Cutting metric threads on a lathe with an 'inch' leadscrew is difficult and time consuming, requiring a more experienced operator...

Cutting metric threads on Clausing Standard Lathes equipped with an Encoder and the ACU-RITE® 300S DRO with the Thread Cycle is as easy as cutting inch threads, just follow a few steps and you’re ready to go.
The Advantage of Clausing Standard Lathes with Thread Assist...

When cutting metric threads on an 'inch' lead screw machine, the half nuts must remain engaged during the thread cutting sequence. This is because the standard 'inch' thread dial indicator can-not track the exact lead of a metric thread. The machinist must either reverse the spindle direction, or reverse the lead screw on headstock (on Clausing/Colchester Lathes) in order to bring the threading tool back to the start position. This is a very awkward and somewhat confusing procedure as it requires more functions for the machinist to quickly execute than cutting inch threads. It is very time consuming as well because the return speed is at the same rate as the cutting feed rate. The Clausing Standard Turning Machines equipped with Thread Assist allows the half nuts to be engaged and disengaged during the metric thread cutting cycle, which makes it as easy as cutting inch threads.

Follow these easy steps and you're ready go... (The Clausing/Colchester Professional Variable Speed Lathe is used for this demonstration)

Step 1: Setting Headstock Gearbox and Selecting Cutting Tool

Set the gearbox as you normally would for the desired thread to be cut.

To select the threading tool, push soft key under TOOL on page one screen... This will take you to the TOOL TABLE screen.

Use up/down arrows to highlight tool and push soft key under USE TOOL. You are now ready to start the THREAD CYCLE.

Step 2: Selecting Thread Cycle and Setting Thread Cycle Parameters

Use the right arrow key scroll to THREAD CYCLE function.

Push the soft key under THREAD CYCLE to open Page One of the Thread Cycle function.

Always set Z-axis at least 3 times the thread pitch or TPI in front of workpiece.

Use down arrow to get to END POINT parameters. In the highlighted area input X-axis end point. (Minor Diameter)

Note: On the right side of screen there is a prompt that indicates what to do.

This is the second screen of page one in THREAD CYCLE. First, in the highlighted area enter the number of normal passes... this does NOT include the finish pass.

Note: The page icon has changed.
Use down arrow again to **FINISH**, in the highlighted area input the depth of the finish pass.

This is the 6th and final pass.

### Step 3: Executing the Thread Cycle

Use down arrow to **THREADS**. This screen is used to select the type of thread to be cut. Using the left soft key, choose either **THREADS PER INCH (TPi)** or **PITCH IN MM**. To cut a metric thread, press the soft key under **PITCH IN MM**. In the **THREADS area** the word **PITCH** appears. In the highlighted area input the thread pitch and press **ENTER**, this will bring up the opening page for cutting threads.

The **P:1/6** indicates what pass you are executing, in this demo you have 6 passes, 5 normal passes and 1 finish pass.

At this point you will start the spindle. Now you will move X & Z axes to zero on DRO. First set **`Z` axis** by using the Saddle Handwheel, move cursor **`a`** between markers **`b`**. Notice cursor **`e`** will start to move from right to left when the spindle is engaged.

On the first pass only, you will engage the Half Nut (Thread Lever) either by using the thread dial on machine or applying upward pressure on the Half Nut lever until it engages. When you press **FIRST PASS**, cursor **`a`** will move to the right; when the Half Nut is engaged, cursor **`a`** will move to the left and cursor **`e`** will change to green and remain between the markers.

Notice **P:1/6 changed to P:2/6** indicates you're on pass 2. Using the Saddle Handwheel, bring the **`Z`** axis to zero. Then using the Cross Slide Handwheel move the **`X`** axis to zero as you did in the first pass. Press the soft key under **START PASS**. Notice cursor **`e`** passes between the markers, cursor **`e`** and markers turn from **RED** to **GREEN**

The **P:6/6** means you have completed the 5 normal passes and ready to run the Finish and final pass. First set the **`Z`** axis then the **`X`** axis to zero, the same as the first 5 normal passes, then press the Soft Key under **FINISH PASS**

Next set **`X`** axis by using Cross Slide Handwheel to move cursor **`e`** between markers **`d`**. Press the soft key under **FIRST PASS** to start first pass. On the **FIRST PASS** cursor **`e`** remains **RED** as it passes between the changes to green when to engage Half Nut.

When the **`Z`** axis on the DRO reads all zeros, cursor **`a`** centers between markers **`b`**, and cursor **`e`** returns to red and starts moving to the left, you are at the **TARGET ZONE**:

When cursor **`e`** centers between the two markers and turns green, engage the Half Nut. For the rest of the passes cursor **`e`** will be used to engage the Half Nut. When the **TARGET ZONE** is reached, disengage the Half Nut.

Repeat the instructions from the 1st and 2nd passes to complete the final three normal passes.

As in passes 2-5 when the red cursor **`e`** turns to green engage the Half Nut. Disengage Half Nut when **`Z`** axis reaches **TARGET ZONE** and back off cutting tool. Press Soft Key under **END** and you are finished.
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Issued 8-12