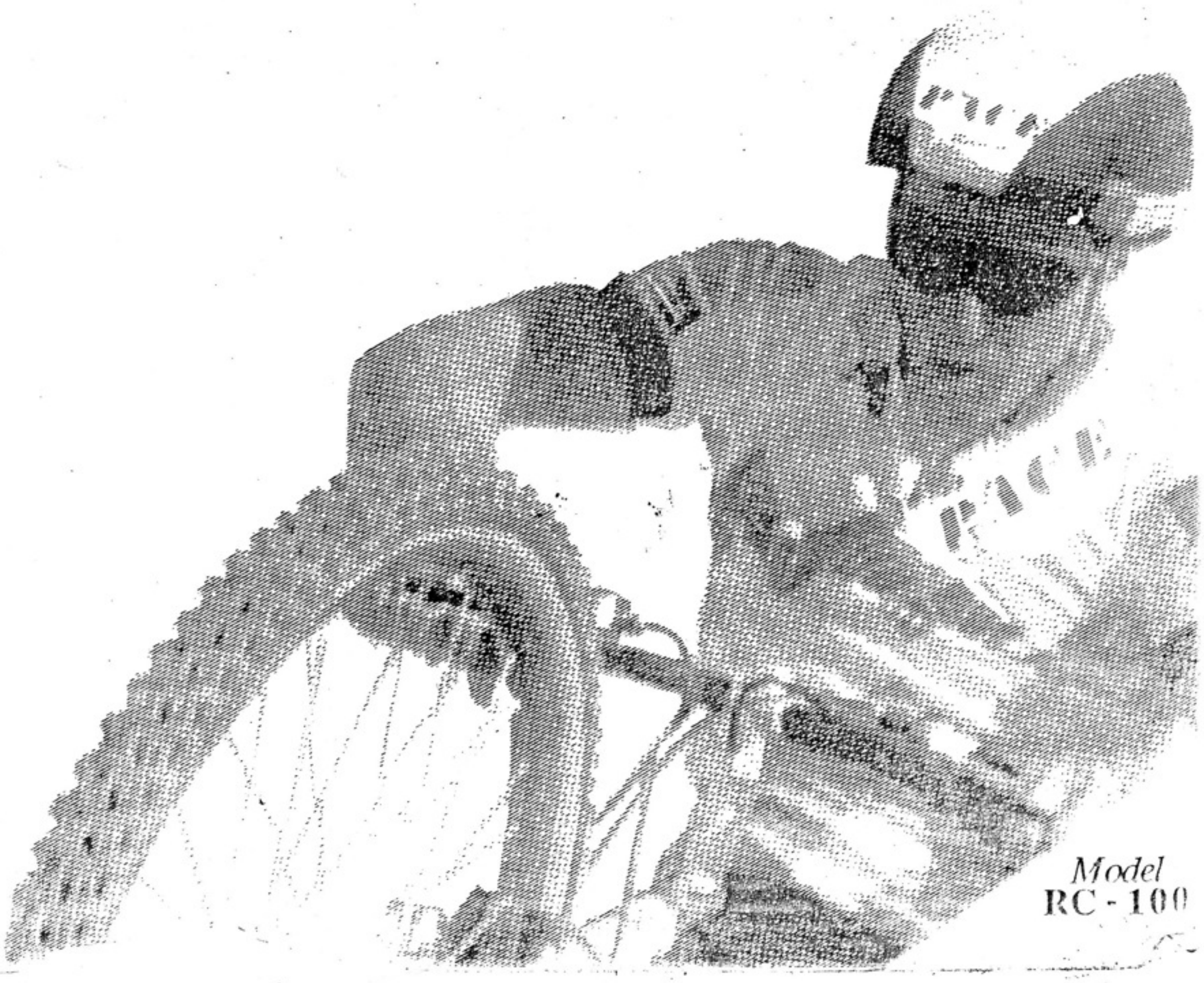
PACE

RESEARCH CYCLES

FACTORY MAINTENANCE MANUAL

AND RESOURCE



Model
RC - 100

CONTENTS

	Section& Page
INTRODUCTION, WARRENTY.....	1.0
MACHINE SPECIFICATIONS.....	2.0
MACHINE REFERENCE ILLUSTRATION	3.0
RC - 100 SET- UP.....	4.0
ROUTINE MAINTENANCE	
Transmission (including cables & controls)	5.10
Braking System	5.20
Bottom Bracket (including Crankset & Pedals)	5.30
Fork /Steerer System (including Headset)	5.40
Wheels, Tyres & Tubes	5.50
Chassis	5.60
Cycle Parts	5.70
SPECIALISED MAINTENANCE.....	6.0
RACE PREPARATION	7.0
TORQUE FIGURES.....	8.0

INTRODUCTION

Pace Research Maintenance Manuals are dedicated to the professional bicycle mechanic, and are designed to be a practical workshop & race resource for all users of Pace machines. Its content will apply both to the Authorised Dealer & the owner, therefore where Pace special tools are called up (of which there are very few), these may be found at Authorised Dealers.

The sections within the manual which deal with the routine maintenance of the machine, cover maintenance which should be carried out both regularly and on a longer term. We recommend that all sections are followed regularly at first, until a feel is aquired for those systems which can be left for a longer maintenance period (which will be dictated by the way and amount the machine is used).

The manual has been produced in a loose leaf form so that it can be laid flat for ease of use in the workshop, and so that it can be readily updated. Regular updates will be issued from the factory to your Authorised Dealer, who will in turn circulate them to you. These Factory Technical Updates will allow Pace owners to keep abreast of developments found through our Race Programme, and technical or maintenance notes from Paces R&D.

The RC-100 Series of competition machines are designed and built in the UK, to the very highest of standards. All materials and components found in this machine series must be carefully and regularly maintained to yield maximum performance and life. Failure to follow maintenance shedules may invalidate warrenty.

We hope that you enjoy being the owner of the ultimate mountain bike available in the world!

PACE RESEARCH

© Pace Cycles Limited 1989. All rights reserved.

WARRENTY

Pace machines purchased new from a Pace Authorised Dealer are warrented by Pace to be free from defects in materials and craftmanship under the limitations of its intended use (see below) for a period of twelve (12) months.

All original parts purchased from a Pace Authorised Dealer, excepting tyres, tubes, hydraulic lines and fluid and cables are warrented by Pace to be free from defects in materials and workmanship under the limitations of its intended use for ninety (90) days from the date of purchase.

Any prospective claims under this warrenty, made through the original Pace Authorised Dealer, will be honoured by Pace free of charge, excluding postages and packing and dealer labour charges (where applicable). This limited warrenty applies only to Pace machines PDI'd by an Authorised Dealer and which were not altered in any way inconsistant with its design.

Pace cycles should be inspected every twelve months by your Authorised Dealer.

The user assumes the risk of any personnal injuries, damage to or indeed failure of the bicyle and any other losses if Pace cycles are used outside of its intended use. Pace shall not be responsible for consequential or incidental damages.

Warrenty does not cover for any personnal injuries or losses due to accident, misuse, alteration, neglect, abuse, improper assembly, improper fit, improper maintenance or use of unauthorised replacement parts.

The warrenty including merchantability or fitness for a particular purpose is limited in duration to the 12 months of original warrenty.

INTENDED USE

The RC Series of machines have been specifically designed for serious competition use. However, the user assumes the risk of any personnal injuries, damage to or faiulure of the machine and any other losses if the machine is used for stunt riding, demonstration or display riding, bicycle motocross, BMX, ramp jumping, bunny hopping, trials riding, acrobatics, operated with more than one person, used with motors or for towing.

Use of machine outside of its limitations of design will invalidate warrenty.

Failure to follow service maintenance schedules may invalidate warrenty (this does not effect your consumer rights).

MACHINE SPECIFICATIONS

2.0

PACE MARK IV Production Model.

MODEL; ***RC-100***

WEIGHTS
All-up machine weight; 23.95 lbs (10.86kg)

INTENDED USE
Serious off-road competition/ riding.

CHASSIS
Material; 7000 Series, Box / Circular-section aluminium. Externally butted.
Sizes; 18in, 20in & 22in. (457,508 & 559mm)
Finish; Dupont Polyester Enamel
Colour; Graphite Grey
FRAME SPECIFICATION
Head Tube Angle; 71 degrees
Seat Tube Angle; 74 degrees
Top Tube Length; 23.10 in (582mm)
Chainstay Length; 16.50 in (419mm)
Wheelbase; 41.85 in (1061mm)
Ground Clearance; 11.95 in (304mm)
Pedal Clearance; 4.75 in (120mm)

FORKS (straight leg configuration)
Pace Research Composite; 7000 series aluminium fork-crown (Gull-wing configuration).
Reynolds/Tange Cr-Mo blades with reinforcing insert.
Offset; 1.45 in (36.5mm)
Trail; 2.87 in (70.5mm)
Finish; Dupont Polyester Enamel.

TRANSMISSION
Crankset; Bullseye 2-Piece (box-section 4130 chrome-moly cranks,large diameter hollow spindle).
Crankarms; 173mm (178mm optional) Finish; Dupont
Bottom Bracket; Totally sealed,replaceable press-fit roller bearings with grease nipple.
Pedals; PACE modified Shimano Deore XT II Comp', fitted with Mt. Christophe fibre toeclips & straps.
Front Derailleur; Shimano Deore XT II.
Rear Derailleur; Shimano Deore XT II 'GS' short cage.
Chain; Shimano Hyperglide narrow.

Gearing; (low/low -28/28, high/high -48/12)
Chainwheels; Shimano Deore XTII High Performance 48 + 38 + 28. (optional 50x44x28)
Freehub; Shimano Deore XT II Hyperglide Cassette-12,14,16,18,21,24,28.

BRAKING SYSTEM & WHEELS
BRAKES
Front/Rear; Hydraulic Magura Hydro-Stop.
Hose; Armoured micro-bore hydraulic line.
WHEELS
Hubs; Shimano Deore XT II (QD). 32 h.
Spokes; Magna stainless with aluminium nipples.
Rims; Mavic MA40 / Specioalized GS23
Tyres; Ritchey Force Racing Kevlar 26 x 2.00.
Tubes; Latex lightweight competition

CONTROLS
Handlebar Stem Steerer Tube (one piece);
Pace Research 'Upsidedown'.4.50 inches (114mm) reach.(Pace custom-stems available)
Headset; Shimano 105 with grease nipple.
Handlebars; Renthal Competition, Pace Research pattern/ bend. 23.5inch width.
Finish; Hard Anodised. Colour; Graphite Grey.
Grips; Pyramid' Grab-On' MK II.
Brake Levers; Magura Hydro-Stop, with Carbon-Graphite 'shorty' levers.
Thumb Shifters; Shimano Deore XTII.

