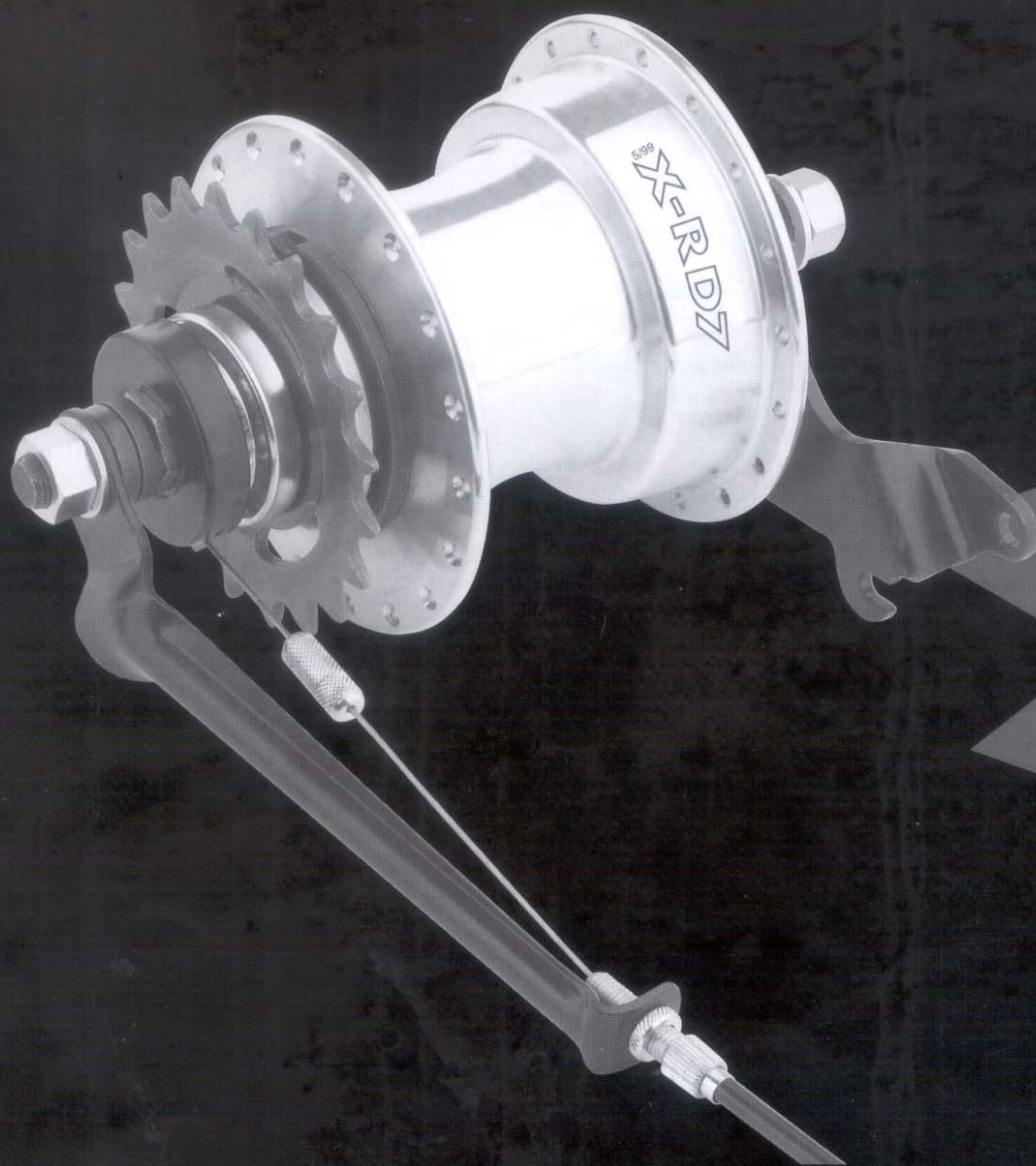


Summit X-RD7 Brake Hub



Technical Information
and Parts List

Sturmey
Archer 

Technical Information - Summit X-RD7 Brake Hub

Part 1 GENERAL INFORMATION

1.1 SCOPE OF THIS LEAFLET

Congratulations upon your purchase of a Sturmey-Archer SUMMIT X-RD7 7-Speed Hub. To enjoy this hub at its best please follow these few simple instructions. Remember, during the first few miles the cable system will "bed-in", which may necessitate adjustment to ensure the hub is working to its maximum potential and to prevent possible hub damage (See Part 2.).

This leaflet refers only to the X-RD7 Brake Hub which has a combined 70mm diameter DRUM BRAKE for safe progressive braking. Please contact your local approved dealer if any problems are experienced with this product.

NB. This hub is not designed to be used with dropout angles in excess of 25°.

1.2 LUBRICATION

No routine lubrication is required. During a major service the greases should be replenished to prolong the life of the gearbox. Please contact your approved dealer who is equipped to carry this out.

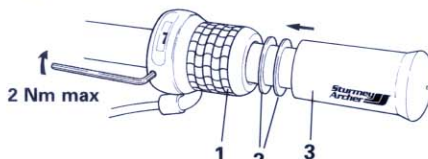
The following types of greases meeting Sturmey-Archer Technical Standards should be used.

