

Zero Friction Cycling

Master Link FAQ Guide!

Alrighty with the uptake of immersive waxing (well done peoples!) as well as better understanding re one should REALLY look after ones chain – especially if often riding offroad, wet lubricants, post wet rides etc – as chain just does oh so much work under high load and completely exposed to contamination.

Your chain and its lubricant truly is exposed to an EXTREME lubrication challenge, and so moving to immersive waxing which requires you to pop chain on and off, as well as great periodic maintenance which really requires chain to come off vs on bike clean – and this will pay you back many fold in vastly greater chain, and therefore drivetrain component lifespan – very handy with high cost of many cassettes & chain rings – it truly is extremely beneficial to learn the basic skill of how to easily remove and re-install your chain – same as one should learn how to fix a flat tire.

Many many many cyclists are getting on this, which is most excellent indeed, but with that excellent trend, along with more difficulty now in the land of 12spd chains being more proprietary – there has been a huge increase in enquiries lodged re master links – hence this FAQ – enjoy!

10 speed chains

Easy – either use the link that matches your chain brand, or use YBN QRS 10 links that are officially 5x re-useable.

11spd chains

Same as 10spd chains.

12 spd chains

Ok here things get more fun.

CAMPAGNOLO – You can use either sram eagle links (officially single use, more on single use links below) or YBN QRS 12 links that are officially 5x re-useable. The campagnolo record 12spd chain is a blindingly fast chain, and so I would stay with this chain if you run campy 12, only changing to YBN 12 if you want some colour in your life.

YBN SLA 12spd – The ybn SLA 12spd chain is the top plug n play go fast race chain for sram eagle mtb 12spd riders. Sram eagle xx1 / x01 chains are by far the worlds longest lasting chains but they are so, so slow. You will save a good bunch of watts on race day using ybn 12spd for races, train on xo1 / xx1. This is what I do.

For road use of YBN 12 – use QRS 12 links (ie campy 12 riders) as they are officially 5x re-useable.

For mtb use – personally I use sram eagle links as they have a long curved locking channel vs short straight locking channel which is fine for road – but I have had a QRS 12 link failure on mtb.

Sram Eagle 12 spd (MTB) – Use sram eagle 12 spd links (not their road 12spd links, they will not fit, they must be EAGLE links. These are officially single use – more on that after this section.

Shimano 12 spd – Shimano chain is a little thinner than Eagle / ybn / Campy – recommend use Shimano's 12spd links. They are officially single use – more on that after this section.

Note on Shimano 12spd chains – Shimano 12spd chains have inner plate links that extend PAST THE ROLLER as part of their hyperglide + shifting system. This makes the chain not compatible with traditional narrow / wide chain rings, you must run a shimano hyperglide + compatible chain ring (there are some great ones available from wolf tooth for mtb riders). In most cases if running shimano 12spd chain on a different brand 12spd cassette (sram eagle, campy 12) – in most cases it seems to run perfectly – however there have been reports of inner plate link extensions rubbing on side of cogs in the more extreme chain line angle gears (ie 50 to 52tooth cogs). A number of intangibles from chain ring size, chain stay length, chain ring q-factor etc will affect final chain line, and so for cassettes not specifically designed for hyperglide+ chain, you MAY experience issues.

For those that try and do not experience issues, or if you are on shimano 12spd - then the XTR 12 chain in ZFC's highly tested and assessed opinion – it is the overall the best chain on the market / best chain ever developed thus far.

It is fast. It has unsurpassed shifting quality. And shimano has increased durability of the xtr 12 chain to near double that of their Dura Ace 11spd chains.

Due to extreme lubricant test volumes I have not been able to wear test XT and lower level shimano chains so I only have data for XTR level, typically there is a small drop in performance to one level down, then a much larger drop after that.

As your chain is your hardest working component by absolute miles, completely exposed to contamination - NEVER skimp on your chain – I would run XT as a minimum, and highly recommend XTR.