OTHER COMPONENTS
Saddle; Selle Italia Turbo.
Seat-Post; Tioga Carbon-Fibre/Suntour XC.
Adjusted via Shimano Deore XT II binder bolt.
Specialized Water-Bottle/Carriers (1 x off)
High Tensile Alloy Screws throughout

FINISH
Fork Blades, Handlebar Stem, Crankarms, Detail - Bright Yellow.

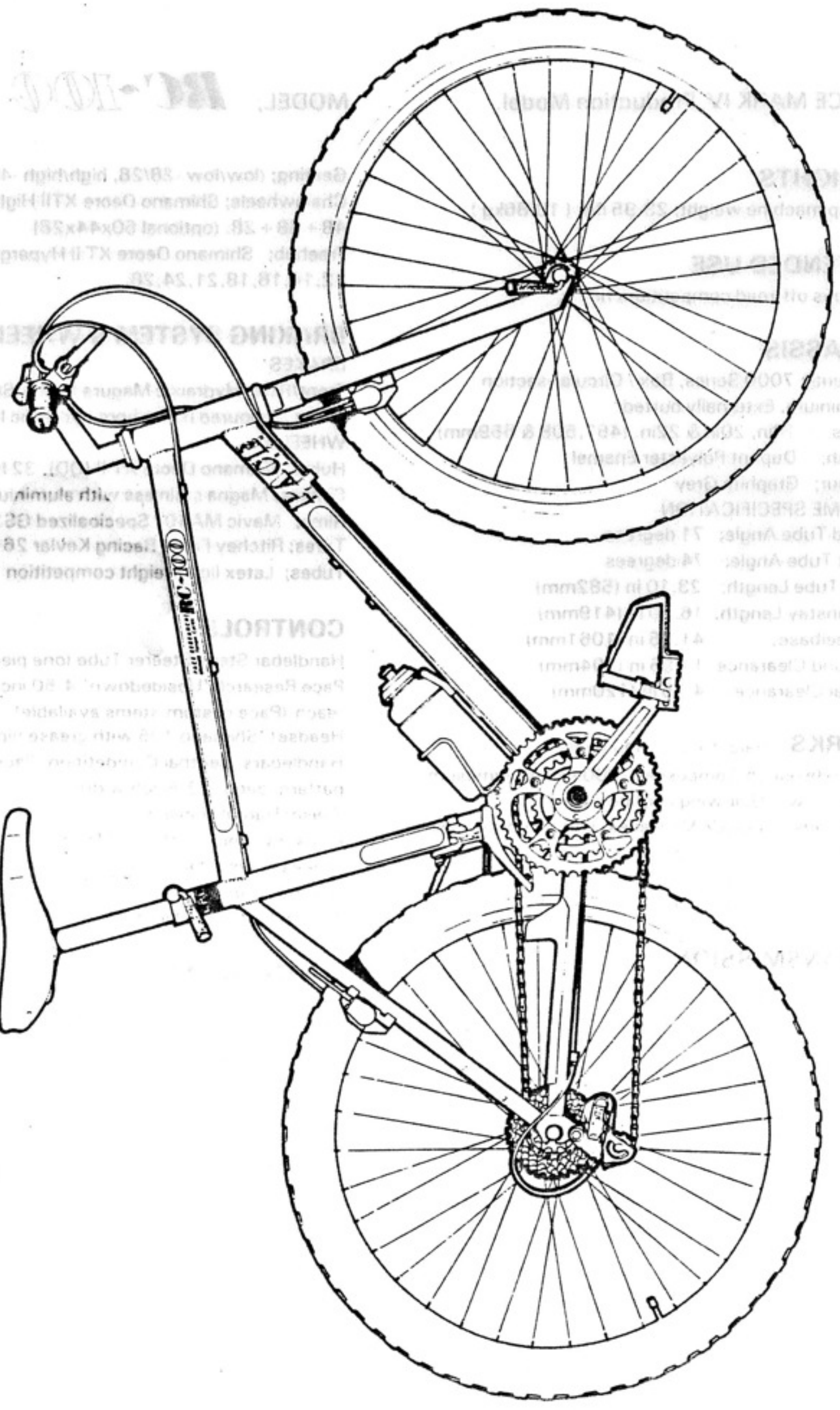
PACE RESEARCH IS THE OWNER OF COPYRIGHTS & PATENTS/ PATENTS PENDING IN RESPECT OF THIS MACHINE

SPECIFICATION
(all details relate to 20in model)

PACE RESEARCH
ULTIMATE TERRAIN CYCLES

REFERENCE ILLUSTRATION

3.0



PACE RESEARCH IS THE OWNER OF COPYRIGHTS & PATENTS/PATENTS PENDING IN RESPECT OF THIS MACHINE

Each machine in the RC series is test ridden before it leaves the factory. Machine set up includes brake system. transmission, wheel & steering system alignment. Your Authorised Dealer will have PDI'd your machine and fitted any special order components.

However, before your machine is ridden, particularly in competition, we would recommend adjustments are carried out both for your comfort and safety. Take great care on your first ride, checking that machine functions correctly and all necessary adjustments have been made.

Gear choice is restricted when competition SS mech' is fitted. Avoid use of 28/12 and 28/14.

NOTE. Hydraulic Brakes are powerful. TAKE CARE!
NOTE. Double check 4 x yoke screws are CORRECTLY TORQUED

SADDLE
Saddle height should be determined by your leg length, any other means of setting can result in knee injury. Sit on machine, with riding shoes on, feet in cages. Adjust saddle height so that when crank arms are in line with seat-tube, your extended leg is virtually straight. Correctly adjusted, your saddle height may at first seem too high, however when you are cycling, sat in the saddle, as long as your hips do not have to 'dip' or rock from side to side, height is correct. We would recommend that for all types of riding (short of pure Trials) saddle height is kept at the optimum and is not lowered.
Saddle position on rails should be cental and horizontal (see 7.0 Machine Set-Up).

HANDLEBARS & CONTROLS
Loosen handlebar-stem pinch bolt and rotate bars for most comfortable position. Then loosen all controls and slide brake levers along the bar, sufficient so that two, three or four fingers will rest on lever blade (the further in levers are the better for clearence against tree snagging etc). For competition use, rotate levers down to approx 45 degrees, less for leisure use. Position thumb shifters approx 10 to 15 degrees (off horizontal). Torque all screws correctly.

TOE CAGES
Wearing riding shoes, with feet in the cages, make sure that the cage positions your foot centrally on the pedal, and that the 'ball' of your foot is directly above the pedal axle. If not shim out or exchange cage for appropriate size if not.

TYRES
Dependent upon terrain, pressurise to between 35 - 55 psi. For road training inflate to maximum (see 7.0).

GENERAL

The transmission on the RC - 100 is Shimano SIS indexed. Correct and regular maintenance will keep SIS function working smoothly. Maintenance required is limited and comprises mainly of lubrication, regular correct torquing of screws and mechanism alignments. After transmission has been cleaned, we would recommend application of a quality protection fluid eg 'Duck Oil or WD 40'.

CABLES

Are SIS dedicated, do not replace with any but standard part. Make sure all outers are not kinked and casings are undamaged. Check inner wires are not frayed. It is recommended to replace all gear wires after half season maximum.

Cables can be shortened if required, but should always maintain a smooth line. Lubricate cables regularly. This is best achieved by moving thumbshifters to give inner wires most slack, then hold body of mechanism and push across chain rings / cassette. This will completely slacken cables and allow you to pull both inner and outer out of slotted cable guides. Wipe clean and lube with light oil. Refit by repeating removal proceedure.

MECHANISMS AND THUMB SHIFTERS

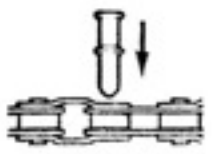
For adjustment and alignment please see 5.2 and 5.3. To lubricate, wipe mech' bodies clean or wash with soap and water, then brush clean with Diesel Fuel before lubricating with a light oil. Jockey wheels in rear mech' should be periodically removed and regreased. Correctly torque all screws before riding. As standard, rear mech' is SS short-cage type. Mechanism will suff er damage if used incorrectly (see 4.0)

NOTE Regularly check both mech'mounting / clamping screws are correctly torqued.

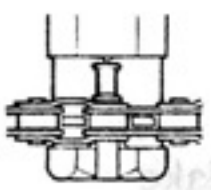
CHAIN

Inspect chain regularly for damage and excessive wear. We would recommend replacement after a quarter season maximum. Please note the correct method to determine new chain length (see 5.2). Chain cleaning & lubrication is best carried out with chain removed from machine (cleaning lub'n proceedure as mechanisms). Recommended lube is PJ1 'O-Ring' chain lube, available from competition motorcycle dealers.

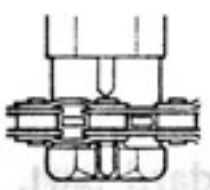
Due to the high stresses of the Hyperglide System use of the exclusive 'Chain Pin' is required. Never break the chain again at the reinforcing pin because pushing through the pin's extra large head will damage link (pin is recognised by its indent on one end).



1 Insert
Einführen
Introduire



2 Press
EinPressen
Enfoncer



3 Press-in
Aufweiten
Encastrer



4 Break-off the extra pin
Scherstift abbrechen
Rompre la partie de la goupille qui dépasse



SHIMANO UG CHAIN TOOL
SHIMANO UG KETTENSCHLIESSER
OUTIL POUR CHAINE UG SHIMANO



PARK* SUPER CHAIN TOOL
PARK SUPER KETTENSCHLIESSER*
OUTIL POUR CHAINE SUPER PARK*



PLIER TYPE CHAIN TOOL
KETTENSCH-LOSSZANGE
OUTIL POUR CHAINE DE TYPE PINCE

CHAINRINGS AND SPROCKETS

The nature of the Hyperglide system dictates that certain groups can only be used. Other gearing available is 13-30 and 26-46. These ratios will give you a wide ratio gear train and can only be used with long cage rear mechanism see 6.1). No maintenance as such is required although when teeth are showing signs of wear (quality of shifting and indexing will decrease) then complete drive train including chain must be replaced.

THUMBSHIFTERS

Little maintenance is necessary on these units, although so that the indexing system functions correctly, the units must be regularly cleaned. To facilitate this, move the thumbshifters to give most slack, then hold body of derailleur mechanism and push across chainrings/cassette. This will slacken cable and allow you to pull both inner and outer out of slotted cable guides. Remove screw holding indexing body/lever to clamp and remove body from clamp (still attached to cable). Clean with diesel fuel then immerse thumbshifter lever in a container of light oil. Leave overnight, wipe clean then reinstall onto clamp, and refit cables. Check indexing.

