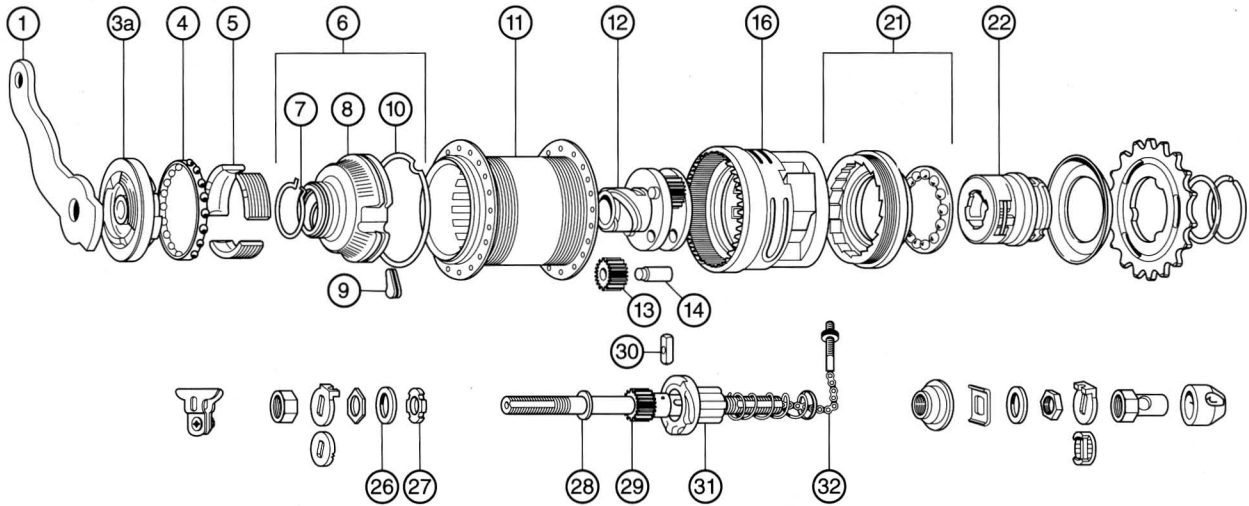


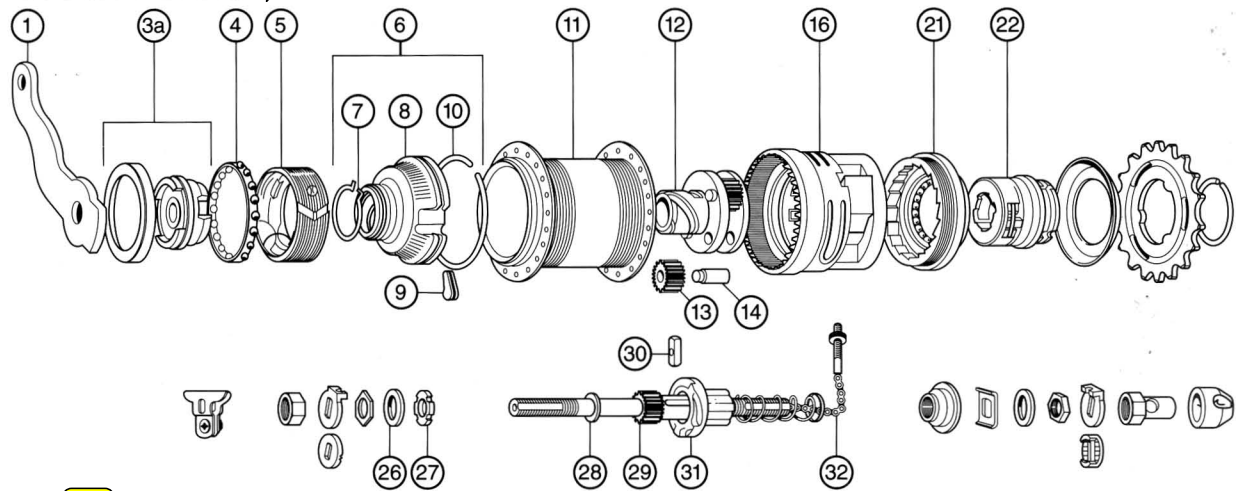
HUBS

STURMEY-ARCHER 3-SPEED COASTER BRAKE

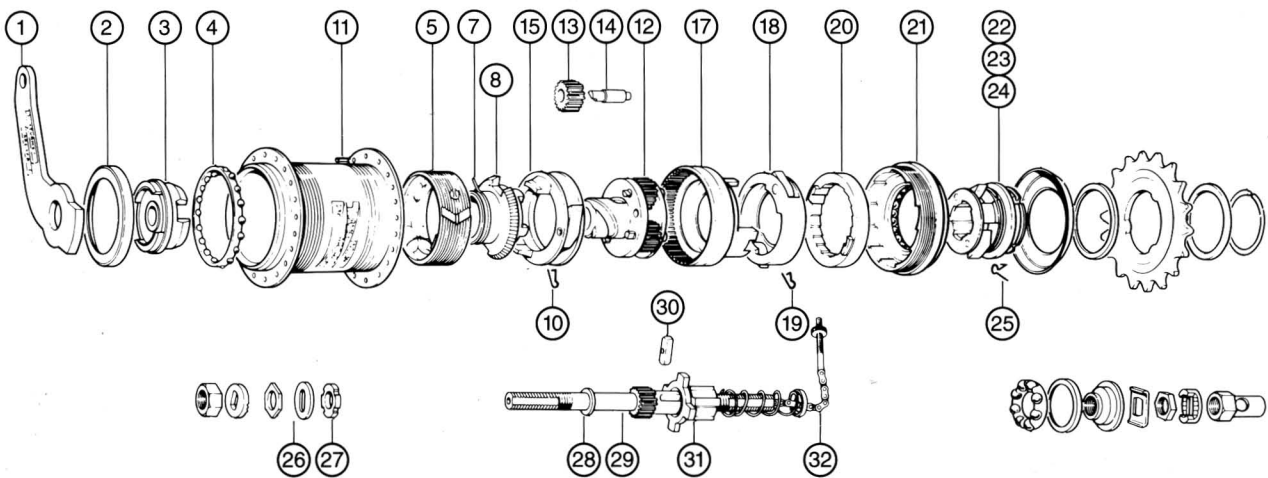
AWC (after 5/91)



AWC (before 5/91)



S3C



¹The lockwasher, brake arm nut and brake arm as a unit may be interchanged.

²Same as AW. ³HSA 469 replaces HSA 302 (see Subassembly text).

⁴If thrust ring has same size opening at both ends, a thrust washer must be installed. This occurs only on older models.

⁵Hub shells marked 88-8 (August 1988) or earlier have 2 pawl drivers. Replace 2 pawl driver assembly and clutch together.

**STURMEY-ARCHER 3-SPEED COASTER BRAKES
PARTS INTERCHANGEABILITY**



SUTHERLAND'S HANDBOOK OF COASTER BRAKES AND INTERNALLY-GEARED HUBS

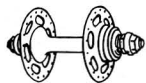
Vertical line between numbers indicate parts are not interchangeable.

Parts are interchangeable only if they are on the same line and they do not have a vertical line between them.

Parts not listed are the same as AW.

This page has been updated in 2012 to cover the latest-model hubs. The S-RC3(II) is identical to the AWC(II) except for the aluminum-alloy hub shell.

