

# Thread Inspection Module

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## *User's Guide Appendix*

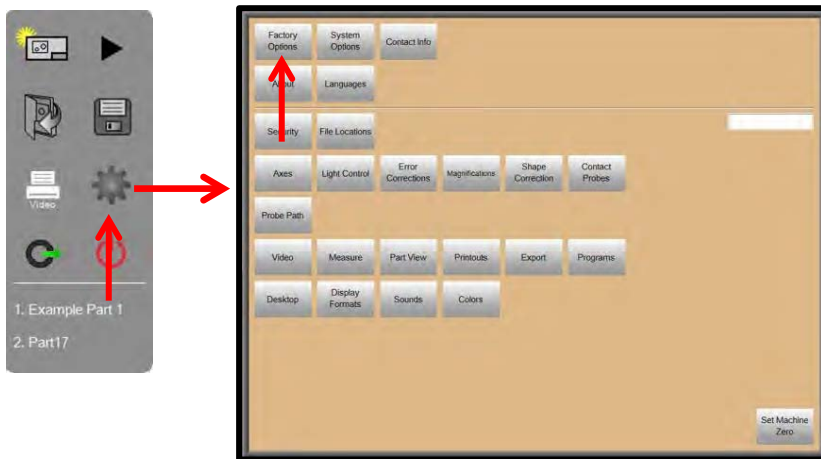
# Thread Inspection Module

The thread inspection module provides the ability to inspect external thread features and quickly calculate the Outside and Root Thread Diameters, the Pitch Diameter, the Lead, and the Root and Crest Truncation values for metric and unified standard thread forms. Then tolerance limits can be applied based on thread category.

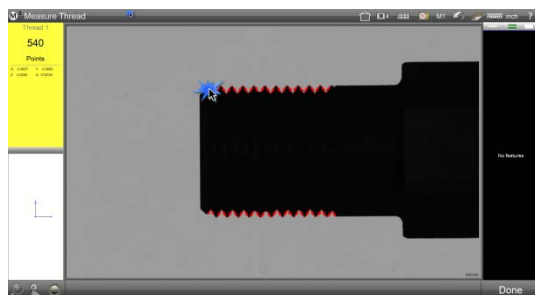
## Enabling the Thread Module

If the Thread feature button is not shown in the bottom toolbar, the thread inspection module must be enabled in Factory Options. Note: A Metlogix License is required for this module. To enable thread module Press the Factory Options Settings screen button and enable Insulation.

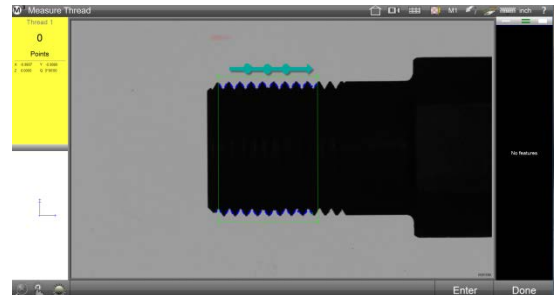
**M3 system menu > Settings > Factory options > Thread > Yes**



To perform a thread measurement press the measure thread button in the bottom toolbar and then click on, or drag along, the thread form edge.



or..



-Single click the thread edge to collect the full length of the tread form.

-Click and drag to specify thread region.

-Resize by clicking and dragging the handles.

-Click inside the rectangle or press Enter to collect points.

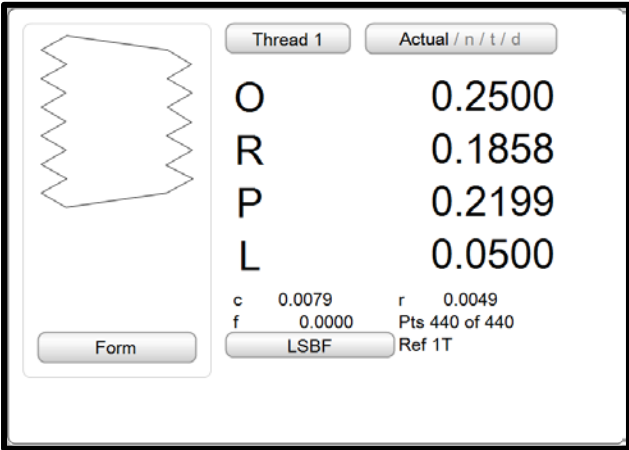
-Press the Done Button to complete the thread measurement.



**Important:** Thread forms should be positioned on the measuring surface in a “mostly” vertical or horizontal orientation. A +/- 5 degree orientation is recommended.

