# *NCL/TOOLIB* REFERENCE DOCUMENT
# Version 10.0

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NUMERICAL
CONTROL
COMPUTER
SCIENCES

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# 12 NCL/TOOLIB

***NCL/TOOLIB*** allows you to create and maintain a library of tools. ***NCL/TOOLIB*** allows the following information to be stored for each tool:

- Tool number
- Tool description
- Cutter definition (mathematical definition used for tool motion calculation)
- Cutter display definition (used for graphic display)
- Cutter display parameters (moving or instanced, partial segments or full segments)
- ***NCL/CADD*** symbol to be used as the displayed cutter or tool holder.
- ***NCL/CADD*** drawing file to be associated with this tool (used to display a sketch of the tool)
- User defined command to be output each time this tool is loaded

## 12.1 Startup

To start ***NCL/TOOLIB***:

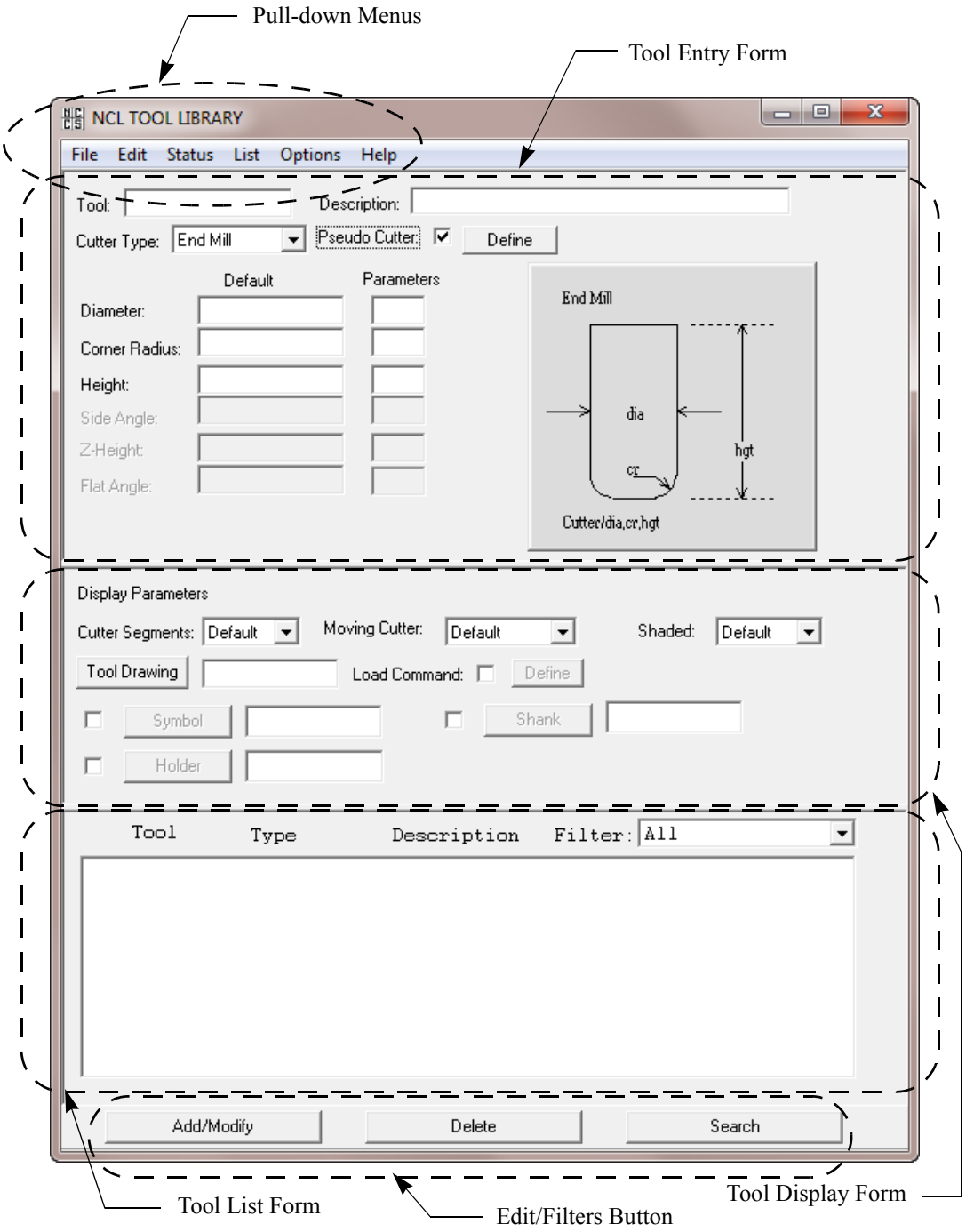
From within ***NCL***, click TOOLS >CAM > TOOL LIBRARY

***NCL/TOOLIB*** can also be started in the following way:

Double click the “TOOLIB” short cut icon in the “NCCS” folder of the desktop window.

## 12.2 Using *NCL/TOOLIB*

Startup ***NCL/TOOLIB*** without using any runtime options. The following form will appear:



This form is composed of five sections: Pull-down Menus, Tool Entry Form, Tool Display Form, Tool List Form, and Edit/Filter-Buttons.

**Pull-Down Menus:**

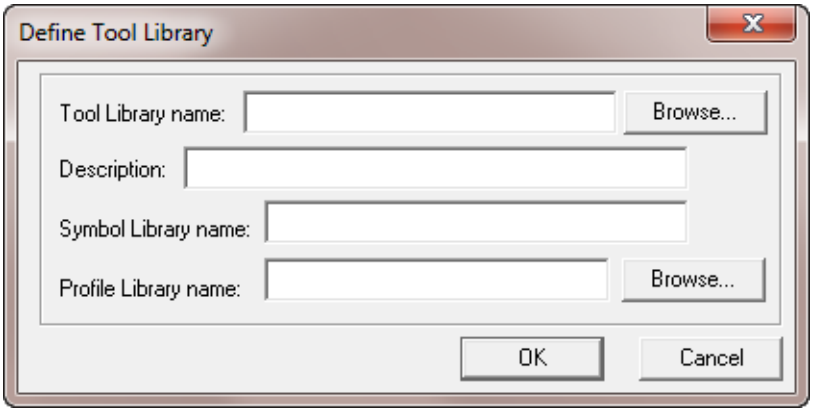
This section is composed of five items: File, Edit, Status, List, Options, Help. They are described as follows:

**File:**

There are five choices (New, Open, Properties, Save, Exit) under this menu:

- **New:**

Click this option to create a new tool library. The "Define Tool Library:" Form shown below will appear. If the currently loaded library has been modified, the user will be given the option to save the currently loaded library before a new one will be created. There *must be at least one alpha character* in the tool library name.




Click on the "*BROWSE*" button to open a file browser or enter a name for the new tool library.

Enter a description for the tool library.

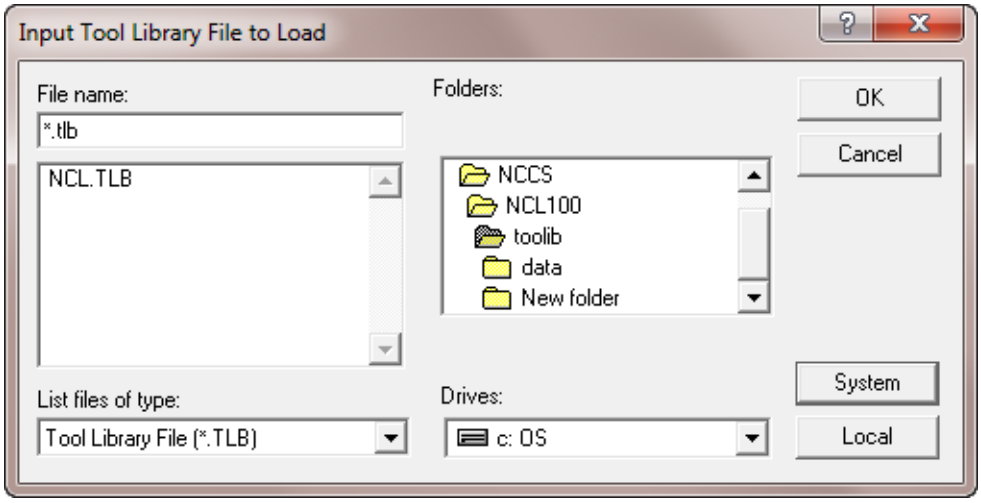
Enter the name of the ***NCL/CADD*** symbol library to be used with this tool library.

Enter the name of the profile library to be used with this tool library.

Click *ACCEPT* to accept the changes. Click *Cancel* to exit this form and not accept the changes.

- **Open:**

  Click this option to load an existing tool library. The browser shown below will appear. If the currently loaded library has been modified, the user will be given the option to save the currently loaded library before a new one will be loaded.




Click *System* to locate a library in the ***NCL/TOOLIB*** system directory.

