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# **USER MANUAL**

## **WHEELSETS**

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Classification: Confidential

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# INTRODUCTION

## SYMBOLS USED

The user manual uses the following symbols:

### CAUTION



Indicates a hazardous situation which, if the safety instructions are not followed, may lead to minor or moderate injury and/or damage to the product or the environment.

### WARNING



Indicates a hazardous situation which, if the safety instructions are not followed, may lead to minor or serious injury or death and/or serious damage to the product or the environment.

### DANGER



Indicates a hazardous situation which, if the safety instructions are not followed, will lead to serious injury or death.

## INTENDED USE

The products are only to be used for mountain bike cross-country ASTM level 1, 2 and 3.

## PROHIBITED USE

It is prohibited to use the product for any other purpose than those indicated in the manual, the safety indicates, or other safety documents related to this document.

## **ISO TESTED**

RIDEPORTE products are tested and approved by EFBE PRÜFTECHNIK GmbH for a maximum total weight of 100kg (unless stated otherwise) for ASTM XC-MTB categories Level 1, 2 and 3.

### **ASTM LEVEL 1**

This is a set of conditions for the operation of a bicycle on a regular paved surface where the tires are intended to maintain ground contact.

### **ASTM LEVEL 2**

This is a set of conditions for the operation of a bicycle that includes Level 1 conditions as well as unpaved and gravel roads and trails with moderate grades. In this set of conditions, contact with irregular terrain and loss of tire contact with the ground may occur. Drops are intended to be limited to 15cm (6") or less.

### **ASTM LEVEL 3**

This is a set of conditions for operation of a bicycle that includes Level 1 and 2 conditions as well as rough trails, rough unpaved roads, and rough terrain and unimproved trails that require technical skills. Jumps and drops are intended to be less than 61cm (24").

### **ASTM LEVEL 4**

This is a set of conditions for operation of a bicycle that includes Level 1, 2, and 3 conditions and downhill grades on rough trails at speeds less than 40 km/h (25 mph), or both. Jumps are intended to be less than 122cm (48"). RIDEPORTE products are NOT tested and approved for this level.

## **TEST PROGRAMS AT EFBE**

- **Wheel – Rotational accuracy (ISO 4210-7:2023 4.1)**
- **Wheel – Static strength test wheel/tire assembly (ISO 4210-7:2023 4.2)**
- **Wheel – Dynamic strength test wheel/tire assembly (ISO 4210-7:2023 A.2)**

# HUBSET

## INSTALLATION AND MAINTENANCE

### HOW TO MAINTAIN THE REAR HUB



The maintenance and cleaning of the hub should be operated on a clean table, because there are some springs and delicate parts. Even a small fragment falling into the item would damage the meshing mechanism of the free body. Any residual vapor or water inside the hub will damage the bearing irreversibly within a few weeks.

Since the rubber seal ring of the hub is of low friction, and the hub is not completely sealed and it can rotate smoothly, there will inevitably get some vapor and dirt in the hub. So, the hub should be cleaned regularly (every 4 months under dry conditions and every 2 months under wet conditions), and it should be cleaned up if the wheel is idle for more than 1 month). Please refer to the instructions on the next page.

Do not clean the hub with the high-pressure water gun. Clean the hub shell with warm water and soap.

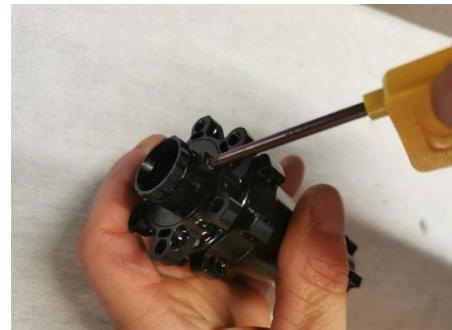
#### **WARNING**

- Improper lubrication and maintenance may cause the free body to be stuck and damaged.
- Any fragments falling into the free body will cause irreversible damage to the item.
- Any residual vapor or water inside the hub will damage the bearing irreversibly.



