

Summit X-RD5 Brake Hub



Technical Information
and Parts List

**Sturmey
Archer** 

Technical Information - Summit X-RD5 Brake Hub

Part 1 GENERAL INFORMATION

1.1 SCOPE OF THIS LEAFLET

Congratulations upon your purchase of a Sturmey-Archer SUMMIT X-RD5 5-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 4.).

This leaflet refers only to the X-RD5 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.

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.

Part 2 GEARS

2.1 GEAR CHANGING

Ease pedal backwards and select the gear required.

2.2 GEAR RATIOS

The Summit X-RD5 has the following ratios:-

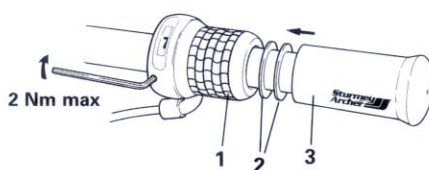
Distance travelled in metres (44T c/w. 22T Sprocket, 27" Wheel) with one revolution of the pedal.
 1st Gear - 2.88 metres
 2nd Gear - 3.42 metres
 3rd Gear - 4.34 metres
 4th Gear - 5.48 metres
 5th Gear - 6.50 metres

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.

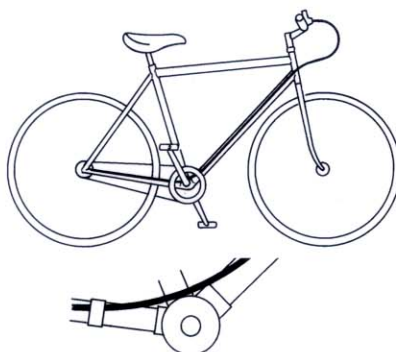
2.3 TWISTGRIP CONTROL FITMENT

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



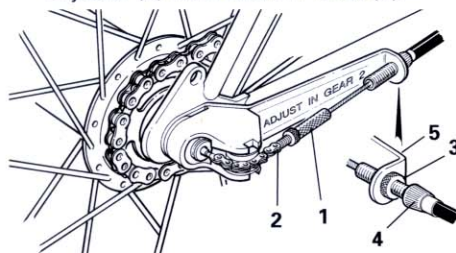
3. Run cable, as diagram, along frame and secure with clips/ties. Do not fasten too tight - the outer cable should be retained but not clamped. Smallest possible cable bend 100mm radius. Fit fulcrum lever to cable by screwing adjuster into fulcrum. To fit the fulcrum lever see Part 3.3. Adjust the gears as in Part 4.



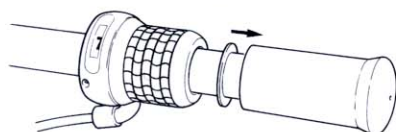
2.4 GEAR CONTROL CABLE REPLACEMENT

To remove cable:

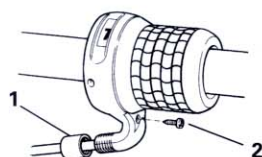
1. Disconnect the cable at the hub by unscrewing the cable connector (1) from the indicator coupling (2), then loosen locknut (3) and unscrew cable adjuster (4) from fulcrum lever (5).



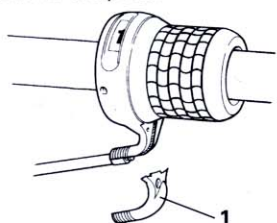
2. Remove cable from frame.
 3. Select 5th gear.
 4. Remove right hand grip and washers.



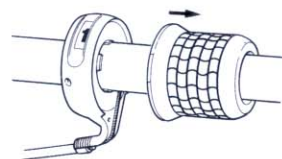
5. Remove endcap (1) and small screw (2).



6. Remove endplate.



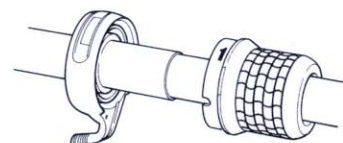
7. Pull out twistgrip and disconnect cable nipple.



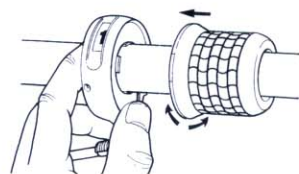
8. Remove endcap from cable.

2.5 TO FIT NEW CABLES:

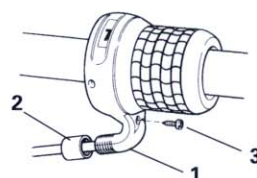
1. Lubricate inner dial and insert into the control body using the twistgrip to aid insertion. Set in gear 5 and remove twistgrip.



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.

