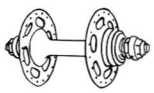


Hub	Trouble Chart page	Exploded Drawing page	Parts Interchangeability Chart page	Disassembly and Assembly Instructions page	Cleaning, Points to Check and Lubrication Axle page	Thread Size
Bendix Torpedo (see Sachs Torpedo)						
Sachs (F & S) Torpedo						
515	5-5	5-28	5-29	similar to H3111		13/32" x 26 TPI
H3111	5-5	5-28	5-29	5-28	5-30	13/32" x 26 TPI
415 (no brake)	5-5		5-31	similar to H3111		13/32" x 26 TPI
H3102 (no brake)	5-5	5-30	5-31	similar to H3111		13/32" x 26 TPI
Shimano						
3CC	5-4	5-8	5-9	5-14	5-17	3/8" x 26 TPI
3SC	5-4	5-8	5-9	510	5-13	3/8" x 26 TPI
333 Trimatic (similar to 3SC)						
Sturmey-Archer						
AWC	5-6	5-18	5-19			13/32" x 26 TPI
S3C	5-6	5-18	5-19	5-20	5-23	13/32" x 26 TPI
TCW-III	5-6		5-19	similar to S3C		13/32" x 26 TPI

WHEEL MOUNTING

Hubs with coaster brakes have a brake arm that prevents the left-hand cone and axle from turning. Attach the brake arm and axle nuts finger tight before cinching down either. Make sure the brake arm clamp will not pull the brake arm out of line as this will cause severe bearing alignment problems. Tighten axle nuts first, then brake arm clamp.

TRIGGER INTERCHANGEABILITY

Triggers are not interchangeable between brands (except Bendix and Sachs, which are copies). See pages 1-2 thru 1-6 at the beginning of the Hubs section for trigger, cable, indicator and bell crank interchangeability within each brand.

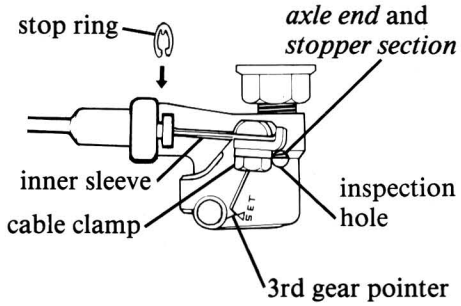
THREE-SPEED COASTER BRAKES

CABLE ADJUSTMENT

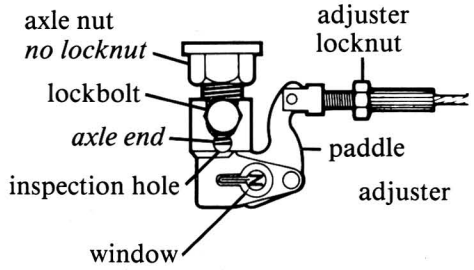
Improper adjustment is the most common cause of problems with 3-speed coaster brakes. Many people have quit riding bikes because their hub slipped out of gear when they were standing up in the pedals. Always check trigger and cable operation before deciding to overhaul a hub.

To have a cable that is in proper adjustment and will *stay* that way, all fittings must be tight enough not to creep along the frame, the cable must be free of kinks and knots, the pulley must operate smoothly and the bell crank or indicator chain must not be twisted. (Always back off a thread-on bell crank or an indicator chain 1/8 of a turn from finger tight.)