**STEP 1**

Unscrew counterclockwise the little counter bolt on the preload adjuster dust cap with a Torx 8 for about 2 turns.

**STEP 2**

Unscrew the preload adjuster dust cap counterclockwise with your hands.

**STEP 3**

Hold the non-drive side (left side) with a 17mm offset ring spanner, Unscrew the drive-side (right side) with a 17mm offset ring spanner.

**STEP 4**

Continue to unscrew the drive-side dust cap with your hands.

**STEP 5**

Pull out the freehub body and remove it from the shaft.



**STEP 6**

Remove the floating ring and inspect the springs and their condition, clean them and apply new grease.

**STEP 7**

Remove the bearing holder ring by sliding it from the axle.

**STEP 8**

With the palm of the hand, push the axle out the shell.

**STEP 9**

Continue pushing, normal force is required.



## STEP 10

Pull the axle out of the shell.



## STEP 11

Inspect the general condition of the parts.



## CLEANING

Clean all of the parts (do not use any corrosive solvent).

Clean the spline, floating gear ring and free body meshing teeth carefully.



**WARNING:** even a small fragment will cause the freehub body to fail to operate.

Check the wear of the ratchet teeth, the edges of the teeth should be sharp. Also carefully check the corners of all splines of the floating ring and the hub housing to make sure they are square and in good shape (neither rounded nor worn). When using the hub, there will eventually always be dirt entering, that will obviously wear the ratchet teeth and splines of the floating ring (and in lesser extent the housing). This until the floating ring cannot move smoothly anymore. In this case, you must replace the floating ring. A new floating ring cannot be installed in a worn housing.

## LUBRICATION AND ASSEMBLY



**WARNING:** normal lubricating grease should be used. Medium density or viscous grease will block or slow down the movement of the floating ring and this will damage the free body. Chemical additives will also damage the O-rings.

- Apply grease on the part where the shaft center makes contact with the bearing.
- Apply grease on the outside of the disc side bearing.
- Apply a small amount of grease to the splines inside the hub housing, and then apply grease on the surface.
- Apply a small amount of grease to the spring mounting hole on the back of the floating gear ring.
- Apply grease on the O-ring of the freehub body seal ring.
- Apply 1cc grease on the tooth surface of the freehub body.
- Apply grease to the bearings outside the freehub body.
- Apply grease on the threads of the right end cap.

### STEP 12

New bearings are optional, if not experienced, please do not clean the bearings, if experienced, please continue with the following steps.



### STEP 13

Remove the bearing seal.



### STEP 14

Remove old grease, dust and mud, inspect condition of the bearings and apply SKF bearing grease.



**STEP 15**

Place the bearing seal back in position.

**STEP 16**

Re-install the clean floating ring.

**STEP 17**

Mount the floating ring in the position as shown in the picture.

**STEP 18**

Insert axle with ease.

**STEP 19**

Reinstall the bearing holder ring.



**STEP 20**

Reinstall the freehub body.

**STEP 21**

Install the drive-side dust bearing cap.

**STEP 22**

Firmly push the cap in position.

**STEP 23**

Tighten both ends with a 17mm spanner.



Do not overtighten! Maximum 10Nm.

**STEP 24**

Push against the drive-side dust cap to get the dust cap and axle in position



## STEP 25

Check if there is no loose spacing on the axle and parts



## STEP 26

Turn the preload adjuster dust cap gently against the bearing and tighten the counterbolt (even more gently) with a Torx 8.



Do not overtighten! Check PRELOAD ADJUSTMENT



## PRELOAD ADJUSTMENT

The optimum bearing preload is critical to the service life and function of the hub and bearings. Improper bearing preload will result in poor performance of the and will damage the bearings and the rotating parts.

Assemble the wheel as usual. If there is a gap between the preload adjuster dust cap and the bearing, use a Torx 8 to loosen the little counterbolt and adjust the preload adjuster dust cap (clockwise) gently with your hands until you feel a stop. Loosen the preload adjuster cap by 2° (counterclockwise) to release any excessive bearing preload and get the maximum rolling smoothness, then tighten the counterbolt .

