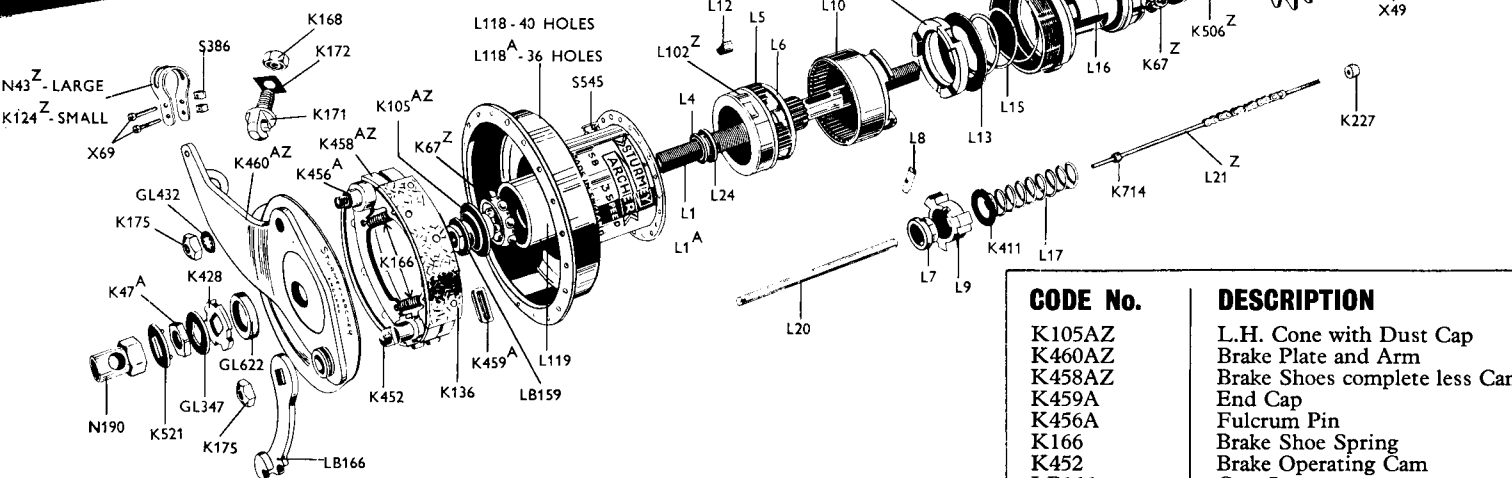


SB 3-Speed Wide-Ratio Hub combined with Internal Expanding Brake

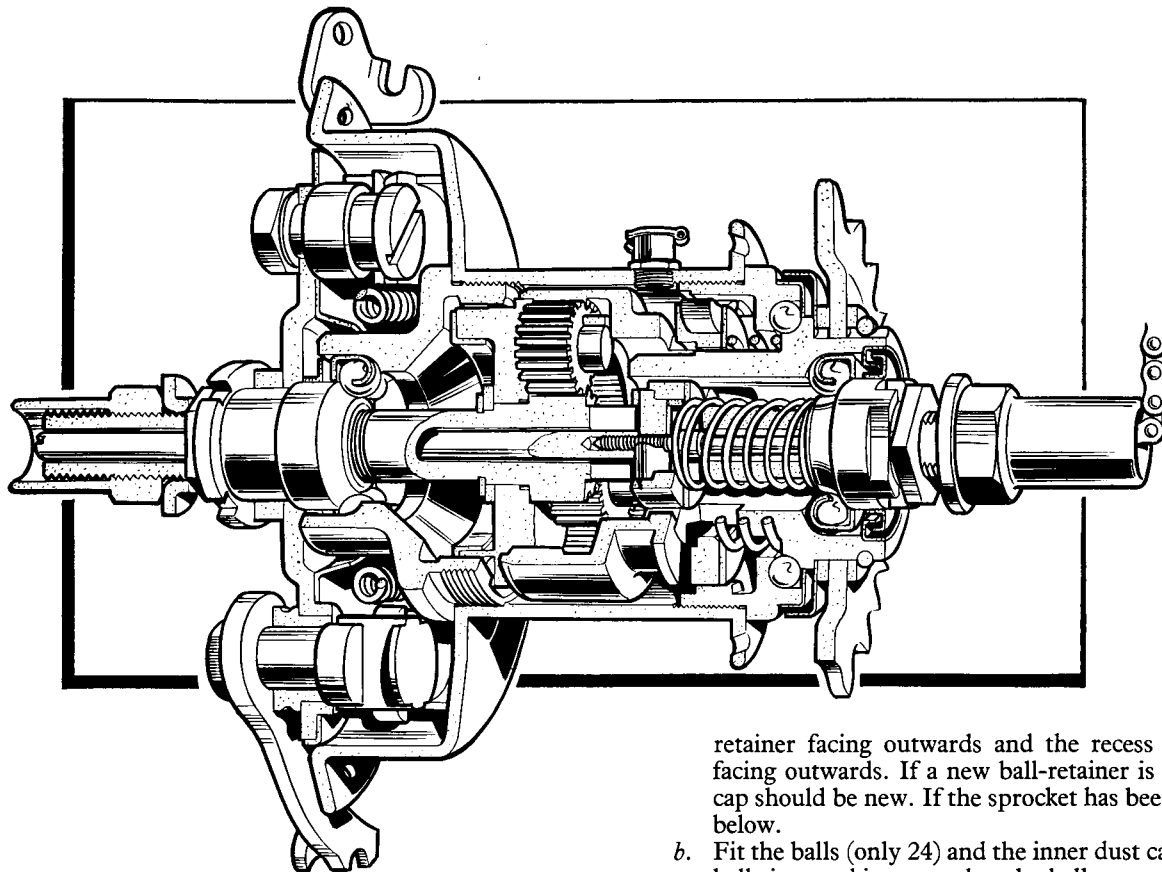


CODE No.

CODE No.	DESCRIPTION
L1	Axle, 6" long
L1A	Axle, 6 $\frac{1}{4}$ " long
L102Z	Planet Cage
L24	Planet Cage Bearing Plate
L4	Planet Cage Fixing Plate
L5	Planet Pinion
L6	Pinion Retaining Ring
L7	Clutch Sleeve
L8	Axle Key
L9	Sliding Clutch
K411	Thrust Washer
L10	Gear Ring
L11	Gear Ring Pawl Ring
L12	Pawl
L13	Pawl Retaining Washer
L14	R.H. Ball Ring
329	Ball Bearings, $\frac{3}{8}$ " diam. (per set of 24)
K63	Inner Dust Cap
L15	Thrust Spring
L16	Driver
K67Z	Ball Cage with 8 $\frac{1}{4}$ " diam. balls
LB405	Outer Dust Cap
L17	Clutch Spring
K529	Clutch Spring Cap
K506Z	R.H. Cone with Dust Cap
K516	R.H. Cone Locking Washer
L118	Shell, 40 holes
L118A	Shell, 36 holes
S545	Lubricator
L119	L.H. Ball Cup

CODE No.

CODE No.	DESCRIPTION
K105AZ	L.H. Cone with Dust Cap
K460AZ	Brake Plate and Arm
K458AZ	Brake Shoes complete less Cam (Pin type)
K459A	End Cap
K456A	Fulcrum Pin
K166	Brake Shoe Spring
K452	Brake Operating Cam
LB166	Cam Lever
K175	Fixing Nut
GL432	Lock Washer
K136	Brake Linings with Rivets (per pair)
K171	Wire Guide
K172	Lock Washer
K168	Guide Nut
L20	Indicator—suits both lengths of axle
L21Z	Coupling complete
K714	Collar for Indicator
K227	Connection Locknut
GL622	Spacing Washer
K428	Notched Cone Adjuster
GL347	Lock Washer
K47A	Cone Locknut
K521	Axle Lock Washer
N190	L.H. Axle Nut