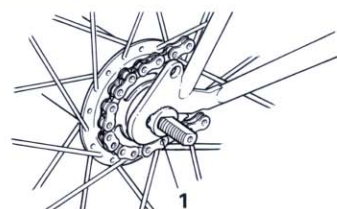


5. Re-adjust hub.
 Note: For fitment and replacement of other types of control refer to Controls Brochure.

Part 3 WHEEL & CABLE FITMENT

The X-RD5 Hub has a 120mm overlocknut dimension.

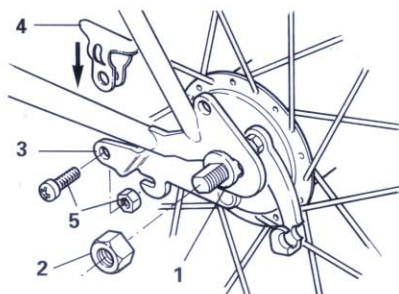
1. Fit the wheel - with chain tensioners, if fitted - into the bicycle frame and place the chain around the sprocket. Locate the anti-rotation washers (1) over both ends of the axle ensuring the lugs fit into the chainstay ends. Sturmey-Archer manufactures two sizes of anti-rotation washer (7.9mm and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



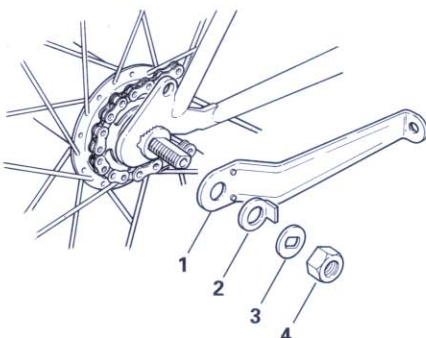


Technical Information - Summit X-RD5 Brake Hub

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.

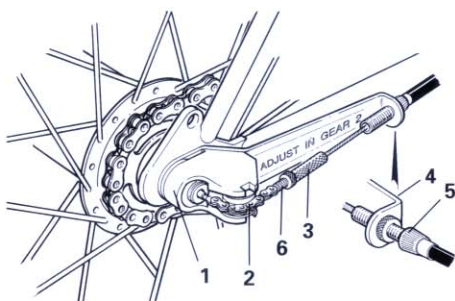


3. Locate fulcrum lever (1) over the axle, fit support washer (2), locking washer (3) and axle nut (4). Align the wheel, tension chain and tighten the axle nuts to 30Nm. Ensure the fulcrum lever is level with the chainstay. Tighten the nut securing the brake arm clip to 7Nm. See Section 4 - Gear Adjustment for cable connection and adjustment.



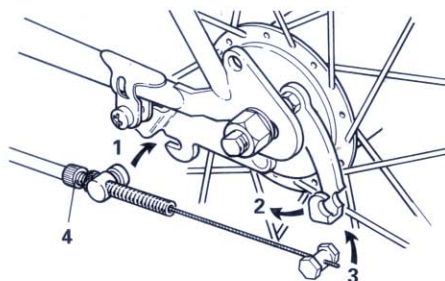
4. Control Cable Fitment

Locate selector guide (1) over axle nut and support washer. Ensure the indicator (2) is screwed firmly into the axle. Unscrew the indicator by up to half a turn if necessary to ensure easy fitment over the selector guide. Insert cable connector (3) through fulcrum lever (4) and screw cable adjuster (5) into fulcrum lever. Connect the indicator coupling (6) to the cable connector (2). Ensure that no more than 2.5mm of axle protrudes from right hand axle nut.



5. Brake Cable Fitment

After fitment of the brake cable to frame, locate the brake cable adjuster into brake arm (1). Rotate the brake lever (2). Locate brake cable nipple (3) into the brake lever. Adjust brake by rotating the adjuster (4).



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

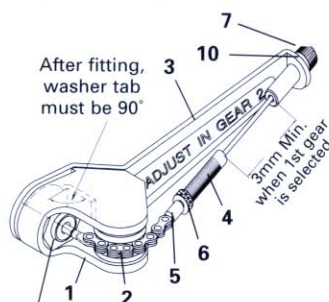
NB: Before use check and make necessary adjustments to brakes (See Part 4.2) and re-adjust gears (See Part 4.1)

Part 4 ADJUSTMENT

4.1 GEAR ADJUSTMENT

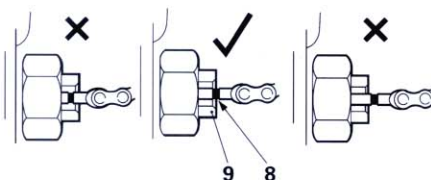
All types of cycle gear systems must not be ridden out of adjustment as this may damage the internal components and cause the gear to malfunction.

1. Check that the indicator chain (2) runs freely over the gear selector guide (1) and ensure that no more than 2.5mm of axle protrudes from the axle nut.
2. Select 5th gear on the control and screw the cable connector (4) until half way down the indicator coupling (5) and tighten locknut (6).



