

"Living with a Rohloff Hub" THORN

By Andy Blance

(Thorn's designer and test pilot).

WINTER 2019/2020

© Copyright 2019 - all rights reserved

St John St cycles -Thorn cycles Ltd

Company no.123142 VAT no. 406 7053 70

91- 93 St John Street, Bridgwater, Somerset. UK. TA6 5HX
01278 441 505 www.sjscycles.com sales@thorncycles.co.uk



INTRODUCTION

It's hard for me to comprehend that more than twenty two years have now passed since Rohloff first introduced their revolutionary 14 speed geared hub in 1996.

I was interested in the hub at the time of its launch, but (like many others, I expect) I didn't want to buy something which I felt may not work properly and which I knew I wouldn't be able to mend.

I could see the attraction of being able to change through all 14 gears using just one shifter; being able to do this - without even needing to pedal, was more attractive still!

I could see that maintenance *could* be much simpler and the wheel *could* be much stronger. We were persuaded by some strong-willed customers into building a few custom bikes equipped with Speedhubs, and hearing much positive feedback from the happy owners, I decided to contact Rohloff myself in spring 2002 - I reasoned that, with the passing of the years, Rohloff would've identified and cured any problems during this time. "What problems have you had and what's the service life?" I asked, getting straight to the point, after introducing myself.

"No joke, Andy, but we've never had a hub fail, so we can't tell you the service life, but some of our customers have covered 70,000km of world travel" was the reply from the product manager, Carsten Geck. (Rohloff still claim never to have had a hub fail and

the greatest distance claimed for a Rohloff hub in 2009 was 145,000km by Thomas Longin.)

Apparently, in 2013, Rohloff stripped some hubs which had covered more than 200,000km. They told me that wear, on critical components in these hubs, showed that they were still nowhere near the end of their service life.

2018 update - apparently there are now documented cases of Speedhubs covering in excess of 300,000km!

There followed more emails and my design for a Rohloff-specific frame was approved.

This is equipped with an eccentric bottom bracket to adjust chain tension, whilst using socketed vertical drop outs, which we know produce the most reliable rear ends for touring bikes.

Whenever we get the opportunity Fiona (my partner) and I like to travel on dirt roads, over high mountains, with medium-weight camping and cooking kit and up to 1 week's supply of food.



I built two "Adventure Touring" bikes with Speedhubs and Fiona and I set out in Feb 2003 to ride as many mountain gravel roads as we could find in Tasmania - there were plenty!

The bikes were better than good - they were sublime - we liked the Rohloff hub so much, that these bikes were soon joined by lightweight, sporty bikes with Speedhubs.

2018 UPDATE: The strength and durability of the bikes, which we took to Tasmania, has now evolved into the Thorn Nomad. The lighter weight bikes have evolved into the Thorn Mercury. We also have our NEW Rohloff tandem - The Raven TwinMk3 S&S

INDEX

[1] INTRODUCTION

[2] **PART 1 - blog?** 2004-2005

[3] 2006-2007

[4] 2008 Trip to India

[5] 2009

[6] Jan - Mar 2010

[7] Riding across the Pampas

[8] Nomad Mk2

[9-11] Tierra del Fuego Jan-Mar 2011

[12] Flat track bars

[13] Thorn Mercury, Nomad & suss fork

[14-15] Philippines Jan - Mar 2012

[16] New Raven, Euro Tour Mercury, 853c forks

[17-18] Carretera Jan - Mar 2013

[19] Back in Blighty April 2013.
Fiona's Gunmetal Mercury.

[20] Cycling in the Vosges

[21] 2017 Photo shoot Mk3 Tandem

[22] Photo - Fiona in South Hams

[23-27] Thailand 2017 and 2019

[28] CHANGES for 2019

[29] Blank page for future additions

[30-31] Andy's recommendations for tool kit, for touring with Rohloff.

[32-48] PART 2

TECHNICAL INFORMATION

[32] Known problems with Rohloff.

Oil leaks. **Best practice for oil change.**

[33] Hub Shell bearing failure,

Slipping gears, sprocket removal.

[34-35] Rohloff serial numbers and Warranties + **THORN**

10 year Hub flange warranty.

[36] Why we don't like BELT DRIVE

[37] Chains and chain wear.

[38] Disc Brakes. Are 32 spokes enough?

[39] **THORN 10year gear internal warranty. Changing gear with Rohloff.**

[40] Speedhub likes and dislikes, changing gear with Rohloff.

[41] Drop bar shifters.

[42] Summary, why get a whole bike?
Thorn's 100 day money back trial + link to **Mega Brochure**

[43] Rohloff's must take tools and New Thorn Eccentric.

[44] Diagrams, wheel removal and adjusting Thorn eccentric.

[45] Mini eccentric for Mercury.

[46] Gear ratios

[47] 700c Gear Tables

[48] 26" Gear Table

PART 1 Andy's Blog?

Thorn Enduro 2004



Our Rohloff equipped MTBs

In September 2003 I rode the Newnham 90Km Enduro on our first prototype Rohloff mountain bike; this was a "hard tail" design, built from our medium weight, conical, Reynolds 853 tubeset.

I designed the frame specifically for hard use, low maintenance and long life.

The results were very encouraging, a few tweaks were made and now the geometry is spot on - a quintessentially perfect blend of stability down hill and agility on single track! The "Enduro" is perfect for long distance, high performance cross-country riding, winter mtb training (or, in the case of the "Catalyst" version, also towing a Bob Yak trailer around the world!) With the help of a short travel suspension post, I can ride this bike all day - I have completed a 90 mile (150km) mtb ride over challenging terrain.

Compared to the usual alloy framed, derailleur geared bikes, the overall impression, when riding off road, is actually one of silence! This is not the usual first impression of a Rohloff hub (!) and is primarily because the chain can't slap on the stays but even seventh gear does not sound too noisy off road.

It's the bikes' performance in mud which is their most outstanding feature - not only do all the gears continue to operate faultlessly, the 'muddy' transmission is much more efficient and much lighter in weight than muddy derailleurs. The bike is so easy to clean afterwards, that the ratio between ride time and cleaning time, improves dramatically, which certainly encourages winter use

2015 UPDATE: Due to underwhelming demand, we no longer make a Rohloff equipped MTB - we just weren't cool and trendy enough. Having said that, a Nomad Mk2 with süss forks and hydraulic disc brakes makes a superbly functional off road machine.

Further Developments and Diary

Fiona and I had the opportunity to load the tourers up, with camping kit and head south to Australia again.



Jan-Feb 2004. South Western Australia's sandy trails and graveled forest tracks were no problem for the Rohloff. The bikes performed faultlessly and traveling with them was indeed "No worries".

In late 2004, the hubs were fitted to a pair of Thorn eXXp bikes (massive, carthorse-like, touring "mountainbikes") and during **Jan, Feb and Mar 2005** (the UK winter) Fiona and I headed north from the southernmost tip of Mainland Chile, into the most ferocious winds and over the roughest gravel roads imaginable. We met many cyclists with broken bikes but we had no mechanical trouble (or punctures!) ourselves. The bikes were absolutely superb - the only maintenance given to the transmission was to wipe the muck off the chain and apply lube from time to time. The Rohloff chain only needed to be adjusted once in 2000km, which of course, was easily achieved in a few minutes using our foolproof eccentric BB system.

During the trip we named our bikes "Hector" and "Bertha". Fiona and I also have a pair of eXp R bikes, which I built in 2005. These bikes are designed for big loads on better roads (Europe?) They've had numerous long camping weekends and have also been used for long Audax rides - for which they were obviously over-built. They've not had the same workout as Hector and Bertha but, in addition to having been 100% reliable, they were without doubt the best handling bikes I've ever ridden - with, or without, a load!

In late 2005, we added S&S couplings to Hector and Bertha and gave them a coat of flashy paint in readiness for the London bike show.

In Dec 2005 we launched the Rohloff-equipped, Raven Twin tandems. There were 11 different sizes, each of which was available in a choice of 3 different colours and each size/colour was also available with an option for S&S couplings. All of these options were available from stock. **Getting rid of the front mech is a phenomenal benefit on a tandem, as is being able to change gear without pedaling**, these two reasons alone make Rohloff the preferred option for a working tandem, without even considering the benefits of easy maintenance and great reliability! Almost all the feedback we've had from the new owners, has been extremely positive - very few have been returned under our 100 day money back guarantee of satisfaction. Fiona and I had a Raven Twin tandem - ours was set up for Audax rides. I can honestly say that it was the best tandem that I'd ever ridden.



Thorn Raven Adventure

**Thorn
Nomad
S&S (Mk1)**



During **Jan-Mar 2006**, Fi and I headed off, with Hector and Bertha to Argentina and Chile again. We traveled mainly on gravel roads, some of which were akin to stream beds and very hard going! We crossed and re-crossed the Andes 6 times, each crossing saw us literally reaching new heights, culminating with the 230km climb from sea level to 4757m over the Paso Agua Negra. We hurtled down the most spectacular descent, the old route from Uspallata to Mendoza; this route, carved into the sides of the mountains, has (allegedly) 365 hairpin bends and multiple sheer, unfenced drops. I love fast descents and this still is the most exciting and technical ripio descent that I've ever ridden...we touched 40 mph (64kph) at times, with full camping kit. The bikes were superb, needing no maintenance (apart from chain lube and adjusting chain tension once) and, unlike our hearts, the Rohloff hubs never missed a beat. Fi and I both decided that trying to prevent a "show-stopping" paint finish from being damaged was more trouble than it was worth, therefore, during summer 2006, we gave Hector and Bertha a double industrial powder coat of military olive green...which suits them perfectly.

In **Dec 2006**, using the knowledge and experience gained from our



"big trips", we launched the Nomad S&S - this surely is the definitive, affordable adventure touring bike - obviously it is Rohloff equipped - it certainly couldn't be called "definitive" otherwise! I have had much praise heaped upon my head from numerous happy Nomad S&S customers.

Jan-Mar 2007 Fi and I loaded up Hector and Bertha again and headed for our third trip to Argentina and Chile. We messed around on the ripio in northern Argentine Patagonia for a while and then crossed, on the worst "roads" yet encountered, into Chile, where we took a 36 hour, 2,500km bus trip up from Temuco to Calama, in the Atacama. Our plan was to cycle from the driest place on earth, over the Andes, at practically their highest and widest point, into Northern Argentina. We had to carry over 50kg each (much of it water) up the first steep 50km climb to 4800m - which was unmarked on our map! We camped on the altiplano at 4500m and witnessed the flamingoes being frozen into their salt lakes each night.

We crossed more cols, including another unmarked 4800m climb and actually descended to the notorious Paso de Jama (4200m). On the 2007 trip we crossed more than a dozen 4000m cols. In spite of the severity of this trip, only routine chain maintenance was required; the bikes were superb and the Rohloff hubs were completely trouble free.

Autumn 2007, the Enduro and the Catalyst were combined into a single frame - the Sterling - this bike could be built up in many different ways to be either a superb, high performance hard tail enduro bike, a touring mountain bike, a disc-braked lightweight touring bike or a round-the-world, trailer pulling expedition bike. I swapped all the components from our Thorn Enduros onto a pair of Sterling frames - I wanted to give them a long (off) road test, to ensure that I could write about them from experience.

The Sterlings were such a beautiful ride that Fi and I decided to sell the Enduro frames and keep the Sterling frames.

**The absolutely
stunning
Thorn Sterling
in Pukka MTB spec.**



Size shown M/L



Jan-Mar 2008 Hector and Bertha were prepared for a 10 week trip to Southern India. Their hubs had their fourth oil change, after which they were running more sweetly than ever. As the roads in India were known to almost always be tarmac, we fitted the steel AFDM forks, which would save wear and tear and servicing costs on the Vanilla suspension forks. In fact the tarmac varied from super smooth (but rarely rolled flat) to hideously broken. We had no intention of camping in India and only rear Ortlieb bags and bar bag were taken. Although the bikes were totally overbuilt for such a trip, they coped well with the conditions and frequently shared a hotel room with us. (In one hotel, with really tiny rooms, they actually had a single room of their own!)

When we booked the tickets, British Airways offered to transport the bikes free of charge, if the bikes could be broken down and fitted into a particular sized box and the total weight was less than 23kg. The S&S couplings enabled me to pack our bikes into a box small enough to qualify for this generous offer. We spent a few days, relaxing on a beach in Goa, which gave us 10 days to rendezvous with our friend Keith, who was having his 50th birthday party, at a very up-market resort in Kerala. Fiona and I rode down the coastal highway from Goa, through Karnataka to Kerala, it's like a 1200km long village! Keith's birthday party was great, it was a view into a whole new world of luxury and expense! However, we were soon glad to be back on our bikes, doing what we love the most - travelling low budget!

We crossed the Western Ghats many times, visiting various hill stations and we also cycled through several national parks, where elephants, tigers and leopards roamed. We did see elephants but we were never going to see tigers. Thanks to the demand for tiger products in Chinese medicine, they're almost extinct!

Some of our friends were horrified when they heard that we were planning to cycle in India, due to the drivers, the roads and the heat. The rural roads were fine - much better than in South America!

Actually we had very few problems with Indian

drivers. There's little traffic, outside of urban areas and away from main highways. We never cycled in big cities, because we'd certainly have got lost. It may seem like chaos in towns and villages but everything is happening at very low speed. Nobody wants to actually stop, not because they're aggressive but because they're all trying to drive as economically as possible - the cost of fuel represents an extremely large percentage of their income.

There's also an overriding principal that "might is right" yet cycles, whilst at the bottom the pecking order, are accepted and respected as vehicles. Once you understand these principals and once you realise that other drivers actually expect you to keep moving, cycling in India is very easy. **Road rage simply doesn't exist - unless you bring it with you!**

In Tamil Nadu, we visited small villages and ate in small "cafes" with local workers, who'd never seen white people before. These Indian villagers loved Hector and Bertha! Travelling by bicycle not only allows you to get to such places, it almost guarantees acceptance and respect.





In April 2008, we received the shipment of our "Thorn narrow bars". I designed a narrow central bulge, to enable the brake levers to be fitted as far inboard as possible. This leaves room for the shifter, grips and bar ends for a total overall width of 515mm. I found that these bars, when fitted with Ergon grips and ergo control (rubber covered) bar ends, they offered 2 really comfortable positions which encourage spirited riding over long distances. **(2019 note, we now use Ergon GP5L bar ends, which give at least 3 different positions and are even more comfortable)** I built up a pair of Sport Tours, to be as light as possible (without being silly) and I fitted them with the "narrow bars". We used these bikes for fast summer rides and Audax rides - when we were not using the tandem.

Feb 2009.

Hector and Bertha had their Vanilla forks serviced and fitted, their hubs were given another oil change and they were then packed into boxes ready for our flight to Montevideo. Our plan was to cycle across Uruguay and Argentina and then climb over one of the monster passes into Chile, touch the Pacific and return via another monster pass. However the snow at Heathrow prevented us from leaving on the Monday although, stupidly, BAA would not confirm to Iberia that we could not take off that day and we had to journey to Heathrow in very dangerous conditions, or risk losing our ticket. Iberia were very good and, although they offered to fly us to Montevideo on the next Thursday, I knew that more heavy snow was expected that day, Fi and I could see our planned route, was gradually becoming very tight for time. Iberia offered us an alternative destination and we managed to negotiate return flights to Santiago de Chile on the Wednesday - before the next snow

There's a huge chunk of Chile that we had not really explored, between Santiago and the Lake district and we identified 5 big trans Andean passes that we had not previously ridden. We started with what was supposed to be an easy week's ride, from central Santiago to the coast at Pichilemu and on to Talca. With all of our experience, we should have known that the ripio, in the costal range of hills, would be tough going and our "easy start" had some of the toughest going of the whole trip, deep sand is the hardest surface to cycle on.

We did cross the Andes 6 times, but one of the big passes was already closed when we got to it, so we only crossed 4 new passes.

Although we never got much above 2500m, some of the ripio was incredibly tough, with sections of loose rocks alternating with sections of deep sand, luckily, unlike our legs, the Rohloff hubs were completely unaffected by this sand. We visited Argentina 3 times during this trip but most of the time we were in Chile. Between the 2nd pass and the 3rd, we spent 3 days belting along the hard shoulder of the Pan American highway, covering 400 km. This was a strange experience, with big trucks passing constantly and waving to us. On the opposite carriageway we spotted a fleet of more than 30 combine harvesters going from one grain region to the next. There were lots of little stalls literally on the shoulder, feral chickens actually crossing the road and

the occasional big shiny Copec service station, where real espresso could be purchased. We enjoyed this glimpse into the Valle Central, where the majority of Chileans live but it's the majesty, grandeur and solitude of the Andes that we really love and the ability to easily find a suitable wild camping pitch makes it possible for us to be there.





Summer 2009. Fiona and I were mostly riding the tandem and the mountainbikes this year - we "blasted" around several Audax rides on the tandem and we completed several long off road events including the 75km Marin Rough Ride.

We had a very wet but nevertheless highly enjoyable, cycle camping trip in North Wales over the August Bank Holiday.

In September we drove through France and, starting near Grenoble commenced a 14 day, self supported cycle camping tour, taking in much of the route des Grand Alps. We took in 14 major climbs including the Bonnet, Galibier and Izoard. The cycling was sublime and the bikes performed with their usual solid reliability. Early snow had closed the Bonnet and we stayed in an inexpensive hotel and we were able to ride to the top of the Bonnet and back down, as a day ride with just the saddlebags. Of course it was tough cycling these cols with full camping kit but the camping kit allowed us to afford to take this trip and it meant we didn't have the worry of finding a room for the night. If we'd booked ahead, the Bonnet being closed, would have thrown all of our plans and we would have had to play catch up.

We rode the notorious Dartmoor Devil Audax (2800m+ climbing) on our Sport Tours at the end of October and completed the demanding course just within the time limit.

We took things fairly easy, on the cycling front, during November and December and concentrated on projects at work, in the loft and we also got to

"tidy up
our wine
cellar".



Jan to Mar 2010

The snows in early Jan gave us cause for concern but we were lucky to depart from Heathrow for South America again. We landed in Montevideo (Uruguay) and stepped into blazing sunshine and temps in the low 30's - it was certainly a shock to the system but this cool weather was not to last. As we pointed Hector and Bertha westwards we lost the cooling breeze from the Atlantic and picked up a blistering, humid wind from Brazil. Within a week we were dripping in daytime temperatures in the low 40's. We liked Uruguay, it's very green and has many exotic birds and butterflies, delicious fruit, cheap hotels (with air con!) and they just might have even better beef than Argentina. The local grape (Tannat) produces a red which is heavy, heady and very complex.



We felt that we had to visit Fray Bentos (yes it is a city) as I remember the pies and corned beef being a real treat in my post-rationing childhood days. The bridge to Argentina was closed and we had to head further north before we crossed the Rio Uruguay, which meant that we saw afternoon temperatures in the mid 40's.



**Don't do this
with more
recent hubs!
See pages
32, 33 and 39**





of water, raging relentless winds and freezing nights before - but not all on the same day! Despite a huge effort, we managed just 30km on the second day on the exposed plateau, we climbed to 4481m and camped at over 4350m for the night in the "shelter" of a drainage ditch. This was the night that the earthquake struck in Pichilemu (where we passed through last year!) we didn't feel it, as we were camped on deep sand but others, who were this far North, had felt the

We continued belting across the Pampas, over the Rio Parana, through Rosario, where we enjoyed a few days in a more up market hotel, had a film fest and headed on back roads for Cordoba. We had the most spectacular thunderstorms, the whole sky light up in violet light. By now 100km days in 45 degree heat and high humidity were quite normal and no problem, as long as we kept cycling briskly. The 32 to 35 degree heat at 2 in the morning **was** more difficult to cope with and we had long been forced to abandon thoughts of camping, until we reached the mountains. The day we encountered 100% humidity and 45 degrees was almost insufferable but it ended in the most spectacular thunderstorm and the temp dropped accordingly for a few days.

We crossed the bad lands between the Sierras de Cordoba and the Andes where summer temperatures of 55 degrees are common and were lucky that we only had to climb the long drags to 1500m in 45 degrees. By now the humidity had dropped and we finally arrived at the last shop in Argentina, in the town of Vinchina; where I was immediately laid prostrate with food poisoning and a cold fever. By the time I was able to stand again, we had just over 7 days to make the 300km crossing before Chilean customs closed Paso Pircas Negras for the year.

There had been no information on cycling the Pircas Negras without support, all we could find were accounts of a supported expedition (no bags to carry and endless water) which had a 67% failure rate. We reckon

these guys climbed too high too soon - easy to do if you are young, fit and pumped with testosterone. The top of the Pircas Negras crossing is a 100km wide undulating plateau at over 4000m; a desolate, majestic, brightly coloured volcanic wasteland of crumbling rocks, sand and dust with a backdrop of snowy peaks rising to over 6000m. It has no water other than a large salt lake. The 100km/h gusts blasted sand at us and the night temperatures dropped to minus 15C. There were very few vehicles and none at all between 16.00 and 11.00. Many people had tried to warn us of this crossing but we have experienced remote high altitude, lack

earth move - as we later found out. We were very tired when we eventually reached the international limit the next afternoon and gazed westwards, over seemingly endless mountains. We spotted a ripio road clawing its way up a steep slope and disappearing into the distance, in the opposite direction to that which we were taking and we wondered who would want to travel on such a road?...After a brisk descent and a sharp 180 degree turn we had our answer...us!

We really struggled on the steep 300m climb but eventually we really did have the descent we were expecting.

Part way down we both decided that it would be a shame not to enjoy another high mountain sunrise, so we made camp at 3300m, after all, although tomorrow was the last day the pass was open for the year it was downhill all the way.

We first found out about the earthquake when we arrived at Chilean customs at midday, they were packing up early and closing the pass, as many of them were heading South, to help with the rescue efforts needed in the earthquake. We continued down the valley and camped the night little knowing that we still had one more big climb (nearly 900m to 3115m) before we could continue our descent to Copiapo at 382m.