	AWC(II) S-RC3(II)	AWC 2004-2005	AWC After 5/91	AWC Before 5/91	S3C Changes	S3C	TCW Mark III
Brake Arm/Cone Assy	HSB 491	HSB 488				HSB 449	HSB 403
1. Brake Arm	HSB 483	HSB 487	HSB 471	HSB 471	HSB 450 ¹	HSB 446	HSB 402
2. LH Dust Cap						HSB 404	HSB 404
3. LH Cone						HSB 447	HSB 405
3a. Cone/Dust Cap Assy		HSB 485	HSB 477	HSB 472			
4. Ball Cage (18 3/16" balls)	HSA 164	HSA 164	HSA 164	HSA 164		HSA 164	HSA 164
Lubricator (old style)						HSA 106	
5. Brake Shoes/Band	HSB 490	HSB 478	HSB 478	HSB 448		HSB 448	HSB 406
6. Brake Actuator Assy	HSB 473	HSB 473	HSB 473	HSB 473			
7. Drag Spring	HSB 407	HSB 407	HSB 407	HSB 407		HSB 407	HSB 407
8. Actuator Thrust Plate	HSB 476	HSB 476	HSB 476	HSB 476		HSB 408	HSB 408
9. Pawl	HSA 410	HSA 410	HSB 474	HSB 474			
10. Pawl Spring	HSB 450	HSB 450	HSB 475	HSB 475		HSA 120 ²	HSA 120 ²
Seal Spring		HSA 818					
11. Hub Shell 28 hole	HSA 465	HSA 617	HSA 465			HSA 232	
36 hole	HSA 400	HSA 616	HSA 400	HSA 400		HSA 233	HSA 166
40 hole						HSA 323	HSA 165
12. Planet Cage	HSA 402	HSA 402	HSA 402	HSA 402		HSA 291	HSA 169
13. Planet Pinion	HSA 292	HSA 292	HSA 292	HSA 292		HSA 292	HSA 115
14. Pinion Pin	HSA 401	HSA 401	HSA 401	HSA 401		HSA 293	HSA 170
15. Pawl Ring Assy						HSA 168	HSA 168
Pawl Spring						HSA 120 ²	HSA 120 ²
16. Gear Ring Assembly	HSA 554	HSA 554	HSA 403	HSA 403			
17. Gear Ring	HSA 558	HSA 558				HSA 296	HSA 171
18. Gear Ring Pawl Ring						HSA 307	HSA 172
19. Spring for Pawl Ring						HSA 253	
Pawl Pin	HSA 415	HSA 415					
Gear Ring Drag Spring	HSA 542	HSA 542					
20. Ratchet Ring						HSA 304	
21. RH Ball Ring	HSA 437	HSA 437	HSA 437	HSA 308		HSA 308	HSA 121 ²
22. Driver/Brake Pawls ⁵	HSA 407 ⁵	HSA 407 ⁵	HSA 407 ⁵	HSA 407 ⁵		HSA 311	
23. Ball Cage Assy	HSA 438	HSA 438	HSA 438	HSA 284 ²			
24. Outer Dust Cap	HSA 102	HSA 102	HSA 102	HSA 102 ²			
25. Pawl Spring						HSA 469 ³	
26. Lockwasher	HMW150	HMW150	HMW150	HMW150	HMW150 ¹	HMW156	HMW156
27. Brake Arm Locknut	HMN 384	HMN 403	HMN 344	HMN 344	HMN 344 ¹	HMN 334	HMN 135
28. Axle Circlip	HSL 729	HSL 729	HSL 729	HSL 729	HSL 729	HSL 725	HSL 725
Clutch Sleeve (not shown)							HSA 116 ²
29. Axle 146 mm 5/8"							HSA 173
152 mm 6"		HSA 538	HSA 466	HSA 405		HSA 313	
159 mm 6 1/4"				HSA 419		HSA 314	HSA 174
163 mm	HSA 539	HSA 539	HSA 467	HSA 427			
175 mm	HSA 645						
30. Axle Key	HSA 295	HSA 295	HSA 295	HSA 295		HSA 295	HSA 124 ²
31. Clutch Thrust Ring (not shown)	HSA 536	HSA 536	HSA 468	HSA 418		HSA 294	HSA 117 ²
32. Gear Indicator							HSA 283 ²
146 mm 5/8" axle							HSA 125 ²
152 mm 6" axle		HSA 126 ²	HSA 126 ²	HSA 126 ²		HSA 126 ²	
159 mm 6 1/4" axle				HSA 315		HSA 315	HSA 126 ²
163 mm axle	HSA 316	HSA 316	HSA 316	HSA 316			
175 mm axle	HSA 420						
Complete Internal Assy							
152 mm axle		HSX 116					
163 mm axle	HSX 118	HSX 118					
175 mm axle	HSX 145						

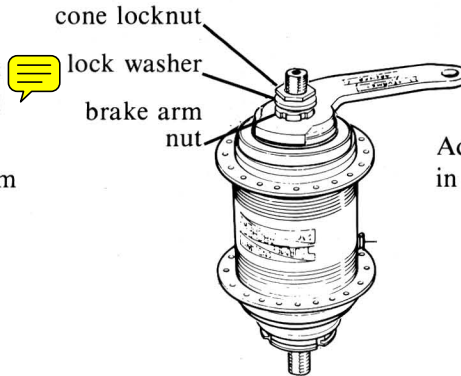


HUBS

STURMEY-ARCHER S3C 3-SPEED COASTER BRAKE DISASSEMBLY AND ASSEMBLY

1 DISASSEMBLY

Loosen but *do not remove* cone locknut and brake arm nut.



Adjust bearing and lock brake arm nut in place with locknut.

ASSEMBLY 7

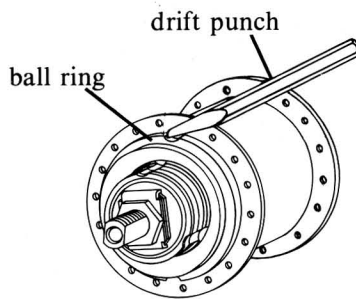
Next Step



2 DISASSEMBLY

The right-hand ball ring may have a double start thread. If the ball ring is replaced in the opposite position, the wheel may need retrueing. To facilitate proper reassembly, mark the ball ring at the point nearest the lubricator.

