



Technical Information  
and Parts List

Sprinter Coaster  
Five Speed Hub Brake



## Part 1 GENERAL INFORMATION

### 1.1 SCOPE OF THIS LEAFLET

Congratulations upon your purchase of a Sturmey-Archer SPRINTER COASTER 5-SPEED BRAKE 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 Section 2.). Please contact your local approved dealer if any problems are experienced with the 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  
For Brake Parts - SA 103E

## Part 2 GEARS

### 2.1 GEAR CHANGING

Continue pedalling, but ease pressure on the pedals and select the gear required. If the bicycle is stationary simply select the gear required.

### 2.2 GEAR RATIOS

The Sturmey-Archer SPRINTER COASTER 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 - 6.5 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.

### 2.3 CONTROL FITMENT SPRINTER CONTROL

Attach to the right-hand side of the handlebar. The control orientation can be altered to suit individual needs by removing the plastic screw cover at the control centre, and loosening the cross head screw. Rotate the control to the desired position before tightening the screw and replacing the cover (See

diagram 1). Select 5th Gear. Attach the cable to the down tube using cable ties or clips, do not over-tighten as this will prevent the inner cable moving within the outer, ensure the handle bars turn freely (400mm loop minimum). Pass the cables over the bottom bracket and fix to the chainstay. (See diagram 4). Adjust the gears as in Section 3.

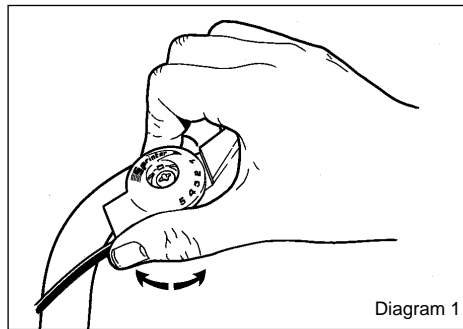


Diagram 1

### 2.4 CABLE REPLACEMENT SPRINTER CONTROL

To remove cable:

1. Disconnect the cable at the hub by unscrewing the cable adjuster from the indicator coupling (See diagram 5).
2. Remove cable from frame.
3. Select 1st gear.
4. Pull outer casing away from control to expose inner cable.
5. Push inner cable and remove the nipple from the slot in the control.
6. Pull inner Cable out of the control.

### 2.5 TO FIT NEW CABLE:

1. Select 1st Gear.
2. Expose inner cable.
3. Push inner cable through the slot in the control.
4. Engage nipple in corresponding internal slot. (See diagram 2).
5. Push outer casing so that it locks into the control recess. (See diagram 3).
6. Attach cable to frame (See diagram 4).
7. Connect cable at the hub by screwing the cable adjuster on to the indicator coupling.
8. Adjust the gears (See Section3).

**NOTE:-** In the event of damage to the control, it is recommended that the whole unit be replaced.

**NOTE:-** See Controls leaflet for Orion and Twistgrip Controls fitment.

## Part 3 ADJUSTMENT

### 3.1 GEAR ADJUSTMENT

See Diagram 5.

