

A black and white photograph of a workshop. In the foreground, there is a large, cluttered collection of tools, including several screwdrivers with different handle designs, a brush, and various small components. In the background, a workbench is visible with various mechanical parts and tools. The overall scene suggests a technical or repair environment.

Tech Help:

**How to change a
cassette from training
wheel to race wheel...**

First, you will need a few tools:

- 1. Lock Ring Tool**
- 2. Chainwhip**
- 3. Screw Driver**
- 4. Allen Key**





To begin this process of changing a training wheel out for a race wheel while using the same cassette starts with downshifting the bike into it's smallest cog.



After shifting make sure to pedal so the chain drops all the way into the last cog to have the rear derailleur the furthest from the wheel to enable the most ease to release the wheel.



Stop the wheel then open the brake release by simply flipping the handle up to open the brake calipers.



After the wheel's brake is open move to the skewer and release the handle while holding onto the wheel to have control over the wheel while taking it out of the dropouts.



While holding the wheel pull the derailleur out of the way of the cassette while slowly pulling the wheel out of the bike.



Here you see the derailleur out of the way while the wheel is coming out of the drop outs as to not scratch or interfere with one another.



From the back, the wheel looks like this. As the wheel is coming out of the bike it will have a tendency to want to grab the slack chain, simply grab the chain pulling down on it while moving the wheel slightly to the left to easily separate the two.



After the wheel is taken out the next step is to remove the skewer by unscrewing until the cap comes off with a spring underneath.



Here is all the parts needed for a skewer assembly. Skewer handle, pivot cap, two springs and other cap.



Once you have placed the skewer safely aside, rest the wheel along your legs with the cassette facing away from you.



Here is the time your first tool comes into play. This is called a chainwhip.





This is how your chainwhip should fit on your cassette. Make sure to put as much of the chain over the second to largest cog. This is to give the chainwhip as much torque on the cassette while not having the possibility of the chain running into the spokes. Also note that the tool should be in your left hand while the wheel is facing away from you.

The tool should be resting on the wheel like this.



Once the chainwhip is on you can grab you Lockring Tool pictured here.



Now apply the Lockring Tool by inserting the end of the tool where the skewer goes and slide it into the cassette until feel the teeth slide into the lockring itself. The lockring tool should be on the opposing side of the chainwhip, which should be in your right hand.

