A More Accurate Byrnes Table Saw

A RELATIVELY INEXPENSIVE AND NON INTRUSIVE UPGRADE!

REVISITED 3/13/19

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Just A Note Before We Start:

The info herein is Byrnes Saw specific. However it may apply to other brands of saw possibly the Micro Mark (Micro Lux) and Proxon . I believe it would be a challenge to apply this to the Preac table saw.

This content is provided after considering 3 approaches and ultimately settling on the saw table top and front edge as the datum for the added parts and alignment. A critical need.

In developing the attachment mechanism the approach has always been “do no harm” to the saw.

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- The Byrnes Table Saw can be upgraded with a micrometer adjustment to the fence
- The Byrnes accessory cost for the part is $55 plus shipping
- It is easy to add on
- If you are competent in using a micrometer it is a decent choice but….
- If you are using a digital caliper in unison it doesn’t integrate well and…..

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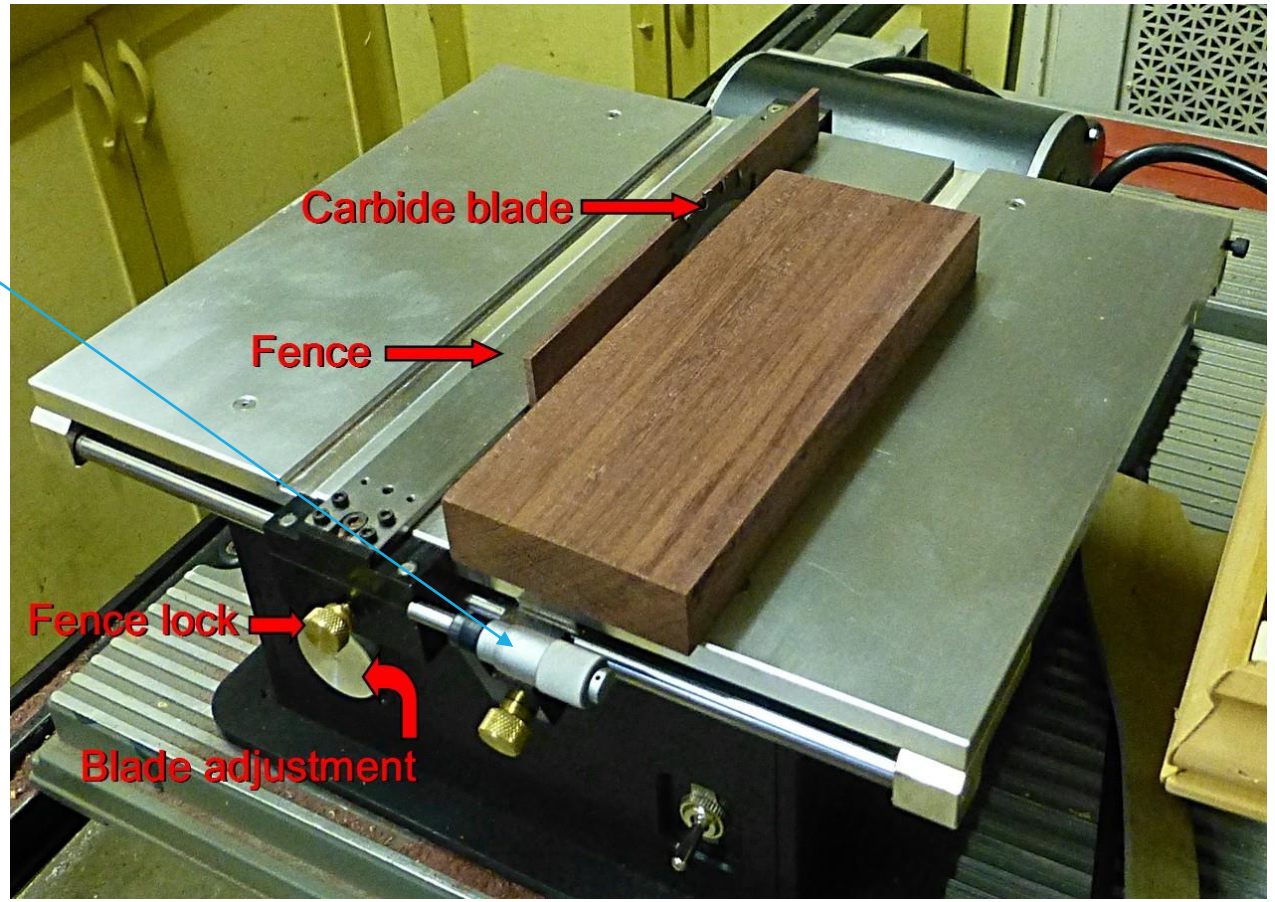
Byrnes Micrometer Version

It also appears to limit RH travel distance ???