We rested for a few days in Copiapo, eventually the internet came back on line and we were able to reassure friends and family that we were not affected by the earthquake.

We crossed back into Argentina by the Paso San Francisco (500km between shops; so we bought provisions for 10 days) We experienced the highest temperature of the trip, 47 degrees but it was not a problem for us because, in the Atacama, humidity is exceptionally low. Water was a problem and we climbed to nearly 4800m, with a good descent on the way to the top. The descent to Fiambala had many long drags, a strong headwind and spectacular scenery.

We caught a bus from Fiambala to Cordoba, where we had a boozy steak lunch and watched Avatar (for the second time this trip) and then caught a night bus on to Buenos Aires. I re-assembled the bikes at the bus station, whilst Fiona maintained a vigilant watch on our belongings. We then rode to the port, where we crossed the Rio Plata and cycle camped the 300km back to Montevideo, to rendezvous with the bike boxes. The blistering Jan heat had dissipated into pleasantly warm March sunshine and we were again charmed by the greenness and gentleness of Uruguay.

Fiona has written up the Pircas Negras report, which contains details of all the places ~~we~~ found water in 2010. This ought to make it easier for those who wish to make this crossing and it has been posted on the web. I have made a pdf available, as a download, from our site.



Return to work I was delighted by the response to the suspension compatible Nomad Mk2, which owes everything to the "work" Fiona and I have put in on Hector and Bertha. Obviously we could never part with our bikes but I would have no hesitation whatsoever, from a kit point of view, in tackling any of our trips on Mk2 Nomads, they are just as

"bombproof" as H&B. Reliability is everything, as far as I am concerned, there are too many other things to worry about, when preparing for big trips, without wondering if your bike will arrive damaged, or if it will carry whatever you need, whenever you need, wherever you need it to take you.

THORN

Nomad Mk2

Size 565L, with lots of accessories



April 2010 to Jan 2011. Fiona and I dusted the tandem off and rode lots of 200km Audax rides and even more 100km rides. We managed a week's cycle camping in Normandy, a couple of long MTB events, more Audax rides, a very wet four day tour in the Yorkshire dales, and my 60th birthday!

We also had a blissful week, in late September, cycle camping in the Upper Dordogne.

I was working like mad, trying to update our brochures before Fiona and I departed in mid Jan for yet one more trip to Argentina!

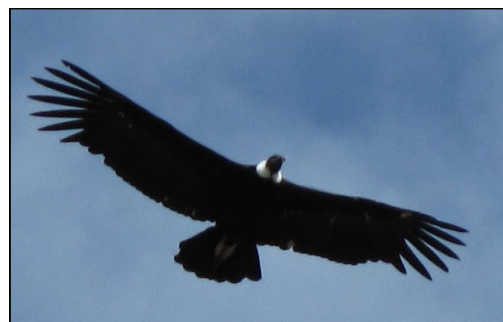
I had also been working on the very special project Mercury. I can't describe how much time this one had taken up and it had been the reason for our late departure from the joys of England in January!

We had crossed the Andes 22 times at this time, yet we had never been to Tierra del Fuego or to Iguazu falls - we hoped to visit both, on this next trip - the trouble is they are around 4,500km apart!

Yes we remembered that we said we'd never attempt to cycle in southern Patagonia again - but it couldn't really have been that windy could it?

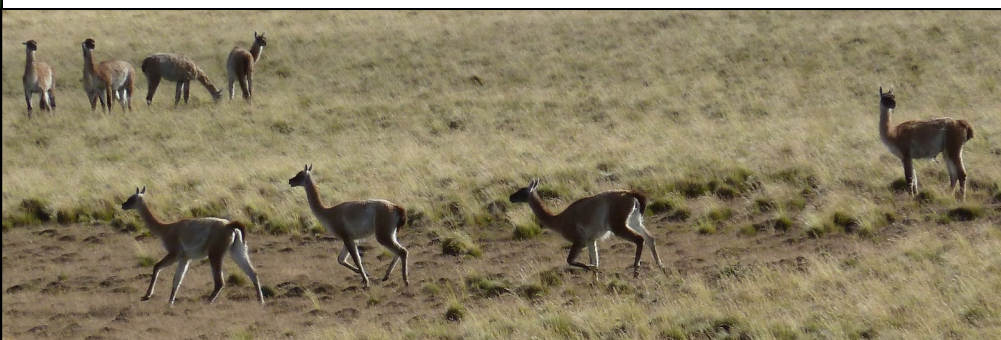
Jan to Mar 2011

I packed Hector and Bertha into their boxes, Fiona and I got a taxi to Bristol airport, followed by a flight to Charles de Gaul. We flew into Buenos Aires into the late January heat and humidity and flew out again later that same day, bound for Rio Gallegos, in the far south of Patagonia. We reassembled our bikes and abandoned the boxes and cycled into the sleeping town, where we rested from our flights, purchased provisions, got our kit ready and headed off, on Ruta 3 for Ushuaia. After a few days we managed to find some much quieter roads, the barren, windswept flat lands of the north of Tierra del Fuego changed to rolling green hills, then a few trees started to appear and eventually we were in rugged forested wilderness shared only with Guanaco, Rheas, Condors and the occasional vehicle. Eventually we rejoined Ruta 3 where we stopped several times to chat with cyclists



heading north. Our final day cycling south was an exceptionally tough day battling into a cold headwind, crossing Paso Garibaldi and slogging along the rolling road into Ushuaia. Nothing had prepared us adequately for Ushuaia! It certainly had a "frontier feel" with its hilly streets. On the main drag we rubbed shoulders with scruffy backpackers at the end of their travels, shiny backpackers at the start of their travels and very well heeled tourists, about to embark on Antarctic cruises, in his and hers Gore-Tex or designer down filled jackets - the streets were busy! The restaurants and kit shops were busy. All this hustle and bustle was set against a backdrop of huge, pointy, snow capped mountains to the north and east and the crystal blue water of the Beagle channel to the south and west.

We were quite prepared to hate Ushuaia but we loved it! We stayed for 4 nights. It had been our intention to catch a bus out of Ushuaia - we had thought we may get the bus to Osorno or Bariloche (a couple of thousand kms further north) but, because every bus was fully booked for ages, we would have had a long wait. Ushuaia is an expensive place to hang out and, in any case, we were anxious to continue with our adventure, so we decided to cycle off the island.



Our route took us on Ruta3 for a few days, where we met many cyclists heading for Ushuaia. Out of 12 bikes, there were 3 Thorn's (14 bikes and 5 Thorn's, if you count ours). Of these cyclists, some had started in Alaska, following the Pan Am and only crossed the Andes once, via Ruta7 and then picked up Ruta3 on Argentina's east coast (Mark Beaumont's route). We could never stand to follow such a boring route - a few days on the busy and boring Ruta 3 was enough for us! If you follow this Route (in reverse) to Alaska, I believe that you will have left the best of the scenery behind, until you reach Alaska, by the evening of your first day!

Most of the other cyclists had begun their trip in Argentina; Bariloche and Salta being popular starting points and most of them had cycled down the notorious RN 40 (Ruta Cuarenta), which runs the length of Argentina, with the majestic high peaks of the Andes constantly to be seen in the east. Ruta Cuarenta is to the Argentine psyche as route 66 is to US culture - and it is steeped in legend and history. We were dismayed that none of the cyclists we met had cycled over the Andes at all, probably because they had all miscalculated how few miles it's possible to cycle in a day, every day - even when young and fully fit - they were all constrained by time! But, in our opinion, even these more adventurous types, had really missed out by not

taking the dirt road, that runs from Porvenir to Rio Grande, this road takes you through the pristine wilderness that is Chilean Tierra del Fuego. It is the size of Wales but only has a population of 7000 - and 5500 of its inhabitants live in Porvenir. You ought to have a 95% certainty of a tail wind for most of this route...if travelling



South West. Travelling North East, we had a head wind of course!

We had calculated that it would take us 5 days, we had food for 5 but, as we were expecting to be able to buy more provisions at Cameron, we decided not to head into and then re-trace again, from Rio Grande. There were no provisions at Cameron and it took us 7 days to battle the wind to Porvenir.

We have frequently heard locals say of their country, that you can experience 4 seasons in one day. (Personally, I don't see how you can have spring and autumn in the same day.)

The weather in Tierra del Fuego really could throw 3 seasons at you in one day. We had long hours of daylight but it was too cold for us to make an early start or continue cycling into the evening, when temperatures were frequently down to 4°C. We experienced bright, strong sunshine with bitter cold winds, whilst being stung by a sudden hail storm from a black cloud 8km away!

We even had one and a half days sweating in shorts and short sleeve tops.

The quality of the wild camping was the best that we have ever experienced. Tierra del Fuego is a tough destination but we are pleased that we took the decision to cycle tour in its beauty, rather than simply bash along some soulless road, at the beginning or the end of an adventure. We crossed the straights of Magellan from Porvenir to Punta Arenas, where we planned to get a bus.

Yet again the busses were booked up for many days in advance and we decided to cycle 3 days back to Rio Gallegos, from where we got a bus the next day to Bariloche via Ruta 3. The 25 hour bus journey saved us approximately 25 days cycling.

We met Fiona's sister, Amanda and her partner Peter in Bariloche and we spent some days with them in Argentina's premier ski resort, before we cycled together for 7 days to Villa Rica in the Chilean lake district.



Some of the idyllic wild camping pitches we found and one pitch that was far from idyllic but we were very pleased to find it nevertheless!

We parted company with Amanda and Peter and Fi and I belted up the Pan Am for a day with a tailwind, then crawled up the Pan Am for a day into a monster headwind, before squelching up the Pan Am for a day in seriously heavy rain. We dried out in luxury in Los Angeles, where we saw the King's Speech, before slowly heading up Paso Pichachen. The heavy rain we'd experienced a few days before on the Pan Am, had fallen as heavy snow in the mountains, which were still covered in black cloud. We were in no rush to catch up with the weather and, I'm pleased to say, that for once we got it right and we arrived on the top of the mountain on the first day of blue sky. We were treated to a campsite in a grassy hollow, in the middle of a volcanic wasteland, from where we witnessed the sun going down behind Vn. Antuco. It was the most spectacular sunset we can ever remember seeing. A few days later we arrived in Chos Malal, where we decided to turn right and follow Ruta 40, which was paved for this section, to Zapala, where we booked our bus. We then cycled east to Neuquén. We stayed for 2 nights in a nice hotel in Neuquén. We obtained some bubble wrap and some thick plastic sheet. We broke down the bikes, wrapped each section and the forks separately in bubble wrap, taped the sections into a bundle, which we covered in the thick plastic and then we caught an overnight bus to Buenos Aires for our flight home.



Once again we have completed a demanding tour, without any mechanical problems whatsoever - which is just as well, considering the extreme remoteness of some of the places we have visited!

It is certainly very windy in Tierra del Fuego and in Southern Patagonia - the Fuegians of course say it is windier there but although we struggled at times, we never experienced the same strength of wind as we had encountered in Torres del Paine and El Calafate on our 2005 trip. On that trip, whenever we saw the grasses flatten, we had to lay the bikes down and sit on the panniers to prevent the bikes being blown up the road. We now think it likely that, contrary to what we were told at the time, the winds in 2005 were exceptional - but, of course, it's equally possible that the winds in 2011 may have been exceptionally light! We will never know!



Before our trip I had equipped Hector and Bertha with the new **Thorn Flat Track bars**, which I designed as the successor to the Comfort bar, for most applications.

These bars were 640mm wide and were designed to be shortened as required - down to 480mm if necessary. They had a comfortable 10 degree bend, immediately after the very short centre swell but, otherwise they were...er...**flat!**

The ideal was that, whilst they didn't look as elegant as the Comfort bars, they didn't have the wasted width, that the elegant bends produce. It was almost like playing a gramophone record (A what Andy?!?) in sales at the time - "no you can't fit bar ends to comfort bars - yes they are 620mm wide but the bends take up so much of the width, that the straight section is only long enough for the shifter and the grips"



2019 UPDATE Flat Track bars are now 580mm wide. We have 680mm eXp bars for heavy touring

I had fitted ski bends covered with grab on, inside of the shifter on the Flat Track bars and I was very hopeful that this would provide us with the necessary leverage on really rough sections of Ripio, whilst allowing us to get more aerodynamic, when riding into the howling wind. In the real world, the bar ends were insufficiently wide apart to allow adequate control in the strong and gusty winds. Within a week, I had swapped both bikes around to have the bar ends in the conventional position - at the ends of the bars! I found that initially my upper arms ached from using bar ends so wide apart but, within a couple of weeks, I was comfortable. When I got home, I noticed more muscle in my upper arms. Whilst 640mm wide bars and bar ends are unnecessarily wide for European cycling on sealed roads, I would hate to ride with big loads, in high winds on broken and or loose surfaces with anything narrower! I have found that 590mm wide flat track bars with ski bends suit me well for general cycling and for fast road work, our 515mm wide Thorn Narrow bars with bar ends work well for me.

Talking of fast road work, I had been riding a pre-production sample of our new bike, which we launched this summer - the **700c THORN MERCURY**. I had designed a new Reynolds 853 tube set for these bikes (**still current in 2019!**) which features, never previously used tube diameters the top tube and seat tube are 30.2mm (An inch and three sixteenths) The tubeset also consists of a conical down tube, cranked chainstays and ovalised seat stays.

I designed a new mini eccentric BB and I designed the Mercury to run with either deep drop caliper brakes or with disc brakes. There was a choice of 6 different front forks - the appropriate choice of which focused the Mercury precisely for the owner's intended application.



The Mercury was designed as a sports bike or sports touring bike - it can also be built into a very special bike for lightweight camping on reasonably good sealed roads. The Mercury features several things that, although desirable on a sports bike, I would hate to see on an expedition touring bike - mini eccentric, disc brakes and lightweight tube set!



Fiona getting her breath back after cresting yet another long steep climb, into a raging headwind on

Ruta 40. Her FLAT TRACK bars have been left full width and have been fitted with ski bends.

Thorn Mercury
Size 580L
Colour: White Team



The Mercury was available (Aug 2013) in 6 different frame finishes and 8 different sizes, that's 4 sizes, each with long or short top tube options. (2019 the Mercury Mk3 is available in 10 sizes and 4 finishes)

I rode the very hilly 200km Dorset Coast Audax on the Mercury and I was delighted with it. It has the almost magical qualities of being exceptionally comfortable and yet being very stiff at the same time. Only top quality steel can provide these two, seemingly disparate qualities in the same frame. The Mercury rewards extra effort immediately, which in turn, encourages extra effort!

Thorn Nomad
 (shown with a
 suss fork)
Size 560M



2011 was a strange year for me; one of my coronary arteries blocked completely in May and I had to have 3 stents fitted into it. Unbeknown to me, I had a pre-existing restriction, which must have been getting progressively worse - I did think that the Andes were slightly tougher than usual on our last trip - but I simply put this down to aging!

This condition really made its presence felt on the third tough climb of the afternoon, on a Quantock hills MTB ride, when the passage through the restriction must have suddenly blocked - I found it difficult to continue to cycle up the hill, due to my arms losing their strength and I found it difficult to breathe. Luckily, being so active, had apparently encouraged a co-lateral blood supply to develop, to feed the heart muscle, at the other side of the restriction and consequently I suffered no damage to heart muscle or valves. Indeed, it took several days to realise that something more serious than a trapped nerve was causing the weird feelings in my arms and the tightness in my chest - which were making cycling difficult and unpleasant. I walked in for my treadmill test and was kept in hospital and operated on the next day. Our NHS is at its most wonderful when it comes to acute care!

The operation has been a great success and, as I am fortunate to have very low blood pressure and a slow resting heart rate, I'm spared from having to take some of the drugs often prescribed to cardiac patients - this makes it easier for me to take exercise.

We concentrated on lightweight touring on our Mercuries for the rest of 2011 and we had as super time in Mid Wales, using our big tent as base camp.

Fiona and I made plans to head off, in mid January, to the Philippines. We planned to travel light on an island-hopping cycle tour. Our intention was to stay in cheap hotels and to take things as easily as I found necessary. I hoped that I proved to be fitter than I'd been for years - but I was prepared to accept that I may have needed to rest, between hard days of cycling. The medication, which was necessary for 12 months after angioplasty, to prevent clots, caused me to bruise very easily and, I believed, caused my joints to ache more than usual after strenuous exercise. Whatever - I planned to enjoy the trip - not least because I realised how lucky I was to still be here and I was reminded that we can never know what the future holds - although I did hope it held another trip or two into the high Andes! Que será será. Just before Christmas, I swapped the bits from our Sport Tour bikes into Nomad frames, after I'd converted the hubs to EX box and I looked forward to giving these bikes a thorough test. The mild Christmas weather enabled us to shake the bikes down well before the trip and our initial feelings were that these would be superb bikes for such an adventure.



A size 590M Nomad with a light build, suitable for holidays, rather than expeditions.

April 2012. Our Philippine trip.

Fiona and I had a great time in the Philippines, the people were very friendly and we had no hassle - I should qualify that by saying that we didn't go anywhere near Manila.

We flew into Cebu City, where we stayed for a couple of days and officially extended our visit. We left by ferry and cycled around the islands of Bohol and then Negros, where we managed to get a beach front room. However the next day the 6.9 earthquake struck and we later found that we were within a few km of the epicenter (The one that devastated Christchurch was 6.3). We literally ran for the hills. It was more excitement that we needed but my heart survived the quake and the 900 aftershocks. Fortunately the tsunami never came to much. Tragically there was a landslide that killed over 100 people. Many of the road bridges ahead of us were destroyed, which meant that we had to retrace our route back over the mountains to leave Negros for the island of Panay. The villagers still waved to us and smiled even though their homes had been flattened - we were humbled!



A small concrete road through the mountains.



The concrete runs out.



North West Panay.



We followed this motorcycle and sidecar with its load for several miles before it reached its destination where we took this pic.



Boracay Beach

Panay was our favorite island. The main city Iloilo, has fabulous sea food. We left Iloilo for a 2 night mini tour of the island of Guimaras, which is justifiably famous as the home of the world's sweetest fruit - the delicious Guimaras Yellow Mango. Guimaras is particularly recommended as a cycling destination, it has some great roads and, apparently, some excellent mountain biking.

The coast road in the north west of Panay offers world class cycling.

We stayed at a German run beach resort for a few days and I learned to snorkel and to swim out of my depth for the first time in my life.

We were not sure about visiting the tiny island of Boracay - Lonely Planet warned that it is a very popular destination with Koreans and has (almost) direct flights from Seoul. We needn't have worried, Boracay is paradise, the white sand beach was kept meticulously groomed, the Koreans knew how to really enjoy themselves without being rowdy and we found that Korean cuisine is delicious!

We carried on cycling around Panay and returned to Iloilo where, for the cost of a nice B&B in the UK, we booked a stateroom on a liner for the long voyage to Cagayan de Oro in northern Mindanao. I enjoyed looking at the ocean from our room directly underneath the bridge.

We cycled northwards on coastal roads and we visited another paradise island, Camiguin, where we watched villagers land a shoal of fish from the beach.

Mainland Mindanao felt a little more edgy than the other islands, there seemed to be greater poverty and yet there were also more big German 4X4s, with blacked out windows, than we'd seen before - never a good indicator of social justice. Fiona and I were both happier when we got the ferry to the lush, forested south of the island of Leyte.

We ate well and very healthily in the Philippines - often from roadside stalls. The chickens tasted great, we could see that they were free range and we believe that they were all eating natural food - the eggs were good too!

We had some fantastic fish and some excellent fruit.

We liked the Filipinos. In our opinion, Filipinos, the women in particular, are very hard working. Filipinos are very inventive and the things they make are made properly and made to last - the Jeepneys being a prime example. Used Isuzu diesel engines are purchased from Japan, they are re-built and reconditioned and installed into chassis which are made locally, then coach-built bodies and interiors are mounted to the chassis.

For the most part Filipinos are very careful with their use of resources. Low energy bulbs are used extensively and, outside large cities, motorcycles and sidecars are used for all manner of tasks. The motorcycles used are generally 125cc and the greatest number of people we saw on a motorbike and sidecar was 11 (Yes eleven!). We cycled at around 16mph and the motorcycles and sidecars traveled at around 21mph. There were loads of cyclists and even pedal cycles and sidecars plying their trade.

Not all was rosy however, the birthrate appeared to be too high to be sustainable - there were swarms of beautifully behaved and very beautiful children in every village. We visited a local school and there was 1 laptop to share between 400 pupils. Even the rich West would struggle to educate such a high percentage of children to an advanced level.

Apparently there is also a lot of corruption but then, where in the world is this not so?

The trip was a great success, we managed to visit 9 different islands and the only forms of transport we used were our bikes and ferries. I managed to swim 500m without putting a foot down - previously a width would have been my limit! The cycling around the coast of most islands was not particularly difficult - except for the very high temperatures, often high 30's or low 40's and near 100% humidity. Travelling at 16mph, we had a 16mph breeze and we were fine - but when we stopped, we became soaked in minutes. The centers of all the islands we cycled were very mountainous, with some very steep climbs. Towards the end of our holiday, we cycled the route from the east of Cebu over several folds of mountains, to the west, This was one of the hardest day's cycling I've ever experienced.

The Nomads were superb, they were quick and very comfortable, the hubs never missed a beat and all I needed to do was to adjust the eccentrics at 2000km



A NEW RAVEN
set up for heavy
touring.



Back at work 2012,

I was very busy bringing the **NEW RAVEN** to market. This bike replaced both the Raven Tour and the Raven Sport Tour and was a sportier Raven Tour or a more touring RST, depending upon how you look at it.

I also updated our (derailleur geared) **Sherpa** and the Mk3 version became available.

The **NEW RAVEN** was made in exactly the same frame sizes as our derailleur Sherpa, although they each had very specific frames. I hoped that this would make sizing easier.