If required use washer to be within 2.5mm, fitted in between fulcrum lever and frame

3. Select 2nd gear on the control and rotate the pedal crank to ensure the gear is engaged. Turn the cable adjuster (7) until the centre of the blue section at the end of the indicator rod (8) is level with the end of the axle (9).



4. Tighten the locknut (10) against the adjuster (7).
5. Select 5th gear, rotate the pedal crank, change back to SECOND GEAR and check adjustment.

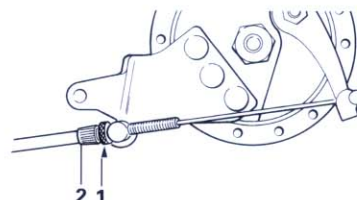
4.2 BRAKE ADJUSTMENT

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 5 SERVICE - DEALER INSTRUCTIONS - ASSEMBLY/DISASSEMBLY

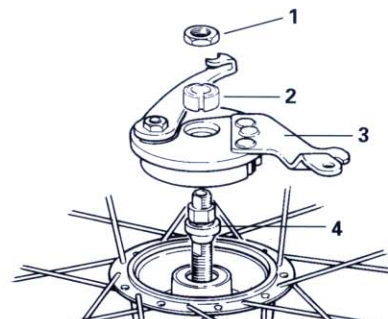
- 5.1 If service problems arise, they usually occur outside the hub. Check gear adjustment and fitment are correct before removing the wheel from the bicycle.

- 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.

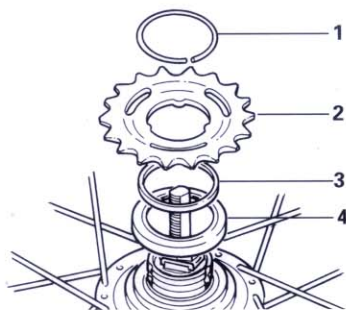
5.3 DISASSEMBLY

1. Remove the indicator, gear selector guide, axle nuts, and washers from both ends of the axle.
2. Clamp R.H. (sprocket) end of axle in vice. Remove L.H. locknuts (1), cone adjuster (2) and brake plate (3) and cone (4). Note orientation of the brake arm and axle flats.

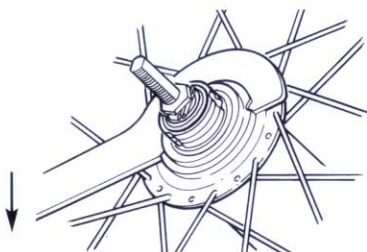


3. Remove hub from vice. Re-clamp L.H. end of axle in vice. Using a small screwdriver, remove the sprocket circlip (1), sprocket (2), spacing washer (3), & dustcover (4). To ensure the chain alignment is maintained, carefully note the order of removal and the dishing of the sprocket.

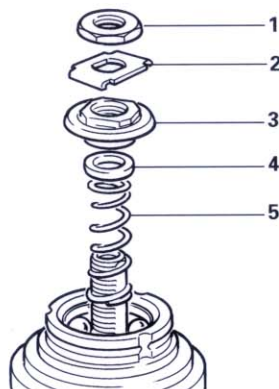
Technical Information - Summit X-RD5 Brake Hub



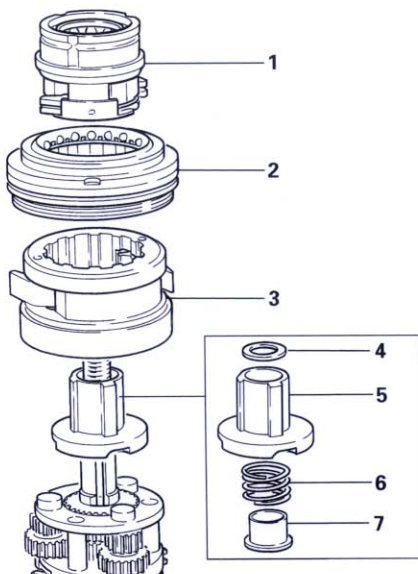
4. Remove from vice and, using a "C" spanner or hammer and punch, unscrew the internal from the hub shell anti clockwise.



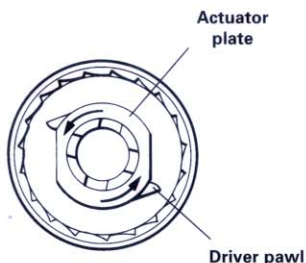
5. Clamp the left hand end of the axle in a vice and remove the right hand cone locknut (1), lockwasher (2), cone (3), clutch spring cap (4) and clutch spring (5).



