

# TS-ALIGNER JR



Additional instructions for the TS-Aligner Jr. SawStop Option

## Introduction

Many of the alignments and adjustments on a SawStop table saw are made exactly as they are on any other table saw. So, for most alignment procedures, you will be able to follow procedures outlined in the Owner's Manual and Video that came with your TS-Aligner Jr. However, these instructions will be needed for aligning the blade elevation assembly as described in the SawStop Owner's Manual.



## Parts Required

You will need the following items to align the blade elevation assembly on a SawStop table saw:

- A Standard TS-Aligner Jr. configured as shown with the Upright Bar connected to the Cross Bar.
- A Starrett No. 671 Universal Attachment.
- A long dial indicator mounting screw (5/8") and thick washer for use on the Upright Bar.
- SawStop recommends the use of an indicator with 0.0005"/div resolution. Several models are available as an option with your TS-Aligner Jr. Alternatively, an indicator with 0.001"/div resolution can be used but is not recommended by SawStop.

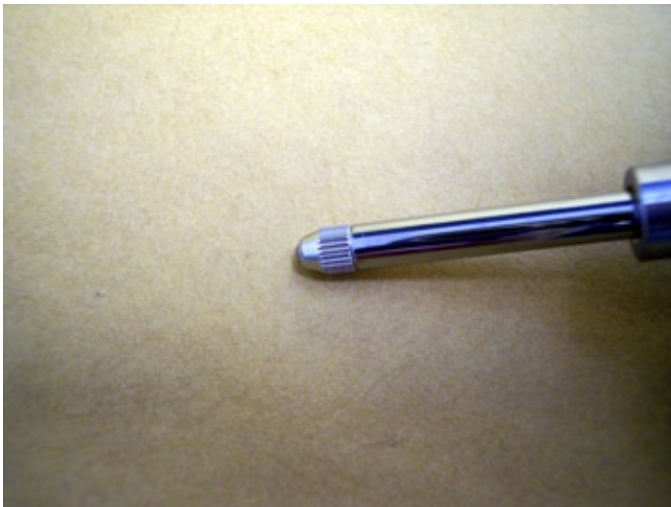
These parts (including the dial indicator) can all be purchased together as the TS-Aligner Jr. with the SawStop option.



## Configure the Universal Attachment

The Universal Attachment comes with two lever arms and a pivot pin. The straight lever arm is used to reverse the measurement direction of the dial indicator plunger. For this setup, choose the angled lever arm. This will translate the stylus of the dial indicator so that horizontal distances can be measured.

There are two ways to install the angled lever arm. The configuration shown in the photo provides the best range and accuracy. If the arm does not protrude at an angle as shown, then remove it, turn it around, and reinstall it. The pin that retains the lever arm is not threaded. It just pulls straight in and out. Rotating it back and forth will make it easier to remove and replace. Do not use excessive force that can cause damage.



## Configure the dial indicator

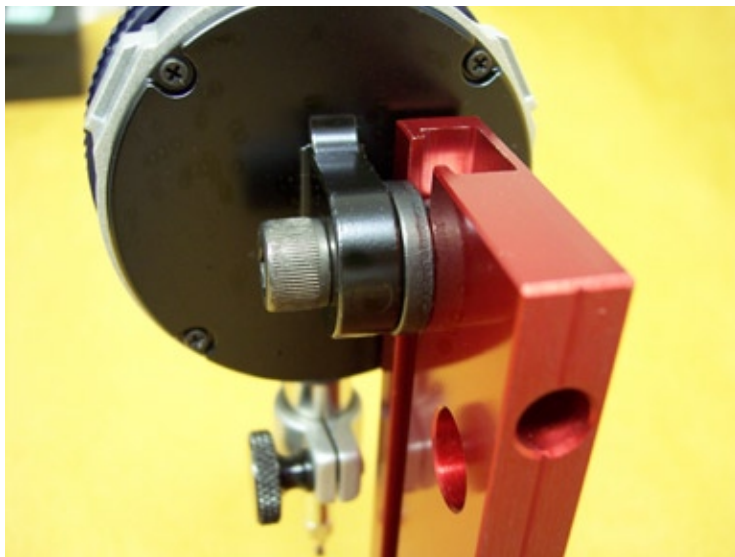
The dial indicator must be configured with the rounded stylus tip when used with the Universal Attachment. Normally, this tip is kept on the Stylus Offset Bar. Remove it and place it directly on the end of the dial indicator plunger. Be

careful to use finger pressure only when tightening a stylus tip onto a dial indicator. Severe damage to the internal mechanism can result from overtightening.



