

Torque Matters

There is one matter that can affect the action of your forks before you even take your bike off the stand. Get it wrong and your front end can feel harsher, or the forks can slide up in the clamps. At its most extreme, it can create an awful grinding noise as the springs bind in the fork tubes. It's the torque settings of your triple clamps, and it makes a bigger impact than you may give it credit.

To start, there are two main reasons for achieving proper torque settings with your triple clamp fork pinch bolts: one is to keep the forks from sliding up in the clamps; the second is to keep enough flex character (through the lower clamp especially), which leads to a more compliant, predictable feel through the front end.

Torqued Enough to Keep the Forks in their Happy Spot

Beginning with the more clear-cut scenario, achieving proper (read: enough) torque with the triple clamp pinch bolts keeps the forks from sliding up in the triple clamps. For starters, if the forks were to slide up in the clamps, it would instantly upset the attitude of the bike, causing it to stink-bug slightly. Some riders may never notice. Heck, some may even like the added weight on the front-end for cornering. However, if your suspension was setup with a certain sag measurement and fork height in mind, then you likely wouldn't be getting the best handling out of your motorcycle. This would be most apparent in either a panic-braking scenario, or coming into a large set of braking bumps, when the front-end dives more than normal and the rear end comes up a little higher. In most situations, it's just a little less comfortable as you have to muscle your weight further back. At its worst, it could lead you to blow the corner, or even endo.

Also, worth mentioning is when one fork slides up, but the other stays stationary. Again, some riders may not notice a major difference in handling character, but this creates a binding effect all the way down to the axle, as the front end has an unnatural torque added to it from the imbalance. The likeliest symptom will be a bit more harshness through the front end. It may not be enough for you to feel the need to immediately pull off and fix the issue, but your forks definitely won't be working at their potential.

Going Caveman on the Clamps Isn't the Answer

The reverse, and more wide-spread, scenario is over-torqueing the pinch bolts, specifically the lowers. First off, there is flex in the lower triple clamp; this is actually part of your suspension. The lower triple clamp is meant to bend and flex slightly with the fork tubes to add compliancy through the front end. Additionally, with the modern upside-down forks, as the lower tube is coming up through the upper, about halfway through its stroke, it's trying to get through that lower triple clamp. If you crank the lower pinch bolts down too hard, it actually creates a bind. The problem is compounded: not only is there a bind as the forks are moving through the lower triple clamp, but the clamp also isn't flexing as much as intended due to the added tension of the bolts.

Too Much Torque Is a Pain in the Wrists

As a symptom, the binding effect from over-torqueing the triple clamp bolts would show up most violently on impacts where the handling of the forks is relying not just on the valving, but the flex through the front end; e.g. slap-down landings (short-jumping or "O.J.'s"). The fork may feel like it just

hit a wall in the valving, coming to an abrupt stop, but it's not the valving. It's actually the fork binding as it's trying to get through the lower triple clamp.

A similar feeling can occur in large braking bumps. The front tire is technically being pushed back into the skid-plate area from the impact of hitting the bumps (creating flex), while it's also trying to move semi-vertically through the travel of the forks. The result can feel like a huge step in the valving (the forks feel like they just stopped moving), which can make your wrists bend forward and your hands fall off the bars. Anyone who's ridden at Glen Helen around the time they have the track prepped for the national may be rubbing their wrists at the memory of hitting some of those huge braking bumps.

It's Not Just the Big Hits

Though not as pronounced over smaller chop, there will be a slightly harsher feeling than with optimally torqued triple clamp pinch bolts. The feeling won't be nearly as noticeable as with larger impacts, as the forks aren't pushing through that point in the stroke of the lower triple clamp, but there will still be a bit of additional bind through the front end.

So... Pay Attention to the Torque Settings

It may be the obvious answer, but pay attention to the torque settings of your motorcycle manufacturer—or the triple clamp manufacturer if you go the aftermarket route. This would require purchasing a torque wrench, which isn't super cheap, but to be honest, neither is anything to do with our sport. It'll be worth the improved handling and peace of mind that achieving proper torque offers.

Many manufacturers (especially the Japanese brands) recommend 14 foot-pounds of torque on the lower pinch bolts and 17 foot-pounds on the uppers. But the European brands sometimes recommend substantially less, and also may measure in newton-meters; e.g. our race team uses the Xtrig triple clamps, which call for 17 newton-meters (12.5 ft-lbs) up top and 15 newton-meters (11.5 ft-lbs) on the lowers. So, make sure you're familiar with which measurement your clamps are recommending.

What if My Forks Slide with the Manufacturer's Settings?

If you find your forks still slide up in the triple clamp with the recommended torque, gradually increase the upper triple clamps pinch bolts in one-foot-pound increments until the forks stop sliding (This should only take a foot-pound or two more). Don't increase the torque of the lowers. As an example, we've run 18-18.5 foot-pounds of torque on the upper triple clamps of some manufacturers in the past, while keeping the lowers at 14.

How About Right-Side-Up Forks?

Right-side-up forks don't tend to suffer as much from the bind issues that the upside-down versions do. As a result, they're typically plusher in action, but don't offer the control and firmness that the modern, aggressive dirt bikes seem to require. Although the binding and flex issues are reduced, it's still important to pay attention to the torque settings.

We've had experience back in the ol' XR650 days with a well-known pro rider and mechanic over-tightening the triple clamp pinch bolts. They torqued the lowers so tight that they actually crushed the tubes into the springs, which lead to a horrible grinding noise as the springs were rubbing against the

tubes while riding. The two points to take from this story are that over-torqueing can happen to the best of us, and even with right-side-up forks it's still important to pay attention to the torque setting.

The Takeaway? Torque Matters

In conclusion, we hope to have made the case for how important it is to use the proper torque setting when tightening your triple clamp fork pinch bolts. It can help the front-end work better and feel more compliant, while also keeping your forks at the proper height. There are other factors related to the triple clamp that can affect the feel of your front end, like the material from which the triple clamp was made (which would affect flex) and how much flex character was designed into the clamp (think rounded and chamfered edges, as opposed to sharp). But we'll save those topics for a future article. Stay tuned and enjoy the ride!