NOTE Without the correct use of a torque wrench bolts may be overtightened, leading to stripped and damaged threads.

Stroke Adjustment and Cable Assembly

"L" (Low) side adjustment

ıt the chain on the front chainwheel small gear
ıd the largest gear of the freewheel. Then adjust
e clearance between the chain and the chain-
ıide inside plate (B) to a minimum by turning the
ljusting screw "L", making sure that there is no
ontact between the two. Turn the adjusting screw
' in a clockwise direction for the chainguide to
ove toward the large gear.

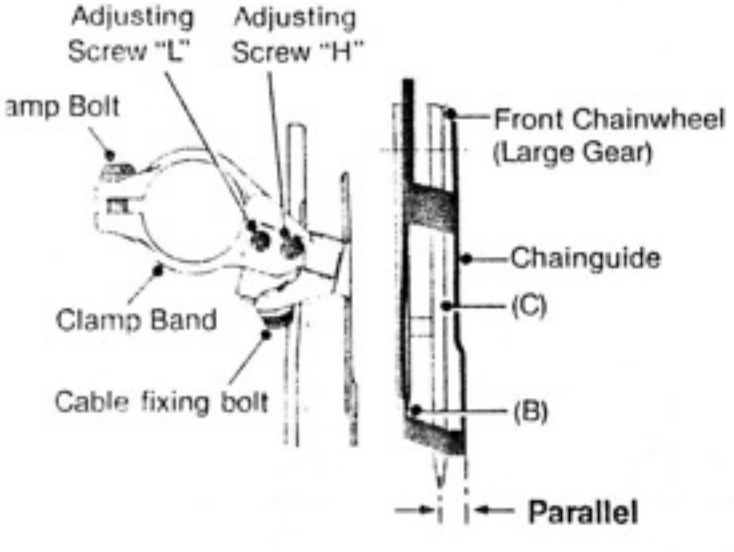
Cable assembly

ghten the cable fixing bolt to fix the cable.

Tightening torque: 50kgfcm (43in.lbs.)

"H" (Top) side adjustment

ıt the chain on the front chainwheel large gear
d on the smallest gear of the freewheel. Then
just the clearance between the chain and the
ainguide inside plate (C) to a minimum by
rning the adjusting screw "H", making sure there
no contact between the two. Turn the adjusting
rew "H" in a clockwise direction for the chain-
ıide to move toward the small gear.

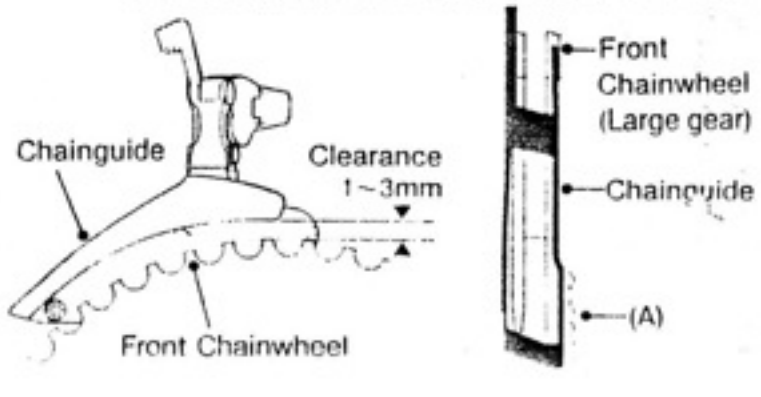


the chain falls to the crank side	Tighten the top adjustment bolt clockwise (about 1/4 turn).
shifting is difficult from the termediate gear to the large gear	Return the top adjustment bolt counter-clockwise (about 1/8 turn).
shifting is difficult from the termediate gear to the small gear	Return the low adjustment bolt counter-clockwise (about 1/4 turn).
there is interference of the chain nd front derailleur inner plate at e largest gear of the front chain heel	Tighten the top adjustment bolt clockwise (about 1/8 turn)
there is interference of the chain nd front derailleur outer plate at e largest gear of the front chain heel	Return the top adjustment bolt counter-clockwise (1/8 turn).

Assembly to Frame

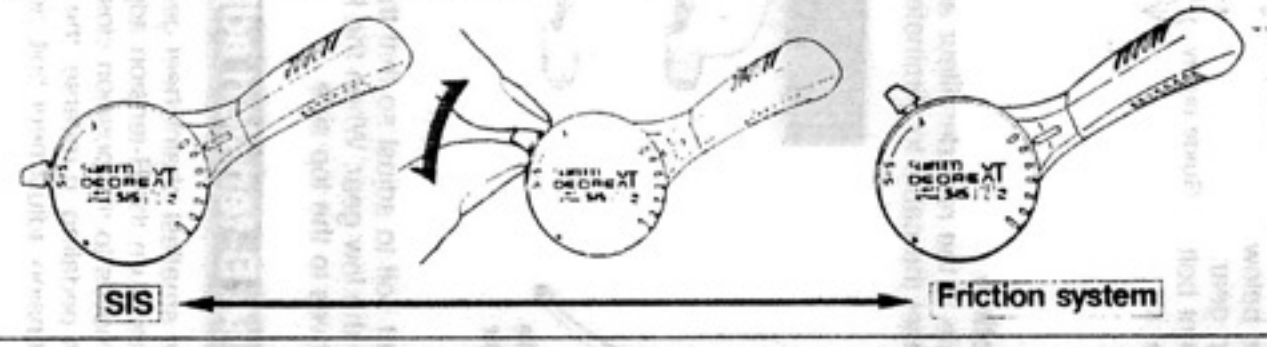
1. Fix the clamp band to the seat tube temporarily by tightening the clamp bolt by hand.
2. And then adjust the clearance between the chainguide outside plate, as viewed from the side, and the front chainwheel large gear to between 1~3mm.
3. Next, adjust the chainguide position as seen from above. Position the chainguide outer surface (A) exactly above the large gear, so that it is parallel with the large gear.
4. Finally, tighten the clamp bolt with the 5mm hexagon wrench.

Tightening torque: 50kgfcm (43in.lbs.)



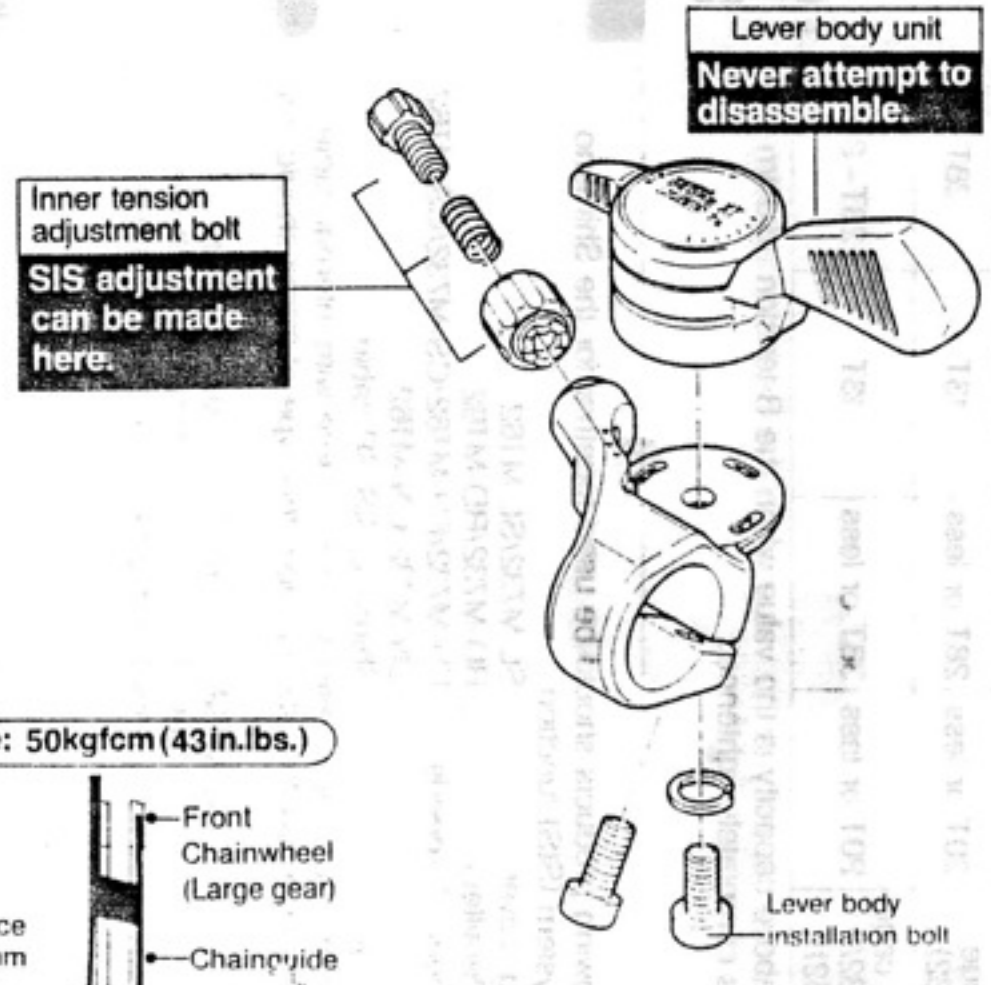
SIS operation

Move the knob to select SIS or friction.

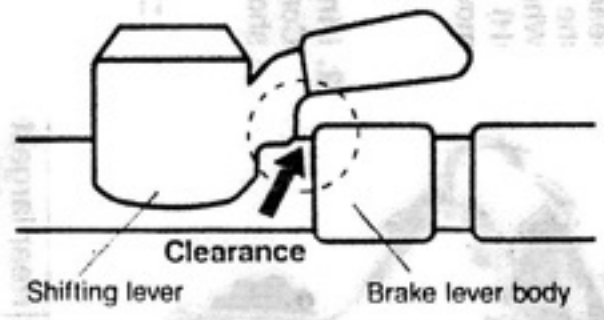


Shifting lever installation

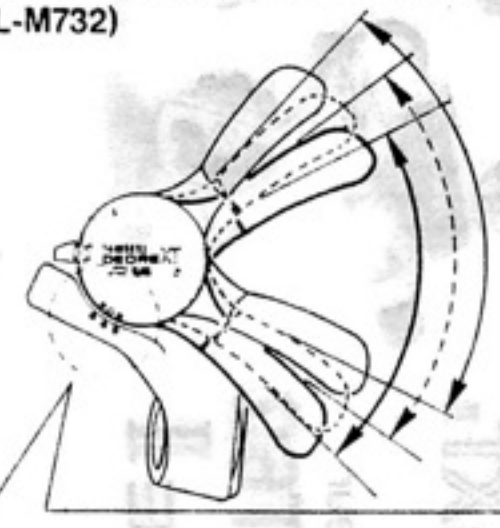
■ Refer to the illustration of the disassembled parts below when installing.
The figure below shows the lever for the rear, but the lever for the front is installed in the same way.



