



*shaping your dreams*

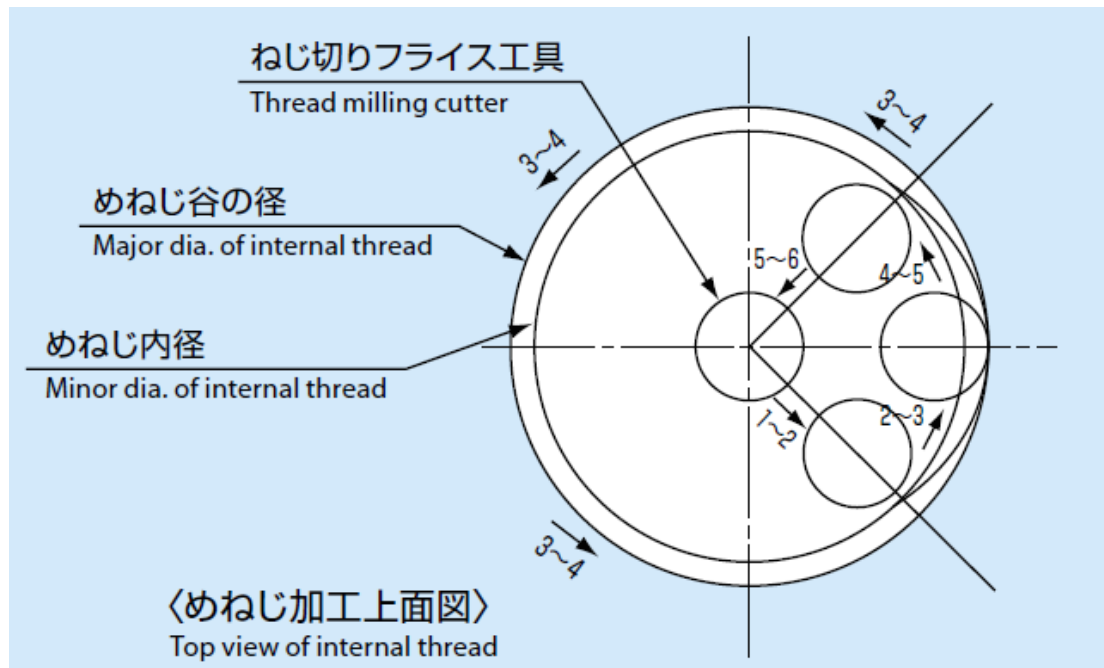
# ThreadPro

User's manual



# How to use Thread mill

Thread mills are used on numerical controlled machining centers equipped with 3-axis control and helical milling function.



動作順序 Step	動作内容 Function
1 ~ 2	<b>クリアランスを残しながら早送りで接近</b> Move to edge (maintain clearance).
2 ~ 3	<b>アプローチ(ヘリカル切削しながら切り込む)</b> Cut with helical milling.
3 ~ 4	<b>本切削(360°ヘリカル切削)</b> Mill the circumference of the circle.
4 ~ 5	<b>リリース(ヘリカル運動しながら切り離す)</b> Pull away from edge.
5 ~ 6	<b>中心まで早送りで戻る</b> Remove tool.

When approach and release, helical milling should be used as shown above for machining precision and efficiency.

# WEB Application : ThreadPro

## Features

- You can use it on PC, smart phones or tablets without downloading software.
- RPRG is produced. (RPRG : Reference value for tool radius offset)
- Insert screw threads are available as well.
- New thread mill products are automatically updated.
- Multiple languages (12 languages)
- Multiple NC languages (8 NC languages)



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ThreadPro

Language/Region-License

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OSG ThreadPro  
END USER LICENSE AGREEMENT

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AGREEMENT AND AN INFRINGEMENT

