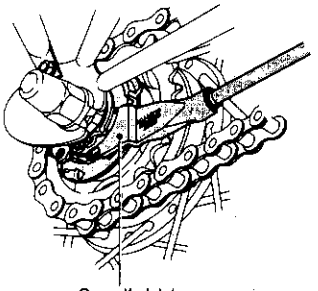


Installation of the lever

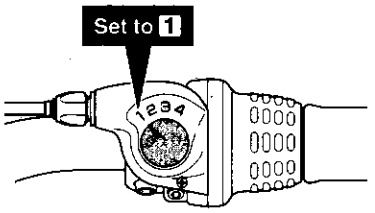
Install the lever as shown in the illustration.



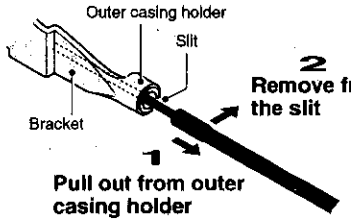
Disconnect the cable from the cassette joint when removing the rear wheel from the frame.



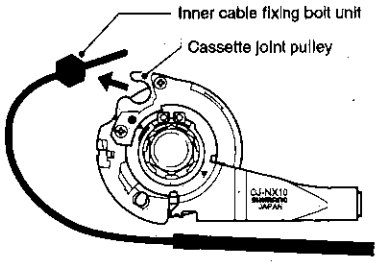
1. Set the Revo-shift lever to 1.



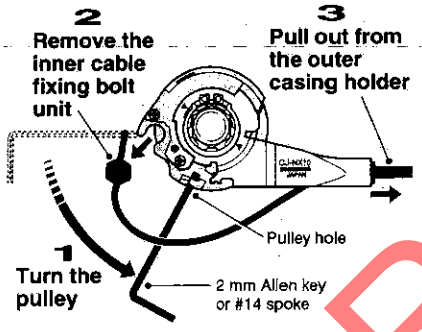
2. Pull the outer casing out from the outer casing holder of the cassette joint, and then remove the inner cable from the slit in the bracket.



3. Remove the inner cable fixing bolt unit from the cassette joint pulley.



If it is difficult to pull the outer casing out from the outer casing holder of the cassette joint, insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley to loosen the inner cable. Then remove the inner cable fixing bolt unit from the pulley first, and after this remove the outer casing from the outer casing holder.



Note:
If reusing the cable, refer to steps 8 to 10 in "Installation of the shifting cable".

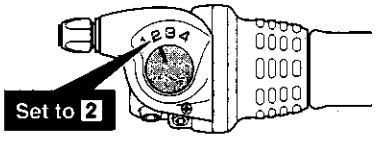
Installation of the shifting cable

Use a shifting cable with one inner cable drum.

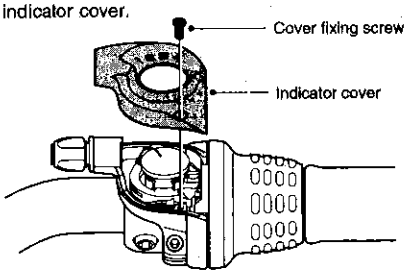
Cable with one inner cable drum / SIS-SP (5 mm dia.)

■ Revo-shift lever side

1. Set the Revo-shift lever to 2.

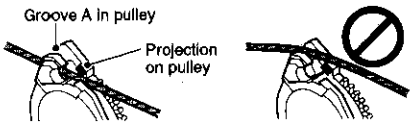


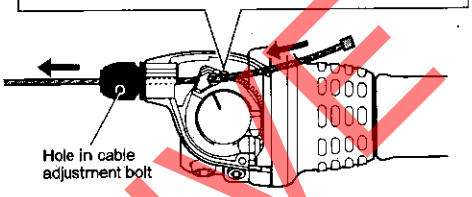
2. Loosen the cover fixing screw, and then remove the indicator cover.



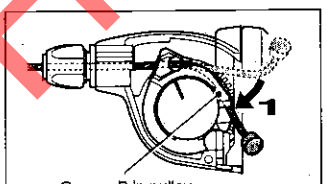
3. Insert the inner cable into groove A from the inside of the projection on the pulley, and then pass it through the hole in the cable adjustment bolt.

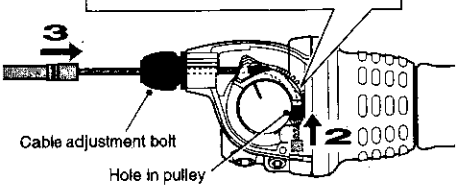
Note: Check that the inner cable is correctly routed along the inside of the projection on the pulley.





4. Hook the inner cable into groove B in the pulley, and pull the inner cable so that the inner cable drum fits into the hole in the pulley. After this, insert the outer casing into the cable adjustment bolt.

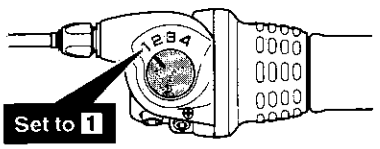




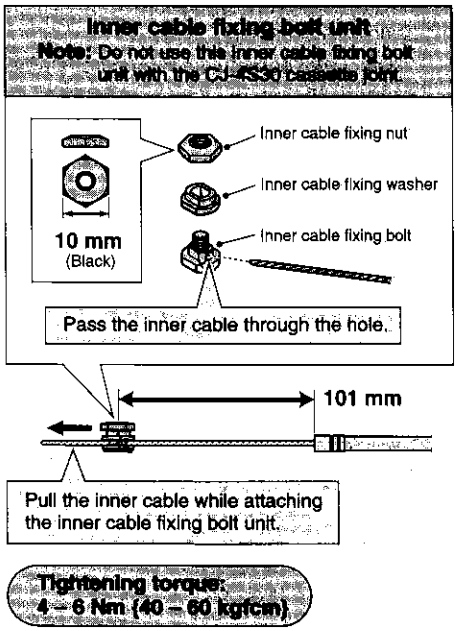
5. Replace the indicator cover and tighten the cover fixing screw.

■ Cassette joint side

6. Set the Revo-shift lever to 1.

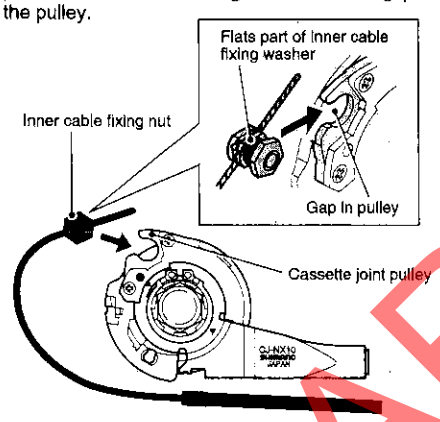


7. After checking that the end of the outer casing is sitting securely in the cable adjustment bolt of the Revo-shift lever, attach the inner cable fixing bolt unit to the inner cable.

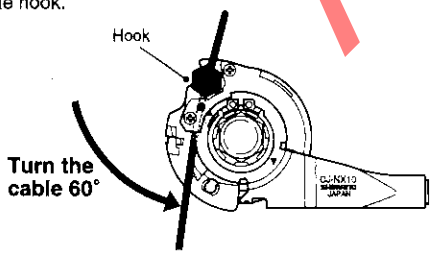


Tightening torque:
4 – 6 Nm (40 – 60 kgf·cm)

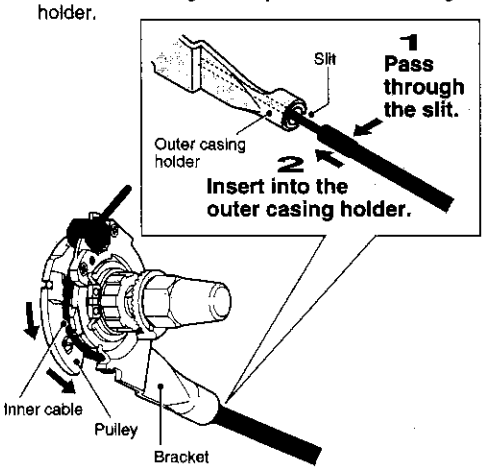
8. Bring the cable around to the cassette joint pulley, hold so that the inner cable fixing nut is facing to the outside (toward the fork end), and then slide the flats part of the inner cable fixing washer into the gap in the pulley.



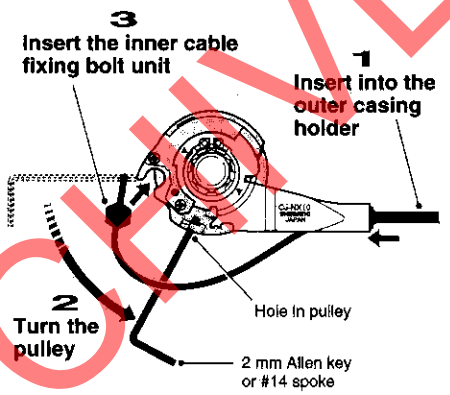
9. Turn the cable 60° counterclockwise and attach it to the hook.



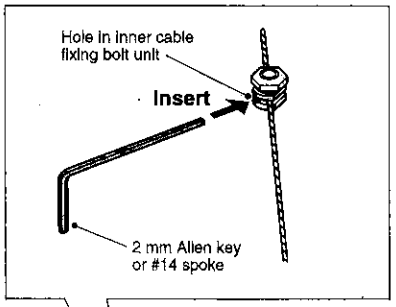
10. Attach the inner cable to the pulley as shown in the illustration, pass the inner cable through the slit in the cassette joint bracket, and then insert the end of the outer casing securely into the outer casing holder.

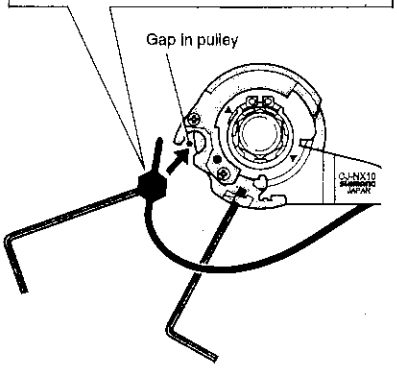


If first inserting the outer casing into the outer casing holder is easier, then first insert the outer casing into the outer casing holder, and then insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley so that the inner cable fixing bolt unit fits into the gap in the pulley.

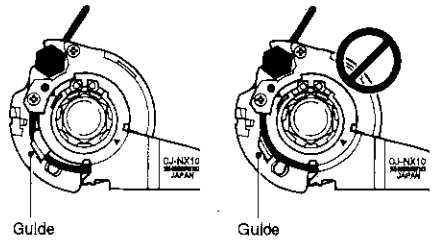


If the inner cable fixing bolt unit cannot easily be pushed into the gap in the pulley using a finger, insert a 2 mm Allen key or a #14 spoke into the hole in the inner cable fixing bolt unit, and then insert the inner cable fixing bolt unit into the gap in the pulley.

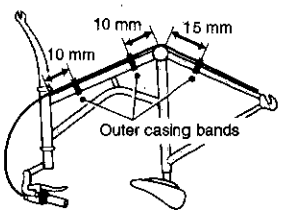




Note:
Check that the inner cable is correctly seated inside the pulley guide.

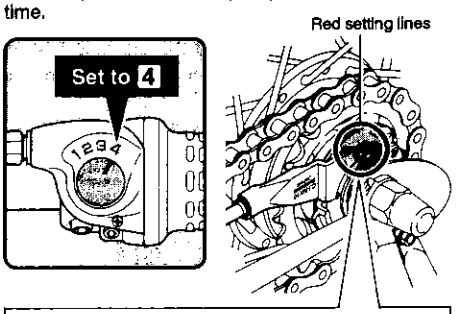


11. Secure the cable to the frame with the outer casing bands.

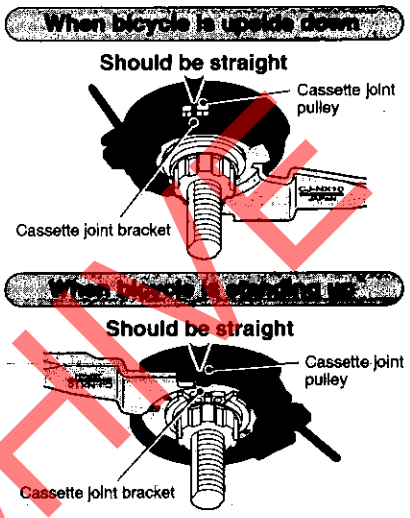


Adjusting the cassette joint

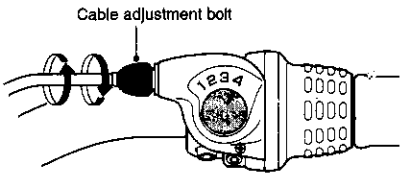
1. Set the Revo-shift lever to 4.
Check to be sure that the red setting lines on the cassette joint bracket and pulley are aligned at this time.



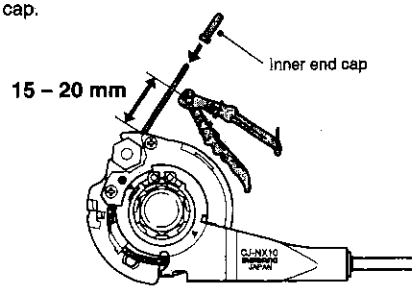
The red setting lines on the cassette joint are located in two places. Use the one that is easiest to see.



If the red setting lines are not aligned, turn the cable adjustment bolt of the Revo-shift lever to align the setting lines. After this, move the Revo-shift lever once more from 4 to 1 and then back to 4, and then re-check to be sure that the red setting lines are aligned.



2. After adjusting the cassette joint, cut off the excess length of inner cable and then install the inner end cap.



SERVICE INSTRUCTIONS **SI-4S35A**

SB-4S35
CJ-NX10

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

SHIMANO® NEXUS

INTER·S

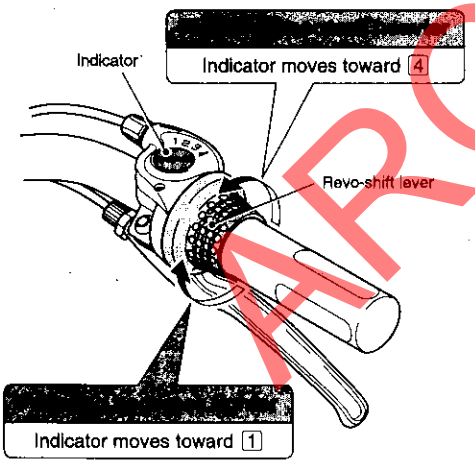
Be sure to read these service instructions in conjunction with the service instructions for the Inter-4 hub before use.

⚠ CAUTION

Be sure to shift the lever one gear at a time, and reduce the force being applied to the pedals during shifting. If you try to force operation of the shifting lever while the pedals are being turned strongly, your feet may come off the pedals and the bicycle may topple over, which could result in serious injury.

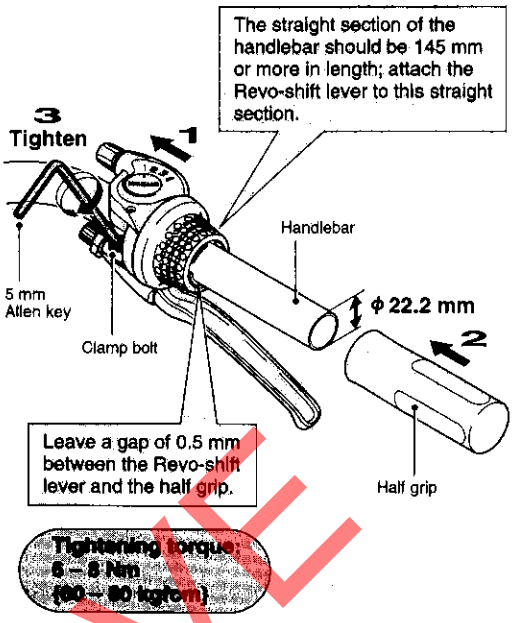
Revo-shift lever operation

Turn the Revo-shift lever to shift to each of the four gears.



Installation of the lever

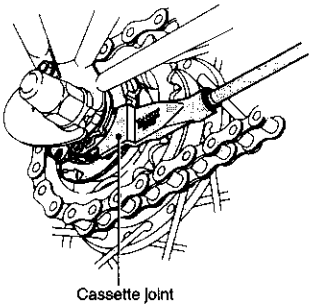
Install the lever as shown in the illustration.



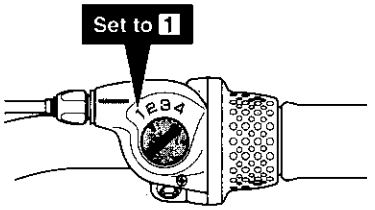
Tightening torque: 6 – 8 Nm (60 – 80 kgfcm)

[illegible] the shifting cable when [illegible] the rear wheel from the frame

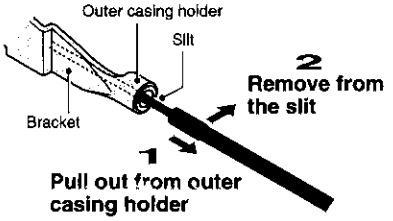
Disconnect the cable from the cassette joint when removing the rear wheel from the frame.



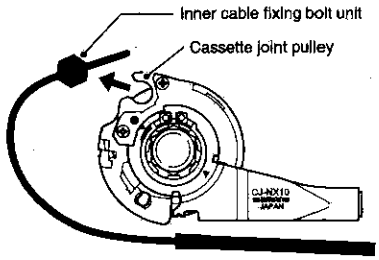
1. Set the Revo-shift lever to 1.



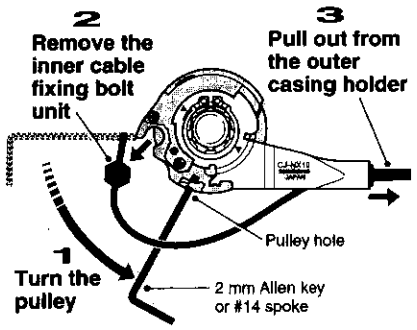
2. Pull the outer casing out from the outer casing holder of the cassette joint, and then remove the inner cable from the slit in the bracket.