Note:
Install so that the lever unit does not contact the brake lever when the lever unit is moved from the LOW to TOP position.



■ **Adjustment of the finger reach (SL-M732)**



The finger reach position can be adjusted to any of three steps.
Loosen the lever body installation bolt, and then align the mark on the lever body unit with one of the marks. Install at the position where operation is easiest.

5.13

Rear Derailleur

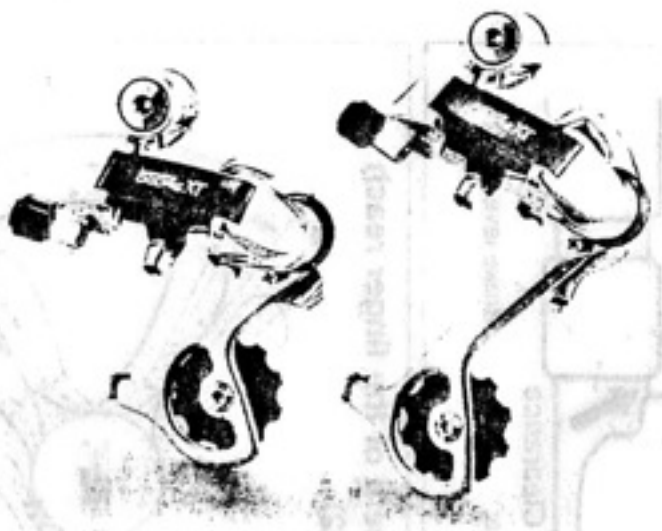
RD-M732

SHIMANO DEORE XT II

Rear Derailleur

RD-MT62

SHIMANO DEORE II



■Capacity

Type	Front difference	Total capacity	Rear smallest sprocket	Rear largest sprocket
Short cage (RD-M732)	20T or less	28T or less	13T	28T
Super long cage (RD-M732/ RD-MT62)	20T or less	38T or less	13T	28T~32T

Note: The above capacity is the value when the B-tension adjustment bolt is completely tightened.

■Note

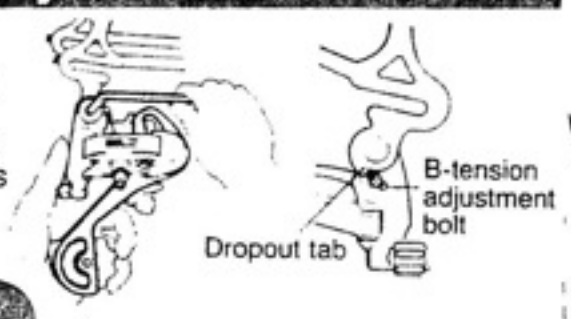
- The following products should be used together for the Shimano Index System (SIS) function.
  - Shifting Lever.....SL-M732/SL-MT62
  - Rear Derailleur.....RD-M732/RD-MT62
  - Freewheel (7 speeds).....FH-M732/FH-MT62/CS-M732/CS-MT62
  - Chain.....CN-M732/CN-MT62
  - Outer Cable.....Shimano SIS-SP cable
- Because the high cable resistance of a frame with internal cable guides would impair the SIS function, this type of frame should not be used.
- The shifting lever (SL-M732, SL-MT62) and rear derailleur (RD-M732, RD-MT62) cannot be used in combination with the DURA-ACE Series components to obtain SIS performance.

■Assembly and Adjustment

1. Assembly to Frame

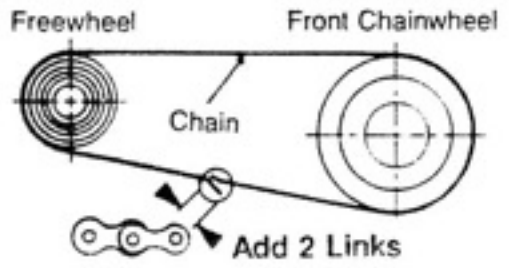
Secure the bracket axle to the rear dropout with a 6mm hexagon wrench.

Note: When installing, be careful that the B-tension ajdustment bolt is not deformed by coming into contact with the dropout tab.



2. Chain Assembly

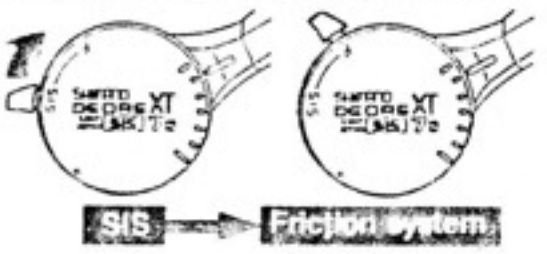
Put the chain on the largest front chainwheel and the largest rear sprocket of the freewheel. Stretch the chain to the limit and add 2 chain links.



3. Stroke adjustment and cable connection

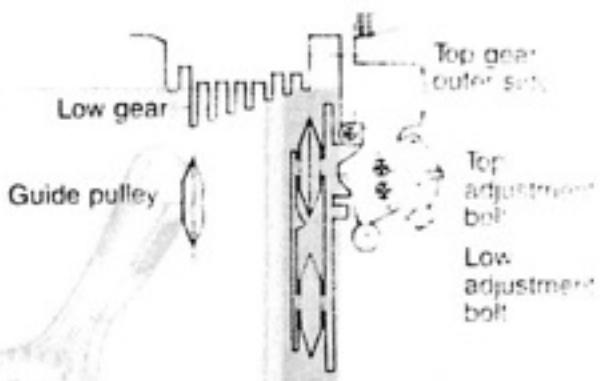
•Stroke adjustment

Make adjustment of the derailleur stroke before making the SIS adjustment. At this time, make the adjustment with the lever in the friction mode



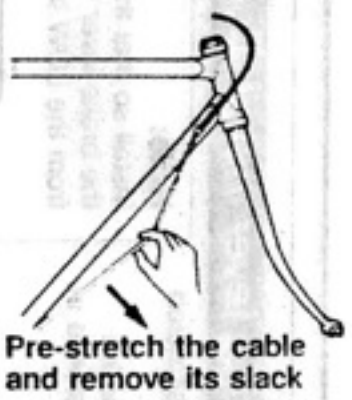
1. Top adjustment

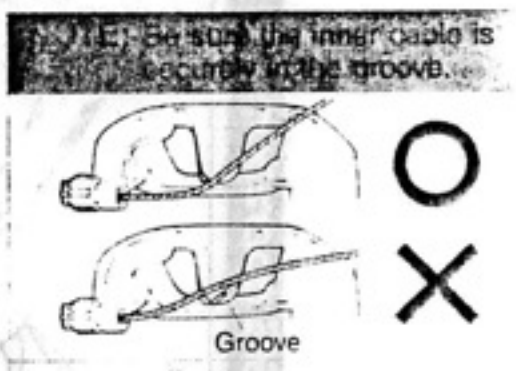
Turn the top adjustment bolt to adjust so that, looking from the rear, the guide pulley is below the outer line of the top gear. When the top adjustment bolt (H) is turned clockwise, it moves to the low side.



2. Inner cable connection

Connect the inner cable to the rear derailleur and, after the pre-stretch as shown in the figure, reset the cable to eliminate cable slack.





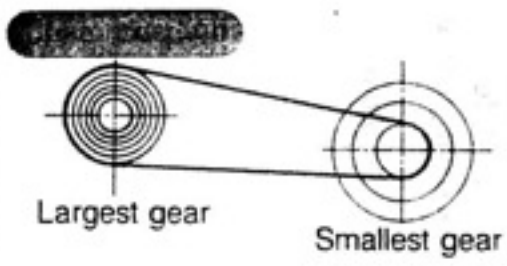
3. Low adjustment

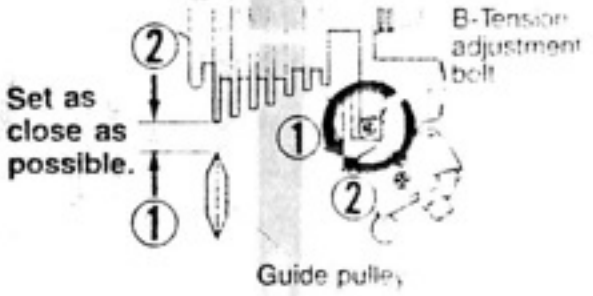
Turn the low adjustment bolt to adjust so that the guide pulley moves to a position directly below the low gear. When the low adjustment bolt (L) is turned clockwise, it moves to the top side.

4. How to use B-tension adjustment bolt

① Place the chain on the smallest chainwheel gear and the largest freewheel gear, and then turn the B-tension adjustment bolt to adjust so that the guide pulley moves to the position closest to the low gear.

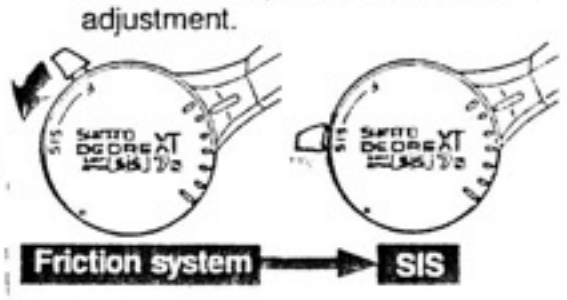
② If the chain rubs when pedaling in reverse, the guide pulley is too close to the low gear. Turn B-tension adjustment bolt clockwise until the rubbing and noise disappear.





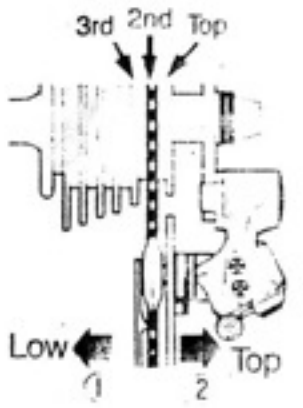
5. SIS adjustment

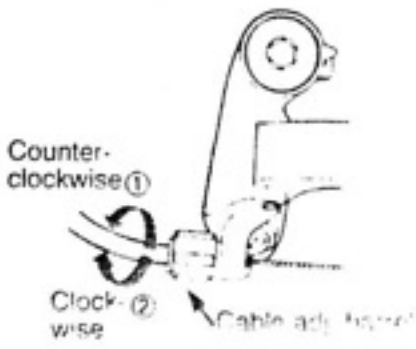
① Move the shifting lever from friction to SIS, and make the SIS adjustment.