The system directory path is defined by the environment variable *NCL_TOOL* in the file:

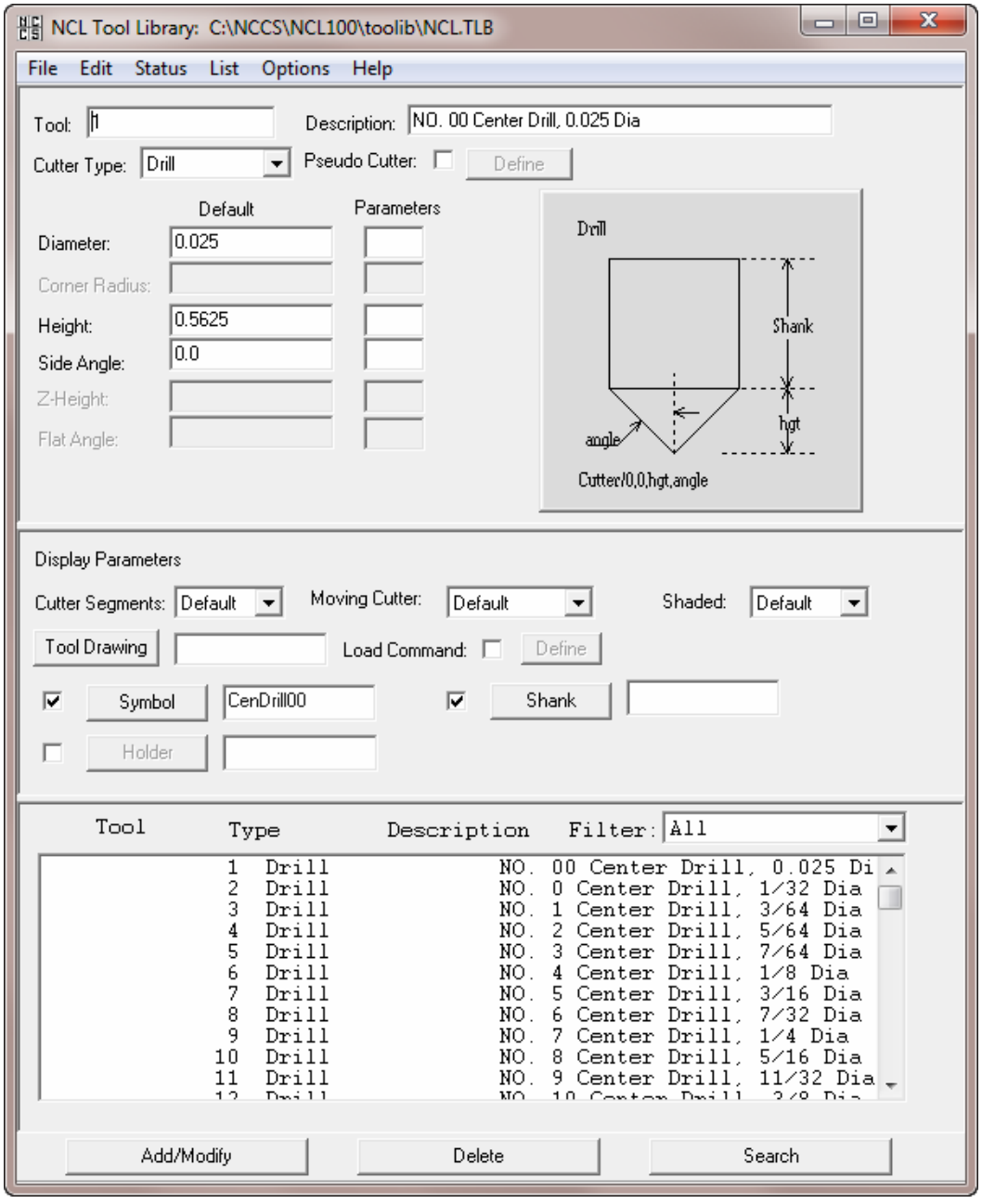
*NCCS\NCL100\interface\ncl.init*

The default path is:

*NCCS\NCL100\toolib*

Click *Local* to locate a library in the local directory structure.

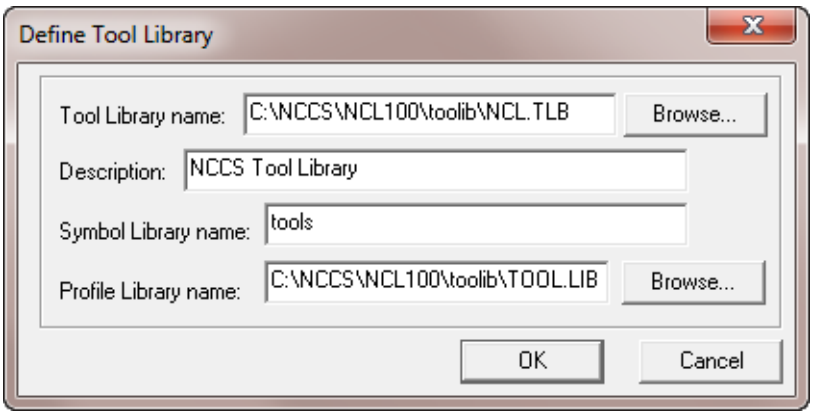
Click on the tool library file that the user wishes to load. Upon loading the library a list of tools will be displayed at the bottom section of the ***NCL*** *Tool Library Form*. For example:




Highlight a tool to display the information for that tool in the *Tool Entry Form* and the *Tool Display Form*.

- **Properties**

  Click this option to change the description, the tool library name or the name of the ***NCL/CADD*** symbol library to use with this library. The following form will appear:




  Enter the desired name for the tool library.

  Enter a description for the tool library.

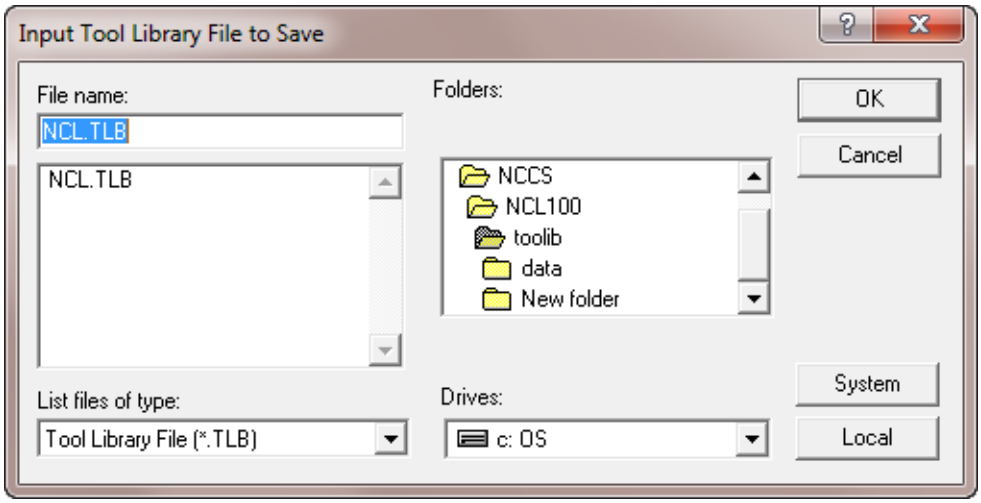
  Enter the name of the ***NCL/CADD*** symbol library to be used with this tool library.

  Enter the name of the profile library to be used with this tool library.

  Click *OK* to accept the changes. Click *Cancel* to exit this form and not accept the changes.

- **Save**

  Click this option to save the newly created tool library or the currently opened tool library. The browser shown on next page will appear. There *must be at least one alpha character* in the tool library name.




If no file name extension is specified, the tool library file will be saved as a binary file which is platform dependent. Specify the file name extension "tla" to save the tool library file in ASCII format, i.e. a text file. This file is platform independent. The advantage of saving the tool library file in ASCII is the file can be transferred from one platform to a different platform. The disadvantage is it will take longer time to open an ASCII tool library file.

Click *System* to save the library in the ***NCL/TOOLIB*** system directory.

The system directory path is defined by the environment variable *NCL_TOOL* in the file:

*NCCS\NCL100\interface\ncl.init*

The default path is:

*NCCS\NCL100\toolib*

Click Local to save the library in the local directory structure.

- **Exit**

Click this option to exit ***NCL/TOOLIB***. This will also remove all the internal generated temporary files used for this session.

**Edit**

There are three choices (Add/Modify, Delete, Search) under this menu:

- **Add/Modify**

  Use this option to add/modify a tool to the current tool library. The information currently appearing in the *TOOL ENTRY Form* is used as the input data. This option is the same as the "*Add/Modify*" button at the bottom of the ***NCL*** *Tool Library Form*.

  If the tool number being added already exists in the library then the information about the tool will be updated to reflect the information currently in the *TOOL ENTRY Form*.

  Add/Modify must be performed after the data in the *TOOL ENTRY Form* is modified, otherwise the current tool library will not be updated.

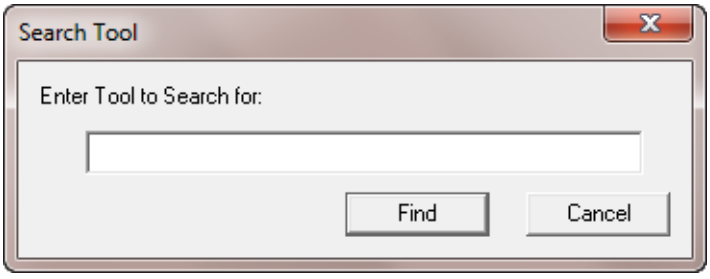
- **Delete**

  Use this option to delete a tool (the one highlighted in the *Tool List Form*) from the current tool library file. This option is same as the "*Delete*" button at the bottom of the ***NCL*** *Tool Library Form*.