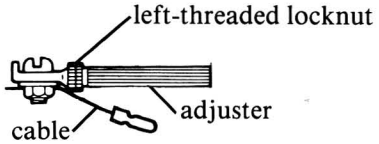
Positron Bell Crank (top view)

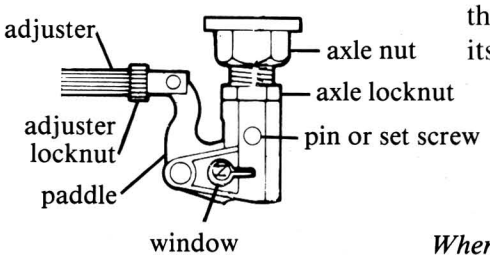


Lockbolt Bell Crank (bottom view)



Universal Cable Clamp





Threaded Bell Crank (top view)

Shimano (3CC and 3SC)

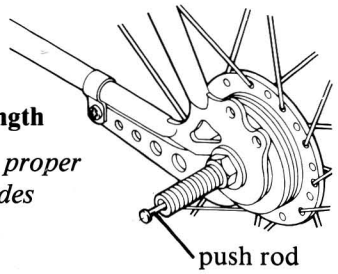
All Shimano hubs use a bell crank and push rod arrangement; coaster brake hubs take the bell crank on the *left* end of the axle. For installation and interchangeability see pages 1-4 and 1-5. Note that push rod length is critical and depends on the length of the axle used.

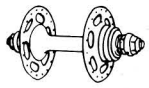
Positron bell crank. Positron bell cranks must be used with Positron triggers and single-strand, push-pull Positron cable; the combination, however, can be used on any Shimano hub. The end of the axle must rest against the bell crank stopper section (as visible through inspection hole). To adjust, move the shifter to the *3* position, loosen the cable, click the bell crank to position marked SET (push hard) and retighten the cable.

Lockbolt and threaded bell cranks. Check for proper installation (pages 1-4 and 1-5). Move paddle to make sure push rod is not missing. Threaded bell crank should be 1/8 to 5/8 of a turn from finger tight (pin or set screw bottoming on end of axle with axle locknut loose). Lockbolt bell crank slips on without axle locknut; make sure stopper section contacts the end of the axle, as visible through inspection hole. Adjust cable with trigger in *N* or *2* position so that the circled *N* on the bell crank paddle is centered in its window (see illustration).

Push Rod Length

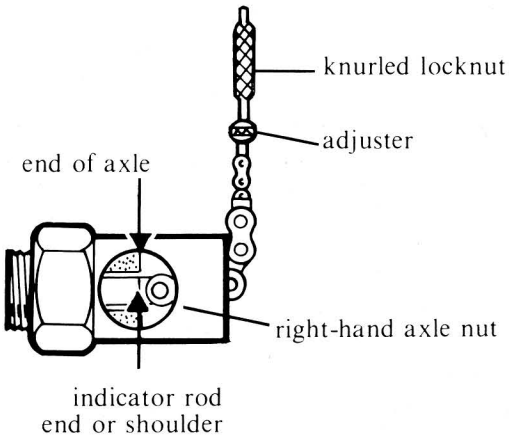
When loosely inserted, proper length push rod protrudes 10–12 mm
13/32 – 15/32"





Sturmey-Archer (S3C)

Make sure that indicator rod is backed off from ⅛ to ⅝ of a turn from finger tight. Adjust cable so that the end of the indicator rod is just even with the end of the axle with the shifter in the *N* position.[1] This method may not work with a non-standard indicator chain or axle. If it cannot be used, adjust the cable so that the "dead spot" (pedals freewheeling forward) falls exactly halfway between *N* and *H* shift trigger positions. This is best done by moving the pedals quickly back and forth with one hand while slowly pushing the trigger from *H* toward *N*. Count indicator chain links as they come out of the axle before the *beginning* of the dead spot; continue moving the pedals and advancing trigger, and count the number of links that emerge between the *end* of the dead spot and the click as the trigger goes to *N*. If these two counts are not the same, adjust the cable and try again. In no case should either gear be closer than ½ *link* to the dead spot. Tighten knurled locknut against adjuster.



Sachs (F&S) Torpedo H3111, 415 and 515

Sachs (F&S) and Bendix hubs are copies with all parts interchangeable. To adjust, shift into 3rd gear and turn pedals at least one full turn. Slacken cable, then tighten until indicator chain just begins to move at the point where it emerges from axle nut. Check adjustment by shifting into 1st gear (turn pedals) and pulling on cable by hand; indicator chain should not move.