Place a drift punch as shown and loosen the ball ring by rapping the punch firmly with a hammer. *Do not try to unscrew it completely.*



Tighten right-hand ball ring with a hammer and drift punch.

ASSEMBLY 6

Next Step

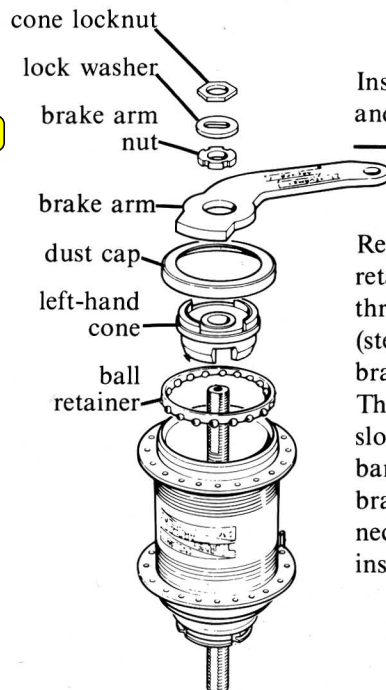


Next Step



3 DISASSEMBLY

Remove cone locknut, lock washer, and brake arm nut. The brake arm, dust cap and left-hand cone may come off separately or as a unit. They can easily be pressed apart if required. Remove ball retainer.



Install brake arm nut, lock washer and cone locknut finger tight.

Replace ball retainer *flat side up*. If retainer will not seat properly, check thrust plate and pawl ring installation (step 3). Install cone, dust cover and brake arm (brand name facing out). The inward face of the cone has three slots; the two wide slots engage the brake band tabs, the narrow slot engages the brake actuating spring. It may be necessary to rotate the spring before installing the cone.

ASSEMBLY 5

Next Step
Next Page



Next Step

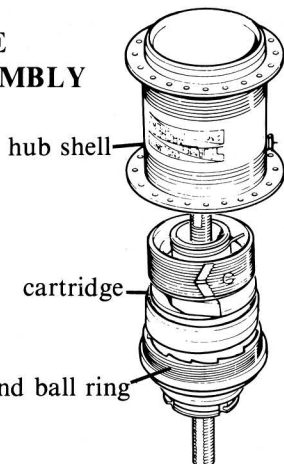


**STURMEY-ARCHER S3C
3-SPEED COASTER BRAKE
DISASSEMBLY AND ASSEMBLY**


HUBS 

4 DISASSEMBLY

Unscrew right-hand ball ring from the *bottom* of hub shell and remove cartridge.



Next Step 

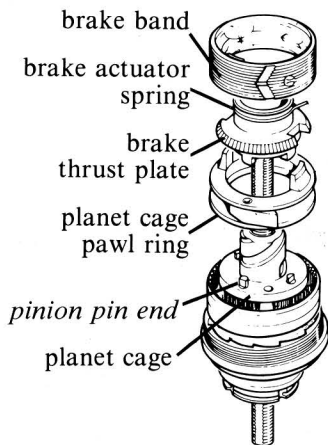
Next Step 
Preceding Page

Without inverting cartridge, slip it into the hub shell and thread ball ring finger tight. If the mark made during disassembly is not beside the lubricator, remove and restart cartridge. Do not tip or invert hub until left-hand locknut has been installed in the next step.

ASSEMBLY 4

5 DISASSEMBLY

Remove brake band, thrust plate and planet cage pawl ring. If required brake actuating spring can be pried off thrust plate with a thin-bladed screwdriver.





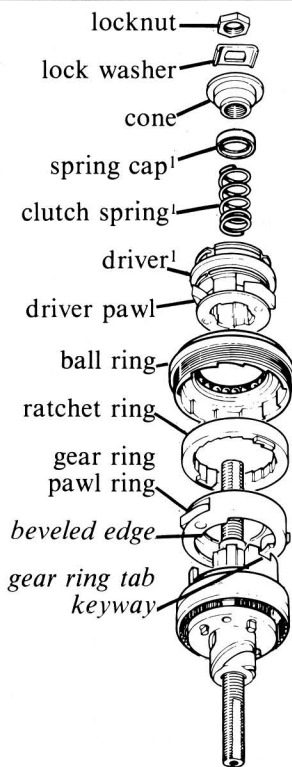
Next Step 

Turn assembly over. Install brake actuating spring on thrust plate if it was removed. *Viewed as shown hooked end of spring must be clockwise from gap.* Incorrect installation will cause excessive drag and wear. Rotate pinion pins so the flats face outwards. Insert tabs of planet cage pawl ring into slots on thrust plate. Screw the pawl ring and thrust plate onto the planet cage until pawl ring seats on the planet cage. Install brake band, *tabs up*.

