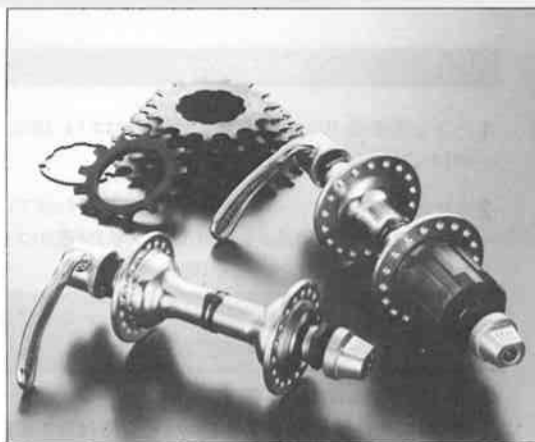


SERVICE INSTRUCTION

Shimano 105 series Freehub

- FH-R105 FREEHUB
- HB-F105 FRONT HUB

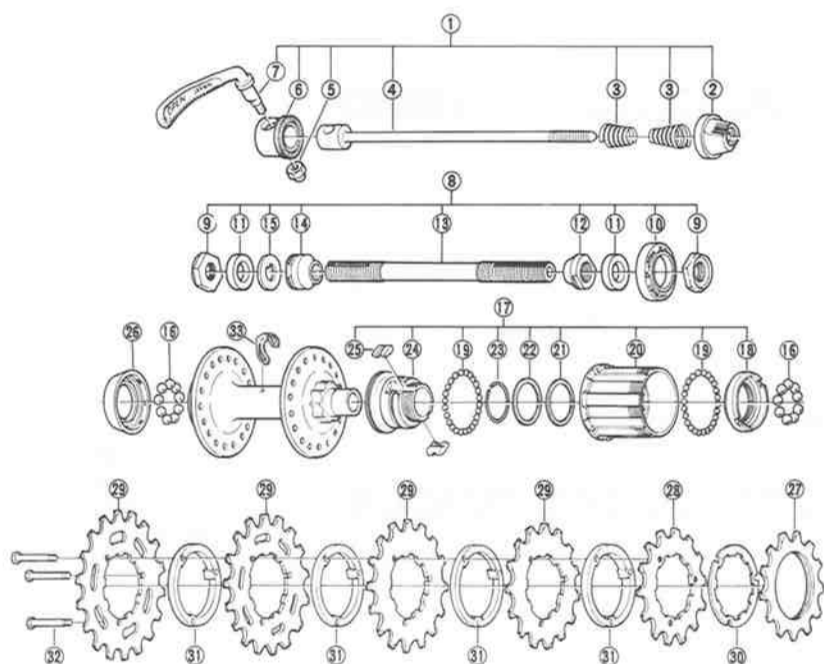


■ Features

- The spokes last longer because of the improved balance of tension distribution. This means decreased vibration and a subsequent decrease of wheel loosening.
- Lightness is greatly improved through the union of the multiple freewheel and the hub.
- The distance between the hub balls (1/4") is wider than before, thereby improving the hub axle's strength.
- The sprockets possess the UG "Twist" teeth for high performance gear changes.