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

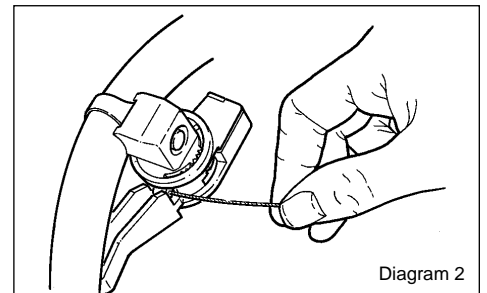


Diagram 2

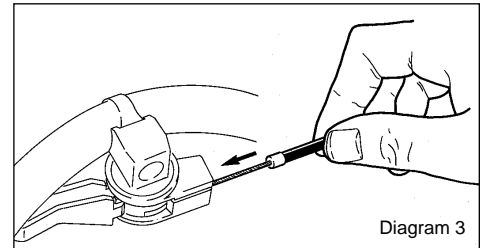


Diagram 3

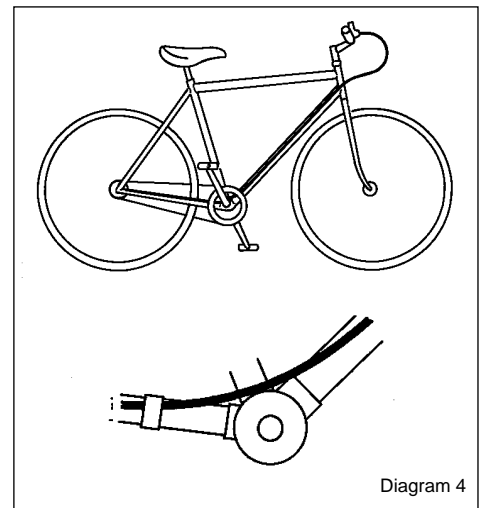


Diagram 4

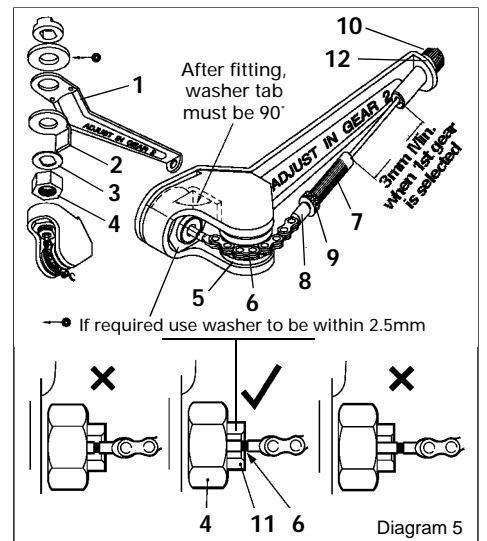


Diagram 5

1. Check that the fulcrum lever (1), support washer (2), lock washer (3) and right hand axle nut (4) are fitted in the correct order. Ensure that no more than 2.5mm of axle protrudes from the axle nut. Fit the gear selector guide (5).
2. Ensure that the indicator (6) is fully screwed in, turn back a maximum of

- half a turn to the line up with the selector guide (5) and fulcrum lever (1).
3. Check that the indicator chain (6) runs freely over the selector guide system (5).
  4. Select 5th gear on the control and connect the cable connector (7) until half way down the indicator coupling (8) and tighten locknut (9).
  5. Select SECOND GEAR on the gear control and rotate the pedal crank to ensure the gear is engaged. Turn the cable adjuster (10) until the centre of the red section at the end of the indicator rod (6) is level with the end of the axle (11).
  6. Tighten the locknut (12) against the adjuster (10).
  7. Select 5th gear, rotate the pedal crank, change back to SECOND GEAR and check adjustment.

## Part 4 WHEEL FITTING

The Sturmey-Archer SPRINTER Hub can be fitted into rear chainstay widths between 122mm - 126mm using the appropriate spacers. **NB: These products are not designed for bicycles with vertical rear dropouts as chain tensioning cannot be achieved. If the wheel is removed, these instructions should be followed during re-assembly:-**

### 4.1

1. With the chain on the sprocket place the hub axle into the chainstay ends.
2. Fit washers and axle nuts. Ensure that the serrations on the anti-rotation lockwashers face into the frame with the lugs located into the chainstay slots. **NB: Ensure the correct size anti-rotation washer (to match the chainstay slot width 9.5mm or 7.9mm) is fitted. DO NOT tighten the axle nuts at this stage or mis-alignment of the brake plate may occur.**
3. Insert torque arm on hub loosely into the clip. With the wheel centralised, chain tensioned and aligned correctly, tighten the axle nuts to a torque of 25NM.
4. Tighten the torque arm clip nut firmly to 7NM. Max. Ensuring brake arm remains in line.
5. **Control Cable** - Ensure the indicator (8) 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 and connection to the gear cable. Connect the indicator coupling (4) to the gear cable adjuster (2).

6. Replace chainguard/gear case (if fitted).

## Part 5 SERVICE - DEALER INSTRUCTIONS - ASSEMBLY/DISASSEMBLY

**5.1** When service problems arise, they usually occur outside the hub, and the checks listed previously must be made 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. Refer to the fault diagnosis chart before commencing disassembly which can be done without the use of special tools.

