

SWAG U-Turn Tube Bender Digital Read Out Installation Instructions



**IMPORTANT
NOTE FOR JD²
MODEL 32
ONLY
IN STEP 9!!**

DO NOT TWIST COUNTERCLOCKWISE PAST ZERO°. DOING SO WILL CAUSE PERMANENT DAMAGE TO THE DIGITAL READ OUT.



We also have a YouTube video for instructions: https://youtu.be/X1KKY9Ai_5g

The digital angle finder (PN # 65451) can be purchased directly from Harbor Freight. The angle finder is ~\$20.00.

The installation instructions show a step-by-step operation to help clarify points of assembly.

Step 1: Examine your kit contents.

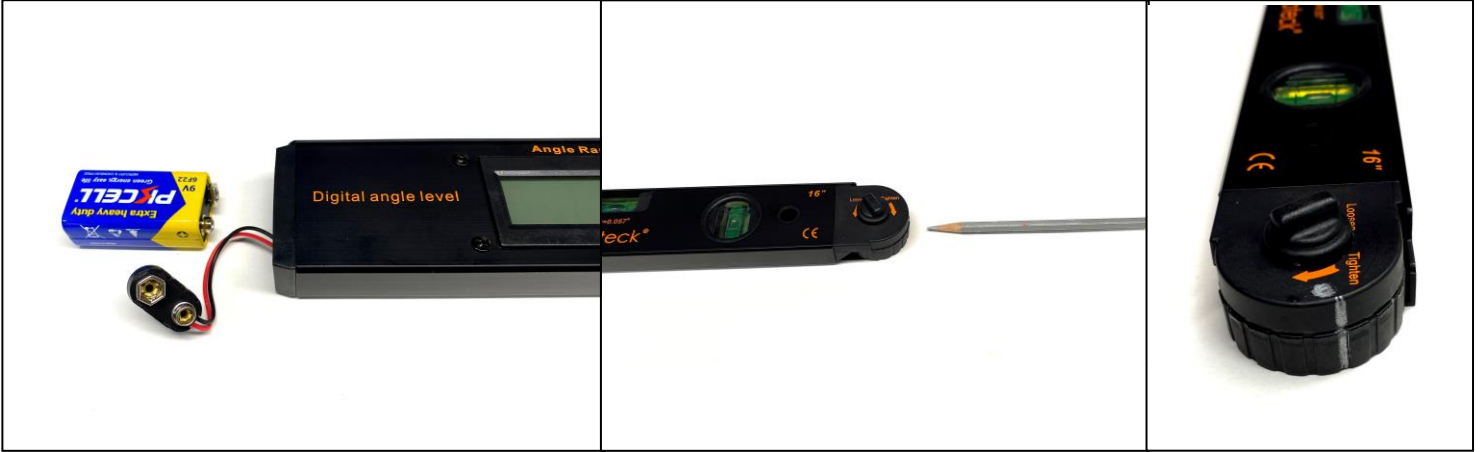
Check to make sure your kit contains everything shown in the picture above. Begin by pre-reading the installation instructions. Pay close attention to the notes in red on Step #9.