② Operate the shifting lever to shift the chain from the top gear to the 2nd gear.

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





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

SERVICE INSTRUCTIONS

Any repairs which may be necessary on the MAGURA "Hydro-Stop" are essentially restricted to

- Replacement of damaged fluid lines
- Filling and bleeding the brake system in the event of an accidental loss of oil.

In the event of leaks at the master or slave cylinder, please refer to the list of available spare parts.

REPLACING A FLUID LINE

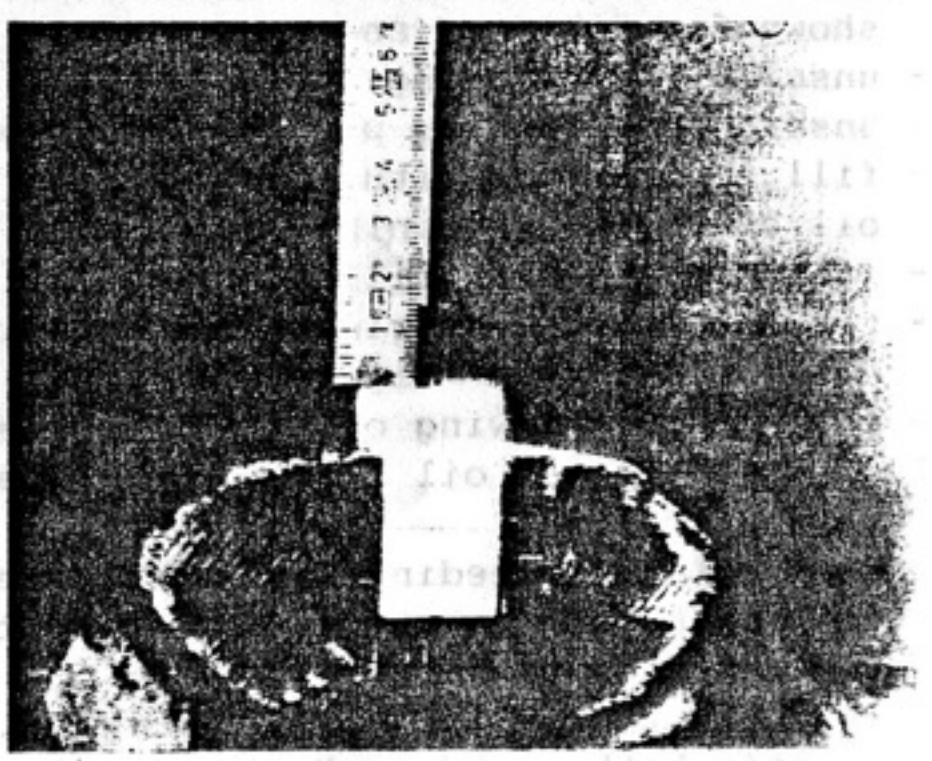
Unscrew the damaged line.

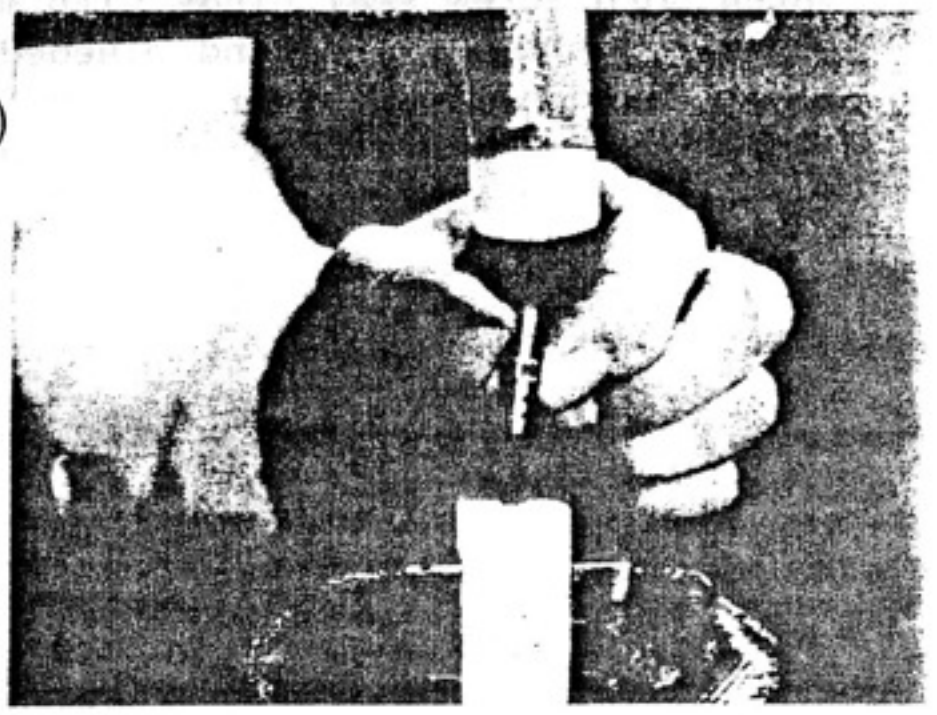
Produce a spare line, to do this
- cut the fluid line to length (see Figure 1),
- place the line end in the clamping jaws,
- clamp the clamping jaws in a vice (see Figure 2),
- strike in a connection piece using a plastic hammer (see Figure 3),
- provide the opposite end with a connection piece in the same way if there is no compression fitting.

Fit the spare line with connection piece at both ends, to do this
- screw connection piece into connection bores,
- tighten with max. 2,5 Nm,
- secure line with existing clips.

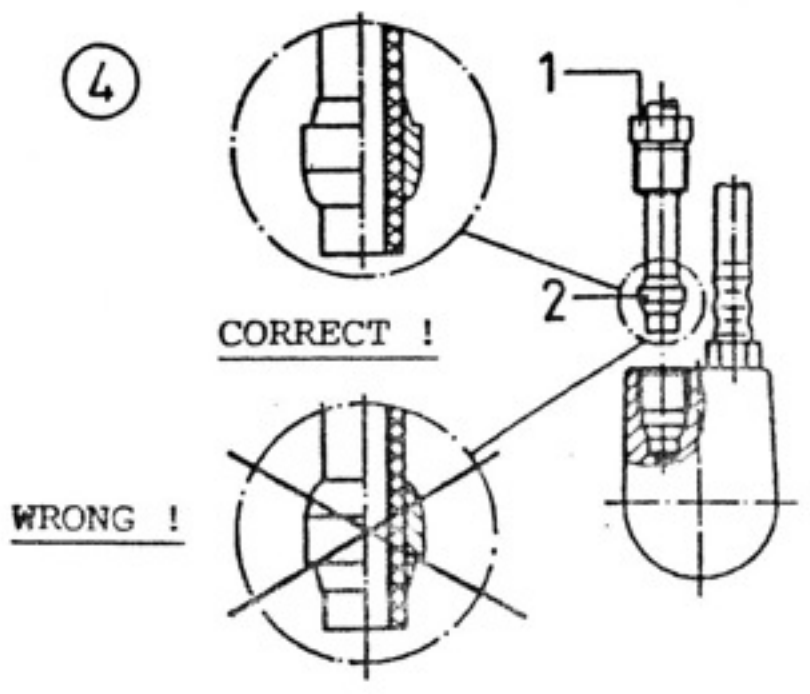
Fit spare line with compression fitting (see Figure 4), to do this
- screw in connection piece at master cylinder,
- tighten with max. 2,5 Nm,
- route line through eyelets or frame webs,
- push compression screw (1) and ferrule (2) onto line end,
  Caution: Please note correct direction of ferrule as shown in Figure 4,
- push line end into the connection bore on the slave cylinder until it bottoms,
- screw in compression screw with 4-5 Nm and tighten sufficiently, gap between compression screw hexagon and cylinder to be 2 - 2,5 mm,
- test the strength of the compression fitting by pulling the fluid line with a force of 100 - 200 N.

① 

② 

③ 

④



FILLING AND BLEEDING THE BRAKE SYSTEM

Please use the prescribed low viscosity mineral oil Castrol LHM 1756 or Pentosin LHM (hydraulic oil Citroen).
Attention: Never use Glycol-based brake fluid!

- move the master cylinder to the position shown for filling (see Figure 5),
- unscrew the bleeding screw (3),
- unscrew the filling plug on the brake cylinder,
- fill the syringe with low viscosity mineral oil and expel remaining air,
- insert syringe in filler bore,
- thoroughly press syringe contents into the brake system (see Figure 6),
- collect overflowing oil at the master cylinder dispose of this oil later in accordance with regulations,
- seal off the bleeding bore with screw, leave the syringe in position when doing this,
- remove the syringe
- seal off the filler bore with screw,
- tighten both screw seal plugs with max. 4 Nm,
- the system is now filled and bleeded, because the air was displaced upwards from the slave cylinder through the bleeding bore during the filling process.

TESTING

You should perform the following tests before putting into operation:

- pull the hand lever by around 5 mm only, the brake pistons must move out of end position. Bleeding must be repeated if this does not occur (see the instructions for filling and bleeding).
- pull the hand lever to build up pressure
- keep lever at pressure and check connections and seal plugs for leaks,
- release lever, brake blocks move to end position.

⑤



⑥



The following tests should be performed before putting into operation:

- Was the fluid line kinked or damaged?
  If yes, replace immediately - see service instruction !

- Check that the brake functions and that there are no leaks with the bicycle stationary, to do this
- pull the lever - the brake pistons are extended,
- hold lever at pressure and check fluid line connections and screw plugs for leaks,
- release lever - brake pistons travel to end position.

TIP FOR THE CYCLIST

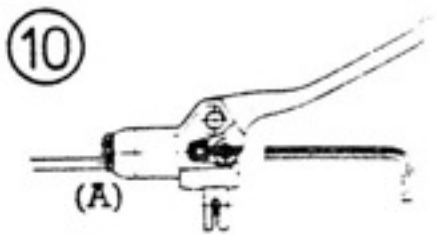
Since the MAGURA hydraulic bycicle rim brake "Hydro-Stop" responds more directly than conventional brakes, you should get used to the new brake by careful trial braking. Apply the brakes so that the wheels do not block.