- **Search**

  Use this option to search for a particular tool in the tool library. The user can search by tool number or enter a string of text and the tool description field will be searched. This option is the same as the "*Search*" button at the bottom of the ***NCL*** *Tool Library Form*.

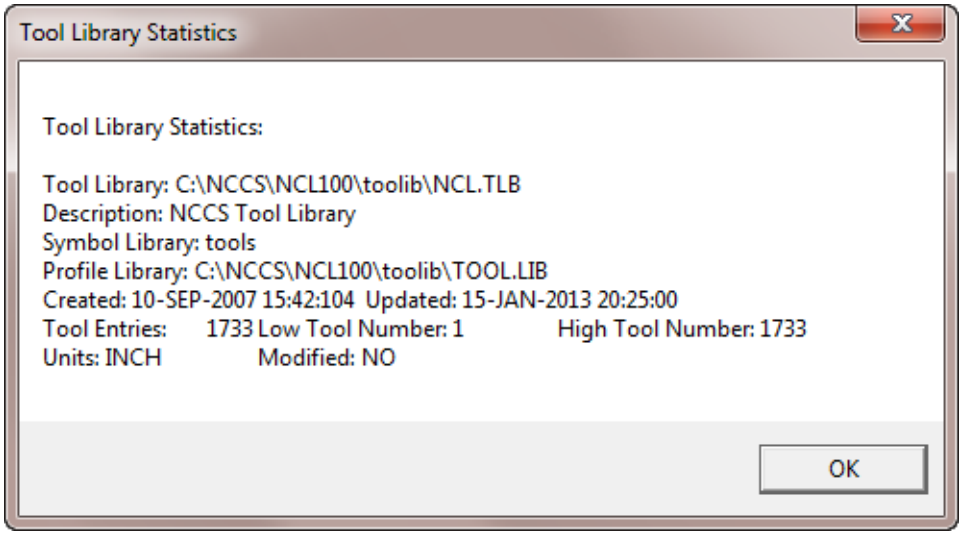
  This option will open a search form as shown below.



Enter a text string that needs to be searched and click the *Find* button to begin the search. Click *Cancel* to exit the search process.

**Status**

Click this button to view statistical information about the current library. For example:




**List**

There are three choices under this menu: Brief, Full and Modify List.

- **Brief**

  Click this option to create a brief listing (tool number and description) of each tool in the library.

- **Full**

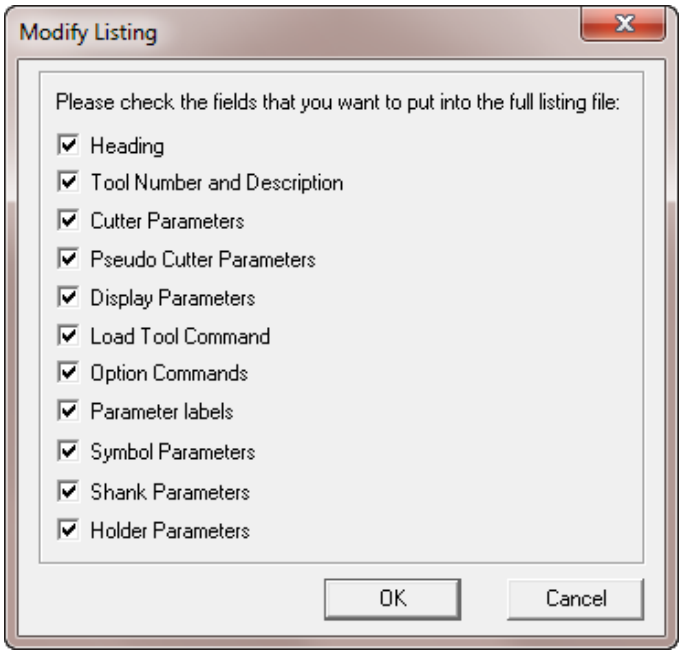
  Click this option to create a full listing of each tool in the library.

  With either option a file browser will appear allowing the user to enter or select a file name.

- **Modify List**

  Use this option to modify the format of the Full List File.

  This option will open a modify list form as shown on next page.



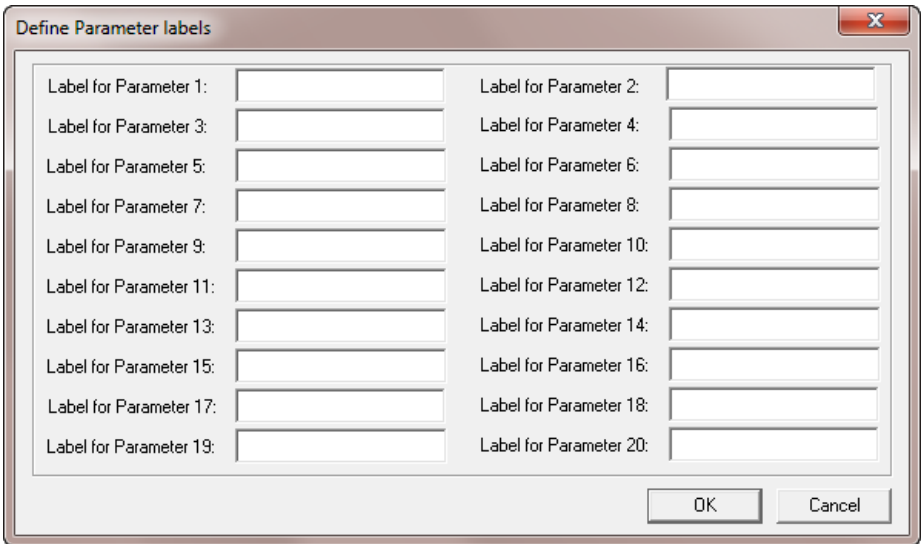

Click the *OK* button to accept the change and the *Cancel* button to reject the change. Click either button will close the form.

**Options**

There are two choices under this menu: Parameter Labels, Optional Commands.

- **Parameter Labels**

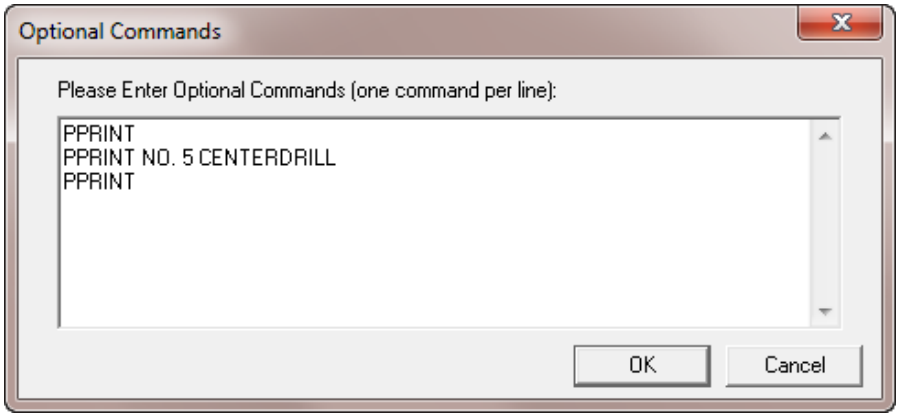
  Use this option to associate label names with the override Parameters. The override parameters allow the user to override the default value for the associated field when a tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu. See both the Pseudo Cutter and the Cutter Parameter descriptions in the *TOOL DISPLAY FORM* for details.




- **Optional Commands**

  Use this option to output optional commands when a specified tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

  A text entry window will open as shown below. Just type in the optional commands in this window. Click the *OK* button to accept the entries or the *Cancel* to reject the entries. Click either button will close this window.




**Help**

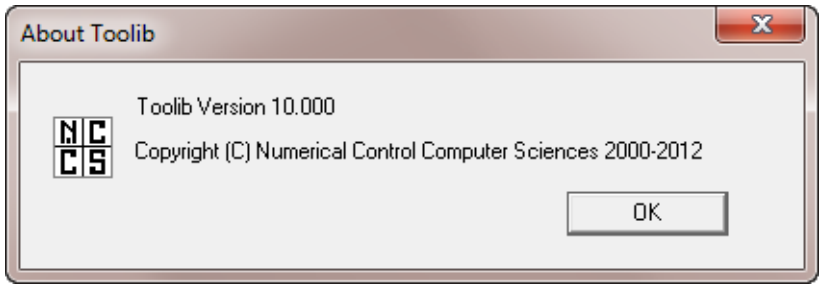
There are two choices under this menu: Help, About.

- **Help**

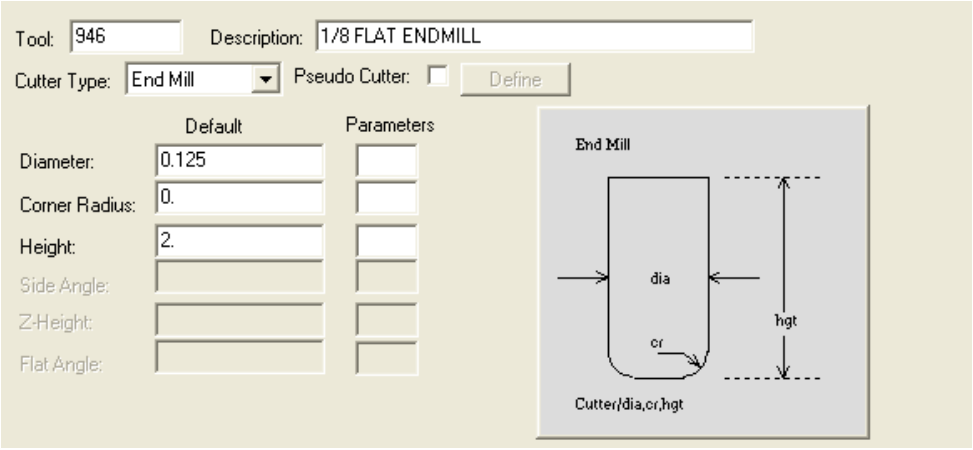
  Click on this menu will bring up this document.

