# Linkage play--your technique for consistency?

Posted by dgriff - 25 Feb 2012 14:28

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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 PhilipPasteur - 24 May 2012 20:06

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I tried straws from about 8 different sources. All were too big or too small in ID. I got some from Subway and they fit perfectly. They are just a little snug, but you want that. I did not have to use any lubrication. That was about a month or so ago. I think there were quite a few people that got the Subway straws and they worked... and that was from several different areas of the country. I thought they were all getting them from the same source. Hopefully they haven't changed their supplier or something. I will have to go by my local subway and pick up a few more to see if they are different now than they were then. If they still work, maybe I should get a few for spares.

Phil

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# Re: Linkage play--your technique for consistency?

Posted by AnthonyYan - 24 May 2012 21:27

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I wonder if you could heat the straws to make them expand slightly, and then slide them over the rods with a little WD-40 or something.

I have not tried this. But if you do, do not melt the straws! You don't want that, as the straw will then deform and change thickness in uncontrolled ways. You want warm, but not melted. Maybe warm/hot tap water on the straws?

Sorry, just a random suggestion. I thought of this because of two things:

(1) When a jar cap was hard to open, my mother would heat it under hot water from the tap. The lid would expand, and it would be easier to open. I don't know if this is because the cap heated more than the glass and/or the coefficient of expansion for metal is much larger than glass. The latter is true, the former is probably true too, but I'm not sure.

(2) In metal-work, there are extremely tight and nearly-permanent friction-fit parts. These are done by heating one part (say a precision hole) to make it thermally expand just enough enough for another part to fit (say an axel). After the two parts are joined, they let the hot part cool down to normal temperature, and by thermal-contraction it super-tightly squeezes the other piece. This is only a friction fit, but it can be so exceptionally tight that it is effectively a solid-join. In some machines, such a join is even used to transmit mechanical power.

Sincerely,

--Lagrangian

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## Re: Linkage play--your technique for consistency?

Posted by martinlind - 24 May 2012 22:11

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i took straws from mc donalds they were to small but i just cut them open and it works well i think.

martin

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## Re: Linkage play--your technique for consistency?

Posted by mark76 - 25 May 2012 01:25

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Even the straw from Subway in the Netherlands fit the rods perfectly

However, they fitted the stones less perfectly. What I mean is that the stones did not move on the rods easily anymore. I guess you need some play for the stones to move freely on the rods.

Everyone has their own taste! ("Mustard, mayonnaise, buffalo or vinaigrette, sir?")

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## Re: Linkage play--your technique for consistency?

Posted by mark76 - 25 May 2012 01:26

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Even the straws from Subway in the Netherlands fit the rods perfectly. But if they don't, cutting them open may help.

However, the Subway straws fit the stones less perfectly. What I mean is that the stones could not move on the rods easily anymore. I guess you need some play for the stones to move freely on the rods.

Everyone their own taste! ("Mustard, mayonnaise, buffalo or vinaigrette, sir?")

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## Re: Linkage play--your technique for consistency?

Posted by AnthonyYan - 25 May 2012 03:50

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Hmm.... Not sure if my previous advice is completely sound. Some materials, such as rubber or heat-shrink tubing actually contract when heated. Since I don't know what type of plastic goes into straws, I don't know how they would respond to heat.

If the straw is too thick, and the paddle wont slide on it, then you might try something thinner. One possiblity is clear-tape. Clear tape usually has a fairly smooth and slippery surface. You could stick a line of tape to the rod, and see if that works. Probably, clear tape is thinner than a McDonalds' straw.

The only downside is that the tape could leave a glue residue if you needed to remove/replace it. To remove the residue, you could use a solvent such as acetone. btw, do not use solvent on the paddles at all; acetone can soften or dissolve plastic. However, it should be just fine to use solvent on the metal rods.

If you don't want to use solvent, you can use new clear-tape and repeated stick new tape on and peel it

off; the old glue on the rod will stick at least partially to the new tape, and will peel off with it. At least, a little bit will peel off each time, so you need to do it repeatedly. This is an old trick my mother taught me for removing residual glue left from stickers on jars.

There is such a thing as Removable Scotch Tape. I suppose you could try that if you're concerned about the glue residue. It may not be as thick or smooth as clear-tape, so probably should experiment with it first.

www.amazon.com/Scotch-Removable-Tape-Inches-224/dp/B001GXD2S2

Anyways, just my random thoughts about it. If you try any of these, or other ideas, let us know how it goes.

Sincerely,

--Lagrangian

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"What grit sharpens the mind?"--Zen Sharpening Koan

**AnthonyYan wrote:**

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Sincerely,

--Lagrangian

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## Re: Linkage play--your technique for consistency?

Posted by StevenPinson - 25 May 2012 11:31

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Hey All,

Just a quick shot of my solution to the "Slippery Pete" problem on the guide rods. FYI

i1133.photobucket.com/albums/m599/SPIN1963/DSCN0123.jpg

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## Re: Linkage play--your technique for consistency?

Posted by PhilipPasteur - 25 May 2012 11:36

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What is the part that looks like a washer at the bottom of the rod for?

Possibly to keep contamination out of the joint?

Phil

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## Re: Linkage play--your technique for consistency?

Posted by StevenPinson - 26 May 2012 10:42

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Hey Phil,

Not sure if the question was directed at my post/pict but here is an answer to the question:

The washer at the bottom of the (rod mounting) joint is to take up the slop in the rod to prevent (as much as possible) the movement in the "Y" axis and inhibit the pitch of the stone as it travels across the arc plane. I really do not worry about contamination because I clean the joint(s) after every two or three uses with a little alcohol. I then re oil the joint with just a drop of a light oil (Tri Flow or shell Rotella).

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## Re: Linkage play--your technique for consistency?

Posted by PhilipPasteur - 26 May 2012 12:25

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Steven,

Yes it was your post. I see the washers mounted on either side of the pin through the bottom of the rod to take up slop. This is similar to what was done with the modified rods that I got from Clay. The piece I was talking about ... from what I can see in the pic looks like a fiber washer that the rod itself goes through. The thing that is below the zip tie on the rod just above the flat part of the rod. It is brown in color and looks like you just slid it down over the rod and then put a zip tie above it to hold the straw.

Not sure why I am having difficulty describing it, but maybe you understand from this..

Phil

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