The **NEW RAVEN** and **Sherpa** each shared the choice of two different forks. These were either:-

(1) A Reynolds Cro-Mo fork, with all the braze-ons, including lo-loader bosses.

Or (2) A Reynolds 853c fork, with lightweight "c" (competition weight) blades and a lightweight 853 steerer, these had mudguard bosses etc. but offered no facility for lo-loaders. This gave the 853c fork a clean look and made certain that the lightweight blades didn't get overloaded.

I'd also developed and tested new, lightweight 700c steel forks. I used **Reynolds 853c blades** with a cast fork crown and **Reynolds 853 steerer**.

I had 2 different versions of these 700c forks made, neither of these forks had lo-loader bosses but both versions had, as you'd expect, stainless bosses for the direct fitting of mudguards.

There was a V brake 700c fork, which took tyres up to 37c with mudguards.

There was also a deep drop calliper brake version which took 28c tyres with mudguards. These forks also took some 32c tyres - Schwalbe Marathon Supreme for example - with close but sufficient clearance - but it was necessary to deflate the front tyre a little to remove the wheel with these 32c tyres.

I can categorically state that these were the most comfortable forks that I've ever used on the road.

We had both these forks available, in many different colours and 2 different offsets, to suit our Mercury frames. The Deep drop calliper brake version was also a superb option on our derailleur geared Thorn Audax bike.

2019 update. The 700c 853 V brake fork is still the absolute state of the art and IMO the pinnacle of perfection. The latest version will take 700 x 40c tyres with mudguards or 650b x 50mm tyres and mudguards!

It is available in 4 colours and in 3 different offsets. It suits our Mercury Mk3 and Club Tour Mk5 bikes, when a fast touring spec is requested.



Here's a really nice bike for European Touring - it's a Mercury running 35c tyres, with a cable disc on the back and a V brake on the fork. It will stop in freak mountain weather, whilst giving ride quality and confidence only obtainable from a steel fork.



2013 Mid Jan to the end of March. The Carretera Austral re-visited.

Fi and I visited South America, for probably the last time. Our original plan was to ride some of the lower passes - south of Santiago. If all went well, we'd progress to ride the 4755m Paso Agua Negra again but from East to West this time.

Jan/Feb 2013 turned out to be unseasonably hot in Chile and we soon realized that we were not in good enough shape to cope with a steep 2580m pass, with heavy loads in this heat - well, not straight away. So we quickly decided to ride a big 7 day loop, to get acclimatized, before we tackled the passes. We knew, from our 2009 trip, that the roads on this loop would still be tough - and they were! We arrived back at Curico, feeling much fitter and almost used to the heat. We stocked up with 12 days' worth of supplies and headed off to Paso del Planchon. As we headed East on one particularly grueling day, we'd had to share the road with literally hundreds of large trucks going to and from a mine. The drivers were friendly and showed us huge respect but there were often dense clouds of dust. On the fourth day, we'd climbed to 1600m, where we reached the Chilean border guards - they informed us that the pass had been closed, due to a rock fall. We turned around and descended to a nice hotel, where we contemplated our options.

As I said, it was very hot, it would be even hotter up North and we didn't want to climb the Agua Negra in such conditions, especially without having sufficient mountain miles in our legs. We decided instead to go South and ride the Carretera Austral again.

We rode to Talca, where we had to wait 2 days for tickets to catch a bus to Puerto Montt; which is 1000km South. This would save us at least 7 days of riding the relatively uninspiring Pan Am Highway - time which would be better spent in awesome Patagonia! Whilst in Talca, we also purchased bus tickets to return from Puerto Montt to Santiago, at the end of our trip - on the day we wanted! We'd ridden the Carretera South to North in 2005, when very few cyclists had ridden it. We knew that it was now a very popular route.

The 2005 trip had been very special for us - and we'd been so lucky with the weather, that we'd previously thought that we wouldn't want to risk souring our memories.

We remembered the 1200km long Carretera as being tough going and being especially hard on bikes. It was and still is, mostly ripio (dirt roads with very rough and loose surfaces) apart from 100km either side of the town of Coyhaiqui, where there'd been tarmac. In 2005 the Carretera was dotted with small communities, which were about 20-30km apart, with peoples' front rooms being used as mini shops. There were almost no camp sites back then, people would laugh if we asked about hot water but it had the best wild camping opportunities anywhere we've ever been - apart from those we've found on the passes over the Andes.

On our first day out of Puerto Montt, we met a young French couple, they were scorched and dusty having had sunshine, with just 1 day of rain, since they set off from El Calafate 5 weeks previously.

We had hot sunny, dusty days, until the day after we'd taken the boat over to Puerto Gonzalo, which lies at the north of Parc Pumalin. On the same boat were 7 other cyclists - all of them Chileans - 6 university students, 2 of whom were making a road trip with their father. We also had the first of several meetings with a young Canadian couple. Parc Pumalin is beautiful, set in dense temperate rain forest, with excellent facilities, we dawdled our way through it, going on short walks and we spent the evenings in very pleasant company. Then the glorious weather broke and we had low grey cloud and very heavy rain for a few days. We stayed for 3 days, under the shelter of a fogon at one of the camp sites, watching Vulcan Chaiten appear and disappear into the clouds.

Vn. Chaiten had awoken from a long sleep and erupted violently in May 2008, decimating a huge swathe of the National Park.

Eventually, we had a break in the weather and we pushed on towards the port of Chaiten itself, unfortunately it poured again en route, we arrived in a very busy Chaiten absolutely soaked. We grabbed the only accommodation we could find and dried our things out.

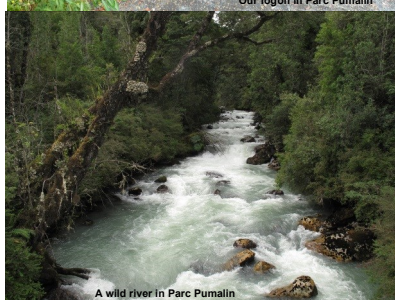
Some tarmac had been laid on the road



Quarry Trucks.



Our fogon in Parc Pumalin



A wild river in Parc Pumalin



Soft Ripio with dense vegetation.



Road improvements on the Carretera



Aftermath of Vn. Chaiten's eruption in Parc Pumalin



Wild (and wet) camping by Rio Futaleufu

south, in the intervening years and, the next day we made the most of this wide 50km stretch. Soon we were slogging along on ripio again and, at the foot of a tough climb, before yet more road works, we camped wild beside the magnificent Rio Yelcho.

Whilst smooth blacktop may sound preferable to ride on, the reality is that wide verges are cut on each side of the road and the magical experience of riding so close to the dense vegetation is lost.

We spent several more weeks on these rough roads, which wound over steeply pitched climbs. We camped wild beside the turquoise waters of the mighty Rio Futaleufu. We rode narrow roads winding between dense walls of Fuchsia and watched humming birds sip nectar. Occasionally we stayed at one of the many small camp sites, which are now commonplace alongside the Carretera, where we enjoyed a hot shower.

We met many groups of cyclists coming the other way, with whom we frequently shared information regarding shops, camp sites, hills, distances and road surfaces. We remember a Kiwi girl and her English partner who were riding from Ushuaia to Fairbanks. This was her first time on a cycling holiday - what a trip to pick! She was suffering from various aches and pains due to lack of preparation and a poorly fitting bike. We also got to hear about some of the other characters, who were riding in the same direction as us, who we were yet to meet. We even got to hear about people we would soon meet who were coming towards us - English Dave turned up on cue on his Thorn. I believe that our reputation, as the people from Thorn, who had a seemingly everlasting bottle of Whisky, also travelled in both directions. With there being the possibility of so many interesting side trips, it was easy to catch up with younger and faster riders. We eventually met up with American Dave and Argentine Chris and many others. We enjoyed other cyclists' company on many evenings. This was so unlike any of our previous trips! When we reached the halfway point - Coyhaiqui, we stayed for 3 days at a camp site, where there were 10 other cyclists - we went out for meals and cocktails and talked like old friends.

One of these Guys was Willy, from Germany, who had cycled all the way from Columbia sticking to the Pan Am, on an Aluminium bike with 700 x 32c tyres. He thought that Hector and Bertha were nice but overbuilt and that their tyres were too fat and too heavy - he'd had no trouble at all. Canadian Dave was out joining his partner Ellen, for a month, on her round the world cycle tour - you certainly picked the best part Dave! We met up with Natasha and Ton, from the Netherlands - for the third time!

Fi and I had no clearly defined plan, we were just heading for Villa O'Higgins - at the end of the Carretera and, when we got there, we planned to see how much time we had left, before deciding how we were going to get to Puerto Montt to get our bus back to Santiago.

There were ominous clouds in the sky, when we departed South from Coyhaiqui, on the smooth tarmac, we were up on some bleak, high, rolling pasture, when the storm hit us. It was really cold! We battled on, in full waterproofs, into the storm; eventually we descended to La Blanco, where we saw a small hotel. It looked very inviting, all the more so, when a tall American couple appeared at the door - in cycling kit!

The next day, in cool but dry weather, we crested the 1150m climb and descended to Cerro Castillo, where the tarmac ran out.

The next sections of ripio were very poor, cyclists warned us about the soft surfaces on either side of the crown. We stayed at a campsite at Puerto Tranquillo, on Lago General Carrera, where a young cyclist, on her Thorn RST, announced that we must be the Thorn people.

Whilst we shared a dram or two of White Horse, we heard that Annie was a teacher from Glasgow, on a 12 month career break and that she had crossed to the Americas as crew on a tall ship.

Annie, thought she'd seen Mark Beaumont on this small site - Fi and I exchanged slightly raised eyebrows but Annie was right! Mark was here with 2 others on an attempt to climb the 4000m lump of ice that is Co. San Valentin.

Mark was the only person who didn't talk to us on the campsite - he had a job to do - we later found out that they had to abandon the climb due to terrible weather.

The road got even tougher and we eventually arrived at a very smart town. Cochran had been a scruffy little place in 2005 but it was a little jewel now! We stayed at a small hospedaje, with a lovely lady who owned a washing machine that we could use! We decided to treat ourselves and as we walked into the restaurant, we spotted Natasha and Ton, so we joined them.

Fi and I thought that we had just enough time to make the boat crossing from Villa O'Higgins to Candelario Mancilla, ride through the Fitz Roy region of Argentina, through El Chalten and onto Puerto Natales in Chile - where we could get the very expensive Navimag ship and return directly to Puerto Montt, just in time for our bus. We told Natasha and Ton that we may see them yet again on this trip!

We also met Willy again - he was stuck in Cochran, waiting for a bus back to Coyhaiqui - 1000km of ripio had destroyed his bike; both carriers were broken, both wheels needed re-building and his transmission was shot. It had all been new in Columbia and had been no problem at all on the black top. When he asked me, I did have to admit to having to wipe my chain clean and apply lube twice and even to having to adjust the chain tension once!

In the end, Fi and I decided that the timings were too close to risk crossing Lago O' Higgins and we also learned of a new pass, which would take us over the Andes to join Ruta Cuarenta (RN 40) at Bajo Caracoles - we could ride through Perito Moreno and on to Bariloche all on the infamous Ruta 40. We even convinced ourselves that the raging winds, which we'd battled through in 2005 on Ruta 40 must have been abnormal and that the locals were just teasing us when they told us it was very normal to have winds this strong and, anyway that was 800km further south! The weather, where we were, was settled - very hot and dry; the winds were light - what could possibly go wrong?

Paso Roballo was an absolute delight! It was billed as "the Chilean Serengeti" which was an exaggeration but we saw plenty of wildlife and the newly created National Park was being stripped of thousands of miles of barbed wire. Just as we reached Argentine customs, the first heavy rain hit us and the wind got up. The wind seemed to turn with us as we looped Northwards towards Ruta 40. The wide open spaces of Argentine Patagonia are magnificent but make for excruciatingly difficult cycling - if there's a headwind. Then it started really raining! We were lucky to find the owner of a tourist estancia, who showed us to the shearers' hut to shelter the night in - it was too windy to put even our Hilleberg up!

After 2 days of these winds, we decided we couldn't possibly reach Bariloche in time and so we contemplated a new plan. If we headed west, from the oasis that is Perito Moreno, to Chile Chico, we could cross Lago General Carrera, the second largest lake in South America, by boat to Puerto Ibanez. We could re-cross the Paso Cerro Castillo and head North. In Coyhaiqui, we should be able to get tickets for a boat from Puerto Chacabuco, to the Island of Chiloe - the second largest island in South America. We could ride the length of Chiloe and cross back to the mainland, where we'd be a day's ride from Puerto Montt.

We adopted the new plan and took the road due west from Perito Morino. Once we'd left the shelter of the tall poplars, we discovered that the wind had turned 45°, to oppose us and what a wind this was! On one descent, which is steep enough to be marked as a hazard for cars, the wind, funneled by 2 small peaks saw me pushing as hard as I possibly could on the pedals to reach 5.6mph! When the driver of the flat bed truck, carrying bags of concrete, stopped and offered us a lift to Los Antiguos, there was no discussion between Fi and I! It was a relatively easy crossing from Los Antiguos to Chile Chico and our latest plan was working out well.

By now Autumn had arrived and it was bitterly cold at night, especially at 1100m, when we camped at the Ranger's campsite. We got caught in a violent hailstorm on the descent and we waited it out in a bus shelter. An hour later we saw a young Chilean cyclist heading for Puerto Natales on her own - she was as beautiful as any model, cycling fit and well kitted out - we hope that we managed not to sound negative, about what her route held in store.

When we reached Coyhaiqui we stayed at the same site we had camped at 3 week's previously but there were no other cyclists there now. The boat trip to Chiloe lasted 36 hours and was an entertaining ordeal.

We liked Chiloe - there are no high mountains but on several days we increased this trip's records for meters climbed per kilometer! We weren't surprised, we always say that



Confluence on the Rio Baker



Banks of Lago General Carrera



Leaving Cerro Castillo behind.



Leaving Chile towards Paso Roballo



In Argentina, heading towards RN40



Pink Rock on RN40



RN40 100km South of Perito Moreno - can you sense the wind?



Heading towards Cerro Castillo again!



A side trip on Chiloe.

relentless hills are much tougher than big mountains. Much of Chiloe is still wilderness - the West is almost all National Park; the truly adventurous traveler could have a great time there. It was just out of season now, prices had dropped and we spent the rest of this trip in Cabanas, with wood burning stoves - cosy! One day we picked enough blackberries to make a crumble and I made a pot of jam, to share with friends we'd met in Patagonia in 2005 - David and Christine, when they visited us, the weekend after we got back.

We saw just 2 more cyclists, as we pushed towards Puerto Montt - we think they had small Union Jacks on their bags but they disappeared quickly down a hill and that was that - we'll never know. We didn't envy them, going South at this time of year (Mid March).

I can't recommend the Carretera Austral highly enough as a cycling destination. Basic provisions; pasta, rice, oats, lentils, bread, crackers, cheese, potatoes, onions, garlic, tomatoes, avocados, instant coffee, dried milk, olive oil, wine, beer and White Horse (!) are all easily available. You'll also find various bottled and canned items, tea bags are also available but they're horrible - we take our own! Camping is also easy but you cross into Argentina and Ruta Cuarenta, at your peril! IMO, December, January and February are the months to go! We met several cyclists who'd started the Carretera on their own they all told us that they could have ridden with other cyclists every day, if they'd wished! We wished that we'd made more side trips - Laguna San Rafael looks very special!

We made the most of our 2 days in Santiago. We went shopping and dining. Mario, a young lawyer we'd met in Parc Pumalin, arranged a personal visit for us to La Moneda - whilst the President was in residence! We didn't even have to go through a metal detector! Try that at No.10!

The Chilean government have sold Chile's rivers to foreign interests. Go to Patagonia soon, whilst it's still almost pristine, go whilst there are still wild rivers - without dams! Go before pylons cover the mountains; go whilst there's still ripio!



This huge poster certainly caught my attention!

Back in Blighty - April 2013.

Fiona and I arrived home just in time for Easter. We were both fitter than we'd been for years. Although we'd not climbed any big mountains, the steep gradients and tough surfaces of the Careterra demand that you're tough and fit, although, if like us you're simply very determined - they will eventually make you tough and fit!

We slotted back into Audax rides and we took our Thorn Team Mercuries round the Dorset coast 200, on a bitterly cold day. We rode several more 200km events.

We rode Graham Brodie's Devon Dirt on our Thorn Sterling MTBs - they were as reliable and easy to ride as ever.

I swapped Fiona's components from her other Mercury onto one of the **new Gunmetal frames**, along with the superb MERVC 853c forks and top quality 35c tyres. **(2019 it still looks a treat, as you can see)** I have a red one, with identical spec, which I was lucky enough to get painted especially for me in Taiwan. **(Feb 2019 red has been a colour option on a Mercury for many years now)** These bikes are superb, comfortable, sure footed, engaging to ride and certainly quick enough for long distance cycling.

The spec for these bikes could be called "Mercury LeJog spec". They will carry sufficient kit and tools for a 3 week B&B or hostel tour, with the minimum of civvy clothes, in small panniers and a saddle bag at the back. They are, in my opinion, also ideal for ultra hilly Audax rides on poorly surfaced roads in the worst of weather - or of course - riding to work! **(2019 UPDATE - we have since taken these bikes on 5 x 4 week holidays - 4 to Thailand and 1 to Cuba)**

With a Mercury in such a spec and my expedition bike, Hector, I feel that I have the perfect bike for any touring, anywhere on the planet.

Fiona decided that 200km was now as far as she ever wanted to plan to ride in a day and that became her new personal limit.

I entered the Audax National 400 on my Red Mercury. I was interested to see if I could still ride 250 miles in 24 hours one last time, I felt fit enough and had the motivation but I was concerned that I might have difficulty navigating at night.

The route sheet didn't arrive until the Monday before the Saturday of the event - too late to survey the route. 150 miles into the event and the route sheet was a shambles! There were lines missing from the instructions and without a GPS it was impossible for me to navigate. I got lost completely at night in dense fog, somewhere in the steep twisty lanes around Badminton. I racked up many extra miles, riding in ever increasing circles, trying to find something which matched the route sheet. Once I realised I was going to be out of time, my motivation disappeared and exhaustion took its place. I rang Fiona and she said she'd rescue me and asked me to send her a glympse, so that she could track me, whilst I cycled on, to keep warm. (A great App!) . I tried to take comfort from the fact that I'd covered 220 miles in 21 hours but I still felt I'd failed. I wish that this was the low point of 2013 for me but sadly this was not to be.

Tragedy struck, on 26 June. Nick, my younger and only brother was killed on his motorcycle, whilst apparently riding carefully and within the speed limit. This knocked me sideways, as well as taking up all my time. I took a while to get back into cycling again.

Fiona's Other Mercury



In September

2013 we took the big tent and my van down to the French Alps. We rode many cols, including the Alpe d'Huez, we carried on through the town and descended the newly



surfaced Col de Sarenne. We also rode the spectacular balcony routes before heading South to Barcelonnette, in the Haute Provence region, where we established a new base camp. We rode the Col d'Allos and the Col De La Cayolle, before heading to Nice.



Jan 2014

Fiona and I decided to take our Mercuries to Northern Thailand. We landed in Chiang Mai, where we were lucky enough to meet an ex-pat American motorcyclist who gave us a map of the Mai Hong Son loop. We travelled light, staying in inexpensive hotels. We loved the peaceful, friendly charm of Northern Thailand and the quiet, scenic roads through the mountains. The hills were fearsome in places and we thought that the climb from Mae Chaem to Doi Inthanon would never end - honestly, it's tougher than any climb that we've encountered in the Alps! There are ample opportunities to find predominantly flat routes in Northern Thailand - but we like the hills.



Here's our new favourite bar set up for fast touring:- Ergon GP5L grips, with integral but independently adjustable, bar ends - mounted on Thorn Flat Track bars, which have been cut to 530mm. Who'd want drops?

In **September 2014**, we planned to go to the Italian Alps and Dolomites. On the ferry over to France we contacted friends who were there on a walking holiday, they told us that the weather was bad, with no prospect of it improving. We changed our plans and headed for the Pyrenees instead!

We found a perfect camp site to pitch our base camp tent and we went for a succession of long day rides. We climbed the Tourmalet and the Aubisque, as well as many other less famous climbs. En route back to Blighty, we spent a few days in the Massif Central - which we loved. We enjoyed excellent cycling and had exceptional weather every day, poor David and Christine **did** have heavy rain every day in Italy.

We find that too much planning is very often counterproductive. We like to "go with the flow" and make it up as we go along.



Jan 2015 our winter holiday was delayed waiting for the "Causing death by careless driving" case against the tractor driver who killed my brother to be put before a jury. The NFU paid for a brilliant barrister - the CPS didn't. Almost by sleight of hand, the barrister managed to secure a not guilty verdict, when the police had originally contemplated "Manslaughter" or "Causing death by dangerous driving". How do they sleep at night? Lessons to be learned by us cyclists. A not guilty result poured water on the plan that I had to campaign against tractors being used as tax exempt haulage vehicles on our roads.

I was shaken but was determined to put it behind me and in **Feb 2015** Fiona and I headed once more to Chiang Mai, in Northern Thailand. This time we rode the Golden Triangle route. In the early 70's when I was a young man, the Golden Triangle was a no-go area. Thanks to the brilliance of the King and Queen, coffee - good coffee and tea have replaced the opium fields and some (very steep) roads now take the place of drug traffickers' mule routes. The North East of Thailand, where it meets Burma, is very tough cycling - but the scenery is superb. We had a great time!



I used to say that "If you can cycle camp in Cornwall and Exmoor, you can ride anywhere in the world". I held that view for many years. I have to say now that, after riding in Northern Thailand, I no longer hold that opinion. We managed to find 40% gradients! We could have had a very different holiday, if we'd wanted, as there is much flat, easy cycling in between the mountains. (Having been on walking Holidays in Madera in Sept 2015 and Tenerife in 2017, I would imagine that crossing those mountain roads on either island, on a loaded bike would be a serious challenge.)