- **About**

  Click on this menu will bring up the following form which shows the version number and the copyright notice.




### The TOOL ENTRY Form




The following gives an description of each field in this form:

**Tool**

Enter a tool number (must be a positive integer and maximum of 15 digits).

**Description**

Enter a description for the tool.

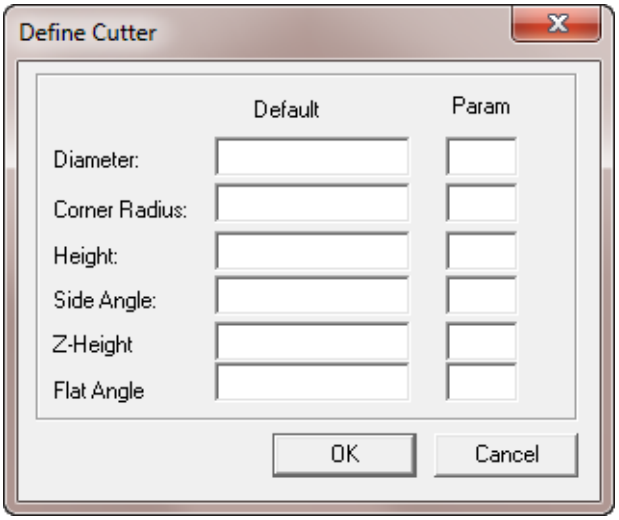
**Cutter Type**

Toggle this button to toggle between different types of cutter. This will activate the allowable cutter parameters fields and change the cutter picture display accordingly.

**Pseudo Cutter**

This option is used to define a pseudo cutter. During tool motion, this pseudo cutter will be used for calculation instead of the default cutter if defined.

Check the square button to define a pseudo cutter if it has not been defined. Or click the "Define" button to modify the pseudo cutter if it has been defined. Both action will open the form as shown below.




**Default**

Use this column to enter the mathematical description of the cutter for tool path calculation.

**Param**

Each field in the Default columns have a *Param* field associated with them. The *Param* fields allow the user to override the default cutter entries (diameter, corner radius, etc.) when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

To allow an entry to be overridden, a parameter number in the *Param* field associated with the entry must be specified. ***NCL/TOOLIB*** supports up to 20 override parameters, thus the number entered must be a number between 1 and 20.

For example, if the user wants the ability to override the diameter of the *Actual* cutter, then the user could enter a 1 in the *Param* field which is directly to the right of the *Diameter* field.

When this tool is loaded the user will be given the option to override "parameter #01". See the section entitled *Accessing tools from the library* for more information about overriding default entries.

**Cutter Parameters**

**Default**

Use this column to enter the mathematical description of the cutter for motion calculation and/or display purpose. If a pseudo cutter is not defined, the data in this column will be used to calculate the tool path and for display purpose when this tool is being used. Otherwise, the pseudo cutter will be used for motion calculation, and the parameters defined here will be used for display purpose.

**Param**

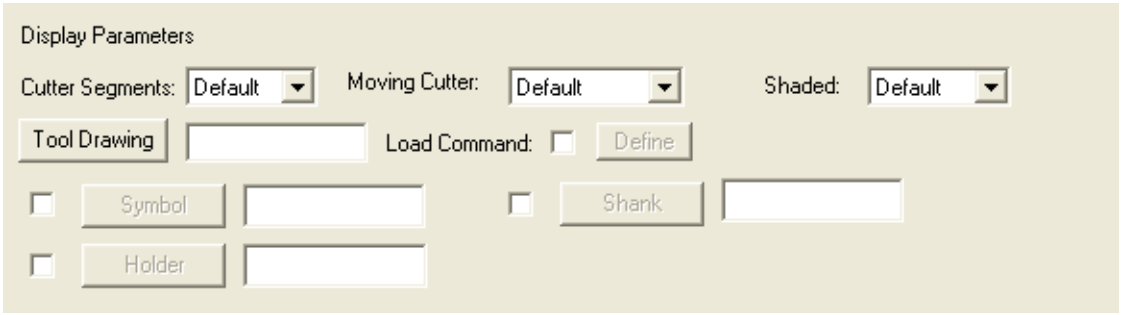
Each field in the Default columns have a *Param* field associated with them. The Param fields allow the user to override the default cutter entries (diameter, corner radius, etc.) when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

To allow an entry to be overridden, a parameter number in the *Param* field associated with the entry must be specified. ***NCL/TOOLIB*** supports up to 20 override parameters, thus the number entered must be a number between 1 and 20.

For example, if the user wants the ability to override the diameter of the *Actual* cutter, then the user could enter a 1 in the *Param* field which is directly to the right of the *Diameter* field.

When this tool is loaded the user will be given the option to override "parameter #01". See the section entitled *Accessing tools from the library* for more information about overriding default entries.

### The Display Parameters Form




#### Cutter Segments

This button determines how the wireframe image of the tool will be displayed.

*Default* specifies to use the setting which is currently in effect when this tool is loaded.

*Part* specifies that only the outside profile of the tool will be displayed.

*All* specifies that the tool will be displayed using multiple 3D segments.

#### Moving Cutter

This button determines how tool motion will be animated when using this tool.

*Default* specifies to use the setting which is currently in effect when this tool is loaded.

*On* specifies that the tool be displayed as a dynamically moving object.

*Off* specifies that an instance of the tool will be drawn according to the current setting of *PLAYBACK > MODALS > CUTTER STEPS*.

#### Shaded

This button determines how the shaded image of the tool will be displayed.

*"Default"* specifies to use the setting which is currently in effect when this tool is loaded.

*"On"* specifies display tool as shaded. Moving tool will has jumpy motion.

*"Off"* specifies display tool as wireframe. This is the fastest display mode.

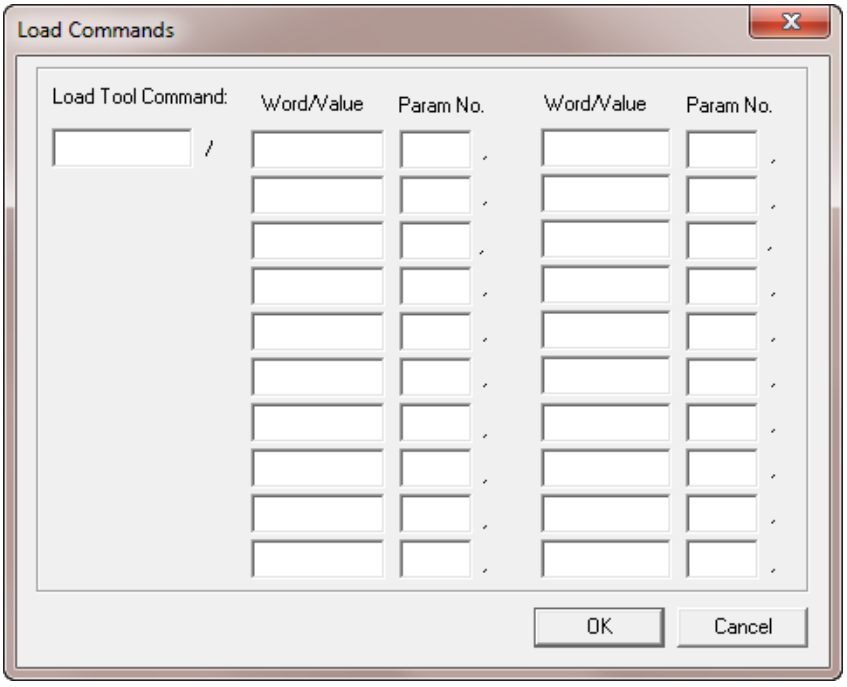
**Tool Drawing**

Enter the name of a ***NCL/CADD*** drawing file that contains a drawing of the tool, or click the "Tool Drawing" button to open a file browser to locate the drawing file and load the name into the tool library data base. The drawing can be viewed from within ***NCL*** by clicking the *View Tool* button on the *Cutter Form* which is opened by the *TOOLS > CAM > CUTTER* menu.

**Load Command**

This option allows the user to output a user specified command each time this tool is loaded.

Check the square button to define this user specified command if it has not been defined. Or click the "Define" button to modify the command if it has been defined. Both action will open the form as shown below.