The ideal bearing preload should eliminate the gap between the preload adjuster and the bearing without affecting the rolling.

The preload ring needs to be a little loose. After the Thru Axles is locked, the hub Axle will be compressed, causing the side cover of the drum to squeeze the inner ring of the bearing. In this way, the bearing will be subjected to axial force, and the bearing is prone to damage.

The preload adjuster should be a little looser. The axle can move left and right. Adjust the preload adjuster after the wheels are locked to the frame.

## HOW TO MAINTAIN THE FRONT HUB



### STEP 1

Unscrew the preload adjuster dust cap with a Torx 8.



### STEP 2

Unscrew the preload adjuster dust cap.



### STEP 3

Unscrew both the axle ends, this should be possible with your hands.



**STEP 4**

Use a spanner if needed, but do not use excessive force to open both ends.

**STEP 5**

Unscrew the drive-side axle end.

**STEP 6**

Inspect the general condition.

**STEP 7**

Push the axle out of the shell.

**STEP 8**

Remove the axle by hand and clean if needed.



**STEP 9**

If you have the experience: remove the seal, clean the bearing and apply SKF bearing grease. If needed change the bearing.

**STEP 10**

Picture of a cleaned bearing (without grease), the bearing needs grease until the seal is reached.

**STEP 11**

Reinstall the axle gently back in position.

**STEP 12**

Screw the drive-side axle end back.

**STEP 13**

Feel if there is no play or spacing anymore.



**STEP 14**

Tighten both ends with a closed ring spanner 17 and 19mm (handtight max 10Nm).

**STEP 15**

Push the axle in position with your hands. Turn the preload adjuster dust cap gently against the bearing and tighten it (even more gently) with a Torx 8.



Do not overtighten! Check PRELOAD ADJUSTMENT.



## HUBSET TECHNICAL DRAWINGS



## SPECIFICATIONS

### *Front hub*

- Weight: 103 gram (R) & 94 gram (SL)
- Width: 110 mm
- Bearings: SKF6903 x 2 (R) & 6803 x 2 (SL)
- The diameter of spoke hole: 2,5 mm
- The diameter of right flange: 36 mm
- The diameter of disc side flange: 44 mm
- The distance from right flange to center: 38 mm
- The distance from left flange to center: 27,5 mm
- The maximum spoke tension: 150 kgf
- Max tensioning brake disc: 6 Nm

### *Front hub*

- Weight: 192 gram (R) & 188 gram (SL)
- Width: 148mm
- Bearings: SKF 6903 x 2 + 6803 x 2 (R) & 6903 x 1 + 6803 x 3 (SL)
- The diameter of spoke hole: 2,5 mm
- The diameter of right flange: 56mm
- The diameter of disc side flange: 40mm
- The distance from right flange to center: 24,3mm
- The distance from left flange to center: 38,5mm
- The maximum spoke tension: 150 kgf
- Points of engagement: 45
- Max tensioning brake disc: 6 Nm

## PERIODIC SERVICE

### CLEANING

The hub should be serviced regularly: every 4 months under dry conditions, every 2 months under wet conditions.

### PRELOAD ADJUSTER CAP

PORTE hubs have a preload adjuster dust cap, which is used to adjust the gap of the bearing. If the gap of the bearing becomes larger, it needs to be tightened again. We added this preload adjuster dust cap to make the bearing smoother.

However, it needs to be included in **the daily inspection**, because the bearing gap may become larger when the hub is used.



### BEARING LIFETIME

Industrial SKF Bearings lifetime ISO 281-2007 is 25.000 hours in dry conditions without excessive loads. 10.000 hours in wet conditions without excessive loads. 6.000 hours in wet conditions with excessive loads.

#### Every 2000 KM

We recommend cleaning of the small springs of the floating ring and new grease. The teeth of the ratchet should be still in a good condition as shown in the pictures on the next page. If there is heavy wear, the floating ring and hub should be replaced. Please contact us. if this is the case Small metal debris and small wear is normal. The material is made from 7075 aluminium and has been subjected to hard oxidation treatment.