ASSEMBLY 3

6 DISASSEMBLY

Hold down ball ring while removing right-hand locknut, lock washer, cone clutch spring, spring cap and driver¹ (rotate driver to disengage driver pawls). If driver catches on ball ring, remove both parts together; be careful not to damage pawl springs when separating them. Lift off ball ring, ratchet ring and gear ring pawl ring.






Next Step 

Install ball ring. Push pawls in and rotate ring until seated over pawls. Install driver.¹ Push pawls in and turn driver clockwise until it seats in ball ring. Install spring and spring cap.¹ Install cone, lockwasher and locknut. Adjust bearing. If bearing runs rough, check spring cap.¹

Replace gear ring pawl ring *beveled edge down*. Pawls must point clockwise when viewed from above. Top face of ring should be flush with top of gear ring tabs.

Install ratchet ring. Ratchet ring keys must be engaged in *keyways* of the gear ring tabs. If the keys are positioned *beside* the gear ring tabs, low gear may not engage properly.

ASSEMBLY 2

¹Old model spring caps are too large to fit through the driver. On these hubs, the spring and cap are removed *after* and installed *before* the driver. Otherwise the spring cap will be compressed between the cone and the bearing with damage to both. Upon installation the driver must be held in place against the spring until the cone is installed. 

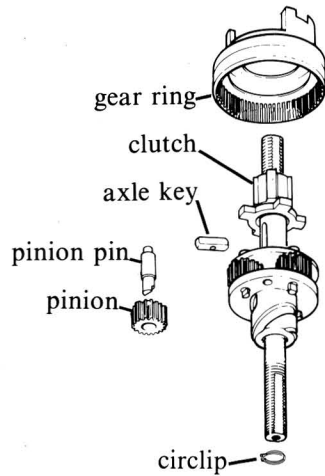
HUBS

STURMEY-ARCHER S3C 3-SPEED COASTER BRAKE DISASSEMBLY AND ASSEMBLY (cont.)

7 DISASSEMBLY

Remove gear ring, clutch and axle key. Push out pinion pins and remove pinions.

Pry off planet cage circlip and remove planet cage.



Slide planet cage over left end of axle past circlip groove and replace circlip.

Replace pinions and pinion pins. Orient the pins as shown. Center axle key in the bottom of the axle slot with threaded hole parallel to axle. Slide clutch over axle key. Clutch should contact face of planet cage and engage pinion pins. Install gear ring.

↑
Next Step
Preceding Page

ASSEMBLY 1

SUBASSEMBLIES

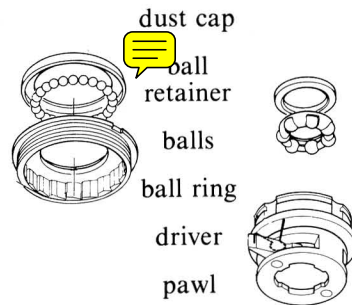
DISASSEMBLY

Ball Ring, Driver and Pawl Rings

Bearings. Remove dust cover with a thin-bladed screwdriver. Work slowly around cover to avoid deforming it. Lift out balls or ball retainer.

Pawls. Pawl springs can be removed with the pawls in place, although some deformation usually results. Ease the hooked end of the spring over the side or long end of pawl to the other side. Spread the ends of spring and slide out.

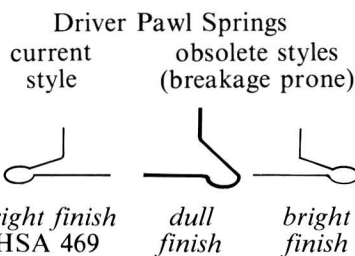
If pawls are to be removed, springs are best removed at that time. Riveted pawl pins can be removed only by drilling. Hollow pawl pins can be driven out with the correct size drift punch. Some drivers use removable pawl pins held in place by a circlip. *Do not mix up pawl springs.*



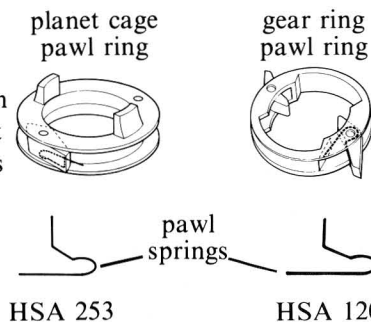
Ball Ring, Driver and Pawl Rings

Bearings. Install balls or ball retainer. *Orient retainer as shown.* Start dust cover straight by hand and tap home with a soft hammer.