Thailand was very relaxing place for a cycle tour. There was slow moving traffic, courteous drivers, well appointed accommodation and stunning food.



We had a mini cycle tour in the Faroes in **Mar 2015**, the reason for going was to see the total solar eclipse - which we actually managed to do! It was cold and bleak.

Autumn 2017 we finally received the New Raven Twin Mk3 frames and built up a new fleet of demo bikes. Here is my favorite pic from the photo shoot that I did with Sarah (Thorn sales) and James (a top Thorn mechanic)



[CLICK HERE](#)

This is an 19mb file; it may take a while for it to open, please be patient.

For
**Raven Twin Mk3
S&S Tandem
Brochure**

Below - Fiona on her Mercury pushing hard on a steep section of bridleway in the South Hams Autumn 2017



In Jan/Feb 2016 we took our Mercuries on a tour of Cuba. Cuba has quiet roads with mostly slow moving traffic and the weather was pleasant. Fiona and I both think that we left it too late to visit Cuba. Whilst it always felt very safe, we constantly experienced people treating us as cash cows. In our opinion Cuba, especially Havana, is beyond economic repair. Before Castro's revolution the Cuban economy was based on rum, prostitution, cigars and gambling. Sixty five years on it seemed to be based on rum, prostitution, cigars and gambling. Cuba is a lovely tropical island and very enjoyable from a socio-political point of view but, if viewed as a winter sun cycling destination, it was twice as expensive as Thailand but with significantly lower quality food and accommodation.



Our long term plan has always been to see as much of this planet as we could before the reaper called time. As we can only afford to travel cattle class and could only take long holidays, as opposed to sabbaticals, our plan entailed going to the furthest away places first and gradually reducing the length of the punishing long-haul flights, as we aged, until we were left with Europe - which neither of us really knows well. We thought that we could use a vehicle and a big base camp tent and move from one base to another, whilst thoroughly exploring the area surrounding base camps by bicycle. We've tried out such a plan on various holidays and it worked well for us - apart from when we had to pitch on sodden ground, or pack up a large wet tent! Getting old is horrible - but far better than the alternative! In May 2016, we took possession of our Eriba caravan, which we hope will be a game changer for us.

Sept 2016 - France. We tried a different sort of cycling holiday in September 2016. We loaded the bikes into my Vito, hitched up our Eriba Caravan and headed for Dover en route to the Alps, via Dunkirk. We planned to use predominantly D roads - apart from the free motorways through Belgium. We arrived in France mid afternoon and headed for Belgium. We stopped at Ypres for a couple of nights either side of a very busy day visiting the WW1 sites. The last post at the Menin Gate always sends shivers down my spine, this time there was also a choir and a small military band. There were tears in thousands of eyes, as collectively we contemplated what could have possibly caused the global madness, that had indiscriminately reaped the flower of so many nations' youth, left a generation traumatized and sowed the seeds which made a further global conflict practically unavoidable?

We will remember them.

Our intention was to sample some more of the Alpine cols made famous in the Tour de France. Preferably some that we've not yet ridden. By taking the caravan and my van it was possible for us to take our lightest bikes and tackle the cols as day rides. Using our lightest bikes in the Alps would be a first for us! **The reality** was that, whilst we thought that we might break the journey in the Vosges, we fell in love with the region and we spent many more days than we'd planned riding the green mountains. We found a very small rural site, parked up amongst the trees and established base camp.

Contrary to our original plan, we took our Mercuries, on some of the numerous gravel roads which crisscross this region. These particular Mercuries are built to be as light as possible, whilst still having mudguards and small saddle bags. They have lightweight rims and run on 30c Schwalbe S-One tubeless tyres (since re-named G-One Speed!). They are very much road-going ultra lightweight touring bikes.





On one particularly memorable day, Fiona's navigation took us into a huge forest, where we picked up a very rough and steep gravel service road. Obviously we had to take care on such narrow tyres but we arrived, without incident, on the very roof of the Vosges. All we could see in every direction (and we could see a very long way - thanks to the clear skies) were green mountains and beyond them yet more green mountains! Fiona's clever route planning included a rough and twisty but sealed road back down to the valley - we would have had to go very slowly had we chosen to re-trace our route on such narrow tyres.

Would I choose these tyres for this type of cycling? Clearly not - but, with care, they were fine and suffered no cuts at all.

If we'd had Schwalbe 40c G-One Allround tyres, the Mercuries would've made excellent Gravel bikes.

We've frequently driven past the Vosges on our way down to the Alps and it didn't seem worthwhile visiting France, to climb small mountains, when the giants of the Alps are just a few hours down the road. How wrong we were! The Vosges are quiet and peaceful, in contrast to the bustle of the Alps and they're a joy to cycle in.

Continuing on our way to the Alps, we stopped just beyond the Jura Mountains as I decided that I must try the Grand Colombier - having seen the mayhem that it caused on stage 15 of the 2016 TDF. We found a luxury Dutch run site in Artemarie and established base camp. It was fine, although we prefer fewer frills and more space - but we needed washing machines! We had several half day rides with a couple of visits to small, family run vineyards - which resulted in us returning with the van, I built a small wall of wine boxes in the middle of the Vito. We spent 2 consecutive days crossing Grand Colombier - once from each direction. It was hard work winching ourselves up the steep gradients, even though **we made full use of the very low gears which are possible with a Rohloff hub** - no wonder it caused such chaos on the Tour!

We did eventually get to the high Alps and we took on the Col de la Madelaine from the more difficult Maurienne valley (North) side. The Madelaine is a long, relentless brute of a climb from this direction. The Madelaine is the toughest climb I've encountered (so far) in the Alps - but then I've only ridden the Galibier from the South, I've not yet ridden it (the Galibier) from the North side, which also involves climbing the Col du Télégraphe - I have a strong suspicion that this is a harder climb - probably the toughest climb in the French Alps?

Of course I realise that categorizing climbs is subjective and when you have a bad day, it makes every climb seem tougher. On the big Alpine climbs there are frequently large groups of touring motorcyclists, generally riding BMWs and I have always found them to be courteous and safe. Perhaps we were unlucky with our timing, but this time, there were more noisy, high powered sports motorcycles being ridden furiously than we'd previously encountered in the Alps. With this in mind and because our holiday was coming to an end, instead of tackling another Alpine Giant and driving back to Blighty in a single day, we decided to head back slowly via the Jura and Vosges and spend a few days cycling in less dramatic but more peaceful terrain - which is exactly what we



did.

Jan 2017 We flew to Bangkok, with Thai Airlines and we took a connecting flight to Krabi. After a couple of days to acclimatize, we embarked on a circular tour of Southern Thailand. We took an interesting, meandering route through rubber and palm oil plantations, where despite the proximity of large tourist destinations, we met an elderly woman who had never seen a white person before! We carried on to the Gulf of Thailand, where, after a bit of searching, we managed to find nice accommodation for a couple of nights right next to a practically deserted beach. It's there if you look for it - and it's easier to look for it on a bicycle! Fiona enjoyed the warm sea and continued to improve her

stroke. As has always been the case in Thailand, we still managed to find excellent food. From there we cycled to get the ferry to the busy tourist island

of Koh Samui, where I had a few days' fishing booked at a small freshwater fishing resort. I almost had my arms pulled off by Mekong Catfish, Amazon Red tails, Alligator Gar, Siamese Carp, Pacu (vegetarian piranha) and air-breathing Arapaima.

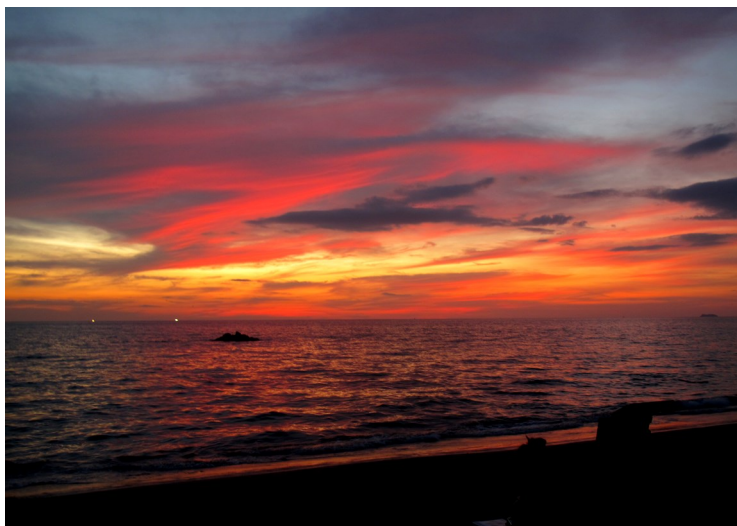
We carried on with our cycling holiday through Surat Thani and looped back towards the West

Coast, via the hills of Khao Sok National Park. We spent a couple of days in more upmarket accommodation and took a trip on the huge and very deep man made Cheow Lan lake. We learned that there used to be 6 species of monkey living in the rainforest before it was flooded - now there is only 1. Not all monkeys can

swim. The 5 species that could swim all drowned - the myriad of Islands, which were once hilltops had apparently often looked closer than they were.

The 1 species that couldn't swim survived because they stayed put.

There must be a lesson in that!

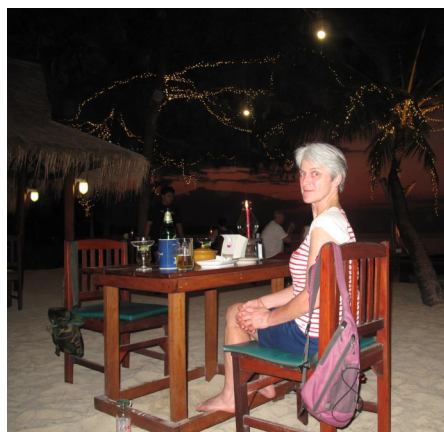


We cycled down the West Coast past the former devastation caused by the Boxing Day 2004 Tsunami. We saw the famous police boat 813, which ended up several miles inland and has now become a

monument to mark the tragedy.

Fiona had been here 30 years ago and was sad to see that the small beach resorts, which she had enjoyed had not reopened, in their place are massive fortress-like, tsunami-proof tourist resorts - not our thing! There were too many ghosts and so we headed inland and then cycled 100km south of Krabi, where we found an idyllic beach resort and perfectly adequate inexpensive accommodation, again, right on the beach. We enjoyed spectacular sunsets and Fiona had more opportunity to improve her open water swimming. We caught a fast boat back to Krabi and then returned to the

greyness that is so often Blighty in late Feb.



We had thoroughly enjoyed our time in Southern Thailand. It was more humid than the north and we had the occasional heavy shower. It's still very safe and peaceful and the national parks are indeed lush but it's not quite as laid back as the north.

We prefer to cycle through natural vegetation or, failing that, through orchards, paddy fields, tea gardens or coffee plantations than mile after mile of palm oil or rubber.

I'm not saying that we won't visit Southern Thailand again, because we hope that one day we can ride from Singapore, through Malaysia, Thailand, Cambodia, Vietnam and



Laos and fly back from Bangkok.

Summer and Autumn 2017. We had several short breaks on conventional bikes during this time. Unfortunately, I started to develop problems with my Achilles tendon, which as the result of an injury, had decided to give itself a blood supply. A blood supply brings nerves. After a long period of waiting, I had a surgical intervention in November 2017.

In Feb 2018, for a change and also to strengthen my Achilles tendon, we went on a walking holiday in Tenerife. By a stroke of luck, we managed to be there whilst the UK was experiencing the "Beast from the East". I did assess Tenerife as a potential cycle touring destination. The small roads were relentlessly and savagely hilly, the more main routes appeared better graded though still challenging and a bit too busy for our liking. We thought that it looked like a fabulous destination for seriously fit roadies, to get even fitter on their road racing bikes. We considered that these roads were so inherently dangerous, that they may in fact be fairly safe to cycle. Certainly the numerous drivers of hire cars were being very cautious - it's interesting to observe that the risk of serious personal injury, leads to potentially safer driving!

Most of the rest of 2018 was spent either walking, finishing off our garage project or evaluating e-Bikes see page 28 onwards.

Unfortunately my Achilles had started to re-develop a blood supply and a further surgical intervention was necessary.

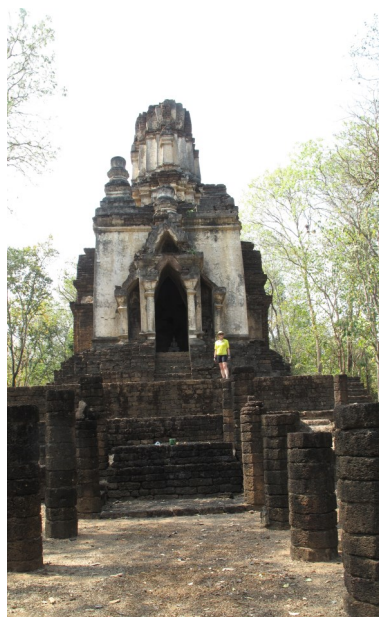
In Jan 2019 I got our Mercuries ready for another 4 week trip to

Thailand. We had a direct flight from LHR, with Thai Airways to Chiang Mai, via a transfer in Bangkok. Southern Thailand had experienced flooding but it was dry and exceptionally hot in Chiang Mai. It had been 4 years since we were last in Chiang Mai, in that time, the city itself

had become very congested with traffic at peak times and consequently the air quality was poor. As a concession to my lack of time on a conventional bike, Fiona agreed to my insistence on having as easy as possible a start to our tour. After a few days acclimatising to the heat, we headed south on small, quiet, flat roads to Lamphun, where we spent the afternoon in the amazing Wat complex. This Wat is apparently one of Thailand's top 5 Wats.

We continued to head south to Lampang, this necessitated a short ride on what would be the hard shoulder of a busy trunk route in the UK but in Thailand the lane was devoted to cycles and scooters. It was a bit noisy but there was never a hint of danger. There were a couple of long drags on this route but really it could be categorized as being flat.





We took much smaller roads out of Lampang and headed to the World heritage site of Si Satchanalai via a loop west to Phrae, then south again, through almost endless orange groves and then into bright green paddy fields stretching to the distant mountains. We only had one reasonably steep climb en route.

Si Satchanalai was spectacular in its ruined state - we can only



imagine what it must've been like in its heyday.

We continued south, through more paddy fields to another world heritage site at Sukothai, where we spent 2 nights. This was touristville central but we enjoyed it nevertheless. Both ancient cities were vast and bicycles were the recommended method of visiting the dozens of Wats on each site and there were several bike hire establishments. We clearly had better bikes than anybody else! We were now approaching something that could be called fitness and we both felt that we had experienced as much culture as we could absorb - it was time to head for the hills.

We still had one "easy" day left to cycle to Tak, by now it was 37°C in the shade - the trouble being that there was no shade on the highway - I recorded temperature of 42°C that day - tough going but at least we were making our own 22km/h breeze!

From Tak we headed over the mountains to Mae Sot. It was another blisteringly hot day, we had to slog ever upwards on a very busy road with diesel fumes catching our throats and there was no breeze at 5km/h! After several hours on the big climb, we hoped for a descent to cool down. We did descend but in a series of climbs through road works and then we climbed in a series of descents, through yet more road works. I was practically done for, I would've been happy to find somewhere en route to spend the night but, as expected, there was nothing that we could find. If the last 15km had continued in the same manner, I would've been in trouble - fortunately we had a long descent into the outskirts of Mae Sot and a very pleasant little hotel. There followed a couple of moderately hard days riding next to the Burma border. This was a region populated by the Karen hill tribe. Thai was most definitely an optional second language. We are not linguists, we know very little Thai but even we could tell that this was a completely different language. We cycled past a huge refugee camp at the side of the road, for at least 10km, it had 40,000 permanent residents and, apparently 1000's of Burmese Karens, who sent their children there to be educated!

The population of this region were not necessarily Thai, many were clearly poor but they retained the smile that always greeted us wherever we went. You'd also smile if you saw the state we were in!



We knew that we had one really big day left. There appeared to be little chance of accommodation between Tha Song Yang and Mae Sariang and we suspected that there would be a few hills in the way. We got the earliest start that we could, after ensuring that we'd had a good breakfast - it was almost cold as we set off on a gently rolling road through stunning national park jungle. We reached a section of wide, steep climb with a brand new, smooth black and sticky tarmac surface. Just as we thought that we had reached the summit, the road kicked up again. The midday sun was scorching us and sunscreen was trickling into our eyes. There were descents followed by yet more tough climbs. I wished that I had geared our bikes down, I needed one lower gear we were both running 41/19 and we were carrying <14kg each but I was tired and the gradients were fierce. Eventually we reached a police check point, that had a sign saying it also provided tourist information. The young officer only knew slightly more English than we knew Thai but he could see that we were very tired. After asking if we had a tent and sleeping bags (we had neither) he offered us a hammock under a teak hut on stilts - we didn't fancy the idea, we knew that it would be very cold at 1000m in the early hours. There was no food available in this village. I thought that if I took it as steady as possible I could burn enough fat to be able to continue to cycle through the night. - we had excellent lights after all. We carried on slowly up several more steep hills and an hour passed, the light was fading when a small motorcycle pulled alongside. It was the young officer. He made a signal that we should

carry on for 4km, which turned out to be a long descent. He was waiting for us as we entered a large village and he had arranged for us to sleep on the floor of offices at the local hospital. We were provided with mattresses and blankets. We had our own en suite, squat toilet with cold shower! One of the young clinicians brought us a cyclist-sized portion of delicious chicken fried rice. We didn't use the self-erecting mosquito net that had been left for us, thinking that at 600+m there wouldn't be any at night - big mistake!

In the morning, after a hearty breakfast and making a donation to the hospital, we headed off on a long, long descent to join a more major route to Mae Sariang, where we'd promised ourselves a rest day. We stayed at the best hotel in town (£30 a night inc buffet breakfast for the 2 of us) and made the most of the luxury. We ended up staying 3 nights. Fiona swam in the pool, I did some aqua aerobics. We hatched a new plan. It was clear that if we headed to Mae Hong Son, we would have to push hard to complete another hilly loop and still arrive back in Chiang Mai in time to get our flight. Instead we headed for Chom Thong, from where we would be able to find some easy flat riding and enter Chiang Mai feeling like we'd had a holiday, rather than having survived an ordeal.

We expected a reasonably easy undulating ride to Chom Thong. After a few km of climbing we'd reached 500m. The road must start to descend soon, surely? By the time we'd reached the third col at 1300m+ we were stuffed again! Luckily we found some accommodation and some food and we enjoyed the tropical stars at 1300m, with zero light pollution.



The rest of the ride to Chom Thong was fairly easy and we found a delightful hotel, set in beautiful gardens, where we stayed for a further 2 nights, which gave us the opportunity to take a gentle ride on very lightly loaded bikes and explore. We also continued with our Cribbage championship. We did take a very relaxed approach to getting back to Chiang Mai, via Lamphun (again) and arrived a day early. This gave us time for some fine dining, shopping and best of all for me, a days fishing at a Thai fishing resort, stocked with Mekong Catfish. I caught 25 fish for a total weight of 250Kg, including some big ones. Happy days!

As with all of our previous cycling holidays on the Mercuries, we never had a puncture and I never had to do anything to the bikes apart from putting them together at the start and taking them apart at the end of the trip. The Mercuries are super-comfortable on broken tarmac and cope with dry dirt roads. But I am determined to have one lower gear, if and when we return to South East Asia!

DIY CYCLE TOURS IN THAILAND

I've included much more detail in this account than I have with previous accounts. I've done this especially for anybody who may lack the confidence to put their own self-guided tour of Thailand together. You can do it! You too can leave the UK in bleak, grey January, February or March and get some much needed winter sun in this safe, very civilized and enchanting country.

You can live very healthily on the delicious food available in local cafes. We found perfectly acceptable accommodation with a/c from around £10 a night for the two of us.

On this trip I changed £1100 into Thai Bahts before we left. We did however spend £250 on the joint card during the 6 nights we spent at our really nice hotel in Chiang Mai, where the included superb buffet breakfast makes mid day meals unnecessary. There are 2 swimming pools at this hotel. The rooms above reception were best for our purposes. We had an air conditioned suite, the extra room made assembling the bikes and later packing really easy. Leaving our bike boxes at the Rainforest Boutique Hotel during our tour presented no problems.

On the road we generally ate Chicken Fried rice with a bowl of delicious spicy chicken soup - this usually cost us 75p each!

High quality coffee is readily available in the many coffee shops and most service stations in Northern Thailand - iced Latte is especially welcome in the afternoon heat.

We reckon 15% of our spending was on bottled beer and Johnny Walker Red and soda with ice - purchased from 7/11 or Tesco Lotus.

There are plenty of quiet country roads, where the traffic is slow. You can plan a flat route, or you can head for some of the most demanding hills that you'll find anywhere.

There appears to be a huge area in North Eastern Thailand of flat land, which nestles between Cambodia and Laos. I'm sure that this region of Thailand would provide relaxed, laid back, gentle cycling, in glorious weather during Jan, Feb and March.

Our flights cost us around £550 each. Thai Airlines allowed us 30kg each plus 7kg of cabin baggage. All non American airlines promise service with a smile - with Thai you can see that it's genuine.

We got one of the waiting people carriers (luxury vans) to take the two of us, plus our bikes from Chiang Mai airport to the hotel for just £15. We got a similar vehicle from the hotel to the airport for half this!

We found 30 days' parking at Heathrow for £100

Changes. 2019 has been another busy year for me.

I've been introducing updated models and systems, whilst also attempting to simplify our literature. This is taking much longer than I anticipated, mainly due to having to cover for colleagues who have left and currently (October 2019) with the task only half completed, buying a Thorn bike appears to be more complicated than ever - for which I apologise.

The one change that I can't get **my** head around is sizing our bikes in cm instead of mm (550L becomes 55L- but can I remember?)