### The Thread Feature

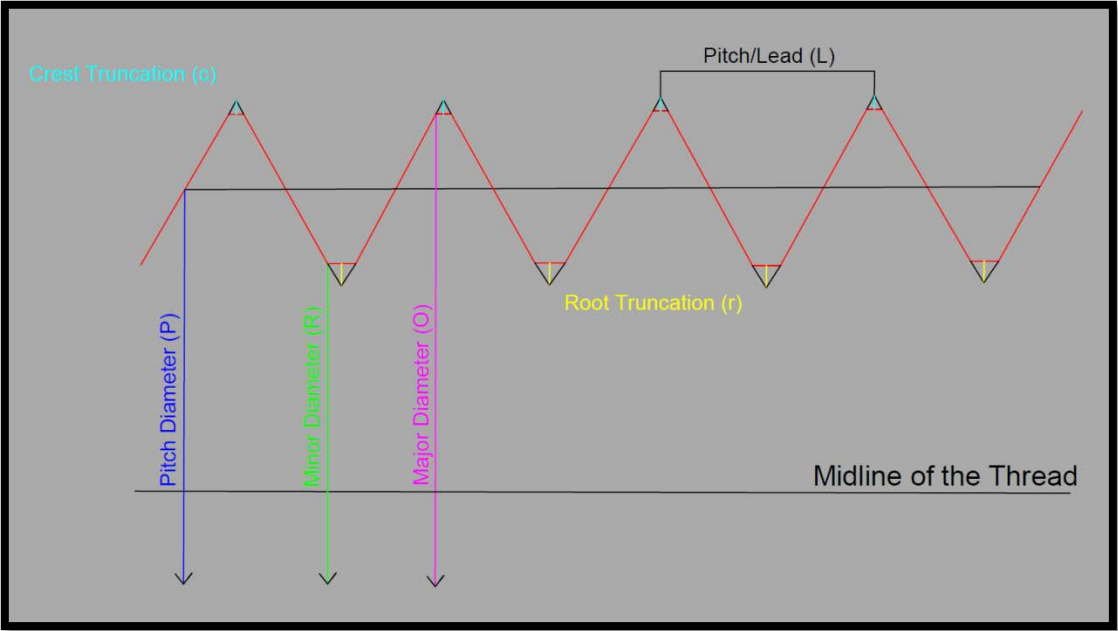
The thread feature measurement contains 6 coefficient results.



O=Outside(Major) Diameter // R=Root(Minor) Diameter // P=Pitch Diameter // L=Lead

c=Crest Crest Truncation // r=RootTruncation

Graphical representation of the thread coefficient results



# Thread Classifications

-There are three classes of thread fit;

Class 1 - A very loose tolerance thread class designed for applications involving easy assemble and disassembly of components.

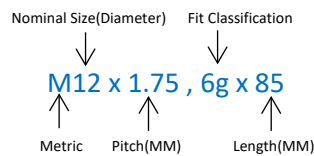
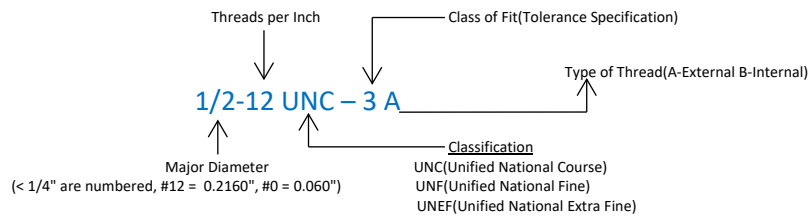
Class 2 - "Standard" tolerance thread class used for general assembly.

Class 3 – High Accuracy thread class used for fine fits.

Designations for each class and the type of thread for Unified and Metric are listed below;

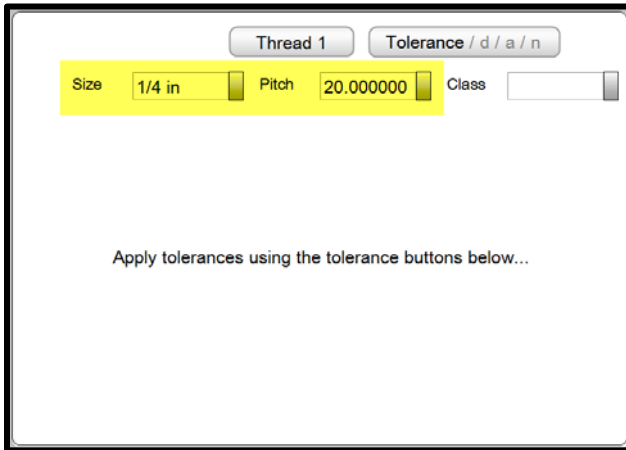
	Unified Inch Standard	Metric
<b>Class</b>	External Thread	External Thread
Loose	1A	8g
Standard	2A	6g
High Accuracy	3A	4g

**Nomenclature:** Example specifications for a threaded fastener are given below for both Unified Standard and Metric unit types;