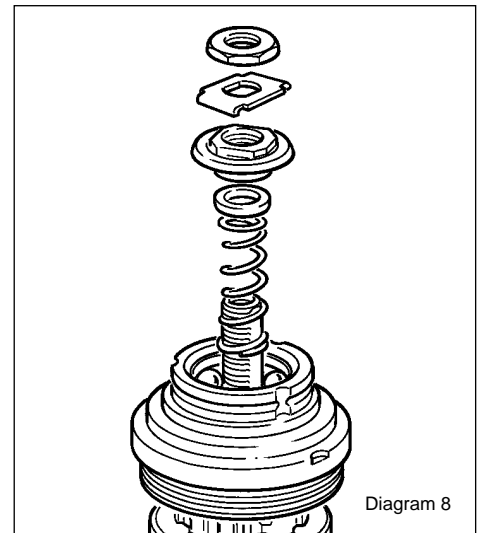
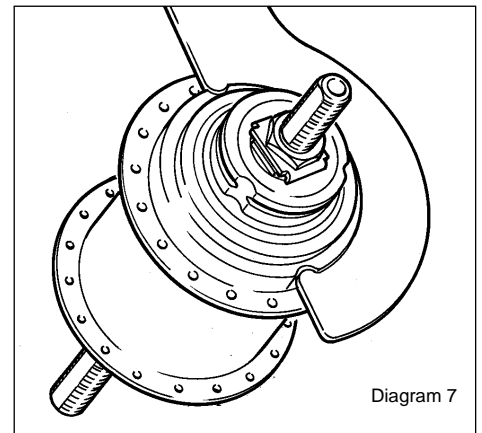
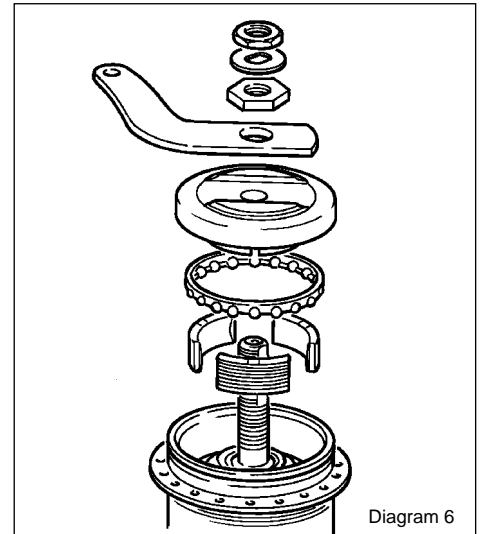
**NB: The right hand end of the axle is where the sprocket and indicator are fitted. The axle should be clamped across the flats taking care not to damage the threads.**

### 5.3 DISASSEMBLY

1. Remove the indicator rod, indicator protectors or gear selector guide (if fitted), axle nuts and spacing washers from both ends of the axle.
2. Use a screwdriver to release the sprocket circlip from the driver, then remove the spacing washer, sprocket, and outer dustcap (Note the order of these parts).
3. Clamp right hand end of axle in a vice and unscrew the left hand cone locknut, locking washer and brake arm nut. Remove the brake arm, left hand cone and dust cap assembly, ball cage assembly and brake shoe segments. **(See diagram 6).**
4. Remove hub from vice.
5. Clamp left hand end of axle in vice and loosen right hand ball ring and internal assembly with a 'C' spanner (or hammer and suitable punch) and unscrew the ball ring to release the internal assembly from the hub shell. **(See diagram 7).** Remove the brake actuator assembly by turning anti-clockwise.

**NB: If a replacement gear internal assembly complete (item 69 on exploded view) is to be fitted no further disassembly is required.**

6. Remove locknut, spacers (if fitted) and cone lockwasher cone and dust cap assembly, spring cap and clutch spring. **(See diagram 8).**
7. Lift off driver assembly, ball ring assembly, gear ring assembly, clutch washer, clutch, clutch sleeve spring and clutch sleeve. **(See Diagram 9).**



8. Remove pinion pins and planet pinions.
9. Remove axle and planet cage from vice and reclamp opposite (RH) end.
10. Using circlip pliers remove circlip and discard. **(See diagram 10).** Remove planet cage, planet cage spring, sun pinion cap, secondary sun pinion and primary sun pinion. **(See diagram 11).**
11. To remove gear selector key compress axle spring to bottom of

axle slot. Remove axle key assembly.  
(See diagram 13).

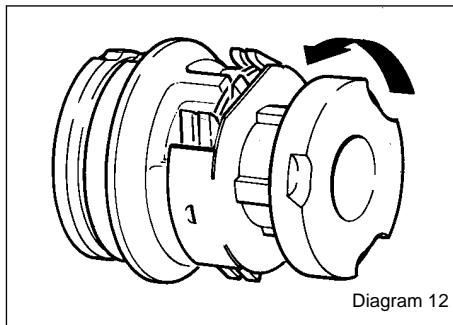
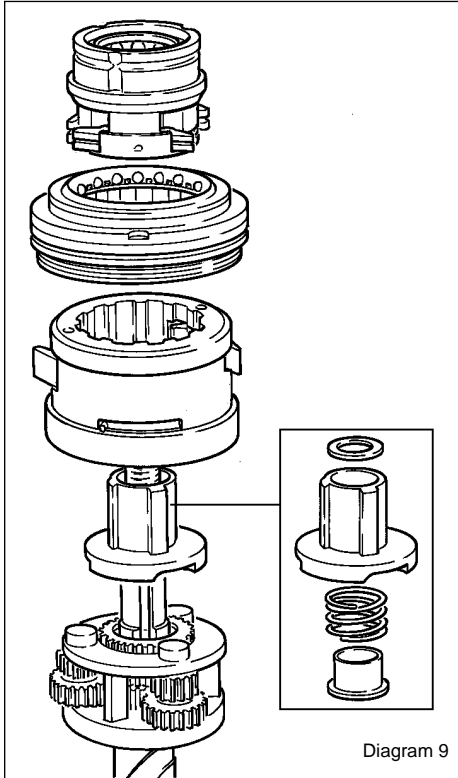
12. Release pressure on spring and remove axle from vice.