**Language**  
English ▾

**Region**  
Japan · Asia ▾

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# Thread information-1

ThreadPro

Specify Thread Size

全画面表示を終了するには [F11] を押します

**Thread Type**  
M ( Metric ) ▾

**Internal / External**  
Internal ▾

**Right Hand / Left Hand**  
Right-hand thread ▾

**Diameter ( D )**  
1 ▾

**Pitch ( P )**  
0.200 ▾

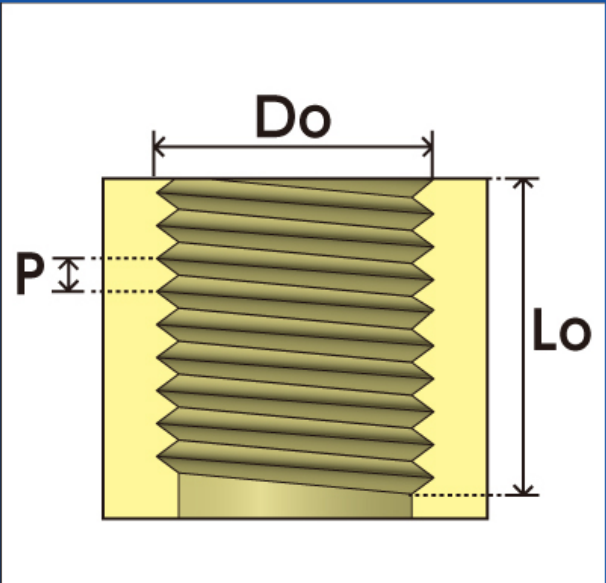
**Thread length(Lo)**  
0 (mm)

**Drill Hole Diameter**  
0.8 (mm)

**Class**  
5H ▾

**FIT**

Start Language



The diagram shows a cross-section of a thread. The outer diameter is labeled  $D_o$ . The pitch is labeled  $P$ . The length of the thread is labeled  $L_o$ .

Enter the information of thread to be machined.  
Please select from each of the pull-down menu.

Note: If there is not value in the pull-down menu, select “Custom” for Thread Type and please enter the actual value in mm manually.

# Thread information-2

ThreadPro

Specify Thread Size

全画面表示を終了するには **F11** を押します

**Thread Type**  
M ( Metric ) ▾

**Internal / External**  
Internal ▾

**Right Hand / Left Hand**  
Right-hand thread ▾

**Diameter ( D )**  
1 ▾

**Pitch ( P )**  
0.200 ▾

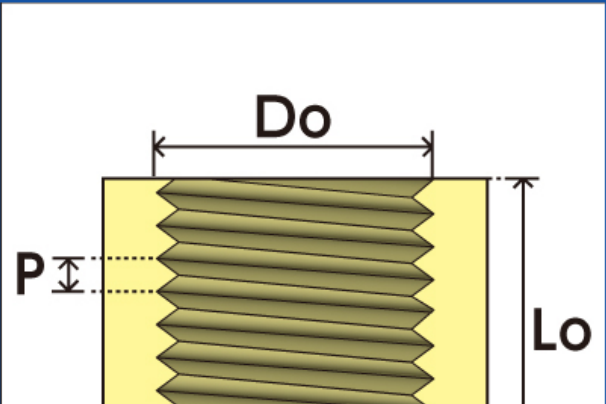
**Thread length(Lo)**  
 (mm)

**Drill Hole Diameter**  
 (mm)

**Class**  
5H

**FIT**  
 (%)

Start Language / Region Previous Next



The diagram shows a cross-section of a thread on a yellow cylindrical part. The outer diameter is labeled  $D_o$ . The pitch is labeled  $P$ . The thread length is labeled  $L_o$ .

Please enter the thread length and drill hole diameter.

Note: When the thread size is selected from the pull-down menu, the drill hole diameter is automatically inputted, but you can change it as necessary.

