

Frequently asked Technical Questions at the track

3/32" chain versus 1/8" chain

Q: Is it OK to mix various width cogs and chains?

*Answer presented by Colby Pearce,
former USA Cycling Track Endurance Coach*

A: NO, it is not recommended in any case. Read on...

(Some people mistakenly refer to the width as “pitch”, speaking of “road pitch” or “track pitch”. This is an error. The pitch is the distance between the rollers, and all modern bicycle chain has the same pitch, 1/2”/12.7 mm.)

First of all, to use a **thicker 1/8th inch (“track width”)** chainring or cog with a **thinner 3/32nd inch (“road width”)** chain is not possible, as the chain is not wide enough and will not engage the teeth on the ring or cog. While it is possible to do the reverse and use a 3/32nd inch cog or chainring with a 1/8th inch chain, it is not recommended because the narrower width of the 3/32” ring or cog will encourage the derailing of the chain from the system during riding. This could cause a crash or at the very least, ruin some equipment, even if you do not go down.

In synopsis, there are slight differences to each system, but both are adequate for track use. As a general rule, **SPRINTERS** should always select 1/8th inch width equipment, but **ENDURANCE** riders could get away with either. Even riders who “cross over” frequently and are competitive in sprint events are fine to use 3/32nd width chains, as long as they do not train heavily for these disciplines (meaning boatloads of standing starts with weight vests) on the equipment. Brad Huff & Jame Carney both use 3/32nd width chains and have both won medals at USA Elite National Kilo championships.

Endurance riders at the world level are probably split as to which width they ride; the British riders all use 1/8th inch, while Sarah Hammer won her second world title in Majorca, Spain on a Wippermann 808 3/32nd chain. Six Day racers generally run 1/8” to help with reliability on small



Women's Match Sprints World Championship action with Jennie Reed (Kirkland, WA) ahead of Victoria Pendleton (GBR)



Colby Pearce (author on black bike) throwing Marty Nothstein into the Madison at the World Championships in LA

tracks with huge g-forces. Those same riders on the World Cup circuit will use 3/32 to help lower weight of their machines. (although with some carbon fiber frames, using the heavier 1/8 may help a bike meet minimum weight limits.)

1/8th inch: the Sprinter's Chain

(Match Sprint, Keirin, Kilo, Team Sprint & Six-Day riders)

1/8th inch width chains are commonly used for sprint distance events on the track. At the world level, everyone who competes in sprint events uses this width chain without exception. The reason is that the men (and some women) often weigh close to 200 lbs, produce fantastic power outputs along with massive amounts of torque, especially in standing start events such as the Team Sprint. The stout construction and durability of these wider chains mean they very rarely fail under load. In fact, I can't remember the last time I saw or heard of a 1/8th inch chain fail during a track race or workout.

The only cons of this system (and I will use the term "system" as 1/8th inch chains are commonly and should be used with the same width cogs and chainrings) is possibly weight; a rider who is attempting to build up a super light track bike might make this a consideration, assuming they are planning to enter endurance events primarily. However, I don't consider this to be a significant "con".

The standard for 1/8th inch width chains is the Izumi V, which is manufactured in Japan and is NJS Certified (a rigorous standard which applies to Japanese Keirin racing bicycles and components).

These chains are broken via a special link which is not driven out with a pin tool like a road chain, but is removed with a screwdriver. This allows for the chain size to be changed if necessary to accommodate different gear ratios and still have room on the bike's drop outs for the wheel.

Six-day riders are considered "Endurance" types by many, but their rigorous nightly race schedule



USA Sprinter, Jennie Reed tightening wheel bolts & checking chain tension prior to her training session at Beijing.



Notice the screwed in silver bolt on the Izumi V chain on the left?



photo: Izumi Chains - www.businesscycles.com

on small tracks makes them choose this type of chain to avoid mechanical problems that can leave them out of the action of the show. Can't get paid if you don't race, I suppose.

3/32nd inch width: Endurance Rider's Chain
for any over 10km (Scratch, Points, World Cup type Madisons, Individual Pursuit, Team Pursuit) or any rider under 180lbs

3/32nd inch width chains are the same chains used for **8-speed road** systems, with a pin width of close to 7.2mm. Slightly wider or narrower chains will suffice, however I do not recommend that anyone use a 9 or 10-speed road chain on their track bikes, as the chain width will be too narrow to properly engage the teeth of the chainring and cog, and these chains are too narrow to withstand regular standing starts and sprint work done by serious trackies. Some 7 speed road chains will work fine, but it is becoming increasingly difficult to find these chains manufactured of any real quality, as most are intended for commuter style bikes and low end cruisers.

The rider is left with 8 speed chains as a choice, and in most cases must select from a few commonly available options. One problem is that most 8 speed road chains are manufactured with indexed shifting systems in mind, which necessitate a chain with a high degree of lateral flexibility, a characteristic which is the opposite of what is desired in a high quality track chain. The reason is simply that a chain with supple lateral motion is prone to be thrown from the chainring on a much more easily.

The few 8 speed road chains I have found to be sufficient are listed here:

- SRAM PC890 with power link
- Wipperman 8 x 1 stainless steel or 808 nickel with connex link

connex link



These chains are not necessarily ideal for the application, but they are sufficient. That is to say, they are high quality road chains (the highest



Great Britian full flight in Team Pursuit in Beijing.



Spain's Joan Llaneras lapped the field in the Men's Points Race in Beijing with Antonio Tauler and the Russians. | Photo: Graham Watson

available 8 speed made by these manufacturers) but they are not track purpose specific. They each have features which are designed to help them shift better, but these features will not help anyone on a velodrome.

Both of these brands of chains can be used with their tool – less connector links, which enable the rider to take the chain completely off the bike during travel, for cleaning, and also to change the size of the chain for different gear combinations (when going from a 53x15 vs. 48x14 for example). I keep 3 chains in my gear bag usually, each with one additional link, so that breaking the chain is not necessary. Every time a chain is broken and reassembled with a pin – driving tool, it is weakened and increases the likelihood of potential failure. This is why the use of tool – less links is recommended, as using these does not weaken the chain each time it is disassembled.

The disadvantage of using a 3/32nd inch width chain is perhaps durability. Even though you will not encounter a measurable amount of stretch in even one heavy season of track racing, the chain will need to be replaced, as it will develop “tight” and “loose” spots which will make achieving the optimum chain tension impossible.

Chain Tension?

If you run your chain too loose, you risk it becoming derailed during a race or workout, which is dangerous of course. If you run it too tight, it is the same effect as riding with the brakes on. Proper chain tension is very important to any serious track athlete.

Conclusion:

There has been plenty of success with both systems at the highest level. Unless the rider is over 180lbs (1/8 would be recommended) or under 130lbs (3/32), the choice between the two sizes would probably come down to what is available and if the shop you are working with has an existing stock in one width or the other. In this case it is probably best to let your decision be made by what is available. In either case, it is best to only have one width or the other in your track sack/gear tote, once you commit, to avoid any potential for accidental exchange of widths. E-bay the stuff that is not compatible, or trade it out with your buddy for what you need to find your “right gear.”



A small, easily stowed chain tool.
pic: Park Tool



EAI
Keirin Tote
pic:
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