## Part 6 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. (See diagram 12).

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



4. Gear selector key - Check threads for wear and free movement in axle slot.
5. Clutch - squareness of drive corners.
6. Brake actuator assembly - Condition of pawls and pawl spring. Brake actuator spring should be able to turn clockwise readily, but have high resistance to turning anti-clockwise.
7. Brake shoe segments - Replace if worn.
8. Left hand cone - Condition of ball track.
9. Brake Arm - Replace if damaged.

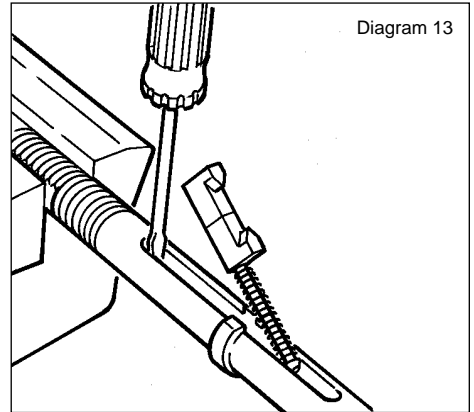
## Part 7 ASSEMBLY

### 7.1 (See diagram 13).

1. Clamp the drilled end of axle horizontally in vice with slot uppermost.
2. Using a small screwdriver compress indicator spring towards vice and insert gear selector key Assembly.
3. Release indicator spring and remove from vice.
4. Test by screwing Indicator into axle finger tight and test movement of gear selector key by pulling on the indicator.

### 7.2 PINION FITMENT

1. Reclamp axle in vice in the vertical

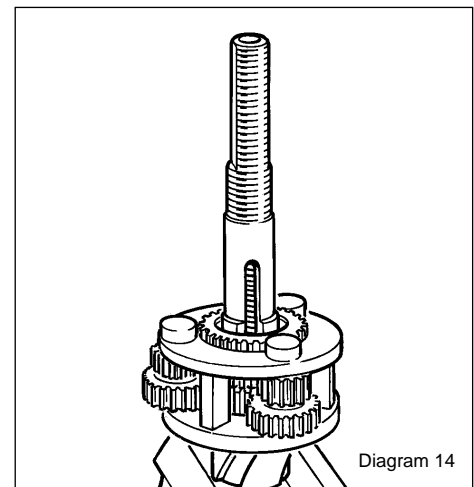
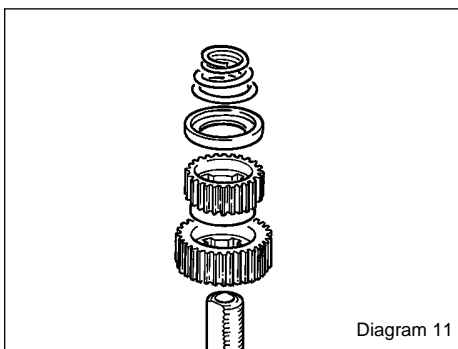
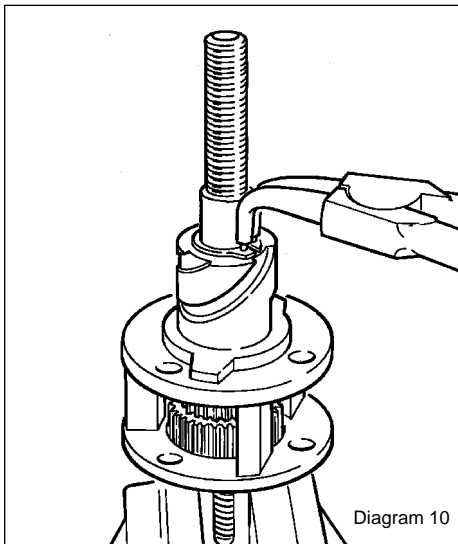


- position, circlip slot uppermost.
2. Fit primary sun pinion such that it engages with the gear selector key, recess uppermost.
3. Fit secondary sun pinion, bore protrusion downwards locating into primary sun pinion (See Diagram 11).
4. Fit washer, recess side uppermost.
5. Fit planet cage spring and planet cage ensuring thread end uppermost.
6. Take new circlip and locate it in the circlip groove, ensuring that circlip sharp corners are uppermost.