## Thread Identification

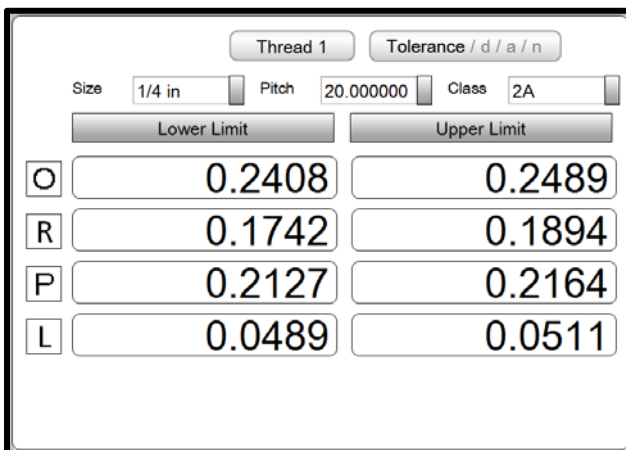
Once a thread feature has been measured the M3 software will attempt to identify the size and lead/pitch of the measured thread automatically. Access the feature detail view and toggle to the Tolerance display page to view the calculated thread size and lead.



-Select the Class category for the thread being inspected and then select the desired coefficients from the bottom toolbar that you would like to apply tolerance for. The correct tolerance limit values will be applied automatically based on the size, lead, and class selected. Press the full-thread button to apply all 4 major coefficients at once.



**NOTE:** In some cases the system may not correctly identify the size and/or lead of the thread being measured. For this case select the correct size and lead from the dropdown menus to update the tolerance limits for the coefficients being tolerated.



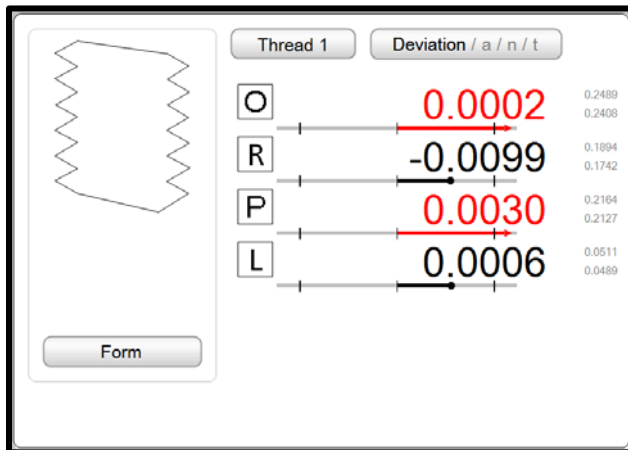
## Thread Tolerance

-In the thread deviation view both a **numeric** and **graphical** result will be displayed for each coefficient that has been toleranced.

-The numeric value represents the actual deviation from nominal for a given coefficient.

**NOTE:** The nominal value for some coefficients does not fall within the upper and lower limit.

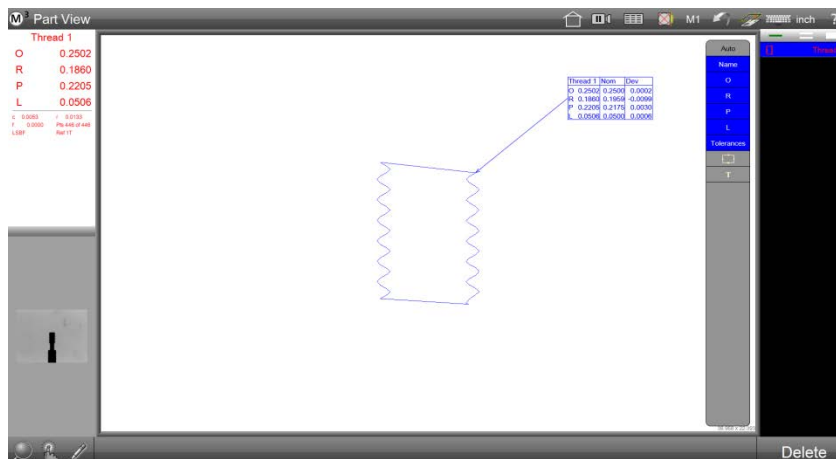
-The graphical deviation display is a fence graphic that indicates the position of the actual thread result within the upper and lower limit for the coefficient. The middle of the fence graphic represents the middle of the range from the lower limit to the upper limit.



-The thread feature itself will fail if any one of the toleranced coefficients fails. Individual coefficients that fail will be displayed in red.

## Thread Annotation

-Thread features can be annotated in the part view or the live video view by the same method as other feature types. Select the annotation button and then drag from the thread feature to add the annotation coefficients based on the selection from the annotation coefficient list.



## **Additional notes on Threads.**

**-Select the unit type for the thread you are inspecting either prior to, or soon after measuring your thread. IN/MM.**

**-Threads are treated like any other feature type with respect to Part Programming, the Part View, and the Report View. All edit functions have been expanded to support the thread feature type.**