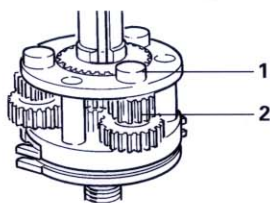
6. Remove driver assembly (1), ball ring/ball cage (2) and gear ring assembly (3). Remove clutch (5) from axle and remove washer (4) from inside clutch. Remove spring (6) and clutch sleeve (7).



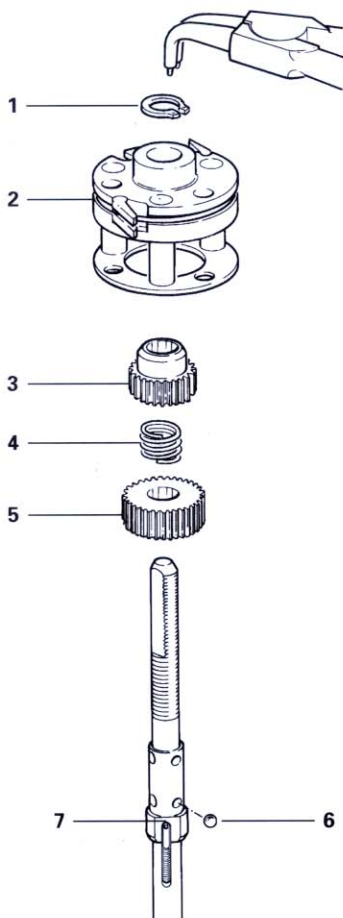
7. To separate driver assembly (1) and ball ring (2) rotate driver actuator plate anti-clockwise to disengage pawls and remove.



8. Remove pinion pins (1) and planet pinions (2).



9. Remove axle and planet cage from vice and clamp right hand end of axle. Using circlip pliers remove circlip (1) and discard. Remove planet cage (2), secondary sun pinion (3), sun pinion spring (4), and primary sun pinion (5). Note the order for re-assembly. Remove the 6 locking balls (6) and store carefully. **Note:** It is important that the shuttle pin (7) is not be removed from the axle.

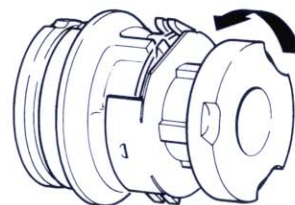


This completes disassembly.

5.4 INSPECTION AND REPAIR OF INTERNALS

Thoroughly clean all the internal parts and replace those worn or damaged. Specific items to be checked are:-

1. Axle - straightness, condition of thread and slots.
2. Condition of all pawls, springs, ball, ball tracks, pinions and gear ring teeth and drive slots.
3. Check free movement of driver actuator and pawl action by inserting clutch and turn

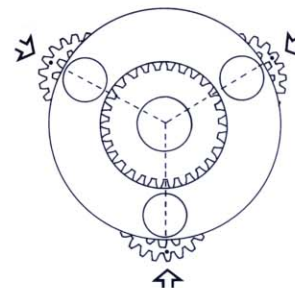
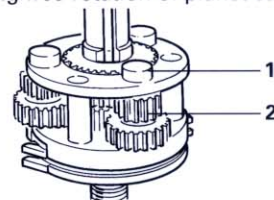


NB: It is recommended that this assembly is not dismantled but if necessary replace with a new assembly.

4. Clutch - squareness of drive corners.

5.5 ASSEMBLY

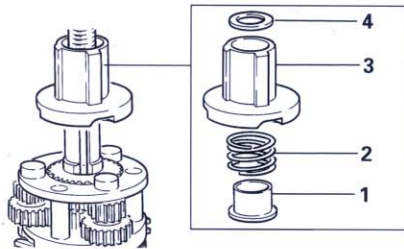
1. See diagram 5.3.9 for assembly in reverse order. Check that shuttle pin (7) has not been dislodged and is firmly in place. Clamp axle in vice ball pockets uppermost. Fill ball pockets in axle with Sturmey-Archer bearing grease, insert 6 gear selector balls (6) into pockets. Refit primary sun pinion (5), flat side uppermost, so that it engages with the gear selector balls and axle collar. Fit sun pinion spring (4) and secondary sun pinion (3), recess downwards, over axle and balls ensuring correct order and orientation, then fit the planet cage (2) pawl end uppermost. Fit new circlip sharp side uppermost into circlip groove.
2. Remove from vice and reclamp left hand end of axle into vice. Lubricate planet pinion pins (1) and fit planet pinions (2) and pins, with their timing marks pointing radially outwards, into planet cage ensuring free rotation of planet cage.