**NB: TAKE CARE NOT TO OVERSTRESS CIRCLIP.**

### 7.3 CLUTCH FITMENT

1. Remove axle from vice. Reclamp left hand end of the axle in vice (See diagram 14).
2. Lubricate pinion pins with grease.
3. Fit planet/pinions and pins with their timing marks pointing radially outwards.



**NB: SEE DIAGRAM 15. FOR PINION TIMING, EACH PINION HAS A TIMING MARK STAMPED ON ONE OF THE LARGE DIAMETER PINION TEETH.**

4. Fit clutch sleeve and clutch sleeve spring.
5. Fit clutch ensuring it meshes with



the top of the pinion pins.

6. Fit washer into clutch. (See diagram 9).

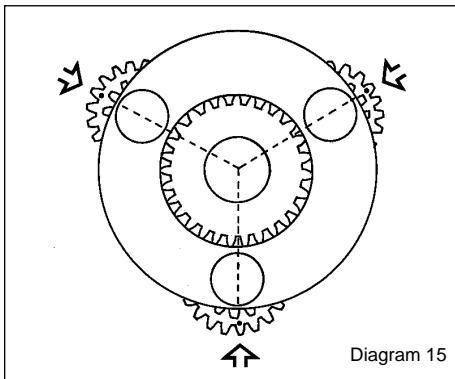


Diagram 15

### 7.4 GEAR RING, BALL RING, DRIVER ASSEMBLY

1. Take gear ring and fit the pawls, pawl pins and springs if required. Refit drag spring.
2. Lubricate with grease pinions and gear ring teeth.
3. Locate the gear ring assembly over the planet cage, then fit ball ring.
4. Lubricate the right hand ball cage assembly with grease.
5. Place the ball cage assembly on the ball ring ensuring that the balls are positioned downwards.
6. Rotate the actuator clockwise to compress pawls (See diagram 12).
7. With actuator in this position fit driver assembly, rotating anti-clockwise to ensure that driver engages with the clutch splines.

### 7.5 R.H. CONE ADJUSTMENT

1. Slide on the clutch spring and then the cap (with its flat face uppermost) over the axle and locate on the spring.
2. Screw down the right hand cone finger tight - slacken the cone off by half a turn and lock it in position with the lockwasher and locknut.

**NB: UNDER NO CIRCUMSTANCES MUST THE CONE BE UNSCREWED MORE THAN 5/8" OF A TURN, AS THIS COULD ADVERSELY EFFECT GEAR ADJUSTMENT.**

### 7.6 INTERNAL ASSEMBLY FITMENT

1. Remove the assembly from the vice. Apply grease to the working parts.
2. Insert the assembly in the hub shell and tighten the ball ring, turning anti-clockwise first to prevent cross threading. Tighten clockwise using 'C' spanner (or suitable punch) to torque of 50 - 55 Nm.

### 7.7 BRAKE ASSEMBLY, FITMENT AND LEFT HAND CONE ADJUSTMENT.

1. Clamp right hand end of axle in vice. Insert brake actuator assembly to left hand end of axle ensuring spiral spline engages with planet cage spline. Fit the 3 brake shoe segments such that cut outs are uppermost and the tag of the actuator lines up with one of the cut outs, and the three segments are evenly spaced (See diagram 16). If the drag spring has been replaced ensure that the tag faces upwards.
2. (See diagram 17). Fit ball cage assembly with balls facing down. Fit left hand cone rotating to ensure that it engages with the brake shoe segments. Fit brake arm, brake arm nut. Adjust brake arm nut until minimum side play can be felt at the rim and none at the hub.
3. Holding the brake arm nut stationary tighten the cone locknut (torque 7 - 10 Nm).
3. Assemble dustcap, sprocket and circlip in reverse order to disassembly.

4. Assemble the wheel into the bicycle and fit serrated washers and axle nuts. Fit brake arm clip to chainstay and locate brake arm into clip. Tighten axle nuts to 24 - 26 Nm torque and then tighten nut on brake arm clip to 7 - 10 Nm torque. Check correct indicator is fitted and that gear selector guide rotates freely (if fitted) and adjust gears as described in section 2.1.

