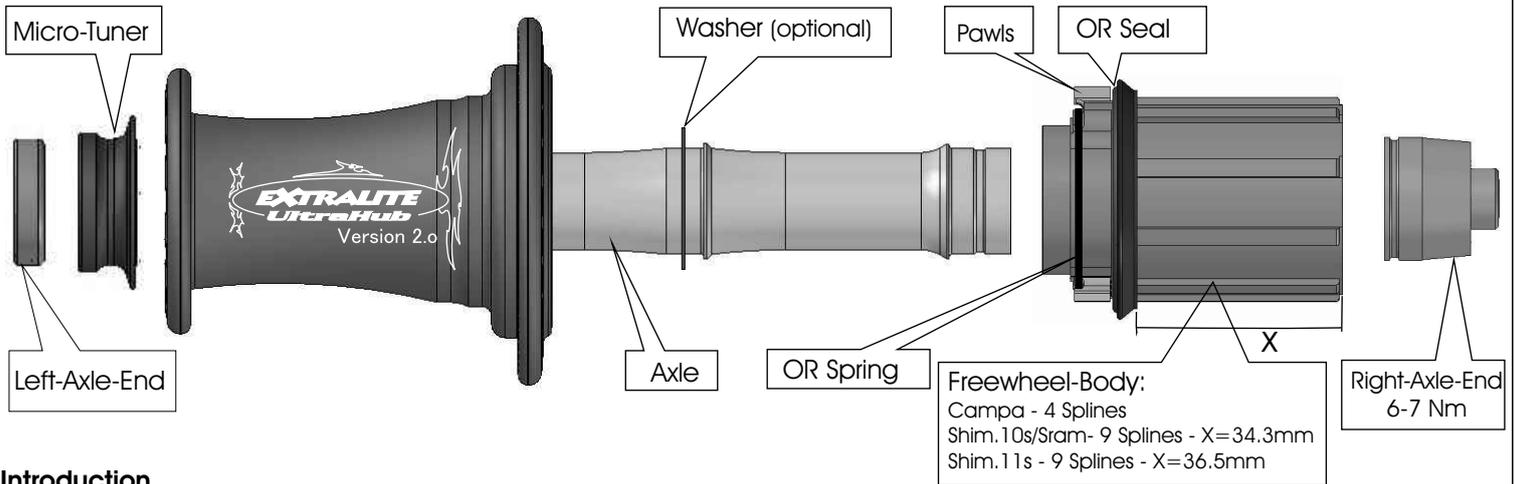


ULTRAREAR SX - SLX - SPX VERSION 1/2 FREEWHEEL REPLACEMENT



Introduction

This manual is addressed only to qualified mechanics.
Special skills and attention are required to properly execute tolerance check and tuning.
Refer to Level 1 maintenance for basic information.

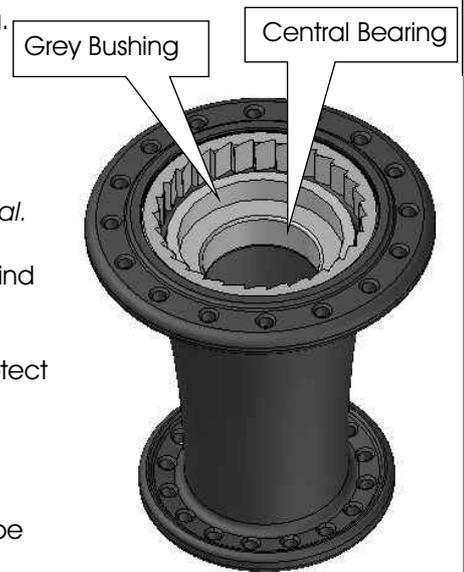
Bushing and Freewheel-Body replacement

The supplied special bushing is individually matched to the tolerance of the supplied Freewheel-Body.

Avoid scratching or dinging the bushing surface during installation and eventual removal.

- 1) Fully unscrew Right-Axle-End, pull out Freewheel-Body by hand.
- 2) Pop-out Left-Axle-End, fully unscrew Micro-Tuner and extract Axle (be careful, you may find very thin washers between axle shoulder and central bearing).
- 3) Extract used Bushing.
- 4) Install the new Bushing into Hub Body with a plastic mallet (use the old bushing to protect the new one while pushing it in).
- 5) Insert Axle.
- 6) Insert new Freewheel-Body (without pawls and OR seal) and carefully test rotation and eventual radial play.