For Bearings - SA103B

For Internal Parts - SA103A

WARNING:- UNDER NO CIRCUMSTANCES SHOULD ANY LUBRICANT BE APPLIED TO THE BRAKE DRUM OR BRAKE SHOE, AS THIS MAY PREVENT THE BRAKE FROM FUNCTIONING.

control to handlebar ensure that the grip is pushed fully onto the handlebar. Now push control unit against the grip, rotate to the required position and tighten the grub screw to 2Nm max.



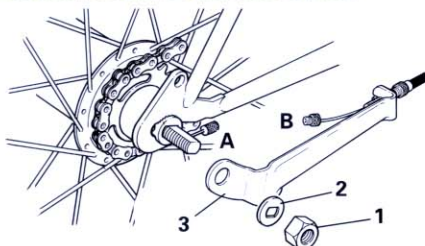
3. Run cable, as diagram, along frame and secure with clips/ties. Do not fasten too tight - the outer cable should be retained but not clamped. Smallest possible cable bend 100mm radius. Fit fulcrum lever to cable by screwing adjuster into fulcrum. To fit the fulcrum lever see Part 4.3. Adjust the gears as in Part 3.



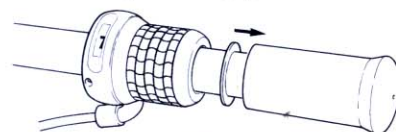
2.4 GEAR CONTROL CABLE REPLACEMENT

To remove cable:

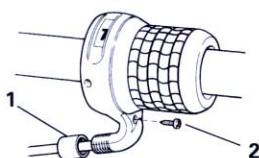
1. Remove axle nut (1) from axle along with axle washer (2) and fulcrum lever (3). Disconnect cable connectors A & B.



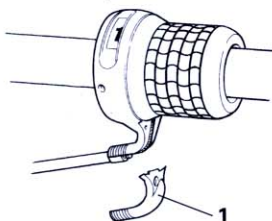
2. Remove cable from frame.
3. Select 1st gear.
4. Remove right hand grip and washers.



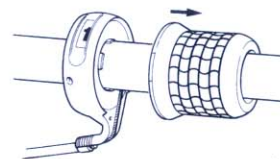
5. Remove endcap (1) and small screw (2).



6. Remove endplate.



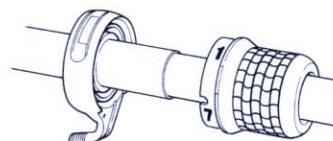
7. Pull out twistgrip and disconnect cable nipple.



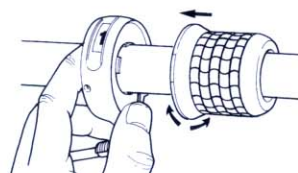
8. Remove endcap from cable.

2.5 TO FIT NEW CABLES:

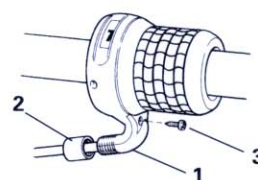
1. Lubricate inner dial and insert into the control body using the twistgrip to aid insertion. Set in gear 1 and remove twistgrip.



2. Thread endcap over cable.
3. Insert cable nipple into nipple recess of inner dial ensuring inner wire exits control body correctly. Hold in position with thumb. Fit twistgrip onto body and rotate until it locates over cable nipple. Click twistgrip into body.



4. Insert endplate (1) ensuring the outer cable ferrule end is retained. Screw on endcap (2) and insert screw (3) and tighten.



5. Re-adjust hub.
Note: For fitment and replacement of other types of control refer to Controls Brochure.

Part 2 GEARS

2.1 GEAR CHANGING

Ease pedal backwards and select the gear required.

2.2 GEAR RATIOS

The Summit X-RD7 has the following ratios:-

Distance travelled in metres (44T c/w. 22T Sprocket, 27" Wheel) with one revolution of the pedal.

1st Gear - 2.58 metres

2nd Gear - 2.97 metres

3rd Gear - 3.45 metres

4th Gear - 4.31 metres

5th Gear - 5.36 metres

6th Gear - 6.25 metres

7th Gear - 7.18 metres

The overall distance travelled can be altered by changing the size of the rear sprocket. A range of sprockets from 14 to 22 tooth are available suitable for 1/2" pitch x 1/8" chain. Always maintain at least a 2:1 ratio between the numbers of teeth on the chainwheel and those of the sprocket.

2.3 TWISTGRIP CONTROL FITMENT

1. Slide control (1) onto handlebar followed by the two washers (2) and the handlebar grip (3). Before securing

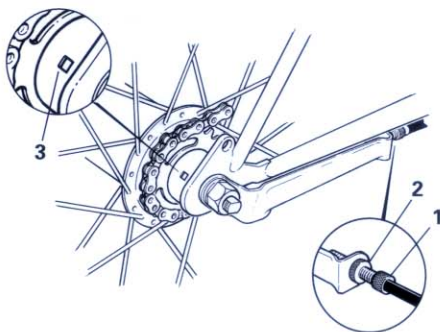
Part 3 ADJUSTMENT

3.1 GEAR ADJUSTMENT

All types of cycle gear systems must not be ridden out of adjustment as this may damage the internal components and cause the gear to malfunction.