The Mercury Mk3 frames have several small changes- they now have slightly more clearance to allow 700 x 40c tyres and guards and also 650 x 50b tyres with guards.

The Mercury now uses the same EBB shell as the Raven Twin Mk3 tandem. Using this EBB means that any combination of chainring and sprocket can now be used and has also allowed me to increase the chainstay length slightly on sizes #58L and #61L.

However it's the Nomad Mk3 which has seen the biggest changes. The Mk3 can now be run with derailleur gears or with Rohloff (see also page 38). With the appropriate guides for either set up.

The sizes are now the same as all our current solo bikes - the Mercury Mk3, Club Tour Mk5 and Audax Mk4 but I have also introduced 2 new step through sizes, a very small step through and a medium sized step through.

The Nomad Mk3 now also comes in a choice of the same 4 colours as our other solo bikes.

I've dispensed with the S&S option - so few people actually chose it and I've changed the geometry, so that the bikes are now no longer suspension compatible (almost nobody wanted suss forks) this change has allow me to reduce the fork length, whilst increasing the head tube length and to also have a top tube with less slope.

There is clearance for 26 x 2.75", 650 x 60b or 700 x 40c (Yes, you can now fit 700c forks in a Nomad).

The Thorn Mk3 Disc fork fits the Nomad Mk3 and will take the above wheel sizes but this fork is 110 x 15mm BOOST (through axle) specific. The BOOST axle means that there's significantly less dish and a reduced tendency to pull to one side under heavy braking.

Horror of horrors, I've even had a gate put into the R/H seat stay to allow for a Gates Carbon Drive belt! We don't really want to supply bikes with belt drive but, once an owner has determined their ideal gearing, they can install one. If you twist our arm, we will supply the bike with belt drive but, apart from being 3 times the cost of chain drive, this will impact upon your 100 day money back guarantee.

The removable V brake bosses on the seatstays can be reversed to allow 26" or 650b - the same was planned for the Nomad Mk3 forks but (and here's where things have gone wrong) we've had to reject (almost) the entire batch of forks. The replacement forks won't be with us until March 2020 and they will be 26" wheel only.

650b Nomads can only be supplied with F&R disc brakes - no suitable 650b rim brake rim exists for heavy touring. The Andra 40 is way too heavy and our Thorn 650b rim is too light. There are many very suitable 650b disc rims and 60mm tyres will compensate for the inevitably harsher ride.

However shortish, lightweight customers could have a Thorn 650/700 ST fork and would be light enough for our Thorn rims to give good service in Europe. Once we get the forks, we will recommend that 26" wheel Nomads have either F&R V brakes or a V front and a disc rear - no 26" disc rim exists that is suitable for heavy touring - of course you don't need disc rims in order to run disc brakes.

Provided a rear disc brake is used, along with a Thorn 700c V brake fork, a 700c Nomad is possible. You could of course use the Mk3 Steel disc fork but 40c tyres would not mitigate against the inevitable harsh ride.

**Thorn NOMAD Mk3
650b
SIZE 55L**





"I really must get one of these Rohloff hubs on my next bike"

My personal recommendation for tools for touring with Thorn Rohloff equipped bike - Please Note, you'll have to source most of these tools yourself, as I had to do. I've given SJSC part # for tools we can supply *Andy B Mar 2019*

Thorn tool as supplied with bike (adjusts eccentric and removes pedals. With S&S bikes the tool supplied also incorporates the coupling tool)

2mm Allen Key. For securing cables into bayonet or pulley wheel.

2.5mm AK (Only required if you have the old triangular shifter)

3mm AK

4mm AK

5mm AK

Sliding T bar for 1/4" socket - a good quality item will last a lifetime.

8mm socket

Adaptor for bits

Torx TX 20 bit

6mm AK bit

8mm AK bit (Only required if you have square taper cranks with 8mm socket-head nuts. Make this from short section of 8mm AK and use with 8mm socket.)

Various screwdriver bits (flat and X head)

Chain tool #14697 is adequate when dealing with KMC Rohloff chain

Spoke key - **IMPORTANT** - buy the absolute best quality you can find, or you will do more harm than good!

Lightweight slip-jaw pliers. The Knipex slip jaws SJSC part # 39800 are excellent.

Triangular needle file.

Spare tube we can add these very easily at the time of purchase

Puncture repair kit # 41792 includes tyre levers

Tyre levers repair kit above includes tyre levers.

Talc or French chalk I use talc in a 35mm film can

Pump We list literally 100s - I'd take #11676 Topeak Mountain Morph Mini Track Pump

Pressure gauge - #20242 this is analogue and works better than digital types.

For extended touring

Tools to remove or tighten crank.

Spare brake pads

Rohloff sprocket removal tool 8501 **NOT NEEDED FOR SPLINED SPROCKET only required if you have the old style screw on sprockets.**

Spare sprocket.

Grease

Chain lube

Chain links

Spare Chain and quick links - necessary for KMC Rohloff chain. We supply spare link and quick link with our Rohloff bikes

Spare spoke nipples and Spare spokes now supplied with our bikes.

Rapid Araldite

Super glue

Soft garden wire

Small sharp blade.

Scissors

Canvas needle and waxed thread.

Spare screws, including a chain ring bolt.

120mm long section of lightweight tyre, with bead removed and tread sanded smooth. This can be used to mend a split tyre.

Spare gear cables, already cut to correct length, with ends silvered, to prevent fraying.

Oil change kit 8410 - if you're lucky, you may need several!

For internal gear cables only - e.g. The RAVEN, RT and RST

One of the following should be taken - depending on user ability:-

Spare hub cables 8271. I'd take 2 sets in case I messed one up.

Or Easy cable set 8573 (only for hubs after serial 25300)

or Quick change axle ring 8272.

You should also consider whether you need:

Avid cable operated rear disc brake requires Torx TX 25 bit.

A roll of US\$ one dollar bills - almost everyone will accept these.

A dummy wallet for muggers, with pre-stopped credit cards and lots of high denomination (but low value) bills, in various currencies - a friend's hot tip - along with the US\$1000 dollar bill in the seat post!

Fiona and I don't take either - we strenuously avoid travelling to any places where we could possibly need them!

My Touring Tool Kit



I've used a Carp Fisherman's lead storage bag, the ESP version is the best I've seen. It's available in 2 different sizes, from angling shops. This is the large size, which is ideal for my Touring Tool Kit. It's the perfect size for carrying in the bottom of a Sport sized Ortlieb pannier.

Notice the zippered see-through pocket, I use this for small, or rarely used items.

The main compartment can be divided into different sections, thanks to Velcro dividers - these are designed to keep dozens of 100g leads separated - so no worries about strength!



Contents of main compartment.

This would also have washing up gloves and rags. It would also contain specialist tools for whichever bikes Fiona and I had taken.

Compact reading glasses

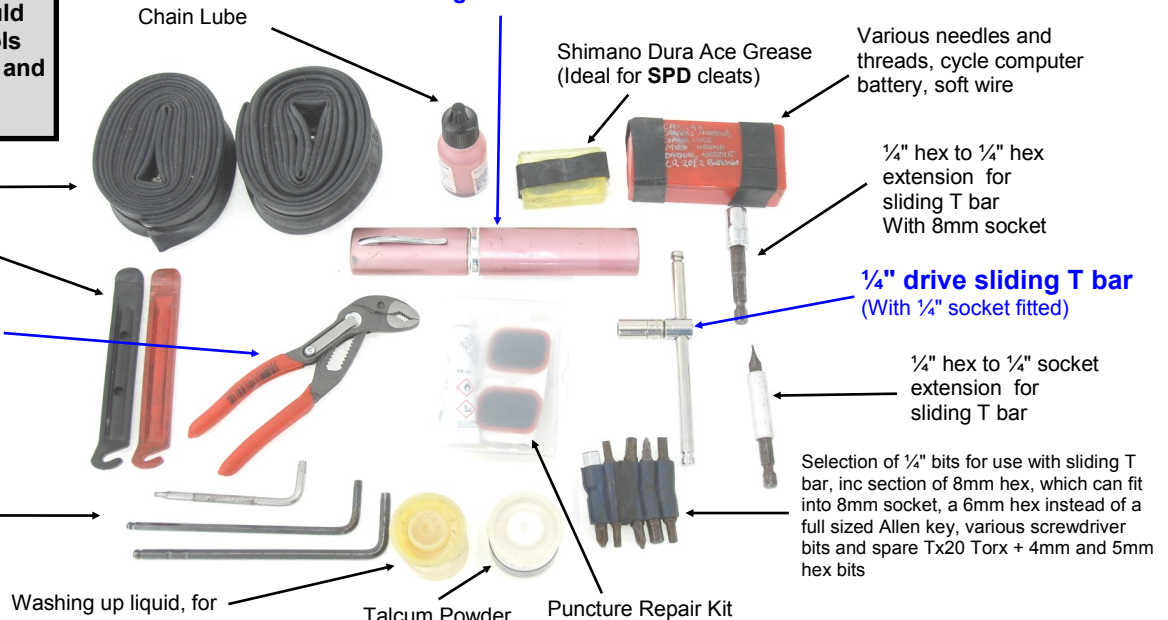
2 x spare tubes

2 x Tyre Levers

Mini Slip-Jaw pliers.

These are made in Germany and are of outstanding quality
SJSC part # 39800

Tx20 Torx key
4mm Allen key
5mm Allen key.
(I normally keep the 4mm and 5mm keys very close to hand for a few days, if I've had to re-assemble boxed bikes)



Contents of see-through pocket

Chain links and joiners for KMC X1 chain

Tweezers for removing splinters and broken bits of thorn - tyres and/or fingers

2mm, 2.5mm and 3mm Allen keys

Brake Pads (for rim brakes)

Cable ties

Set of Rohloff Torx screws, pawl springs

Various spare screws and washers.

Chain tool - can be held with slip jaw pliers and

Micro screwdriver + screws for repairing spectacles

Spoke nipples

Glue-less patches

DT Spoke key with spare key for our mini padlock

Steerer spacer

BROOKS SPANNER

PART 2 - More Technical

Known problems with Rohloff hubs.

As mentioned earlier in this brochure, there has never been a case of a Rohloff hub's internals failing, unless it was seriously mistreated, (someone once rode 17,000km, without changing the oil and then posted pics on Facebook of his entire bike sharing a sulphurous thermal bath with him. The hub seized 1000km after that! In another incident, a hub seized after 7 miles, because Rohloff had forgotten to add any oil to the OEM hub! Apart from Thermal bath man, no one has ever been stuck anywhere with a broken internal! This does not mean that nobody has ever had any problems with the hub - it just means exactly what it says - nobody has (to my knowledge - and I've scoured the internet searching for examples) ever been stuck anywhere, with a hub that **could not** be ridden. Actually the reported problems, with the hub have been very few. For some people the noise of the hubs has been an insurmountable problem for them. Having ridden exclusively Rohloff equipped bikes for 13 years, Fiona and I know that, the more they are used, the quieter they get - all of ours have very quickly become silent in gears 8-14. We can still hear their lower gears (particularly seventh) whirring away.

We understand why new owners may try to avoid seventh gear but, having ridden for miles in 7th gear, unaware of the noise, whilst cycling into winds so strong that we could not make ourselves heard - even when shouting to each other and having now climbed for literally tens of thousands of kilometers, in the lowest gears, with full camping kit, Fiona and I are both totally convinced that the "seventh gear noise" is only noise - not increased friction!

It's essential that the hubs have their oil changed every 5000km or annually - whichever comes first.

Don't ever use a pressure washer, or a high pressure hose and never submerge the hub!

OIL LEAKS.

Modern motor vehicle gearboxes run in an oil bath, they're almost invariably oil tight - there are several reasons for this:- They split horizontally. Motor vehicle gear oil is very viscous. They have excellent seals - the losses, due to friction in these seals, are considerable but, hey, there's always more power available than we need and we just burn a bit more fuel without realising!

With the Rohloff hub, the first thing to understand is that the internals are **not** supposed to run in an "oil bath" in the strict sense of the term. The seals required, to prevent any light oil from leaking, if the hub was filled with oil, especially considering that the hubs split vertically, would cause too much friction to be acceptable to most human engines, the fittest of which, can only sustain around 300W. It would be more accurate to say that "the internals run with oil-coated surfaces, in an environment, which is sealed from outside contamination at atmospheric pressure." Rohloff have changed the specifications of the seals several times. They were too effective, when I first started riding Rohloff and caused a slightly noticeable drag - however the early hubs could be submerged without issue. Rohloff then went too far the other way and some hubs actually leaked a bit. Several years ago, they got the amount of sealing spot on and I can now confirm (Jan 2018) that these seals have proved very durable but **NOTE unlike the original hubs - you must never submerge these more recent hubs.**

Oil leaks from the EX box are generally due to the lack of grease inside the EX box - grease is used as the only seal for this part of the hub. Fortunately the remedy is very simple - apply grease!

When initially filled, the internals of the Rohloff hub become coated with oil. It takes 7ml of oil to coat all the surfaces. If you put 25ml of oil into a brand new (un-lubricated) hub, and ran it for 3 minutes and then immediately tried to drain the hub, no matter how long you waited, you would never be able to drain more than 18ml out.

When you change the oil, if you put the 25ml of oil, that Rohloff suggest, into the hub there will still be 7ml of oil adhering to the internals - which is 32ml in total.

During use, 25ml of this oil is almost certain to escape slowly, as oil mist, which will collect on the outside of the hub seals. When you come to perform the next oil after 5000km, there will be very little excess oil left in the hub - **but there will always be 7ml adhering to the internals.**

If you don't use the hub much before you perform the next oil change after a year (which you must) it's likely that there will be a more significant amount of oil to drain.

Best practice for oil changes.

Advice for temperatures above -10°C Mar 2019

Run the hub for at least 3 minutes in gears 3 or 5 and then drain out as much oil as you can - there is often no excess oil that can be drained out.

Add 25ml of rinsing oil, replace the drain plug and run the hub for at least 3 minutes in gears 3 and 5, then drain out as much as you can. Leaving to drain overnight is best, if you can.

Add 25ml of Oil of Rohloff, replace the drain plug and run the hub for at least 3 minutes in gears 3 and 5, to thoroughly mix the 2 oils and then drain out 18ml of oil and replace with a NEW drain plug. You will now have around 14ml of oil in the hub, 7ml of which will be adhering to the surfaces. The excess 7ml of it will leak out much more slowly, as an oil mist.

You'll have very little excess oil in the hub, when the next oil change is performed - but your dropouts will not be as messy.

It should be noted that, even if you deliberately drained all the oil out of the hub, there would still be sufficient oil adhering to the internal parts to prevent any damage, until the next oil change was due!

I double flush our (my and Fiona's) hubs, when I perform an oil change. I use half the rinsing oil, run the hub, drain it and then use the other half of the rinsing oil and drain that too, before adding the oil of Rohloff. Rohloff say that this is unnecessary but can cause no harm - but I do it anyway. AB Jan 2018

Best practice for VERY COLD conditions.

The Rohloff oil becomes too viscous to allow slick shifting when temperatures fall below -10°C. Rinsing oil is actually very low viscosity oil, in very cold conditions, below -10°C and down to -30°C you should run the hub with a 50:50mix of both oils. This is easily achieved, rinse the hub with rinsing oil, drain out as much as possible and then add 7ml of Oil of Rohloff.

Rohloff have endorsed the above procedures - the only downsides being that the hub will run slightly more noisily, than it would with 25ml of oil, to dampen the sound.

Our 10 year warranty on the hub's internal gear mechanism (see page 34) applies, whether you follow my advice, or stick to the book.

For operation in temperatures below -30°C! Please contact Rohloff for their current advice.

Occasionally we have reports of bigger oil leaks from the hubs following air travel. The hubs breathe through a hole into the hollow axle and the sometimes dramatic changes in pressure can cause some oil to be forced through into the hollow axle, from where it will find its own way out.

If the wheel is transported in a horizontal position and there's sufficient excess oil, this oil will pool directly above the hub shell bearing seals and some can find its way out. This is only a problem if the oil contaminates other items of luggage.

Hub shell bearing failure.

In theory (and in practice) 99% of the hub shell bearings are capable of 100,000+km if looked after **correctly**. The design of the journal bearing means that the metal parts are always kept from apart by a thin film of oil.

Oil breaks down both over time and also with work. Oil contaminated by water emulsifies and can't do its job of keeping metal surfaces apart - the result is wear.

I'll repeat - it's essential that the hubs have their oil changed every 5000km or annually -whichever comes first.

Worn bearings cause excessive play at the axle and excessive play leads to the seals being ineffective against the ingress of more water.

If you always change the oil as directed - every 5000Km or every year and you never use anything more powerful than a garden hose set on spray to wash the hub, you're 99% certain to get more than 100,000Km from the hub shell bearings.

Hub shell bearings can be replaced in the **UK** by **THORN** or worldwide by any **ROHLOFF SERVICE PARTNER**.

The needle roller bearings within the hub are less vulnerable, being subject to lower forces and can last for 300,000+km - but they'll still be damaged by lack of care (**particularly by water ingress see previous page**) and **PLEASE NOTE**, these bearings can only be replaced in Germany by Rohloff.

Slipping Gears

Internet reports of slipping gears can often be traced to using a chain tensioner; everything that I've reported about the hub has been based on me using the OEM version, in a frame with vertical dropouts and an eccentric bottom bracket. There are alternative methods of building a frame for a Rohloff hub - obviously I believe that my solution is the best but there really is no sense in using the chain tensioner or belt drive.

Very occasionally, a new hub rapidly becomes difficult to change between 3 and 4 and/or 10 and 11, even more occasionally, this can be accompanied by slipping in these gears, sometimes a small foreign particle is the culprit, it can be flushed out and the hub's oil replaced, but usually the wheel has to go back to Rohloff; who return the wheel inside one week, after they have re-shimmed it. The problem has never been reported to arise a second time. As this malfunction has almost never been reported on anything other than very low mileage hubs, it shows that there must have been an error, in deciding which shims are required, when the hub is assembled, which can't be detected until the hub is built into a wheel and comes under operational load.

We've now supplied many 1000's of machines with the Rohloff hub and we have had to return fewer than 1% of them!

We advise you to purchase your bike at least a couple of months before a grand adventure, just in case you are that 1 in 100! (Please also take into account that the lead time for our bikes can vary throughout the year).

Screw on Sprocket Removal

NOTE: THORN bikes sold after Mayday 2016 all have splined sprockets.

There have been reported cases of bike shops damaging Rohloff hubs, when attempting to replace or reverse the sprocket, either through not having the correct tool, or because they've not followed the correct procedure.

Take time to think through what you, or a bike shop, are going to do - it's really simple - you are preventing the sprocket carrier, which is part of hub's internal mechanism, from rotating with the confusingly named "sprocket removal" tool. This tool must be securely attached to the hub using the QR skewer, to ensure that the pegs on the tool remain located in the slots of the sprocket carrier when force is applied. The sprocket removal tool then needs to be prevented from rotating in a vice, or if it's the only available option, in the jaws of a large adjustable spanner.

The sprocket carrier can't turn, and it's relatively easy to remove the sprocket, using a chain whip, by applying force in the opposite direction, to the force applied to it, by the bike's chain - when cycling.

PLEASE NOTE that this direction is the opposite direction to which a bike mechanic will have become accustomed to turning the chain whip, when removing a derailleur cassette!

PLEASE ALSO NOTE that Shimano make a cassette removal tool which looks like it will fit Rohloff's sprocket carrier...

... **BE WARNED - IT DOES NOT FIT PROPERLY!** This is probably the cause of most of the cases of bike shops damaging Rohloff hubs, when attempting to remove sprockets.



Splined Sprocket Removal

The NEW splined sprockets, fitted to all THORN BIKES sold after MAYDAY 2016 is simplicity itself to remove - just spring the retaining ring clip out of its groove and the sprocket slides off!

Like all of Rohloff's improvements to their hub, this can be retro-fitted to every hub they've ever sold.

Don't rush to do this before you need a new sprocket - unless you're going on a big trip and your current sprocket has to be replaced or turned. Your threaded sprocket has to be removed as above and the splined sprocket carrier screws on in its place.

The splined sprocket carrier will last a very long time, if and when it needs changing, **the sprocket must be left in place** and the assembly removed using a sprocket removal tool, in exactly the same manner as removing a screw-on sprocket above.

Andy B Feb 2019.

Serial numbers + buying used Rohloff hubs

Every Rohloff hub has its own unique serial number. This number used to be on a very special, heavy duty sticker, which went all the way around the centre of the shell. The sticker was never subject to any wear or abrasion and was almost impossible to remove, once the hub was built into a wheel. Unfortunately some customers thought that they'd remove the sticker - goodness knows why? A misguided attempt to disguise its value? To somehow look cool?

The serial number is now engraved into the hub shell.

Rohloff will not accept any warranty claims, or do any work, on hubs which have had their serial number defaced or filed away.

They treat all such hubs as if they are stolen - otherwise why would anybody remove the serial number?

From this serial number, Rohloff have access to exact details of the history of every single component used within the hub, when it was built, who bought it and details of any work carried out on it subsequently. When a hub is returned to Rohloff, they always check it to make sure that it's not on the stolen register.

If your hub is stolen, let Rohloff know and, if it ever turns up at Rohloff's factory, **they will return it to you** - the registered owner. If you ever buy a pre-owned Rohloff hub, you can check that the hub isn't on the stolen register - if it is, please try as hard as you can to help secure a successful prosecution of the vendor. Receiving stolen goods is as serious an offence as the actual stealing of them.

IMO as a cyclist, receiving a stolen bike is an even more serious offence - there'd be very few bikes stolen if there weren't people ready to buy them without asking questions.

Never buy a Rohloff hub without a serial number - it's important for all of us that such hubs have absolutely no value whatsoever.

If you buy a used and bona-fide Rohloff hub, it's highly desirable that the registration of the ownership is transferred - Rohloff make this as simple as possible.