#### Every 6000 KM

We recommend a new 6803 bearing set.

#### After 10000 KM

We recommend a new 6903 bearing set. The freehub ratchet and the floating ring need to be inspected closely for wear and tear. See next page for more details.

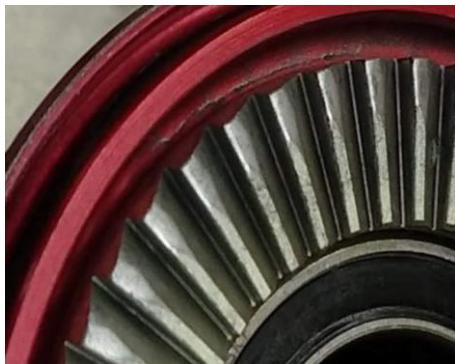
## REAR HUB HOUSING

The squares are 2.6mm (when new). Do not use them anymore if they are less than 2mm or extremely worn and/or with irregular shapes! There are two possible positions of the floating ring inside the rear hub housing. Please do not place a new floating ring arbitrarily. You should mark the first position with a waterproof marker and use the second unused spline position in the rear hub housing.



## FREEHUB RATCHET

Small wear is normal. Check if all the teeth edges are still sharp. Do not use it anymore if there is a jagged cut on the edge of the teeth. If more excessive wear is present, this could be because there is too much play on the axle and the freehub ratchet floats too much. This causes more damage than intended.



## FLOATING RING

Check all teeth edges are still sharp, do not use it anymore if there is a jagged cuts on the teeth. The squares of the splines are 2.8mm (when new). Always check if the contact surfaces of the splines are still square and flat. They should not be rounded!



## RIM

### INSTALLATION AND MAINTENANCE

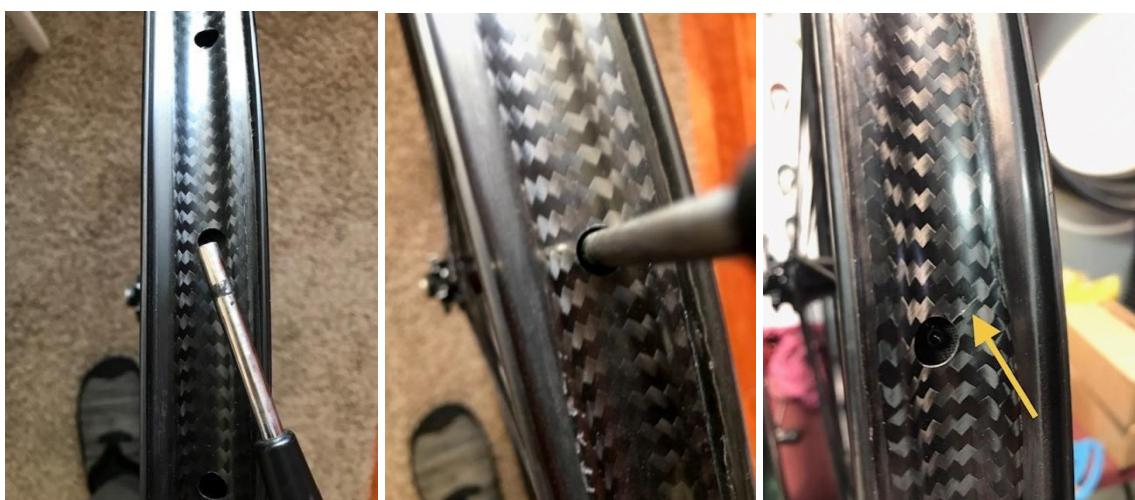


Be advised, we do not recommend lacing the wheel from the outside rim bed. The tool illustrated easily causes fractures on our ultra-light rims, because the thickness of the rim bedding is only a few mm.