A Take Off On An Existing Upgrade

- An MSW member designed an upgrade that employs a *digital scale attachment*
- It employs an I Gaging digital linear scale with read out capability; *I Gaging Model # 35 -712 – P*
- The part can be purchased on Amazon for $49 and shipping cost
- It requires fabrication of at least 2 extra parts and some different hardware
- The fence traveler bar must be drilled and tapped
- It is unclear how the DRO is attached to the sensor
- *It does require shorteninging the length of a 12” or longer digital scale bar*
- *The aluminum substrate is easily cut at home*
- It is a worthwhile adaptation

A Take Off On An Existing Upgrade

MSW IGaging Version

A longer digital scale was cut down to fit the 12” Wide table

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- I Gaging Model # 35 -712 – P+
- It has a 12” range of measurement. Total Beam length 16.5”
- The Byrnes saw useful table top with the fence is 3 7/8” either side of the blade
- It supports remote DRO (digital readout) of a full the 12”/300mm portion of the beam
- Advertised accuracy of .002 inch/.01 mm over 6 inches 0r .004 over 12 inches
- Display On/Off, mm/Inch w/fraction, Zero set, Set, Preset, functionality
- Specification can be found on line https://www.amazon.com/dp/B01G4FQJI6?ref=myi_title_dp

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- The IGaging Digital Scale Remote Readout comes with the following parts:
  - The 12” Digital Scale *(w/ brackets is ~ 14 inch long w/mounting brackets whe modifed)*
  - The DRO (Digital Readout) has a 6 foot cord, *unshielded USB connection (more later)*
  - A swivel arm to mount the readout elsewhere can be purchased
  - A ‘Z’ bracket to attach to the sensing mechanism to saw fence traveler
  - Two different sets of mounting brackets to mount the digital scale
  - Requires a DC adapter
  - Digital Output port added
  - Mounting specific hardware

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Just a word about typical digital read out measurement devices with remote readout

- The bar incorporates a substrate of etched copper elements that can be detected by the sensing head
- The head has a similar physical array
- The bar surface is coated with a dielectric
- When assembled it forms a capacitor: sensor head copper elements/bar dielectric/bar copper elements
- For a good but technical summary see