Rohloff's warranty Dec 2017

Rohloff's 24 month warranty complies fully with current EU legislation for the original purchaser. EU legislation states that, during the first 6 months, the responsibility is the manufacturer's to prove that they were not at fault, for the remaining 18 months, it's the customer's responsibility to prove that the manufacturer was at fault. It's important to be able to prove that, at a minimum, you've changed the oil after the first year of ownership.

A warranty registration card is supplied with every new hub. Rohloff's warranty obligation is dependant upon the warranty registration card being completed and sent to them as requested - otherwise it's the responsibility of the person who sold the hub.

In the past, Rohloff almost inevitably provided free service for much longer than they were obliged to by law - for those who follow Rohloff's directives exactly, we expect this to continue.

However Rohloff have expressed their determination to reduce the cost of this service. There are two areas where they feel that they have been taken advantage of:-

[1] Many used and badly cared for Rohloff hubs are being sold.

[2] Many wheel builders don't listen to Rohloff's wheel building directives and their failure to comply can lead to hub flange failure. Rohloff are apparently targeting these irresponsible wheel builders by specifically limiting their warranty on broken hub flanges to 24 months.

Rohloff's gripe is with several large manufacturers, who refuse to listen to what they are told but who expect their deliberate deviations from best practice to be backed up at Rohloff's expense.

Why don't they follow the directives? Simple, there's more profit in using non-compliant spokes and in making *wheel-shaped objects*, than there is in making *proper wheels*. It takes a considerable time to inspect every spoke head and to achieve the correct spoke tension - it takes even more time to then stress relieve and re-tension spokes. We believe (and I must stress that it's only our belief) that Rohloff are likely to continue to extend support for any genuine claims made by an original owner, whose wheels have been built as proscribed.

There's much more information in the next column. *Andy B 17 Feb 2020.*

HUB FLANGE FAILURE

This isn't so much a known problem with Rohloff, it's more of a known problem with many wheel builders.

15 years ago we had the occasional problem with flange failure on Rohloff wheels that we had built.

(For the record, we responded very quickly and supplied these customers with new wheels).

After much investigation Rohloff concluded that all the cases of flange failure were the result of one of, or a combination of two or more of the following 6 issues:-

[1] They identified that it was more likely to happen if the spokes were not tightened to the recommended (high) tension.

The solution is to use an accurate strain gauge to get the tension correct.

[2] They identified that the stamping burrs, which are frequently created when the spoke heads are formed, could initiate micro cracks, which could grow in time. **The solution is to use Rohloff's own spokes, which are checked for burrs.**

[3] The length of the bend on the spoke head could cause cracks, either because it's too short and causes the head to bed into the flange, or because it's too long and allows free movement, which damages the internal surfaces of the spoke hole.

The solution is to use the correct spokes.

When Rohloff first designed the hub, most spoke head bends were the ideal length - however nowadays most spoke head bends are too short. Why? The majority of bicycle wheels are now built on machines and, to make it easier for a wheel lacing machine to let the spokes fall into place, other manufacturers decided to slim down their hubs' flanges and spoke manufacturers made shorter bends to suit these slimmer flanges.

The solution is to have a master wheel builder hand build your wheels, with the correct spokes.

Unique and exclusive to THORN

We're so confident that we have built the wheels perfectly that we give a 10 year warranty on the Hub Flange of all of our Rohloff equipped bikes with 32 spoke hubs.

This is for the original owner and is dependant upon you ensuring that ROHLOFF spokes are used, if ever you need to have a spoke replaced.

Of course our wheel building is so good that it's highly unlikely that you'll break a spoke whilst cycling - no matter how rough the road, or however heavily loaded you are but accidental damage, whilst touring, is always a possibility.

We now supply **all of our bikes** with spare spokes - genuine Rohloff spokes in the case of our Rohloff bikes - make certain that you at least take your Rohloff spokes with you on tour. *Andy B. Jan 2018*

[4] Heavier duty spokes have been used - perhaps thinking they would be stronger? These have larger diameter wire at the bends, creating stresses in the spoke hole.

The solution is to use 2.0/1.8/2.0 double butted spokes just as Rohloff say in the handbook.

[5] The wheels have been re-built using a different lacing pattern to that originally used. All spokes leave a witness mark when a wheel is built, creating a new witness mark at 90° to the original mark can weaken the flange.

The solution is to have the wheels built correctly the first time and to choose the rim wisely, to minimise the number of times the wheel has to be re-built. An Andra 30 CSS rim or a high quality, medium to heavy weight disc rim **may** never need to be rebuilt. When a wheel is

re-built it **MUST BE** laced in the **same pattern** as it was originally laced. An aftermarket flange support ring is essential whenever an old hub is re-built.

Many years ago I designed and had flange rings made to reinforce the flanges, we offered these on tandem wheels and we called them Tandem flange rings. A few years after this Rohloff increased the size of the flanges and our rings would no longer fit. The increased size of the flanges reduced the number of broken flanges Rohloff had to deal with - but it didn't prevent them entirely. Rohloff have adopted my idea of flange rings and have had some made to fit the new flange size. They called them flange support rings and made them available to those people who were having their wheels re-built.

Rohloff decided, in Autumn 2017, to fit flange rings to all new hubs. In Jan 2018 we saw the first hubs to arrive from Rohloff with flange support rings shrunk on and the 24 month warranty applies to these hubs.

BUT PLEASE NOTE:- The hub flange warranty will only legally apply, if all of Rohloff's directives have been met by the wheel builder.

Rohloff have tested the ability of the flange support rings to contain a chunk of detached flange and its spokes.

Rohloff state that the integrity of the wheel is maintained and consequently it's possible to continue the longest of tours safely with a broken flange.

IMPORTANT UPDATE 17 Feb 2020

I've just completed a series of emails with Rohloff.

They've confirmed that there are now no directives in place regarding whether spoke heads should be on the inside or outside of the flange.

They no longer insist that wheels must be built symmetrically.

They agree that if a wheel has been built with incorrect, or unchecked spokes, it's best left as it is - as the damage has already been done.

Rohloff are adamant that if the correct spokes, are first checked for burrs and then built at the correct tension, the chances of flange failure are very remote. Andy B.



**Rohloff hub with
flange support rings**

A brief re-cap:-

Rohloff are convinced that if the wheels are built correctly, the hub flanges will never fail. (Our experience supports this and OUR GUARANTEE UNDERWRITES IT). Rohloff have identified 5 issues which could cause their hub flanges to fail.

Rohloff can supply spokes made to their specification regarding the absence of burrs and correct length bends. Rohloff make all this information available to anyone who may wish to build a wheel using a Rohloff hub. Rohloff say that they will no longer support those whose wheels have not been built in accordance with their directives - even if they are victims of bad wheel building practice and/or wheel builders, who for reasons of pride, ignorance or meanness don't follow these directives. Rohloff have designed a fail-safe to prevent possibly ruined holidays - or worse!

However it's far better to have your wheels built by somebody who, not only complies fully with Rohloff's directives, but who also understands the reasons behind them.

We guarantee that we do this in a way that nobody else would dream of - see page 34 for details of

THORN'S 10 YEAR GUARANTEE ON ROHLOFF HUB FLANGES

How will this affect Thorn?

I confess that I was initially disappointed by Rohloff's declaration that they intended to take a firm stance on their 24 month warranty. Rohloff's warranty has been exceptional and it must be frustrating (and expensive!) to have to constantly provide such a service to those who fail to take notice of what they are told and/or fail to respect the requirements of the piece of engineering genius which they have purchased - I'm particularly thinking of lack of oil changes and the use of jet washers (as well as not investing in the correct spokes or top quality wheel building)

I thought that it may lead to some negative postings on forums from those affected and (significantly more likely) from Trolls whose cycle touring adventures are confined to their computer screens.

I still think that it may have a negative impact on Rohloff's overall sales but, because we have been building our wheels so perfectly for so many years we are able to offer a 10 year warranty on the flanges of wheels we build for new bikes, I think we may actually see an increase in sales.

How will this affect Thorn's customers? It won't!

How will this affect other manufacturers' customers?

If they've read this, they'll be able to ask very specific questions, as nobody will be prepared to offer the guarantee we offer (or make such high quality bikes!) I hope they'll decide to become Thorn customers!

BELT DRIVE ON CONVENTIONAL BIKES.

We get several enquiries every month regarding belt drive and, as the designer of the complete range of Thorn bikes; I would like to say quite clearly that my number one priority is to design bikes for a very long and easy service life. Most bicycles appear to cover very few miles each year; whereas our bikes seem to have always sold to customers who cover great annual distances. I see such a large percentage of Thorn bikes being ridden, compared to the very small number of Thorn bikes actually sold!

I don't believe that belt drive transmissions actually deliver the claimed high mileage and easy maintenance promises. In many cases, the modification to the rear triangle, in order to be able to fit the belt, compromises the service life of the frame. Some of the "solutions" I have seen to allow the fitting of a belt have been unbelievably stupid and would, beyond doubt, result in early frame failure.

I question the fundamental "sense" in having belt drive. Many sources claim that a belt is less efficient than chain drive. A belt is much less reliable and more easily damaged. The cam chain, in a Mercedes engine is generally acknowledged to have a service life in excess of 500,000 miles; whilst a cam belt, used by most other manufacturers, has a service life of 60,000 miles. Cam belts are sealed from the elements - bicycle transmissions are not.

The belts needed to be redesigned, with a central groove, to allow mud to be squished out of it more easily and to help keep the belt on the pulleys. The new **Center Track belts** are run on stainless steel toothed rear pulleys, these are heavier than a sprocket for a chain.

Gates have stated that the life expectancy of the belt is, "similar to that of a high quality conventional transmission". Similar? Perhaps - but at around 3 times the price!

Apparently, belts hardly stretch - whereas some chains appear to "stretch" considerably. The KMC X1 chains exhibit very little "stretch", our eccentric BB makes adjusting chain tension very easy.

Note: chains don't actually stretch but over time the rollers and pins wear and, under tension, the tiny amounts of wear add up to make the chain longer.

MAYDAY 2016 UPDATE - the new splined sprocket carrier removes the objection to Gates because of the difficulty of removing their pulley.

JAN 2019 UPDATE - Rohloff's splined sprocket carrier has had to be re-designed for use with belt drive. The spring clip has had to be replaced with a screw on locking. The extra width of the Gates pulley means that a special, Rohloff-specific tool is once again necessary for the removal of the lock ring.

The natural relaxed shape of the belt is circular. The carbon fibres act as strong springs, which try and return to this natural shape, consequently the belt always has a tendency to pull away from the sprocket; whereas a chain naturally drops into the teeth. This means that when the belt is slack it skips over the teeth. Many frames have stays which flex, when the rider sits on the bike. This flex is more pronounced when bumps are hit or if the rider pushes hard. Flexing reduces the distance between the BB and the dropout and the belt can become sufficiently slack, on the lower run, to cause it to slip around the teeth, rather than drive them. When the bike is examined, without the rider on board, the belt tension is seen to be sufficient.

Hubs have been returned to Rohloff, because they have lost drive, upon investigation, the fault has been shown to be the skipping belt.

The carbon fibres in the belts are also very easily broken if the belt is bent back on itself or twisted. When the fibres are damaged, the belt has no tensile strength and will snap suddenly. The belt is easily damaged when it falls off the ring or sprocket and becomes jammed between ring and BB.

As if these were not enough to put you off, I have more objections to the belt:-

As the length of the belt is fixed, it's not possible to change the size of either a front or rear pulley, without buying a new belt.

The cost of new front and rear pulleys and belt are approximately 3 times that of a chainring, sprocket and top quality chain.

Whilst on tour, there's an almost zero chance of being able to find a bike shop with a spare pulley or belt. You'll still need a special tool to get the pulley off the Rohloff hub. Gates are not Thorn or Rohloff, they won't move mountains to help you - you can read Gate's list of things that are not covered by their warranty on the next page.

Surely the only valid reason for wanting belt drive would be to save energy/money/planetary resources? I firmly believe that belt drive will, in fact, waste all of these!

Of course some people will think that your belt-drive bike looks cool, if that's more important to you than having a reliable, practical and comfortable bike, you're in luck because there are many people waiting to take your money and tell you what you want to hear.

I know that belt drives won't be as problem free as other people may believe them to be and I'm convinced that a small amount of maintenance is more cost effective than replacing a frame, which had been compromised by having a "gate" installed. Such a gate is normally positioned in the area most prone to failure on a bicycle - the RH rear dropout. Any experienced builder of high quality frames will confirm this.

The reason this area is prone to failure is that chainstays ought to flex slightly, to aid comfort and to distribute stress; I can't see that adding a rigid section to this area can be anything other than detrimental and if the "gate" is not rigid, the screws securing it will fail sooner rather than later.

I've also seen the gate installed by securing the RH seat stay to the dropout with an M5 screw. Given that our expedition touring bikes use M6 screws for mounting the front and rear carriers, I can't see a single M5 screw lasting long.

The "round the world record belt drive bike" apparently used 2 belts and, apparently the frame was also in need of replacement. How long should a bike frame last? Is once "around the world" long enough? It sounds a long way but I doubt if many of our customers would think 20,000 miles was an adequate service life for a frame!

We have some customers who commute, who don't even consider themselves "cyclists", whose 3 year total mileage is considerably more than the "official" round the world record route.

Would you consider replacing the frame to be an acceptable alternative to occasionally wearing rubber gloves, or getting dirty hands?

On 4/Oct/2012 I downloaded the Gates Carbon Drive Owner's Manual and I was appalled - the situation was worse than I thought.

On page 6 the manual clearly stated that, if the belt was crimped (I believe from the illustration that they meant folded), twisted, bent backwards, inverted or used as a wrench it was damaged and a damaged or mishandled belt could no longer be used.

On page 7 they said that mounting a belt with a lever or by rotating the cranks also damaged the belt.

Even uncoiling a new belt incorrectly apparently damaged it. Assuming that you could fit the belt without damaging it, you may have been forgiven for assuming that difficulties were behind you - not so.

On page 7 Gates showed that if the belt slipped off either of the pulleys it was dead; if you trod on it - it was dead.

On page 31 they went on to say that if a stone, root, bit of wood or even clothing became caught in the belt and pulled between belt and sprocket, it was damaged and must be replaced.

According to page 15, If the belt skipped over the rear pulley, it was called ratcheting and a belt that had ever ratcheted had to be replaced.

On page 5 they said that snow and ice could cause the belt to be pushed off the pulley and snow and ice could also cause ratcheting, either of which required a replacement belt.

Gates also told you on page 5 to make sure that no components or objects could come into contact with the belt. Other bikes were cited as an example of such objects.

Belts could squeak in dry dusty conditions - apparently the remedy was to spray the belt with some belt spray, which contained synthetic lubricant. Guess what? The belt then became mucky!

November 2017. Regular readers may have spotted that, in my synopsis of the Gates 2012 manual above, I have changed the tense from present to past - because Gates have now toned down their manual. **All** the above warnings are still there, about all the same issues but Gates now say that all the instances cited above **may** cause damage- but they still say that a damaged belt must be replaced!

Gates now say that the belt must only ever be cleaned with water, what harm did the recommended belt spray do I wonder? And how often do the belts have to be washed in order not to squeak?

If we fitted belt drive, we could no longer offer our unique 100 day money back guarantee of satisfaction on such bikes - because the cost of replacing the belt and pulleys would be so high. We couldn't risk re-selling the returned bike without changing the belt at least, as we would have no idea of what may have happened to it. We could no longer offer to change the final drive ratio free of charge, if customers decided that they had specified their bike with too high or too low a range of gears.

I believe that the objections to using belt drive on conventional bikes are overwhelming and I foresee many Gates customers wishing to revert to chain drive. Rohloff have told me that they now (Feb 2019) get more enquiries about swapping from belt to chain than they get asking about swapping from chain to belt.

How do you feel about belt drive now?

Sprocket & chain wear is minimal with Rohloff.

Very long trips can be undertaken, without the need for sprocket reversal. If you're planning to undertake journeys where you feel that you may have to change or reverse the sprocket - make certain that you take a genuine Rohloff sprocket removal tool and the relevant page of the (excellent) Rohloff manual.

Fiona and I have covered 15,000km on our sprockets and there is still no need to replace them. I must stress that "keeping the chain clean" is the only maintenance that I undertake on our trips. I do this by firstly turning the bikes upside down and removing as much muck as possible from the chain, sprocket and chain ring, with a bit of stick. Then I apply lots of chain lube and rotate the cranks, after which I run the chain through a bit of rag and remove as much muck as I can, before applying a little more chain lube - job done!

With our THORN bikes, the above procedure is really easy because the chains don't have a chain tensioner, therefore the chain doesn't derail, as it would if you had a chain tensioner or a derailleur equipped bike! I use dry lube in dry climates - as this doesn't attract dust. I use wet lube wherever necessary - this adheres to the chain better but does attract dust. I never ever use petroleum based products for cleaning our chains.

If you try and fit a new chain to an old sprocket, you'll achieve little, the old sprocket will run very roughly, until it wears the new chain to the same state as the old chain.

A new sprocket is also worn rapidly by an old chain.

It's possible to use a succession of (cheap) chains and throw them away before they get very worn. This is cost effective if your time is limited and compared with running anything with an engine, it's still an environmentally friendly practice - although not very practical for long trips!

However, belts may be preferable to chains, for use on e-Bikes.

Having (almost?) zero stretch is a benefit.

E-Bikes have very stiff frames - frame flex isn't an issue.

The fact that you can't fly with an e-Bike, or charge it in the middle of nowhere, will mean that few people will ever be very far from the help of a specialist dealer.

Thanks to the assistance provided by a very powerful motor, there's no need to change the gear ratios. This means that, because the manufacturer has determined the correct belt length, a new belt, of the correct length will be available as a spare part.

E-Bikes are likely to have regular servicing and preventative maintenance carried out by specifically trained mechanics, with the necessary specialist tools.

As high quality e-Bikes aren't cheap to buy or run, the extra expense of belt drive is less of an issue.

Chains and chain wear.

We have been fitting KMC Rohloff specific chain to ALL THORN ROHLOFF bikes for many years, it's the best single speed or hub gear chain you can get. In my experience, it can be run for up to 1500 km before requiring either tensioning, or re-tensioning.

It will last many times longer than any other chain.

Derailleur chains are designed to have considerable lateral movement, in order to be able to be derailed from one sprocket to another easily.

This movement is achieved by having large tolerances between the pins and the rollers. Dirt and grit, mixed with chain lube makes a very effective grinding paste, which gradually works its way inside the chain, causing wear. The more acutely the chain is flexed, the more easily the grinding paste finds its way inside.

The KMC chain is designed solely to run on hub gears (it also works with single-speed or fixed) - it's designed with minimal lateral deflection, as it's only intended to run in a straight line. This means that the tolerances between the pins and the rollers can be kept tight, which in turn means that it's more difficult for dirt and grit to get inside. In good conditions and if kept clean and properly lubricated, this chain ought to last 20,000+ km, which for reasons explained on the left of this page means that your sprocket will also last this long.

This is inexpensive cycling!

Andy B. Feb 2019

Rear Disc brake.

Specific rotors are required for the Rohloff hub, these use 4 x M8 x 0.75 bolts (chain ring bolts). The 8 screws used to secure the back plate of the hub to the main body can work loose with the application of a disc brake. We have had 2 Rohloff specific rotors made for us, we have the 160mm rotor and the 203mm ventilated rotor - which we only recommend for tandems. I designed both of these rotors and, because they use 8 arms, it was possible to prevent every back plate screw from being obscured by the arms - thus it is possible, with our rotors, to check the tightness of these screws, without having to remove the wheel, the EX box or the rotor.

Nov 2017 UPDATE. Rohloff now use oil-proof Loctite and the above problem no longer exists.

Are 32 spokes enough?

Many people question whether 32 spokes are enough - especially on a tandem. We can report that 32 spokes are certainly enough, in a correctly built wheel - even for tandem use! Unfortunately we had several cases of spoke breakage on the tandems until we discovered the cause - incompatible rims! The flanges of the Rohloff hub are so large that, with most rims, the spokes tend to bend as they leave the nipple, which eventually causes them to break at the nipple - a spoke breaking at the nipple was previously almost unheard of. This is what caused Mark Beaumont problems on his 2008 record setting, round the world ride - yet, we'd already identified and solved the problem at source more than 3 years earlier. We had rims drilled so that the spokes leave the rim in a perfectly straight line, since doing this, no more of our tandems have had broken spokes. If a wheel is strong enough for tandem use, it will survive any other kind of touring use.

Of course a spoke can suffer accidental damage, such as may occur if an SPD pedal, from another bike, becomes entangled in the wheel. Having more spokes won't help prevent accidental damage - **indeed having more spokes makes the above scenario more likely!**

Spokes can in fact be replaced very easily in a Rohloff hub, as the sprocket doesn't need to be removed to replace the spoke. **(Dec 2017 be sure to use a Rohloff spoke pages 34 & 35)** There have been cases of the flange cracking at the spoke holes.

Dec 2017 Rohloff say that cracks in the hub flange are entirely due errors in wheel building. See pages 34 & 35.

It must be stressed that in no case did either spoke breakage or flange breakage (both of which we have now cured) prevent the riders from completing their holiday, or in the cases of cyclists on trips of indefinite duration, prevent them from carrying on their journey, until they could rendezvous with a new wheel, which we sent out to them, free of charge!

Aug 2011 spoke breakage update.

We had a rogue shipment of spokes from Sapim, which caused problems on a few wheels built in Spring 2011.

We responded to these problems immediately and delivered our excellent after sales service promptly.

