

FREQUENTLY ASKED QUESTIONS – ANSWERED!

MAINTENANCE AND SERVICE

What are the wearable parts?

The wearable parts are:

- Sprocket
- Chainring
- Jockey wheels on the chain tensioner
- Shifter cables and shifter cable guide in the shifter
- Transfer wheel in the external gear mech
- Internal gear mech cables and transfer wheel
- Shifter rubber grip
- Disc brake rotor
- Hub seals
- Oil change kits

All wearable parts mentioned above generally are subject to wear. The amount of wear depends on maintenance, service, how the product is used and cared for (running performance, pressure, rain and snow rides, dirt, salt, etc.) With regular cleaning and oiling, using the appropriate means, the life span can be elongated. A replacement is definitely recommended, when the wear limit is reached.

It's a good idea to get an annual check of your bike by a professional bike workshop.

If you need servicing on your hub then PureSports can carry this out for you.

OIL AND LUBRICATION

All-season oil and cleaning oil?

All forms of multi geared bicycle transmissions use a variety of movable parts regardless of whether they are derailleur or IGH style transmissions. These components need to be lubricated regularly to uphold the manufacturer's warranty, to ensure easy operation and correct functionality as well as to protect these components against corrosion and premature wear.

The process of oiling chain drives is due to the principle of lubrication loss over time. So far the following recommendation remains valid:

Please read this next page as it will help explain why we ride a Rohloff hub.

Derailleur gear systems:

The chain should be thoroughly cleaned and lubricated with a viscous chain lubricant at least every 500km. Lubrication is absolutely necessary following bicycle use in dry dusty, muddy or rainy conditions so that the oil can force any penetrated moisture out of the joints and thus prevent corrosion. Likewise, the joints of the front and rear derailleurs should be lubricated with a drop of oil. Comprehensive hub maintenance should be completed every 3000km. The front and rear wheel hub and freewheel bearings should be checked and re-greased or replaced when necessary. The same applies to the jockey wheel bearings. The extent of component removal and preparation for these service tasks varies according to each application.

Standard IGH transmissions:

The chains of gear-hub drives are not subjected to such high stress situations as derailleur chains are. They are not required to cope with sideways movement, nor are they required to climb and fall from one sprocket to the next. With regards to this, these chains are not in need of such high maintenance. IGH chains only require lubrication approximately every 1000km - although on principle, these should still be re-lubricated following every rainy tour. Standard IGH transmissions are said to be low maintenance. The bearings of these IGHs are filled with grease, the teeth of the gearwheels are greased and the surfaces of the planet-bearings and ratchets are lubricated with a few drops of oil. With intensive use the oil of the planet-bearings is consumed and the grease is pushed out from the bearings. The same happens to the tooth flanks of the gearwheels. Grease is forced away from the tooth flanks and cannot fulfil its function of lubricating the gear mechanism. To prevent the transmission from running dry, the hub should be stripped and re-greased at least every 4000km in order to ensure a long life. As above, the extent of component removal and preparation for these service tasks varies according to each application.

Rohloff SPEEDHUB 500/14:

Similar to an automotive transmission, the Rohloff SPEEDHUB 500/14 uses a sealed oil-bath lubrication. In the SPEEDHUB case, a shot-glass of special lubricant (25ml) is more than sufficient to lubricant the transmission for 1 year or 5000km of use. The movement of the gear system ensures that the oil is evenly dispersed around the hub coating all components with enough oil to guarantee smooth operation and durability. Because the Rohloff SPEEDHUB 500/14 can be ridden for so much longer than other bicycle transmissions without additional lubrication except for a few drops on its chain (see IGH above), it is referred to as being maintenance-free.

The Rohloff SPEEDHUB 500/14 is filled with an all-season oil. This oil copes with a large temperature range ensuring that expedition cyclists will not experience any oil viscosity related issues. In addition to lubricating the bearings and gear system of the SPEEDHUB, the oil also helps to dampen the noises created by the high efficiency straight-cut gears that are used. Replacing this oil every 5000k' or 12 months (which ever is sooner) guarantees the long life of the hub.

Why change the oil annually or every 5000km?