1. Select 5th gear and rotate the pedals. Turn the cable adjuster (1), until the white mark is in full view through the adjustment window (3). Rotate pedals and select all gears. Move the control to 4th gear then select 5th gear, rotate the pedals and re-check adjustment. If the white mark is central within the window, adjustment is correct and the adjuster can be locked in place with the adjuster locknut (2). If not, repeat the procedure.

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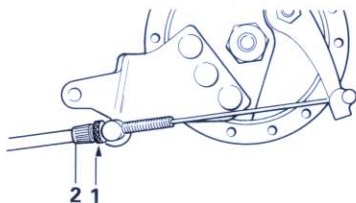


3.2 BRAKE ADJUSTMENT

If the wheel will not rotate freely or cannot be locked by a full application of the lever then adjustment is necessary.

1. Slacken the brake adjuster locknut (1). Turn the adjuster (2) until the brake is applied. Rotate the adjuster until the wheel just spins freely. Tighten the locknut.

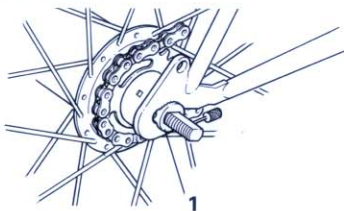
NB: During the first few miles brake linings "bed-in" and may require adjustment. Should braking efficiency become impaired beyond adjustment, contact your local approved dealer who is equipped to replace the brake plate and shoe assembly.



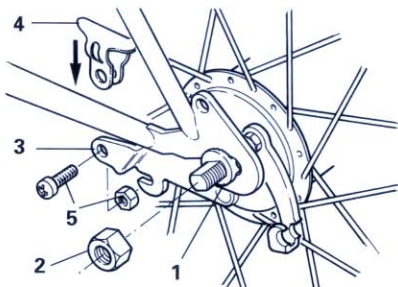
Part 4 WHEEL FITTING

The X-RD7 Hub has a 135mm overlocknut dimension.

1. Fit the wheel - with chain tensioners, if fitted - into the bicycle frame and place the chain around the sprocket. Locate the anti-rotation washers (1) over both ends of the axle ensuring the lugs fit into the chainstay ends. Sturmey-Archer manufactures two sizes of anti-rotation washer (7.9mm and 9.5mm): ensure the correct one is fitted.

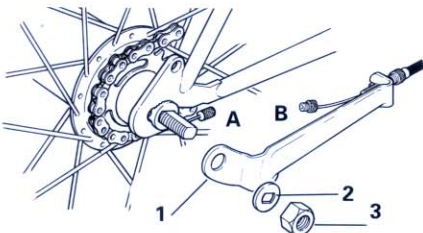


2. Fit LH axle nut (2) finger tight, and loosely fit brake arm (3) into brake arm clip (4)

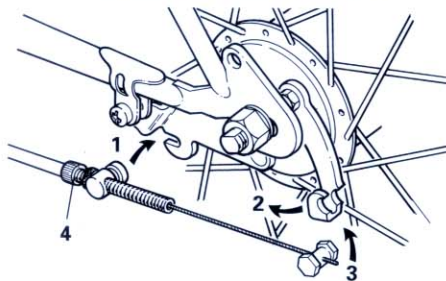


with nut & bolt (5). Do not tighten at this point.

3. Select gear position 1 on control and then join cable connectors A & B securely. Locate the fulcrum lever (1) over the axle. Fit the washer (2) and axle nut (3). Align the wheel, tension chain and tighten the axle nuts to 30Nm ensuring the fulcrum lever is parallel to the chainstay. Tighten the nut securing the brake arm clip to 7Nm.



4. After fitment of the brake cable to frame: -
 - a. Locate the brake cable adjuster into brake arm (1).
 - b. Rotate the brake lever (2).
 - c. Locate brake cable nipple (3) into the brake lever.
 - d. Adjust brake by rotating the adjuster (4).



5. Replace chainguard/gear case (if fitted) in accordance with cycle manufacturers instructions.

NB: Before use check and make necessary adjustments to brakes (See Part 3.2) and re-adjust gears (See Part 3.1)

Part 5 SERVICE - DEALER INSTRUCTIONS - ASSEMBLY/DISASSEMBLY

5.1 If service problems arise, they usually occur outside the hub. Check gear adjustment and fitment are correct before removing the wheel from the bicycle.

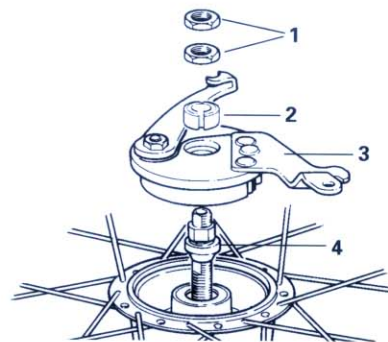
5.2 When service problems occur which cannot be corrected by attention to external maintenance, a close inspection of the working parts inside the hub will be necessary. This should be carried out by a trained bicycle mechanic.

NB: The right hand end of the axle is the sprocket end. The axle should be clamped across the flats taking care not to damage the threads.