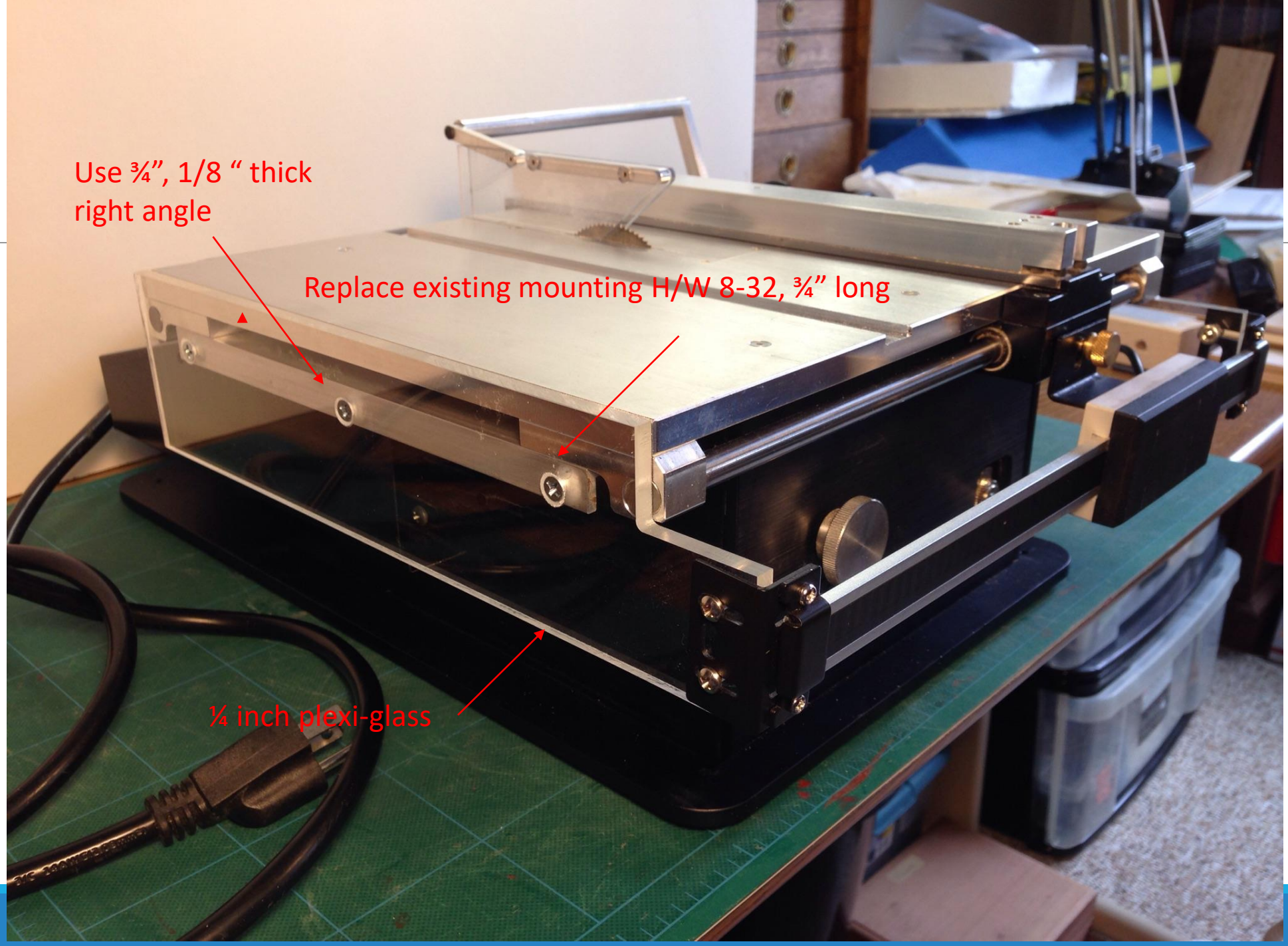
Shahe 5403 and 5404 Digital Linear DRO Scales Overview Yuriy's Toys.url

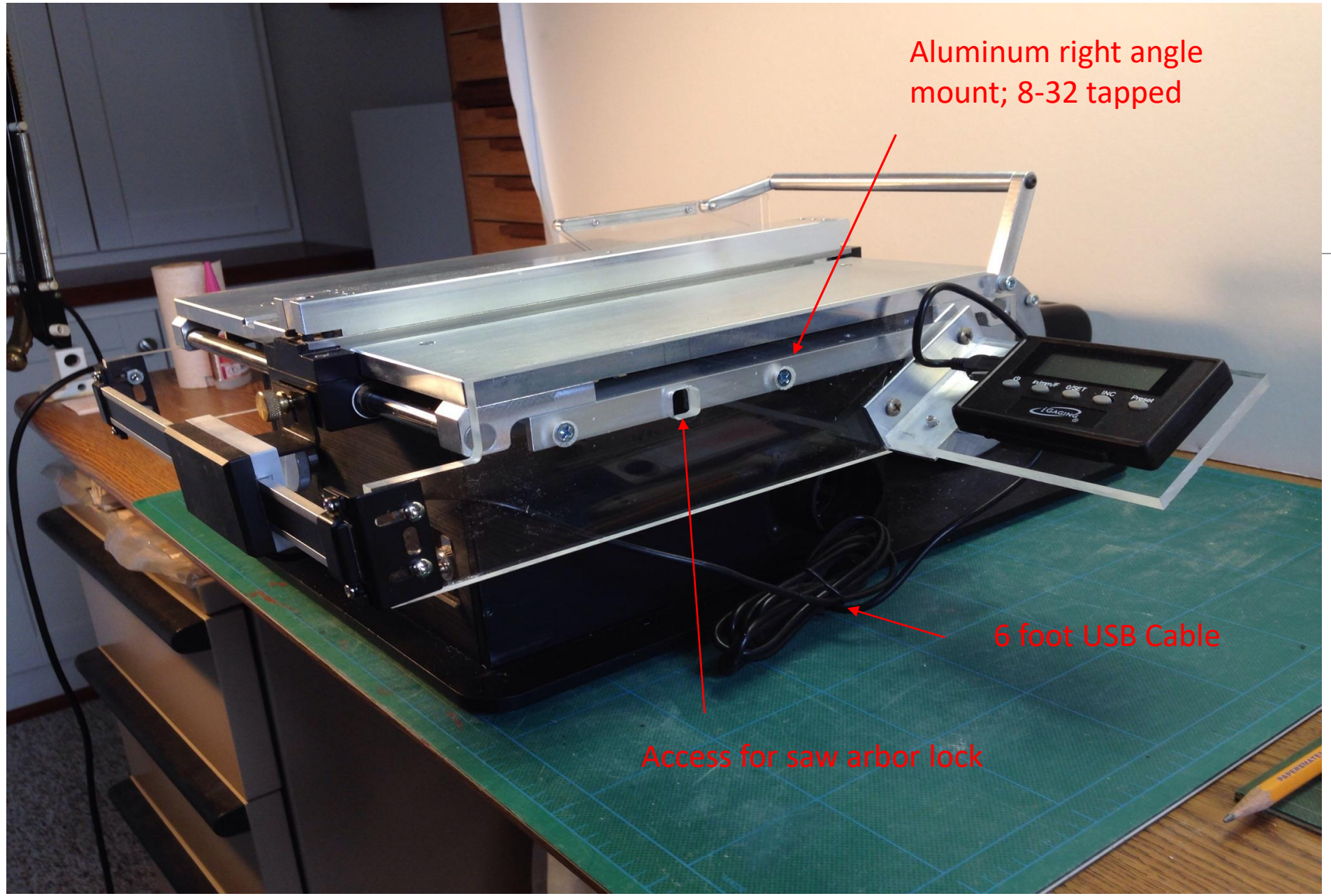
- Better units utilize glass substrate and/or employ stainless substrate bars or magnetic technology

