
From: Robert Bastow <teenut@home.com>
Newsgroups: rec.crafts.metalworking
Subject: Re: Newbie: Cam-Lock Safety
Date: Sun, 17 Oct 1999 07:04:41 GMT

You are dead right George. The studs are not supposed to be tight and it would be dangerous if they were.

If you look at the studs there is (Should be!!) a witness line scribed around each one, just where it disappears into the backplate. Ideally this line should be right at the face..sorta half in, half out, when the cutout for the lockscrew aligns with the lockscrew pocket.

This not being a perfect world..it is not often that all three land dead on the middle of the line..but the line is about .020" wide and as the pitch of the stud thread is 20 tpi we have a full turn equal to a movement of .040" It is therefore possible to get the ring somewhere between just fully "buried" and just fully "exposed" in the stud pocket.

Usually, (I guess it is a normal distribution curve) the majority finish up with the ring more closely centered on the edge of the pocket. If the studs and camlocks are in good shape, then the camlock will lock up correctly, by turning in the direction of the arrow (clockwise) and will come to that locked position after turning somewhere between 15 and 175 degrees from the release position. Anywhere within that quite broad arc is acceptable, and will give a secure lock up

Because of the shape of the cams and notches, that represents a quite wide range of movement..enough so that the accumulated assembly tolerances can be quite wide. Most times you can chuck any three pegs into any three holes, screw them in so that the ring is in the neighborhood of the edge of the pocket, fine tune (Turn) so you can get the lock screw in...and it works fine.

But not always!! 8^(

One peg out of every three or four might give a lock up position that you are not totaly comfortable with...Either the cam balks when you try to turn it, or it locks up to soon or too late (less than 15 degrees or more than 175 degrees and I start to get a bit nervous). So off comes the chuck, out with the lock screw, one full turn of the peg, back with the lockscrew...Back on with the chuck, try the camlocks again and USUALLY, (like 90% of the time), that fixes it. all three cams lock within the acceptable arc and we are ready to cut metal!

But not always!! 8^(

Every so often you will find a peg/hole/cam combination that plumb just don't belong together! no matter which way you turn and lock the peg into the chuck backplate, it just will NOT give a good lockup. One way it is to tight, back it off a turn and it is too loose!

Now is the time for a bit of SELECTIVE assembly (And I am sure that they do this at the factory too!)

Take off the chuck. Again!! More often than not there is one of the pegs that locks up just perfectly..dead center. Leave that alone! But pull the other two out and switch them round in their pockets, readjust and voila..perfect lockup!

But not always!! 8^(

Once or twice in my life, I have had that fail...one or two pegs just didn't work no matter how I swapped or adjusted them. OK, Which of your OTHER chucks has a peg that, while you have lived with it so far, you were never 100% happy with it. Well now is the time to fix BOTH those suckers!! Switch them around and chances are you will have the perfect lockup you seek. (I already have my eye on one peg in my largest faceplate that is the candidate for the next time ;^)

Forgive me for going into so much (to some tedious) detail. But George contacted me off list too, and that usually means that my first explanation wasn't clear enough..or I had skipped over or confused an important detail somewhere.

Camlocks are IMHO by far the best spindle nose configuration ever devised. I wouldn't choose any other. But they can be a bit trickier to set up than first imagined, They are a bit more complex in design parameters than most people EVER realise! But once set up properly they will give a lifetime of secure accurate service.

And to answer the last part of your question George...No there is nothing wrong with your spindle nose. Just a combination of the way it needs to be adjusted, and the confusion I caused in my last response. I hope I have helped clear up on both accounts!

8^)

teenut

George Glines wrote:

> Robert,
>
> How can you adjust the position of the studs on the attachments? There is a
> cut-out on the bottom of each stud for the locking screw to fit it. It
> doesn't allow for the studs to be turned, other than a little looseness,
> unless you took the locking screw out completely. I wouldn't be able to
> reinstall the locking screw then, because the little cut-out groove would be
> out of position. In other words, if you tighten the studs completely, the
> locking screws can't fit back in, because the cut-out for the screw is out
> of position.
>
> Also, none of the studs are tight on any of the tooling (chucks, drive
> plate, spindle protector) for the same reason. It isn't from wear: the
> drive plate, lathe backplate, 4-jaw and spindle protector were original
> (1976) but never used. The 3-jaw that came with the lathe looks to be a
> Bison, but without a lot of use. The fact that NONE of these had tight
> studs, and none of them would tighten on the spindle the "correct" way led
> me to believe that was how it was supposed to work.
>
> Could the problem be with the spindle nose?
>
> Many thanks,
>
> George
>
> Robert Bastow <teenut@home.com> wrote in message
> news:38093E25.CC7B4260@home.com...
> > I take no legal responsibility for the following statements...
> >
> > Firstly the camlock studs, retaining threads, cam sizes etc are all
> > carefully sized so that, by rotating the stud forward or backwards and
> > then replacing the lock screw, the correct locking relationship of
> > stud and lock can be obtained UNDER ANY CIRCUMSTANCES!! (those
> > threads, cut outs etc didn't just pop out of the air onto someones
> > drawing board. Nor are the arrows ther "Just for Pretty")
> >
> > The locking screw should always be turned in the direction of the
> > arrow. so that:
> >
> > A) it can readily be observed to be correctly locked B) It can be
> > checked for tightness with no danger of actually LOOSENING it. C) it
> > can be loosened by turning contra the arrows..all in the same
> > direction and avoiding the danger of overtightening one by turning it
> > in a direction that SHOULD loosen it.
> >
> > Finally, it is a good check on whether the studs etc are in good
> > condition and properly adjusted and tightened!
> >
> > Now I am sure that isn't the answer you were hoping for! The chances

> > are that you can adjust the position of the studs (Hint..try swapping
> > them from threaded hole to threaded hole)
> >
> > If you can't get them all to lock by turning in the correct
> > direction..chances are they are worn or stretched to the danger point.
> > Replace them!! For your own safety, and for the safety of the next
> > person to use that lathe.
> >
> > The choice is yours of course...but your ignorance can no longer be
> > claimed to be blissful
> >
> > 8^)
> >
> > Teenut
> >
> > George Glines wrote:
> > >
> > > After reading the thread where someone got killed by a cam-lock chuck
> > > coming off, I thought I'd ask. .
> > >
> > > My SB Heavy 10 has a D1-4 Camlock Spindle. This one has three
> > > studs. Theoretically, you lock the cams by turning them to the
> > > right. This is the direction that the arrow points to on the
> > > spindle.
> > >
> > > Does it matter if you lock to the right or the left? None of the
> > > attachments I have (3-jaw chuck, 4-jaw chuck, spindle protector,
> > > drive plate) will allow me to turn all the cams to the right. Every
> > > attachment is different. Some all turn to the left, most have two
> > > studs that I turn right and then one left. I can feel the studs
> > > locking, so I know they are all engaged. I can't reposition the
> > > studs on the attachments because they are all held by locking
> > > screws.
> > >
> > > Do I have a problem or may I return to my formal blissful ignorance?
> > >
> > > Thanks,
> > >
> > > George