Tool Check List

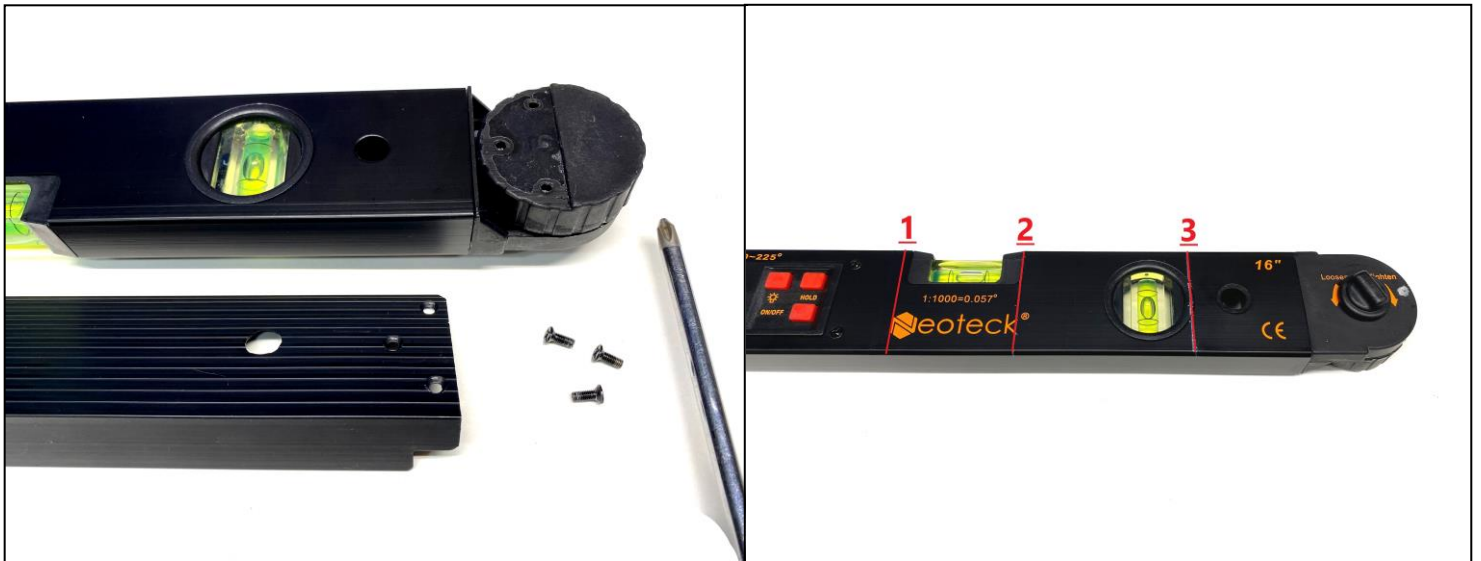
Electrical Drill
Soldering Iron
7MM and 10MM Sockets
3/16" Allen Wrench
Sharpie Marker
Phillips Screw Driver
Pliers
Hack Saw
5/16-18 tap
1/4" & 21/64" Drill Bit
Center Punch
Knife/Razor Blade
Hammer

Step 2: Marking the “0.0” location.

Insert the 9-volt battery, then turn the angle finder on and set angle to 0.0°. Mark the “0.0°” location with a visible permanent marker or Sharpie as shown below at roughly the three o’clock position. Remove battery when finished.



Step 3: Remove the aluminum back plate and mark cut locations.



Step 4: Cut completely through the angle finder along line 2 as shown below. Remove the spirit level so you can tuck wires out of harm’s way behind the screen, then cut along line number 1.