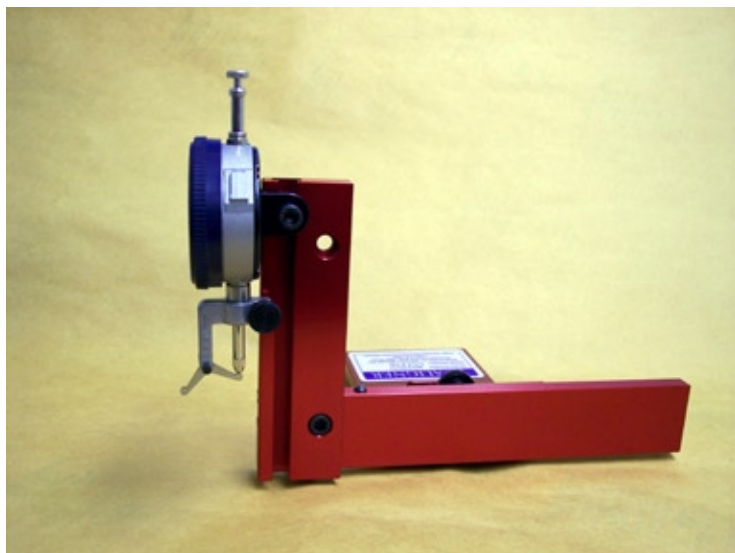
### Combine the Universal Attachment and dial indicator

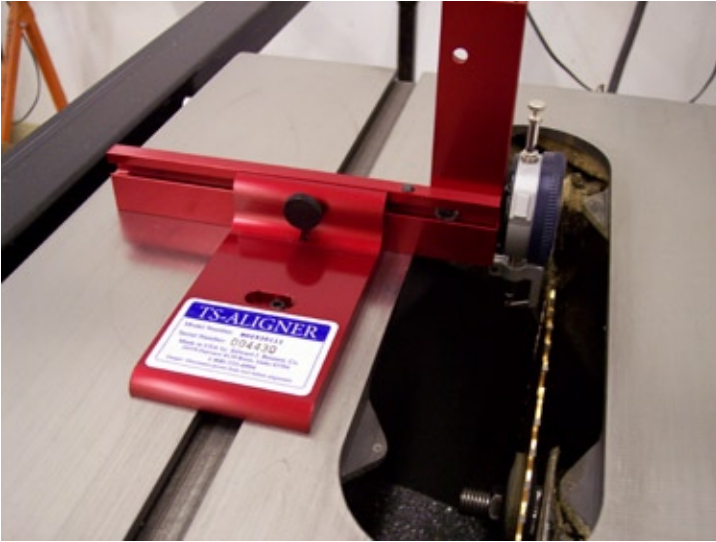
Pull back the plunger and place the stem of the dial indicator into the clamp ring on the Universal Attachment as shown in the photo. Make sure that the stem is at least flush with the other side of the clamp. Tighten the thumbscrew to prevent slipping which would invalidate readings. Use finger pressure only - dial indicator measurement forces are small so it doesn't take much pressure to hold the assembly in place. When you release the plunger, the bulb on one end of the lever arm should contact the end of the dial indicator stylus. The other end of the lever arm should be pointing out at an angle - just like it shows in the photo. Pushing on this end of the lever arm should produce very smooth movement of the dial indicator plunger.