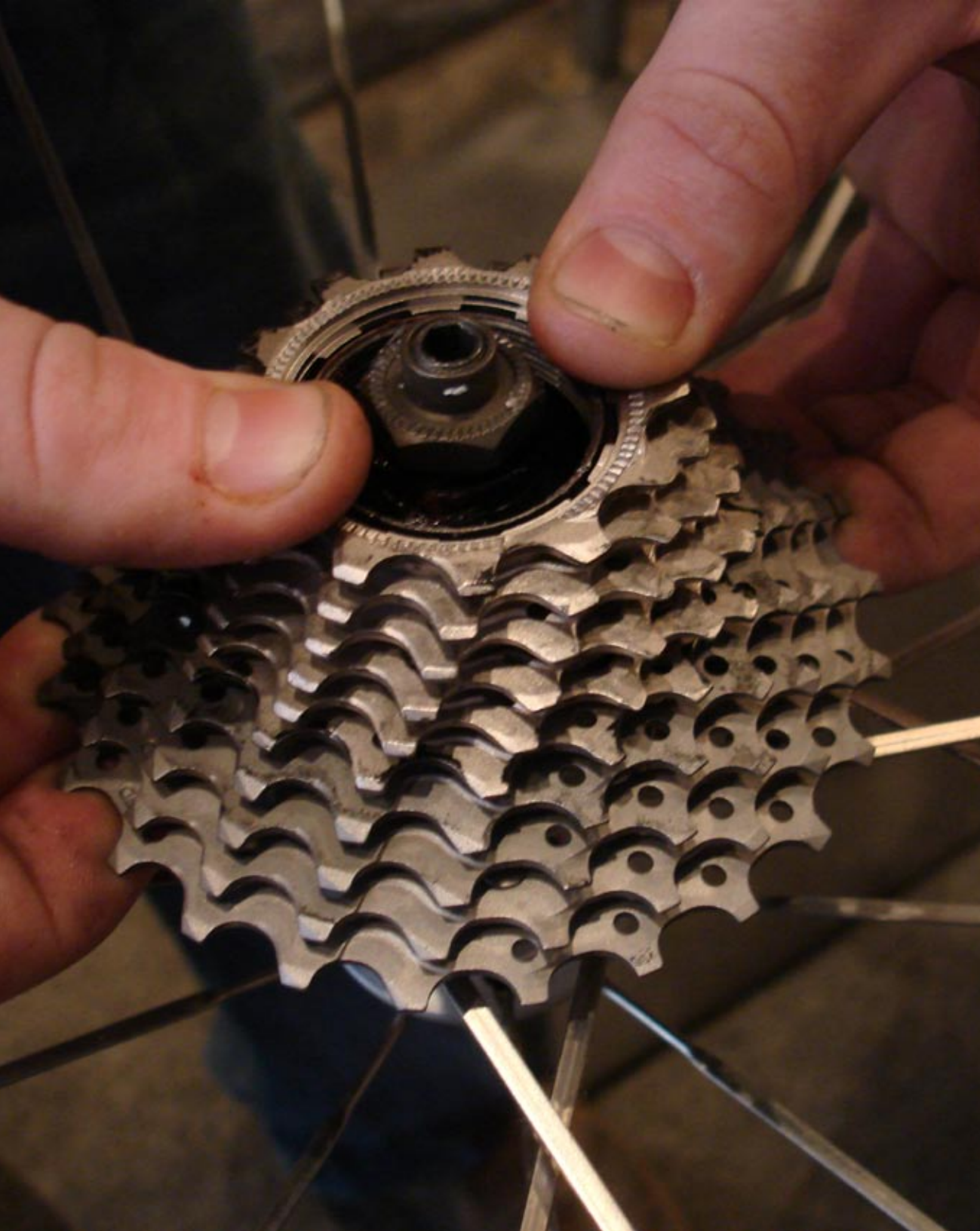


After both tools are on the cassette, hold the chainwhip while pushing down on the locking tool and spinning off the lockring.



After the lockring is loosened enough it should come off with the lockring tool itself.





As the lockring has been taken off, put the wheel horizontal and grab the entire cassette. The whole cassette should come off altogether. If the cassette feels sticky, it can be removed one cog at a time to find the one stuck, as sometimes cogs dig into the hub cassette body. This may be able to be removed by putting a flat head screw driver between the cogs and turning it to pop the cog free.

There is also a thin steel spacer on the back of the cassette which be sure to take off as well. *Note: on mavic wheels there is a thicker spacer only for the mavic wheels which should stay with those wheels.





Pictured is a ten speed (Dura-Ace) cassette and ten speed cassette. Make sure all this goes onto the race wheel.

Grab your race wheel and hold it level to be able to slide the cogs onto the wheel. Its easiest to press the wheel against a table and your lower stomach to hold it in place.



First thing to go onto the race wheel is the thin steel spacer that should be able to just fall onto the cassette body.