The purpose of the oil change is to ensure that any oil lost over the previous 12 months is replaced, and that any moisture which has penetrated the hub is rinsed back out.

The old oil will eventually start to dry out in the hub and the hub will feel stiffer to ride and change gear.

It could be that the hub will stick in a gear and then drop in to neutral as the 'dry' oil in the hub is affecting the shifting clutches.

Failure to change the oil may result in damage to the hub gear unit which is not covered by the warranty.

When changing the oil please ensure that you fill in the warranty card each time.

Contact PureSports for the Oil change kit.



My gears are skipping, why?

Our experience is that this is often the result of the following three things, in this order.

Chain and Sprocket wear

Have you just put on a new sprocket or turned the old one around, or a new chain has been installed.

These are not playing nicely together so are skipping, but it feels like it is coming from the hub.

You need to check the chain wear with a Caliber 2 tool (from PureSports if you don't have one) only chains with wear less than 0.075 can be used with new sprockets.

Cables

Have you had new cables installed on your bike?

Is the hub skipping after you change gear? but settles down after a few pedal strokes.

If this is the case then it is likely that gear cables have been installed, these are affecting the shifting and not allowing the hub to settle in to a gear properly.

Solution is to remove the gear cables and install Rohloff cables which you can get from PureSports.

Irregular and the odd missed oil change.

It is likely that you have not used the hub for some period of time and it has sat in the garage or shed. This was after you used the hub a lot during the summer months.

You're now back on the bike and the hub is skipping sometimes.

To fix this we suggest that you purchase the oil change kit and two extra bottles of cleaning fluid. Put in two bottles of cleaning fluid and take the hub for a ride, 20k's should do it. Drain this out and put in the next bottle of cleaning fluid, again ride 20k's. Then drain this out and put in the hub oil.

Crank rotation whilst pushing the bike

Should the bike be pushed, it is possible that the cranks could also start to rotate.

This occurs due to the hub seal activating the sprocket as there is friction between the two.

A very light running bottom bracket with poor quality seals will make it much easier for the cranks to rotate.

A drop of Rohloff cleaning oil (Part No. 8402) through the holes in the sprocket onto the hub seal will reduce this activating effect.

It is also a sign that you may want to get your bottom bracket serviced.

More on Friction, warning is really for the tech heads

Wherever power is transmitted, friction is produced within the mechanical system. In general, this friction is lost as heat and is referred to as power loss.

While observing gear systems, two different types of power losses can occur. These are power dependent and power independent losses. Power independent loss is e.g. friction within the seals. Whether the bike is being pushed, ridden downhill or ridden with extreme force upon the pedals uphill, the friction force within the seals remains the same. Here the friction losses vary according to the condition of the seals (smooth or rough surfaces) and, depending on the speed, are very small producing between 1W and 3W of power loss. This small power loss is enough to bring a free spinning wheel to a stop just after a few rotations, or it makes the cranks rotate while the bike is being pushed.

The power dependent losses work completely differently. Whilst pedalling, the friction loss is produced between the tooth flanks of the gears and all bearings in use. Each different gear system produces a different percentage of power loss depending upon the mechanical construction. If the working efficiency of a gear system remains at e.g. 95%, the remaining 5% of the transmitted power is lost through friction. So, if a rider is pedalling with 100W of input power, the rear wheel will only transmit 95W of output power onto the road because of the 5W power loss. If the input power is increased to 300W, the power loss will rise accordingly to 15W.

Should the rider increase his tempo to a fast, high blood pressure sprint with 1000W of input power, 50W of will be lost through friction reducing the output power considerably. This example shows clearly how important a good working efficiency is. The input power given by the rider defines the amount of power loss. In the examples this could be 5W, 15W or 50W. Through special constructive developments like an increased number of teeth per gear and the choice of using roller bearings for the planetary gears, running the gearbox within an oil bath the extremely rigid construction

of the overall gearbox etc, the working efficiency of the Rohloff SPEEDHUB 500/14 is brought up to 96% (for gears 1 to 7) and 98% (for gears 8 to 14).