3. Remove the inner cable fixing bolt unit from the cassette joint pulley.



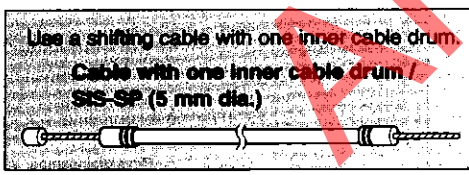
If it is difficult to pull the outer casing out from the outer casing holder of the cassette joint, insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley to loosen the inner cable. Then remove the inner cable fixing bolt unit from the pulley first, and after this remove the outer casing from the outer casing holder.



Note:
If reusing the cable, refer to steps 8 to 10 in "Installation of the shifting cable".

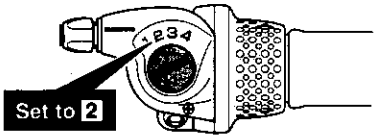
Installation of the shifting cable

Use a shifting cable with one inner cable drum.
Cable with one inner cable drum / SIS-SP (5 mm dia.)

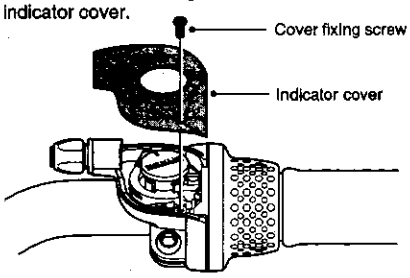


■ Revo-shift lever side

1. Set the Revo-shift lever to 2.

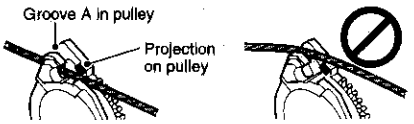


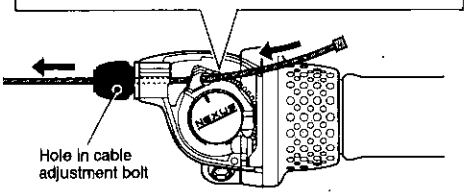
2. Loosen the cover fixing screw, and then remove the indicator cover.



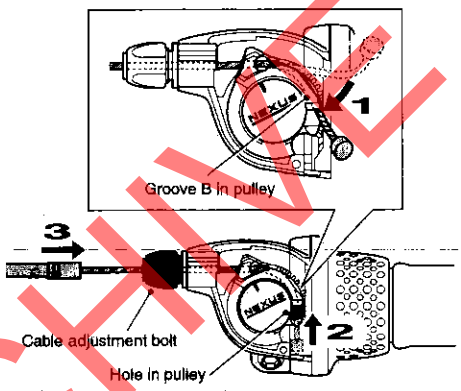
3. Insert the inner cable into groove A from the inside of the projection on the pulley, and then pass it through the hole in the cable adjustment bolt.

Note: Check that the inner cable is correctly routed along the inside of the projection on the pulley.





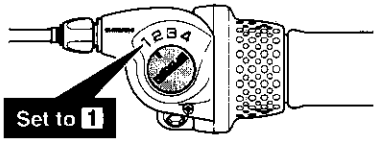
4. Hook the inner cable into groove B in the pulley, and pull the inner cable so that the inner cable drum fits into the hole in the pulley. After this, insert the outer casing into the cable adjustment bolt.



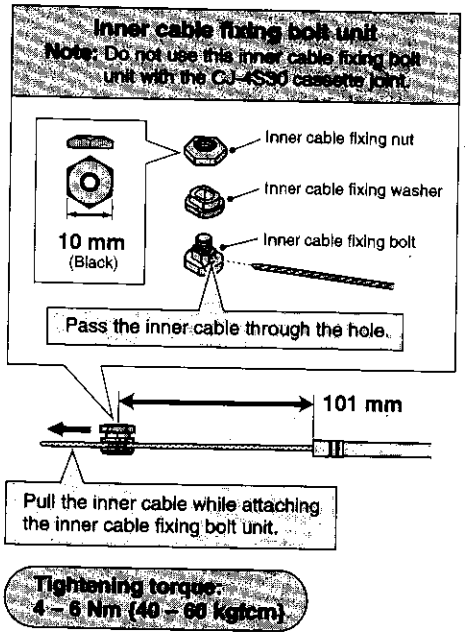
5. Replace the indicator cover and tighten the cover fixing screw.

■ Cassette joint side

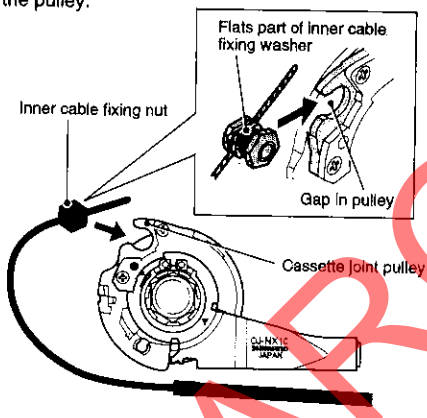
6. Set the Revo-shift lever to 1.



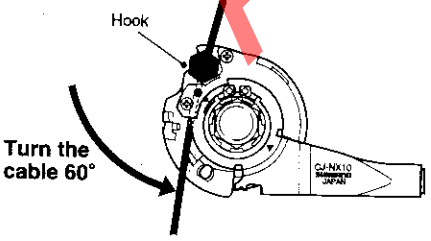
7. After checking that the end of the outer casing is sitting securely in the cable adjustment bolt of the Revo-shift lever, attach the inner cable fixing bolt unit to the inner cable.



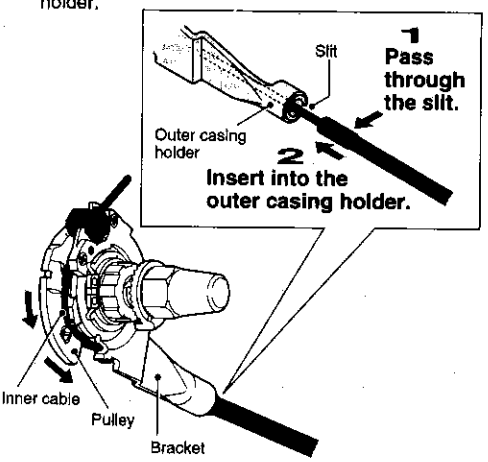
8. Bring the cable around to the cassette joint pulley, hold so that the inner cable fixing nut is facing to the outside (toward the fork end), and then slide the flats part of the inner cable fixing washer into the gap in the pulley.



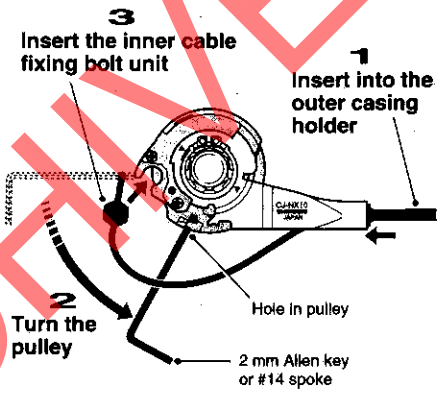
9. Turn the cable 60° counterclockwise and attach it to the hook.



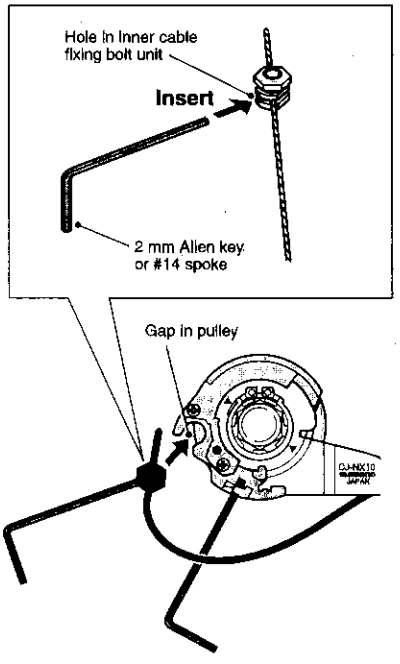
10. Attach the inner cable to the pulley as shown in the illustration, pass the inner cable through the slit in the cassette joint bracket, and then insert the end of the outer casing securely into the outer casing holder.



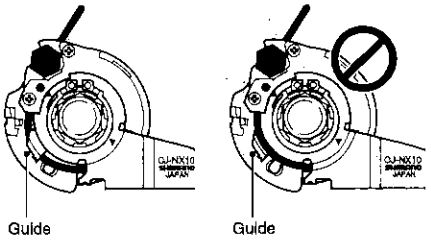
If first inserting the outer casing into the outer casing holder is easier, then first insert the outer casing into the outer casing holder, and then insert a 2 mm Allen key or a #14 spoke into the hole in the cassette joint pulley, and then turn the pulley so that the inner cable fixing bolt unit fits into the gap in the pulley.



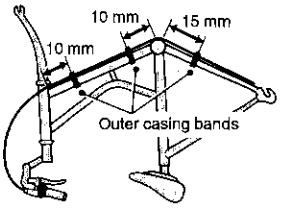
If the inner cable fixing bolt unit cannot easily be pushed into the gap in the pulley using a finger, insert a 2 mm Allen key or a #14 spoke into the hole in the inner cable fixing bolt unit, and then insert the inner cable fixing bolt unit into the gap in the pulley.



Note:
Check that the inner cable is correctly seated inside the pulley guide.

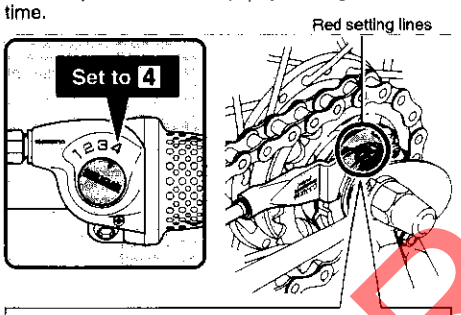


11. Secure the cable to the frame with the outer casing bands.



Adjusting the cassette joint

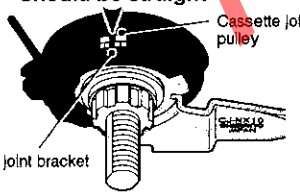
1. Set the Revo-shift lever to 4.
Check to be sure that the red setting lines on the cassette joint bracket and pulley are aligned at this time.



The red setting lines on the cassette joint are located in two places. Use the one that is easiest to see.

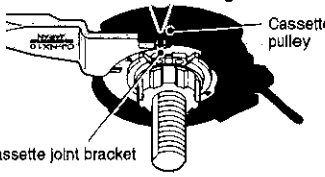
When bicycle is upside down

Should be straight

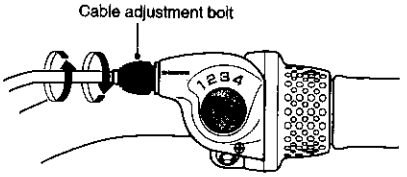


When bicycle is standing up

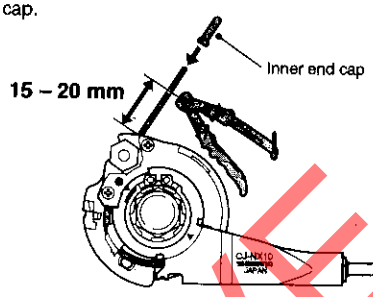
Should be straight



If the red setting lines are not aligned, turn the cable adjustment bolt of the Revo-shift lever to align the setting lines. After this, move the Revo-shift lever once more from 4 to 1 and then back to 4, and then re-check to be sure that the red setting lines are aligned.



2. After adjusting the cassette joint, cut off the excess length of inner cable and then install the inner end cap.



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)

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Holland Irvine CA 92618 U.S.A. Phone 949-951-5003
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222
SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

⚠ WARNING

- Do not move the mode select switch to "P" mode while riding the bicycle. (The mechanism will not lock the bicycle wheels even if the mode select switch is set to "P" mode while riding, but a warning beep will sound five times. If this happens, move the mode select switch to the "D", "Ds" or "M" mode position promptly.)
- Be careful not to pay excessive attention to the computer data while riding, otherwise you might have an accident.

SERVICE INSTRUCTIONS **SI-7AEEA**

SE-4S41
AI-4S41

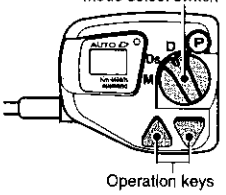
Operating Panel
Battery Box

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

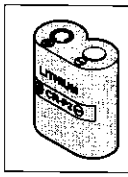
Be sure to read the service instructions which are suplied with the Inter-4 hub together with these instructions.

NOTE

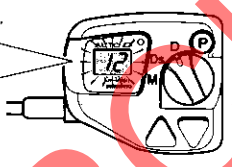
- The CPU in the battery box switches to sleep mode if the bicycle is stationary for 2 minutes or more. During this time, nothing appears on the digital display. If the mode select switch is moved, the △ or ▽ operation keys are pressed, or if the bicycle is moved, the CPU will start operating again.



- If the speed display or gear shifting display on the digital display starts flashing (when in "M" mode), it means that the battery inside the battery box is nearly depleted. Replace the battery with a new one (CR-P2 lithium battery) as soon as possible.



If the digital display is flashing, it is time to replace the battery. Replace the battery inside the battery box with a new one (CR-P2 lithium battery).



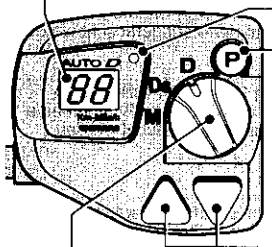
- The code number data will still remain after the batteries are replaced.

NAMES AND FUNCTIONS OF PANEL AND DISPLAY PARTS

Digital display (Figures in brackets are examples)

- Speed ..... [20]
- Gear shifting position (in "M" mode)..... [3]
- Parking mode ..... [P]
- Parking code number ..... [46]
- Error ..... [E]

Flashing ..... Replace the battery.



LED
Illuminated :
Red when shifting gears and when "P" mode is released. A beep also sounds.

Ⓟ key
Press the Ⓟ key when moving the mode select switch to the "P" mode position.

Mode select switch

- "P" mode: Parking lock
- "D" mode: Slow automatic gear shifting
- "Ds" mode: Quick automatic gear shifting
- "M" mode: Manual gear shifting

Operation keys

- In "M" mode : Press the △ or ▽ key to shift gears. (Press the △ [left] key to shift up and the ▽ [right] key to shift down.)
- To cancel "P" mode : Enter the parking lock code number (2 digits).

Write down the parking lock code number and the place and date of purchase here. You can then use it as a handy guide if you forget the code number or when requesting repairs.

Parking lock code number (2 digits) [ ] [ ]

Place of purchase

Phone

Date of purchase / /

magic code 42

PARKING LOCK QUICK REFERENCE CARD

Setting the parking lock	Releasing the parking lock
While pressing Ⓟ, move Ⓜ to "P".	Move to a riding mode.
[P] will illuminate in the digital display.	Press △ and ▽ simultaneously.
Wait 1 minute or more, or press △ or ▽ once.	[00] will illuminate in the digital display.
[P] will illuminate in the digital display.	Enter the 2-digit code number.
The parking lock is now set. (The parking lock will not be released even if you change to a riding mode.)	Press △ (left) once to accept the code number.
Note: If you move mode select switch to the "D", "Ds" or "M" position within one minute after setting it to the "P" position but without pressing the △ or ▽ key, "P" mode will be canceled and riding in the specified mode will then be possible.	A beep will sound, and the red LED will illuminate. Beep
	The parking lock is now released. (Riding in the specified mode is now possible.)
	Note: When entering the code number, be sure to press the △ (left) key and enter the tens digit first. Then press the ▽ (right) key and enter the units digit.

Using the mode positions

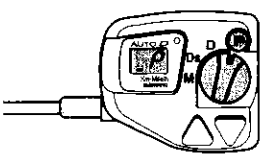
"P" mode

■ Parking the bicycle

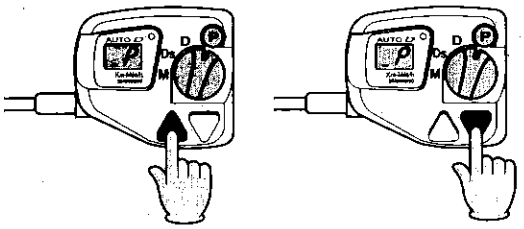
Move the mode select switch to the "P" (parking lock) position.

- While pressing the Ⓟ key, move the mode select switch to the "P" position.
- After 1 minute or more has elapsed since the mode select switch was moved to the "P" position, or if the △ or ▽ key is pressed once, "P" mode will be set and the bicycle wheel will be locked. (When the wheel becomes locked, [P] will appear in the digital display.)

After 1 minute or more has elapsed



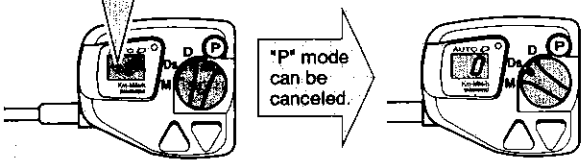
Press the △ or ▽ key once



Even if the mode select switch is then moved to another mode position, the lock will not be released and riding will not be possible.

- If the mode select switch is moved to the "D", "Ds" or "M" position within 1 minute after it has been moved to the "P" position, "P" mode will be canceled and riding in the specified mode will then be possible.

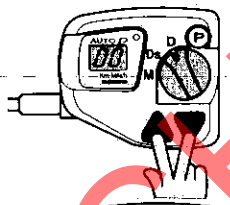
Within 1 minute, "P" mode will not be set and [_] will not appear.



■ When riding the bicycle (releasing the wheel lock)

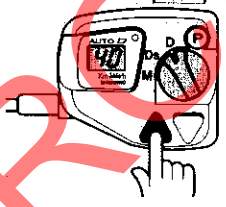
Releasing the parking lock

1. **Move the mode select switch to either "D", "Ds" or "M".**
2. **Press the △ and ▽ keys simultaneously.**
   - ■■ will illuminate in the digital display. (The back light of the display will illuminate for a maximum of 30 seconds.)



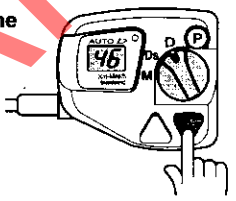
3. **Press the △ (left) key to enter the tens digit of the code number.**
   - The number entered equals the number of times the key is pressed.

   Example:
   If the key is pressed 4 times, the number 4 will be entered in the tens column of the digital display.