■ Exploded View and Parts List

Model FH-R105



ITEM NO.	PART NO.	DESCRIPTION	ITEM NO.	PART NO.	DESCRIPTION
1	3-387 9801	Complete Quick Release 159 mm (6-1/4")	28	368 1000	Left Hand Dust Cap
2	3-264 9010	Nut for Skewer		357 1312	Sprocket Wheel 13T
3	231 1100	Volute Spring	27	357 1412	Sprocket Wheel 14T
4	243 0811	Skewer 159 mm (6-1/4")		357 1512	Sprocket Wheel 15T
5	231 0800	Cap Nut		357 1422	Sprocket Wheel 14T
6	231 0500-1	Body Cam Lever	28	357 1522	Sprocket Wheel 15T
7	231 0600-4	Cam Lever		357 1622	Sprocket Wheel 16T
8	3-368 9801	Complete Hub Axle 137 mm (5-13/32")		357 1722	Sprocket Wheel 17T
9	220 0502	Lock Nut 3.5 mm		357 1532	Sprocket Wheel 15T
10	357 5702	Right Hand Dust Cap (Gray)		357 1632	Sprocket Wheel 16T
11	241 1100	Axle Spacer 5.5 mm		357 1732	Sprocket Wheel 17T
12	220 0850	Right Hand Cone M10 x 9 mm		357 1832	Sprocket Wheel 18T
13	243 2001	Hub Axle 137 mm (5-13/32")		357 1932	Sprocket Wheel 19T
14	220 0800-2	Left Hand Cone M10 x 13 mm		357 2032	Sprocket Wheel 20T
15	241 0700-1	Key Washer 1.5 mm	29	357 2132-1	Sprocket Wheel 21T
16	000 0131	Steel Ball (1/4") 18 pcs.		357 2232-1	Sprocket Wheel 22T
17	3-353 9801	Complete Freewheel Body		357 2332-1	Sprocket Wheel 23T
18	357 5300	Body Fixing Race		357 2432-1	Sprocket Wheel 24T
19	000 0111	Steel Ball (1/8") 50 pcs.		357 2632-1	Sprocket Wheel 26T
20	357 2201	Outer Body		357 2832-1	Sprocket Wheel 28T
	357 5500	Adjusting Washer 0.05 mm		357 3032-1	Sprocket Wheel 30T
	357 5501	Adjusting Washer 0.10 mm		357 3232-1	Sprocket Wheel 32T
	357 5502	Adjusting Washer 0.17 mm		357 3432-1	Sprocket Wheel 34T
	357 5503	Adjusting Washer 0.30 mm	30	357 5800	Sprocket Spacer A
21	357 5400	Spacer 1.0 mm	31	357 5900	Sprocket Spacer B
22	357 5600-1	Pawl Spring	32	357 6001	Sprocket Fixing Bolt
23	361 0301	Inner Body	33	217 0501	Oil Cap
24	256 0700	Pawl			

■ Specifications

- Weight front hub: 275g (9.7 oz)
- freehub: 418g (14.7 oz) (excluded gears)
- Material: Light Alloy
- Suitable Spoke Dia.: 2.0mm (0.078")
- Over lock nuts' dimension: 126mm (4.96")
- Axle length: 137mm (5.39")
- Chain line: 42.95mm (1.69")
- Dishing distance: 5.5mm (0.22")
- Sprocket replacement teeth: 13T~34T
- Top sprocket screw Measurement: BC 34.6 x 24 T.P.I.

* Please note: Specifications are subject to change for improvement without notice.

Note:

- The Freewheel section receives a strict quality check on leaving the factory and to ensure that this condition is kept please do not disassemble unless absolutely necessary.
- Please always use the Shimano 105 rear derailer which incorporates the hatch plate mechanism (this is a new design without the left plate) when using the Freehub unit.

Assembly

1. Assemble the wheel and be sure to use spokes of 2.0mm (0.078") diameter.
2. Assemble the cassette gear sprockets and align with the outer grooves. Next, position sprocket spacer A and then screw on the top gear (smallest sprocket). (Diagram 1)

Note:

When assembling sprocket spacer A, the 3 notches should be aligned with the 3 sprocket fixing bolt holes.

3. Assemble the tire to the wheel rim and set the wheel to the center of the frame. Next step, fix the wheel to the frame by tightening the quick release cam lever.

Tightening the Quick Release Mechanism

Adjust the adjusting nut and fix the wheel to the frame by tightening the cam lever in the direction of the "CLOSE" sign. Continue to tighten firmly until full limit is reached. (Diagram 2, 3)

Tightening torque: 90~120kgfcm (80~105 in. lbs.)

If the cam lever is considered to be insufficiently tightened, turn the adjusting nut clockwise and retighten the cam lever.