This working efficiency is comparable to a derailleur gear system. Common seven speed gear hubs reach a working efficiency of approx. 90% (gear #1) and 98% (direct drive gear). Again we observe our test rider, now pedalling up a hill with 200W of input power. While using the Rohloff SPEEDHUB 500/14 or a derailleur gear system, he will lose approx. 4% of output power, or riding in gear #4 as this is comparable to the first gear of a seven-speed gear hub, which is 8W. With the same input power but using a seven-speed gear hub, our test rider will lose approx. 20W of output power. Adding approx. 2W of power loss caused by the seals for the Rohloff SPEEDHUB 500/14 would bring the overall loss of power with the Rohloff SPEEDHUB 500/14 up to 10W against 20W with the common seven-speed gear hub. Conclusion: Power independent losses like the friction of the seals will have the same effect as a lightly rubbing brake block. This brings a free spinning wheel to stop but is barely noticeable whilst riding. But it is easy to recognise on a bicycle repair stand.

On the contrary, power dependant losses mean that a particular percentage of the transferred power is lost and not so easy to be detected on a bicycle repair stand, because the measurement can only really be made with the bicycle being ridden with the appropriate measuring aids.

The Rohloff SPEEDHUB 500/14 has an extra fact to take into consideration.

While the pedals are rotated backwards, the sprocket is being forced to rotate backwards. Therefore, the planetary gear system also has to run in reverse. The sun gears, that are fixed to the axle for the particular gear that is currently selected (when the wheel is being driven forwards) now rotate with a ratchet function over the pawls. The method that is used to allow this is 100% dependent on which gear is currently selected.

It is therefore easy to see that if the pedals are rotated backwards it causes more friction in turn. Also the hub will sound a lot noisier, so if you playing with the bike on the stand you are going to notice this.

If the rear wheel is freewheeling forwards and the cranks refrain from rotating, the first two planetary gear systems (twin planetary gear carrier) remain motionless and the planetary gear system 3 rotates. The freewheel mechanism to enable this is to be found situated in the middle of the planet carrier 2. The flat-toothed components allow this gear carrier to freewheel. Which of these parts are active all depends upon which gear is currently engaged (gear # 1-7 or gear # 8-14).

As opposed to a derailleur gear system, the backward rotation of the planetary gear mechanism is not comparable to that of a running freewheel on a derailleur gear system.

Changing gears

All 14 gears of the Rohloff SPEEDHUB 500/14 are selectable through one twist shifter, so that in one turn it is possible to change up or down by one or more gears.

The Raven or red mark on the twist shifter casing next to the gear numbers informs the user of which gear has been selected. The assembly instructions show the twist shifter being fitted to the right-hand side of the handlebars, you can also change this to a left-hand shifter

When rotating the twist shifter in the direction of #14, a harder, faster gear is selected. When rotating the twist shifter in the direction of #1, an easier, slower gear is selected.

In contrast to other gear systems on the market, with the Rohloff SPEEDHUB there is no delay between gear selection on the twist shifter and gear change in the hub. The moment the notch can be felt in the twist shifter, the gear has been changed. Therefore a quick and failure free gear change is possible whilst riding and also when stationary.

When changing, gear coupling elements inside the hub must move and when there is more pressure on the pedals it is obvious there is more pressure on these coupling elements resulting in a harder gear change. Whilst stationary or when there is less pressure on the pedals, the twist shifter has less resistance and therefore a lighter gear change is possible. In a situation whereby it is not possible to reduce the pressure on the pedals (e.g. hill climbing), it is still possible to change gear quickly and smoothly. Simply change gear when the cranks are in a straight up-down position where hardly any pressure is being applied upon the pedals.

Changing gear with the Rohloff SPEEDHUB 500/14 with pressure on the pedals is not necessary when being used appropriately. However due to the robust construction of the Rohloff SPEEDHUB 500/14 changing gear under pressure is possible and is not harmful to the hub. It is however possible that when changing gears under high pressure the hub could accidentally fall into a neutral gear, this is due to the coupling elements not seating correctly into the next elements and therefore rebounding back. If this occurs the pedals will free spin and the rider could lose balance and crash.

Particulars:

If changing up and down slowly or under high pressure between the gears #7 and #8, it is possible to fall momentarily into gear #14. The hub is designed to do this to avoid going to neutral.