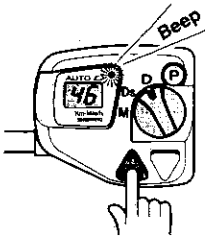


4. **Press the ▽ (right) key to enter the units digit of the code number.**
   - The number entered equals the number of times the key is pressed.

   Example:
   If the key is pressed 6 times, the number 6 will be entered in the units column of the digital display.



5. **Press the △ (left) key once more.**
   - A beep will sound, and the bicycle wheel will be unlocked.
   - Riding in the specified mode will then be possible.



Hints

Entering a zero (0) into the code number

Code number (example)	04	40
First, press the △ (left) key to enter the tens digit.	Press 10 times	Press 4 times
Next, press the ▽ (right) key to enter the units digit.	Press 4 times	Press 10 times
Press the △ (left) key once more to set the code number.	Press once	Press once

Note:
- Be sure to press the △ (left) key first to set the tens digit, and then press the ▽ (right) key to enter the units digit. If the ▽ (right) key is pressed first by mistake, the code number cannot be entered.
- If the code number is entered incorrectly, repeat the procedure from step 3.
- If an incorrect code number is entered three times in succession, the operating panel will switch to sleep mode for 10 minutes, and no operations will be possible during this time. Moreover, [--] will appear in the digital display. After 10 minutes have passed, repeat the procedure from step 2.

"D", "Ds" and "M" modes

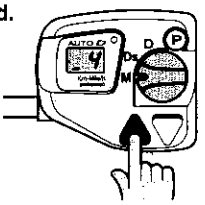
■ "D" and "Ds" modes

Move the mode select switch to the "D" or "Ds" position for automatic gear shifting in accordance with the bicycle speed.
- In "D" mode, slow automatic shifting is carried out.
- In "Ds" mode, quick automatic shifting is carried out.

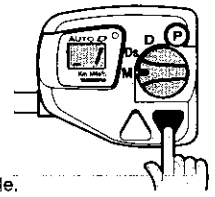
■ "M" mode

Move the mode select switch to the "M" position.

1. **Press the △ (left) key to shift upward.**
   - Each time the key is pressed, shifting is carried out one gear at a time up to 4th gear.
   - If the key is pressed continuously, 2-gear shifting is possible.
   - Once [4] appears in the digital display, no further upshifting is possible.

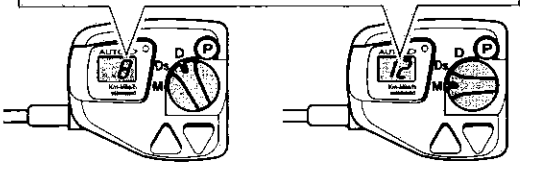


2. **Press the ▽ (right) key to shift downward.**
   - Each time the key is pressed, shifting is carried out one gear at a time down to 1st gear.
   - If the key is pressed continuously, 2-gear shifting is possible.
   - Once [1] appears in the digital display, no further downshifting is possible.

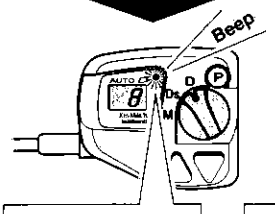


"D" and "Ds" modes | "M" mode

During normal riding, the travelling speed appears in the digital display.

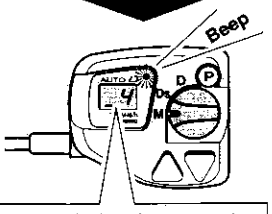


When shifting gears



The LED illuminates red and a beep sounds.

When shifting gears



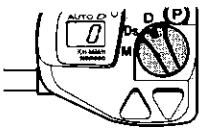
The speed display changes to the gear shifting display, which consists of [_] and a number. The LED also illuminates red and a beep sounds.

Changing the code number

Note: If you lose your place at any time during the procedure for changing the code number, wait 10 seconds or more without pressing any of the operating keys. The digital display will return to 0, and you can then start the procedure again from step 2.

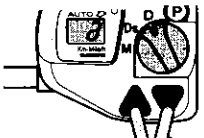
Example: Changing the code number from 46 to 53

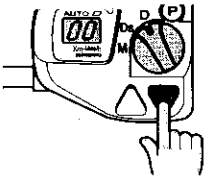
1. **Move the mode select switch to either "D" or "Ds".**
   - Changing the settings is not possible in "P" and "M" modes.



2. **Press the △ and ▽ keys simultaneously for 3 seconds or more.**
   - 00 will illuminate in the digital display.
   - If something other than 00 appears in the digital display, you must press the △ (left) key to scroll the display until 00 appears.

Press the △ (left) key so that 00 appears.



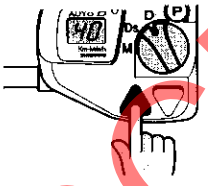


3. **Press the ▽ (right) key.**
   - 00 will illuminate in the digital display.

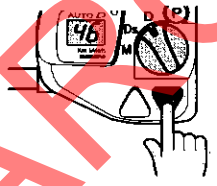
■ Enter the code number which is currently set.

This is extremely important.
Make sure that you enter the current code number correctly.

4. **Press the △ (left) key to enter the tens digit of the code number.**

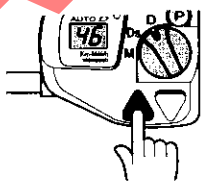


5. **Press the ▽ (right) key to enter the units digit of the code number.**

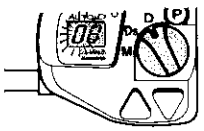


6. **Press the △ (left) key once more.**
   - This causes the previously-set code number to be entered.

   Example:
   The code number is 46.

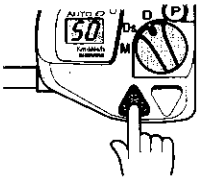


7. **Check that 00 appears in the digital display, with the tens digit flashing and the units digit illuminated.**

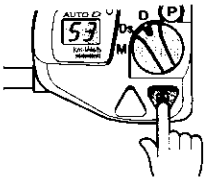


■ Enter the new code number.

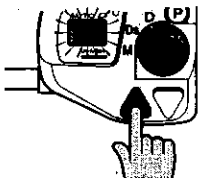
8. **Press the △ (left) key to enter the tens digit of the new code number.**



9. **Press the ▽ (right) key to enter the units digit of the new code number.**

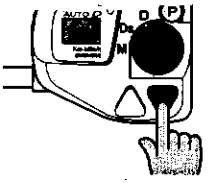


10. **Press down the △ (left) key until a continuous beeping sounds.**
    - The number which is flashing at this time will become the new code number.



11. **Press the ▽ (right) key once.**
    - The new code number will then be registered.

    Example:
    The new code number is 53.

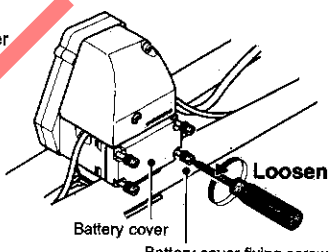


Note: If two minutes pass after the continuous beeping starts without any other keys being pressed, the display will return to 0 and the code number will be unchanged.
Example: The code number will remain at the current setting of 46.

This completes the procedure for setting the new code number.

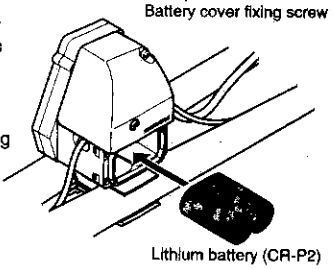
Replacing the battery

1. Use a Phillips screwdriver to remove the four battery cover fixing screws, and then open the battery cover.



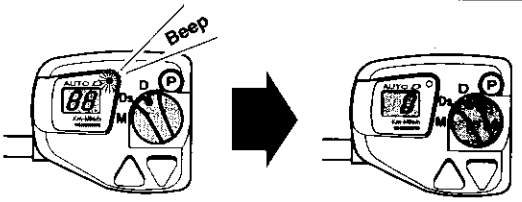
2. Insert the new lithium battery (CR-P2), making sure that its polarity is correct.
3. After inserting the battery, close the battery cover and tighten the battery cover fixing screws.

Tightening torque:
0.5 – 1 Nm
(5 – 10 kgfcm)

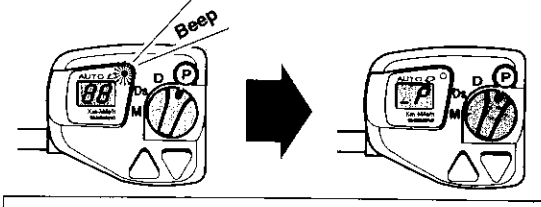


If the battery has been inserted correctly, a beep will sound, the LED will illuminate red and 00 will illuminate in the digital display (for about 1 second). After this, 00 (for "D", "Ds" and "M" mode) or 00 (for "P" mode) will illuminate in the digital display.

For "D", "Ds" and "M" mode



For "P" mode



Note: If the above does not appear even after the battery has been replaced, insert the battery once more.

Troubleshooting chart

■ Gear shifting is not possible

Symptom	Check or remedy	
Automatic gear shifting is not possible (manual gear shifting is possible)	• Is the mode select switch at the "D" or "Ds" position? • Does the speed display appear while riding the bicycle?	• Move it correctly to "D" or "Ds". • Re-Install the speed sensor and magnet correctly.
		If the above remedies do not solve the problem: • Replace the speed sensor. • Replace the operating panel.
Manual gear shifting is not possible (automatic gear shifting is possible)	• Is the mode select switch at the "M" position?	• Move it correctly to "M"
		If the above remedies do not solve the problem: • Replace the operating panel.
Both automatic and manual gear shifting are not possible.	• Does the buzzer sound when the mode select switch is moved?	• If the buzzer does not sound, replace the operating panel. • If the buzzer does sound, replace the hub internal assembly.

■ When engaging the parking lock

Symptom	Check or remedy	
The bicycle wheels do not lock when the mode select switch is moved to "P".	• Can a warning sound (5 beeps) be heard from the buzzer?	• This warning is not a sign of a malfunction. The parking lock does not engage as a safety measure because the bicycle is moving. Move the mode select switch momentarily to a position other than "P", and then move it back to "P".
	• Does [P] appear in the digital display?	• If [P] does appear, replace the hub locking unit. • If [P] does not appear, replace the operating panel.
The wheel locking friction is too small and no noise can be heard.		• Replace the hub locking unit.

■ When releasing the parking lock

Symptom	Check or remedy	
The bicycle wheels do not unlock when the code number is entered.	• Does [E] appear in the digital display?	• If [E] does appear, try turning the wheel back and forth. If this does not solve the problem, replace the hub locking unit. • If [■] appears, the code number entered was incorrect. Enter the correct code number. • If [E] appears, wait 10 minutes, and then enter the correct code number again.
I have forgotten the code number.		• Please contact the place of purchase.

■ Digital display

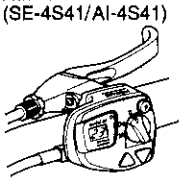
Gear shifting and wheel locking can be carried out normally, but the digital display is flashing.		• The battery is nearly depleted. Replace the battery with a new one as soon as possible.
Gear shifting and wheel locking cannot be carried out, the digital display is flashing and does not stay illuminated for long.		• The battery is spent. Replace the battery with a new one.
During automatic gear shifting, the speed indicated on the digital display is different from other times.		• This is not the sign of a problem. The computer calculates the optimum speed at which automatic gear shifting should occur.
Nothing appears in the digital display.	• Is the digital display in sleep mode because the bicycle has been standing still for 2 minutes or more? • Is the battery inserted? • Is the battery new? • Is the cord connector at the operating panel connected securely? • Is the operating panel cord broken?	• Release cancel sleep mode. (Press the △ or ▽ key, move the mode select switch, or move the bicycle.) • Insert the battery correctly. • Replace with a new battery. • Securely fasten the connector fixing screws. • Replace the cord at the operating panel side.
		If the above remedies do not solve the problem: • Replace the operating panel. • Replace the battery box.
Automatic gear shifting occurs even though the digital display is switched off.		• Replace the cord at the operating panel side. • Replace the operating panel. **Note:** If the mode select switch was set to the "D" or "Ds" position before the problem occurred with the operating panel or before the cord broke, then riding will still be possible in the mode selected even once the problem or breakage has occurred.
E1 or E2 appears in the digital display.	• Is the cord connector at the motor unit connected securely? • Is the motor unit cord broken?	• Clear the error display. (Set to manual mode and then press the △ and ▽ key simultaneously for 3 seconds or more.) • Securely fasten the connector fixing screws. • Replace the cord at the motor unit side.
		If the above remedies do not solve the problem: • Replace the motor unit. • Replace the battery box.

⚠ WARNING

- Always be sure to use the Auto-D (SE-4S41/AI-4S41) parking lock-compatible gear shifting lever with the SG-4R41 hub (parking lock-compatible hub). Do not use any of the levers listed below which are not parking lock-compatible, or any other type of lever which is not listed, otherwise the mechanism will not function correctly when the parking lock is activated during normal riding, and serious accidents and injury could result.

■ Parking lock-compatible gear shifting levers

Auto-D
(SE-4S41/AI-4S41)



■ Levers that cannot be used

- Revoshift levers:
  SB-4S30 / SB-7S40 / SB-7S45
- Rapidfire levers:
  ST-4S20 / ST-7S20
- Button shift levers:
  ST-4S50 / ST-7S60

- 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-4R4EA

SG-4R41
BR-IM31-R

Inter-4 Hub
Inter-M Brake

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

Be sure to read these service instructions in conjunction with the service instructions for the Inter-4 shifting lever before use.

⚠ CAUTION

1. 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.

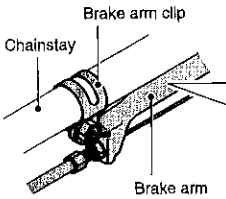
2. If any of the following occur while using the brakes, stop riding immediately and ask the place of purchase to carry out inspection and repairs.
   1) If abnormal noise is heard when the brakes are applied
   2) If braking force is abnormally strong
   3) If braking force is abnormally weak

   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.

3. In order to get the best performance from the Shimano Inter-M brake, be sure to use Shimano brakes 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.)

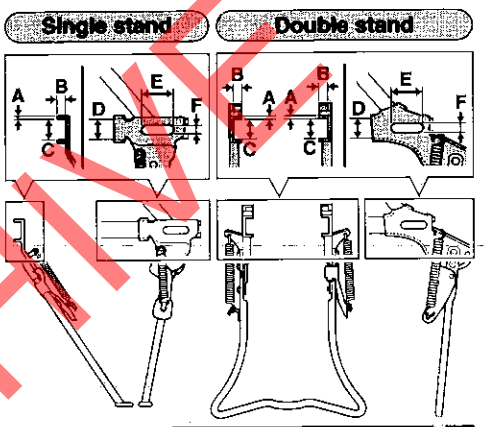
4. Check that the brake arm is securely fastened to the chainstay by the brake arm clip. If it is not installed correctly, braking performance will suffer.



If 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.

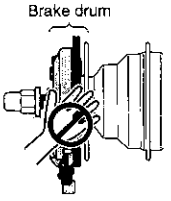
5. When installing the hub to the frame, be sure to install the correct non-turn washers to the left and right sides, and securely tighten the hub nuts to the specified torques.

6. When attaching the stands (single stand/double stand) make sure that you follow the dimensions given in the illustrations below. There are two frame hooks on the stand fixing plate (one each at the top and bottom); make sure that 60 Nm or more of force is applied when twisting these frame hooks around the stand holes (60 Nm at each side in the case of the double stand).



A (Plate thickness at bend)	3 mm or more
B (Length of bend)	5 mm or more
C (Inside dimension of frame hook)	C ≦ D + 0.8 mm
D (Vertical width of chain stay)	
E (Slot width)	31 mm or more
F (Slot height)	10 mm

7. 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.



8. 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.

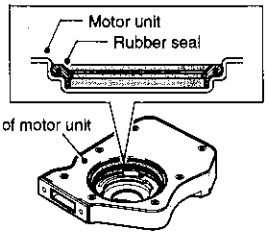
9. The BR-IM31-R brake unit should never be disassembled. If it is disassembled, it will no longer work properly.

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.

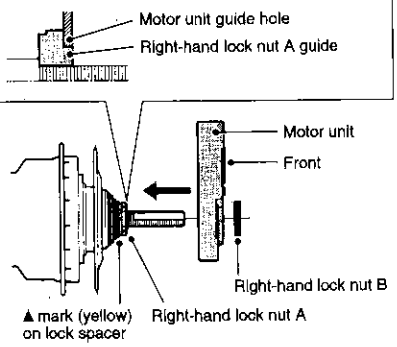
Installing the motor unit to the hub (rear wheel)

1. Check that the rubber seal is attached. If the rubber seal is not attached, attach as shown in the illustration.

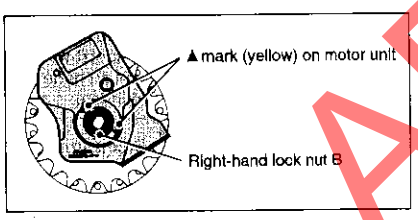


2. Install the motor unit to the hub so that the ▲ mark (yellow) on the motor unit is aligned with the ▲ mark (yellow) on the hub lock spacer. After this, gently push the motor unit while turning it slowly to set it correctly until it stops turning on the hub axle. Next, secure the motor unit by tightening right-hand lock nut B.
When tightening right-hand lock nut B, hold the two bevelled surfaces of the hub axle (8-mm wide) with a spanner to stop the hub axle from turning.

Note:
Check that the guide of right-hand lock nut A is seated securely in the guide hole on the front of the motor unit.



Tightening torque:
40 – 50 Nm {150 – 200 kgfcm}

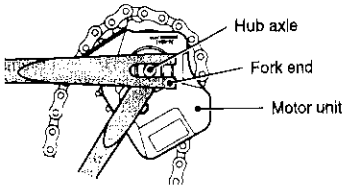


Installing the hub (rear wheel) to the frame

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

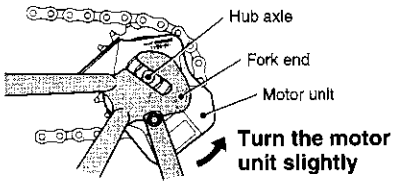
For reversed fork end

When mounting the chain on the sprocket, remove the chain from the chainring in order to protect the motor unit. After mounting the chain on the sprocket and setting the hub axle into the fork ends, place the chain back onto the chainring.