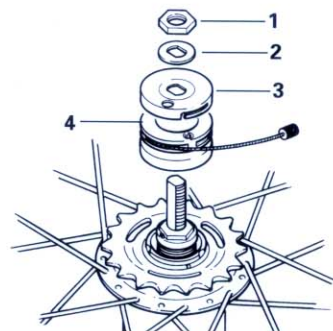
5.3 DISASSEMBLY

1. Clamp R.H. (sprocket) end of axle in vice. Remove L.H. locknuts (1), cone adjuster

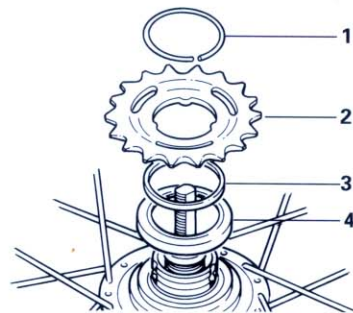
(2) and brake plate (3) and cone (4).



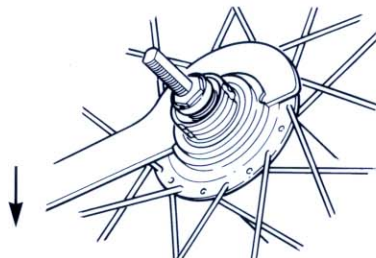
2. Remove hub from vice. Re-clamp L.H. end of axle in vice, remove locknut (1) & washer (2), adjuster cover (3) & cable drum (4).



3. Using a small screwdriver, remove the sprocket circlip (1), sprocket (2), spacing washer (3), & dustcover (4). To ensure the chain alignment is maintained, carefully note the order of removal and the dishing of the sprocket.

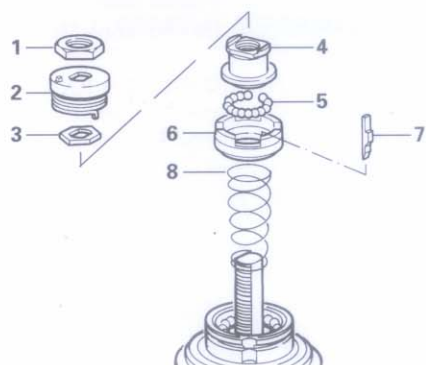


4. Remove from vice and, using a "C" spanner or hammer and punch, unscrew the internal from the hub shell anti clockwise.

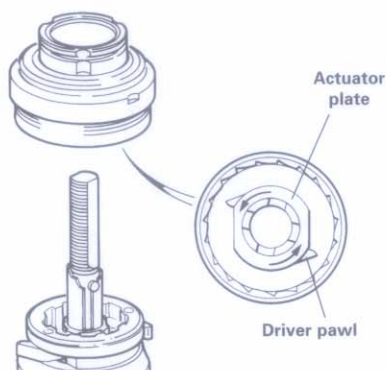


5. Re-clamp L.H. end of axle in vice. Remove locknut (1), support cap & torsion spring (2), lockwasher (3). Unscrew the threaded cone (4), remove gearchange cone (6) and ball bearings (5) together, and remove selector key (7) and spring (8).

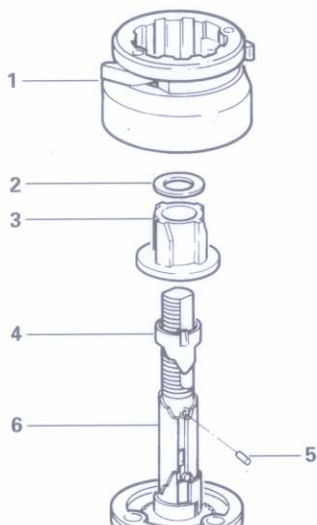
Technical Information - Summit X-RD7 Brake Hub



6. Remove balling & driver assembly. To separate these rotate the actuator plate anti-clockwise to close driver pawls, and remove driver assembly & ballcage from balling.

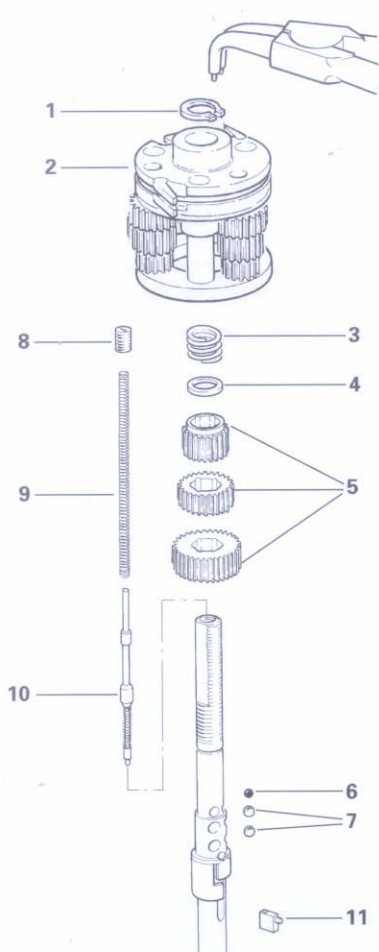


7. Remove gear ring assembly (1), clutch washer (2), & clutch (3). Slide off cam selector (4) and remove pin (5) and inner selector (6).



8. Remove internal from vice.

9. Re-clamp R.H. end of axle in vice. Using circlip pliers, remove circlip (1) and discard. Remove planet cage assembly (2), spring (3), washer (4) & sun pinions (5). Note the order for re-assembly. Remove 3 black balls (6) and 6 silver balls (7). Remove grub screw (8), spring (9) and gear selector assembly (10) from axle end. Also remove key (11) from axle slot.