Riding noises

When riding in particular gears, one of two different types of riding noise could be heard. Construction characteristics prove that in most gears a free-spinning noise can be heard which is particularly noticeable in gear #7. When riding with a higher pressure upon the pedals, a higher frequency can be heard through the gears #5, #6 and #7 which is typical for straight-toothed precision gears. Through different frame types these noises can be of different volumes in regard to noise transfer (the tubes of the frames react as a resonator for the sound waves).

Different noises are noticeable whilst freewheeling depending on which gear you have currently selected. This is due to different parts of the gear mechanism rotating within the hub.



Maintenance and care of the Rohloff SPEEDHUB 500/14

The gears of the Rohloff SPEEDHUB 500/14 are protected from dust and harmful moisture due to running in a service-free oil bath. The maintenance and care of the Rohloff system is limited to the following points:

Chain and chain tensioner (where applicable) should in regard to regular use (at the latest after riding in rain) be cleaned and re-lubricated.

The cable box of the external gear mech should be demounted approx. every 500km, cleaned and the cable pulley lightly greased from the hub-facing side.

The shifter cable tension should be regularly checked, and when necessary altered by the cable adjusters.

The Rohloff shifter cables are made from high-quality stainless steel and run in a nylon liner. They must not be greased or oiled. The stainless steel/nylon combination runs service-free.

Please use Rohloff cables when putting on new cables. Don't use gear cables as these are not suitable.

Warranty: Rohloff SPEEDHUB 500/14

The Rohloff SPEEDHUB 500/14 has been exclusively constructed for the bicycle drive.

Please, read the owners' manual first, before mounting and using the SPEEDHUB 500/14!

We guarantee a flawless and technical fault-free running of the Rohloff SPEEDHUB 500/14 for a period of two years after date of purchase. Provided you have change the oil in the first year or at every 5000k's, whichever is first. You will need to have a completed warranty card. It is likely that your warranty will be extended if you are carrying out an oil change as required and recording this on the warranty card.

Not included in the warranty is a normal amount of wear of all wearable parts. Wearable parts are those parts which are subject to an amount of wear due to their function.

Non-wearable parts are: encapsulated gear box bathed in oil, hub case and twist shifter housing.

Any warranty is void with damage to the hub, which are caused by: accident, using of brutal force, incorrect mounting, incorrect use, inadequate maintenance, taking apart the gear box.

To guarantee the safe function, these parts must be replaced as soon as they are no longer capable of performing correctly. Therefore, it is necessary to have a service check and oil-change made, at the owner's expense, once a year or after 5.000km by a professional bike workshop, who is obligated to check over all the workings of your bike regularly and to replace worn parts.

The service check is to be documented on the service card by this professional bike workshop. If you don't look after your hub and change the oil regularly, then you are going to be paying for any repairs which can be traced back to a neglected service check.

Within the context of warranty, it remains our choice to perform replacement or any other work on the product.

The warranty transaction takes place over the bicycle shop only. Please keep in mind the filled in service card has to be sent with the hub in case of warranty claims. With complete bikes, which are equipped with Rohloff products in series, the warranty transaction of Rohloff products is made directly between the bicycle dealer and the Rohloff AG.

The regular service check in accordance with our instructions secures the warranty entitlement and keeps the high value of your Rohloff SPEEDHUB 500/14 in future.

Rear wheel postage in cases of guarantee

Any problems with the Rohloff SPEEDHUB 500/14 should be firstly taken up with the person you brought the hub from.

Should it be that it is a genuine guarantee case, then you will need to send the wheel / hub to PureSports NZ for repairs.

The hub will be serviced and returned as soon as possible

It is however very important that the wheel is cleaned,

The whole wheel must be properly and carefully packaged (the tyre works well to protect the rim). Make sure that the box is wide enough so that the external gear mech and disc are not going to be damaged in transit.

How to clean a Rohloff SPEEDHUB 500/14

Only wash with water & gentle cleaning fluids. The use of high-pressure wash or steam cleaning increases the risk of water coming through the seals and into the workings of the hub. Don't use a tooth brush on the seals you will damage them.

Remember water and rags only.