**Warranty is invalid when using this tool.**

If you still choose (or if you are obliged e.g. Berd spokes) to build the wheel with this tool, be advised to only tighten in a straight way. Any slight abbreviation can cause minor damage, even unseen with the naked eye in the beginning. Because these rims are made from long and continuous carbon fibers, the unseen crack can become larger in time and cause the rim to fail.



If you have a very minor carbon fiber cracks please follow the carbon repair instruction on <https://www.rideporte.com/technical>

We **strongly recommend** building the wheel from the inside. Because we have created a reinforced nipple bed, no damage can be caused building the wheelset with the tools we advise illustrated below:



Regular cleaning products and methods are allowed.



**WARNING:** do not use a microfiber cloth to clean around the nipple's holes, this is able to grab a small carbon fiber and cause a small fracture.



**WARNING:** do not use refined linseed oil as lubrication for the spoke thread. This creates a bad reaction with the decals on the rim. DOT oil from brakes has the same effect on the decals, so please pay attention when bleeding.



## DEVIATION

### TOLERANCE

PORTE wheels only have a maximum (lateral and radial) deviation of 0,1mm with ultra-balanced spoke tension of 105-110 kgf. When mounting a tire the tension can reduce with 20 kgf. The deviation can then become 0,3mm, the maximum tolerance is set at 0,5mm. If your wheel exceeds this tolerance when the tire is mounted, please correct this by straightening your wheel with the tire mounted.

The maximum spoke tension for a wheel without a tire is 125 kgf, we recommended to use 110 kgf when tensioning.

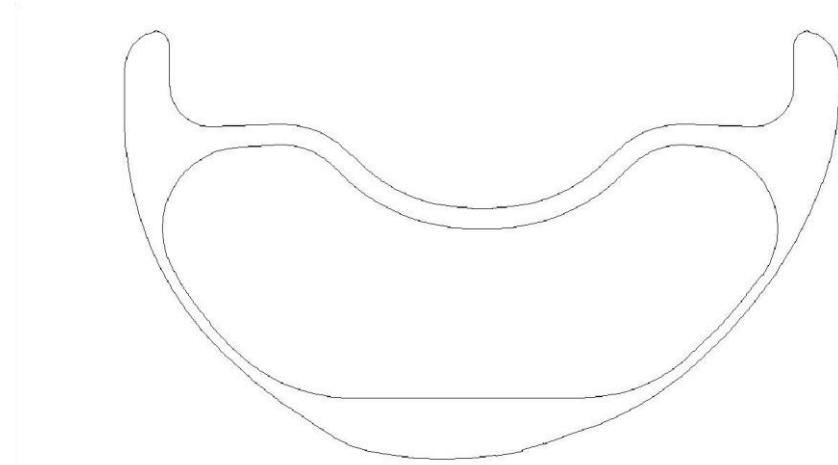
**NOTE:** a small deviation can be noticed where the valve is located because this area is more reinforced, this is normal.

**WARNING:** 20psi/1,37 bar is the absolute bare minimum tyre pressure, if you want to go lower it is at your own risk and we strongly recommend using a tyre insert. There is no warranty or crash replacement possible when not respecting the tyre pressure limits.



## RIM TECHNICAL

### DRAWING



### SPECIFICATIONS

- Rim size: 29"/700c
- Rim type: asymmetric 2mm offset & hookless
- Outer width: 35 mm
- Inner Width: 30 mm or 30,6 mm (250UL)
- Height: 21 mm
- ERD: 597 mm
- Number of spoke holes: 28 or 32
- Diameter spoke hole: 4,5 mm for external nipple
- Diameter assembly hole: 7 mm
- Spoke hole offset: 2,2 mm
- Spoke hole angle: 7°
- Max. spoke tension: 125 kgf
- Max. tyre pressure: 40 psi (2,5 bar)
- Min. tyre pressure: 20 psi (1,37 bar)
- Max. tyre width: 2,70" or 2,80" (250UL)
- Min. tyre width: 2,20"
- Max. rider weight: 100 kg (290R) or 90 kg (270SL & 250UL)

# **WARRANTY**

See warranty document at:

<https://www.rideporte.com/technical>