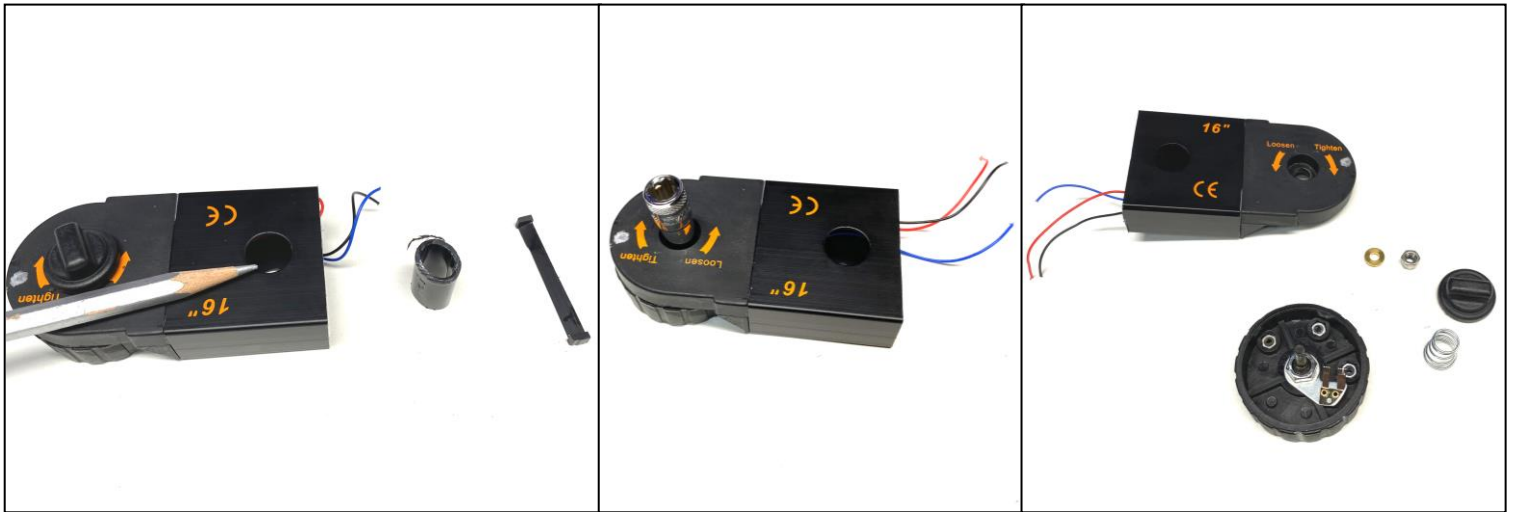




Step 5: Mark and drill a 21/64” diameter hole, then install the top plastic swivel joint. Tighten the provided 5/16” button head until it is snug; then tighten an additional ¼ turn. (You should not be able to turn the plastic swivel joint by hand when fully tightened)



Step 6: Push wires deep into unit then cut completely through the angle finder on line 3. Remove the plastic pieces shown below, then carefully disassemble the rotating side of the unit.



Step 7: Carefully remove the spring-loaded finger from the inside of the rotating unit. Damaging this piece will render your unit inaccurate or entirely inoperable.



Step 8: Thread the fasteners removed in step 3 into the nuts glued inside the swivel unit. Use a pair of pliers to break the nuts free. Then, install the swivel unit to the new drive pin using the small, provided fasteners. After swivel unit is attached to drive pin, reinstall the spring-loaded finger.



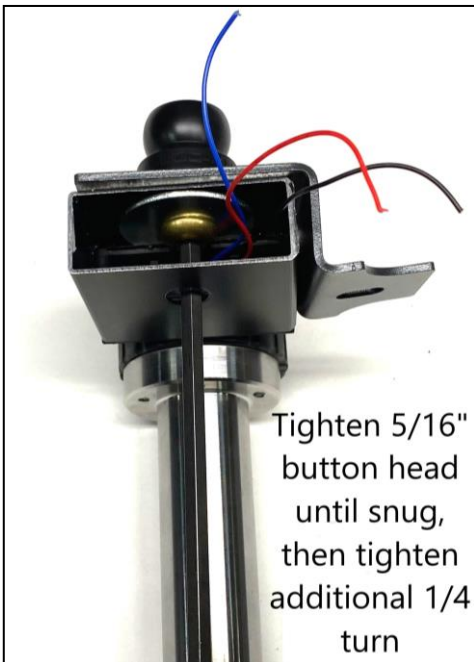
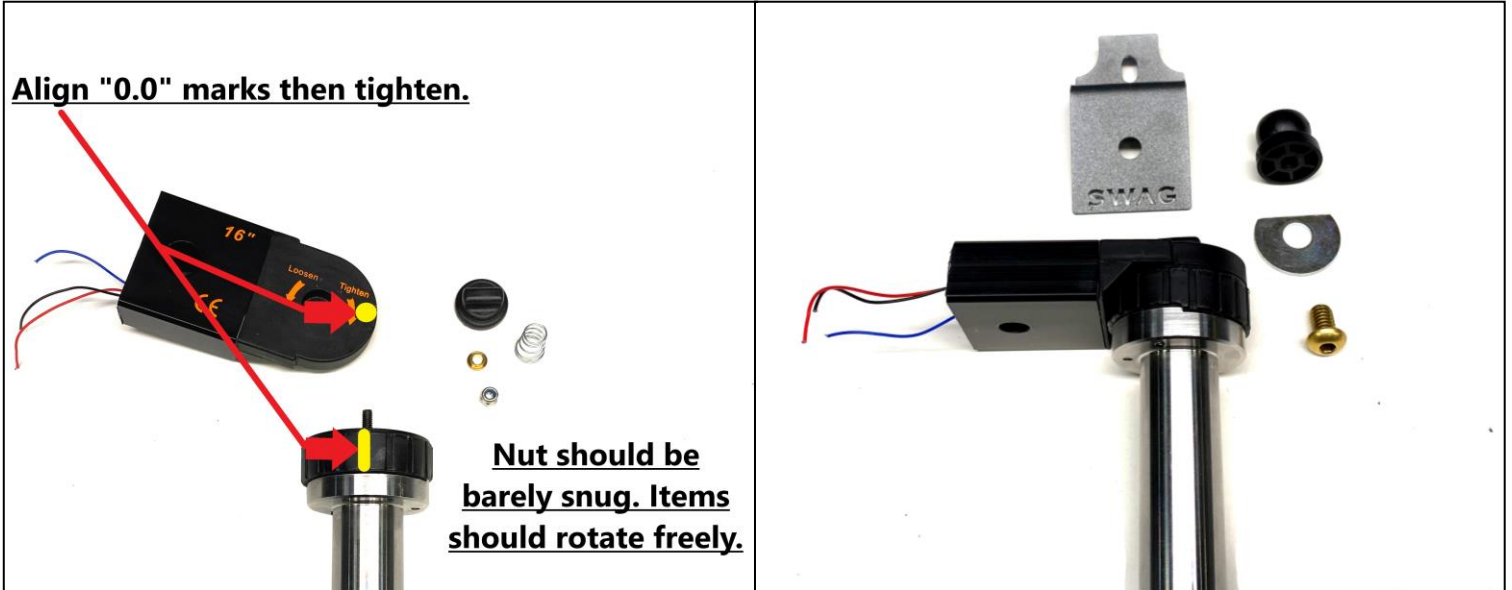
Step 9: Reassemble swivel unit.