Pawls. If only pawl springs have been removed, springs may be fitted with pawls in place. Use only new style pawl springs. Early types tend to break. Holding spring by hooked end, hook straight end around pawl pin beside pawl. Ease hooked end over the side or long end of pawl. Straight end must come to bear on piece body and hooked end on inside surface of pawl slightly behind driving edge.



If pawls were removed, install pawl, pawl spring and pin together. *Make sure pawls are oriented as shown.* Straight solid pins must be lightly riveted over. File end of pin flush. Hollow pins are driven in with a soft hammer. Grooved driver pawl pins are installed groove first and retained by a circlip around the driver.



ASSEMBLY

**STURMEY-ARCHER S3C
3-SPEED COASTER BRAKE
DISASSEMBLY AND ASSEMBLY (cont.)**



CLEANING

Clean all parts, including outside of hub shell and axle bore, in a suitable solvent. Be very careful not to introduce dirt or grit after cleaning.

POINTS TO CHECK

Part numbers followed by * refer to AW parts chart, others to S3C or TCW-III parts chart.

1. Clutch (26) and gear ring dogs (14) for rounded or chipped driving edges (rounding to a radius of even $\frac{1}{64}$ " (0.4 mm) at the corners can cause hub to slip out of gear)
2. Pawls (12*, 19, 21*), ball ring (18), left-hand ball cup (5) and ratchet ring (17) for rounded or chipped driving edges
3. Sun pinion (24), planet pinions (11) and gear ring (14) for worn or chipped teeth
4. Bearing surfaces of left-hand cone (3), left-hand ball cup (5), ball ring (18), driver (19), right-hand cone (5*) and pinion pins (12) for wear and pitting
5. Axle key (25) and indicator for stripped threads
6. Clutch spring (32*) and brake actuating spring (7) for size and tension
7. Dustcaps and ball retainers for straightness
8. All threaded parts for worn or damaged threads
9. Axle (24) for straightness
10. Planet cage (13) and thrust plate (8) threads for wear or roughness
11. Thrust plate (8) and brake band (6) serrations for wear
12. Brake band (6) and hub shell (5) for wear or glazing

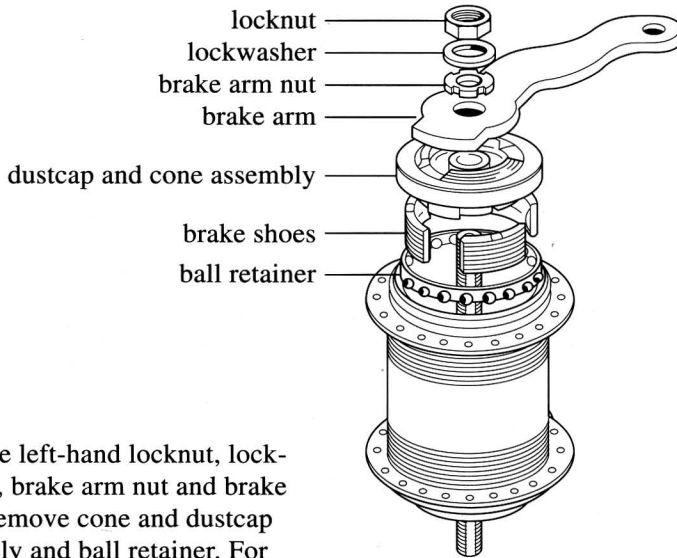
LUBRICATION 

Lubricate ball retainers by filling the spaces between balls with grease. Lubricate hub shell and brake band liberally with a high-temperature grease. Be careful not to grease pawls. Lightly oil other internal parts with a *good* cycle oil. (WD-40 is too light for lasting lubrication, 3-in-1 Oil gums up with age.) Add about two teaspoons (8 ml) of oil when assembled.

 HUBS

**STURMEY-ARCHER AWC
3-SPEED COASTER BRAKE
DISASSEMBLY AND ASSEMBLY**

1 DISASSEMBLY



Remove left-hand locknut, lockwasher, brake arm nut and brake arm. Remove cone and dustcap assembly and ball retainer. For hubs manufactured 5/91 and after, cone and dustcap assembly are one piece. Turn upside down so the brake shoes fall out.

Space the brake shoe segments evenly between brake actuator assembly and hub shell. Slotted edge of shoe segments should be facing up. Place ball cage assembly (ballside down) inside the hub. Note the slot in the brake cone and align it with the drag spring on the brake actuator.

Gently place dustcap and cone assembly onto the hub, turning gently so that shoe segments will line up into proper position, allowing a tight fit without forcing it. Attach brake arm (label face up) into slot on dustcap. Screw on brake arm nut, lock washer and locknut.