This completes disassembly.

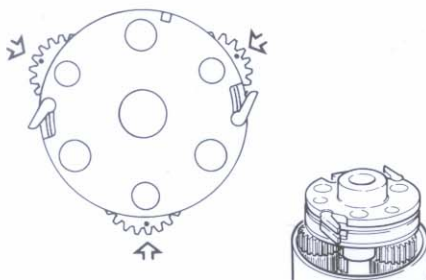
5.4 INSPECTION

Thoroughly clean all the internal parts and inspect all components for wear or damage. Any worn or damaged components must be replaced.

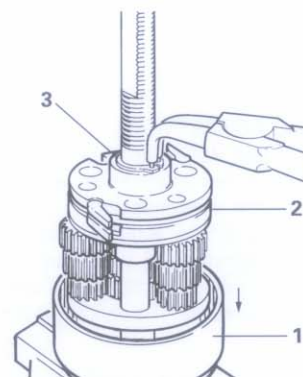
5.5 ASSEMBLY

1. Re-clamp solid end of axle in vice with circlip groove uppermost. **See previous diagram for assembly in reverse order.** Fix axle key (11) into slot, large hole uppermost. Insert shuttle assembly (10) and spring (9) into axle end, insert grub screw (8) and tighten until tight. Fill ball pockets in axle with Sturmey-Archer internal grease, insert 6 silver balls (7) into bottom 6 pockets and 3 black balls (6) into top 3 pockets. Refit sun pinions (5) over axle and balls ensuring correct order and orientation, then fit the washer (4) and planet cage spring (3).

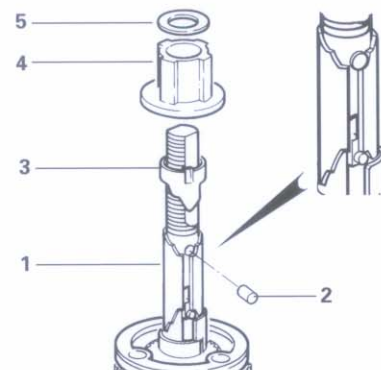
2. Set timing marks on planet pinions. Use the gear ring (1) to hold position when fitting over sun pinions.



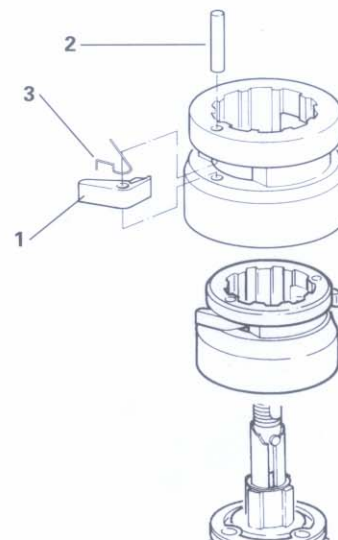
3. Fit planet cage onto axle, ensuring sun pinion teeth are in line. Ensure planet cage is located over all 3 sun pinions. Slide gear ring (1) down onto the vice. Check that the planet cage (2) rotates easily, then, using circlip pliers, fit new circlip (3) (sharp side up) into its groove. Do not overstretch.



4. Remove internal and loose gear ring from vice. Re-clamp L.H. end of axle. Fit inner selector (1) and locate pin (2) in hole, locating selector on pin and key as shown in diagram (this gives gear position 7). Slide on cam selector (3) and locate in groove, slide on clutch (4), ensuring it locates inside the planet cage, and fit washer (5). Ensure clutch slides freely.



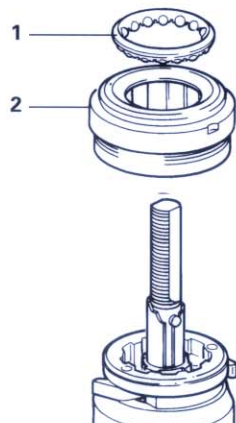
5. Take gear ring and fit the pawls (1), pawl pins (2) & springs (3). Lubricate pinions & gear ring teeth and locate gear ring over planet pinions.





Technical Information - Summit X-RD7 Brake Hub

6. Lubricate the ballcage assembly (1). Place the ballcage assembly on the ballring (2), ensuring the balls are positioned downwards, and locate over the gear ring assembly.

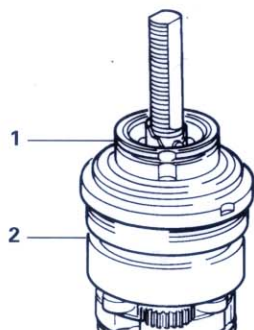


7. Grease and replace the 19 loose ball bearings in the driver. Rotate the actuator plate clockwise to compress the pawls.

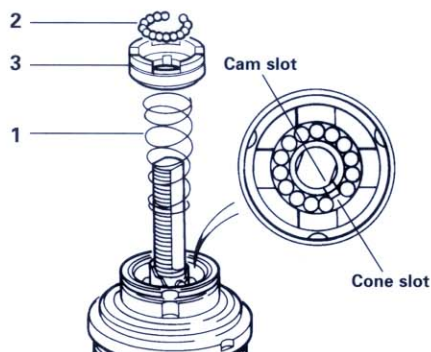


Rotate clockwise

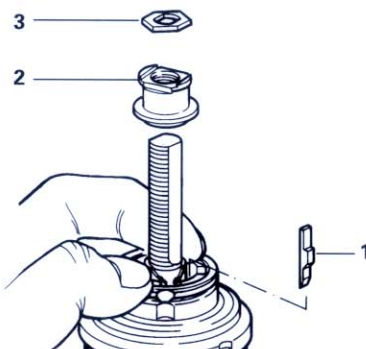
8. With the actuator in this position fit the driver assembly (1) into the ball ring assembly (2).