There are a lot of reports from around the world of cyclists using shimano 12spd chains on their 11spd shimano drivetrains and experiencing BETTER shifting than their 11spd set up, and in the case of XTR, vastly greater wear lifespan.

However – just always take note that mixing and matching standards is not a guarantee – again due to many factors – your experience may differ to what you have read on a forum. It may also be just as good. If you have the budget to try and not be hurt if it doesn't work well, then in this case you have nothing to lose apart from possibly poor shifting / rubbing of inner plate links on high chain line angles on ring / cassette teeth – and go back to your 11spd chain. If it does work better, then yeehaa – you are able to run what ZFC rates as the highest performance chain on the market currently.

Some like me on one of my mtb's have installed a shimano 12spd compatible wolf tooth ring on my axs eagle drivetrain, and run XTR 12 chain as race chain on that bike. In my use case, the XTR 12 chain shifts better than the eagle training chain, I have no rubbing in largest cog, and saving a bunch of watts vs eagle chain on race days (as per outright efficiency test data from ceramic speed test lab – cannot publish yet as it's not my data – working on that).

As per below section pls note **you cannot** use this chain on Sram axs ROAD drivetrains, but it is an 11/128 standard chain, as is sram EAGLE mtb chain – so it **MAY** be compatible with your EAGLE drivetrain **AS LONG AS** you replace the chain ring to a **shimano 12spd compatible ring**.

It is expected with shimano 12spd road, which has been launched and so should be commercially available by year 2050 or so as per shimano normal launch to availability schedules (**insert a long suffering sigh here*), that they will be using the same chain which is excellent news – it is a phenomenally great chain – ticks every single box – it is fast, amazing shifting, great durability.

Sram Axs Road 12spd – YOU MUST USE SRAM AXS ROAD flat top links. The axs road chain is much thinner than other 12spd chains. They are officially single use – more on that after this section.

Just on sram axs road – note this is a completely different standard to all of the other 12spd chains listed above which are still an 11/128 standard chain. Ax road is much thinner, and has oversize rollers.

Unfortunately, despite warning on 12spd chain product page, sometimes people still buy a YBN 12 or other 12spd chain for their sram axs road 12spd drive train. NO OTHER CHAIN IS COMPATIBLE.

Aside from being too wide and may rub on cogs / be near impossible to tune gears, as the axs road cassettes and chain rings are made of axs road chains oversize rollers, running another brands chain on your axs road drivetrain would be like running a chain on a very worn cassette / rings.

There is a high risk that under load the chain would jump. If you stand up and power down and chain jumps off chain ring – this can and does lead to riders going over the handlebars for a hot date with the asphalt, broken bones often ensue, or worse.

You MUST run axs road 12spd chains on your axs road 12spd drivetrain.

This issue is being confused somewhat as some aftermarket companies like Alu gear offer a 12spd chain ring that is apparently compatible with all 12spd chains. This leads people to then buy a non axs road chain, but this spells disaster when put onto the axs road cassette.

I have asked alu gear to include this warning on their chain rings. No dice – so obviously they don't care if you go over the handle bars. I do. Don't do it.

If on axs road, you must stay in that ecosystem, currently there are ZERO aftermarket chains that are officially compatible with axs road drivetrains. If a chain claims to be compatible with say eagle and axs road – this is not possible as they are A COMPLETELY DIFFERENT STANDARD – and they are risking you suffering a potentially bad injury, as well as horrible running drivetrain.

KMC 12spd – ZFC's strong recommendation is to avoid this chain.

The kmc 12 chain has extremely fast wear rates (as in almost unbelievably fast), the coatings they use seem to have top known wax / chain coating lubricants adhere poorly and have very low treatment lifespan – the chains faired very poorly in control testing, and in field testing a wax treatment would

barely last a 1.5hr xc race without sounding very dry, whereas YBN / Campy / Sram / Shimano 12 chains remain silky smooth for circa 8hrs + per treatment in most dry conditions.

