



## **THE DIGITAL ANGLE DIAL (DAD) KIT 1314.1**

### **Instruction: Replacing the analog Angle Dial with the DAD**

*Removing an old analog Angle Dial and replacing it with a Digital Angle dial—the “DAD”—is not difficult. There is a series of steps—each one described in this Instruction. This Instruction is sufficient to guide you through the installation—**our advice is to read it through once before doing it.***

*There is a video on our website. It shows the process, but it is not meant to be a substitute for this Instruction--we offer it just because it's easier to do something after you've seen someone else do it (for example, if you need to mount the spare tire on your car it's a lot easier if you've seen someone else do it). So, look at it, then proceed with the task. You can access the video by clicking on <http://www.ultratec-facet.com/DAD.htm> .*

### **1.0 THE PACKAGE INCLUDES:**

- a) the DAD
- b) the Power Cable
- c) a Calibration Block
- d) two Allen Wrenches



## 2.0 GETTING READY.

- 2.1 Remove the old analog Angle Dial (you will need the smaller of the Allen Wrenches -- 1/16"). The Angle Dial is held to the Yoke by two set screws that are located on the underside of the Angle Dial. On older Masts, there may only be one set screw. Loosen the set screws, grip the Angle Dial, and pull it back toward yourself—it will come off.



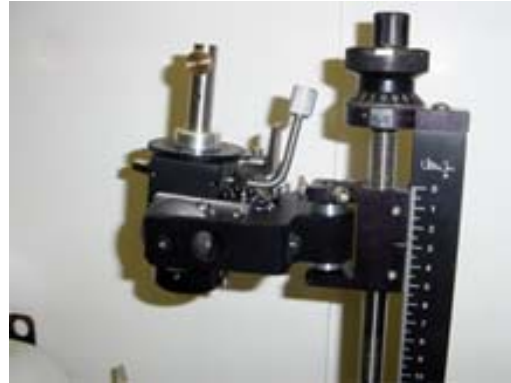
Before you set it aside, look at it and see how the clamping action of the set screws held it to the Yoke—the DAD is going to assemble to the Yoke in the same way. Set it aside (know where you put it—it serves as a hope-you-never-use “spare tire”).

- 2.2 Readying the Base of the machine. Remove the Splashguard and set a smooth and flat Lap onto the Platen—your favorite pre-polish Lap will do.



### 3.0 MOUNTING THE DAD

To do this you will need the larger of the Allen Wrenches.



3.1 Set the Spindle of the Mast so that it points UP.

3.2 Slip the DAD onto the Yoke. You will find that the DAD slips forward and back on the Yoke some small amount. Pull it forward, engaging the small Gear of the DAD with the Ring Gear on the main Block.



3.3 Holding the DAD to the Yoke with your left hand, with the Spindle still pointing UP, slightly tighten the set screw nearest the Mast (don't make it tight—that comes later)—as shown in the first picture below. Then, continuing to hold the DAD to the Yoke, slightly tighten the forward set screw (again, don't make it tight—that comes later).



- 3.4 Setting the pressure of the Gears. Gripping the Spindle—swing it down—swing it back up—swing it back down. Things are settling into place—you will probably feel the gear action.



After a few swings, it will feel good—tighten both set screws to the Yoke (tightening the rear set screw shown).



Incidentally, now that the Spindle is pointed down, you can peek behind the DAD and see that the Gears are engaged (see the photo, below)-- (is it possible that you went through those steps and the Gears were not engaged? Not likely. But if that's the case—patience-- go back to step 3.1, and start over).



**Mounted.** There it is.

**4.0 CALIBRATING DAD.** Not hard to do, *but follow the steps carefully.* Don't worry about it—if you make a mistake, you won't hurt anything—you'll just go back and start over.

4.1 Point the Spindle UP.

4.2 Plug the Power Cord into a live 110VAC or 220 VAC socket.

4.3 With the Spindle still pointed UP, depress the CLEAR button and hold it down as you plug the power jack into DAD.



On the display, 90.00 will appear, and flash – it remains flashing when you take your hands away.

4.4 **SETTING 90 DEGREES.**

4.4.1 Set the Calibrating Block onto the Lap Surface.



4.4.2 With the Angle Stop loose, lower the vertical position—approaching the 90 degrees (represented by the top surface of the Calibration Block)--it's OK to "ride it down", resting on the Block, as shown (the display is still flashing 90.00—it's prompting you to set the 90 degree position). Gradually lower...lower...THERE.