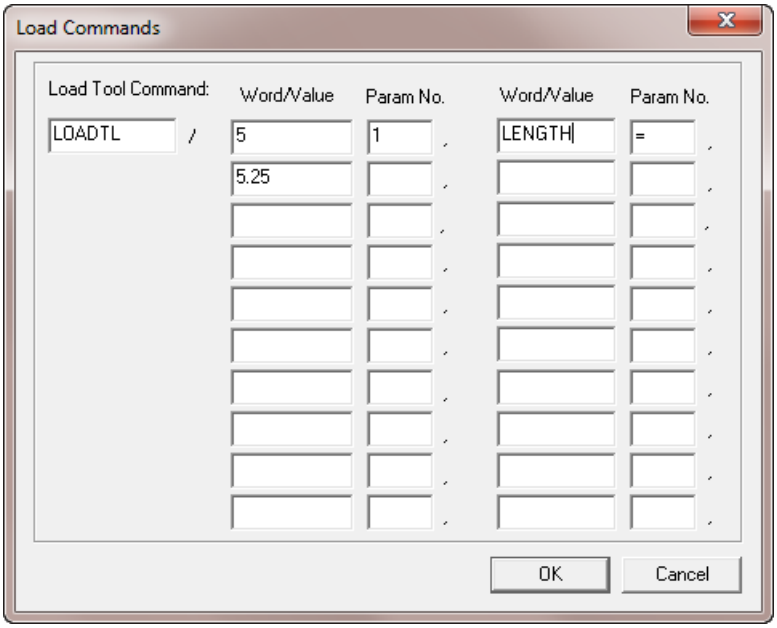
This form composes of fields which are used to define the user specified command. The fields are separated into three types, the Major word fields, Minor word fields, and override parameter fields.

"*Load Tool Command*" column is an user specified command which can be any major word with up to 20 minor words and/or values.

The "*Word/Value*" columns specify the optional minor words or values associated with the major word.

"*Param No*". columns specify the override parameter which can also be associated with each minor word. The override parameters allow the user to override the default value for the associated field when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

An example is shown below.




The entries above would cause the following statement to be processed each time this tool was loaded from the library:

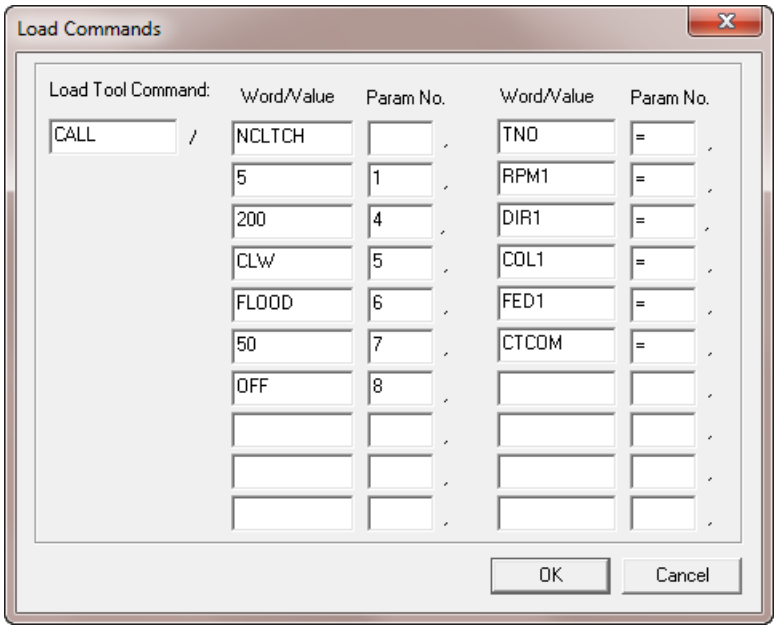
```
LOADTL/5,LENGTH,5.25
```

The user would have the option of overriding the default tool number (5) and set length (5.25) when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

The user specified command can also be a call to an ***NCL*** macro. In this case the Major word field would contain the word *CALL*. The first Minor word field would contain the name of the macro. The remaining minor word fields would contain the macro variable names and their default values. The override parameter fields can be used to allow the user to override the associated default value of the macro variable when this tool is loaded. See the section entitled *Accessing tools from the library* for more information about overriding default entries.

Up to 9 macro variable names with default values can be specified.

Shown below is an example of how an entry should be made when calling a macro:




The entries above would cause the following statement to be processed each time this tool was loaded from the library

```
CALL/TCH,TNO=5,RPM1=6000,FED1=75,OFNO=54,      $
      CCOM=ON
```

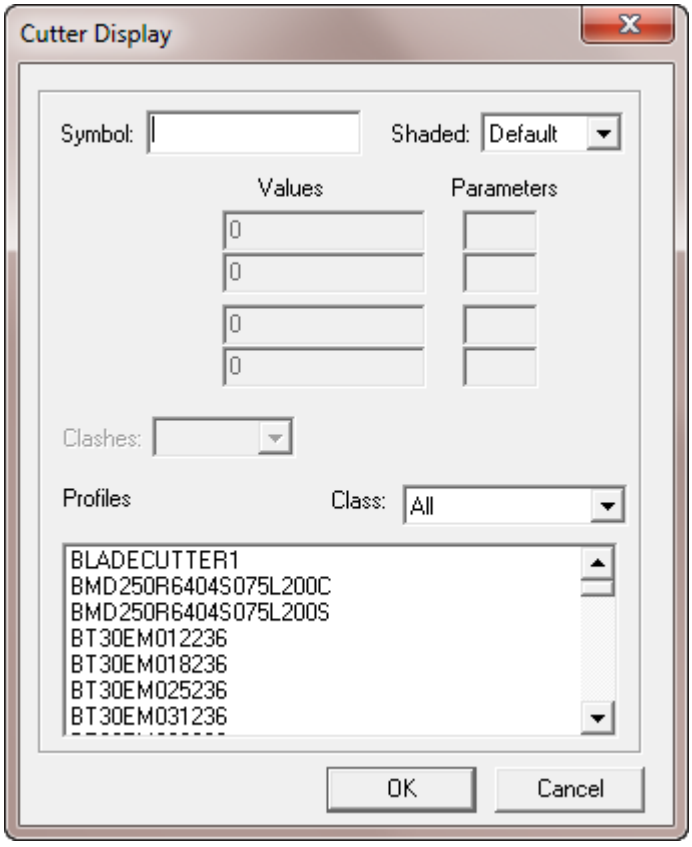
The user would have the option of overriding the default values for the *TNO*, *RPM1*, and *FED1* variables. The *OFNO* variable would always be given a value of 54. The CCOM variable would always be given a value of *ON*.

Macro variable must always be given a default value.

**Symbol**

This option allows the user to specify a ***NCL/CADD*** symbol or a profile name in the tool description file to be used as the displayed tool. Check the square button to activate this option.

Enter the name of a ***NCL/CADD*** symbol, a profile name in the cutter point-list file to be used as the displayed tool. Or click the "Symbol" button to open the Cutter Display Form as shown below.



- **Symbols**

  Enter the name of the ***NCL/CADD*** symbol or the profile name to be used as the cutter image. The name can be entered directly or it can be entered by highlight the profile name listed in the Profiles window at bottom of the Cutter Display form.

- **Shaded**

  Use this button to specify how the cutter image of the tool to be displayed. "*Default"* specifies to use the setting which is currently in effect when this tool is loaded. "*On"* specifies display cutter as shaded. Moving cutter will has jumpy motion. "*Off"* specifies display cutter as wireframe. This is the fastest display mode.

- **Profiles**

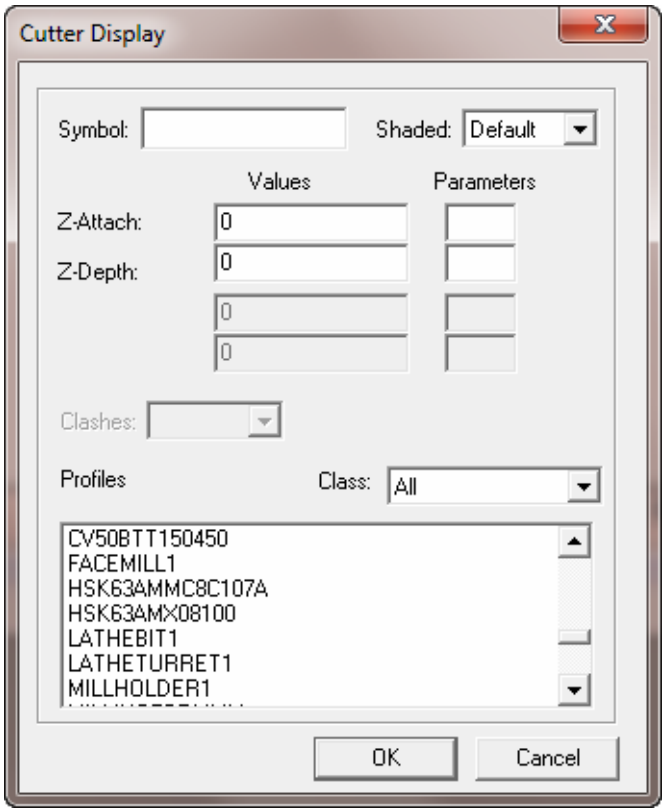
  This display a list of all the profiles specified in the cutter profile file. Picks a profile by highlight it on this form. After the profile has been highlighted, the profile name will be displayed in the Symbol entry prompt.

- **Class**

  Click this button will open the menu as shown below.


  Use this button to display a specific type of profile in the *Profile Window*. Highlight the type and the label of this button will be modified to display the type of profile. Also, the *Profile window* will be updated to only display this particular type of profile.

The Cutter Display form will be changed to as shown on next page if the specified cutter is a lathe insert and a symbol or profile name is specified.