## Mount the dial indicator onto TS-Aligner Jr.

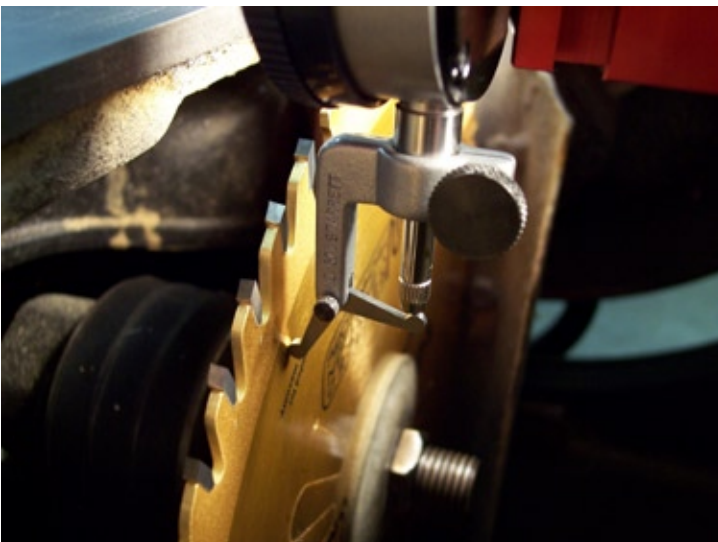
Configure your TS-Aligner Jr. with the Upright Bar connected to the Cross Bar. Then mount the dial indicator vertically on the Upright Bar using the screw and washer provided. The photo shows how the washer is used between the lug on the dial indicator and the surface of the Upright bar. The washer prevents interference between the Universal Attachment and the Upright Bar. Damage and/or invalid readings can occur if the washer is omitted, or placed on the wrong side of the lug. When assembled, Your Jr. should look just like the photo below.





## Performing the Alignment

As described in the SawStop manual, aligning the blade elevation mechanism involves checking blade alignment when the blade is lowered to the bottom and raised to the top of its travel. When TS-Aligner Jr. is configured with the Starrett No. 671 Universal Attachment, it is possible to measure blade alignment below the table surface when the blade elevation is at the bottom of its travel. Below is a closeup showing the bulb on the Universal Attachment contacting the blade.



## Some notes on procedure

### Blade replacement plates

There are a few references in the SawStop manual recommending the use of a flat blade replacement plate. Specifically, there is concern that blade warp and even paint will influence measurements and invalidate the results. It is rather disappointing advice in an otherwise exemplary manual.

Metrologically speaking, a blade replacement plate isn't needed. Unless you are certain that it's truly flat, a blade replacement plate could actually lead you to misalign your saw. It takes a good deal of skill and knowledge to produce a plate which is flat to less than 0.001" that will stay flat over time. No 1/4" or 3/8" thick piece of aluminum plate could ever qualify no matter how much skill and expertise is applied to its manufacture. Both the material and thickness are completely inadequate. Buying such a product is a waste of good money no matter what the price. A steel plate with adequate dimensions and flatness would be a prohibitively expensive and unnecessary item.

The geometry is pretty simple. If you mark a spot on your blade with a felt tip pen, and then rotate the arbor on your saw, that spot will travel in a circular path. The circle traced out by the spot will lie in a plane. That plane will be perfectly perpendicular to the axis of rotation of the arbor. It doesn't matter if the blade is flat or not. It could be bent like a potato chip and the spot will still trace a circle which lies in a plane perpendicular to the arbor's axis of rotation. Arbor run out (from being bent) will not affect the path of the spot either. If you always place the stylus of your dial indicator on the spot when you make a measurement, rotating the blade as necessary, then your results will be more reliable than any flat plate can provide. All measurements (alignment and blade tilt) can be done in this manner if blade flatness is suspect and the situation calls for extreme accuracy.

### Blade Tilt Stops

In a number of places, the manual advises that the blade tilt wheel be backed off to release pressure between the trunnion assembly and limit stops. There is a valid concern that this pressure could cause the assembly to flex and produce accuracy problems - especially when making alignment adjustments. Since your TS-Aligner Jr. can provide very accurate angle measurements, I recommend that the stops be adjusted so that the blade can tilt slightly beyond zero and 45 degrees. Trust your Aligner, not the stops. This will completely eliminate any pressure problems between the trunnion assembly and the limit stops.

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