# Thread information-3

ThreadPro

Specify Thread Size

全画面表示を終了するには **F11** を押します

**Thread Type**  
M ( Metric ) ▾

**Internal / External**  
Internal ▾

**Right Hand / Left Hand**  
Right-hand thread ▾

**Diameter ( D )**  
1 ▾

**Pitch ( P )**  
0.200 ▾

**Thread length(Lo)**  
0 (mm)

**Drill Hole Diameter**  
0.8 (mm)

**Class**  
5H ▾

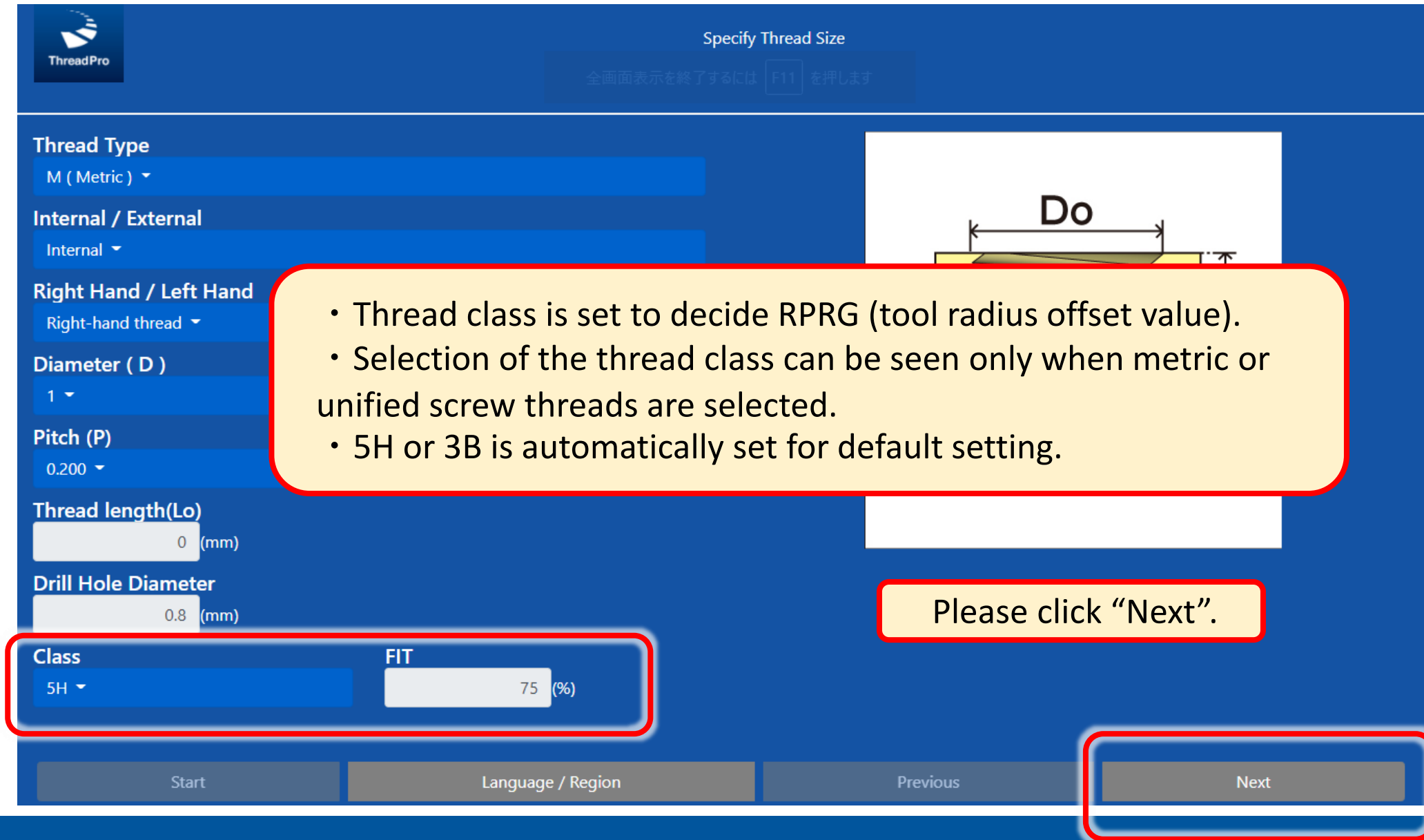
**FIT**  
75 (%)