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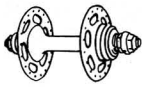
[1]If the end of the axle is not visible in the axle nut window, indicator chain will bottom at last link in low gear. Install a spacer under axle nut.



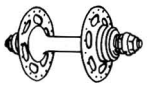
HUBS

SHIMANO 3SC and 3CC 3-SPEED COASTER BRAKES TROUBLE CHART

Symptom	Possible Causes[1] Resulting from wear, improper lubrication or abuse	Resulting from improper assembly or installation
Slips in 1st and 2nd gear	Planet carrier (25) pawls (D) faulty, pawl springs weak or broken	Planet carrier (25) pawls (D) or pawl springs (D) improperly installed
		Stop spring (26) incorrectly installed
Jumps from 1st to 2nd	Cable too loose	
Jumps from 2nd to 1st	Sliding clutch (39) driving edge rounded	
	Planet carrier (25) internal dogs worn	
2nd instead of 1st	Return spring (20) weak	Return spring (20) missing
Jumps from 3rd to 2nd	Cable too tight	
		Axle key (38) reversed or crooked in axle slot
2nd instead of 3rd		
Slips in 1st gear	Ring gear (44) pawls (E) or pawl springs (E) faulty	Ring gear (44) pawls or pawl springs improperly installed
Brake grabs or jerks	Brake arm (11) (12) loose at frame	
	Wrong lubricant or lack of lubricant	
Stiff running or noisy	Brake arm (11) (12) forcing brake cone (11) (14) out of line	Stop nut (33) adjusted for insufficient brake shoe play (3SC)
	One pawl of a pair faulty	Thrust washer (32) or clutch washer (40) missing
	Axle bent	
	Dropouts not parallel	Slide spring (23) reversed
	Improper or no lubrication	Brake shoes (16) misaligned or reversed
	Loose or broken parts inside hub	One pawl of a pair improperly installed
	Chain too tight	Ball retainer reversed
	Cones too tight	
	Gear teeth chipped or worn	
	Ball retainer damaged or broken	
No brake Weak brake Too much pedal travel	Slide spring (23) weak or broken	Stop nut (33) adjusted for excessive brake shoe play (3SC)
	Hub shell or brake shoes (16) (17) glazed or worn	
	Wrong lubricant	
	Brake shoe (16) or planet carrier (25) tapered surfaces worn or burred	
Brake slips in 1st and 2nd gear	Ring gear (43) lead (49) or cam (50) teeth worn	

[1] Numbers in parenthesis refer to parts chart and exploded drawing.

F & S 3-SPEED HUBS & 3-SPEED COASTER BRAKES TROUBLE CHART



Symptom	Possible Causes[1] Resulting from wear, improper lubrication or abuse	Resulting from improper assembly or installation
Slips in 1st gear Slips in 2nd gear Slips in 3rd gear	Brake cone (13) pawls faulty	Brake cone (13) pawls improperly installed
	Clutch gear (33) teeth broken	
	Improper lubrication—gummed or dirty	
Jumps from 2nd to 1st Jumps from 3rd to 2nd	Gear ring (29) pawls faulty	Gear ring (29) pawls improperly installed
	Cable too tight	
Jumps from 1st to 2nd Jumps from 2nd to 3rd	Cable too loose	
	Axle key (54) threads stripped	
Pedals driven forward while coasting	Chain too tight	
	Bearings too tight	
Stiff running, noisy	No lubrication or wrong lubrication	Axle circlip (17) missing
		Ball retainer reversed
	Ball retainer damaged or broken	Friction spring (14) reversed
	Brake lever (6) forcing cone out of line	
Jammed	Loose or broken parts inside hub	
	Broken gear teeth	
Sluggish shifting	Pull chain (55) damaged	
	Cable kinked, damaged, unlubricated	
Too much play in axle	Bearings loose or damaged	
No brake Weak brake	Friction spring (14) weak or worn	Friction spring (14) missing
	Wrong lubricant	
	Brake parts glazed or worn	
Brake too strong or jerky	Brake lever (6) loose at chainstay	
	Brake shell (11) unlubricated	
	Axle (39) loose in dropouts	
Brake does not release	Unlubricated thrust surface between axle (39) and planet carrier (19)	
	Planet carrier (19) and brake cone (13) threads worn or chipped	

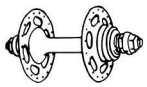
[1] Parts numbers in parenthesis refer to parts chart and exploded drawing.