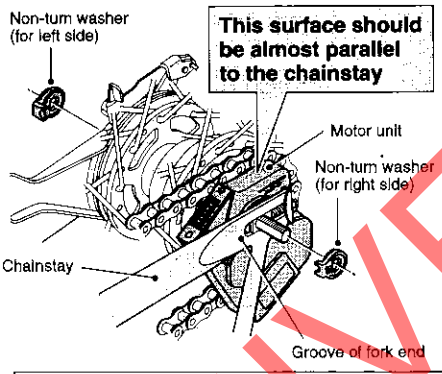


For standard fork end

The motor unit may be obstructed by the frame in this case, which can cause difficulties in setting the hub into the fork ends. Turn the motor unit slightly as shown in the illustration before setting the hub into the fork ends. At this time, do not tighten the brake unit fixing nut of the Inter-M brake so that the Inter-M brake can rotate on the hub axle during installation.

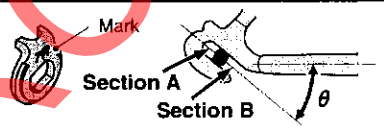


2. Install the non-turn washers onto the right side and the left side of the hub axle. At this time, turn the motor unit until it is almost parallel to the chainstay so that the projecting parts of the non-turn washers fit into the grooves of the fork end.



- Different types of left and right non-turn washers are provided for use with standard and reversed fork ends. Use whichever non-turn washers are suitable.

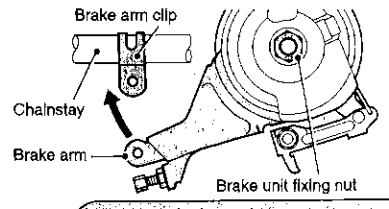
Fork end	Non-turn washer		
	Mark/Color		Size
	Right	Left	
Reversed	6R/Galvanized	6L/White	$\theta = 0°$
Standard	7R/Black	7L/Gray	$20° \leqq \theta \leqq 38°$



- The projecting parts should be on the fork end side.
- Install the non-turn washers so that the projecting parts are securely in section A or section B of the fork end grooves.
- If inserting the projecting parts into section B, insert the hub axle as far as possible into the fork ends so that the projecting parts are not too close to the groove openings.

3. 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.

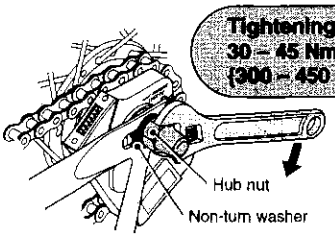
Note:
If the brake arm is in the incorrect position as shown in the illustration so that it cannot be provisionally installed to the chainstay, loosen the brake unit fixing nut and turn the brake arm. Then, after provisionally securing the brake arm to the chainstay, tighten the brake unit fixing nut.



Tightening torque:
20 – 25 Nm {200 – 250 kgfcm}

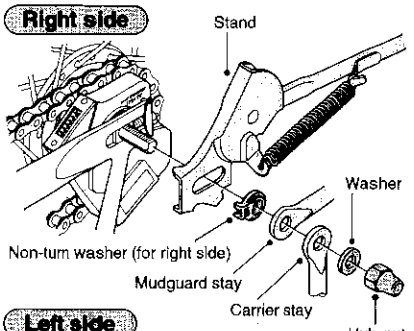
4. Take up the slack in the chain and secure the wheel to the frame with the hub nuts.

Tightening torque:
30 – 45 Nm {300 – 450 kgfcm}

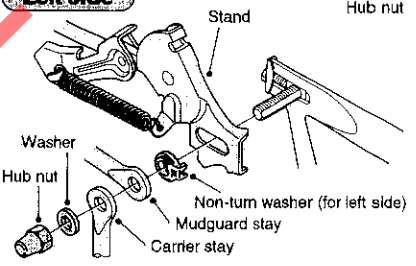


Note:
When installing a part such as a mudguard stay to the hub axle, install in the order shown in the illustration below.

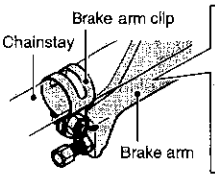
Right side



Left side



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

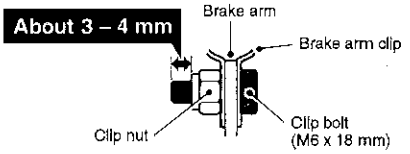


If excessive force is applied to the brake arm, the wheel will become difficult to turn. Make sure that you don't apply excessive force when installing.

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

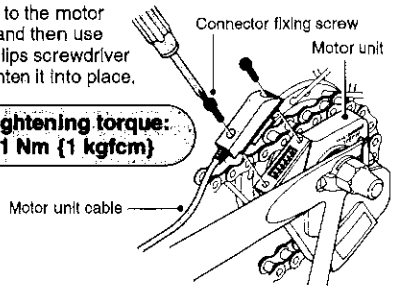
Tightening torque:
2 – 3 Nm {20 – 30 kgfcm}

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



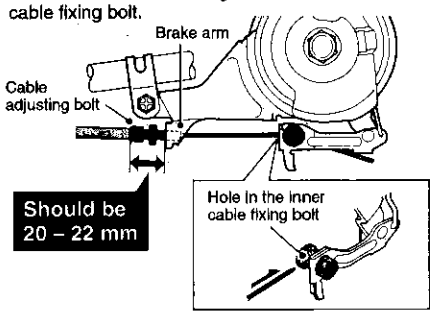
6. Attach the connector at the motor unit end of the cable to the motor unit, and then use a Phillips screwdriver to tighten it into place.

Tightening torque:
0.1 Nm {1 kgfcm}

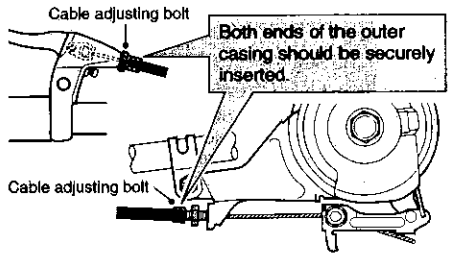


Installing the brake cable

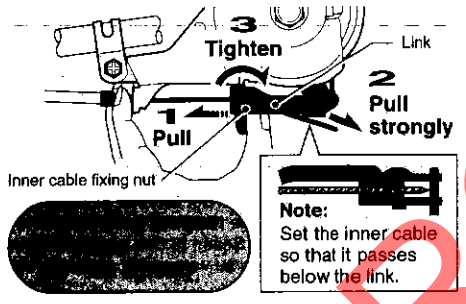
1. Place the cable adjusting bolt so that it is 20 – 22 mm from the end of the brake arm, and then pass the inner cable through the cable adjusting bolt of the brake arm and then through the hole in the inner cable fixing bolt.



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

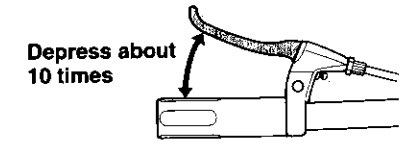


3. Pull the link back until it stops. Then, while pulling the inner cable to apply the full amount of tension to the cable, tighten the inner cable fixing nut.



Adjusting the brake cable

1. 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.

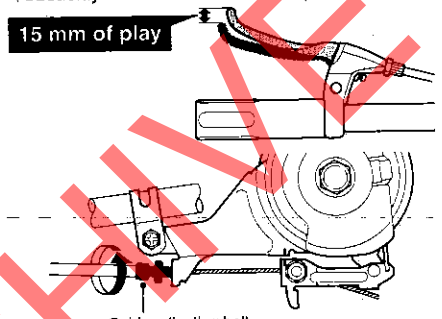


Note:
If the brake cable is not run in, it will need to be adjusted again after only a short period of use.

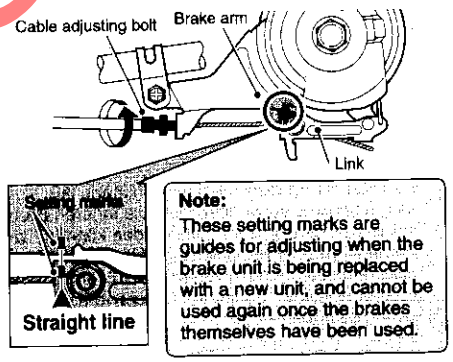
2. There are two methods of adjusting the brake cable: the one below is for use when readjusting just the brake cable, and the other one is for use when replacing the brake unit with a new unit.

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.)

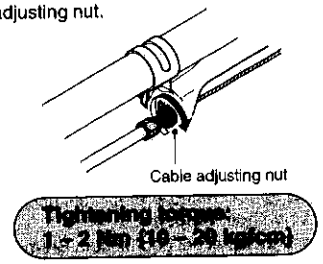


Turn the cable adjusting bolt to align the setting mark on the brake arm with the setting mark on the link.



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.

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



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.

SERVICE INSTRUCTIONS SI-3S30A

SB-3S30 Revo-shift Lever
BL-IM32 Brake Lever
Bell Crank III Bell Crank

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

SHIMANO NEXUS INTER-3

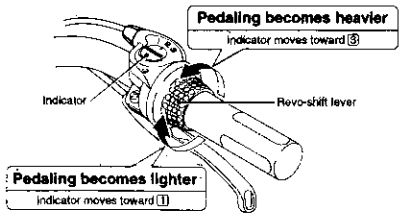
Be sure to read these service instructions in conjunction with the service instructions for the Inter-3 hub before use.

⚠ CAUTION

- Be sure to shift the lever one gear at a time, and reduce the force being applied to the pedals during shifting. If you try to force operation of the shifting lever while the pedals are being turned strongly, your feet may come off the pedals and the bicycle may topple over, which could result in serious injury.
- Never place your foot on the bell crank. Doing so may cause problems with gear shifting.

Revo-shift lever operation

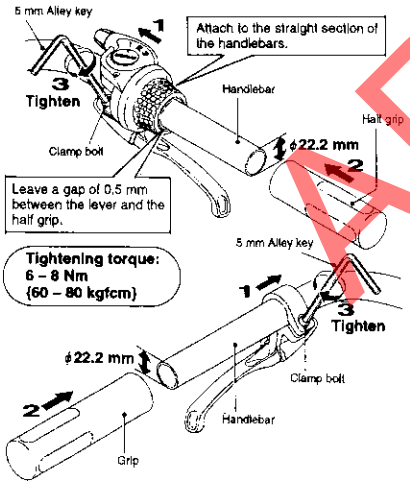
Turn the Revo-shift lever to shift to each of the three gears.



1 ····· Starting/Riding on sandy or rough road surfaces/ Riding up slopes/Carrying heavy loads/ Riding into head winds/When the light is illuminated
2 ····· Riding on flat road surfaces
3 ····· Riding at high speeds

Installation of the lever

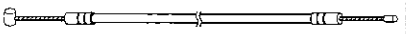
Install the lever as shown in the illustration.



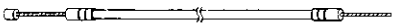
Installation of the shifting cable

Shifting cables with either one inner cable drum or two inner cable drums can be used.

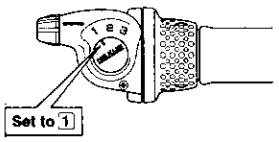
- **Cable with two inner cable drums**



- **Cable with one inner cable drum**

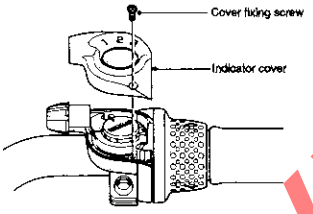


1. Set the Revo-shift lever to 1.



■ Revo-shift lever side

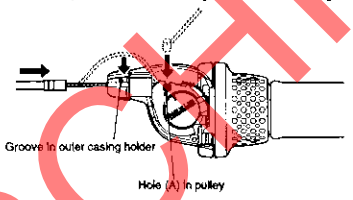
2. Loosen the cover fixing screw, and then remove the indicator cover.



3. Set the inner cable onto the pulley.

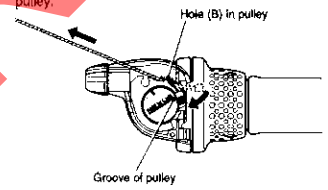
For cable with two inner cable drums

Hook the inner cable drum into the hole (A) in the pulley, and then pass the inner cable along the groove of the outer casing holder. After this, insert the outer casing into the outer casing holder.

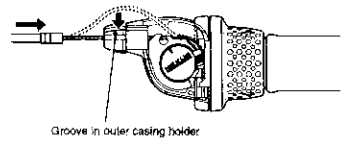


For cable with one inner cable drum

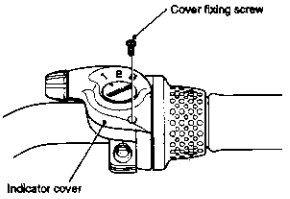
1) Pass the inner cable through hole (B) in the pulley, and then pull the inner cable out and set the drum into the groove of the pulley.



2) Insert the inner cable into the groove of the outer casing holder, and then insert the outer casing into the outer casing holder.

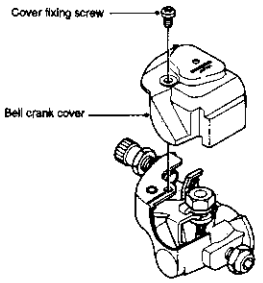


4. Replace the indicator cover and tighten the cover fixing screw.



■ Bell crank ■ side

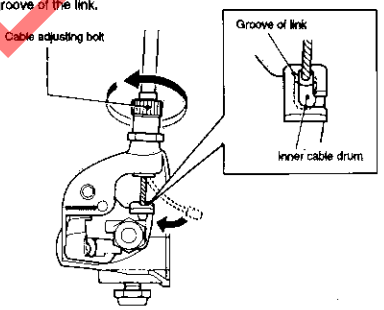
5. Loosen the cover fixing screw, and then remove the bell crank cover.



6. Set the inner cable into the link of the main bell crank unit.

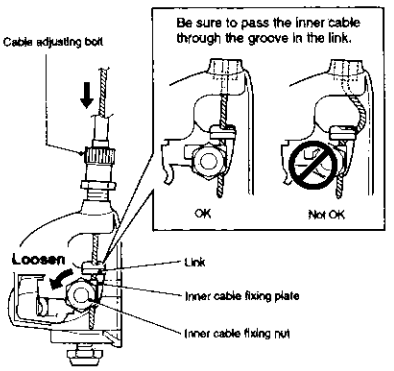
For cable with two inner cable drums

Tighten the cable adjusting bolt, pass the inner cable through the cable adjusting bolt, and then hook the inner cable drum into the groove of the link.

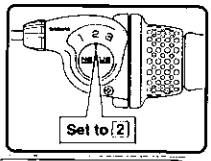


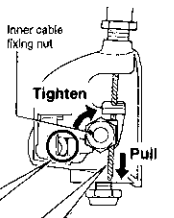
For cable with one inner cable drum

1) Loosen the inner cable fixing nut on the main bell crank unit. Next, pass the inner cable from the cable adjusting bolt along the groove in the link and then in between the link and the inner cable fixing plate.

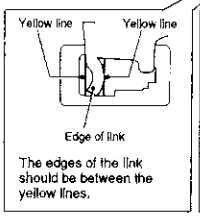


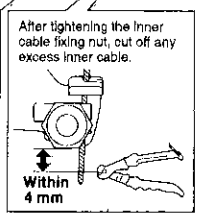
2) Set the Revo-shift lever to [2].
Next, pull the inner cable so that the edges of the link on the main bell crank unit are between the two yellow lines on the window, and then tighten the inner cable fixing nut at that position.





Tightening torque:
4 – 6 Nm (40 – 60 kgfcm)

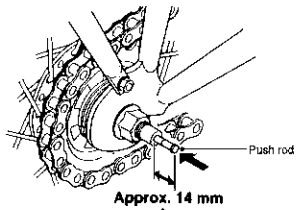




7. Replace the bell crank cover and tighten the cover fixing screw.

Installation of bell crank III

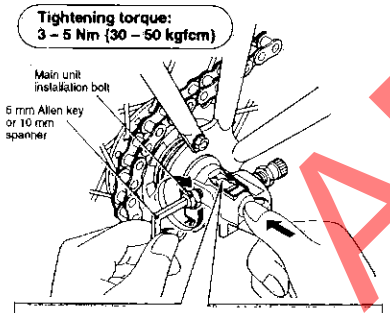
1. Insert the push rod into the hub axle.

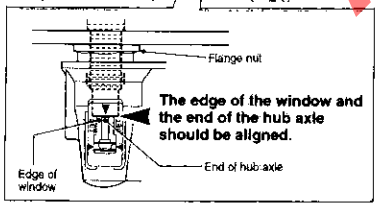


The end of the push rod should project from the end of the hub axle by approximately 14 mm.

2. While pushing the main bell crank unit onto the hub axle, align the serrations inside the main bell crank unit with the flange nut, and then push the main bell crank unit on until it touches the end of the hub axle. In this position, tighten the main unit installation bolt onto the hub axle.

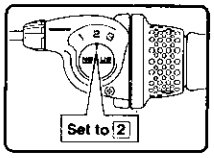
Tightening torque:
3 – 5 Nm (30 – 50 kgfcm)

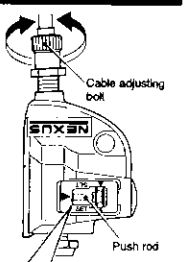




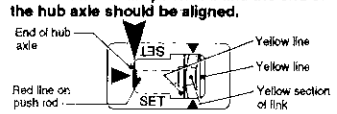
Adjusting bell crank III

1. Set the Revo-shift lever to [2].
Next, turn the cable adjusting bolt until the red line on the push rod is aligned with the end of the hub axle.

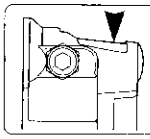




The red line on the push rod and the end of the hub axle should be aligned.



If the red line on the push rod is not visible, adjust so that the yellow section of the link is between the two yellow lines on the window.

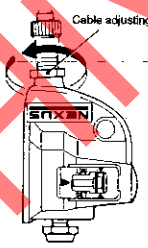


Note:
Look at the two yellow lines from directly above during adjustment.