MAINTENANCE

The MAGURA "Hydro-Stop" is maintenance-free, except for following work:

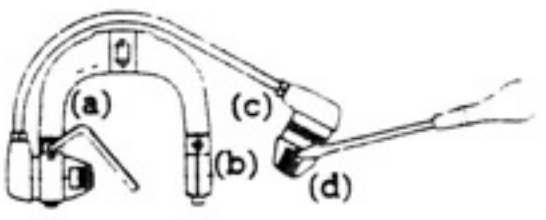
The distance between the brake blocks and rim should be between 2 and 2 mm on both sides. This distance increases gradually due to wear of the brake blocks. To readjust, simply turn the set screw on the hand lever (A) clockwise with an Allan key (see Figure 10).

(10)



The brake block must be replaced (see Figure 11) when the rubber has been wom down to 1 mm at the latest.
- unscrew the hexagon socket screw on the holder (a),
- remove the clip (b),
- remove the slave cylinders (c),
- remove the brake blocks by turning a screwdriver between the block carrier and housing (d),
- press in a new brake block,
- turn the set screw on the hand lever back anticlockwise until the brake block carrier contacts the housing,
- fit the slave cylinder again - ready.

(11)



BOTTOM BRACKET

5.30

GENERAL

The Bottom Bracket utilised on the RC - 100 series is the Bullseye 2 - Piece. Representing as it does, the lightest and most rigid ass'y available, the system must be regularly and correctly serviced to yield its maximum potential. As standard, the crankset will always show a small degree of side to side float. This is normal, and as long as it remains within acceptable parameters should be ignored. The paint finish should not be tampered with, whilst the outside faces of the crank arms are protected with clear film which should be replaced when damaged (Pace Pt No 103).

LUBRICATION

IMPORTANT The life of the crank bearings will be severly reduced if lubrication is not carried out regularly.

After every ride the BB must be lubricated. Use a quality grease, applying through nipple in bottom of BB shell. Turn crank slowly , and continue to pump through until clean grease appears around ends of BB shell. Wipe off excess.

SPIDER & CRANKS.

Keep all screws firmly tightened to correct torque figures. Note that nearside crankarm screw and inner chainwheel screws are of American manufacture and therefore are imperial size. Please use correct keys as supplied.

If it is found necessary to service crank, remove single screw and safety tab from LH crankarm, pull off crankarm and draw out crank assy from RH side of machine. Take care to reassemble with spacers in correct order on crank spindle.

CAUTION Note that safety tab must locate into hole in crank spindle as the pinch bolt passes through tab itself. This prevents LH crankarm sliding off of spindle itself.

Touch - Up paint is available for the crankarms (Pt No P111Y).

IMPORTANT Torque LH crankarm screw correctly

BEARING REPACEMENT

It is recommended that the machine is returned to your Pace Dealer when bearing repacement is necessary. If however you wish to undertake the proceedure yourself, a Pace Tool with replacement instructions is required (Pt No P105).

FORK AND STEERING SYSTEM

5.40

GENERAL

The fork and steerer system on the RC - 100 series is of a design unique to Pace machines. The system offers unequalled steering precision whilst affording a high weight saving. The maintenance of the entire system is minimal as long as the simple proceedures are regularly followed. Please note that the handlebar stem geometry is set at the factory and cannot be altered for either reach or rise. Although the reach of the stem has been calculated to harmonise with the machines geometry, the stems rise can be customised by ordering a particular rise of stem from your Pace Dealer (Part No P103).

NOTE; FOR YOUR SAFETY IT IS ESSENTIAL THAT THE 4 X FORK-YOKE SCREWS ARE CORRECTLY TORQUED after any adjustments are made.

LUBRICATION

A grease nipple will be found behind the frame head tube. It is recommended after every competition or lengthy ride that a quality grease is pumped through the headset. Wipe away excess.

ADJUSTMENT

HEADSET. When play is felt in the headset a simple adjusting proceedure should be followed. Determine wether adjustment is necessary by locking front wheel
(whilst stationary!) and rocking machine back and forth. If fork blades can be seen to pivot back and forth simply fully loosen 4 x fork-yoke screws and turn 10mm nut (found beneath fork-yoke) one flat. Tighten screws and check for play. If no play is detected lift front wheel clear of ground and turn handlebars either way. If resistance is felt then headset has been overtightened . Readjust correctly.
NOTE; Correctly torque 4 x yoke screws after adjustment
NOTE; Do not attempt to adjust 10mm nut before yoke screws are released.

TRACKING. Care should be taken whilst adjusting headset so that the wheel alignment with machine is not affected. If it is found that whilst riding the handlebars are not at 90 degrees to frame then follow adjustment 1) then 2) as necessary.
1) Loosen 4 x fork-yoke screws. Whilst standing infront of the machine with the wheel held between your legs and with the wheel inline with the machine (sight down top-tube), lightly twist handlebars to also align handlebar stem with frame top-tube and front wheel.
If misalignment is still noted;
2) Deflate tyre and remove wheel. Loosen 2x righthand fork-yoke screws and twist blade so that when sighting down fork blade from above, drop-out flange is set at 90 degrees to face of fork-yoke. Repeat for LH side. Repeat 1) as necessary. **Now correctly torque 4x fork-yoke screws.**

5.41

FORK BLADES

No maintenance as such is required on this component set. However it is recommended that attention is always paid to their correct positioning within the fork-crown during tracking and headset adjustment. As standard, the very top of the steel fork-blade should be level with the edge of the fork-crown. Any sign that the blade has slipped through at all indicates that the 4x fork-crown screws require tightening.
Should you wish to replace a blade (Pt No P108LH and P108RH), first deflate tyre and remove wheel. Remove 2 x screws (per leg) holding brake slave cylinders and release from fork blades. Loosen 4 x fork crown screws and remove blade (note that blades are 'handed').
Touch-Up paint is available for blades (Pt No P111Y).

HEADSET

It is recommended that the machine is returned to your Pace Dealer when bearing repacement is necessary. If however you wish to undertake the proceedure yourself, only a Pace uprated headset can be installed (Pt No P106), using a Pace tool(Pt No P107) (Please see 6.0).

HANDLEBAR STEM

The stem requires no maintenance but should be periodically inspected for crash damage.
To remove stem, loosen 4 x fork crown screws and remove 10mm nut and its alloy shim from beneath crown. Remove wheel and brake cylinders from fork blades as detailed in Fork Blades section. Slide stem out from the headset noting position and order of all headset components. Clean inside of frame headtube.
Reassemble (or if replacing use Pace stem only, Pt Nos P10418L to P104 22H) following the above detail in reverse order. Make sure that all headset components are clean and greased, and are reassembled in their correct order and position. Install new 10mm Nyloc nut. Pump fresh grease into headset until it appears from beneath headset collar. Wipe away excess.
Touch-Up paint is available for the stem (Pt No P111Y).

NOTE

To protect both the upper surface of the fork crown and the control cable housings, it is recommended to apply a small tab of Duct-Tape in shoulder of crown. This will prevent wear between the two sufaces.

NOTE Correctly tighten 4 x fork-crown screws after adjustments and before final test ride.

GENERAL

The wheels on the RC - 100 series of machines have been specifically designed for competition usage. Each wheel is hand built and trued and should require little maintenance in this respect. However it is recommended that at the end of a season the wheels are returned to the factory for correct truing and tensioning
(every wheelbuilder has his own partricular building style and should maintain the wheels he builds). As the wheel is the most critical area for weight saving on a competition machines, rims with both a narrow section and few spokes (some of the RC series will carry as few as 28) should be treated accordingly whilst competing. Any sign of spoke loosening must be rectified immediately.
Tyre choise is very much a matter of personal preference, however the tyres found on your machine have been selected for their allround performance in UK competition. Take care to select replacement tyres carefully, noting their weight as well as their performance. The RC - 100 series will accept tyres of any section, whilst noting that narrow section rims alter tyre profile and performance.

LUBRICATION

The RC - 100 series of machines are equipped with Shimano hubs. For Shimano hub service see 5.51.
Occasionally remove QR skewers and wipe clean and regrease.
Note that if wheels are treated with protection fluid after washing (see 7.0), the spoke nipples will be protected against corrosion (and therefore will ease wheel maintenance).

TYRES

Regularly check for damage to the side walls of the tyres and for excessive wear. For tyres which are directional, if wear is noted then transfer the tyres from front to back, making sure they are not turned around during fitting (a chalk mark on the nearside wall of each tyre prior to swopping over should be on nearside after exchange for example). For none directional tyres either transpose as suggested or turn tyre around on same wheel. After inflation check that tyre is fully seated on wheel rim and that when wheel is spun tyre runs true.

RIMS

The powerful nature of the hydraulic brakes fitted to the RC - 100 can damage rim if brake shoes have collected a sharp piece of grit. Inspect rim and shoe surface regularly. Check for trueness of rim run out and have retrimmed of replaced as necessary.

HUBS

Lubrication: Traditionally the hub-set is one of the components least capable to withstand heavy mountain bike racing usage. However, if a hub is regularly lubricated (which ideally means after every ride), modern hubs will stay 'in-tune' over a long period.

To correctly lubricate, a particular type of pointed grease gun nozzle is required, which can be bought cheaply from your local tool shop.

Firstly, using a pointed implement of suitable size, insert into the red window found on the circular black collar (arrowed with open indicator) found around outside face of each hub. Slide collar around to reveal grease port.

Insert grease gun into port and pump until contaminated grease and any water have been purged from hub bearing races.

Wipe away excess.

Repeat proceedure for each collar (rear-hub only has one on nearside).

Slide collar closed when serviced.

Adjustment: 14 and 15mm cone spanners are required to remove any excess play in hubs. Hubs are easily checked for excess slack by removing wheel from machine then withdrawing QR skewers. Pull axle tightly and move from side to side. If play is felt, then loosen axle lock-nut (15mm) whilst holding inner cone (14mm). Wind inner cone one half of a turn and lock with lock nut.

Test for play and repeat accordingly.

FREEHUB

Lubrication: Servicing and adjustment of the freehub mechanism is difficult with replacement parts scarce. Therefore, frequent lubrication is recommended to maintain and increase service life. See 5.52 for freehub removal.

With freehub removed from wheel, remove dust cap fom inner face.

Clean freehub body with diesel fuel and submerge entire unit in a light oil, preferably overnight.

IMPORTANT Use light oil only, as freehub pawl mechanism will not operate with heavier oils and grease.

