

COLD ROLLING PROCEDURE

Cold rolling is the process of burnishing the root radius of a threaded rotary shoulder connection. Multiple studies and practical industry experience with this process has shown an increase of fatigue life of 3 to 5 times over similar, untreated connections operating in the same working environment. This process has re-emerged throughout the drilling industry due to numerous benefits including increased fatigue resistance noted above. Other benefits are: increased torque capacity, enhanced performance, minimization of crack initiation and a longer service life.¹

There are multiple manufacturers of tooling used for this process throughout the industry. Please refer to the instructions accompanying the tooling used for specific operation. There are different pressure requirements for different connections. Please note that the following models of Weiler have the noted pounds of axial force:

Model	Axial Feed Force (X axis)	Feed Force Longitudinal (Z axis)
Weiler E70	2,250 lbs.	4,500 lbs.
Weiler E90	4,500 lbs.	4,500 lbs.

Also, please note that extra support may be required to secure the tool post onto the riser block of the machine. Existing customers have used various methods to achieve this, such as pinning the tool post directly to the riser block.

Image of a popular thread burnishing tool.

(Mfg: CJ Winter)

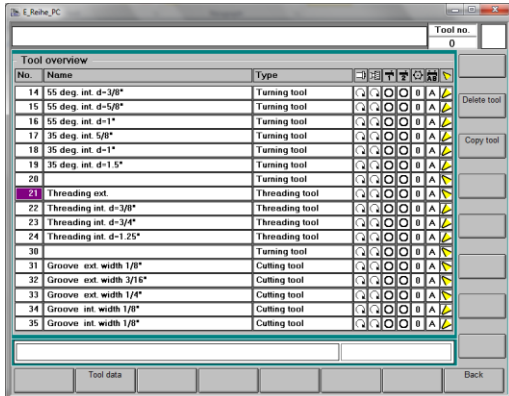


¹ CRR Manual_May 2014. CJ WINTER. www.cjwinter.com [online].

PROCEDURE FOR PROGRAMMING COLD ROLL TOOL (PIN CONNECTION)

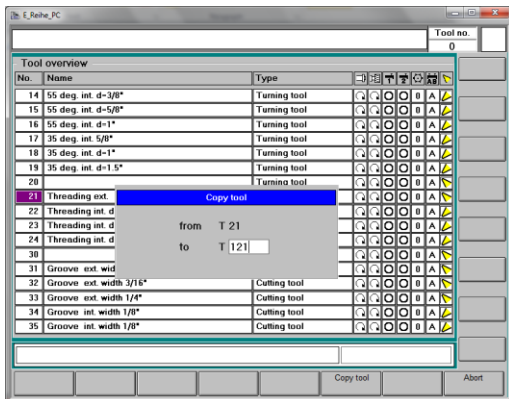
Create a tool in the Tool database:

The easiest way to do this is to take an existing External Threading Tool and **COPY** it to create the **Cold Roll- OD** tool



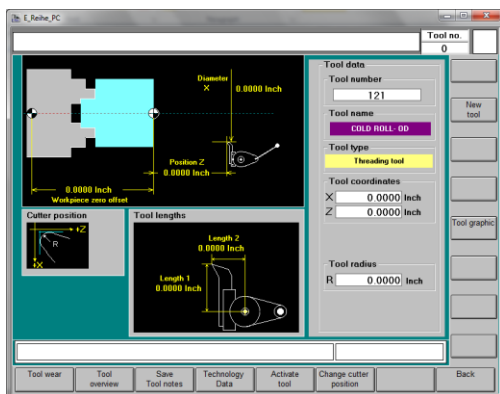
Go to **Tool Overview** and highlight existing Threading External Tool (21)

Press the **COPY TOOL** softkey



Choose a number for the new tool- 121 (example)