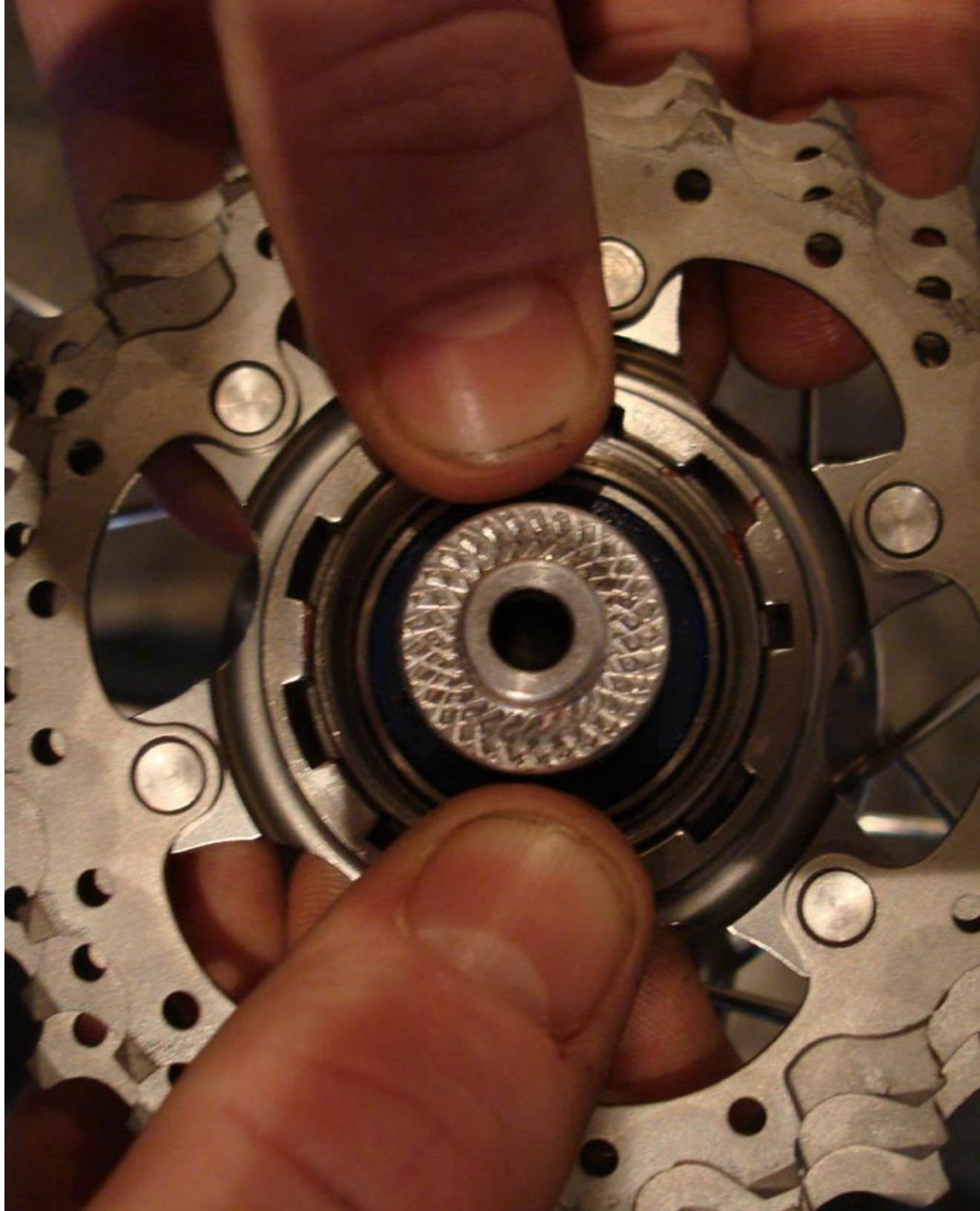
The easiest way to put a cassette on is to separate the entire cassette and put it on one piece at a time. When about to put the first part of the cassette on the body, look for the smallest gap as a guide.



Also find the smallest protrusion on the Hub's Cassette Body as the second part to your guide.



Sliding the cogs onto the body should look like this so that all the splines line up on the keyway which the cogs should slide easily on.





This is what the first cogs should look like on the body.

Here is the second group of cogs on the body.



On a Dura-ace ten speed cassette the next few have separate spacers from cogs. It starts with the next cog, then a spacer that is labeled "10S" for ten speed cassettes.



This is how the cogs should be coming along, biggest to smallest.



The Last two cogs have their own spacers underneath them in which a plastic one is not necessary.