N200	R.H. Axle Nut
X42	Spacing Washer, $\frac{1}{16}$ " thick
L22	Sprocket Dust Cap
K466	Sprocket, 16 teeth
K467	Sprocket, 17 teeth
K468	Sprocket, 18 teeth
K468A	Sprocket, 18 teeth for $\frac{3}{8}$ " wide chain
K469	Sprocket, 19 teeth
K469A	Sprocket, 19 teeth for $\frac{3}{16}$ " wide chain
K470	Sprocket, 20 teeth
K472	Sprocket, 22 teeth
X49	Sprocket Spacing Washer
K463	Circlip
N43Z	Brake Arm Clip complete for oval tubing
K124Z	Brake Arm Clip complete for round tubing
X69	Clip Screw
S386	Clip Nut



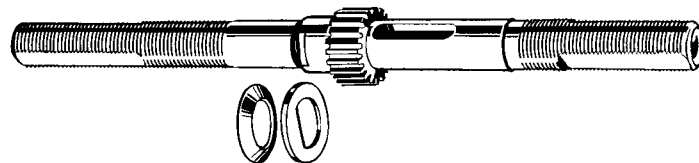
TO RE-ASSEMBLE THE SB HUB

Proceed as follows:

1. If the left-hand ball cup has been removed from the hub shell, use the special tool (DD12987) to replace it, and remember that it must be screwed anti-clockwise because it has a left-hand thread. The joint between the ball cup and the hub shell must be cemented with a good sealing compound to prevent oil from leaking through to the brake shoes. Either the slight recess in the shell or the face of the shoulder on the ball cup which makes contact with the shell should be well painted over with sealing compound before the ball cup is screwed home.
2. Prepare the following preliminary sub-assemblies:
 - a. Fit the ball cage into the driver, with the ring of the ball-

retainer facing outwards and the recess in the dust cap also facing outwards. If a new ball-retainer is being fitted, the dust cap should be new. If the sprocket has been removed see No. 24 below.