How do you KNOW it's "there"? As you lower the position, and the Spindle is evening out against the top surface of the Calibration Block, you watched as the gap closed ... closed...slowly closed...adjusting with the Vertical Knob--seeing what light comes through the gap. When the light is pinched-off—it's THERE. 90 degrees.

Hold it there and **press the SET button ONCE**. The display changes from 90.00 to a flashing 00.00 – prompting you that setting the 0 degrees position is next.



(whoops—did you press it more than once? Start over—back to 4.3—pull the plug—replug and proceed. raise up—lower—confirm that the Spindle is flat against the Block-- **press the SET button ONCE**).

On to the last step.

#### 4.5 SETTING 0 DEGREES

- 4.5.1 Raise the Vertical Position. As you do that, allow the Spindle to point down...down...as the Riser Block goes up. You have to raise the position high enough so that the end of the Spindle, when it's pointing straight down, is above the surface of the Lap.



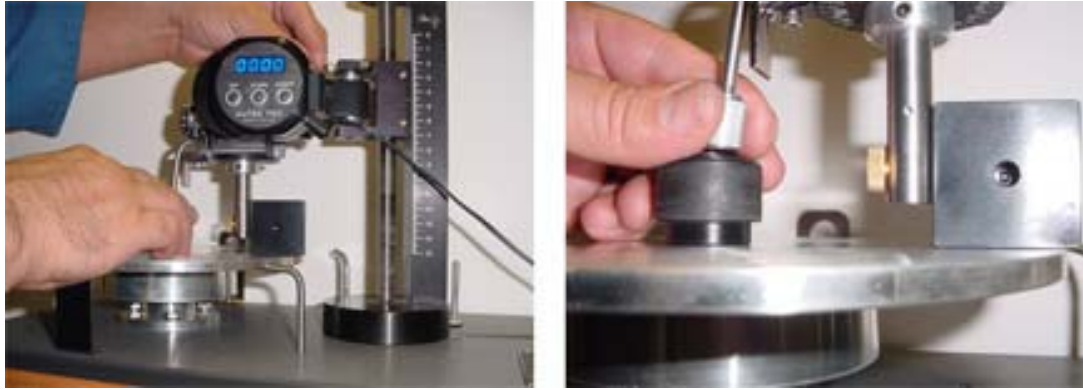
The display is still flashing 00.00.

When you get it so that it's about pointing straight down, as in the second photo above, lock the Angle Stop there. It will permit you to use the Fine Adjustment Knob to dial-in the 0 degree position in the next step

- 4.5.2 Set the Calibration Block back onto the Lap (it's probably easier to angle the position of the Mast on the Baseplate, as in the second photo, above. It gets you a bit more room).



You will now go through a 0-setting procedure that's pretty much the same as the prior 90 degree procedure—except, with gravity no longer helping, it will be watching the gap...watching...watching...adjusting with the Fine Adjusting Knob...until the light showing through the gap is pinched off. It's there at 0 degrees.



**Hold it there and press SET – ONCE. You’ve done it. DAD is installed and ready to use.**

(There’s a similar “whoops”—did you press twice? Start over—back to 4.3—power off—reset 90--reset 0—this time you’ll remember the press-once rule).

5.0 **ABOUT DAD...USING IT.**

5.1 You will see, as you swing up the Spindle from that 0 position toward the 90 degrees, it reads all the way—each angle---each .01 angle. If you keep raising the Spindle past 90, it will read up to 99.99, and then stop. You will use it just as you used the analog Angle Dial that you've replaced—set the angle—cut to it.

5.2 Maintaining Calibration. Once it is set, the calibration is retained.

You turn DAD OFF by pressing the POWER button, and then you turn it ON again by pressing the POWER Button. Raise the Spindle to a pointed-up position and then, as you lower it, you see that the calibration has been maintained.

Similarly, if by accident the power interrupted —just turn the power back on plug the jack back in—or whatever). Bring the Spindle to a pointing up position—it will flash 99.99. Swing the Spindle down and when you get to the 90 degree position it starts reading the angles—calibrated.

You won't need that Calibration Block again (new machines are shipped calibrated, with no Block)—it's a one-time thing.

5.3 There's an optionally ON beeper that indicates making contact with the Stop. Pressing SET turns it ON—pressing CLEAR turns it OFF.