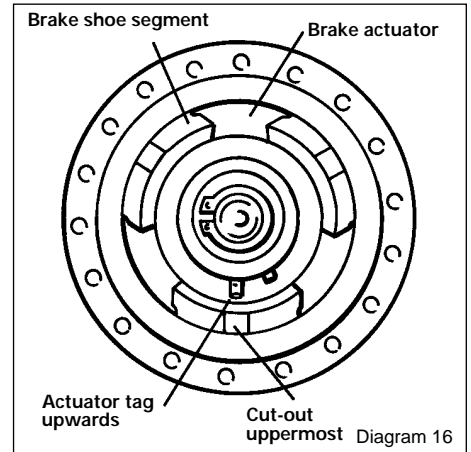


Diagram 16

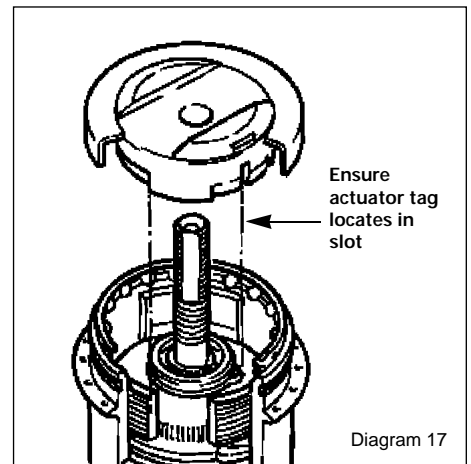


Diagram 17

## Part 8 FAULT DIAGNOSIS CHART

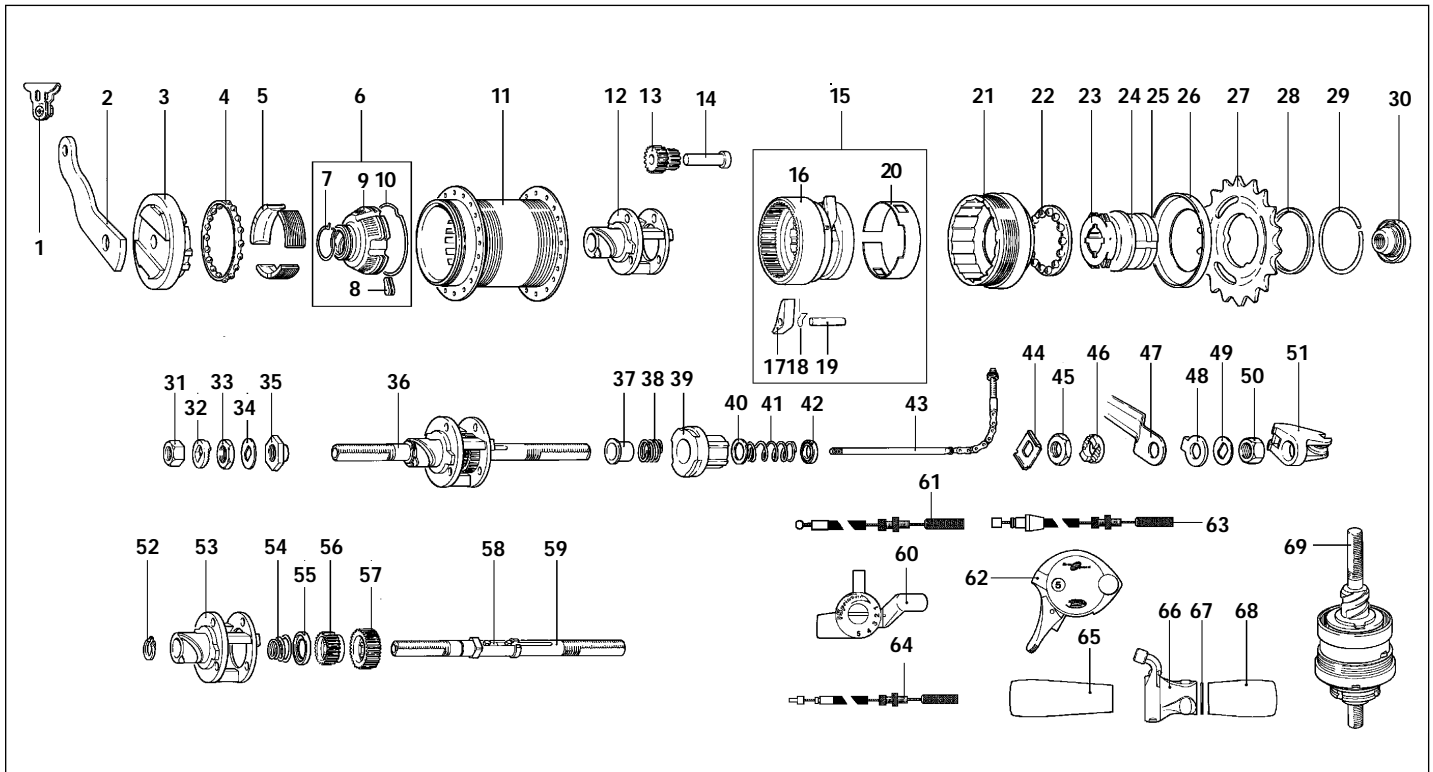
### A. JUMPING AND SELF-CHANGING GEARS

Table 1 - Symptoms	
Refer to the relevant faults and remedies in Table 2 for each of the following symptoms.	
Symptom	Possible Faults and Remedies (See Table 2)
Jumping in first gear	a,b,c,d,e,f,i,k,l,o,p.
Jumping second gear	a,b,c,d,e,f,j,k,l,o,p,q,s.
Jumping in third gear	f,g,h,l,m,p
Jumping in fourth gear	a,b,c,f,g,h,j,k,l,m,n,o,p,r.
Jumping in fifth gear	a,b,c,f,g,h,i,k,l,m,n,o,p,r,t.
Self changing between 1st and 2nd gear	a,b,c,k,s.
Self changing between 1st and 3rd gear	g.
Self changing between 4th and 5th gear	a,b,c,k,s,q.
Self changing between high and low gears	g.
Self changing between 2nd and 3rd gear	a,b,c,q.
Self changing between 3rd and 4th gear	a,b,c,d,q.

Table 2 - Faults and Remedies		
Refer to Table 1 for the symptoms that will be caused by each of the following faults.		
Ref. Fault	Remedy	
a. Kinked or stiff gear cable.	Replace or lubricate cable.	
b. Twisted indicator chain/catching gear selector pulley.	Replace indicators/Re-align gear selector pulley.	
c. Indicators not screwed in fully.	Screw in fully.	
d. Deformed or weak planet cage circlip.	Fit new circlip.	
e. Worn brake actuator pawls.	Replace pawls.	
f. Worn gear ring splines.	Replace gear ring assembly.	
g. Worn gear ring pawls.	Replace gear ring assembly.	
h. Weak or sticking gear ring pawl springs.	Clean the hub, lubricate and/or replace gear ring assembly..	
i. Worn primary sun pinion.	Replace primary sun pinion.	
j. Worn secondary sun pinion.	Replace secondary sun pinion.	
k. Worn or ineffective gear selector key.	Replace gear selector key.	
l. Worn driver pawls.	Replace pawls.	
m. Worn right hand ball ring ratchet teeth.	Replace ball ring.	
n. Tight or weak clutch spring.	Clean the hub and fit new spring.	
o. Incorrect right hand cone adjustment.	Re-adjust the hub (see PART 2).	
p. Worn clutch washer.	Replace.	
q. Ineffective clutch sleeve spring.	Replace.	