2. While turning the crank arm, move the Revo-shift lever from [3] to [1] and then from [1] back to [3] two or three times to check the gear shifting.
Set the Revo-shift lever back to [2] and check that the red line on the push rod is aligned with the end of the hub axle.

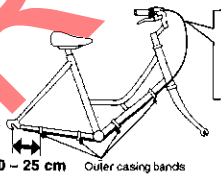
If they are not aligned, turn the cable adjusting bolt to make fine adjustments.

3. After adjusting the bell crank III, tighten the cable adjusting nut to secure the cable adjusting bolt.



Securing the shifting cable to the frame

Secure the cable to the frame with the outer casing bands.



There should be enough slack so that the cable is not pulled too much when the handlebars are turned.

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)

SHIMANO®

These service instructions are printed on recycled paper and can be recycled again.

SHIMANO AMERICAN CORPORATION
One Shimano Drive, P.O. Box 19615, Irvine, California U.S.A. 92623-9615 Phone 714-951-5003

SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222

SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

⚠ 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 sever injury. Because each bicycle may handle differently, be sure to learn the proper braking technique (including bicycle control characteristics) and operation of your bicycle. This can be done by consulting your professional bicycle dealer and the bicycle owner's manual, and by practicing your riding and braking technique.

SERVICE INSTRUCTIONS **SI-3C40B**

SG-3C40

Inter-3 Hub
with Coaster Brake

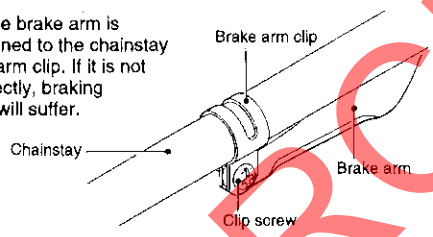
Before use, read these instructions carefully, and follow them for correct use.

SHIMANO
NEXUS
INTER 3

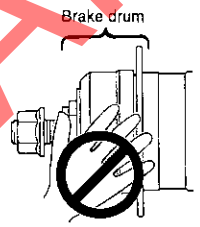
Be sure to read these service instructions in conjunction with the service instructions for the Inter-3 shifting lever before use.

⚠ CAUTION

1. Check than the brake arm is securely fastened to the chainstay by the brake arm clip. If it is not installed correctly, braking performance will suffer.



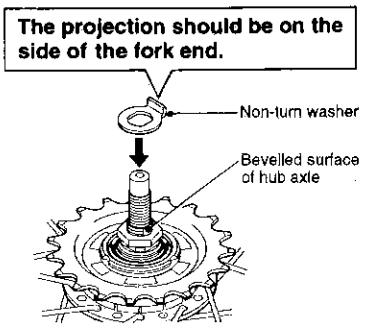
2. Spin the wheel and confirm that the braking force of the coaster brake is correct.
3. If the brakes are used frequently, the brake drum may become hot. Do not touch the brake drum for at least 30 minutes after you finish riding the bicycle.



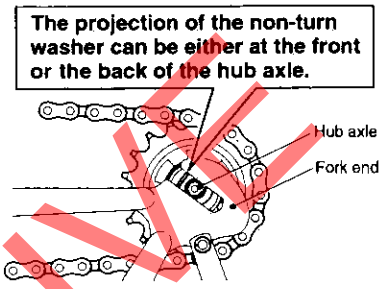
NOTE:
For any questions regarding methods of handing or adjustment, please contact the place of purchase.

Installation of the hub to the frame

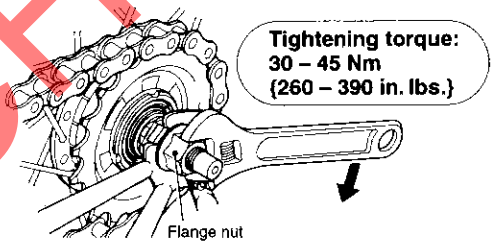
1. Install the non-turn washer so that it is aligned with the bevelled surfaces on the right side of the hub axle.



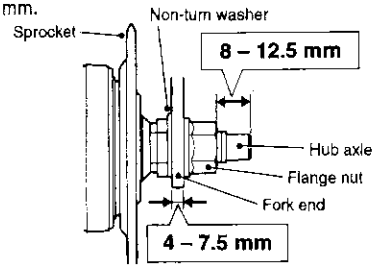
2. Mount the chain onto the sprocket, and then turn the hub axle to set it into the fork ends so that the projection of the non-turn washer fits into the groove of the fork end.



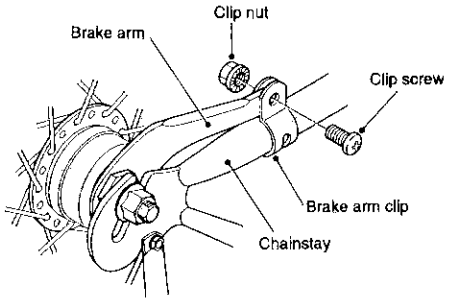
3. Screw the flange nuts onto both ends of the hub axle. After this, take up the slack in the chain and then tighten the flange nuts to secure the wheel to the frame.



Note:
Check that the right end of the hub axle protrudes from the edge of the flange nut by about 8 – 12.5 mm.



4. Fix the brake arm securely to the chainstay with the brake arm clip.

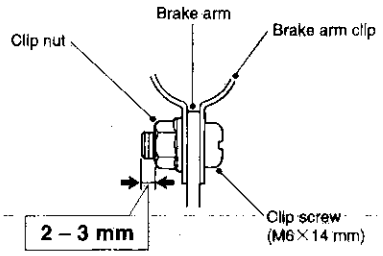


Note:

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

Tightening torque:
2.5 – 3 Nm {22 – 26 in. lbs.}

- After installing the brake arm clip, check that the clip screw protrudes about 2 – 3 mm from the surface of the clip nut.



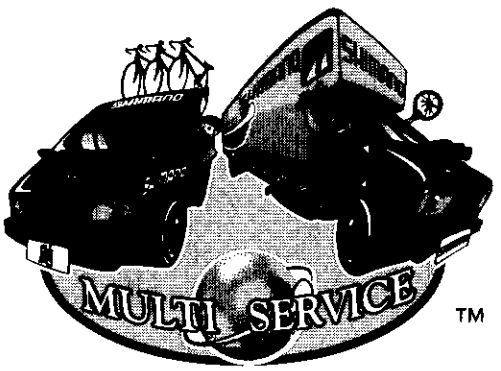
These service instructions explain how to use and maintain the Shimano bicycle parts which have been used on your new bicycle. For any questions regarding your bicycle or other matters which are not related to Shimano parts, please contact the place of purchase or the bicycle manufacturer.

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

These service instructions are printed on recycled paper and can be recycled again.

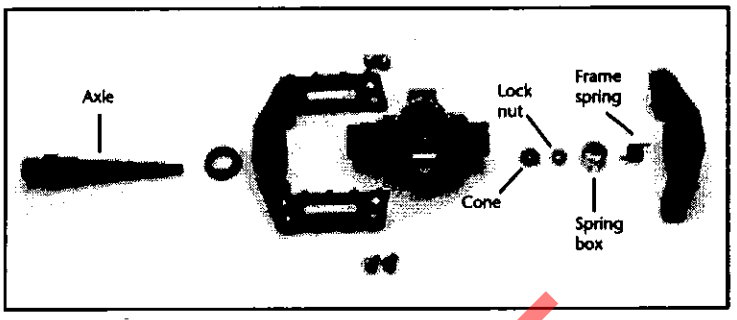
SHIMANO®
SHIMANO AMERICAN CORPORATION
One Shimano Drive, P.O. Box 19615, Irvine, California U.S.A. 92713-9615 Phone 714-951-5003
SHIMANO EUROPA
Industrieweg 24 NL-8071 CT Nunspeet, Holland Phone 31-3412-72222
SHIMANO INC.
3-77 Oimatsucho, Sakai, Osaka, Japan Phone 0722-23-3243

More Tech Support

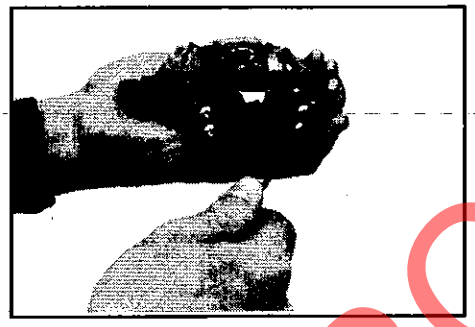


SHIMANO®

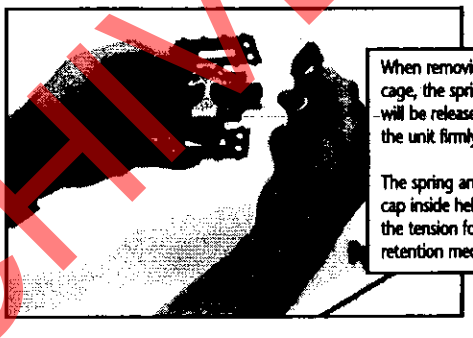
The following are instructions for removing, adjusting and replacing the axle for the PD-M636 Pedal. The unique design of the pedal, requires a special tool for adjusting the cone and retention nut: TL-PD63. You'll also need a 3 mm Allen wrench and a 15 mm open-end wrench.



PEDAL ASSEMBLY



Remove the four outer body 3 mm Allen head bolts.

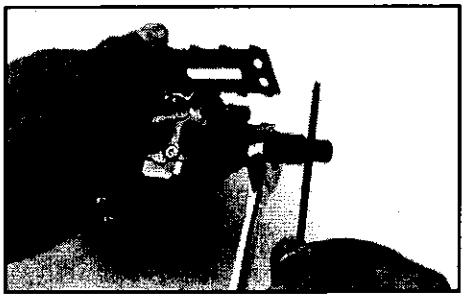


When removing the cage, the spring tension will be released. So hold the unit firmly.

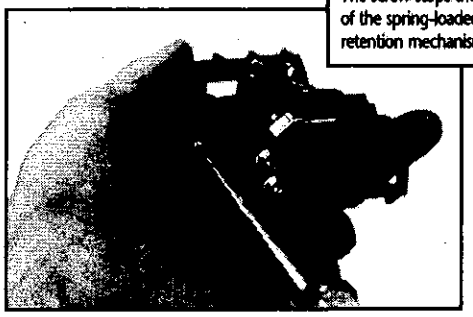
The spring and spring cap inside help create the tension for the cleat retention mechanism.

Remove the red outer body pedal cage.

TL-PD63

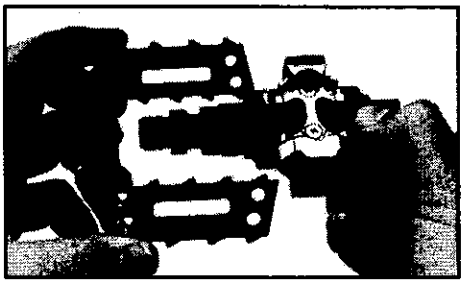


Use the TL-PD63 tool to loosen the axle.

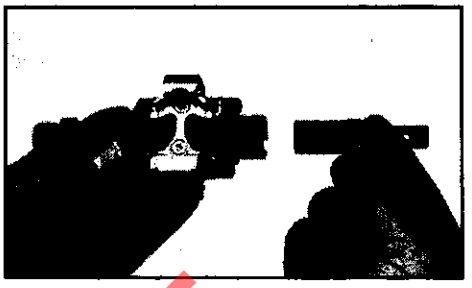


The screw stops the rotation of the spring-loaded cleat retention mechanism.

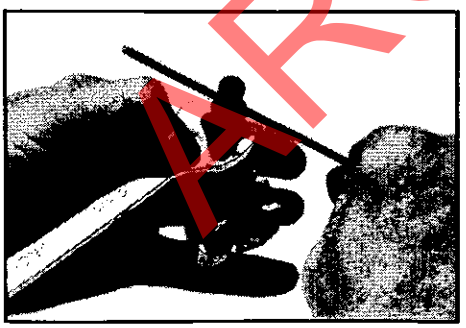
Remove the stopper screw.



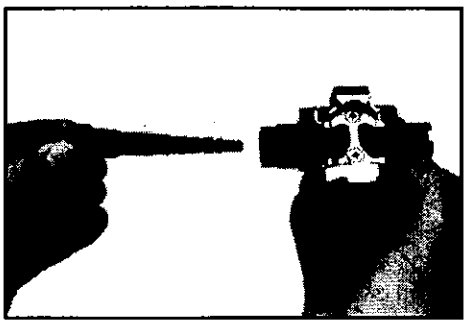
Remove the cleat retention assembly with axle inside.



Place the tool on the outer end of the axle.



Use the TL-PD63 to loosen and then remove the retaining nut and cone which secure the axle inside the housing.



Remove the axle.

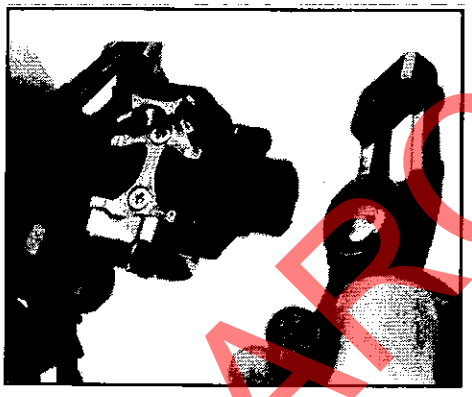
Re-Assembly and Adjustment of Axle

- Put the axle back into the SPD cleat retention assembly.
- Insert the cone. The tapered part of the cone faces the bearings inside.
- Insert the retention nut.

Adjustment: The rule of thumb for axle adjustments is to make it as smooth as possible without any play. Use the tool to snug the cone down. Then tighten the cone retention nut down snug. Back off both nuts a little. If you get some play after backing off the nuts, then reinstall the cone and retention nut, but make them a little tighter, so when you back off you've got a nice smooth rotation with no play.

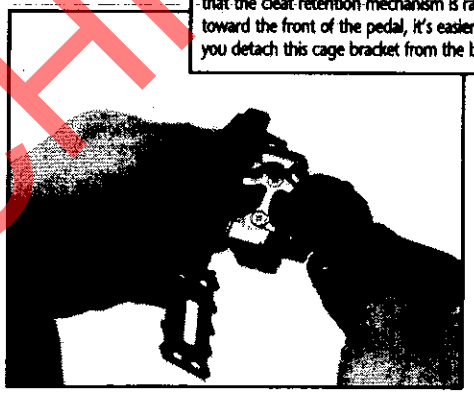
This is how the spring fits back into the cap.

This is how the spring and cap fit back into the pedal body. Make sure the fins on the cap fit properly into the grooves of the housing.

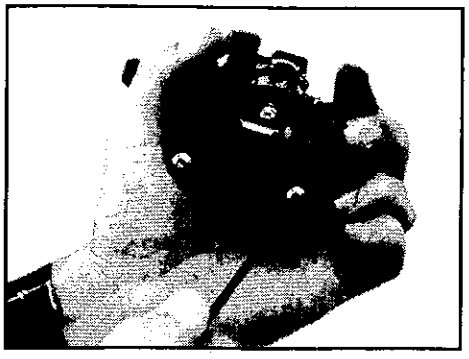


This is how the outer body fits back on the axle.

Since you have to rotate the outer body so that the cleat retention mechanism is raised toward the front of the pedal, it's easier if you detach this cage bracket from the body.



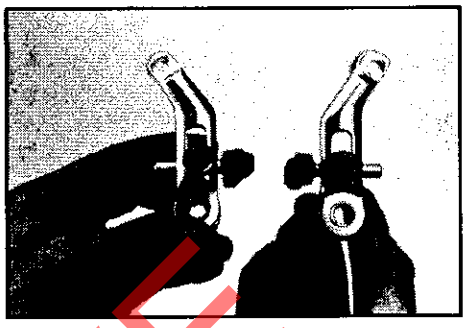
Remember to rotate the FRONT END of the cleat retention mechanism so it angles up 30 degrees. If the REAR END is angled up, the pedal has been assembled incorrectly.

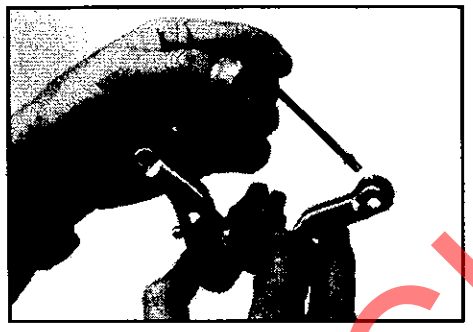


Insert the remaining Allen head bolts.

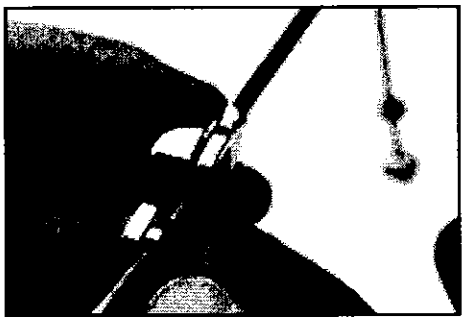
BR-MC16 LOW-FLEX CANTI

The 97 Alivio Cantilever Brake (BR-MC16) has a different cable anchor bolt position than previous setups. The new design enables the canti arms to open wider. In fact both sides can be unhooked which means both arms open up for easier removal and replacement of the wheel. Some technicians, however, are placing the anchor bolt into the wrong hole. It's an easy mistake to make. Here's the correct way to do it.

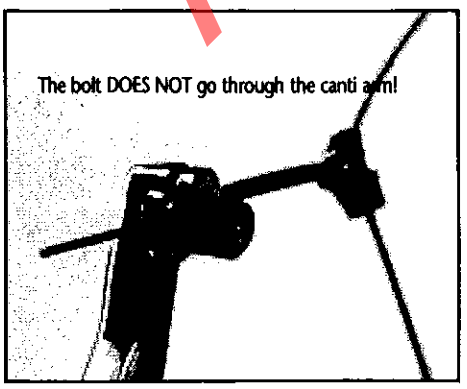




Route the cable through the slot at the end of the canti arm.