- **Z-Attach**

  Defines the starting Z-axis position of the insert. The default starting position is at the bottom of the insert cutter or top of the shank. The specified value corresponds to the "*Z-Attach*" parameter of the "*OFFSET,Z-Attach,Z-Depth*" parameters of the *CUTTER/LATHE* statement for a lathe style cutter. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Z-Attach*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Z-Depth**

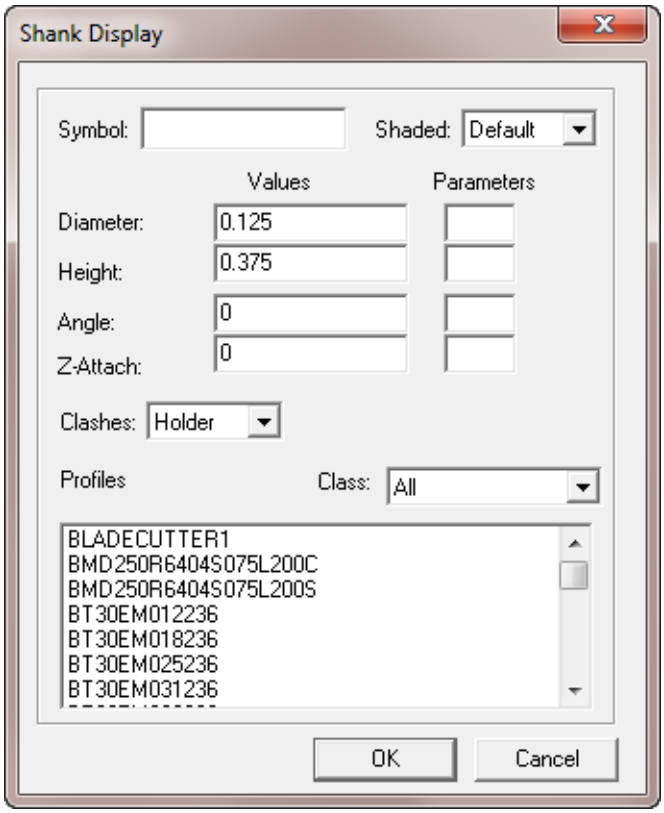
  Defines the default depth of the insert cutter. The default depth is the defined cutter height from the CUTTER/LATHE statement. The specified value corresponds to the "*Z-Depth*" parameter of the "*OFFSET,Z-Attach,Z-Depth*" parameters of the *CUTTER/LATHE* statement for a lathe style cutter. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*"

column allows the user to override the default "*Z-Depth*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

**Shank**

This option allows the user to specify a ***NCL/CADD*** symbol or a profile name in the tool description file to be used as the displayed shank. Check the square button to activate this option.

Enter the name of a ***NCL/CADD*** symbol, a profile name in the cutter point-list file to be used as the displayed shank. Or click the "Symbol" button to open the Cutter Display Form as shown below.




- **Symbols**

Enter the name of the ***NCL/CADD*** symbol or the profile name to be used as the shank image. The name can be entered directly or it can be entered by highlight the profile name listed in the Profiles window at bottom of the Cutter Display form.

- **Shaded**

  Use this button to specify how the shank image of the tool to be displayed. "*Default"* specifies to use the setting which is currently in effect when this tool is loaded. "*On"* specifies display cutter as shaded. Moving cutter will has jumpy motion. "*Off"* specifies display cutter as wireframe. This is the fastest display mode.

- **Diameter**

  Defines the diameter of a Mill style shank. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Diameter*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Height**

  Defines the height of a Mill style shank. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Height*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

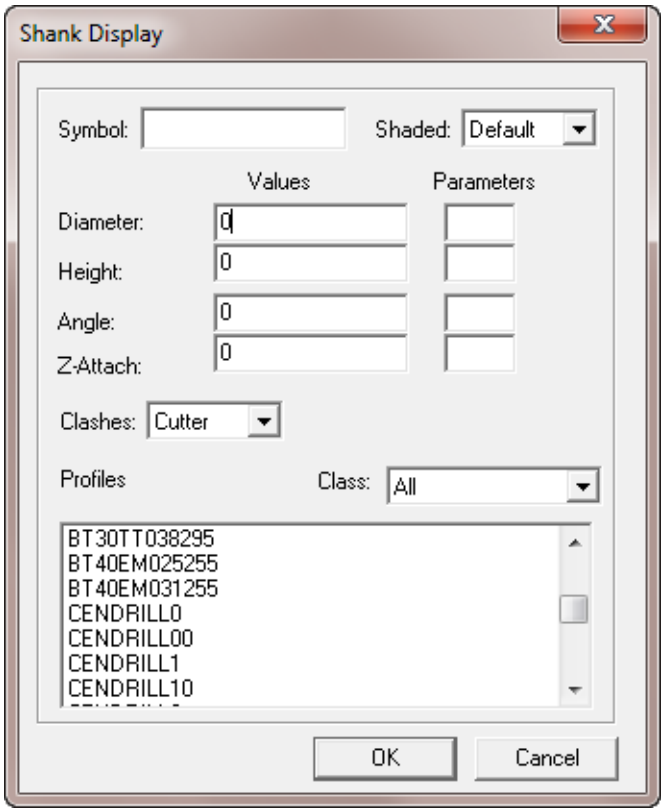
- **Angle**

  Defines the side angle of a Mill style shank. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Angle*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Z-Attach**

  Defines the attach point of a Mill style shank to the cutter. A value of 0 will attach the shank at the top of the cutter. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Z-Attach*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

The Shank Display form will displayed as shown on next page if a Lathe style cutter is specified.




- **Width**

  Defines the width in X of a lathe insert shank. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Width*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Length**

  Defines the length in Y of the lathe insert shank. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Length*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Z-Depth**

  Defines the depth in Z of the lathe insert shank. Enters the specified values in the "*Values*" column. Specifies the override parameter in the

"*Parameters*" column allows the user to override the default "Z-Depth" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Y-Offset**

  Defines the Y-offset for the attach point of the lathe insert shank. A value of 0 will attach the shank at the center of the insert's inscribed circle. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Y-Offset*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Clashes**

  This controls how the shank is treated during the ***NCL/IPV*** simulation session. Specifying "*Cutter*" causes the tool shank to be treated as a part of the cutting portion of the tool as defined by the cutter parameters. Clashes will only be reported if the tool shank violates a fixture or during Rapid moves. "*Holder*" specifies that the tool shank should be classified as a part of the tool holder, causing clashes to be reported whenever it violates a fixture or a stock.

- **Profiles**

  This display a list of all the profiles specified in the cutter profile files. Picks a profile by highlight it on this form. After the profile has been highlighted, the profile name will be displayed in the Symbol entry prompt.

- **Class**

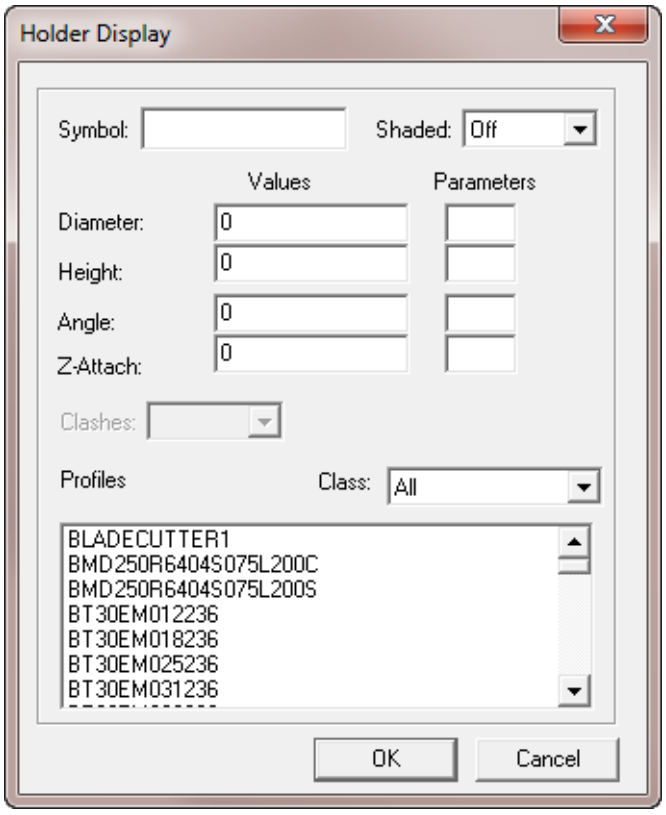
  Click this button will open the menu as shown below.


  Use this button to display a specific type of profile in the *Profile Window*. Highlight the type and the label of this button will be modified to display the type of profile. Also, the *Profile window* will be updated to only display this particular type of profile.

### Holder

This option allows the user to specify a ***NCL/CADD*** symbol or a profile name in the tool description file to be used as the displayed holder. Check the square button to activate this option.

Enter the name of a ***NCL/CADD*** symbol, a profile name in the cutter point-list file to be used as the image of the holder. Or click the "Symbol" button to open the Cutter Display Form as shown below.




- **Symbols**

  Enter the name of the ***NCL/CADD*** symbol or the profile name to be used for the holder image. The name can be entered directly or it can be entered by highlight the profile name listed in the Profiles window at bottom of the Cutter Display form.

- **Shaded**

  Use this button to specify how the holder image of the tool to be displayed. "*Default"* specifies to use the setting which is currently in

effect when this tool is loaded. "*On"* specifies display holder as shaded. Moving tool will has jumpy motion. "*Off"* specifies display holder as wireframe. This is the fastest display mode.

