Linkage play--your technique for consistency?

Posted by dgriff - 25 Feb 2012 14:28

Not mentioned much, if ever, is the effect of axial arm/paddle play and linkage play on the angle. Using the Angle Cube one can see fully a 1.5° angle change on my WEPS depending on how one holds the paddle.

The variation is the sum of the paddle and linkage play when you push the paddle in or pull the paddle out at the bottom. I think the best method is to push in, because it takes less effort, and if you relax your concentration, your hands will naturally fall inward.

When I want to check the nominal angle symmetry during setup--knife edge centered--I let the paddle drop all the way down so the link snuggles into the paddle's concave recess. This becomes my nominal angle, but likely not the exact angle depending on how I handle the handle....

How do others *handle* this? (no pun intended)

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Re: Linkage play--your technique for consistency?

Posted by wickededge - 09 Mar 2012 13:31

CAWalter wrote:

Due to the arm's tab width I stayed with the .125" hole and use a 5-40 bolt with enough unthreaded shaft to ride on, and a nylock nut. The tab thickness tapers, so that was squared up. Now there isn't any play and the action is smooth. Haven't addressed the paddle to arm, but reaming the paddle and pressing in a bronze bushing would do. Not going there for a while as it really is very little.

CAW

I've been messing with bronze bushings (since reading this suggestion) and the action is very smooth, all the play is eliminated. The only issue I'm having is a slight clicking as the end of the rod hits the inside edge of the bushing. Any ideas?

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Re: Linkage play--your technique for consistency?

Posted by razoredgeknives - 10 Mar 2012 22:23

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I also was one who modded the joints at the base of the rod arms... i basically disassembled the joints and reinforced themip with some PB washers... it now doesn't have any play in the joints anymore at least! i did have to sand the OD of the washers down some to make them work. as far as the play in between the paddles and rods I. haven't found any way to fix this yet unless I just want to have some new ones made with a bigger OD. what I have noticed is that if you do a lot of smaller strokes per side instead of one long stroke per side, you will make sure you reach all the way to the edge. if you do one long stroke, then your angle actually changes by one or two degrees by the time you reach the tip. hope this helps!

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Re: Linkage play--your technique for consistency?

Posted by babo - 11 Mar 2012 14:35

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Clay, what are the specs on the bushing you are using?

Regarding your question, do you mean a slight clicking as the end of the rod near the base of the swivel where it widens?

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Re: Linkage play--your technique for consistency?

Posted by babo - 12 Mar 2012 10:50

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I found some nylon bushings I'm going to try. ID is 0.240 so that leaves about 0.005 clearance for the rods. OD is 0.312 so I'll have to ream about 0.042 wider so they fit tight. I'll keep you posted on the progress. Clay have you found one method for counter boring the paddles better than another. I have 5/16 fostner bit that should work well and leave a square surface for the bushings to adhere to.

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Re: Linkage play--your technique for consistency?

Posted by wickededge - 12 Mar 2012 17:01

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babo wrote:

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Can't wait to hear your results. I picked up some cast bronze bushing from McMaster-Carr, part# 6381K412 - Alloy 932 Bronze Sleeve Bearing, for 1/4" shaft, 3/8" OD, 1/4" Length. I put one in each end of the handle, reaming it out with a 5/16" bit. I wasn't overly careful to make a perfectly vertical hole, and I'm wondering if the bushings are in at a slight slant, causing the rod to hit the edge (inside the handle) of the bushing before finding its way into the hole.

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Re: Linkage play--your technique for consistency?

Posted by babo - 16 Mar 2012 16:44

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Howdy,

I still haven't received my nylon bushings but I may have found the perfect alternative. And it doesn't cost a dime.

A drinking staw..

I cut two to the length of the paddles. Split it the entire length. Place one small drop of super glue opposite the slit and slide it into the paddle. Then immediately run the swing arm through it and spin the paddle around the arm pressing firmly.

Voila - instant sleeve bushing. The ID measurse about 0.242 which is only 0.002 larger than the bushings I was ordering and you don't have to worry about the end of the arm slipping inside and off the bushing on the up stroke. One drop of oil if needed and works like a charm.

I thought of this when I visualized how thin the wall of the bushings I wanted to order were; just like a straw. And being an Old Army Grunt you know what came next; field expediency.

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Great tip, I'm definitely trying it!

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Re: Linkage play--your technique for consistency?

Posted by babo - 17 Mar 2012 20:32

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I've now upgraded all my paddles with the "straw sleeve bushings" and there is no measurable play in them. Between that and the upgraded swing arms there is no play unless you intentionally put torque on the swing arms. So far I've only re-sharpened one knife and I did not see any of the "micro-bevels" as before. And by that I mean being able to visually see two different planes that the stone cut. It never affected the edge but I guess I'm just a little OCD about it.

As you can see in this image there are still micro scratches but the entire bevel is uniform now. Before I could see multiple facets.

The reflection is of the bottom of the Vehro microscope.
On and for those interested the image is from the tip of one of my Tanto blades.

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Re: Linkage play--your technique for consistency?

Posted by wickededge - 17 Mar 2012 20:39

That looks really good. I saved some straws today can't wait to try it.

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Re: Linkage play--your technique for consistency?

Posted by babo - 20 Mar 2012 12:51

One update; I am now cutting a narrow strip off the straw after splitting them so that there is no overlap after they are inserted into the paddles. In two cases it seems that the overlap causes them to be a bit too tight and they drag a bit when used. A drop of oil takes care of it but I'll most likely redo those two.

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