9. Fit conical spring (1) small end down. Grease and replace the 14 ball bearings (2) into cone (3), locate onto spring and line up the slot inside cone with slot in cam.



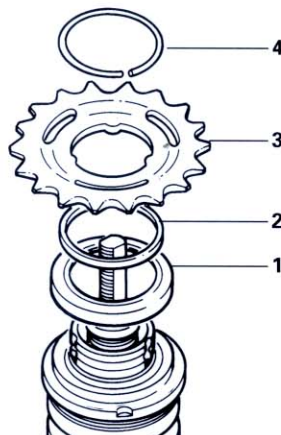
10. Hold in place and locate key (1) (short end down) into slot. Keeping hold, screw on threaded cone (2), adjust until finger tight, turn cone back 1/2 a turn and lock in position with lockwasher (3). If flats do not locate, undo, until next flat is located.



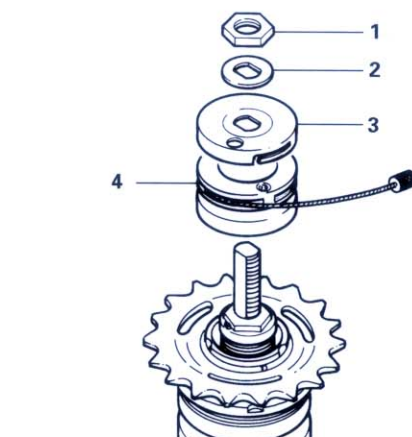
11. Using cable drum by locating its legs into the selector cone slots turn the unit fully clockwise to engage gear one (the gear ring will rotate freely in gears 1 & 2) and then remove cable drum. Fit torsion spring & cap (1) onto axle. Using a small screwdriver, tension torsion spring by moving spring leg back anti-clockwise until it is positioned in the next slot. Screw on locknut (2) and tighten to 7 Nm.



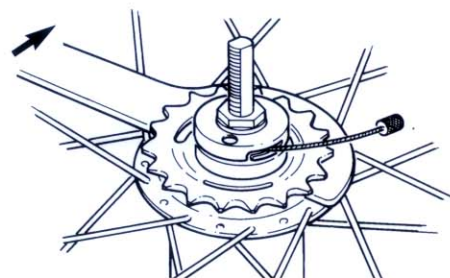
12. Fit sprocket dustcover (1), spacer (2), sprocket (3) & sprocket circlip (4).



13. Locate cable drum legs into internal (this will only fit one way). Wrap cable around pulley anti-clockwise, fit adjuster cover and locate cable in slot. Fit washer & locknut (tighten to 7 Nm). Remove from vice.

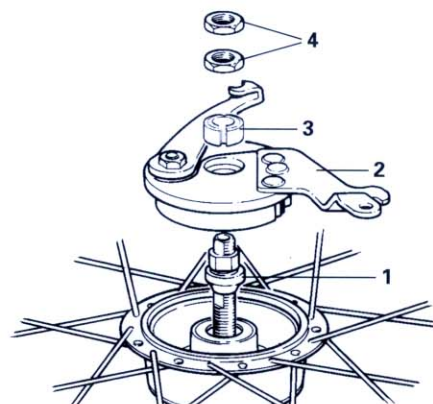


14. Ensure internal is lubricated. Insert internal into hub shell rotating anti-clockwise holding cover until pawls engage, then turn the ball ring clockwise to engage the thread and tighten with a "C" spanner or hammer and suitable punch.