IMPORTANT NOTE FOR MODEL 32 AT BOTTOM OF PAGE!

NOTE: (Align both the "0.0" marks done in step 2 above. Then tighten nut until it is barely snug. The drive pin should freely rotate in both directions.)

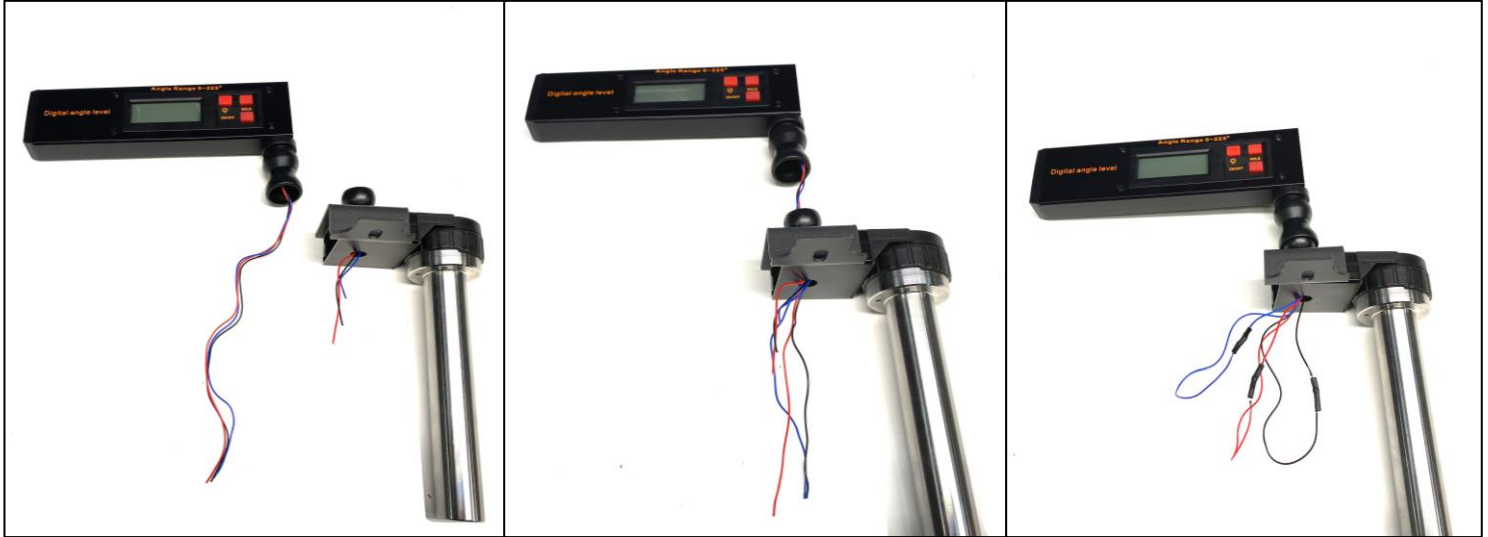
The HF digital angle finder in stock configuration can swing from 0.0° to 230.0°. With the physical mechanical stop removed you are now able to manually turn the angle finder into infinite positions. Rotating the angle finder counterclockwise ~ 15° past the "0.0" will cause the spring-loaded fingers to travel over the soldered wire connections, which could break the fingers off causing the unit to become inaccurate or inoperable.