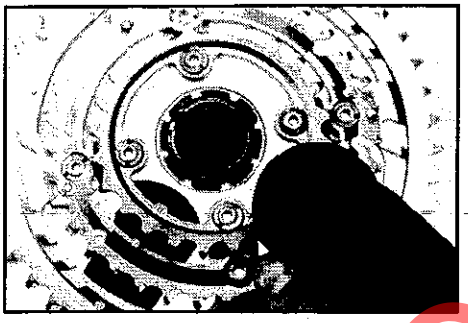


The cable runs through a hole in the center of the bolt. The sleeve and nut anchor the cable into place.

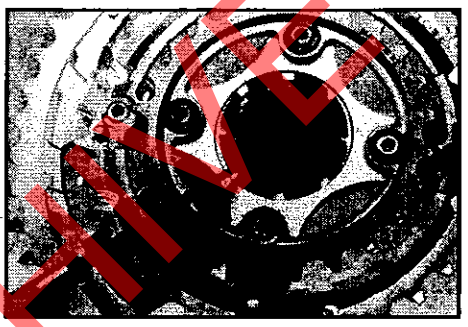


The square of the bolt fits inside the square recess that has been machined out of the canti arm on the anchor link side. The threaded part of the bolt faces the rider. The threaded bolt DOES NOT go through the canti arm.

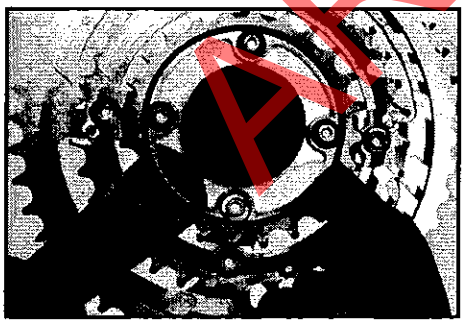
The new XTR bottom bracket tool (TL-UN95) has two functions. The large part of the tool with the splines is used in the usual way to install the bottom bracket into the frame. XTR has a spiderless crank, which means the spider is not permenantly fixed to it. The smaller attachment helps to break loose the spider and remove it.



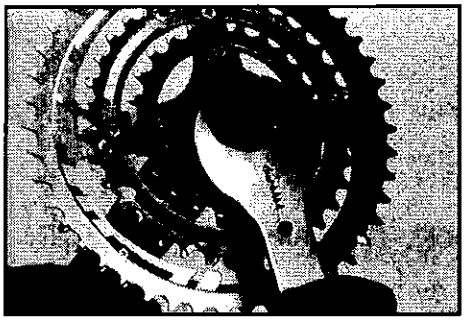
The splines of the tool fit in the crank as usual to remove or replace the bottom bracket



To remove the spider from the crank, first remove the c-clip here.



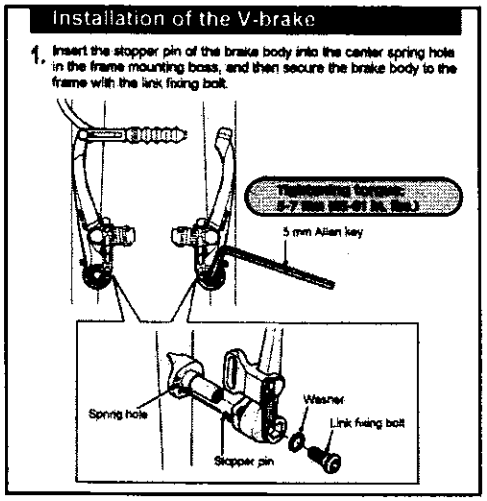
The large splined section of the tool fits into the lock ring. The smaller one fits into the center and threads onto the crank bolt (the one-key) release.

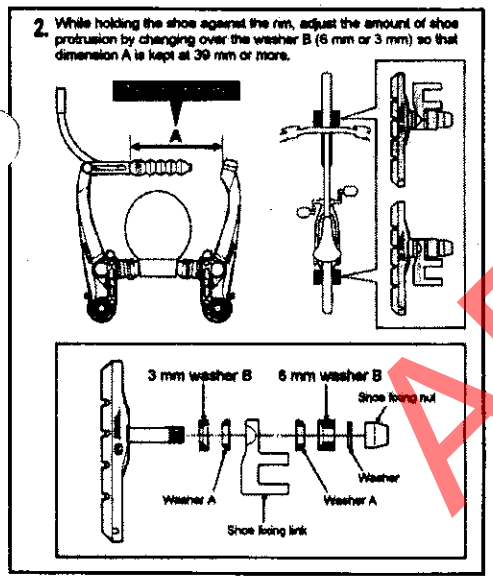


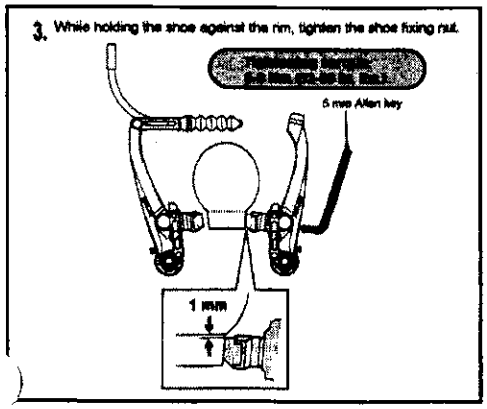
The small attachment locks the tool down and enables you to loosen the lock ring that holds the spider to the crank.

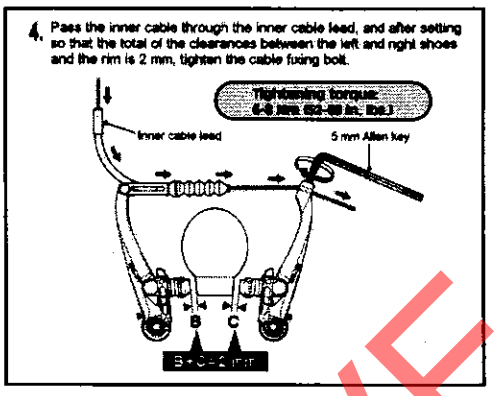
TL-UN95 XTR BOTTOM BRACKET

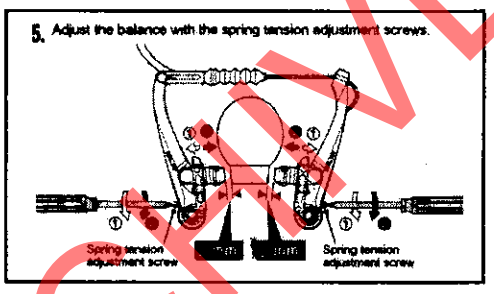
V-Brake Set Up

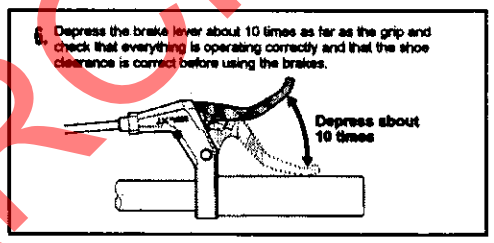












Tech-Tips for V-Brake

In addition to the basic set up instructions which come with each V-Brake, we have found a few other techniques that have been helpful. Here they are:

1. *Do you toe-in the V-brake pads?*

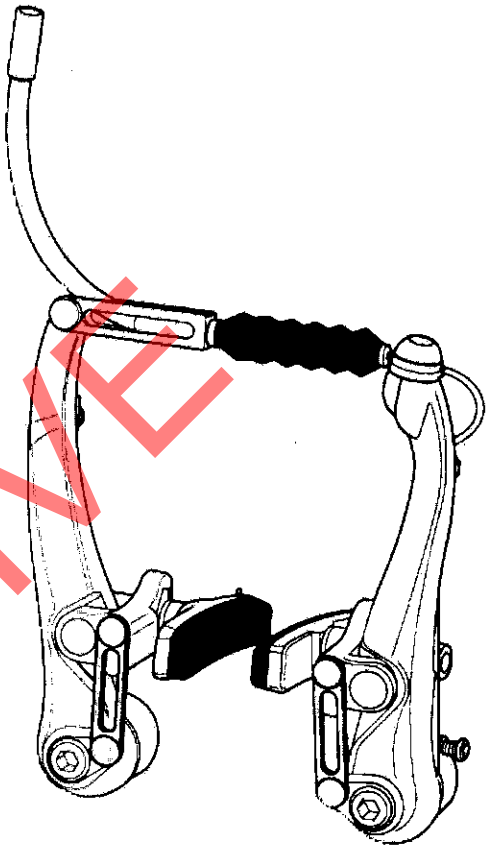
No. Initially, adjust the pads without any toe-in, as square to the rims as you can get them. If you do get some squeal after you have ridden them for a while, then you may need to add a slight amount of toe-in. Also, if the heel of the shoe is wearing more than the front (even if there is no squeal), adjust to create slightly more toe-in.

2. *Brake Cable Adjustment*

Adjust the brake cable as short as you can. If it's too long, it will jam the little alloy guide pipe into the arm of the brake and cause some wear to the pipe, especially when your suspension compresses.

3. *Routing the Cable*

Route the cable and cable link in such a way that the guide pipe does not rub on the side of the linkage that it hooks through. That too will cause some wear on the pipe. The pipe can actually be bent slightly with thumb pressure, and if you are careful not to create a kink you can customize it so it does not rub.



4. *Keep Cable Same Side as Brake Lever*

Also, don't route the rear brake cable on a big loop from the lever to the opposite side of the stem, to the top tube frame stop. Run the cable on the same side of the head tube as the brake lever. It may not look as smooth, but the side pressure on the cable housing reduces the housing compression when you pull hard on the brakes. Housing compression wastes lever travel and creates a spongy feeling while pulling the brakes.

Tune Up Kit for V-Brakes (Part # 8AA9810)

The Parallel Push pivot for the shoe fixing plate in the V-brake will eventually wear and develop some play. If you get too much play, it's harder to set the toe-in and there might be a tendency for brake squeal due to negative effective toe. Shimano has tightened up the tolerance specifications during the manufacturing process. We are also providing dealers with a V-Brake Tune Up Kit to correct for excessive play. The pivot axle on the Parallel Push mechanism is easily replaced and the Company is providing the Tune Up Kit to do it. It will eliminate the play and return the mechanism to its original standard of performance. A little play is normal, but any rider who feels the braking performance has deteriorated can replace the pivot and get it back to original spec.

The following charts provide recommended tightening torques for most bicycle assemblies. Use these guidelines to check all assemblies, even O.E.M. pre-assembled parts. Proper assembly builds a better bicycle.

Tightening Torques

REAR DERAILLEUR	BRACKET FIXING BOLT CABLE FIXING BOLT PULLEY FIXING BOLT	7.84 - 9.8 Nm 3.92 - 5.88 Nm 2.94 - 3.92 Nm	70 - 86 in. lbs. 35 - 52 in. lbs. 27 - 34 in. lbs.
FRONT DERAILLEUR	CLAMP BOLT CABLE FIXING BOLT	4.9 - 6.86 Nm 4.9 - 6.86 Nm	44 - 60 in. lbs. 44 - 60 in. lbs.
SHIFTING LEVER	CLAMP FIXING BOLT (Screw Driver) CLAMP BOLT (Hexagon Wrench) LEVER FIXING SCREW	2.45 - 2.94 Nm 5.88 - 7.84 Nm 2.45 - 2.94 Nm	22 - 26 in. lbs. 53 - 69 in. lbs. 22 - 26 in. lbs
RAPIDFIRE	SHIFTING LEVER PARTS FIXING BOLT CLAMP BOLT (Hexagon Wrench)	2.45 Nm 5.88 - 7.84 Nm	22 in. lbs 53 - 69 in. lbs.
DUAL CONTROL LEVER	CLAMP BOLT (Hexagon Wrench) STOPPER SCREW (Screw Driver) FIXING BOLT	5.88 - 7.84 Nm 1.47 - 1.96Nm 3.92 - 4.9 Nm	53 - 69 in. lbs. 13 - 18 in. lbs. 35 - 43 in. lbs.
BRAKE LEVER	CLAMP BOLT (Screw Driver) CLAMP BOLT (Hexagon Wrench) EXTENSION LEVER CLAMP BOLT	2.45 - 2.94 Nm 5.88 - 7.84 Nm 1.47 - 2.45 Nm	22 - 26 in. lbs. 53 - 69 in. lbs. 14 - 21 in. lbs.
HUB	CLOSING OF QR LEVER LEFT-LOCK NUT FOR QR TYPE AXLE	8.82 - 11.76 Nm 9.8 - 24.5 Nm	79 - 104 in. lbs. 87 - 217 in. lbs.
FREEHUB	FREEWHEEL BODY FIXING BOLT FREEWHEEL BODY FIXING RACE HG LOCK RING	34.3 - 49 Nm 34.3 - 44.1 Nm 29.4 - 49 Nm	305-434 in. lbs. 305 - 391 in. lbs. 260 - 434 in. lbs
FRONT CHAIN WHEEL	CRANK ARM FIXING BOLT CHAINRING FIXING BOLT	34.3 - 44.1 Nm 7.84 - 10.78 Nm	305 - 391 in. lbs. 70 - 95 in. lbs.

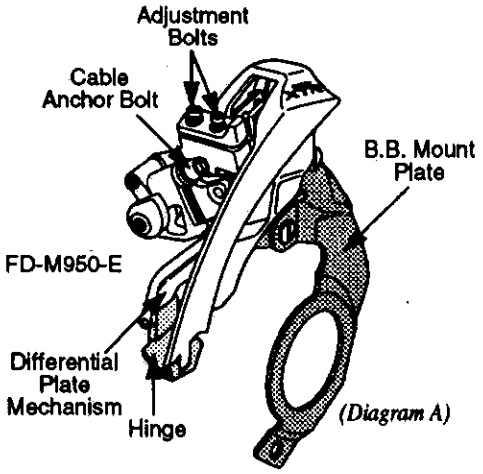
Tightening Torques continued

SEALED CARTRIDGE BOTTOM BRACKET	BODY	49 - 68.6 Nm	435 - 608 in. lbs.
BOTTOM BRACKET	RIGHT HAND CAP LOCK RING	68.6 - 78.4 Nm 68.6 - 78.4 Nm	609 - 695 in. lbs. 609 - 695 in. lbs.
SPD PEDAL	PEDAL AXLE	34.3 Nm	307 in. lbs. or more
SPD SHOE	CLEAT FIXING BOLT SH-M210 SPIKE	4.9 - 7.84 Nm 3.92 Nm	44 - 51 in. lbs 34 in. lbs.
CANTILVER BRAKE	FRAME HOLDING BOLT CABLE FIXING NUT SHOE FIXING BOLT CARTRIDGE BRAKE SHOE SET SCREW FIXING BOLT CARRIER FIXING NUT	4.9 - 6.86 Nm 5.88 - 7.84 Nm 7.84 - 8.82 Nm 0.98 - 1.96 Nm 3.92 - 4.9 Nm	44 - 60 in. lbs 53 - 69 in. lbs. 70 - 78 in. lbs. 9 - 17 in. lbs. 35 - 43 in. lbs.
SIDE PULL BRAKE ARCH	SHOE FIXING BOLT CABLE FIXING BOLT ARCH FIXING BOLT	4.9 - 6.86 Nm 5.88 - 7.84 Nm 7.84 - 9.8 Nm	44 - 60 in. lbs. 53 - 69 in. lbs. 70 - 86 in. lbs.
SEAT POST	FIXING BOLT	19.6 - 39.2 Nm	174 - 347 in. lbs.
HANDLE SYSTEM	HANDLEBAR FIXING BOLT EXPANDER BOLT	19.6 - 29.4 19.6 - 29.4 Nm	174 - 260 in. lbs. 174 - 260 in. lbs.

SHIMANO TECH TIPS

"E" Type FD

INSTALLING THE BB MOUNT "E" TYPE FD



(Diagram A)

XTR, XT, LX, STX RC and STX offer two different types of front derailleurs: the standard version that clamps to the seat-tube and the "E" type ("E" stands for Easy Set) which attaches directly to the bottom bracket. Service instructions are pretty clear about installing the standard type FD, but the "E" type—which includes: FD-M950-E, FD-M739-E, FD-M567-E, FD-MC36-E and FD-MC34-E—may need a little clarification as to how to deal with the frame set.

BENEFITS

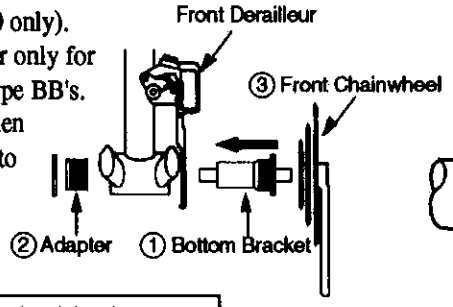
- Since it attaches directly to the BB, it's easier to install.
- It's also easier to adjust because the height and angle over the large chainring is preset.
- It has the potential of reducing the amount of inventory you need to keep on hand*.
- BB Mount Plate keeps the chain from dropping between the frame and crank

INSTALLATION

There's a hole on the plate of the "E" type front derailleur. When installing, you put a bolt through the hole and into the braze-on which is welded to the frame by the OEM (see diagram C). Next, install the FD to the bottom bracket as shown in the diagram B. The derailleur will only line up one way. You don't have to make the adjustment to the angle or to the height. ***If there is no braze-on on the frame set, you may modify the frame with a clamp. In this case, you install the clamp first (they are available for all three frame tube diameters from distributors.) Then insert the bolt through the FD plate into the clamp instead of the braze-on.***

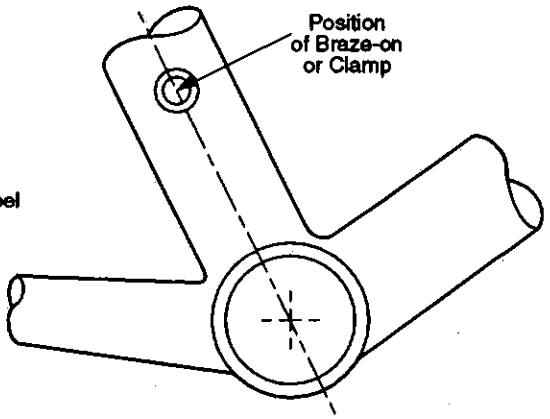
Installation of the front derailleur, bottom bracket and front chainwheel

① Use the special tools (TL-UN95 or TL-UN72) to install the bottom bracket and the front derailleur so that they face as shown in the illustration.
② Install the adapter and the lock ring (BB950 only). Install the adapter only for other cartridge type BB's.
③ Use an 8-mm Allen key (TL-WR38) to install the front chainwheel.