Next Step

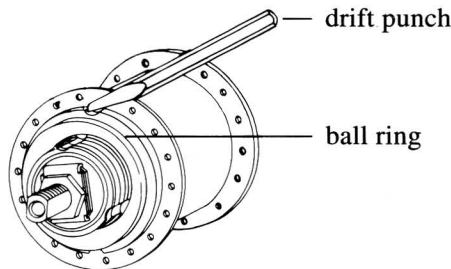


ASSEMBLY 5

2 DISASSEMBLY

The right-hand ball ring has a double start thread. If the ball ring is replaced in the opposite position, the wheel may need retruing. To facilitate proper reassembly, mark the ball ring and hub shell.

Place a drift punch as shown and loosen the ball ring by rapping the punch firmly with a hammer.



Next Step



Tighten right-hand ball ring with a hammer and drift punch.

Next Step
Next Page

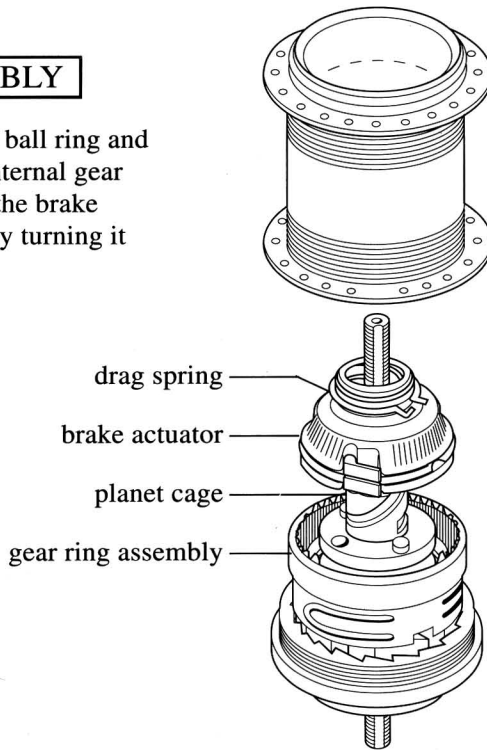


ASSEMBLY 4

**STURMEY-ARCHER AWC
3-SPEED COASTER BRAKE
DISASSEMBLY AND ASSEMBLY (cont.)**

3 DISASSEMBLY

Unscrew right hand ball ring and remove the entire internal gear assembly. Remove the brake actuator assembly by turning it counterclockwise.



Next Step
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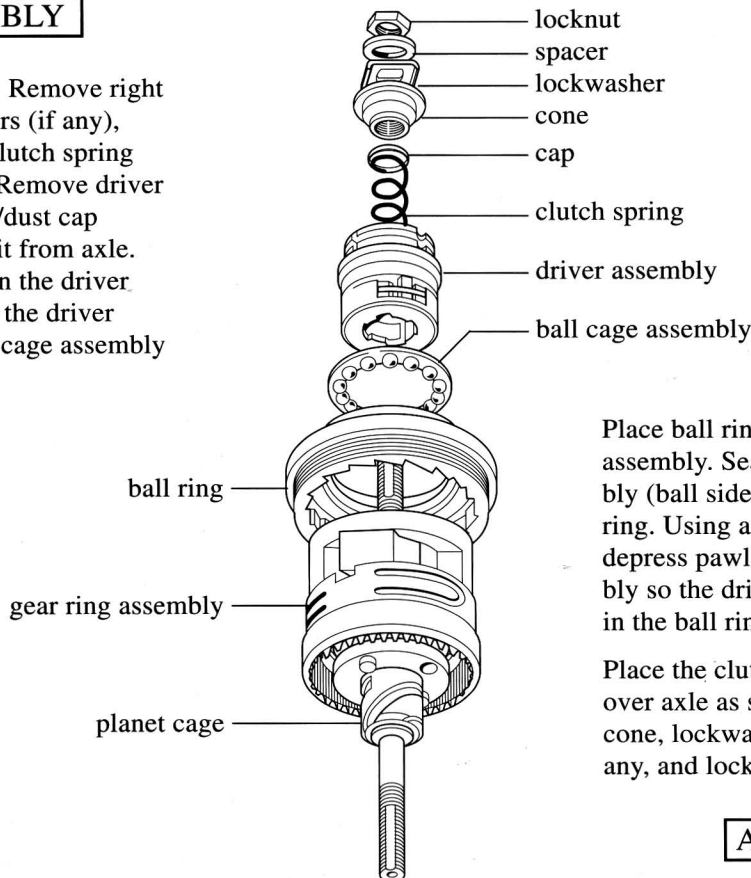
Turn the cartridge over. Screw brake actuator assembly clockwise onto planet cage. Slide axle assembly into the hub shell, then screw ballring to hub shell.