Do

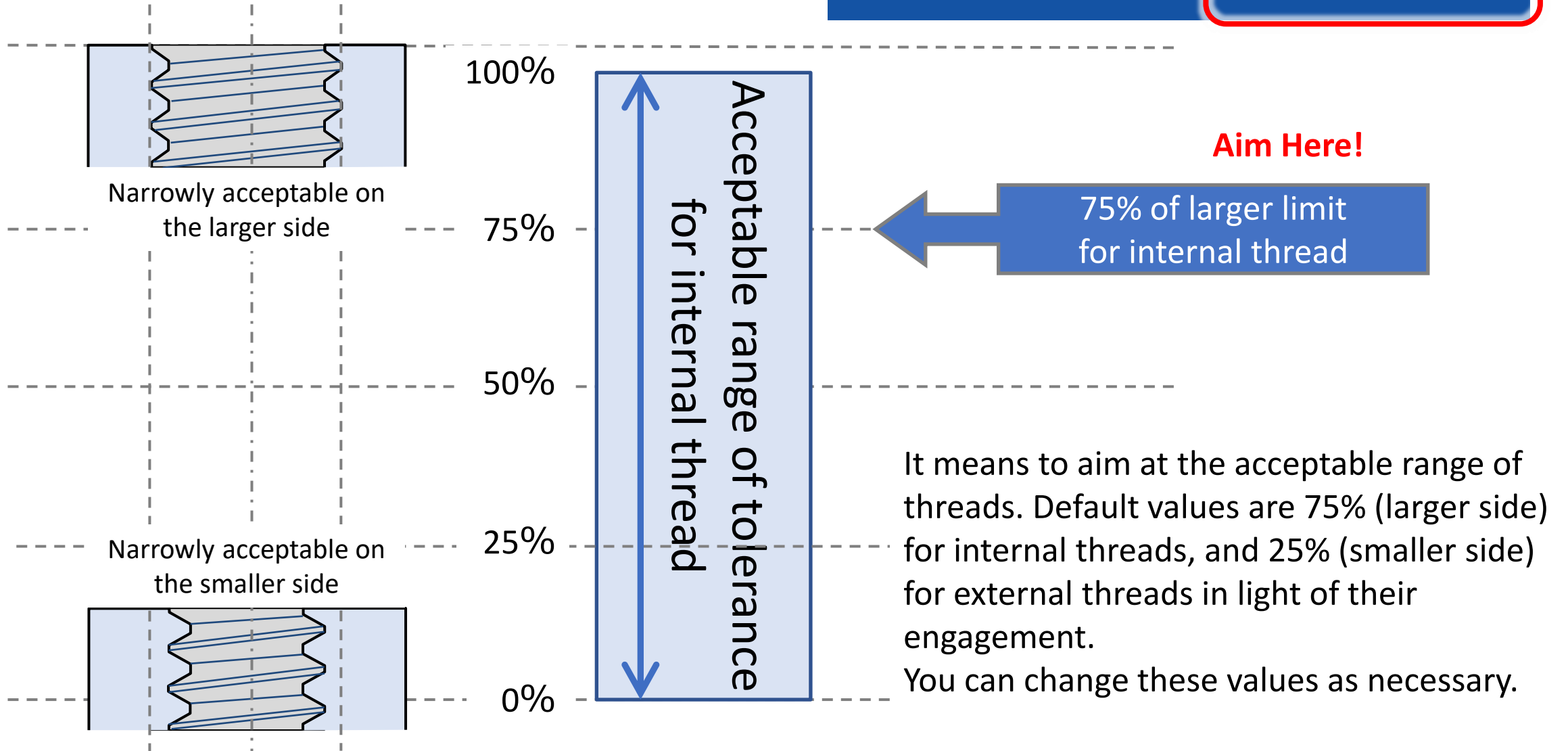
- Thread class is set to decide RPRG (tool radius offset value).
- Selection of the thread class can be seen only when metric or unified screw threads are selected.
- 5H or 3B is automatically set for default setting.

Please click "Next".

Start Language / Region Previous **Next**



# What is "FIT 75%" ?






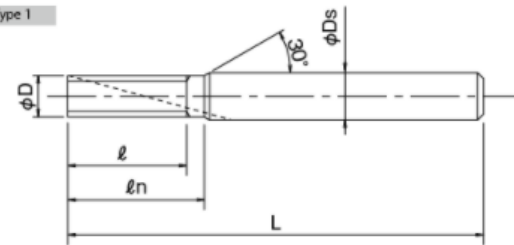
# Tool selection

ThreadPro Select Threadmill

Tool Type	Product name	Cutter Body	EDP	Inserts	EDP	Tool size	max cutting length	Number of Flutes
Solid	WX-ST-PNC	7.5x22.5P1.5	8305723			7.500	20.250	4
Solid	WXO-ST-PNC	7.5x22.5P1.5	8304723			7.500	20.250	4
Solid	WX-PNC	7.5x22.5P1.5	3900023			7.500	20.250	3
Solid	OT-PNGT	7.5x20P1.5	8306223			7.500	18.750	3
Solid	OT-SFT-PNGT	7.5x20P1.5	8306523			7.500	17.750	3
Solid	AT-1	7.7x24P1.5	8331007			7.700	21.750	4
Solid	AT-2	7.5x20P1.5	8331205			7.500	20.000	4
Solid	AT-2	7.5x25P1.5	8331212			7.500	25.000	4
Solid	AT-2_R-SPEC	7.5x20P1.5-INT	8331225			7.500	20.000	2
Solid	AT-2_R-SPEC	7.5x25P1.5-INT	8331232			7.500	25.000	2



Type 1



$\phi D$	7.500
$l$	22.50
$L$	70.0

Please click "Next".

Start Language / Region Previous Next

- Candidates tools that can machine are displayed based on the input thread information.  
(Nothing will be displayed if there is no corresponding tools.)
- Please select the tool to use, so the selected tool is highlighted in gray.