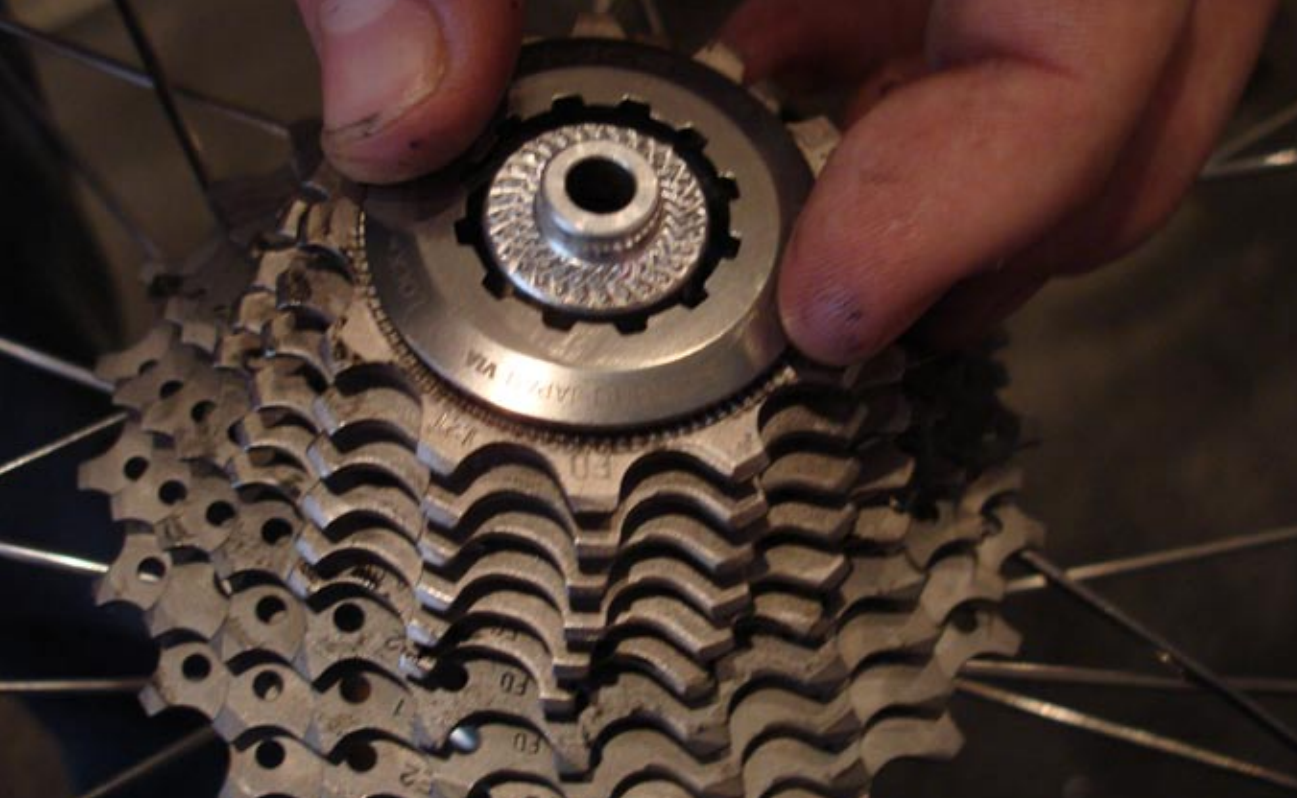


This is a full cassette without a lockring.