(Diagram B)

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

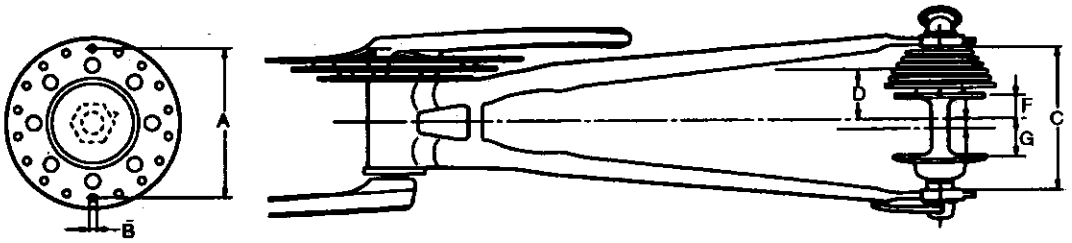


Frame
(Diagram C)

* Currently you have the top-pull and bottom-pull versions to keep in stock and there are three tube sizes for each. That's six FDs. With Easy Set you have the top-pull and bottom-pull versions and that's it. A total of two. Then you just stock the three clamp sizes instead of the entire FD.

SHIMANO

FREEHUB SPECIFICATIONS

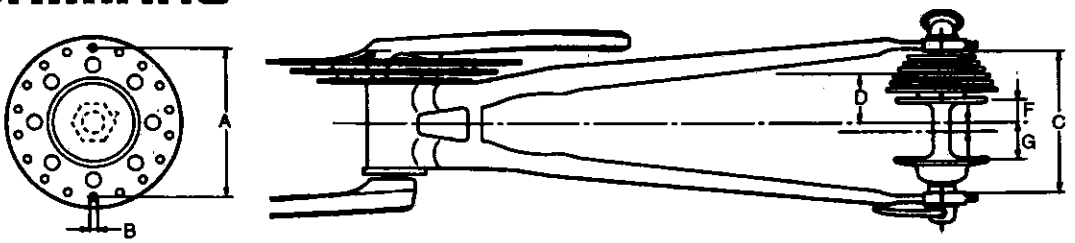


	Model No.	Weight	A Flange Diameter	B Spoke Hole Diameter	SIS Comp.	C Over Lock Nut Dimension	D Chain Line	Dish Distance	F Center to Flange (R)	G Center to Flange (L)
DURA-ACE	HB-7400/7700	228g	38mm	2.4mm		100mm			37mm	37mm
	FH-7400	439g	44mm	2.4mm	6S	126mm	43mm	6.8mm	23.2mm	36.8mm
					7S		42.6mm	8.15mm	21.85mm	38.15mm
	FH-7402	460g	44mm	2.4mm	8S	130mm	42.6mm	7.9mm	21.1mm	36.9mm
	FH-7403	439g	44mm	2.4mm	HG8S	130mm	42.6mm	7.9mm	21.1mm	36.9mm
	FH-7700	375g	44mm	2.4mm	HG9S	130mm	42.6mm	7.9mm	21.1mm	36.9mm
Shimano 600 ULTEGRA	HB-6400-F	212g	38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-6401	423g	45mm	2.6mm	HG7S	126mm	41.2mm	8.3mm	20.7mm	37.3mm
	FH-6402	426g	45mm	2.6mm	HG8S	130mm	42.2mm	8.1mm	20.9mm	37.1mm
Shimano 105 SC	HB-1055-F	216g	38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-1056	427g	45mm	2.6mm	HG8S	130mm	42.2mm	8.1mm	20.9mm	37.1mm
	FH-1055	415g	45mm	2.6mm	HG7S	126mm	41.2mm	8.3mm	20.7mm	37.3mm
Shimano RX100	HB-A550-F	202g	38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-A550	420g	45mm	2.6mm	HG7S	126mm	41.2mm	8.3mm	20.7mm	37.3mm
RSX	HB-A410		38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-A410		45mm	2.6mm	HG7S	126mm		8.4mm	20.7mm	37.5mm
	FH-A410		45mm	2.6mm	HG7S	130mm		6.9mm	22.2mm	36.0mm
EXAGE	HB-RM50-F	228g	38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-HG50	435g	45mm	2.6mm	HG7S	126mm	41.2mm	9mm	20.2mm	38.2mm

	Model No.	Weight	Flange Diameter	Spoke Hole Diameter	SIS Comp.	Over Lock Nut Dimension	Chain Line	Dish Distance	Center to Flange (R)	Center to Flange (L)
NEXUS 7 Sp. Roller Brake	SG-7R40	1520g (w/ brake)	87mm	2.6mm		130mm	45.8mm		23.45mm	31.15mm
NEXUS 7 Sp. Coaster Brake	SG-7C21	1780g	87mm			127mm	46.5mm		24.70mm	29.73mm
		(w/ brake)				127mm	41.5mm			
							46.5mm			
NEXUS 4 Sp. Roller Brake	SG-4R31	1330g	84mm			123.5mm	44mm		19.45mm	25.30mm
NEXUS 4 Sp. Coaster Brake	SG-4C30	1680g	84mm			123.5mm	44mm		33.55mm	27.70mm
NEXUS Front Hub/ Roller Brake	HB-IM40	870g	52mm			100mm			33mm	26mm

SHIMANO

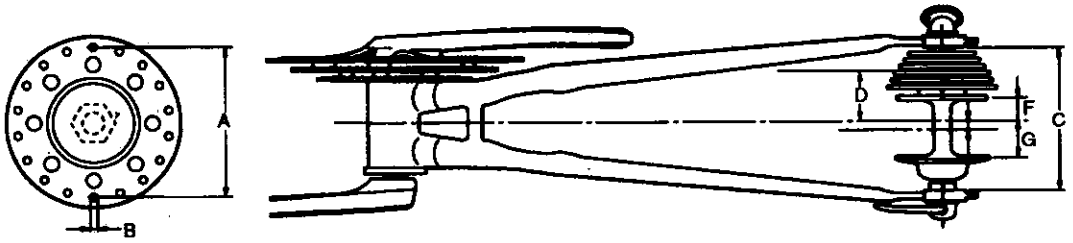
FREEHUB SPECIFICATIONS



	Model No.	Weight	A Flange Diameter	B Spoke Hole Diameter	SIS Comp.	C Over Lock Nut Dimension	D Chain Line	Dish Distance	F Center to Flange (R)	G Center to Flange (L)
Shimano XTR	HB-M950	190g	38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-M950	371g	45mm	2.6mm	HG8S	135mm	44.75mm	6.8mm	23.2mm	26.8mm
DEORE XT	HB-M737	202g	38mm	2.6mm		100mm			35.8mm	35.8mm
	HB-M738	206g	38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-M737	452g	45mm	2.6mm	HG8S	135mm	44.75mm	6.8mm	23.2mm	36.8mm
DEORE LX	HB-M563		38mm	2.6mm		100mm			35.8mm	35.8mm
	HB-M564	218g	38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-M563	444g	45mm	2.6mm	HG7S	130mm	43.2mm	7.3mm	23.0mm	37.6mm
	FH-M563	444g	45mm	2.6mm	HG7S	135mm	45.7mm	4.8mm	25.5mm	35.1mm
	FH-M565	442g	45mm	2.6mm	HG8S	135mm	44.95mm	7.6mm	22.7mm	37.9mm
DEORE LX & STX-RC	FH-R080	615g	45mm	2.6mm	HG8S	135mm	44.95mm	7.6mm	22.7mm	37.9mm
STX-RC	HB-MC33-S	225g	38mm	2.6mm		100mm			35.8mm	35.8mm
	HB-MC33	212g	38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-MC33	432g	45mm	2.6mm	HG7S/IG7S	130mm	42.7mm	7.8mm	22.5mm	38.1mm
	FH-MC33		45mm	2.6mm	HG7S/IG7S	135mm	45.2mm	5.3mm	25.0mm	35.6mm
STX	HB-MC32		38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-MC32		45mm	2.6mm	HG7S/IG7S	130mm	42.7mm	7.8mm	22.5mm	38.1mm
	FH-MC32		45mm	2.6mm	HG7S/IG7S	135mm	45.2mm	5.3mm	25.0mm	35.6mm
STX & ALIVIO	FH-R050		45mm	2.6mm	HG7S/IG7S	130mm	42.7mm	7.8mm	22.5mm	38.1mm
			45mm	2.6mm		135mm	45.2mm	5.3mm	25.0mm	35.6mm
ALIVIO	HB-MC12		38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-MC12		45mm	2.6mm	HG7S/IG7S	130mm	42.7mm	7.8mm	22.5mm	38.1mm
	FH-MC12		45mm	2.6mm	HG7S/IG7S	135mm	45.2mm	5.3mm	25.0mm	35.6mm
ACERA	HB-M290		38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-M290		45mm	2.6mm	HG7S	130mm	42.7mm	7.8mm	22.5mm	38.1mm
	FH-M290		45mm	2.6mm	HG7S	135mm	45.2mm	5.3mm	25.0mm	35.6mm
ALTUS C90	HB-CT90		38mm	2.6mm		96mm			35.8mm	35.8mm
	HB-CT90		38mm	2.6mm		100mm			35.8mm	35.8mm
	FH-CT90		45mm	2.6mm	HG6S	126mm	42.0mm	7.3mm	23.0mm	37.6mm
	FH-CT90		45mm	2.6mm	HG6S	130mm	44.0mm	5.3mm	25.0mm	35.6mm
	FH-CT90		45mm	2.6mm	HG7S	130mm	42.7mm	7.8mm	22.5mm	38.1mm
	FH-CT90		45mm	2.6mm	HG7S	135mm	42.7mm	7.8mm	22.5mm	38.1mm

SHIMANO

FREEHUB SPECIFICATIONS



	Model No.	Weight	A Flange Diameter	B Spoke Hole Diameter	SIS Comp.	C Over Lock Nut Dimension	D Chain Line	Dish Distance	F Center to Flange (R)	G Center to Flange (L)
EXAGE	HB-RM50	228g	38mm			100mm				
	FH-HG50-QR	440g	45mm	2.6mm	HG7S	126mm	41.2mm	9mm	20.2mm	38.2mm
	FH-HG40-QR	445g	45mm	2.6mm	HG7S	130mm	43.2mm	7mm	22.2mm	36.2mm
	FH-HG50-QR	450g	45mm	2.6mm	HG7S	135mm	45.7mm	4.5mm	24.7mm	33.7mm
Shimano 200GS	FH-HG20-QR	440g	45mm	2.6mm	HG7S	126mm	41.2mm	9mm	20.2mm	38.2mm
	FH-HG20-QR	445g	45mm	2.6mm	HG7S	130mm	43.2mm	7mm	22.2mm	36.2mm
700 CX	HB-C700	228g	38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-C070	427g	45mm	2.6mm	HG7S	130mm	43.2mm	6.3mm	22.7mm	35.3mm
400 CX	HB-C400	228g	38mm	2.6mm		100mm			36.3mm	36.3mm
	FH-C040	432g	45mm	2.6mm	HG7S	130mm	42.5mm	7mm	22.2mm	36.2mm

What's a "Reverse Spring" Rapid Rise RD?

XTR NEXAVE

You'll see it in the new NEXAVE group. You'll hear about it from the pros racing the new XTR system. But what, exactly, is a Rapid Rise Rear Derailleur with a "Reverse Spring." ?

With a conventional RD, the rider has to provide the force to extend the tension spring and get the chain up the cog cluster to a lower (easier to pedal) gear. There is a tendency when racing to force the chain between the HG gates, creating a rough or noisy shift. With more casual riding, it takes extra strength to get to a lower gear, just when you need all the strength you have to pedal up the hill.

So we reversed the tension of the tension spring. Now the spring is totally extended in the high gear (harder to pedal) position, and gradually contracts as you go to a larger, (easier to pedal) gear. The spring actually pulls the chain up the cog cluster. All you have to do is release the trigger in the case of XTR, or tap the button in the case of NEXAVE. It's a very light touch to get to easier gears, which is exactly what you need in a steep ascent, or a wild, washboard turn. And the shift is more precise because the tension is constant and the chain is always perfectly directed through the HG index gates.

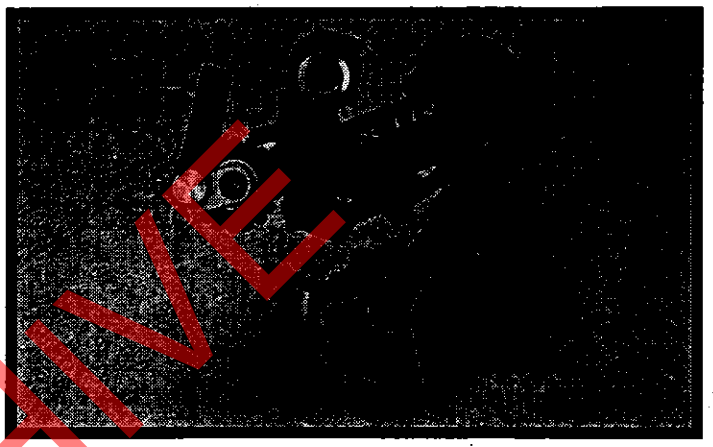
It takes a little getting used to, but it makes a difference and it makes more sense. Right and left shifters use the same movements to get to higher and lower gears. The XTR gear indicator is more intuitive, too; because now the needle is moving in the same direction as the chain. If you go to a high gear, the indicator goes out. If you go to lower gears, the indicator goes in. Reverse Spring. Rapid Rise. Get it?

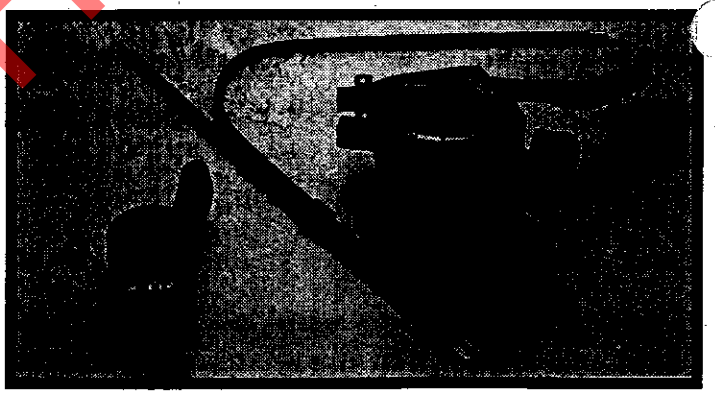
Better shifts to lower gears, right when you need 'em

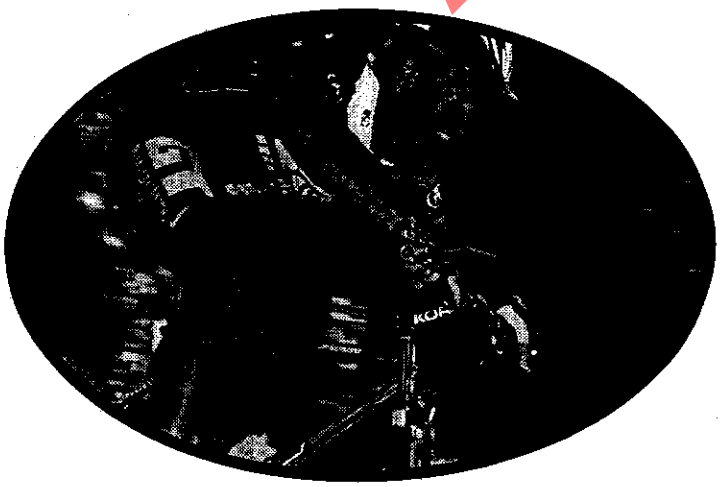
RAPID RISE REAR DERAILLEUR & RAPID FIRE REMOTE

Shimano's XTR component group has proven itself supreme in the world of competitive MTB racing. The addition of the Rapid Rise Rear Derailleur and Rapidfire Remote Shifter pushes the performance edge even further.

The new XTR RD-M951 enables riders to preselect lower gears for uphills or turns, and, thanks to the RD "reverse spring" configuration, the shift is made with a trigger (release) action instead of the conventional thumb movement. With conventional RDs, the thumb is used to provide the force which moves the chain up the cog cluster. With Rapid Rise, the force from the spring tension lifts the chain to the larger cog and through the HG ramps. Thumb shifts to lower gears can be rough and inconsistent, especially in competition where terrain is treacherous and riding styles extreme. But with the cable roller guide which reduces shifting resistance by 10%, and the reverse spring mechanism which creates a consistent tension up and down the cog cluster, the new RD produces an HG shift which is quicker, smoother and more consistent, even when going to lower gears in a sudden ascent or descent. Lighting "thumb-action" multiple upshifts are also an important feature of the new system, and with the incredible handlebar and bar-end shifting capability (Rapidfire Remote), racers can make the shifts just as well in or out of the saddle, without changing hand positions. The tactical options and total control offered by these two innovations are cutting crucial seconds off world class racing times.







FEATURES	BENEFITS
Pre-select lower gears with trigger (release) action	Adds tactical options and cuts time in competition
Consistent spring pressure up and down the cog cluster	Chain always moves through index gates. Quicker, more precise HG shifts every time
Thumb-Lever Multiple Upshifts	Instantaneous and precise shifts win races
Out-of-the-Saddle Handlebar and Bar End Shifting	Shifting out of the saddle without changing hand positions creates significant competitive advantages.

Installation and Adjustment of XTR Rapidrise RD-M951/Nexave RD-T400

The reverse spring and the new cable guide on XTR's Rapid Rise RD require slightly different set-up procedures.

Measure the Chain

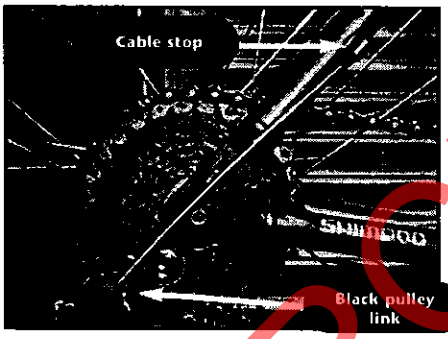
1. Run the chain around large chainring and large sprocket. Pull tight and add two lengths.