STURMEY-ARCHER AWC, S3C and TCW-III 3-SPEED COASTER BRAKES TROUBLE CHART

Symptom	Possible Causes[1]: Resulting from wear, improper lubrication or abuse	Possible Causes[1]: Resulting from improper assembly or installation
2nd gear instead of 1st		Planet cage (12) pawl ring pawls installed in gear ring (20*)
		Ratchet ring (20) improperly installed: dogs *beside* gear ring (17) tabs rather than *engaging slots* in tab
Jumps from 1st to 2nd	Clutch spring (32*) bent or too long	No washer (4*) under right-hand axle nut (31*): indicator chain bottoms out at last link
Slips in 2nd	Cable too loose	Indicator (32) not fully screwed in
	Indicator (32) threads stripped	
	Gear ring (17) dogs worn	
	Clutch (31) worn	
	Pinion pin (14) ends worn	
2nd gear instead of 3rd Jumps from 3rd to 2nd	Gear ring pawl ring (18) pawls faulty or worn, pawl springs weak or broken	Gear ring pawl ring (18) pawls or springs improperly installed
Slips in 3rd	Cable too tight	
Sluggish shifting	Dirt between axle (29) and clutch(31)	
	Weak or bent clutch spring (32*)	
Slips in 1st	Right-hand cone (5*) too loose	
	Cable sticks; indicator chain twisted	
(cont.)	Planet cage pawl ring (12) pawls sticking or pawl springs weak	Planet cage pawl ring (12) pawls or springs improperly installed

Next Page

[1]Parts numbers followed by * refer to AW parts p. 4-17, others to S3C/TCW-III parts chart on p. 5-9.



STURMEY-ARCHER AWC, S3C and TCW-III 3-SPEED COASTER BRAKES TROUBLE CHART (cont.)

Symptom	Possible Causes[1]: Resulting from wear, improper lubrication or abuse	Possible Causes[1]: Resulting from improper assembly or installation
Stiff running noisy	Chain too tight	Spring cap (33*) pinched between right-hand cone and driver (22)
	One pawl of a pair sticking	Too many balls in ball ring (21)
	Chainstay ends not parallel	AW ball ring (21) installed in S3C
	Loose or broken parts inside hub	Ball retainer reversed
	Dust caps distorted	One pawl of a pair improperly installed
	Ball retainer damaged or broken	Wider TCW brake band (5) in S3C
Brake will not release	Corroded parts; improper or no lubrication	Brake actuating spring (7) reversed
	Axle (29) bent	Wide S3C ball ring (21) on TCW III
	Left-hand cone (3) brake band (5) or thrust plate(8) tapered surfaces rough burred	
	Brake arm (1) forcing left-hand cone (3) out of line	
Too much back-pedal travel	Cones too tight	
Weak brake	Improperly lubrication — too slippery	
	Brake band (5) or hub shell (11) worn or glazed	
	Thrust plate (8) or planet cage (12) threads chipped	
No brake (pedals slip back)	Brake actuating spring (7) worn or damaged	Brake actuating spring (7) missing
	Driver (22) pawls or pawl springs faulty, broken (S3C)	Driver (22) pawls missing, backwards; pawl springs improperly installed
Intermittent brake	Cable misadjusted (TCW III)	

[1] Parts numbers followed by * refer to AW parts chart, others to S3C/TCW III parts chart.