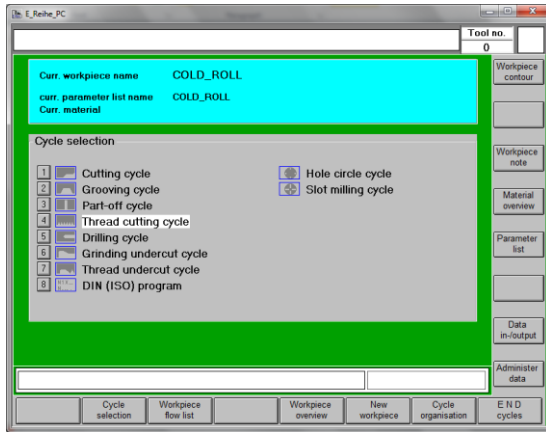
T 21 will be copied and the new copy will be labeled **T 121**



Type in a description of the tool such as:

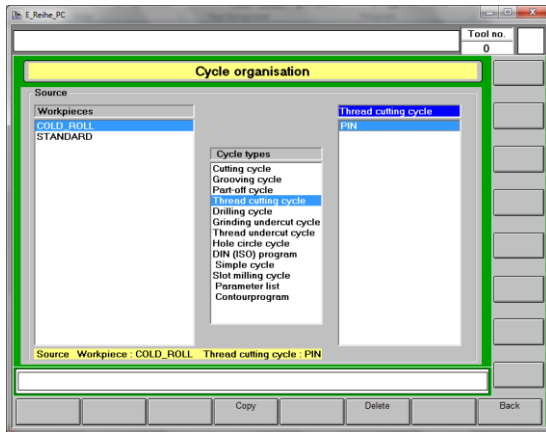
COLD ROLL- OD

Copy existing threading cycle to create a Cold Roll Cycle:



At Cycle Main Page press:

CYCLE ORGANIZATION softkey

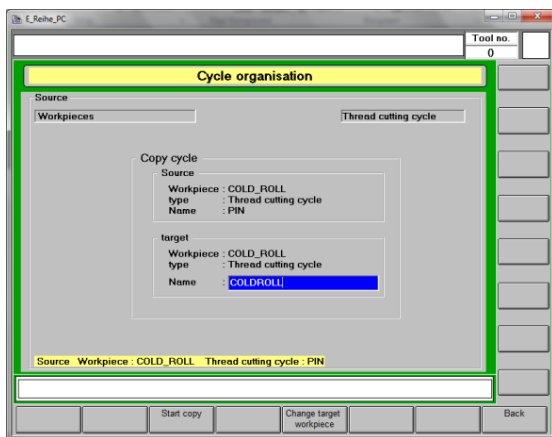


Choose Workpiece

Choose Cycle Type (Thread Cutting Cycle)

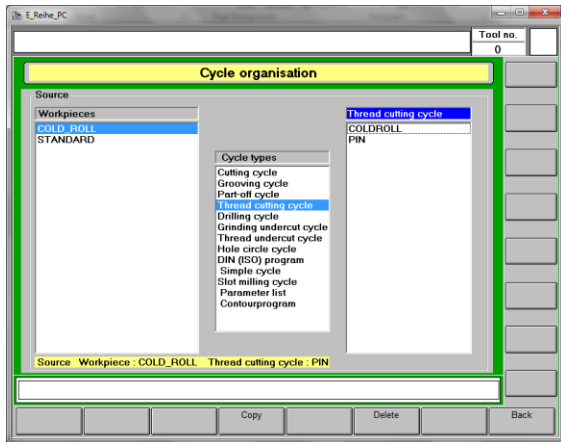
Choose existing cycle to copy (PIN)