DO NOT ROTATE PAST -15° COUNTERCLOCKWISE OR 240° CLOCKWISE!!



NOTE: POWDER COATED BRACKET MUST BE ROTATED 180° FOR MODEL 32 ONLY!

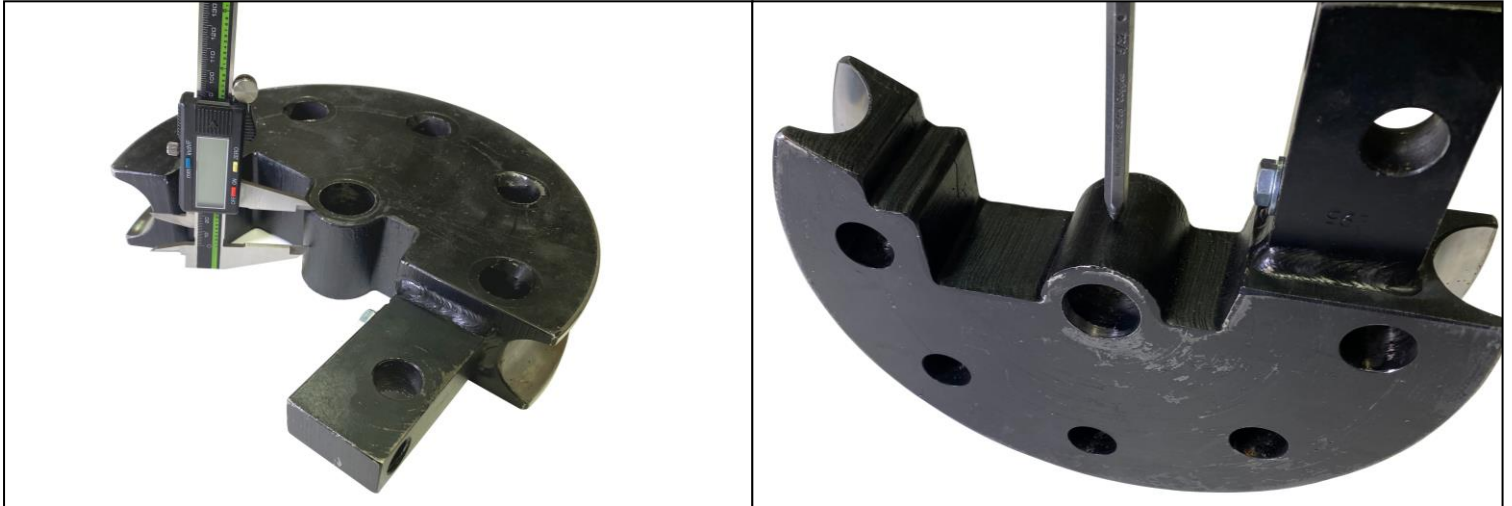
Step 10: Attach middle plastic connector to top assembly. Before attaching top and bottom together, solder & heat shrink wiring making sure to match wires based on color. Next, snap all plastic connectors together, carefully push wires into bottom assembly, install end caps, attach beam clamp, and insert battery.



Note: (Do not rotate the drive pin more than -15° counterclockwise or 240° clockwise. Also, do not swing the display head more than a couple turns in the same direction, as you will rip the power cord you just soldered.)

Step 11: Tapping your dies to a 5/16"-18 TPI.

Mark the center location on each of your die sets' drive pin tube, (check clearances before drilling.) Mark with center punch and drill the 1/4" diameter hole required for a 5/16" -18 tap, then insert provided red thumb screw.