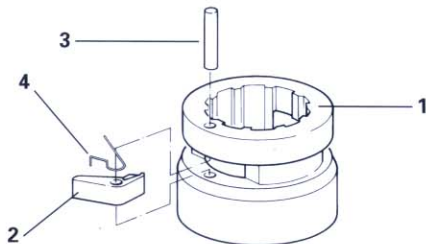
3. Fit clutch sleeve (1) and clutch sleeve spring (2). Then fit clutch (3) ensuring it

Technical Information - Summit X-RD5 Brake Hub

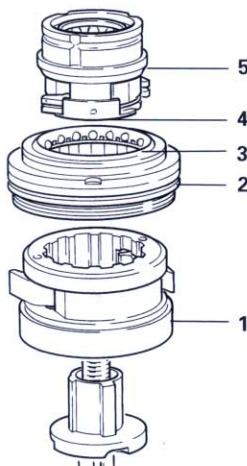
meshes with the top of the pinion pins. Fit washer (4) into clutch.



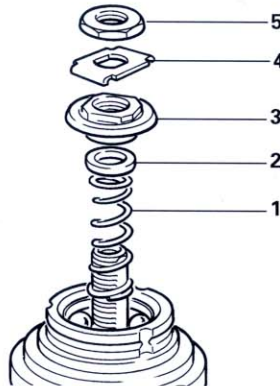
4. Take gear ring (1) and fit pawls (2), pawl pins (3) and springs (4), if required, as shown.



5. Lubricate pinions and gear ring teeth with internal grease. Locate the gear ring assembly (1) over the planet cage, then fit ball ring (2). Lubricate the right hand ball cage assembly (3) with grease. Place the ball cage assembly on the ball ring ensuring that the balls are positioned downwards. Rotate the actuator plate on the driver assembly (4) anti-clockwise to compress pawls. With the actuator in this position fit the driver assembly into the ball ring (2).

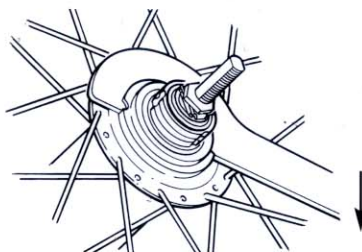


6. Locate the clutch spring (1) and spring cap (2), with its flat face uppermost, over the axle. Screw down the right hand cone (3) finger tight - slacken the cone off by half a turn and lock in position with the lockwasher (4) and locknut (5).

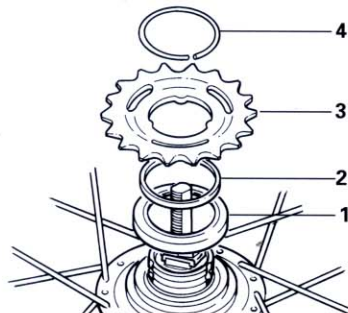


NB. Under no circumstances must the cone be unscrewed more the 5/8ths of a turn, as this could adversely effect gear adjustment.

7. 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.