- **Diameter**

  Defines the diameter of a Mill style holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Diameter*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Height**

  Defines the height of a Mill style holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Height*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

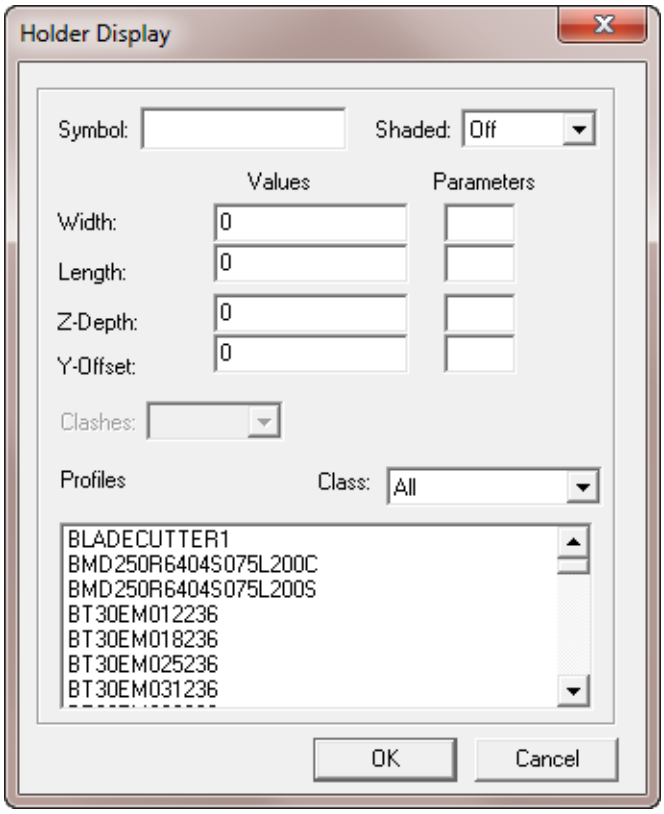
- **Angle**

  Defines the side angle of a Mill style holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Angle*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Z-Attach**

  Defines the attach point of a Mill style holder to the cutter. A value of 0 will attach the shank at the top of the cutter. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Z-Attach*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

The Holder Display form will displayed as shown on next page if a Lathe style cutter is specified.




- **Width**

  Defines the width in X of a lathe insert holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Width*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Length**

  Defines the length in Y of the lathe insert holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "I" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Z-Depth**

  Defines the depth in Z of the lathe insert holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the

"*Parameters*" column allows the user to override the default "*Z-Depth*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Y-Offset**

  Defines the Y-offset for the attach point of the lathe insert holder. A value of 0 will attach the holder at the center of the holder. Enters the specified values in the "*Values*" column. Specifies the override parameter in the "*Parameters*" column allows the user to override the default "*Y-Offset*" value when this tool is loaded by either the *CUTTER/TOOL* statement or the *TOOLS > CAM > CUTTER* menu.

- **Profiles**

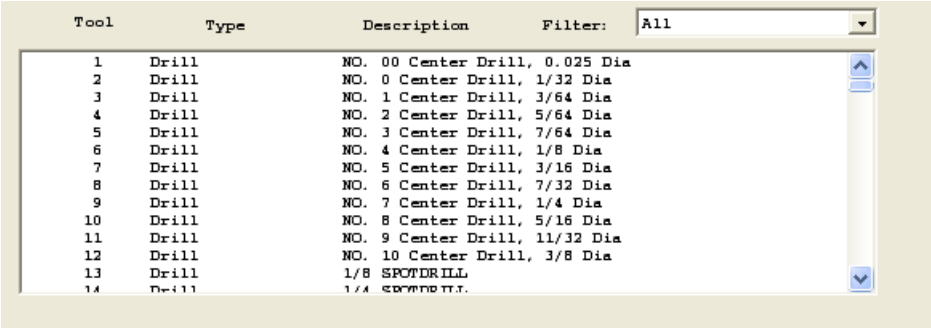
  This display a list of all the profiles specified in the cutter profile files. Picks a profile by highlighting it on this form. After the profile has been highlighted, the profile name will be displayed in the Symbol entry prompt.

- **Class**

  Click this button will open the menu as shown below.


  Use this button to display a specific type of profile in the *Profile Window*. Highlight the type and the label of this button will be modified to display the type of profile. Also, the *Profile window* will be updated to only display this particular type of profile.

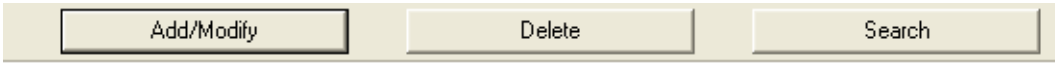
### The Tool List Form




All the defined tools will be displayed in this form after a tool library is loaded. Picks a tool by highlighting it on this form. After the tool has been highlighted, all the information of the tool will be displayed in the rest of the ***NCL*** *Tool Library Form*.

The first column of this form will display to number corresponding to this tool. The second column displays the type of tool. The last column displays the description of the corresponding tool.

### The Edit/Filter Buttons



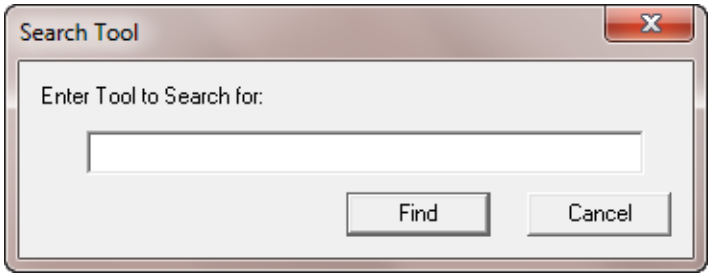

This composed of four buttons and they are described below.

**Add/Modify:**

Click this button to add/modify a tool to the current tool library. The information currently appearing in the *TOOL ENTRY Form* is used as the input data. This option is same as the "*ADD/MODIFY*" button at the bottom of this form.

If the tool number being added already exists in the library then the information about the tool will be updated to reflect the information currently in the *TOOL ENTRY Form*.

Add/Modify must be performed after the data in the *TOOL ENTRY Form* is modified, otherwise the current tool library will not be updated.




This button has the same function as the option *Add/Modify* under the *Pull-Down Menu*.

**Delete**

Click this button to delete a tool (the one highlighted in the *Tool List Form*) from the current tool library file.

This button has the same function as the option *Delete* under the *Pull-Down Menu*.

**Search**

Click this button to search for a particular tool in the tool library. The user can search by tool number or enter a string of text and the tool description field will be searched.

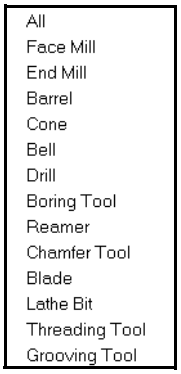
This option will open a search form as shown on next page:

Enter a text string that needs to be searched and click the *Find* button to begin the search. Click *Cancel* to exit the search process.

This button has the same function as the option *Search* under the *Pull-Down Menu*.

**Filter**

Click this button will open the menu as shown below.




Use this button to display a specific type of tool in the *Tool List Form*. Highlight the type and the label of this button will be modified to display the type of tool. Also, the *Tool List Form* will be updated to only display this particular type of tool.

## 12.3 Accessing Tools From The Library

### 12.3.1 Accessing The Library Using The CUTTER/TOOL Statement

Tools are loaded from the library by using the following statement:

```
CUTTER/TOOL,[lib,]tool[,params]
```

Where:

lib — Is the name (with at least one alpha character) of the tool library from which to load the tool. If *lib* is not specified, then the last specified tool library will be used. The system looks first to the local directory and then to the system directory.

The system directory path is defined by the environment variable *NCL_TOOL* in the file:

*NCCS\NCL100\interface\ncl.init*

The default path is:

*NCCS\NCL100\toolib*

tool Tool number to load.

params Optional override parameter list which can be used to override the default value of the *TOOL ENTRY* fields which have an override parameter associated with them. The order in which the parameters are given correspond with the override parameter number given in the *TOOL ENTRY* form. That is, the first parameter in the list corresponds with override parameter 1, the second corresponds with parameter 2, and so on. The word *SAME* can be used to maintain the default value of a field when a list of override parameters is being specified.

The following are some examples of the *CUTTER/TOOL* command:

```
CUTTER/TOOL,NCCS,1
```

Tool number 1 from the library "*NCCS*" will be loaded.

```
CUTTER/TOOL,NCCS,5,10
```

Tool number 5 from the library "*NCCS*" will be loaded. The default value of the entry associated with override parameter 1 will be overridden and given the value of 10.

```
CUTTER/TOOL,NCCS,7,SAME,SAME,4000
```

Tool number 7 from the library "*NCCS*" will be loaded. The default value of the entries associated with override parameters 1 and 2 will not be overridden. The default value of the entry associated with override parameter 3 will be overridden and given the value of 4000.

### 12.3.2 Accessing The Library Using The CUTTER/READ Statement

Tools are loaded from the library by using the following statement:

```
CUTTER/READ,[lib,]tool[,params]
```

This statement works the same as the CUTTER/TOOL statement with the following modifications and additions.