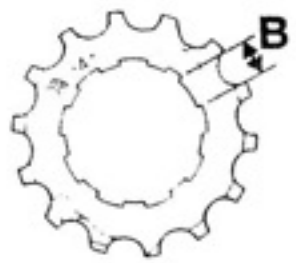
Installation of the HG sprocket

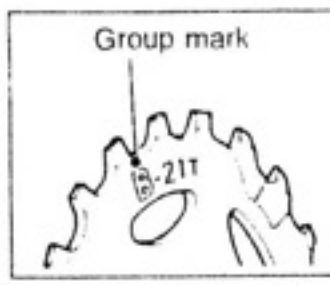
Each sprocket should be placed so that the surface with the mark indicating the number of teeth is at the top side, and so that part A of the freewheel body and part B of each sprocket are aligned.

Wide groove width at one place only



Wide projection at one place only on each sprocket





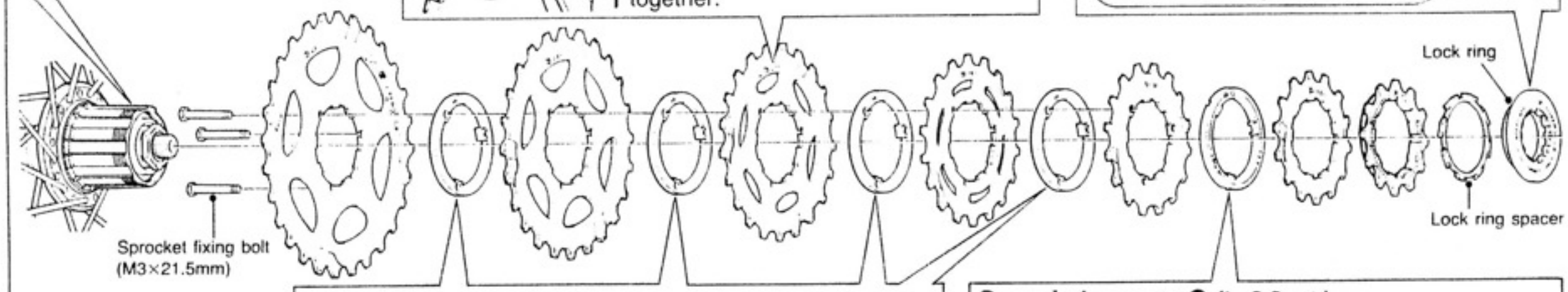
Note:
In order to maintain smooth shifting performance of the HG (Hyper-Glide) sprocket, use only B-marked sprockets together and only C-marked sprockets together.

Tighten the lock ring by using the freewheel removal tool. (right-threaded)

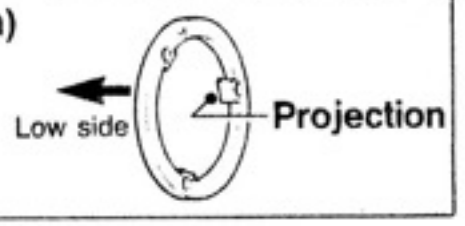
TL-FW30
Freewheel removal tool (part no. 4-120 0905)



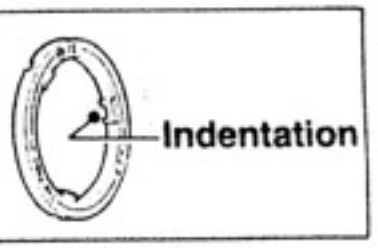
Tighten torque: 300~500 kgfcm (260~430 in.lbs.)



Sprocket spacers D (t=3.1mm)
※ Set so that the three projections of each of the sprocket spacers D is at the low side, and align with the sprocket fixing bolts.

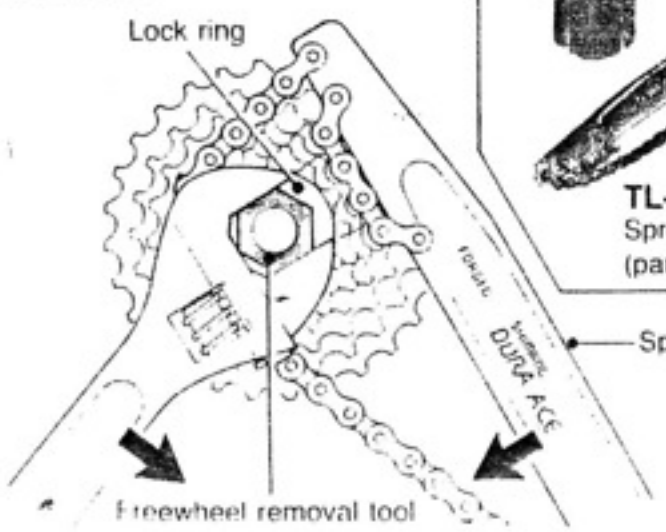


Sprocket spacer C (t=3.3mm)
※ Set so that the three indentations of sprocket spacer C are aligned with the sprocket fixing bolts.



Removal of the HG sprocket

Remove the lock ring by using the special tools (TL-FW30 and TL-SR20) in order to replace the HG sprocket.



TL-FW30
Freewheel removal tool (part no. 4-120 0905)

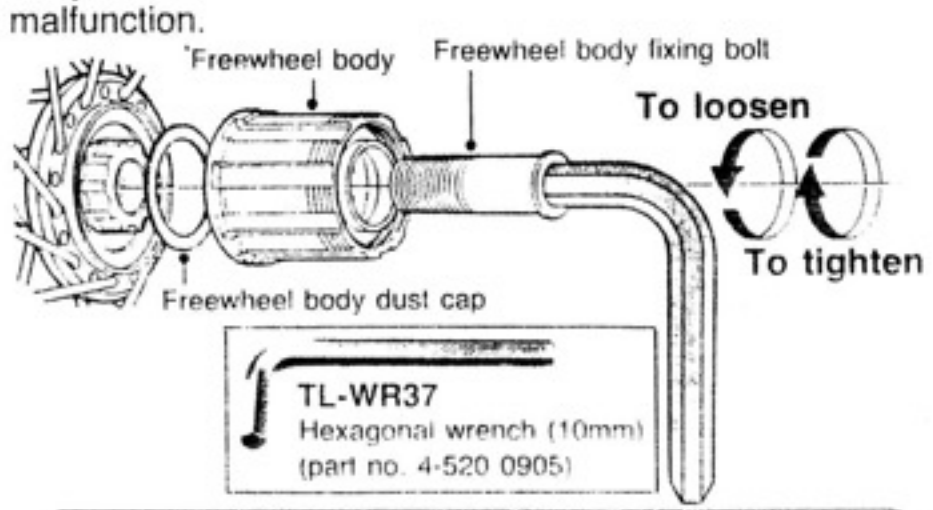


TL-SR20
Sprocket removal tool (part no. 4-130 0915)

Replacement of the freewheel body

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

Note: Do not attempt to disassemble the freewheel body, because to do so can be the cause of a malfunction.

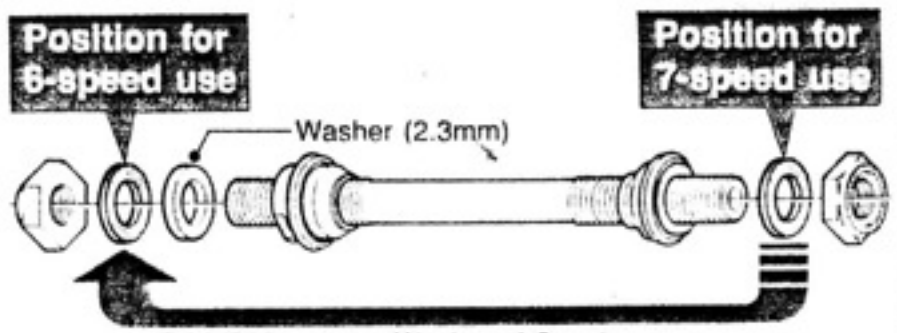


TL-WR37
Hexagonal wrench (10mm) (part no. 4-520 0905)

Tightening torque: 350~500 kgfcm (300~430 in.lbs.)

Changeover from 7-speed use to 6-speed use

[if a former UG 6-speed sprocket (CS-6400/CS-1000) is used]
To change the hub axle assembly from 7-speed use to 6-speed use, move the washer at the hub axle right side to the left side.



FH-M732 ..... Washer (1.9mm)
FH-MT62 / FH-M452 ..... Washer (2.3mm)

CHASSIS

5.60

GENERAL

The chassis on the RC - 100 series of machines is constructed from the finest grade 7000 series aluminium available. It is drawn from Paces' own dies to meet and exceed British Standards. Each frame is Tig welded (by hand) and carefully finished and inspected. The frame is designed to withstand tremedous loads over a considerable length of time, however to prevent the condition of the frame from deteriorating, a regular visual inspection of the tubes, joints and paint finish will quickly identify competition or crash damage. The paint covering should be kept intact, whilst if any paint is chipped or scatched away, this MUST* be replaced (longterm corrosion damage to the frame material could result if left exposed).

A touch-up paint is available (Part No P110G).

LUBRICATION

Periodically remove seat-post and clean inside of seat-tube. Lubricate with a quality grease. Note that after the machine has been power washed or ridden in very wet conditions, it is recommended to remove seat-post and upend machine so as to drain any moisture collected in tube.

Apply grease to inner faces of frame drop-outs (to ease wheel removal and reduce damage to paint finish) and to the cable guides beneath BB shell.

INSPECTION

Make sure that the cable guides (including under the BB shell) are kept free from mud and grass etc. Check that the drive side chainstay protector is firmly attached, regluing if it appears loose. After checking condition of paint finish, make sure that all components attached to frame are not loose and therefore cannot damage frame mountings (particular attention should be given to gear hanger)

* Please note failure to repair paint damage may negate guarantee.

GENERAL

To keep the components on the RC - 100 functioning correctly, after cleaning the machine it is recommended to inspect all the cycle parts so as to identify if service or replacement is necessary.

Make sure that recommended torque figures are used, particularly those components which attach directly to frame. All components on the RC - 100 series of machines are selected because of their quality, performance and light weight. To ensure they have a long service life please follow the maintenance schedule .

LUBRICATION

Remove and dissemble the seat-post QR skewer (including the cam ass'y). Clean and regrease.

If seat is removed from seat-post, lubricate adjusting screws beneath saddle with copper grease to prevent seisure.

If bottle cages are removed, make sure that attaching bolts are replaced (again smear with copper grease). NB Do not over tighten bottle cage screws or damage to grip-nuts held in the frame may result.

MAINTENANCE

Saddle ; Check the underside of saddle and make sure than saddle base is undamaged. Clean saddle surface and treat with leather oil as necessary.

Seat - Post (Carbon Fibre Unit) ; If your machine is fitted with this component, inspect the outer face of the post regularly for damage. All other posts are virtually service free.