Rotation must be perfectly free and without a noticeable play, a very small play could be acceptable for the freewheel but even a slight friction may damage the bushing.



Tuning OR Seal and axial clearance

- 7) Insert Axle (without washer) and fully screw-in Micro Tuner (make sure that Axle shoulder touches the Central Bearing).
- 8) Lube OR seal with thin oil and put water proof grease on thread of Right-Axle-End.
- 9) Insert Freewheel-Body (without pawls), tighten Right-Axle-End at 4-5 Nm (use the new one if supplied with your Kit).
- 10) Test OR Seal stiction. Freewheel rotation must be smooth with only a minimal resistance.
- 11) Pop-in Left-Axle-End (use the new one if supplied with your Kit), mount the hub on bike dropouts and tight quick release.
- 12) Spin the wheel and hold Freewheel-Body with fingers; freewheel resistance must be as smooth as previous test.
- 13) If ok go to "Lubrication and final assembly".
- 14) If you feel more stiction or any resistance, go back to point 7) and insert the supplied 0.3mm Washer between Central Bearing and Axle shoulder. Then repeat tests 10) and 12).

Lubrication and final assembly

- 15) Grease pawl retainers on Freewheel-Body (use supplied Alugrease Super1).
- 16) Install pawls, check that the OR spring is correctly positioned and functioning.
- 17) Apply 2cc. of the supplied Alugrease Super1 on ratchet wheel tooth.
- 18) Partially insert freewheel, carefully press pawls one by one, check pawls engagement, then fully insert Freewheel-Body.
- 19) Tighten Right-Axle-End at 6-7 Nm (use water proof grease on thread).
- 20) Make sure that the contact area between Axle and Left Bearing is sealed with water proof grease.
- 21) Pop-in Left-Axle-End.
- 22) Go to "Preload Tuning".

Warning: Use only the supplied Alugrease Super1.

Other products often contain chemical additives that may damage bushing and freewheel OR spring.
Medium or hard density grease may cause un-complete pawl engagement and this will seriously damage freewheel mechanism.

Preload checking

Optimal preload is important for long bearing life.

Before modifying bearing preload carefully check the complete wheel as follows:

- 1) Install the complete wheel into dropouts and normally lock skewer.
- 2) Check there is no play at rim diameter.
- 3) Leave wheel free to completely stop spinning and carefully control latest instants of movement. Stopping should be very smooth.

Preload tuning

If necessary fine tune as follows; no tools are required.

- 4) Hold right axle end with one hand and turn Micro-Tuner fully clockwise by hand.
 - 5) Unscrew Micro-Tuner for 1/8 to 1/4 of turn.
 - 6) Repeat preload checking and eventually slightly correct it.
- Turn anti-clockwise to increase rolling and stopping smoothness.
Turn clockwise to correct play.



Wheel center line

Once the hub is ready you may need to adjust the wheel camber, since Axle-End replacement changes wheel center position.

The Shimano (and Campagnolo) 11 speed cogs require hubs with wider freewheel body and with a different wheel center than 10s (9s and 8s). To further optimize wheel stiffness we provide specific Axle-Ends that are optimized around the cassette dimensions of each manufacturer's standard.

Check on the table below if you are using the correct axle end configuration and if you need to center line the wheel.

FREEWHEEL REPLACEMENT KIT	HUB WIDTH	AXLE ENDS	CAMBER ADJUST
KIT SHIMANO 11S A Campagnolo --> Shimano 11s	130mm	Bronze Left Axle End Bronze or Black/Red Right Axle End	No
KIT SHIMANO 11S B Shimano 10s --> Shimano 11s	131mm	Black Left Axle End Bronze or Black/Red Right Axle End	Slight
KIT SHIMANO 11S C Shimano 10s --> Shimano 11s	130mm	Bronze Left Axle End Bronze or Black/Red Right Axle End	Yes
KIT CAMPAGNOLO 11S A Shimano 11s --> Campagnolo	130mm	Bronze Left Axle End Bronze or Black/Red Right	No
KIT CAMPAGNOLO 11S B Shimano 10s --> Campagnolo	130mm	Bronze Left Axle End Bronze or Black/Red Right Axle End	Yes