Next Step
↓

ASSEMBLY 3

4 DISASSEMBLY

Turn cartridge over. Remove right hand locknut, spacers (if any), lockwasher, cone, clutch spring and cap from axle. Remove driver assembly, ball cage/dust cap assembly as one unit from axle. Depress the pawls in the driver assembly to release the driver assembly from ball cage assembly and ball ring.



Next Step
↑

Place ball ring on gear ring assembly. Seat ball cage assembly (ball side down) into ball ring. Using a screwdriver, depress pawls of driver assembly so the driver assembly seats in the ball ring.

Place the clutch spring and cap, over axle as shown. Screw on cone, lockwasher, spacer, if any, and locknut .

Next Step
Next Page
↓

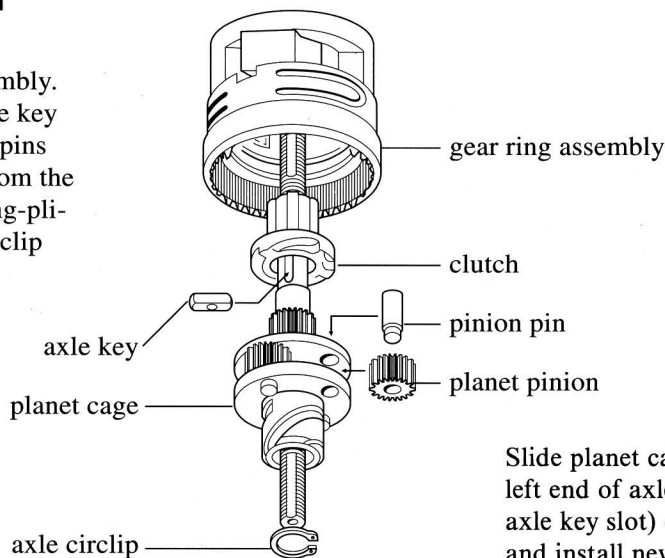
ASSEMBLY 2

 HUBS

STURMEY-ARCHER AWC
3-SPEED COASTER BRAKE
DISASSEMBLY AND ASSEMBLY (cont.)

5 DISASSEMBLY

Remove the gear ring assembly. Remove the clutch and axle key from axle. Remove pinion pins to release planet pinions from the planet cage. Using snap ring-pliers, remove planet cage circlip and remove planet cage.



▲
Next Step
Preceding Page

Slide planet cage assembly over left end of axle (side without axle key slot) over circlip groove and install new circlip. Clamp left end of axle in a vise (axle key slot up). Replace pinions and pinion pins. Orient the pins as shown. Center axle key into bottom of axle slot with threaded hole visible when looking down into slot. Install clutch over end of axle. Install gear ring assembly so that planet pinions mesh with the gear ring.

ASSEMBLY **1**

**STURMEY-ARCHER AWC
3-SPEED COASTER BRAKE
DISASSEMBLY AND ASSEMBLY (cont.)**



CLEANING

Clean all parts, including outside of hub shell and axle bore, in a suitable solvent. Be very careful not to introduce dirt or grit after cleaning.

POINTS TO CHECK

1. All threaded parts for worn or damaged threads. If hub shell is marked 88-8 or earlier, both clutch and driver assembly must be replaced at the same time.
2. Pinions (13), axle (29) and gear ring assembly (16) for worn gear teeth.
3. Axle (29) for straightness.
4. Gear ring assembly (16) and driver assembly (22) for wear and chipping. Drag spring on gear ring assembly assembly should move freely. Clutch (31) should slide easily into driver assembly. Manufacturer recommends replacing either assembly entirely with new factory-fitted assembly if any part of sub-assembly is not suitable.
5. Hub shell (11) for condition of LH ball track, ratchet and braking surface.
6. Ball cage assembly (4) should have 24 bearings if assembly is separate from dustcap, 14 bearings if ball cage and dustcap seal are integral.
7. Pawl (9) and pawl spring (10) in brake actuator assembly (6). Drag spring (7) should easily turn clockwise and have great resistance when rotated counterclockwise.
8. Brake arm (1). Replace if damaged.
9. Brake band or shoe segments (5) for wearing and glazing.

LUBRICATION

Lubricate ball retainers by filling the spaces between balls with grease. Lubricate hub shell and brake shoes liberally with a high-temperature grease. Be careful not to grease the pawls. Lightly oil other internal parts with a good cycle oil, (WD-40 is too light for lasting lubrication, 3-in-1 Oil gums up with age.) Add about two teaspoons (8 ml) of oil when assembled.