Talking to many hundreds of customers, over many years, it seems as if most peoples' biggest worry is **"what happens if it goes wrong, in the middle of nowhere?"** We don't think that there's much likelihood of your Rohloff hub ever letting you down - but for those who may be unconvinced, the new Nomad Mk3 can be used with derailleur gears or with Rohloff and each frame (or bike) comes supplied with both high quality CNC inserts for the R/H dropout to do this as neatly as possible



I've not done this because I think that you need the back up of being able to use derailleur gears but for 2 separate reasons:-

- [1] Some people will only use derailleur gears but they still want to go expedition touring.
- [2] Some younger customers plan on taking a gap year - they can now buy a derailleur Nomad and fit a Rohloff hub later - once they are working.

We have many years of experience selling our Rohloff equipped bikes with only a couple of cases of insurmountable problems whilst on tour - which we dealt with swiftly (see page 34) it's significantly more likely that you'll have an insurmountable problem, on tour, if you use derailleur gears. There are so many compatibility issues with derailleur hubs, BB types, mechs (front and rear and road and mountain), cassettes, chains and shifters. I hope that the latest craze for **one by** (1 x 11 or 1 x 12) on MTBs and Gravel bikes is never offered on a bike marketed as a touring bike.

The chains can't be expected to last long, whilst being bent laterally over such extreme angles, which will exacerbate the problem of dirt and grit getting inside the chain, causing rapid wear. The small sprockets will also wear very quickly. The 12sp 10-51t cassette in particular is very expensive to replace and still doesn't give the range of gears that Rohloff offers!

Unique to Thorn - another astonishing promise!

10 year warranty on the hub's internal gear mechanism

We're convinced that your Rohloff hub is so unlikely to ever let you down that, as from 1 Jan 2018 we make this promise:-

Our promise - if you have an insurmountable problem with the internal mechanism of your Rohloff hub, which prevents completion of your tour, contact us and we'll act promptly. If you're in a remote area, we'll send you a new wheel, we'll send this entirely at our expense, to the closest settlement served by an international courier (DHL, UPS etc). If you're closer to home, we'll collect your wheel from you - at our expense, we'll repair (or replace it) and return it to you, free of charge, generally within 7 working days for UK customers and within 14 working days for overseas customers.

This Guarantee specifically does not cover cable breakages - cables should be replaced before they break, as part of a responsible owner's personal preventative maintenance program and, in any case, a broken cable does not leave you stranded.

This Guarantee is only applicable to customers who purchase complete bikes and is not transferable.

The guarantee is for 10 years from the date you either collected, or we delivered your bike.

How can we promise to supply a new wheel, regardless of cost, for 10 years?

We can promise it because we know that there will be very few occasions where such action will be necessary. We're simply acting as an insurance company, with a correctly maintained hub, the risk is minimal, so the premium is very small, therefore we consider that you've already paid for 10 years insurance.

The only conditions are that you've looked after the hub, changed the oil as directed & have never pressure washed, or submerged it!

Changing gear with Rohloff

Fiona and I find it really easy to change gear using Rohloff, we change gear smoothly and without thinking - but there was a bit of a learning curve.

All gear change systems need to have the input reduced at the optimum moment, in order to allow the gear shift to occur smoothly.

The gear change with Rohloff is really quick, it happens just a few hundredths of a second after turning the shifter and consequently the input needs to be reduced at the moment the shifter is turned.



Deraileur gears take between 0.5 and 1 second for the shift to take place after moving the shifter. It is at this precise moment when input needs to be reduced. After years of riding with deraileur gears, our legs become used to backing off on the power, at the exact moment to let the shift occur smoothly, without us even thinking about it - this is called muscle memory. Your deraileur gear muscle memory will be too late to allow a smooth shift with Rohloff. Or, indeed any shift at all if you're putting in lots of power. Your legs will need time to develop the new muscle memory necessary for changing gear using Rohloff.

If you don't back off at precisely the right time and you're applying lots of power, the hub will jam in 11th gear. This is quite amusing and happened to me on my first ride up a steep hill with Rohloff. I was changing from 2nd to 1st on a steep hill and suddenly being stuck in 11th felt as if the hub had seized - I thought that I'd broken it! No amount of turning or applying leg power helped - only when I came to a halt and consequently had released power, did the gear change occur and the seized hub magically mended itself!

For a Rohloff Newbie, I recommend actually stopping pedalling whilst you change gear - this will speed up the process of developing the requisite muscle memory. Please be assured this will not be necessary, once you've become used to Rohloff.

Andy Blance Oct 2019

Please note that, in the case of hubs with internal cables - as supplied with THORN RAVENS, the internal gear wire will snap eventually - changing gear with the twist grip then becomes impossible. In practice the rider's instinct is to twist the shifter when the cable snaps, so depending upon which cable snapped, the hub is (usually) in first gear or fourteenth. Removing the axle ring assembly (good quality Torx Tx20 driver and 8mm spanner) will allow the hub to be put into whatever gear is required and **the cycle can still be ridden.**

The replacement of the internal gear wire in a Rohloff hub isn't particularly tricky, once the very clear instructions have been read and understood. Having said that, I'd much rather change the cable at home (when I'm under no pressure, in the dry, under good lighting conditions, with my reading glasses, cable cutters and cup of tea available) than change it halfway up a mountain in a storm during the night!

But prevention is much better than cure, so why not consider maintaining the cable in the same way that you would the cam belt in your car? That is, change it at regular intervals, these intervals being shorter than the service life of the component.

I believe that, because our bikes, which are designed for hubs with internal cables, have such a perfect line of entry of the cable into the hub - **directly down the LH seat stay** - the cable should fail at the upper end of

Rohloff's 10,000-30,000km projected cable service life - so 20,000km service intervals should see very few, if any, of our customers with broken cables. To those poor, unfortunate individuals who always seem to have bad luck with mechanical things, I would suggest that, even if you changed it at 10,000km (i.e. every other oil change) it would require but a fraction of your time spent in maintenance compared to a derailleur system.

For the global tourist, the extremely cautious and the phenomenally unlucky, there are two alternative strategies to consider - taking a cable easy set, or sidestepping the issue completely - see below.

The Rohloff hub cable easy set (the name of a sub assembly which includes the cables and pulley) and a good quality Tx20 Torx driver; this allows the replacement of the cables in less time than it would take to repair a puncture and pump up a tyre! You then have 10,000km minimum to find a suitable time and place to perfect the technique to replace the 0.9mm cable in your old pulley assembly before you could possibly need it again.

The Rohloff hub cable easy set (for hubs after serial 25300) is available from SJS Cycles (SJSC part No. 16460) it comes complete with cables installed and cut to precisely the correct length, rubber gaiters fitted and QR fittings attached.



Here's how to COMPLETELY SIDESTEP the issue of replacing the internal cable. You can opt for the (more expensive and slightly heavier) version with the QR external cable box.

The **EX box** uses conventional cables, found in every bike shop in the world - 1.1mm gear inner cable and conventional (brake) outer casing.

The outer casing runs all the way through, from shifter to EX box and in the (unlikely) event of one of these breaking, disconnect the external box and a simple turn of an 8mm spanner will engage whichever gear you wish, enabling you to continue on to a suitable repair facility.

However, to function perfectly, the **EX box** really does require specific cable routing, it should run under the BB and under the LH chain stay. If cables are routed under the top tube and down the seat stay, the EX box will fill with water - such routing is only available on our **Thorn Mercury, Thorn Nomad Mk2, Thorn Nomad Mk3, Raven Twin tandem & Thorn Raven S-T 420** (step through)

I've been unable to discover any other problems with the Speedhub, every part is available as a spare part and Rohloff's philosophy means that each improvement to the hub may be retro-fitted to earlier hubs.

What I like about the Speedhub. I like the solid build of the Speedhub; it was originally built as an all-season MTB hub, for use in Northern Europe's extreme conditions - it's well sealed, all the internals run in a clean environment and are continually lubricated with clean oil

I like the fact that the **'indexing of the gears' takes place inside the hub**, this means that the twist grip, although beautifully made to enable easy replacement of the cables, is a low tech item - there is little to go wrong with it (unlike current derailleur shifters).

The twin-cable system means that there are **no return springs to fail**, either in the shifter or the hub.

I like the way that **the next gear (up or down) is only a simple twist of the shifter away** - none of that "changing up a chainring and down two sprockets malarkey"

I love being able to change gear without pedaling, it's easy to quantify but very difficult to express how really incredibly useful this is, when cycling in the "real world"!

It's great not to have a derailleur hanging low down waiting to be knocked.

The smaller chainring and sprocket (and lack of rear derailleur) means that the chain is less likely to cover your leg in black muck.

I like the way Rohloff have engineered the sprocket to be double sided - wear it out and then turn it round and get some more wear out of it, it's refreshing that, in today's throw away society, Rohloff have considered this to be a priority!

I like the way the my gears never 'jump' or slip - I feel really confident pedaling, or changing gear, when out of the saddle! As with any gearbox, it's possible to occasionally select a "false neutral", I've done this fewer than a dozen times in over 120,000km.

I like the **absolute silence of pedaling in gears 8 to 14** - once run in. Over the years I've come to appreciate the total reliability that Fiona and I have experienced with the Speedhub.

Things I dislike about the Speedhub

It would be too much to hope that there would be no dislikes but **they are few.** I don't enjoy the noise in gears 7 to 1, especially the noise in gear 7 but I can easily live with it, because it is the noise of precision parts rotating and meshing at speed, the hub does get quieter with the miles and, because I have carefully considered my gearing, I am in gears 8 to 14 most of the time!

2015 UPDATE. Rohloff hubs are now significantly quieter than they used to be and seem to require little or no running in.

I'm not obsessed with weight but, like most cyclists, I like things to be as light as possible; the hub doesn't weigh more than the items it replaces, but the frame needs some extra provision for the hub. The fact that all the weight is at the rear of the bike makes it feel heavier than it actually is when you pick the bike up, this is not noticeable, in any way, when riding the bike. To be fair to Rohloff, when you see a cut-away drawing (we actually have a cut-away hub in our showroom) and you see all those ball races, labyrinth seals, and needle bearings - when you see the quality of the machining, you realise they've done remarkably well to make it as light as it is!

I'm not going to cite the high cost as a negative feature because, looking at the quality of this product, it's actually an engineering bargain! And goodness only knows how many £££'s worth of shifters, cassettes, derailleur, chains, chain rings and rear hubs you would've needed to buy during the service life of the Rohloff Speedhub - however long that turns out to be! Or how many jammed chains, slipped gears or time spent with messy hands you'll avoid!

In short, the Rohloff Speedhub is German engineering at its absolute finest. The internals are so overbuilt, that nobody yet knows its real-world service life!

Unlike derailleur systems - it continues to get better as it gets older!

ROHLOFF BIKES with DROP BARS

Van Nicholas have had some 22.2mm diameter drop bars made, in 3 widths, 40cm, 42cm and 44cm, which are joined in the middle.

Although Van Nicholas say that the join in the bars is sufficiently strong by itself,

Van Nicholas insist that one of their stems is also used!

The Van Nicholas bars obviously allow the fitting of Rohloff's shifter, which is a huge advantage - as it's better and nicer to use than any 3rd party shifter.

The limited choice of stems means that relaxed positions may not be possible - which IMO is not an issue, as I fail to understand why anybody would want drops - unless they were looking for a fairly relaxed, fairly sporty, or sporty position!



NOTE: We will NOT supply a bike with Van Nicholas bars without a Van Nicholas stem!

We recommend getting a complete bike, rather than adding a hub to an existing machine - apart from the benefits described below - you'll also have all of our Thorn Guarantees.

One of the great joys of the Rohloff (apart from all the considerable benefits in operation, service and reliability) is that the significant investment in one is repaid, over the years, by being able to squeeze every last bit of service life out of the transmission.

Please note: Fitting the hub into a frame which isn't specifically designed for Rohloff (unless it happens to be a frame with exceptionally long horizontal dropouts) means that a chain tensioner will have to be used.

There's a serious downside in using a chain tensioner - the tensioner allows the chain to skip, when the transmission is only partly worn. The chain will also skip if you fit a new chain to a part worn sprocket - just as a derailleur system does.

If you fit an aftermarket hub kit, you must also use a torque arm to resist the considerable force trying to rotate the hub in the frame. We've had our own stainless steel vertical dropouts made, which

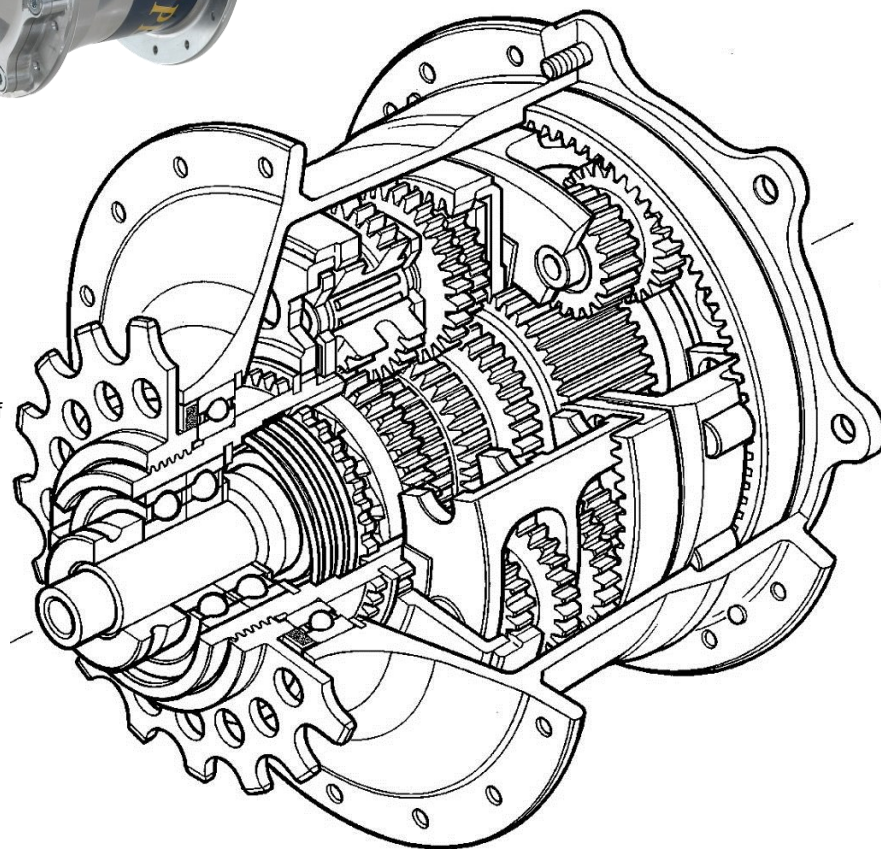
accept the bicycle manufacturers' version of the hub (OEM 1) which have a "mini torque arm" built into them.

The Rohloff cables run in continuous outer casing to the LHS of the hub, frames not carefully considered for Rohloff will need cable ties to secure these cables to the frame - this is neither as efficient nor as elegant as our totally thought out, Rohloff-specific frames.

I've taken huge trouble to get the smoothest cable runs, with the fewest bends, to assure light shifting. I've also had many different stainless cable guides cast, because I know that, in the real world, the cables will chafe the paint from the guides and I didn't want the ensuing rust to spread to the frame tubes.

Frames, which route bare wire under the bottom bracket for gear runs, are a sure sign that the builder has no experience with Rohloff. These will cause you problems very quickly, as grit will be drawn into the cables, which will soon make for heavy shifting.

I'd like to stress that neither Fiona, nor myself, have ever had any problem whatsoever with any of our Rohloff equipped bikes - and we've certainly put them to long and strenuous use! *Andy Blance, Jan 2019*



I don't know whether to laugh or cry, when I see some of the basic errors made on so-called "dream machines", which have been custom built, at great expense, for use with Rohloff hub - I've spent many years perfecting our bikes for Rohloff use and I've put this information into the public domain! There are few machines, which could compare favorably with even our most basic Thorn Raven - and remember, our most basic Raven comes with industry-leading warranties, backed up by our helpful, knowledgeable and enthusiastic team!

Please also note; we allow you a "100 day, money back if, not delighted" trial period, with our Rohloff bike - who else has such confidence in their product?

Please see Page 67 of the Thorn Mega Brochure for full details.

CLICK HERE For
THORN MEGA BROCHURE
PARTS 1, 2, 3 and 4

This is a very large file (40Mb) it may take a considerable time to open, please be patient.



New Thorn Eccentric

Late in 2017, after almost 2 years of emails and waiting, we received a delivery of 100 new

Raven Twin Mk3 tandem frames.

These are all S&S coupled frames - they're Rohloff-Specific and each frame features two new, full sized stainless steel eccentric shells.

Mercury Mk3 and **Nomad Mk3**

frames are both now in stock and also use our new eccentric.

PLEASE NOTE: You must **NEVER** tighten up the M6 clamps, unless the alloy eccentric is in the shell; furthermore, the "fat" part of the eccentric must be at the bottom, by the clamp. (See pic below)

The eccentric is anodised aluminium and the shell is stainless steel, yet **it's still important to keep the eccentric greased.**

We use "Coppaslip" anti-seize grease in our workshop.
Andy B Jan 2020



WARNING!

ROHLOFF and THORN PROVIDE EXCELLENT CUSTOMER CARE BUT WE BOTH CONSIDER IT TO BE IRRESPONSIBLE TO UNDERTAKE AN EXTENDED TOUR, WITHOUT APPROPRIATE TOOLS and/or CRITICAL SPARES.

ROHLOFF and THORN WILL NO LONGER PROVIDE FREE REMOTE SUPPORT TO TOURISTS WHO DON'T HAVE THE FOLLOWING:-

- 2mm Allen key
- 2.5mm Allen key
- 3mm Allen key
- 5mm Allen key
- 8mm box spanner
- 15mm box spanner (for axle nuts where applicable **Not required** on any Thorn Rohloff bike.
- Chain lubricant
- Grease
- Torx TX20 key
- Oil change kit 8410
- Sprocket tool 8501 **Not required** if the hub has been supplied or retro-fitted, with a splined sprocket.
- Spare Chain
- Spare Sprocket
- Spare spokes **as supplied with your Thorn**
- Complete shifter cables

For internal gear mechanism only; (i.e. NOT required with EX box hubs)

one of the following should be taken - depending on user ability:-

- Spare hub cables 8271
- Or Easy cable set 8573 (only for hubs after serial 25300)
- Or Quick change axle ring 8272.

If one, or more, of the above items are required for a repair and have not been carried - neither ROHLOFF nor THORN will be able to provide remote support - unless the customer agrees to pay, by PayPal, for these necessary spares or tools. **Be warned, carriage could be very expensive!**

Easy rear wheel removal with internal gear mech!

No tools required and takes seconds



Removal:

- (1) Release the V brake pipe
- (2) Quick-release the two Rohloff cables, simply by twisting them through 90 degrees
- (3) Quick-release the skewer.

You may now easily remove the wheel.

Replacement:

- To replace the wheel, reverse the process.
- (4) Locate the chain on the sprocket
 - (5) Ensure that the mini anti-rotation torque arm fits into the deep slot on the LH dropout.
 - (6) Tighten the QR skewer
 - (7) Clip together the two Rohloff cables.

Easy rear wheel removal with external gear mech.

No Tools required and takes seconds



EX Hub Wheel Removal

- (1) Ensure that the shifter is in gear 14.
- (2) If the bike has V brakes, release the V brake pipe.
- (3) Unscrew cable box thumbscrew and
- (4) Remove the cable box.
- (5) Quick release the skewer.

You may now easily remove the wheel.

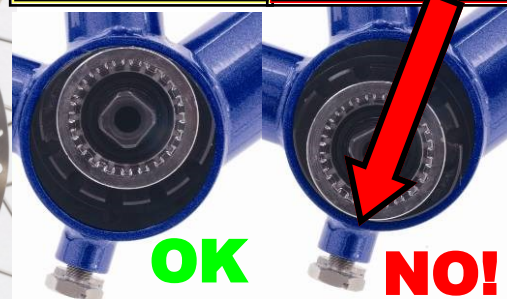
Replacement:

- To replace the wheel, reverse the process.
- (6) Locate the chain on the sprocket
 - (7) Ensure that the mini anti-rotation torque arm fits into the deep slot on the LH dropout.
 - (8) Tighten the QR skewer
 - (9) Check that shifter still reads 14, replace cable box and tighten the thumbscrew.

TIP. If you forget to engage gear 14 at the start, you can put the hub into gear 14 by rotating the hexagonal shaft, onto which the EX box seats, fully anti clockwise using an 8mm spanner.

Simple eccentric chain adjustment and perfect chain line!

WARNING! Do not position the eccentric in this low position...the eccentric bolts will penetrate the thin eccentric shell and damage the bottom bracket

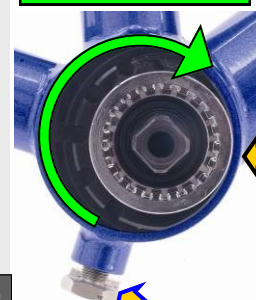


Loosen eccentric screws completely

NOTE:- These views of the eccentric are from the RHS side of the bike, with the chainring removed for clarity. There is no need to remove the ring to perform this procedure.

Rotating clockwise tightens the chain.

Rotating anti-clockwise loosens the chain.



Note that, in this position, maximum tension-adjustment has been reached and a link of chain must be removed, when the chain next becomes slack.

Tighten eccentric screws to a torque of between 10 and 17 Newton metres.

(This is about as tight as most people could get them with a short screwdriver)

When adjusting the chain, please remember to allow for the "tight" spot. Do not over tighten the chain. There is no need to constantly adjust chain tension...the chain is too slack only if there is a danger of it falling off the chain ring or sprocket.

Important safety notice.

Ensure that you reinstall the V brake pipe.

Please read this notice!