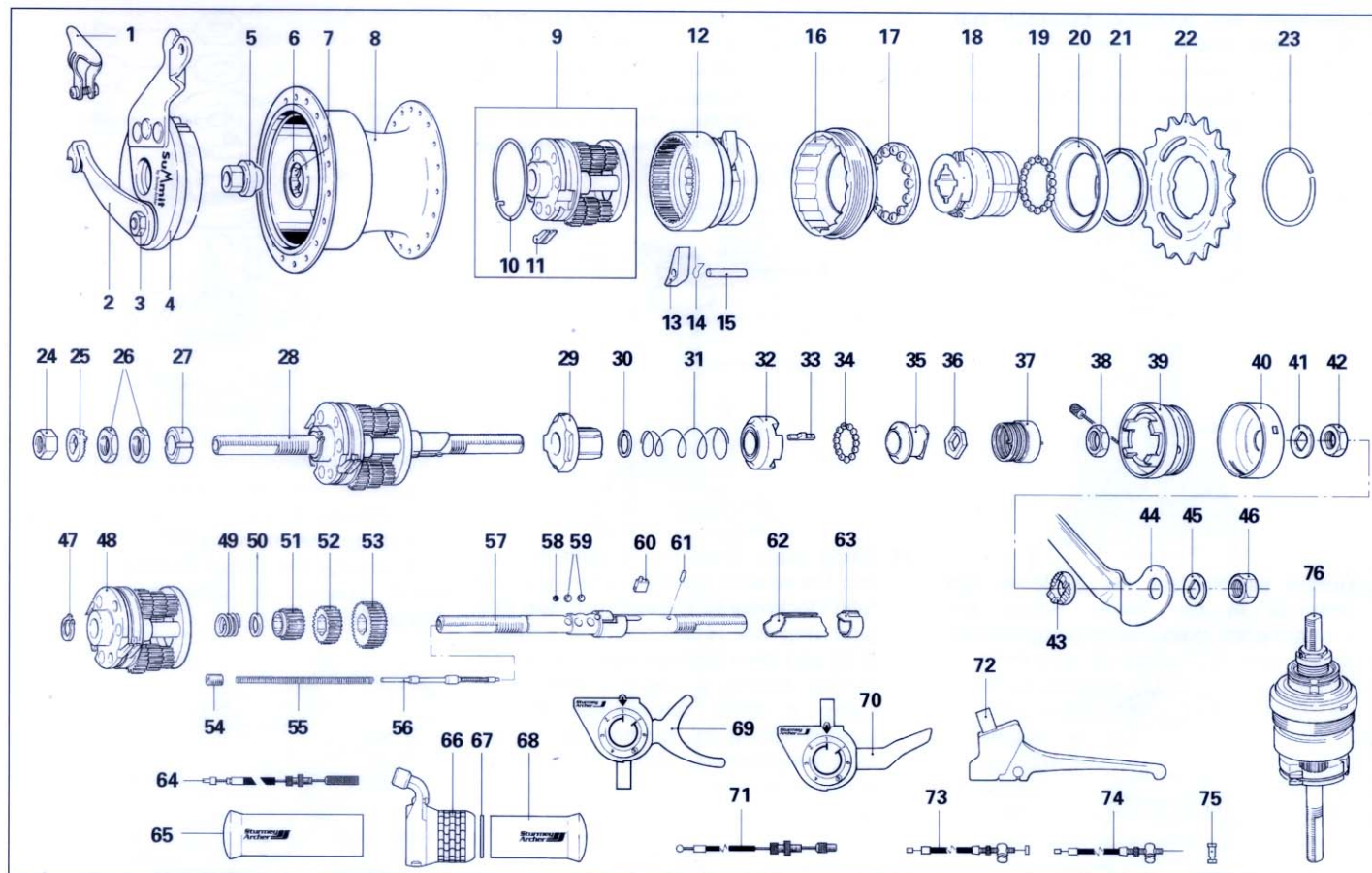
15. Left Hand Cone Adjustment

Clamp R.H. end of axle in vice, grease bearing and fit L.H. cone (1). Clean the brake drum using clean cloth, ensuring all dirt and grease is removed. Make sure the brake linings are clean (brake shoes should be replaced if contaminated with grease). Fit the brake assembly (2) into drum, ensuring torque arm & gear cable point in the same direction. Fit cone adjuster (3) adjust L.H. cone until minimum play is felt at the wheel rim ensuring hub runs freely. Fit locknuts (4). Apply the brake to centralise the brake shoes and tighten the locknuts.