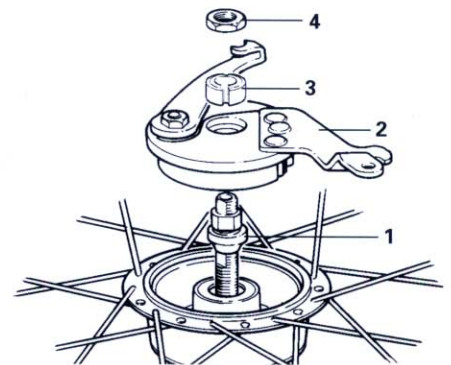


8. Fit sprocket dustcover (1), spacer (2), sprocket (3) & sprocket circlip (4).



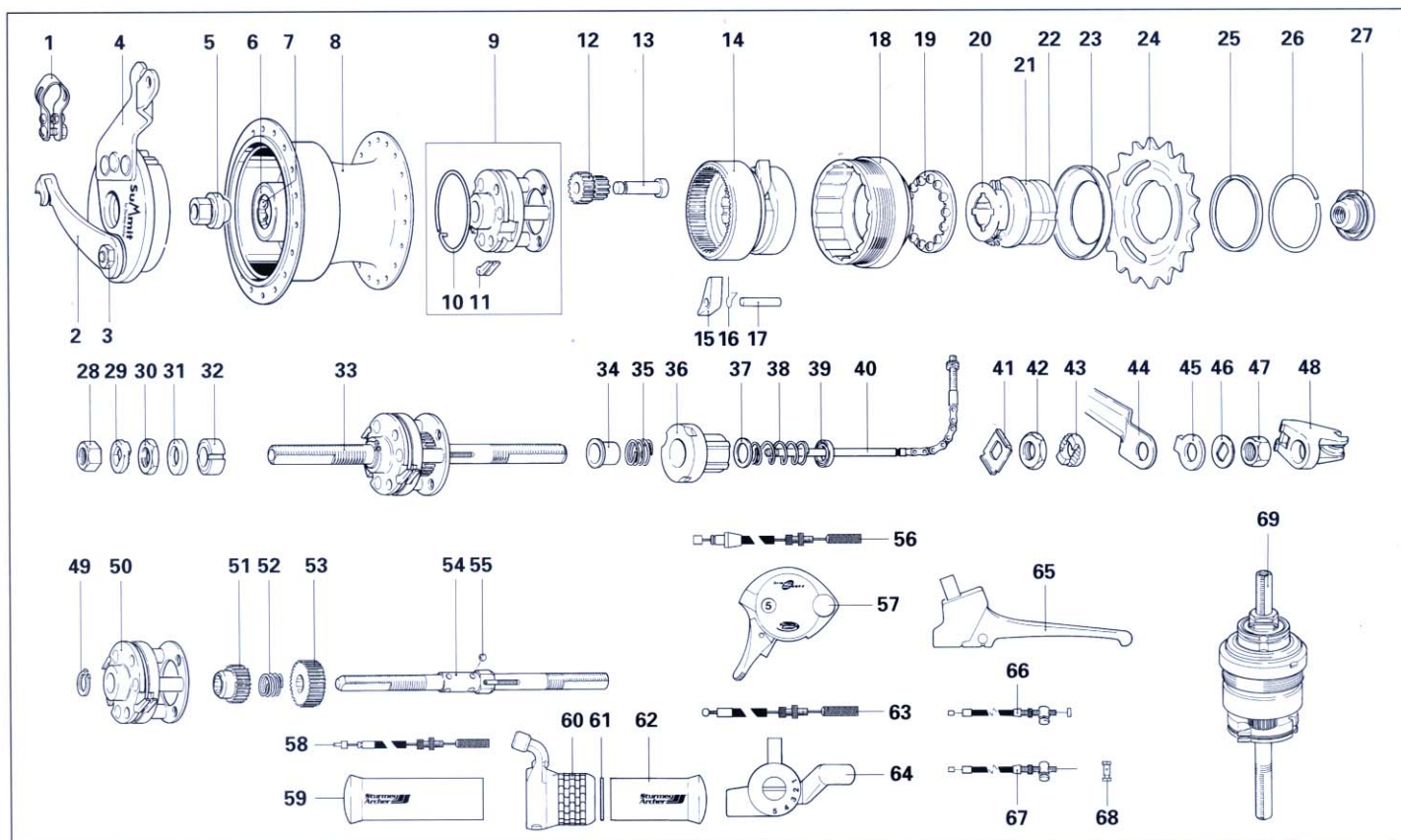
9. Left Hand Cone Adjustment

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 orientation of torque arm & axle flats is correct. Fit cone adjuster (3) adjust L.H. cone until minimum play is felt at the wheel rim ensuring hub runs freely. Fit locknut (4). Apply the brake to centralise the brake shoes and tighten the locknut.



10. Assemble the wheel into the bicycle. Reconnect cables and adjust gear/brake as previously described in Parts 3 and 4. Test fully before using bicycle.