And even on the top known lubricants – myself and other field testers were only attaining 600 to 800km to 0.5%, whereas other brands on wax even in hard Mtb training and racing – wear is minimal on msw or hot melt even after 2000km+ (as in around 0.1 to 0.2% wear only).

Also – kmc claim this re their 12spd chain;

“Compatibility: Shimano, SRAM and all other 12 speed drivetrains | 1x12”

As per above section covering that AXS road 12spd is **A COMPLETELY DIFFERENT STANDARD** – ZFC cannot understand how the above claim by KMC can be accurate, and it could be potentially very dangerous.

For legal reasons, the above I am stating as my personal opinion, not as established fact. (But – you decide if it is likely to be factual, it’s your potential hot date with asphalt, and your drivetrain at risk of early death, not mine, I know what I’m doing, I spend my life hyper focused in a very small niche area of cycling networking with the top brains in the industry – you decide if you want to follow independent assessed advice or sales and marketing from one brand. A brand that also advocates that the biggest mistake people make is to clean off their chains factory grease. Yeah – we should all be riding a contamination magnet lubricant in the world of dirt and dust. Beyond idiotic advice (in my opinion...). They are interested in selling you their chain. I am interested in ensuring you are on the best chain and lubricant for your groupset and riding. Your choice.

Lastly – not to bang on too much – but a driving part of what ZFC is all about is highlighting manufacturers bringing great products to market in lubricant and chains space, and holding to some account mfg who just bring marketing hyperbole to market and poor performing products.

I have very big concerns re KMC behaviour here, it is (in my opinion) a terrible chain, and the compatibility advice irresponsible. Such behavior should not be supported.

13 Speed Chains

Officially there is only one 13spd chain on the market at the moment which is campagnolo Ekar chain for campagnolo's very exciting looking Ekar groupset. I'm currently torn between whether the upgrade in future on my cx / gravel bike should be super refined 2x grx di2, or staying 1x with Ekar – I really admire what campy have done here.

It is still an 11/128 standard chain but due to having more narrow external dimensions – I recommend to use official Campy ekar master links.

Yes finally a decade later than they should have, they finally have a master link.

(Next step will be to stop the enormous waste of resources of including a massive instruction book in every chain box. The internet has been around for a while now... cmon campy.....sheezus..... if you are reading this please email campy and ask them to stop – if they get enough emails they may finally stop this useless waste of paper, resources and money. Money they need to catch up in other product development area's).

The Ekar link is officially single use – more on that below.

Rotor Uno 13spd – Currently rotor uno tends to recommend using the kmc 12 chain – but due to the extremely short lifespan of this chain, and the extremely high expense of a rotor uno 13 cassette – holy batman would I avoid running that.

People have had issues trying the shimano chain due to inner plate link extensions rubbing on side of teeth at high chain line angles.

The use base of uno 13speed has been too small to properly assess how well YBN 12spd or Sram eagle 12spd chains run on Uno – I suspect fine – but will update this document section over time when I have more information.

If I was me and I was on Uno 13spd, I personally would now run campy ekar 13spd chain. Campy chains are very high quality and fast and decent but not brilliant durability (but leagues better than kmc 12 on that front).

SINGLE USE VS MULTIPLE USE MASTER LINKS

Alrighty so this question comes up a lot – with many 12spd systems (shimano, sram eagle, sram axs road) where you really should use that mfg link for that chain, and the link is officially single use – this would be problematic if hoping to move to immersive waxing as cost of using a new link every time would completely blow out the savings you are achieving from much lower chain and drivetrain wear rates from immersive waxing with a proven top wax (Mspeedwax / silca hot melt, not DIY wax or WEND WAX).

I cannot advise you to go against manufacturer instructions, this is a call you must make yourself as to whether or not you re-use an officially single use link.

What I can say is that in all the years and countless immersive waxers re-using single use links circa 5x same as YBN QRS links – to date I know of one (1) link failure. I personally re-use my mtb eagle links on eagle training chain 5x, and same for shimano xtr 12 chain with shimano link. With well over 100,000km of personal cycling on immersive waxing, I have never had a failure of these links doing such.