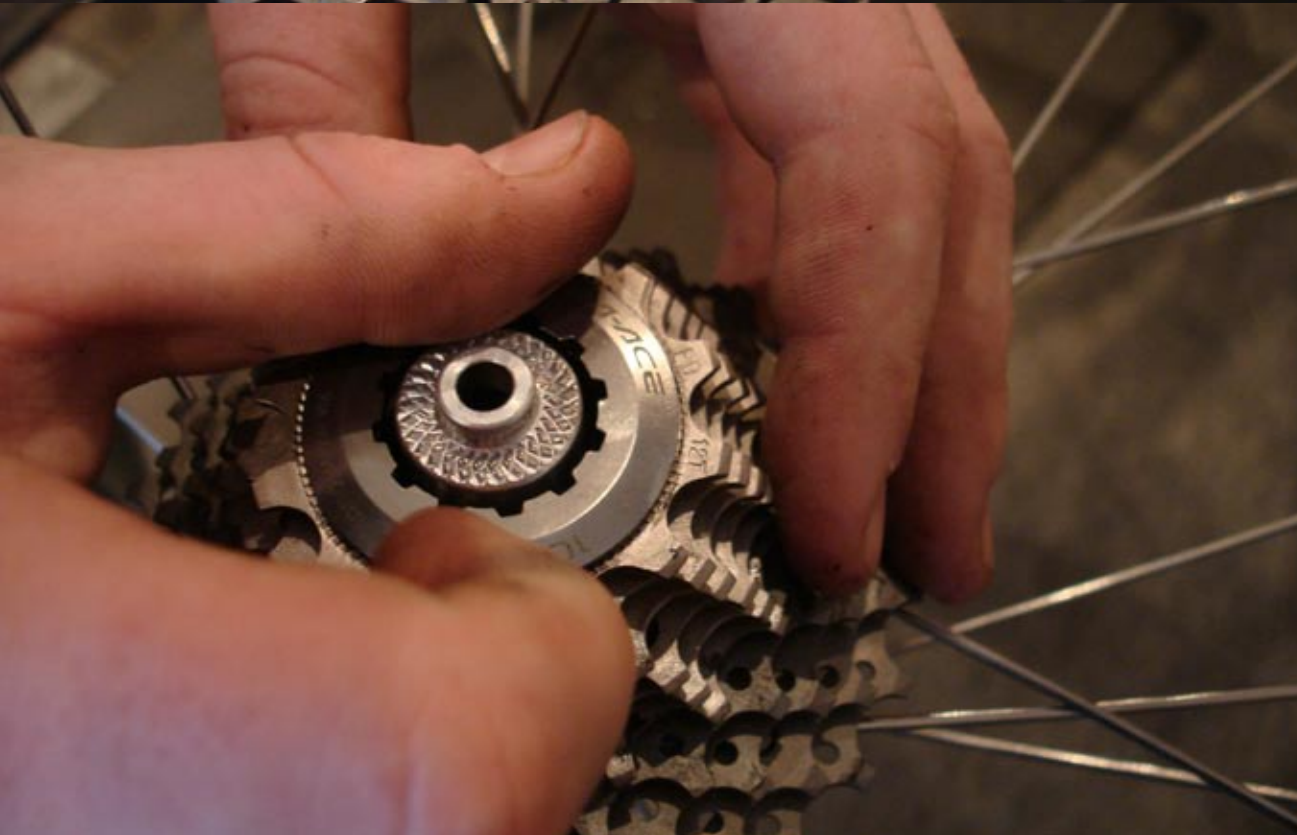


As with a 10-speed Dura-ace cassette there are two large cog units, three individual cogs with separate spacers, and two cogs with integrated cogs; which should look like this in the end.