- b. Fit the balls (only 24) and the inner dust cap into the right-hand ball ring, making sure that the balls can revolve freely with the dust cap in place.
 - c. Smear grease in the channels of the dust cap, the driver, and in the recess of the right-hand ball ring.
3. Screw a cone on to the right-hand end of the axle as far as the flats (to protect the threads) and then fix the axle, with the slotted end downwards, in a vice, and fit the planet cage, with the pins downwards. Fit the bearing plate, making sure that it engages the flat on



- the small shoulder on the axle, followed by a new conical fixing plate, also pointing downwards. Place a hollow punch (DD12403) over the axle, and with one or two sharp blows from a hammer flatten the plate into the axle groove to hold the planet cage in position. Make sure that the planet cage can revolve freely.
4. Remove the axle from the vice, take the cone off the right-hand end and refix the axle, left-hand end downwards, in the vice. Fit the planet pinions and retaining ring.
 5. Fit the clutch sleeve, with the flange downwards, and the axle key, with the flats upwards.
 6. Fit the sliding clutch, with the recess downwards, so that it engages with the axle-key flats.
 7. Fit the thrust washer.
 8. Fit the gear ring and make sure that it can rotate freely.
 9. Fit the pawl ring, with the projections downwards.
 10. Smear the pawl ring pockets with light grease and fit the pawls and pawl-retaining washer.
 11. Fit the right-hand ball ring.
 12. Fit the large thrust spring over the prongs of the driver, making sure that the end of the spring comes to the centre of one of the prongs.
 13. Fit the driver and spring.
 14. While holding the driver down (to compress the thrust spring), fit the clutch spring over the axle and screw on the right-hand cone far enough to hold the assembled mechanism in place.
 15. Screw up the right-hand cone *finger-tight*. Then slacken it back no more than half a turn. The assembled mechanism should be quite free to revolve on the axle. On no account must the cone be unscrewed more than half a turn, as that would throw the gear mechanism out of adjustment.
 16. Fit the cone lockwasher and packing washers (if any), and cone locknut. Fasten the locknut securely.
 17. Lubricate the assembled mechanism with about two teaspoonfuls of good quality thin oil.
 18. Smear the planet-cage pawl pockets with light grease and fit the pawls.
 19. Hold the cycle wheel in the left hand, with the open (right-hand) end of the hub shell facing downwards, and insert the assembled mechanism carefully from below, to prevent the pawls from falling out of position. Screw the right-hand ball ring finger-tight only.
 20. Make sure that the position marks put on the ball ring and the hub flange before dismantling will register properly, and then screw up tightly.
 21. Drop a ball cage into left-hand ball cup (ring of cage outwards) and fit the left-hand cone and shim washer.
 22. Replace the brake anchor plate complete with shoes. (If the shoes have been removed, make sure when replacing them that the longer of the two short arms on the cam spindle is pointing towards the drum surface and the shorter one towards the hub axle; otherwise only one shoe will be brought into action when the brake is operated.) If the brake shoe assembly has been dismantled see general instructions.
 23. Fit the outer washers, the notched cone-adjusting washer, and the left-hand locknut in the arrangement noted when dismantling the hub. Adjust the hub bearing, as described in 'The Fitting and Adjustment of Sturmey-Archer Hubs.'
 24. If the sprocket has been removed from the driver, fit the dust cap over the driver, making sure that it is properly centred on the flange of the driver. Replace the sprocket and washers in the arrangement noted when dismantling, and add the circlip.
 25. Insert the indicator rod in the left-hand end of the axle, and the coupling and toggle-chain in the right-hand end of the axle, and screw them tightly together, *but do not over-tighten*.
 26. Replace the wheel in the cycle frame. The axle is flatted to prevent it from turning in the slots of the cycle frame—a very important point, especially with combined gear-and-brake hubs, and special lipped washers are supplied, to engage in the frame slots. See that the brake plate is not strained when being connected to the anchor clip, which must be fixed so that it engages easily, and make sure that the clip is tight on the frame. If the machine is being laid up, put one or two drops of oil between the brake plate and the cam lever, but not enough to penetrate into the brake drum.
 27. Adjust the gear as described in 'The Fitting and Adjustment of Sturmey-Archer Hubs.'

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