But – I'm not super powerful, and I don't change gears like some do. I know some riders who break multiple chains a year across multiple brands, I've never broken a chain in my life. Some of these I am able to regularly out power as a race goes on, so the power difference between us cannot be that massive. I can only deduce that some riders who suffer constant chain failures regardless of brand tend to change gears under very high pedaling loads, and others who never break a chain, change gears as one is meant too. Electronic shifting has drastically increased chain breakage rates as people shift under loads they never would have attempted with mechanical shifting.

The likelihood of a master link failure (re using or not) is more likely going to be attributed to your shifting pattern vs re-using circa 5 times.

Again, this is my OPINION – not stated as fact, nor have I been able to control test – all information is anecdotal – albeit from a rather enormous immersive waxing customer base over 5+ years of operation now.

However – If you are not comfortable re-using an officially single use master link, but you want to immersively wax to get the huge drivetrain longevity & low friction and cleanliness benefits of immersive waxing with a proven top wax (NOT DIY WAX OR WEND WAX), thankfully now there is a product designed specifically for use in conjunction with immersive waxing;

Silca Super Secret Drip.

So main recommendation if not comfortable to re-use single use links is to start waxed, re lube next circa 5 x re-lubes with silca ss drip, then re-wax to reset any contamination that has started to build, and use a new link.

Also ALWAYS use a new link for any important race.

And – I do not recommend re-using links more than 5x just to be safe. They don't cost that much at all for the km's / hours you get from 5x re-uses for 5 x wax treatments – you will still save a lot by immersive waxing overall on your extremely low drivetrain wear – it well outweighs cost of links – so there is no need to risk pushing re-uses to 10 etc. Try to stay at 5.

You will get to feel fairly quickly when you should replace a link. Each time you re-use, it is easier to reconnect, until it is easily done by hand vs using a tool. You should replace a link by this time.

Used links like this are the best links to carry as your spare link in case of a failure / chain break as you can easily install on the road / trail. Some brands new links (ie shimano) have EXTREMELY tight locking channels that can be beyond the strength of some customers even with a tool, let alone a mid ride install with no tool, so carry a used vs new master link in your emergency pack.

For all 7,8,9,10 & 11spd chains you have the option of YBN QRS links which are officially 5x re-usable, and also for YBN 12spd chain although as mentioned in YBN 12spd chain section – personally I am only using the QRS 12 links for on road use, I am using Eagle links on YBN 12 chain for offroad use – however officially YBN say there are no issues with their links offroad – but.... I have had a failure, and its my only link failure ever – so I am currently cautious until YBN release QL12 link like their ultra secure QL 11 link which has a long curved locking channel – it is apparently being released soon (but they are a bit like shimano re promising release and delivering release).

Wippermann Connex links

Some customers prefer to use wippermann connex links as they do not have a re-use limit, and do not require a tool to pop on and off.

I have used in the past and they are handy, but – the 11spd link is very expensive – you get basically the same lifespan from a pack of 6 YBN QRS links, the wippermann links have no longevity treatment on pins so tend to wear faster than a quality chain over time, and I have seen some customers experience the pin separate from the link plate.

Also, some customers never quite get on top of which way to install leading the link to jump every time it comes around the cassette in the smaller cogs. Sort of funny when people accidentally install the wrong way around for a race and are stuck with the thunk / thunk / thunk ever few pedal strokes, and takes out their ability to sprint.

So ZFC does not stock or recommend as although personally I found them handy for cx bike training chain that I pop off for waxing a lot, they are were too much of a Pain in the butt to sell and support due to install issues / a few failures.

But – some customers love them, never had an issue – if so best place I have found to buy is Merlin Cycles who normally keep stocks for 10 and 11spd chains. They do not have one for 12spd yet.

Ok- hope that covers it for Master Link FAQ's!