16. Assemble the wheel into the bicycle as described in Part 4

Parts List - Summit X-RD7 Brake Hub



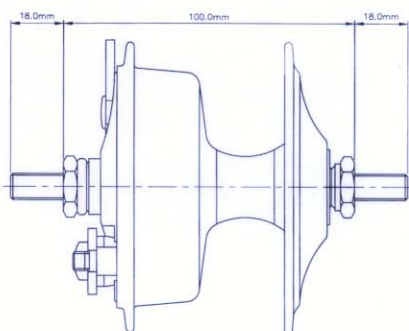
Item No.	Sales No.	Description	Item No.	Sales No.	Description	Item No.	Sales No.	Description
1	*HCB 101	Brake Arm Clip Assembly 15.9mm	*HSL 720		Sprocket 20 teeth	50	HMW 327	Washer
2	*HCB 103	Brake Arm Clip Assembly 18.3mm	*HSL 747		Sprocket 21 teeth	51	HSA 561	Sun Pinion No. 1
3	HSB 406	Brake Lever	*HSL 722		Sprocket 22 teeth	52	HSA 562	Sun Pinion No. 2
4	HMN 139	Brake Lever Nut	23	HSL 721	Sprocket Circlip	53	HSA 563	Sun Pinion No. 3
	HSB 432	Brake Replacement Unit	24	HMN 128	Axle Nut	54	HSA 567	Grub Screw
		NB. Brake Replacement Unit includes 1 off Items 2 and 3	25	*HMW 155	Serrated Lockwasher 7.9 mm Slot	55	HSA 566	Gear Selector Spring
5	HSA 379	L.H. Cone		*HMW 494	Serrated Lockwasher 9.5 mm Slot	56	HSA 568	Gear Selector Assembly
6	HSA 241	Cone Dustcover		*HMW 515	K48 Lipwasher 9.5mm Slot	57	HSA 569	Axle Assembly
7	HSA 284	L.H. Ball Cage Assembly - 6.4mm Ball	26	HMN 132	Cone Locknut - 2 off	58	HSA 564	3.5mm Ball Bearing - Black - 3 off
8	HSA 529	Hub Shell Assembly 36 holes N.B. - Hub Shell Assemblies include 1 off items 6 and 7	27	HSA 371	Cone Adjuster	59	HSA 520	5/32" Ball Bearing - Chrome - 6 off
9	HSA 525	Planet Gear Assembly (includes 1 off Item 10, 2 off Item 11)	28	-	Axle Assembly (See Item 57)	60	HSA 565	Key
10	HSA 450	Circlip	29	HSA 510	Clutch	61	HSA 514	Selector Pin
11	HSB 482	Pawl for Planet Cage	30	HMW 329	Clutch Washer	62	HSA 512	Inner Selector
12	HSA 527	Gear Ring Assembly (includes 2 off Items 13, 14, 15)	31	HSA 517	Clutch Spring	63	HSA 511	Cam Selector
13	HSA 119	Pawl for Gear Ring	32	HSA 516	SelectorCone	64	HSJ 872	Twistgrip Control Cable Complete
14	HSA 120	Pawl Spring	33	HSA 519	Selector Key	65	HSJ 903	Left Hand Grip
15	HSA 530	Pawl Pin	34	HSA 520	5/32" Ball Bearing - 14 off	66	HSJ 874	Twistgrip Control
16	HSA 513	Ball Ring	35	HSA 531	Cone	67	HMW 516	Washer (2 off)
17	HSA 438	Ball Cage Assembly	36	HMW 328	Lockwasher	68	HSJ 902	Right Hand Grip
18	HSA 528	Driver Assembly	37	HSA 546	Torsion Spring & Support Cup Assy	69	HSJ 855	Wishbone Control
19	HSA 520	5/32" Ball Bearings - 19 off	38	HMN 379	Locknut	70	HSJ 845	Standard Trigger Control
20	HSL 701	Outer Dust Cap	39	HSJ 848	Cable Drum	71	HSJ 847	Control Cable Complete
21	HMW 127	Sprocket Spacing Washer 1.6mm	40	HSJ 850	Adjuster Cover	72	* PKL 205	DELTRIN Brake Lever Assembly RH/LH 22.2mm Clip
22	*HSL 714	Sprocket 14 teeth	41	HMW 150	Washer		*PKL 206	DELTRIN Brake Lever Assembly RH/LH 23.8mm Clip
	*HSL 715	Sprocket 15 teeth	42	HMN 379	Locknut	73	*HSK 713	Cable Complete Black - 1570mm c/end
	*HSL 716	Sprocket 16 teeth	43	*HMW 155	Serrated Lockwasher 7.9 mm Slot	74	*HSK 714	Cable Complete Black - 1600mm/1820mm o/end
	*HSL 717	Sprocket 17 teeth		*HMW 494	Serrated Lockwasher 9.5 mm Slot	75	HSK 715	Pinch Bolt
	*HSL 718	Sprocket 18 teeth	44	HSJ 893	Fulcrum Lever	76	*HSX 137	Gear Internal Assembly Complete
	*HSL 719	Sprocket 19 teeth	45	HMW 150	Washer			
			46	HMN 128	Axle Nut			
			47	HSL 729	Circlip			
			48	-	Planet Cage (See Item 9)			
			49	HSA 457	Planet Cage Spring			

* Optional Fitment

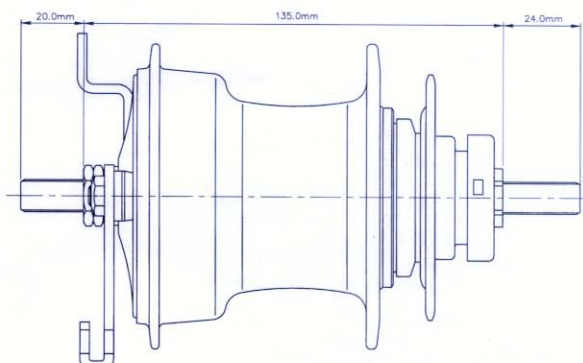


Technical Information - Summit X-RD7 Brake Hub

X-FD



X-RD7



Technical Specifications

	Front Brake Hub (X-FD)	7 Speed Rear Brake Hub (X-RD7)		
Weight, complete with brake	0.76 kg	1.502 kg		
Gear Ratios Front chainwheel: 44T Rear Sprocket: 22T Wheel Ø: 27 inch		Gear	Ratio	Distance travelled with one revolution of the front chainwheel
		1	-40% (0.600)	2.58 metre
		2	-31% (0.690)	2.97 metre
		3	-19.6% (0.804)	3.46 metre
		4	1:1	4.31 metre
		5	+24.3% (1.243)	5.36 metre
		6	+45% (1.450)	6.25 metre
		7	+66.7% (1.667)	7.18 metre
		Overall Range	277.8%	
Standard overlocknut dimension	100mm	135mm		
Controls	-	HSJ 874 City-twistgrip with cable HSJ 855 Wishbone Control		
Total axle length	136mm	179mm		
Axle protrusion length	R: 18mm, L: 18mm	R: 24mm, L: 20mm		
Soke hole diameter	Suitable for 14g, 13g spokes	Suitable for 14g, 13g spokes		
Sprocket range	-	14T - 22T		
Pitch circle diameter	Ø 89.8mm	Ø 89.8mm		



Technical Information - Summit X-RD7 Brake Hub

Notes

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