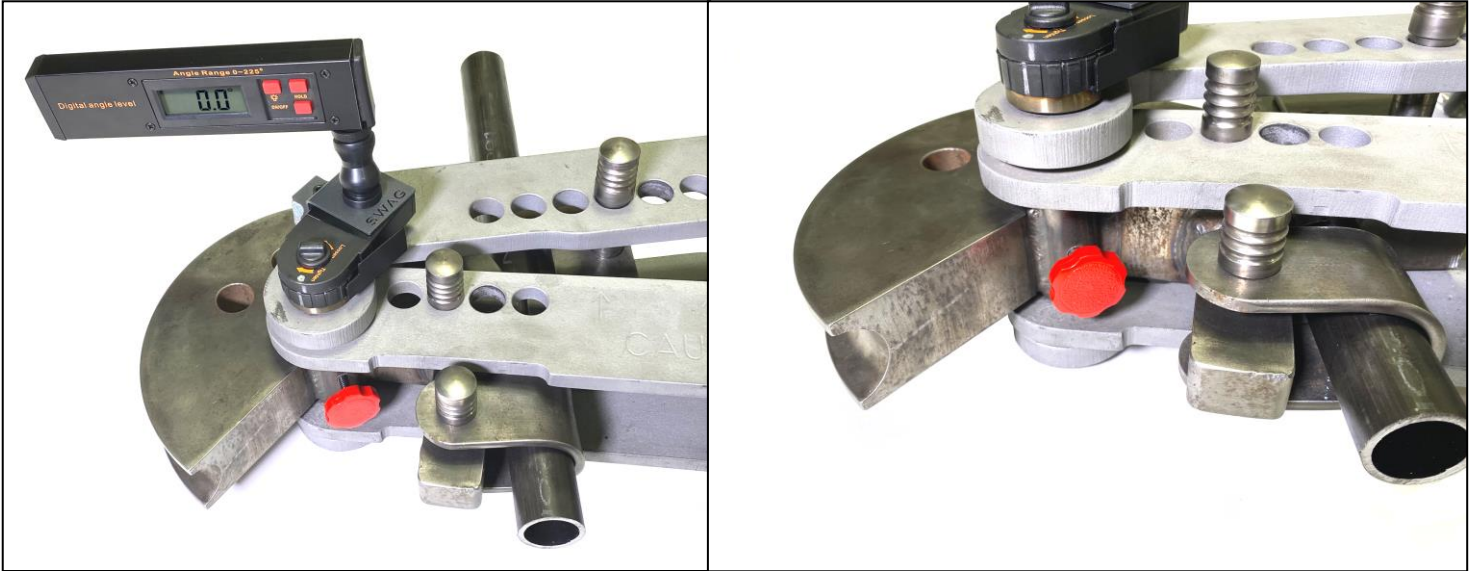
Step 12: Installation & set up.

Apply a light coating of grease over the main drive pin to reduce friction, then rotate drive pin so the digital read out displays 0.0°. Insert the drive pin into the bender and rotate the entire assembly until the zinc plated beam clamp is flush against the bender arms. Tighten both the 5/16" thumb knob and 3/16" allen head bolt. If you own the JD² Model 32 bender, use the small screw to fasten both clamps together and attach as shown in the third picture below.



Step 13: Final assembly and using your new U-Turn.

Using the correctly sized piece of tubing for the die set you have installed, insert a straight piece of tubing into the bender. Manually pull the bender open until all slop is removed from the system. Make sure that your "0.0" marks are still lined up and the display is reading 0.0°. (Manually adjust by rotating the Drive Pin if needed) then tighten the red 5/16" thumb knob connecting the die to the drive pin as shown below.



Your U-Turn is complete! You are now ready to start bending tube.

NOTE: You will need to repeat this set up procedure every time you change die sets. To remove the SWAG U-Turn digital read out you will remove the 5/16" thumb knob on your die set as well as the red thumb knob located on the bottom of the beam clamp, rotate the entire assembly counterclockwise to clear the beam clamp, lift up and slide out.

NOTE: Until you are confident with the SWAG U-Turn tubing bender digital readout we recommend using a manual angle finder or protractor to verify all measurements.

WARRANTY: SWAG will provide a lifetime warranty on all mechanical systems; however, SWAG will not warranty any electrical issues associated with the digital angle finder.

QUESTIONS: Visit SWAG's website at www.swagoffroad.com call (541)-915-2775.



SWAG Off Road DIY U-Turn Digital Readout FAQ's

What is the SWAG U-Turn?

The U-Turn Digital Readout was designed to convert the HF digital angle level into a digital readout for manual tubing benders. The HF digital angle level can be purchased from Harbor Freight stores or online. The Harbor Freight part number is 65451. You can find similar units on Amazon and eBay, we have tried a few and they all worked great.

What models does the U-Turn fit?