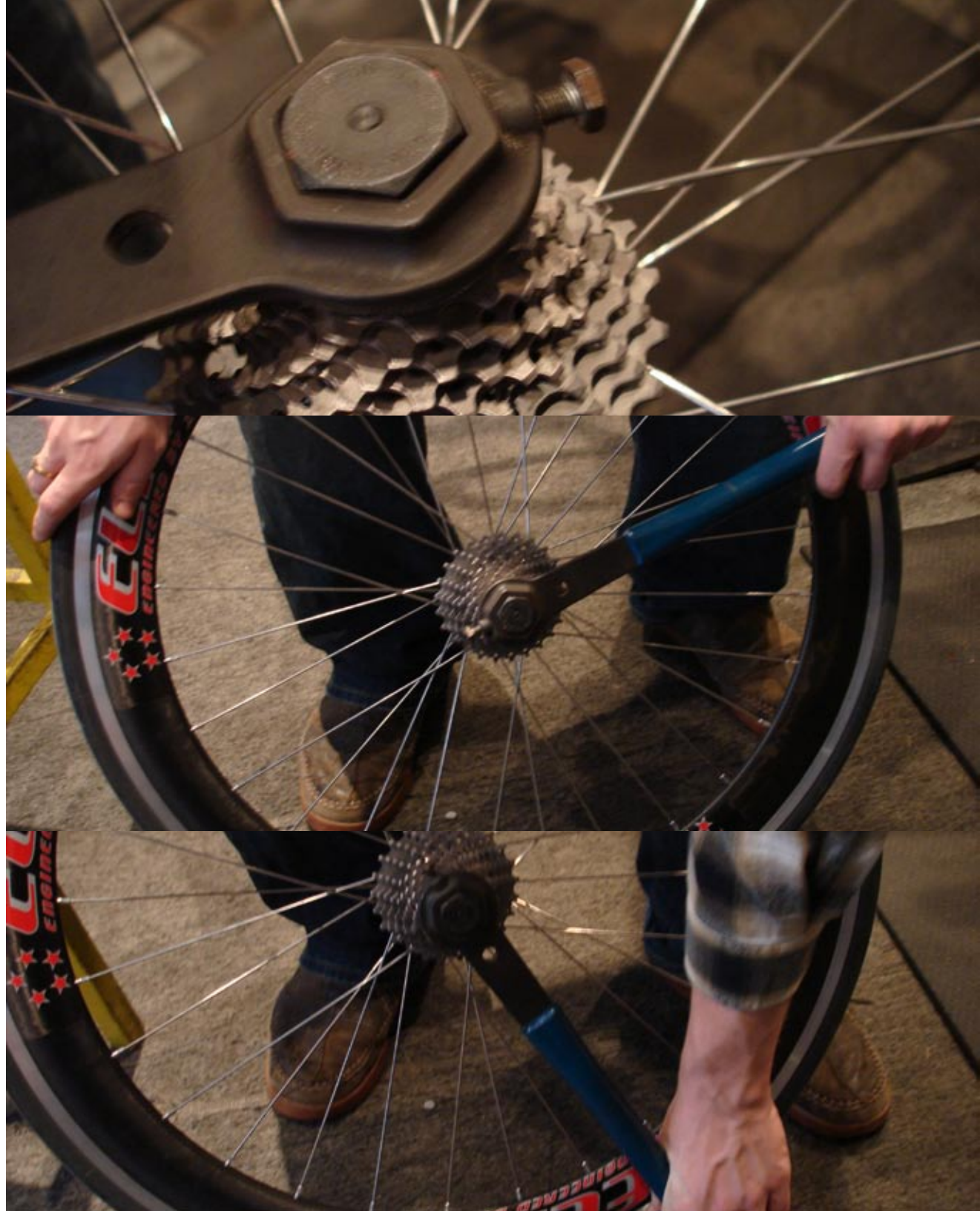




Once the cassette is on the lockring can be hand tightened into the hub body cassette to hold the cassette in place. Make sure to put the lockring on by hand to prevent from cross threading the few threads available on the lockring.



After the lockring is tightened down by hand then take the Lockring Tool and snug the lockring onto the wheel. DO NOT overtighten the lockring, in which the possibility of blowing the threads off of the hub cassette body. The lockring should make a "clicking" feeling as you tighten it down, in which it is tight enough to hold the cassette in place. If it feels tight but doesn't "click," take the cassette off to check if the spacer was forgotten.





Take your skewer from the training wheel, unless you have a race skewer and slide back through the wheel with the handle on the non-drive side of the wheel. Make sure there is grease on the skewer and its threads to prevent it from freezing from sweat and elements affecting the skewer.