Parts List - Summit X-RD5 Brake Hub



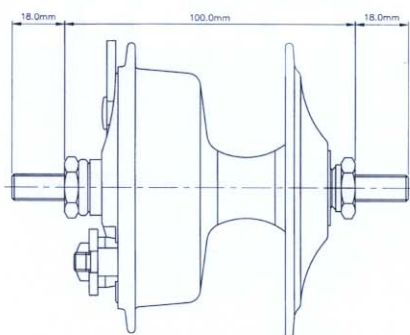
Item No.	Sales No.	Description	Item No.	Sales No.	Description	Item No.	Sales No.	Description
1	*HCB 101	Brake Arm Clip Assembly 15.9mm	*HSL 719	Sprocket 19 Teeth	51	HSA 576	Secondary Sun Pinion	
	*HCB 103	Brake Arm Clip Assembly 18.3mm	*HSL 720	Sprocket 20 Teeth	52	HSA 478	Sun Pinion Spring	
2	HSB 406	Brake Lever	*HSL 747	Sprocket 21 Teeth	53	HSA 575	Primary Sun Pinion	
3	HMN 139	Brake Lever Nut	*HSL 722	Sprocket 22 Teeth	54	HSA 574	Axle	
4	HSB 429	Brake Replacement Unit	25	HMW 127	Sprocket Spacing Washer 1.6 mm	55	HSA 520	5/32" Locking Balls (6 off)
		NB. Brake Replacement Unit	26	HSL 721	Sprocket Circlip	56	HSJ 887	Orion Control Cable Complete
		includes 1 off Items 2 and 3	27	HSA 101	R.H. Cone			- 1420 mm
5	HSA 379	L.H. Cone	28	HMN 128	Axle Nut	57	HSJ 866	Orion Control
6	HSA 241	Cone Dustcover	29	*HMW 155	Serrated Lockwasher 7.9 mm Slot	58	HSJ 873	Twistgrip Control Cable Complete
7	HSA 284	L.H. Ball Cage Assembly		*HMW 494	Serrated Lockwasher 9.5 mm Slot			- 1500 mm
		- 6.4mm Ball		*HMW 515	K48 Lipwasher 9.5mm Slot	59	HSJ 903	Left Hand Grip
8	HSA 498	Hub Shell Assembly 36 holes	30	HMN 132	Cone Locknut	60	HSJ 875	Twistgrip Control
		N.B. - Hub Shell Assemblies	31	*HMW 146	Spacing Washer 1.6 mm	61	HMW 516	Washer (2 off)
		include 1 off items 6 and 7		*HMW 129	Spacing Washer 3.2 mm	62	HSJ 902	Right Hand Grip
9	HSA 477	Planet Cage Assembly (includes 1		*HMW 483	Spacing Washer 4.8mm	63	HSJ 886	Trigger Control Cable Complete
		off Item 10, 2 off Item 11)		*HMW 484	Spacing Washer 6.4 mm			- 1420 mm
10	HSA 450	Circlip	32	HSA 371	Cone Adjuster	64	HSJ 839	Standard Trigger Control
11	HSB 482	Pawl for Planet Cage	33	-	Axle Assembly (See Item 54)	65	* PKL 205	DELIRIN Brake Lever
12	HSA 451	Planet Pinion	34	HSA 479	Clutch Sleeve			Assembly RH/LH 22.2mm Clip
13	HSA 495	Pinion Pin	35	HSA 478	Clutch Sleeve Spring	66	*HSK 713	Cable Complete Black -
14	HSA 496	Gear Ring Assembly	36	HSA 485	Clutch			1570mm c/end
		(includes 2 off Items 15, 16, 17)	37	HMW 327	Clutch Washer	67	*HSK 714	Cable Complete Black -
15	HSA 497	Pawl for Gear Ring	38	HSA 128	Clutch Spring			1600mm/1820mm o/end
16	HSA 120	Pawl Spring	39	HSA 129	Cap for Clutch Spring	68	HSK 715	Pinch Bolt
17	HSA 415	Pawl Pin	40	HSA 317	Gear Indicator	69	*HSX 140	Gear Internal Assembly
18	HSA 492	Ball Ring	41	HMW 147	Cone Lockwasher			Complete
19	HSA 438	Ball Cage Assembly	42	HMN 132	Cone Locknut			
20	HSA 439	Driver Assembly Complete	43	*HMW 155	Serrated Lockwasher 7.9 mm Slot			
		(includes 1 off Items 21 and 22)		*HMW 494	Serrated Lockwasher 9.5 mm Slot			
21	HSA 284	Ball Cage Assembly		*HMW 515	K48 Lipwasher 9.5mm Slot			
		- R.H. 6.4 mm Ball	44	HSJ 842	Fulcrum Lever			
22	HSA 102	Outer Dust Cap	45	HSA 480	Gear selector guide support			
23	HSL 701	Sprocket Dust Cap			washer			
24	*HSL 714	Sprocket 14 Teeth	46	HMW 150	Lock washer			
	*HSL 715	Sprocket 15 Teeth	47	HMN 128	Axle Nut			
	*HSL 716	Sprocket 16 Teeth	48	HSA 488	Gear Selector Guide			
	*HSL 717	Sprocket 17 Teeth	49	HSL 729	Circlip			
	*HSL 718	Sprocket 18 Teeth	50	-	Planet Cage (See Item 9)			* Optional Fitment