Press COPY softkey



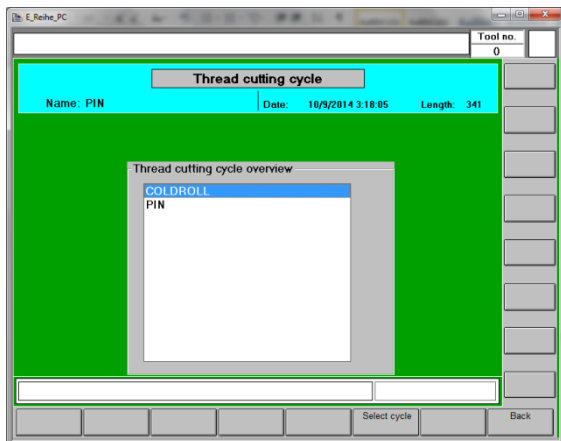
Copy the PIN cycle and name it COLDROLL

Press the Start Copy softkey



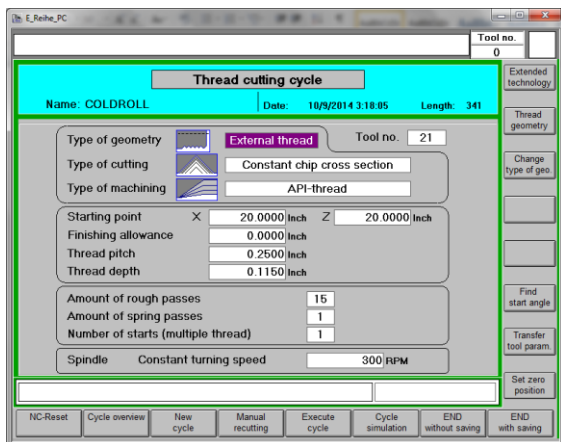
COLDROLL cycle now appears under the Thread Cutting Cycle column

- Press the BACK softkey and return to the Cycle Main Page.
- Then press THREAD CUTTING CYCLE to return to the PIN cycle originally ran.



Press the Cycle Overview button and you will then choose the newly created COLDROLL cycle.

Press Select Cycle.



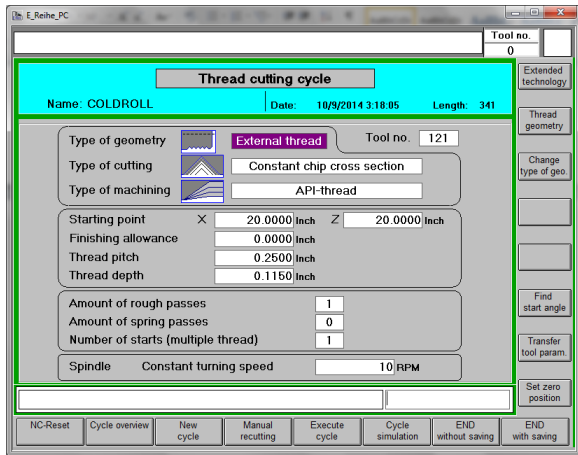
Now alter the cycle shown:

Tool No.= 121

Amount of Rough Passes= 1

Amount of Spring Passes= 0

Spindle= 10 RPM



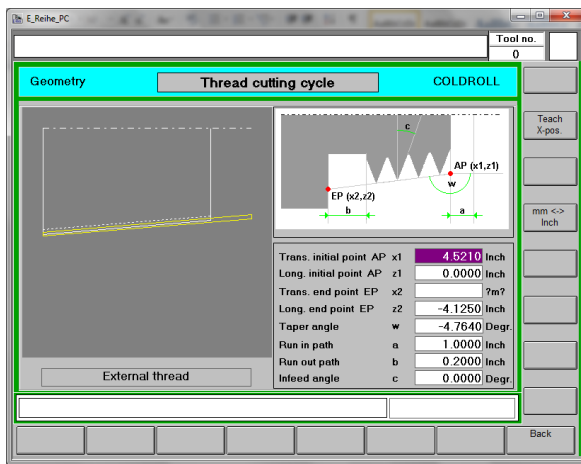
Cycle shown with alterations noted on previous page:

Tool Number= 121

Amount of Rough Passes= 1

Amount of Spring Passes= 0

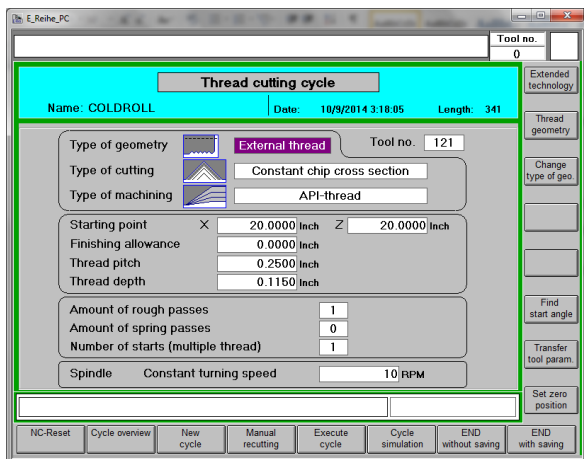
Spindle= 10 RPM



On the Thread Geometry Page, verify that the tool will clear the shoulder at the z2 value shown (-4.125 in this example).

If not, alter as needed so as to not have a collision with the tool and the shoulder.

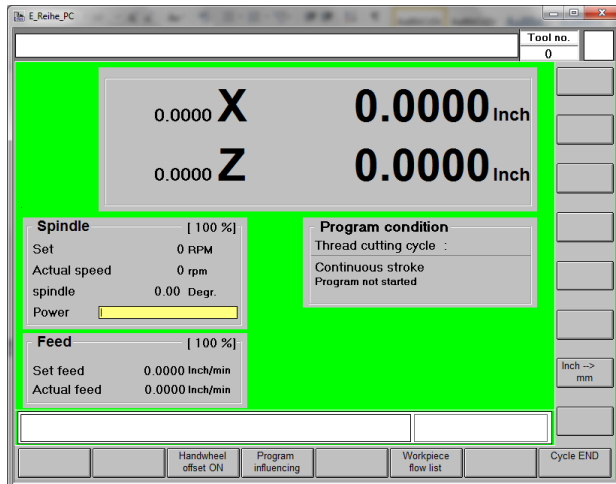
Press the Back key to return to Cycle page



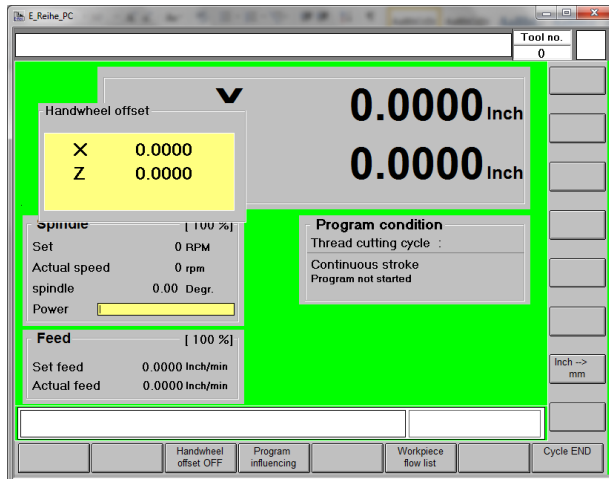
Move the tool into the root of the thread as normal and press the FIND START ANGLE softkey

Teach START ANGLE as we normally do

Press EXECUTE CYCLE



Before starting the cycle, press the Handwheel Offset ON softkey



Make sure that your handwheel incremental switch is set to .01 prior to executing cycle.

Press CYCLE START button and turn SPINDLE ON as normal.

Once the tool enters the thread area, start moving the X axis handwheel until you actuate the tool. With the slow RPM, you can usually do this within the first thread root. Note the X axis offset shown in the yellow box while running.

The tool will follow the thread path as defined and return to the 'home' position defined by the Starting Point.

Turn spindle off and check thread depth. If another pass is required, repeat the process.