Improving The Byrnes Table Saw

The method herein is a spin off of the MSW version with possibly some advantage

- The assembly can also be *easily added and removed, 4 screws is all it takes*
- The *mounting elements are easily machined* in a home shop of wood or plexi-glass and even aluminum
- *If you choose aluminum you can cut the digital bar to length for fit*
- *If you use the more expensive stainless version you can pad out the mounts for fit w/o cutting (see 2nd photo)*
- The DRO can be mounted elsewhere for a better viewing


Use ¾”, 1/8 “ thick
right angle
Replace existing mounting H/W 8-32, ¾” long
¼ inch plexi-glass


Aluminum right angle mount; 8-32 tapped
6 foot USB Cable
Access for saw arbor lock

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- Finally the Byrnes saw fence lockdown has to have 2 holes drilled and tapped for 6-32 hardware.
- One last option; the digital read out placement:
  - Attach it to the digital scale as shown earlier (requires fashioning another bracket)

  OR
  - Utilize the provided swivel mount, mounted elsewhere

  OR
  - Add the outboard mounting bracket as shown

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Lessons learned

- ✓ Do not clean the bar with organic fluids such as acetone.
- ✓ Do not leave the 6 foot cable coiled. There appears to be some crosstalk in this configuration.
- ✓ It might be more beneficial to shorten the cable for a DRO that is located in close proximity
- ✓ A shielded cable may help in (electrically) noisy environments. Ground one end of the shield only.
- ✓ I have found that the most reliable way to use this is:
  - Slide the fence to touch the blade
  - Zero the DRO
  - Side the fence past the desired dimension
  - Return the fence back to the desired set point or dimension
- ✓ My unit has a .004” accuracy. It tends to read in the + .002 range
- ✓ Repeatability is relatively good and runs in the .002 -.004 range
- ✓ I believe my unit always leaves the sensor powered in DRO Power Off mode. For storage of unit I recommend removing the batteries. Unsure what the newer units do.

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Test Results of fence setting using 0.3755 brass bar

	Test		Reference Bar		Saw Blade Reading	Deviation		Hard Ref Reading	Deviation
Pwr On	1		0.3755		0.379	0.0035		0.373	0.0025
	2				0.373	0.0025		0.375	0.0005
	3				0.377	0.0015		0.375	0.0005
	4				0.375	0.0005		0.373	0.0025
	5				0.376	0.0005		0.373	0.0025
	6				0.375	0.0005		0.377	0.0015
	7				0.376	0.0005		0.375	0.0005
	8				0.378	0.0025		0.373	0.0025
	9				0.376	0.0005		0.375	0.0005
	10				0.375	0.0005		0.374	0.0015