The U-Turn fits the following models: JD² Model 3, JD² Model 32, Pro Tools 105 & 105 HD, JMR & JMR Raceline as well as the Eastwood Fab bender.

How accurate is the U-turn?

Harbor Freight states the resolution is down to 1/10th of a degree, however we are confident it will accurately hold +/- 1°.

What is DIY about this kit?

You will be required to cut, drill, solder, and assemble the kit. SWAG has included instructions with over 40 high quality, color photos of the assembly process. The U-Turn kit can easily be modified with basic hand tools including a drill and a soldering iron. The whole process is relatively simple and takes 30-60 minutes. If you can bend tubing, you can build the U-Turn!

What material is the included center drive pin made of?

The center drive pin is made of heat treated 4140 Chromoly steel. Chances are the drive pin is a much higher quality steel than your tubing bender originally came with.

How big/thick of tubing can I bend?

The U-Turn is designed to work within the advertised capacities of your particular tubing bender. Check with the manufacturer of your particular bender for their recommended limits.

What modifications are required to my bender?

We designed the U-Turn to be 100% bolt on assembly with NO modifications required to your bender. Your dies will need to be drilled and tapped.

What modifications are required to fit my die sets?

You will need to drill and tap a 5/16"-18 hole in your dies to insert a thumb knob in order to lock the supplied drive pin to your die sets.

Does the U-Turn account for spring back?

No. That will have to be done the old-fashion way.

Can I use the U-Turn outside?

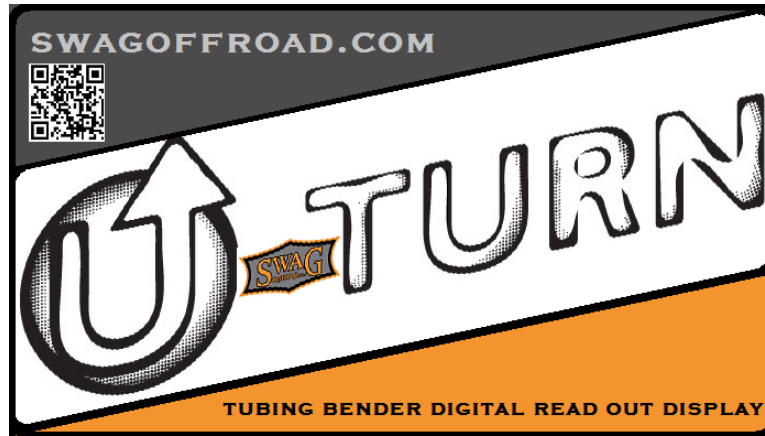
Yes. The U-Turn can be used outside; however, it should be stored indoors when not in use as the display unit is not water resistant.

What is the U-Turn's power source?

Provided in the packaging when you purchase the digital angle finder is a 9 Volt battery, which is readily available and easily replaceable when necessary.

Where are Swag's components manufactured?

SWAG takes great pride in its AMERICAN MADE products. SWAG manufactures locally in the USA! Including the heat treated 4140 steel drive pin, laser cut, powder coated steel bracket, and the black plastic swivel Loc-Line joints in the U-Turn kit. We vow to always support our local vendors and keep all of our manufacturing here in the USA!



U-TURN DIGITAL READOUT TROUBLE SHOOTING GUIDE

Problem	Cause/Solution
Display goes blank after 5 minutes	Battery save feature has been activated, you will need to press the on button to awaken the display
Display angle does not change with movement of bender	Check to make sure the 5/16" thumb knob located in the die is tight.
Display angle slowly decreases in value down to 0.0°	Check if the spring-loaded fingers in the angle finder were damaged.
Display angle jumps up and down	Check that the 7mm fastener connecting the angle finder's two plastic halves is snug, but not overly tight.
	Check to see the thumb knob located on the top bender arm is tight.
There is no display	Check 9-volt battery
	Check to see if sensor wires running through the stem have been torn from over twisting display unit.
The drive pin is difficult to remove	Loosen the thumb knob on the die.
	Apply a light coating of grease on the drive pin to aid in installation and removal
	Rotate assembly to free drive pin from the bender arms.
	Check for wear on pin and polish if necessary
	Check alignment of bender arms
Display head is loose/ vibrates	Tighten the button head fasteners. Use pliers as you are no longer able to insert and Allen wrench.