Chainstay protector; MK 1 black plastic units may be knocked off of frame under impact. Clean surface of chainstay WITHOUT damaging paint surface. Clean protector and smear with Evo-Stick type contact adhesive (follow manufacturers directions). Attach to chainstay and secure with cable ties.

'MK II grey ABS units must be secured to stay using a type of compound available from your Authorised Dealer. Clean all surfaces before assembly.

HEADSET REPLACEMENT

The headset is past its service life when correct adjustment is not effective (see Adjustment 5.40) and headset looses adjustment rapidly.

Make sure that you have all parts and tools necessary before starting work.

Removal ; Remove handlebar/steerer stem as detailed (see Handlebar Stem 5.41). Invert stem and lightly nip two flats of headset in a vice (see fig 1.).

Place Pace tool (Pt No P107) over 6mm threaded adjuster screw and using a mallet, drive stem through headset until free.

To remove upper cone and lower cup from the frame headtube requires a one - inch diameter steel tube or bar (make sure frame is supported and protected against damage).

Insert bar through headstock so that it locates on the lip of the bearing.

Using a mallet, tap cup free working evenly around bearing lip, making sure bearing is withdrawn parallel and is not forced out at an angle from headstock.

Repeat proceedure for upper cone.

Reassembly ; Invert steerer stem and stand on a wad of cloth (to protect paint finish). Place upper headset cup onto the end of the stem, then using Pace tool (Pt No P117) tap with a mallet to drive cup nearly home. Before fully seating cup apply loctite to seating area. Drive home.

The upper cone and lower cup should be replaced using a Shimano Headset Tool. If this is not available, tap the upper cone home using a nylon or acetal block. It is important that the cone is kept parallel to headtube as it is worked home.

The lower cup can be fitted in a similar way, however it is important that the nylon or acetal block only makes contact with the steel bearing face and not the plastic bearing shield.

Follow reassembly instructions (see 5.41) and torque 10mm Nyloc Nut to 25in lbs. This will set new bearing.

After initial use bearing may settle. Adjust accordingly

NOTE Correctly tighten 4 x fork-crown screws after adjustments and before test ride.

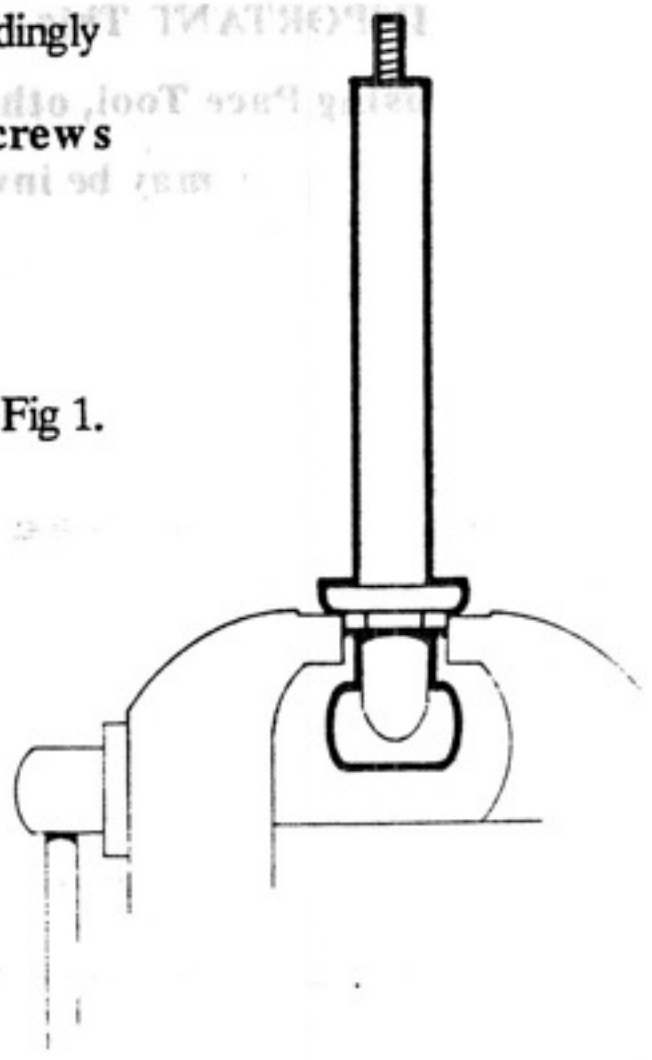


Fig 1.

6.1

BOTTOM BRACKET

When bearings reach the end of their service life an unacceptable amount of 'up and down' play will be detected in the bearing(s). As standard there is a small amount of play in the BB set which is quite normal.

Please see 5.30 (Spider & Cranks) for crank removal.

Bearing removal ; Place a three-quarter inch steel bar through the bearing and engage the inside edge of the opposite bearing. Using a mallet, tap bearing free working evenly around bearing inner edge, making sure bearing is not forced out at an angle to BB shell.

Repeat proceedure for second bearing.

Bearing Installation ; Clean out the BB shell fully using a degreasing agent such as 'Sizer' or 'Gunk'.

Clean the bearing seat area with Trico Ethelene.

Assemble bearings onto Pace tool (Pt No P105) and apply 'Loctite' or similar to bearing and BB shell interfaces. Wind bearings into place.

IMPORTANT This operation must not be attempted without using Pace Tool, otherwise frame damage may result and Warrenty may be invalidated.

GENERAL

The RC -100 series of machines are designed specifically as an experts competition bike. The efficiency of the machine not only depends upon the way it is maintained and serviced, but can be maximised by the careful setting up and preparation before each competition. Over 90% of mechanical failures during a competition are due to incomplete servicing prior to the event, therefore it is recommended that the preparation of the machine is started as soon as possible after an event (so that any problems suffered during that event are remembered and so that any parts needed can be sourced in time for the next competition).

CLEANING MACHINE

The RC - 100 has been designed so that the minimum amount of maintenance is required. To facilitate speed of cleaning, the paint coating on the frame and cycle parts has been chosen to withstand pressure washing (400-600 psi systems max recommended). With the machine secured (ideally with wheels free of the ground), hose away loose mud etc directing jet away from BB & thumbshifters. Then apply a cleaning agent. We would recommend the type designed to be used with a pressure wash system. Copious amounts of soap and water will of course suffice. Allow detergents used time to act on grime. Wash off after 10 to 15 minuites. Use an airline to dry machine off, wipe with rag carefully inspecting each component. Apply a protection fluid over machine ie Duck Oil or WD 40. Finally, follow section 5.0 on routine maintenance.

MACHINE SET UP

Make sure that all screws on machine are torqued to correct figures. Importantly, check that all the rider contact points with you are OK ie;

- Check toe straps are not damaged
- Make sure cages are correctly aligned and secure
- Check handlebar grips and secure if loose, replace if damaged
- Note position of saddle, check condition of seat-post clamp and tighten correctly
- Make sure all QR levers are sufficiently tightened
- Adjust and tighten brake lever perches and thumbshifters (see 4.0 Handlebars and Controls)

The fork system on the RC - 100 is designed both for ease of maintenance and for quality of ride. Follow section 5.40 fully, correctly torquing all screws. Check wheel alignment is correct.

Make sure that both front and back wheels are secured with QR levers fully closed.

NOTE Rear QR lever should be positioned vertically against seat-stay. Also make sure that rear wheel is fully home in rear dropouts.

Machine Set-Up continued.
Saddle height should be correctly adjusted (see 4.0). It is recommended that when you have arrived at the most suitable saddle height, that the seat-QR lever is replaced with a conventional seat-bolt.
Fore and aft adjustment of the saddle should not be necessary, although for increased rider room and rear wheel weighting the saddle can be moved backwards on its rails. Forward adjustment will weight front wheel more and will give you a marginal increase in power delivery.

GEARING
Standard gearing on the RC series is close ratio high. For recreational use 13-30 and 26-46 (with long cage rear mech') is available.
Make sure that both front and rear mechanisms are adjusted so that they can only just engage lowest and highest gears. This will reduce possibility of chain derailment.
More powerful riders may remove the smallest chainring and run 38-48, or even 42-48 or 50/52. Pre-ride the course and choose gears correctly. The correct choise of gear is when you use every gear throughout the race/course eg ;if you never engage top gear you are overgeared. The Hyperglide system dicates that there is little choise in gear selection, whilst bear in mind the limiations of the short cage competition rear mech'.

TYRES
Tyre pressures are very much a matter of personal choise, however most riders will work within the 35 to 55 psi range. A higher pressure will offer a modicum of increased puncture resistance, although the ride will prove to be harsher and less grip will be offered.
Try and gauge the condition of the course and the weather, adjusting pressures to siut. Remember a wet course raced in dry weather will rapidly dry out and may leave you with too low a pressure for type of going, or indeed wrong tyre choise.
Tyre section can be between 1.5 to 1.9 for competition. Some riders even go to 2.125 but remember that such a section of tyre gives a large degree of rolling resistance which you have to overcome. As standard, the RC-100 is equipped with the best tyre for allround use at a light weight. Tyres with greater puncture resistance are often very heavy whilst tyres of a more aggressive section may gather mud and leaf mould (thereby loosing grip, increasing weight and risking chain stay clogging). Choose tyres carefully dependent upon conditions and your riding style.

NOTE When checking brake system do not overtighten slave cylinder mounting screws as this can effect braking efficiency.
NOTE. Before machine is test ridden or used for competition, protection fluid applied to wheel rims should be wiped off.

COMPONENT	No OFF	TORQUE FIGURE (in.lbs)
Rear Mechanism mounting	*1*	*80*
Cable Fixing Bolt	*1*	*40 - 80*
Front Mechanism mounting	*1*	*40*
Cable Fixing Bolt	*1*	*40 - 60*
Front and Rear Thumbshifters Clamp Bolts	*2*	*18*
Front and Rear Brake-Lever Perches	*2*	*18*
Front and Rear Brake Calipers	*8*	*18*
Fork Crown	*4*	*106*
Chainring Fixing Bolts (outer to middle)	*5*	*80 - 110*
Chainring Screws (spider to crank)	*5*	*70 - 95*
Crankarm Screw	*1*	*70*
Handlebar Stem	*1*	*80*
Grease Nipples & Waterbottle Cages	*6*	*13*
Pedal Axle	*2*	*400*
Toe Clip Fixing Bolt	*4*	*25*
Pedal Cone Lock Ring	*2*	*80 - 150*
Hub (closing of QR Lever)	*2*	*80 -105*
LH Lock-Nut	*2*	*88 -220*
Freehub lock ring	*1*	*260 - 430*
Freehub Body	*1*	*300 - 430*