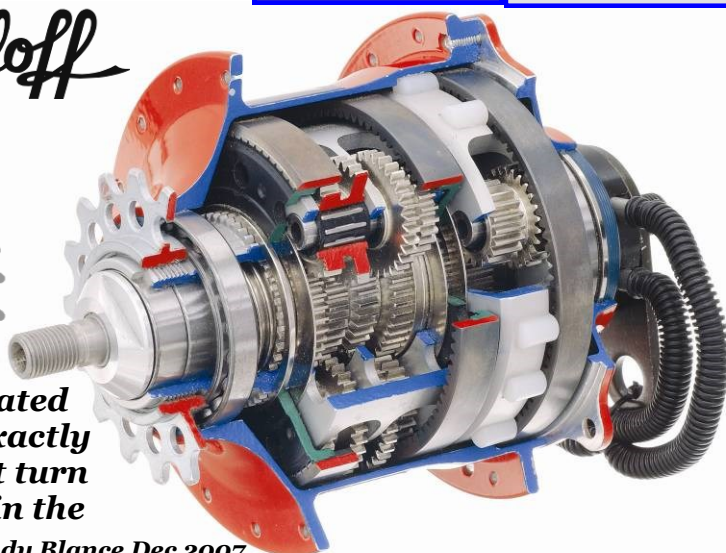


Mini anti-rotation torque arm



"It might look complicated but of course I know exactly how it works...you just turn the shifter and you're in the gear you need!"

Andy Blance Dec 2007



The new lightweight THORN stainless mini-eccentric.



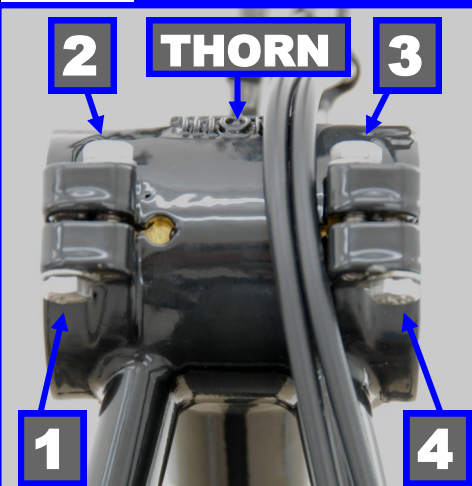
I've designed a new mini eccentric for the Thorn Mercury. I wish to state clearly that there's no intention of offering this on any of the other models. In order to actually save weight, the eccentric had to be smaller in diameter.

Being smaller in diameter means that it can only adjust a little more than half a link of chain. When no more adjustment can be made with the eccentric, a new chain must be fitted. By choosing one of the ideal chain ring and sprocket combinations, the service life of the chain is maximised.

I believe that customers, who require a sports bike, will be prepared to replace the chain. Such cyclists will certainly find obtaining and fitting a replacement chain and servicing the mini eccentric, easier than the expedition cyclist. Servicing and preparing any bike, for an important event, ought to be normal practice.

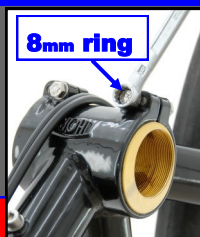
The 4 x M5 screws need to be tightened and loosened in a particular sequence, please see diagram. As soon as each screw becomes tight, each screw must only be turned a sixth of a turn (60°) at a time until they are tight.

Experience has now (Aug 2013) shown that the mini EBB screws don't need to be very tight, to prevent the eccentric from turning. 5 Nm is more than sufficient and there is zero chance of shearing a greased M5 screw at this torque.



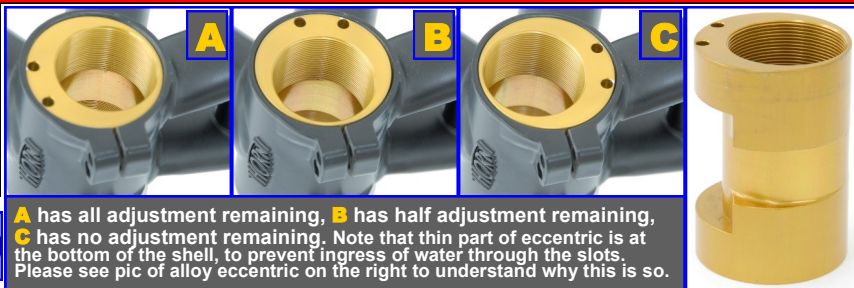
Tightening & loosening Sequence;
1, 3, 4, 2, 1, 3, 4, 2, etc.

Turn screws 60° turn at a time until fairly tight - the maximum torque of 5Nm is *usually* NOT necessary.



The screws must be removed at least every year and fresh copper slip must be applied to the threads. If the bike is used in harsh conditions, such as on salted roads or beaches, re-lubrication, with copper slip, must be more frequent. The whole procedure, whilst not in itself difficult, is certainly less simple with this new eccentric, which we use on all of our other Rohloff specific models.

The crude but effective eccentric will throw a whole link of chain and it may be used with any combination of chain ring and sprocket with impunity. I'm a great believer in horses for courses and having something fool proof, when you're in the middle of nowhere, is very reassuring!



Rotate the eccentric to tighten or loosen the chain.



Then re-tighten screws in sequence to secure the eccentric.

If your mini-eccentric is difficult, or becomes difficult, to rotate - here's our quick, easy solution.

Remove **all** the eccentric's screws (not shown). Refit the 2 outer screws as shown - apply only 3 turns to start with. Insert a thin coin in each slot as shown. Tighten both screws evenly - 4Nm is sufficient. The eccentric should now turn freely.



Adjust the chain tension, as shown above, when the chain tension is correct, remove the screws and re-install, observing tightening sequence shown above.



Rohloff gear ratios and comparison with derailleur gear ratios

On pages **47** and **48** you'll see gear charts for a Rohloff hub with various chain ring and sprocket combinations.

The 700c charts (on page **47**) show the only sensible combinations which will work with the mini eccentric BB used on Mercury.Mk1 and Mk2.

On page **48** you'll see a complete gear chart for 26" wheels.

Dec 2019 update. With a Mercury Mk3, thanks to its full size eccentric, you are not limited to the options given in the 700c gear chart - but it will still be useful in estimating other chainring/sprocket combinations.

The Rohloff hub has an overall range of 526%. That is the bottom gear gives more than 5 times the leverage of the top gear.

Or you may prefer to think of it like this, at the same speed you have to pedal more than 5 times faster in bottom gear than you do in top. 11th gear is 1:1 direct drive with a Rohloff hub

The old "Ordinary" bikes (Penny Farthings) used to have the cranks connected to the front wheel, without gearing - one rotation of the cranks was one revolution of the wheel. Riders use to talk of the size of the wheels in inches (taller riders could pedal a bigger wheel). The single geared safety bicycle was invented when chain technology allowed a chain ring to drive a sprocket. The safety aspect was that the rider was not way up in the air, they had brakes which worked and cranks that stopped rotating when the rider stopped pedalling. Riders used to calculate the gearing and refer to it as if was the actual size of a wheel. i.e. a 2:1 gear ratio on a 26" wheel produced the same gear as a 52" Penny Farthing. In much of the native English speaking world, we use this system today.

Rohloff won't give a warranty on the hubs, when a gear, with too low an input ratio is used - but even Rohloff-legal gears can be very low!

A	22	32	44
11	X	75.6	104.0
13	X	64.0	88.0
15	38.1	55.5	76.3
17	33.6	48.9	67.3
20	28.6	41.6	57.2
23	24.9	36.2	49.7
26	22.0	32.0	44.0
30	19.1	27.7	X
34	16.8	24.5	X

A typical modern MTB 27sp derailleur set up and also frequently recommended on 26" expedition touring bikes
The X combinations must not be used and the combinations in small print should be avoided.

14 distinct different gears

B	26	36	48
11	X	85.0	113.4
13	X	76.2	101.5
15	46.7	66.0	88.0
17	42.1	58.2	77.6
19	37.6	52.1	69.5
21	32.2	44.6	59.4
24	28.2	39.0	52.0
28	24.1	33.4	47.1
32	22.3	30.9	X
36	19.9	27.0	X

Thorn's wide range gearing option we've sold 100's of 700c bikes with this 30sp derailleur set up.
The X combinations must not be used combinations in small print to be avoided.

15 distinct different gears

For riders under 100kg in weight Rohloff now say (2016) that an input ratio of 1.9:1 is fine.

When riders weigh over 100kg or for use on a tandem, Rohloff now say that an input ratio lower than 2.5:1 must not be used.

Rohloff have put a figure on the maximum pedalling force with a 170mm crank of 150kg.

It's the input ratio and not the actual gear ratios produced which is critical.

In our opinion 40 x 17 (or 45 x 19, which is almost identical) is a good choice of gear ratio for general touring. Some may say that it's too low but if you're fit enough, or can get fit enough, to pedal at a knee-saving 100rpm and if you can keep this up for one hour you will travel 42.99 km in that hour on 26" wheels!

Being under 100kg, I have no problem with the gears obtainable with a 1.9:1 ratio.

However, if I weighed over 100kg and was out of shape, I'd consider taking responsibility for my actions and having lower gears - and, if I was 100Kg of muscle, I wouldn't even need such low gears!

We had some **19t** sprockets made for us. These have a longer service life - there are more teeth for a start but the greatest benefit is that, because the sprocket is larger in diameter, the chain doesn't have to perform such a tight bend. This means that there's less opportunity for grit to get behind the side plates. The chain lasts significantly longer and therefore there is less wear on the sprocket.

The new splined sprockets are also available in 19t

C	30	42	52
11	X	99.3	122.9
12	X	91.0	112.7
14	55.7	78.0	96.6
16	48.8	68.3	84.5
18	43.3	60.7	75.1
21	37.1	52.0	64.4
24	32.5	45.5	56.3
28	27.9	39.0	X
32	24.4	34.1	X

A frequently seen combination - once the owner realises that, even with a 27sp set up, racing gearing needs racing legs to go up steep hills and the tight racing cassette is replaced with an MTB cassette.
The X combinations must not be used combinations in small print to be avoided.

14 distinct different gears

I've shown various derailleur gear set ups at the bottom of this page,

To enable you to quickly compare the ratios available with derailleur gears with those available with Rohloff. If you're moving from derailleur gears to Rohloff it's most important, when deciding which chainring and which sprocket will be most suitable for your intended application, that you **confirm that the cassette and chain ring combination that you think you have is actually the one that you do have.** It's also a good idea, if you're perhaps contemplating your first long, self supported tour in high mountains (or relentless steep hills) to consider that you'll need gears which are much lower than anything you've previously required - unless you've completed ultra-long MTB rides up steep hills in heavy mud - in which case this would be a good gear for heavily loaded touring in hilly terrain, when tired. Having such low gears will almost certainly mean that you don't have gears high enough to pedal, when you're descending long or steep hills. This shouldn't matter, you'll probably be glad of the rest, as you freewheel along at speed. Not having low enough gears, when you're tired and have to ride up a long hill, when you still have some distance to travel, really does matter.

If you're looking at a sporty bike with Rohloff gears, to replace an existing sporty bike, it's sensible to make sure that your top gear is as high as the one you are currently happy with - achieving this shouldn't be a problem and you're almost certain to pick up some extra low gears, as a bonus.

D	34	50
12	X	112.5
13	X	103.8
14	65.6	96.4
15	61.2	90.0
17	54.0	79.4
19	48.3	71.1
21	43.7	64.3
23	39.9	58.7
25	36.7	X
28	32.8	X

Many modern sportif bikes use this typical compact double set up - you get lovely close ratio gearing but you certainly need to be very fit for hilly events!
The X combinations must not be used combinations in small print to be avoided.

14 distinct different gears

E	36t Chain ring	F	32t Chain ring
11	90	10	88
13	76	12	73
15	66	14	62
17	58	16	55
19	52	18	49
21	47	20	42
24	41	24	36.5
28	35	28	31.5
32	31	32	26.5
37	27	36	22.5
46	22.5	40	19.5
		44	17

Many 2019 MTBs and Gravel bikes use the "one by" system. Special chainrings are essential, to reduce the number of times the chain falls off. Wear is very high in the small sprockets and the 12sp XTR cassette costs £350 to replace! Not only does it look ugly but IMO, it's far from ideal on a touring bike!

Gear	1	2	3	4	5	6	7	8	9	10	11	12	13	14
37 x 19	14.7	16.6	18.9	21.5	24.4	27.7	31.5	35.8	40.7	46.3	52.5	59.6	67.9	77.0
41 x 19	16.2	18.3	21.0	23.8	27.0	30.7	35.0	39.7	45.1	51.3	58.2	66.1	75.2	85.4
39 x 17	17.3	19.6	22.3	25.4	28.7	32.8	37.2	42.2	48.0	54.6	61.9	70.4	80.0	90.9
45 x 19	17.8	20.1	23.4	26.1	29.6	33.7	38.4	43.6	49.5	56.3	63.9	72.5	82.5	93.7
43 x 17	19.1	21.5	24.5	27.9	31.7	35.8	40.8	46.5	52.8	59.8	68.3	77.4	88.1	100.2
49 x 19	19.4	21.9	25.1	28.4	32.2	36.7	41.8	47.4	53.9	61.3	69.6	79.0	89.9	102.0
47 x 17	20.8	23.6	26.9	30.5	34.6	39.4	44.8	50.9	57.7	65.7	74.6	84.0	96.4	109.4
50 x 17	22.2	25.1	28.6	32.5	36.8	41.9	47.6	54.2	61.5	70.0	79.4	90.1	102.6	116.5
51 x 16	24.0	27.2	31.0	35.2	40.0	45.5	51.7	58.7	66.6	75.9	86.1	97.7	111.2	126.3

Gear Chart for 700 x 28c

Gear	1	2	3	4	5	6	7	8	9	10	11	12	13	14
37 x 19	15.2	17.2	19.6	22.3	25.3	28.8	32.7	37.2	42.2	48.0	54.5	61.9	70.4	80.0
41 x 19	16.9	19.1	21.8	24.7	28.0	31.9	36.3	41.2	46.8	53.2	60.4	68.6	78.1	88.7
39 x 17	17.9	20.3	23.1	26.3	29.8	33.9	38.6	43.8	49.7	56.6	64.2	72.9	83.0	94.3
45 x 19	18.5	21.0	23.9	27.1	30.8	35.0	39.8	45.2	51.3	58.4	66.3	75.3	85.7	97.3
43 x 17	19.8	22.5	25.5	29.0	33.0	37.5	42.6	48.3	54.9	62.4	70.8	80.5	90.7	103.9
49 x 19	20.1	22.8	26.0	29.5	33.5	38.1	43.3	49.2	55.9	63.6	72.2	82.0	93.3	106.0
47 x 17	21.6	25.0	27.8	31.7	35.9	40.9	46.5	52.8	60.0	68.3	77.4	88.1	100.1	113.6
* 50 x 17	23.0	26.0	29.6	33.7	38.2	43.5	49.4	56.2	63.7	72.6	82.4	93.5	106.4	120.8
* 51 x 16	24.9	28.2	32.1	36.5	41.4	47.1	53.6	60.9	69.1	78.6	89.3	101.3	115.3	130.9

Gear Chart for 700 x 40c

All the gear combinations shown are OK for use on solo bikes, by riders who weigh less than 100kg.

The Bright yellow highlighted Gear options are OK for use by riders over 100kg, or for use on tandems.

NOTE:- we don't recommend 700c wheels for cyclists over 100kg and, whilst it's now possible with the Raven Twin Mk3, we haven't supplied any of our tandems with 700c wheels either!

The green columns show 8th gear.

The pink column shows 11th gear which is direct drive

*** With the exception of 50 x 17 and 51 x 16, which use 45% of available adjustment when new, the combinations of chain ring and sprocket shown on this page will all work perfectly with the 700c Mercury and will provide maximum possible service life of the chain.**

	Gear	Number of teeth on chainring x number of teeth on the sprocket													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	40 x 21	14.1	15.7	17.8	20.2	23.0	26.1	29.8	33.8	38.3	43.6	49.5	56.2	63.9	72.7
	41 x 21	14.4	16.1	18.2	20.7	23.6	26.8	30.5	34.6	39.3	44.7	50.8	57.6	65.6	74.5
	43 x 21	14.8	16.9	19.1	21.7	24.7	28.1	32.0	36.3	41.2	46.9	53.2	60.4	68.7	78.1
	44 x 21	15.2	17.3	19.6	22.2	25.3	28.8	32.8	37.2	42.1	48.0	54.5	61.8	70.3	80.0
	45 x 21	15.5	17.6	20.0	22.7	25.9	29.4	33.5	38.0	43.1	49.1	55.7	63.2	71.9	81.8
	36 x 19	13.7	15.6	17.7	20.1	22.9	26.0	29.6	33.6	38.1	43.4	49.3	55.9	63.6	72.3
	37 x 19	14.1	16.0	18.2	20.7	23.5	26.7	30.4	34.5	39.2	46.6	50.6	57.5	65.4	74.3
	39 x 19	14.9	16.9	19.2	21.8	24.8	28.2	32.0	36.4	41.3	47.0	53.4	60.6	69.0	78.3
	40 x 19	15.3	17.3	19.7	22.4	25.4	28.9	32.8	37.3	42.4	48.2	54.7	62.1	70.7	80.3
	41 x 19	15.7	17.7	20.2	22.9	26.0	29.6	33.7	38.3	43.4	49.4	56.1	63.7	72.5	82.3
	42 x 19	16.1	18.2	20.7	23.5	26.7	30.3	34.5	39.2	44.5	50.6	57.5	65.2	74.3	84.3
	43 x 19	16.5	18.6	21.2	24.1	27.3	31.1	35.3	40.1	45.5	51.8	58.8	66.8	76.0	86.3
	44 x 19	16.9	19.0	21.7	24.6	28.0	31.8	36.1	41.0	46.6	53.0	60.2	68.3	77.8	88.3
	45 x 19	17.2	19.5	22.2	25.2	28.6	32.5	36.9	42.0	47.7	54.3	61.6	69.9	79.6	90.3
	46 x 19	17.6	19.9	22.7	25.7	29.2	33.2	37.8	42.9	48.7	55.5	62.9	71.4	81.3	92.3
	47 x 19	18.0	20.2	23.2	26.3	29.8	34.0	38.6	43.9	49.8	56.7	64.3	73.0	83.1	94.4
	48 x 19	18.4	20.8	23.6	26.9	30.5	34.7	39.4	44.7	50.8	57.9	65.7	74.6	84.9	96.4
	32 x 17	13.6	15.5	17.6	19.7	22.7	25.8	29.4	33.4	37.9	43.1	48.9	55.5	63.2	71.8
	36 x 17	15.4	17.4	19.8	22.5	25.5	29.1	33.0	37.6	42.6	48.5	55.1	62.5	71.1	80.8
	38 x 17	16.2	18.4	20.9	23.8	27.0	30.7	34.9	39.6	45.0	51.2	58.1	66.0	75.1	85.3
	39 x 17	16.6	18.9	21.5	24.4	27.7	31.5	35.8	40.6	46.2	52.5	59.6	67.7	77.1	87.5
	40 x 17	17.1	19.4	22.0	25.1	28.4	32.3	36.7	41.7	47.4	53.9	61.2	69.5	79.1	89.8
	41 x 17	17.5	19.9	22.6	25.7	29.1	33.1	37.7	42.7	48.6	55.2	62.7	71.2	81.0	92.0
	42 x 17	17.9	20.3	23.1	26.3	29.8	33.9	38.6	43.8	49.7	56.6	64.2	72.9	83.0	94.3
	43 x 17	18.3	20.8	23.7	26.9	30.6	34.7	39.5	44.8	50.9	57.9	65.7	74.7	85.0	96.5
	44 x 17	18.8	21.3	24.2	27.6	31.3	35.4	40.4	45.9	52.1	59.3	67.2	76.4	87.0	98.8
	45 x 17	19.2	21.7	24.8	28.2	32.0	36.4	41.3	46.9	53.3	60.6	68.8	78.2	88.9	101.0
	46 x 17	19.6	22.2	25.3	28.8	32.7	37.2	42.2	47.9	54.5	62.0	70.3	79.9	90.1	103.3
	47 x 17	20.0	23.2	25.8	29.4	33.4	38.0	43.2	49.0	55.7	63.3	71.8	81.6	92.9	105.5
	48 x 17	20.5	23.7	26.4	30.1	34.1	38.8	44.0	50.0	56.8	64.7	73.3	83.4	94.9	107.7
	49 x 17	20.9	24.2	26.9	30.7	34.8	39.6	45.0	51.1	58.0	66.0	74.9	85.1	96.8	110.0
	50 x 17	21.3	24.7	27.5	31.3	35.5	40.4	45.9	52.1	59.2	67.4	76.4	86.8	98.8	112.2
	51 x 17	21.7	25.2	28.0	31.9	36.2	41.2	46.8	53.1	60.4	68.7	77.9	88.6	100.8	114.5
	52 x 17	22.2	25.7	28.5	32.6	36.9	42.0	47.7	54.2	61.6	70.1	79.5	90.3	102.8	116.7
	48 x 16	21.8	24.6	28.1	31.9	36.2	41.2	46.8	53.2	60.4	68.7	78.0	88.5	100.8	114.4
	50 x 16	22.7	25.7	29.3	33.2	37.7	42.9	48.8	55.4	62.9	71.6	81.3	92.2	105.0	119.2
	51 x 16	23.1	26.2	29.8	33.9	38.5	43.8	49.8	56.5	64.2	73.0	83.0	94.1	107.1	121.6
	52 x 16	23.6	26.7	30.4	34.6	39.3	44.6	50.7	57.6	65.5	74.4	84.4	96.0	109.2	124.0

NOTE: 34 x 17, 38 x 19 & 42 x 21

are NOT included as options because the precise 2:1 ratio means that the same teeth on the sprocket are subjected to the peak pedalling forces, twice with every turn of the cranks - this will result in a shorter service life. It's also best to avoid using **51 x 17** and **48 x 16** because of the precise 3:1 ratio.

All the gear combinations shown are APPROVED for use on solo bikes, by riders who weigh less than 100kg.

The Bright yellow highlighted Gear options are OK for use by riders over 100kg, or for use on tandems.

The green column shows 8th gear.

The pink column shows 11th gear which is direct drive.

26" wheel gear chart for Rohloff hubs