r. Worn clutch.	Replace.	
s. Worn sun pinion spring.	Replace.	
t. Worn/ineffective indicator spring.	Replace axle assembly.	

### B. OTHER FAULTS

Symptom	Fault	Remedy
Hub runs stiffly, drags on pedals when free-wheeling.	<ol style="list-style-type: none"> <li>1. Chainstay ends not parallel.</li> <li>2. Incorrect cone adjustment.</li> <li>3. Distorted dust caps.</li> <li>4. Corrosion due to lack of lubrication.</li> <li>5. Planet pinions are not timed correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Re-align free-wheeling (un-parallel chainstay ends can cause axle bending).</li> <li>2. Re-adjust both cones (see Section 5).</li> <li>3. Replace dust caps.</li> <li>4. Disassemble hub, clean and re-grease (see Part 5).</li> <li>5. Check and re-time the pinions (see Diagram 15).</li> </ol>
No gears at all	<ol style="list-style-type: none"> <li>1. Pawls stuck.</li> <li>2. Broken gear selector key.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean and re-grease.</li> <li>2. Replace gear selector key.</li> </ol>
Sluggish gear change.	<ol style="list-style-type: none"> <li>1. Rusty or frayed gear cable.</li> <li>2. Worn gear indicator coupling.</li> <li>3. Bent axle.</li> <li>4. Damaged axle slots.</li> <li>5. Distorted axle spring.</li> <li>6. Damaged gear selector key assembly.</li> <li>7. Ineffective cable run.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace cable.</li> <li>2. Replace indicator coupling.</li> <li>3. Fit new axle.</li> <li>4. Fit new axle assembly.</li> <li>5. Replace axle assembly.</li> <li>6. Replace gear selector key assembly.</li> <li>7. Re-align cable.</li> </ol>
Harsh braking action	<ol style="list-style-type: none"> <li>1. Lack of lubrication</li> </ol>	<ol style="list-style-type: none"> <li>1. Grease all brake parts and surfaces.</li> </ol>
No brake	<ol style="list-style-type: none"> <li>1. Worn brake pawls in driver</li> <li>2. Worn or incorrectly fitted brake actuator drag spring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace driver assembly</li> <li>2. Replace.</li> </ol>