Install the Chain

2. With proset alignment block still attached, install the chain. Then remove the tool, and set the derailleur to the low (resting) position.

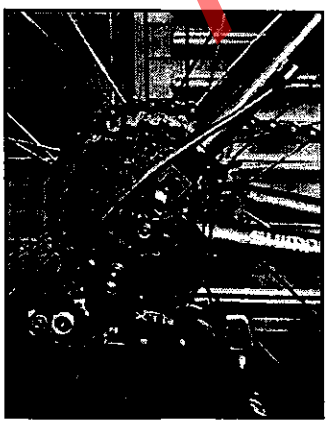
3. Set your low and high adjustments.

FOR TOP-ROUTED CABLES



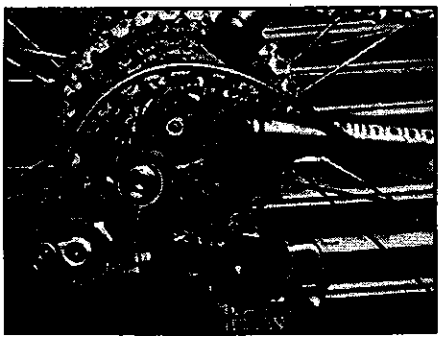
1. Shift chain to the large cog and large chain ring. Then measure distance from Frame Cable Stop to Black Pulley Link (see photo).

2. Add 5mm of Cable Outer Casing to your measurement (Top Route Only). Cut the casing to the proper length.



3. Feed cable through Cable Guide and then anchor to Cable. Make sure the Black Pulley Link is in this position (see photo)

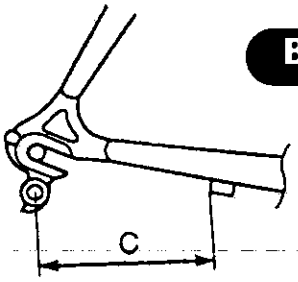
FOR BOTTOM BRACKET ROUTING



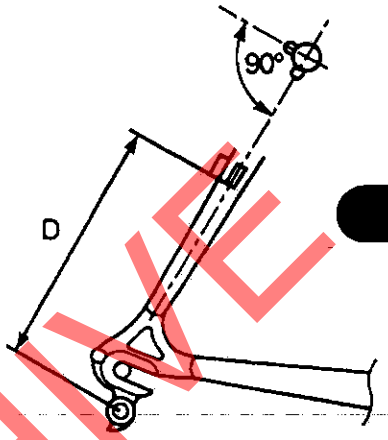
Remember, the chain must be in the large cog and large chainring.

When installed, the outer Cable Casing should angle the Black Pulley Link as shown. The Link should not contact the Link stop.

Outer Cable (Casing) Length Measurement for Standard & Rapidrise RDs



Bottom Route



Top Route

Conventional

Dimension "C"	90mm	100mm	110mm
Outer Cable Length	280mm	300mm	320mm

Conventional

Dimension "D"	140mm	155mm	170mm
Outer Cable Length	280mm	300mm	320mm

Rapidrise RD-M951, T400

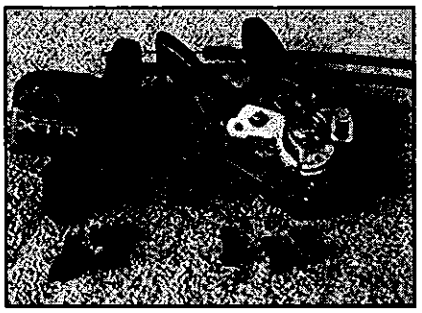
Dimension "C"	90mm	100mm	110mm
Outer Cable Length	150mm	160mm	170mm

Rapidrise RD-M951, T400

Dimension "D"	140mm	155mm	170mm
Outer Cable Length	175mm	190mm	205mm

Rapidfire Remote SL-SS95

The new Rapidfire Remote Shifter is available in two different upgrade kits. Kit #1 replaces the SL-M950 (shift lever only). Kit #2 upgrades the integrated ST–M950. Installation of Kit #1 is pretty straightforward. But to convert the integrated lever, you have to remove the existing shifter pod and install the new one. Here's how you do it.



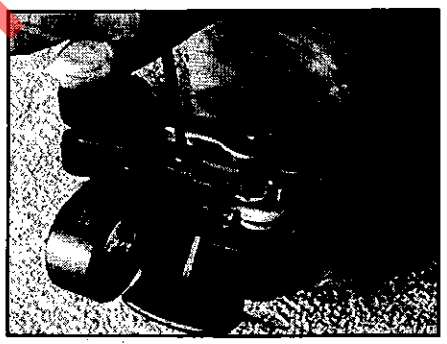
Parts you get in Kit #2:

- New "Guts"
- Remote Shifter
- 2 Cables

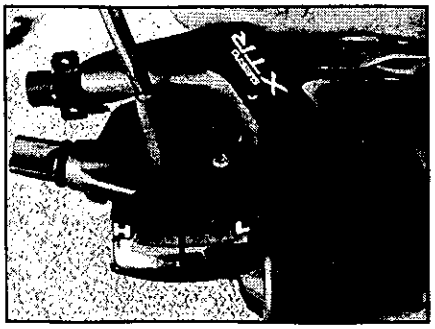
Installing New Shifter Pod

1. To install the Remote Shifter, first remove existing ST-M950 from bike.

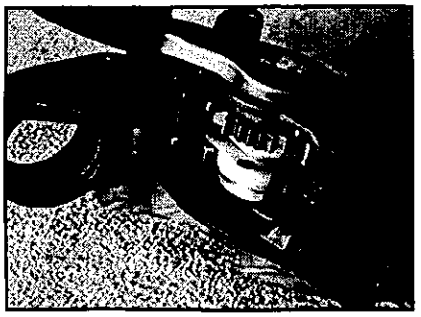
2. Remove the wire hook door from the existing shifter pod.



3. Remove (3) 2.5 Allen-head bolts.

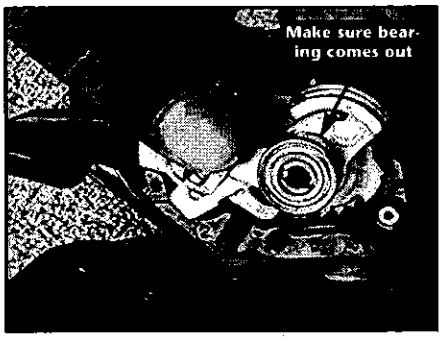


4. Remove the OGD Display (2) screws.

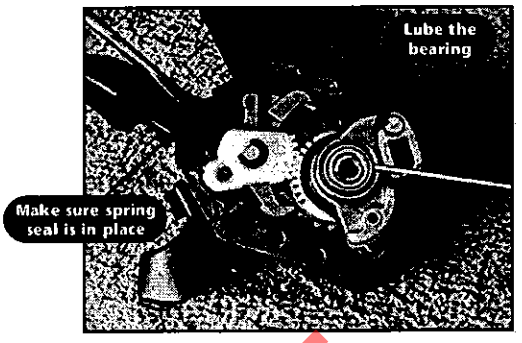


5. Turn unit over and use a small flat-head screwdriver to carefully pry shifter pod away from brake lever.

Rapidfire Remote SL-SS95 (continued)



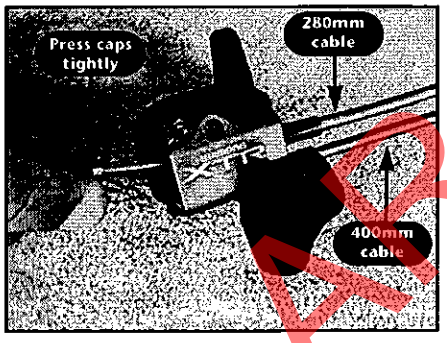
6. If the sealed bearing does not come away from the shift lever body, make sure to remove it. A new bearing comes with the shifter pod.



7. If you lubricate the sealed bearing before inserting it into the NEW shifter pod (Use some Shimano Hypo-spitt®), it will seat easier into the lever body. Also, make sure the little spring seal is in place.

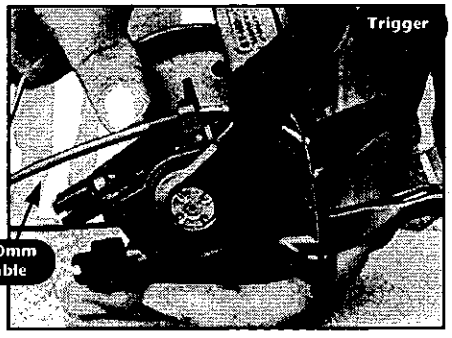
8. Line up the bearing with the housing and press the NEW pod into the Shift Lever. Replace the three fixing bolts. The bolts will help to seat the unit. Also, replace the OGD indicator. (Make sure you shift into high gear before installation.)

Installing Cables

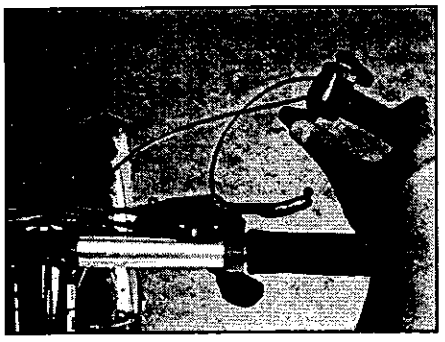


9. There are two cable lengths: 280 mm & 400 mm. Install the longer cable at the bottom, and shorter cable at the top. Make sure you press the end caps tightly into the remote shifter.

10. Route the shorter (280 mm) cable through the cable stop below the brake lever. Insert it through the thumb shifter. Use the cap with the long nose to secure it.



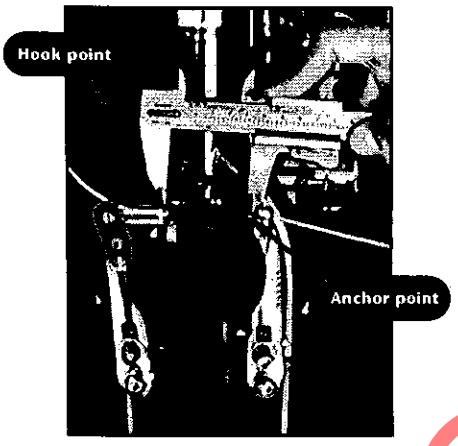
11. The longer cable routes around the front of the shifter and through the Trigger Shifter. It's a tight fit, but that's good. Too much slack will reduce performance.

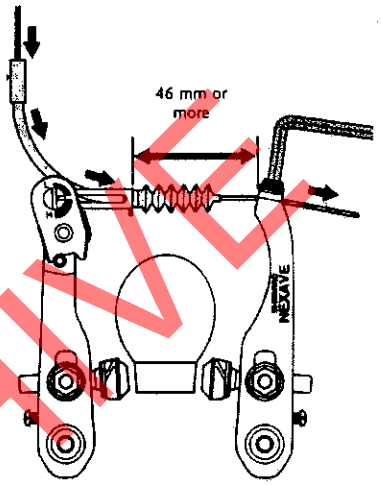


12. Install the shifter back on the handlebar. Re-attach the derailleur cables and brake cables. Put the hook wire door back on. Position the Remote Shifter on the end of the handlebar. Adjust to personal preference.

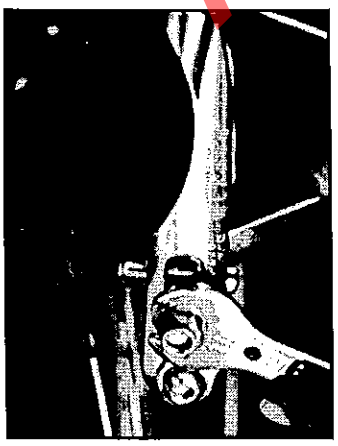
Nexave V-Brake™/Modulator BR-T400

Adjustment for the BR-T400 (Nexave V-Brake™/Modulator) is more like adjusting a canti than a V-Brake™. For example, it is much easier if you anchor the cable first before adjusting the arm and pads. Also, the distance between the hook point and the anchor point is a little greater than standard V-Brakes™, 46mm or more instead of 39mm.

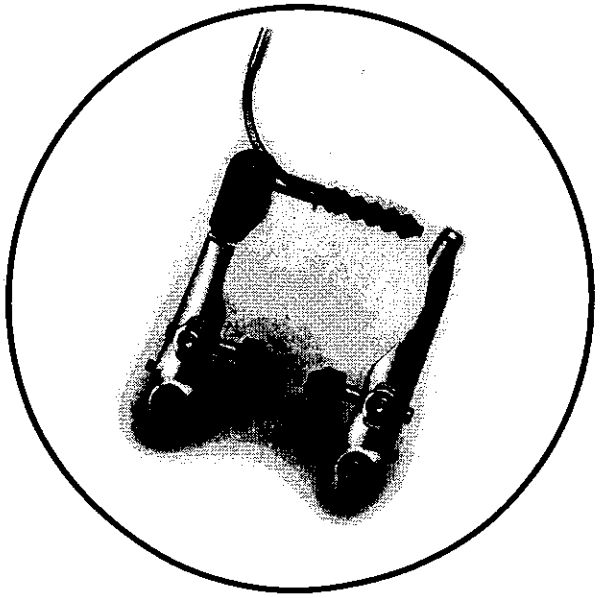




Before adjusting the arms and pads, set the distance between the hook point and anchor point to 46mm or greater. Then anchor the cable.



Once the cable is anchored, make arm and pad adjustments.



A-7 XTR Drivetrain Combinations

A-7-1 BB-M950 Combination

There are two sets of specifications for BB-M950 depending on the length of the axle.
Using the enclosed adjustment spacers, match the BB-M950 to the bottom bracket shell width, chain line, and front derailleur. The BB-M950 line up and adjustment spacers packaged with each type are shown below.

BB-M950 Specification

Axle Length	Shell Width	Adjustment Spacer
112.5mm	68mm (BC1.37) 73mm (BC1.37)	Two spacers, 2.5mm thickness
116mm	68mm (BC1.37) 73mm (BC1.37)	Two spacers, 3.5mm thickness Two spacers, 1.0mm thickness

A-7-2 XTR Front Drive System Combination Chart

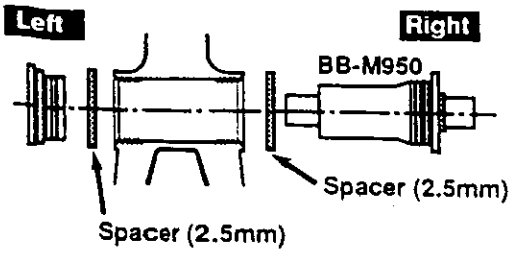
The table below shows the BB-M950 and adjustment spacer combinations that correspond with each front derailleur, front chainwheel, bottom bracket shell width, and chain line combination. The letters A, B, C, D, E, and F in the table correspond to a specific combination. Refer to the next page for an explanation of each combination.

Front Derailleur	Front Chainwheel	Chain Line 47.5mm		Chain Line 50mm	
		68mm (BC1.37)	73mm (BC1.37)	68mm (BC1.37)	73mm (BC1.37)
FD-M950 (Band Type)	MC FC-M951	A	B	C	D
FD-M950E (BB Mount Plate Type)	MC FC-M951-HG	E			F

With FD-M950 (Clamp Band Type)

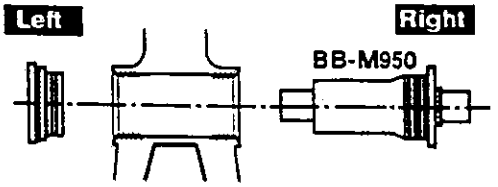
A

BB-M950 Axle Length 112.5mm
FD-M950, 900, 901
(with Clamp Band)
Bottom Bracket Shell Width 68mm
Chain Line 47.5mm



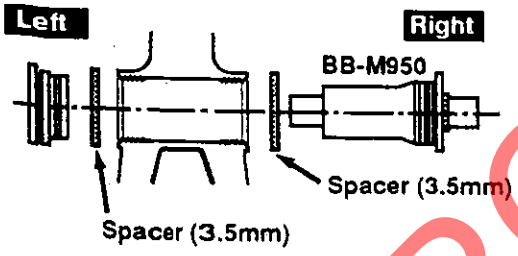
B

BB-M950 Axle Length 112.5mm
FD-M950, 900, 901
(with Clamp Band)
Bottom Bracket Shell Width 73mm
Chain Line 47.5mm



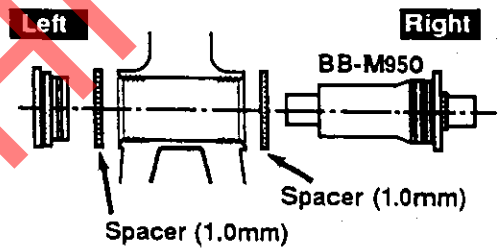
C

BB-M950 Axle Length 116mm
FD-M950, 900, 901
(with Clamp Band)
Bottom Bracket Shell Width 68mm
Chain Line 50.0mm



D

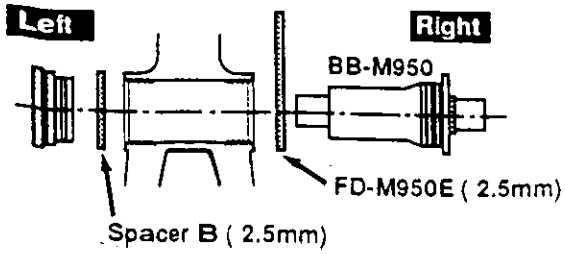
BB-M950 Axle Length 116mm
FD-M950, 900, 901
(with Clamp Band)
Bottom Bracket Shell Width 73mm
Chain Line 50.0mm



With FD-M950E (BB Mount Plate Type)

E

BB-M950 Axle Length 112.5mm
FD-M950E (with BB Mount Plate)
Bottom Bracket Shell Width 68mm
Chain Line 47.5mm



F

BB-M950 Axle Length 116mm
FD-M950E (with BB Mount Plate)
Bottom Bracket Shell Width 73mm
Chain Line 50.0mm