* Optional Fitment

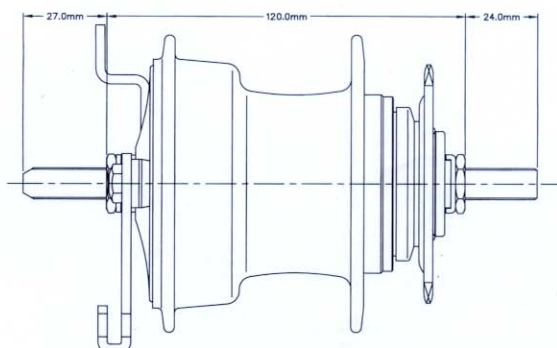


Technical Information - Summit X-RD5 Brake Hub

X-FD



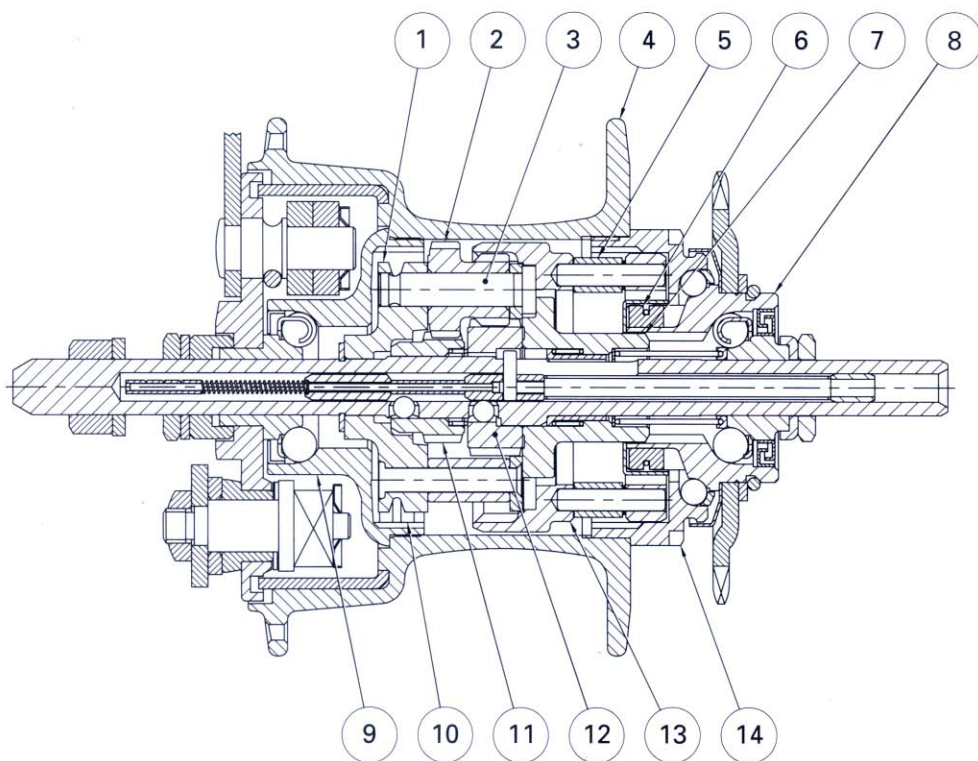
X-RD5



Technical Specifications

	Front Brake Hub (X-FD)	5 Speed Rear Brake Hub (X-RD5)		
Weight, complete with brake	0.76 kg	1.44 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	-33.3% (0.667)	2.88 metre
		2	-21.1% (0.790)	3.42 metre
		3	1:1	4.34 metre
		4	+26.6 (1.266)	5.48 metre
		5	+50.0% (1.500)	6.50 metre
		Overall Range	225.0%	
Standard overlocknut dimension	100mm	120mm		
Controls	-	HSJ 875 City-twistgrip with cable HSJ 866 Orion Control HSJ 839 Standard Trigger Control		
Total axle length	136mm	171mm		
Axle protrusion length	R: 18mm, L: 18mm	R: 24mm, L: 27mm		
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		

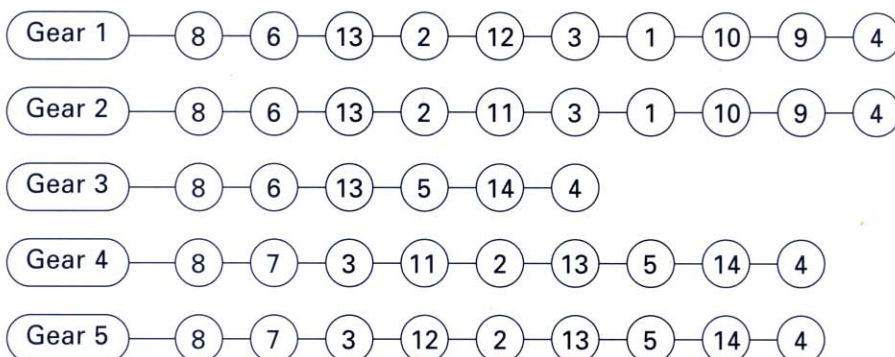
Part 6 DRIVETRAIN CHART



Description

- ① Planet Cage
- ② Planet Pinion
- ③ Planet Pinion Pin
- ④ Hub Shell
- ⑤ Gear Ring Pawls
- ⑥ Driver Pawls
- ⑦ Clutch
- ⑧ Driver
- ⑨ Left Hand Ball Cup
- ⑩ Planet Cage Pawls
- ⑪ Secondary Sun Pinion
- ⑫ Primary Sun Pinion
- ⑬ Gear Ring
- ⑭ Ball Ring

Drivetrain Sequence



Sturmey-Archer Ltd.,
 Triumph Road, NOTTINGHAM NG7 2GL, ENGLAND, U.K.
 Tel: (0115) 942 0800 Fax: (0115) 942 0801
 Email: sales@sturmey-archer.com WWW: sturmey-archer.com

Persons Majestic Co.,
 PO Box 370, 613 South Main Street, Huron, OHIO 44839, U.S.A
 Tel: 419-433-9057 Fax: 419-433-0182

REPRESENTED THROUGHOUT THE WORLD

LTE 161