Conversely, if the cam lever is at an any due to excessive tightening, turn the adjusting nut counter-clockwise and retighten the cam lever. (Diagram 2, 3)

Replacing Sprockets

• To change the sprockets first remove the top gear (smallest sprocket) by means of the 2 sprocket turning tools. Then the other sprockets can be removed easily.

• To change the cassette sprocket combinations remove the 3 sprocket fixing bolts. By utilizing the outer grooves, sprocket changes will be easier. For correct positioning of sprockets, the bevel of sprocket teeth should face the low gear. Final step, tighten the sprocket fixing bolt with due care. (Diagram 4)

Freewheel Body Operation

Removal

1. Remove the left side (opposite side to freewheel) lock nut and left hand cone. Then remove the hub axle from the freewheel side. At this time, take care not to lose the 9 steel ball bearings from each side of the axle. (Diagram 5)

2. Screw the tool onto the freewheel assembly section from the direction of the face stamped "B.C. 34.6". Then remove the freewheel assembly section by turning the tool's center bolt in a clockwise direction. (Diagram 6)

3. When reassembling, after changing the freewheel assembly section, insert the freewheel section to the hub by aligning the protrusions. Place the tool washer on the hub axle and screw the left hand cone on to the hub axle. (Diagram 7, 8)

4. Tighten the left hand cone until contact is made between freewheel and hub body as seen in the diagram 9.

Tightening torque: 80kgfcm (70 in. lbs.)

Note:

When proper contact is made between freewheel and hub body, do not continue to secure left hand cone.

5. After contact is made, unscrew the left hand cone and take out the two tool washers. And then assemble the hub axle. The assembly of the hub axle is the reverse of the disassembly procedure. The hub axle should be assembled so that there is no play on the hub body and smooth rotation is possible.

Disassembly and Assembly of Freewheel Body

- When disassembling the freewheel, insert the inner body into the hub shell, set the removal tool (TL-FH40) at the notch of the body fixing race and turn clockwise to disassemble. When assembling, reverse the sequence of disassembling. (Diagram 10)

Tightening torque: 350~450kgfcm (300~390 in. lbs.)

Diagram 1

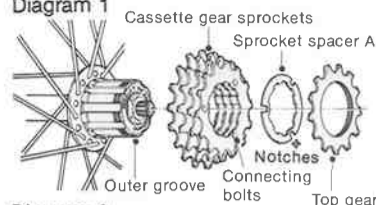


Diagram 2

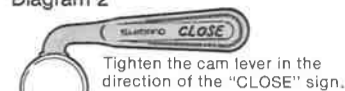
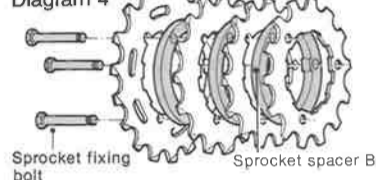


Diagram 3



Diagram 4



The beveled of sprocket teeth



Diagram 5

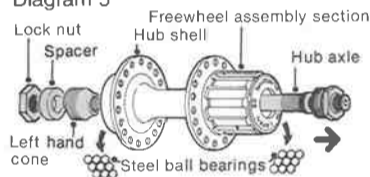


Diagram 6

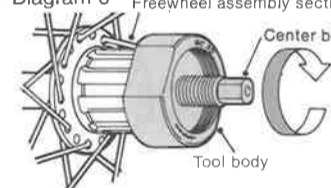


Diagram 7

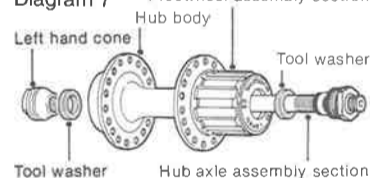


Diagram 8



Diagram 9

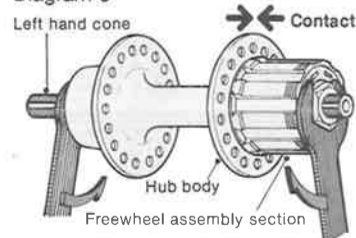


Diagram 10