Item No.	Sales No.	Description	Item No.	Sales No.	Description	Item No.	Sales No.	Description
1	*HSL 767	Brake Arm Clip Assembly with Integral Pad 15.5mm	27	*HSL 714	Sprocket 14 Teeth	49	HMW 150	Lockwasher
	*HCB 101	Brake Arm Clip Assembly 15.9mm		*HSL 715	Sprocket 15 Teeth	50	HMN 128	Axle Nut
	*HCB 103	Brake Arm Clip Assembly 18.3mm		*HSL 716	Sprocket 16 Teeth	51	HSA 488	Gear Selector Guide
2	SHS 483	Brake Arm		*HSL 717	Sprocket 17 Teeth	52	HSL 729	Circlip
3	HSH 485	L.H. Cone and Dustcap Assembly		*HSL 718	Sprocket 18 Teeth	53	-	Planet Cage (See Item 12)
4	HSA 164	L.H. Ball Cage Assembly		*HSL 719	Sprocket 19 Teeth	54	HSA 503	Sun Pinion Spring
5	SHS 478	Brake Shoe Segments		*HSL 720	Sprocket 20 Teeth	55	HSA 504	Sun Pinion Washer
6	HSA 473	Brake Actuator Assembly, incl. 2 off Item 8, 1 off Items 7, 9 & 10	28	*HSL 721	Sprocket 21 Teeth	56	HSA 494	Secondary Sun Pinion
7	HSH 407	Brake Actuator Drag Spring		*HSL 722	Sprocket 22 Teeth	57	HSA 493	Primary Sun Pinion
8	HSA 410	Brake Actuator Pawl	29	HMW 127	Sprocket Spacing Washer 1.6 mm	58	HSA 483	Gear Selector Key Assembly
9	HSH 476	Brake Actuator	30	HSL 721	Sprocket Circlip	59	HSA 505	Axle Assembly.- includes 1 off Item 52
10	HSA 450	Brake Actuator Pawl Spring	31	HSA 101	R.H. Cone	60	*HSJ 839	Standard Trigger Control
11	HSA 500	Hub Shell Assembly 36 holes	32	HMN 128	Axle Nut	61	*HSJ 886	Trigger Control Cable Complete
12	HSA 501	Planet Cage		*HMW 155	Serrated Lockwasher 7.9 mm Slot	62	*HSJ 866	Orion Control
13	HSA 451	Planet Pinion		*HMW 494	Serrated Lockwasher 9.5 mm Slot	63	*HSJ 887	Orion Control Cable Complete
14	HSA 502	Pinion Pin	33	*HMW 515	K48 Lipwasher 9.5mm Slot	64	*HSJ 873	Twistgrip Control Cable Complete
15	HSA 506	Gear Ring Assembly (includes 1 off Items 16 & 20 and 2 off items 17, 18, 19)	34	HMN 132	Planet Locknut	65	*HSJ 864	Left Hand Grip
16	HSA 552	Gear Ring	35	HMW 150	Lockwasher	66	*HSJ 875	Twistgrip Control
17	HSA 497	Pawl for Gear Ring	36	HMW 381	Brake Arm Nut	67	*HMW 516	Washer (2 off)
18	HSA 120	Pawl Spring	37	-	Axle Assembly (See Item 53)	68	*HSJ 863	Right Hand Grip
19	HSA 415	Pawl Pin	38	HSA 479	Clutch Sleeve	69	*HSX 126	Gear Internal Assembly Complete
20	HSA 542	Drag Spring	39	HSA 478	Clutch Sleeve Spring			
21	HSA 492	Ball Ring	40	HSA 485	Clutch			
22	HSA 438	Ball Cage Assembly	41	HMW 327	Clutch Washer			
23	HSA 407	Driver Assembly (includes 1 off Items 19 and 20)	42	HSA 128	Clutch Spring			
24	HSA 284	Ball Cage Assembly - R.H. 6.4 mm Ball	43	HSA 129	Cap for Clutch Spring			
25	HSA 102	Outer Dust Cap	44	HSA 490	Gear Indicator			
26	HSL 701	Sprocket Dust Cap	45	HMW 147	Cone Lockwasher			
			46	HSA 485	Cone Locknut			
			47	*HMW 155	Serrated Lockwasher 7.9 mm Slot			
			48	*HMW 494	Serrated Lockwasher 9.5 mm Slot			
				*HMW 515	K48 Lipwasher 9.5mm Slot			
				HSA 479	Fulcrum Lever			
				HSA 480	Gear Selector Guide Support Washer			

\* Optional Fitment

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