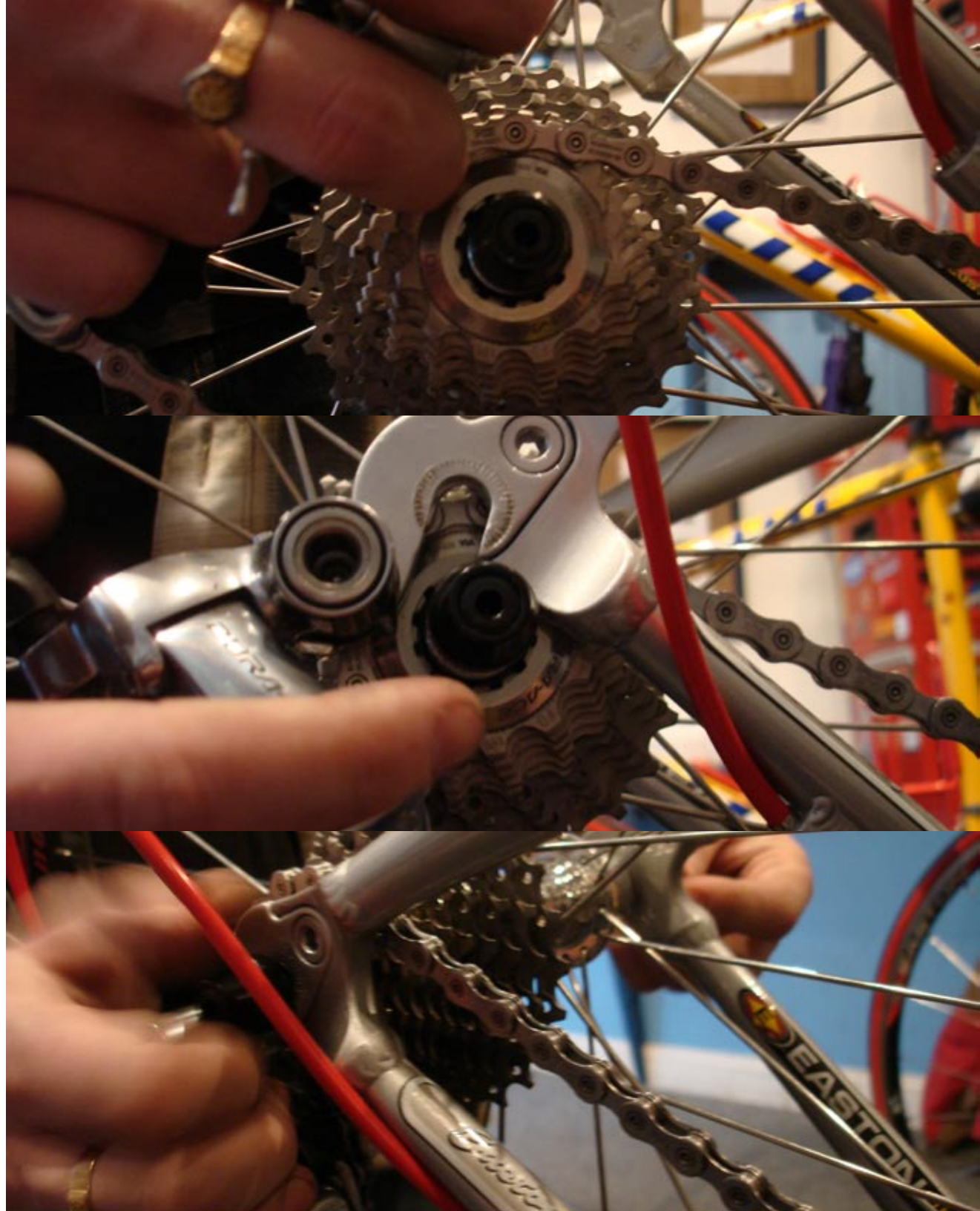
Next, make sure the spring is put on with the large part facing out, as if the spring is backwards will interfere with putting the wheel in the dropouts correctly.



Starting as ended from taking the rear training wheel out will put the race wheel in. Pull the chain down to ease the cassette in between it but not to catch a cog on the bottom.



Here is where you pull the derailleur back again and line the chain up on the first cog on the cassette as to help guide the wheel into the dropouts and keep the chain from getting caught between the frame and the cassette. Once the chain is aligned and the cassette is passing the derailleur push the wheel up into the dropouts COMPLETELY. Be sure the wheel is in the dropouts fully, it is critical to make your bike function properly and if not installed properly could be dangerous for the rider. Once checking both sides are in and wheel is straight in the frame lock down the skewer tight but do not over tighten.





Your wheel should look like this when installed correctly.

After making sure the wheel is in properly and secured, pull down the brake release if on similar size rims. If your training wheel is clincher as well as your race wheel, you should be able to ride with the brake release secured down. If you have tubular race wheels, the braking surface may be slightly wider than the training wheel, in which leaving the brake release up will have the brake lever have the same travel in it. The brake release does not have to only be up or down, feel free to test how the brakes feel and where the lever sits during your race, this is an easy adjuster without using tools and can be put back when the race is over.



Grab your Screw Driver for this next part.