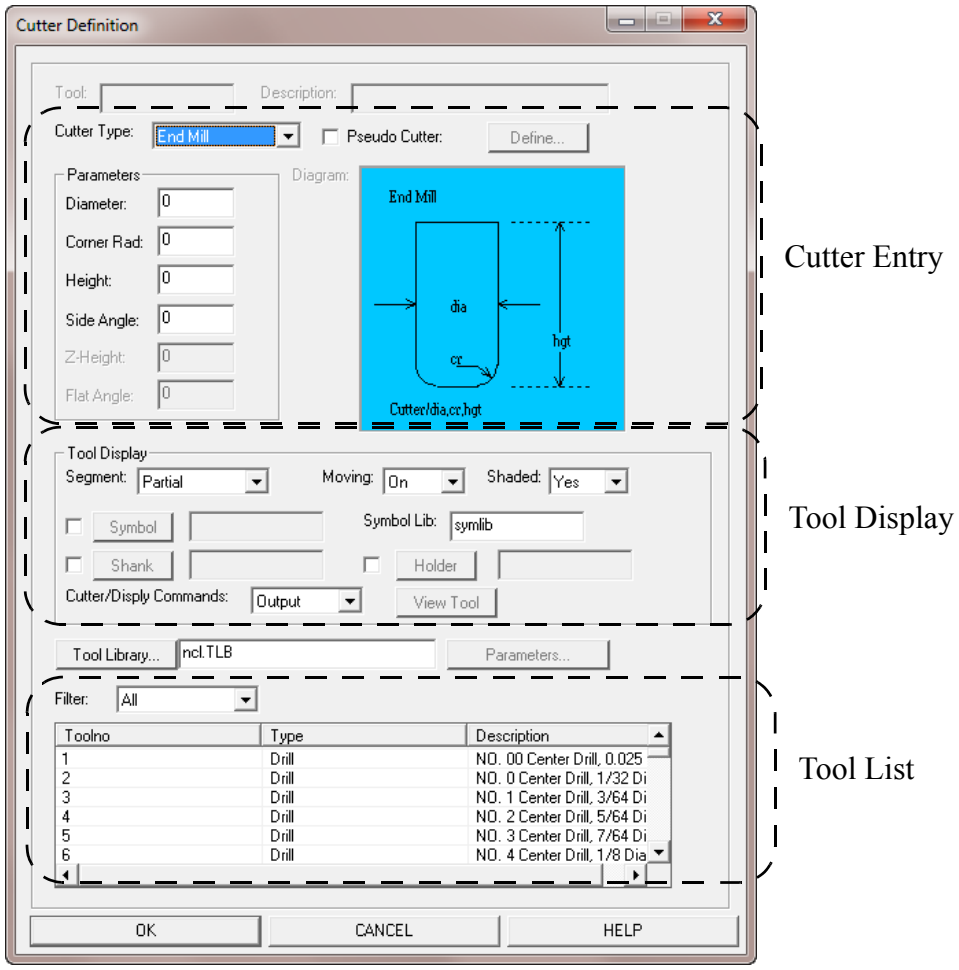
- The input CUTTER/READ statement will be output as a comment statement, i.e.

```
$$ CUTTER/READ...
```

- The tool library commands normally issued internally with the CUTTER/TOOL command are actually written to the source file and will be saved with the part program.
- A CUTTER/PROFIL command will be issued, when a Cutter Profile library is specified in the tool library, with the CUTTER/TOOL commands to denote which profile library is currently set as the default.

### 12.3.3 Accessing Tools Using The Interactive Interface

Tool library functions can be accessed from within ***NCL*** by clicking *TOOLS* > *CAM* > *CUTTER*. The following form will appear with a default tool library loaded:



This form composed of four sections: Cutter Entry, Tool Display, Tool List.

**Cutter Entry**

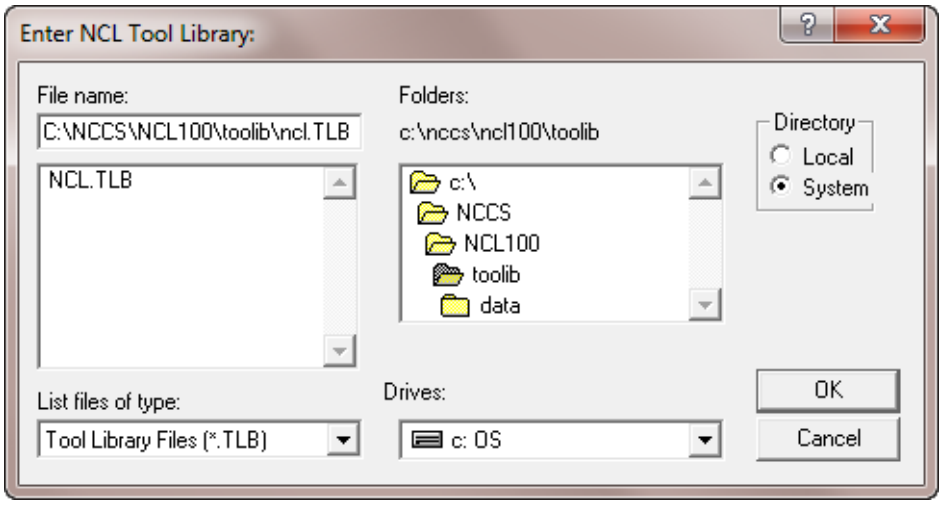
The section is for the definition of the standard cutter parameters. Use this section to define the cutter which includes the actual mathematical definition and the display parameters of the cutter. If a pseudo cutter is not defined, the values entered in the "Parameter Columns" will be used for tool path calculation and for display purpose. If a pseudo cutter is defined, the pseudo cutter will be used for tool path calculation and the values defined in the "Parameter Columns" will be used for display purpose.

**Tool Display**

This section is to define the display parameters of the cutter. The function in this section is the same as described in the *DISPLAY PARAMETER FORM* of the tool library. This section can also used to override the *DISPLAY PARAMETER FORM* setting in this area for a selected tool in the library.

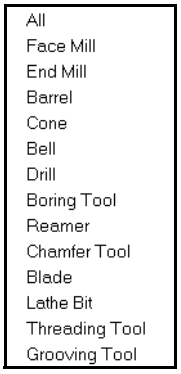
**Tool List**

Click the "*Tool Library*" button to load a different tool library. A file browser shown as follow will appear. Before loading a tool the user must first load a library. The user will be given a list of existing libraries in both the local and system directories. Double click the name of the library on wants to load.



The tool library files can be located in either the local or the system directories. If a tool library that is not located in one of these two directories, an error message will be generated. ***Caveat***: If there is a tool library (located in a directory other than the local/system directory) with the same name as a tool library located in either the local or the system directory, selecting this tool library and clicking "OK" will not load this copy. The local or the system copy will be loaded instead and there will be no error generated.

If there is a lot of tools to choose from, the *Filter* button can be used to list just one type of tool. The following menu will appear after the *Filter* button was clicked. Just picked the one that need to be appeared on the list as shown below.

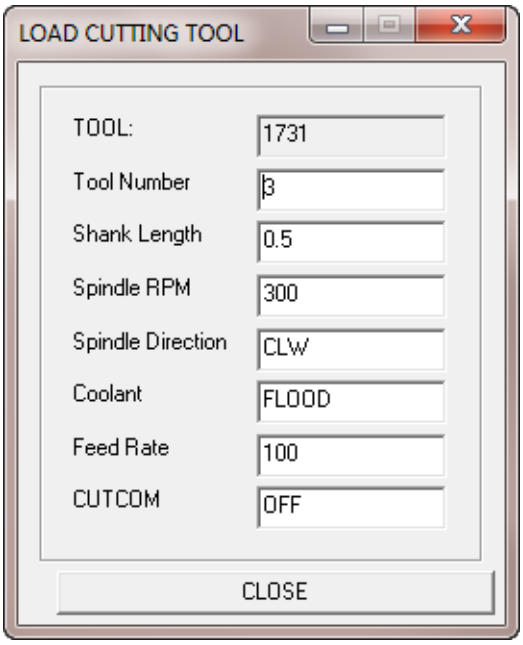



Highlight the tool from the tool list that need to be loaded, e.g. tool number 9. Upon click the *OK* button, the following command will be written to the part program file and the cutter entries associated with this tool will be activated.

```
CUTTER/TOOL,NCCS,9
```

If the tool the user selected has override parameters associated with it, click the "*Parameter*" button to open a "Load Cutting Tool" Form. This form

will allow the user to accept or override the default values. See example below:




Click *CLOSE* to accept the default values shown or change the desired default values and then click *CLOSE*.

After a tool is highlighted and it is decided not to use any tool from the library, just click on the highlight tool again to deselect it.

## 12.4 Working Units Of *NCL/TOOLIB*

***NCL/TOOLIB*** stores the working units in the ***NCL*** tool library and will convert certain fields in the tool record when changing the working units. All applicable fields in the tool record will be converted. Any fields in the user defined command which needs to be converted must be numeric with the first character containing the "&" symbol (i.e. &1.0).

***NCL/TOOLIB*** supports an initialization file which can be use to specify the working unit. This "toolib.ini" file can be either in the current directory or the following directory:

*NCCS\NCL100\toolib\data*

The “toolib.ini” file in the current directory will overwrite the one in the following directory:

*NCCS\NCL100\toolib\data*

You can either specify “-units:inch” to default to inch or “-units:mm” to default to metric in this file.