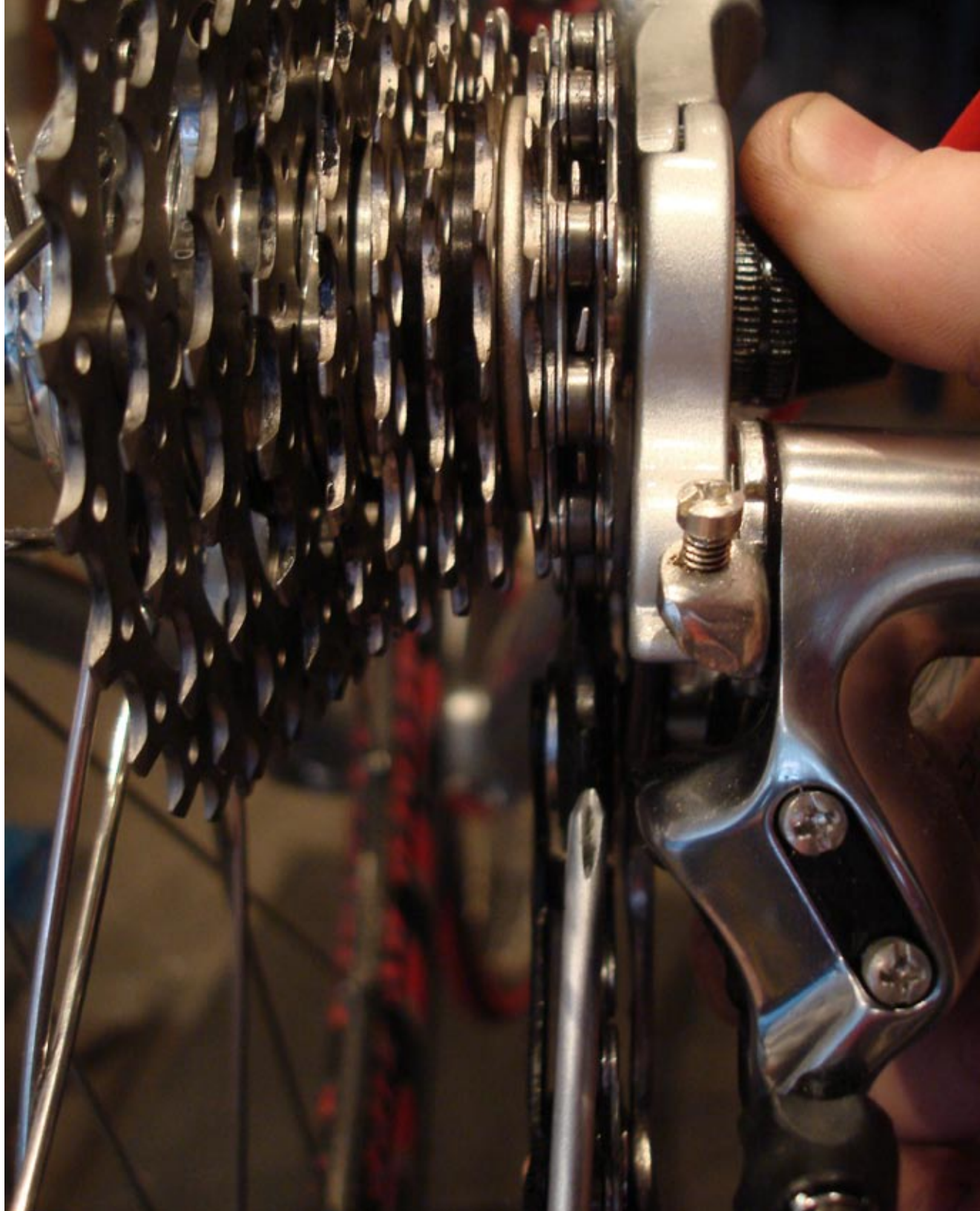


First start with adjusting the High Limit screw, which limits the movement of the derailleur while in the smallest or highest gear.



The High Limit Screw is labeled with an "H" under it or typically located as the top screw. If this is questionable look inside the derailleur itself to see which of the two screws is being touched while in the high gear.

Screw the High Limit Screw in or out so as the top pulley on the derailleur lines up directly under the first cog on a 10-speed cassette. With 9-speed the pulley should be slightly to the right of the first cog, as the cogs on a 9-speed are slightly larger than on a 10-speed needs to be slightly offset.



Be sure that the shifter is still in the last gear with the least amount of tension on the cable to allow the derailleur to drop as far as it can into the proper position.

Next is to adjust the Low Limit Screw. This screw is located as the lower of the two screws and typically labeled above with a "L" above it.





Adjust this screw in or out to have the top pulley on the derailleur line up with the last cog on the cassette.

Be sure to go through all gears, making sure the gears run smoothly down and up, without clicks in between. If clicks occur check cable tension and the alignment of both adjusting screws until the bike shifts as smooth as possible; and then you're ready to race!





Questions?

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