# Machining conditions

ThreadPro

Work Material

Work Material  
Low Carbon Steel (<C0.25%)

Pass Type  
Stairs

Conventional/Climb  
Climb

Number of Passes  
2

Pass 1  
100 (%)

Pass 2  
100 (%)

Cutting Speed(m/m)

Pass 1

Pass 2

Start Language / Region Previous Next

- Please select the work material to be machined.
- Pass Type
- Climb milling(Down-cutting) or Conventional milling(Up-cutting)
- Number of Passes
- Other machining conditions

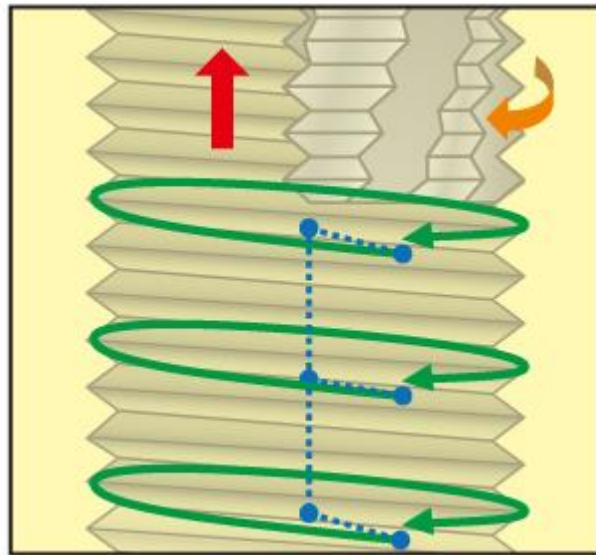
Recommended conditions based on the selected material are automatically entered.

- If you select a work material that is not recommended, a message “The selected material is not applicable for this tool.” will appear.

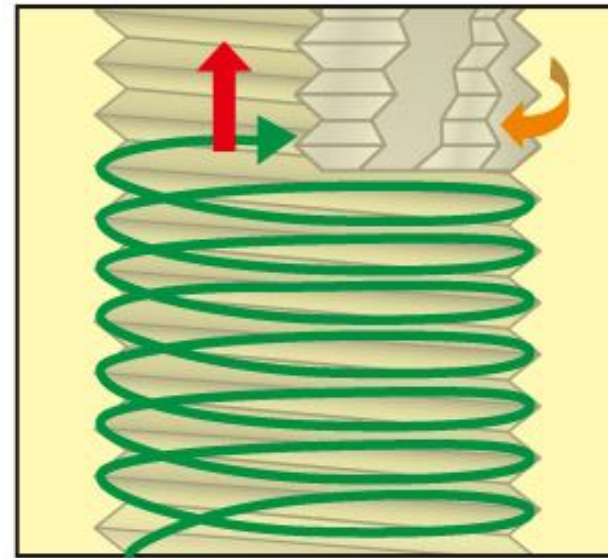
# Stairs type (Multi pass)/Continuous type (Single pass)

The stairs type (multi pass) for more efficiency, the continuous type (single pass) for more quality can be selected according to the application.

The stairs type is basically recommended but select the type that suits your machining environment and purpose.



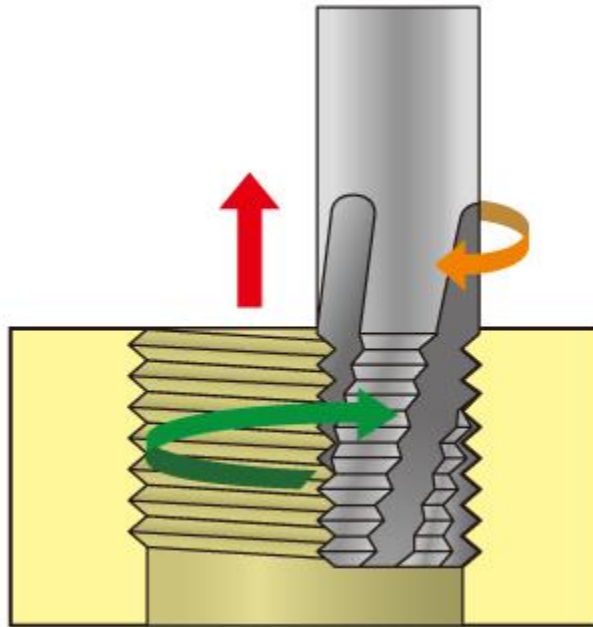
Stairs type



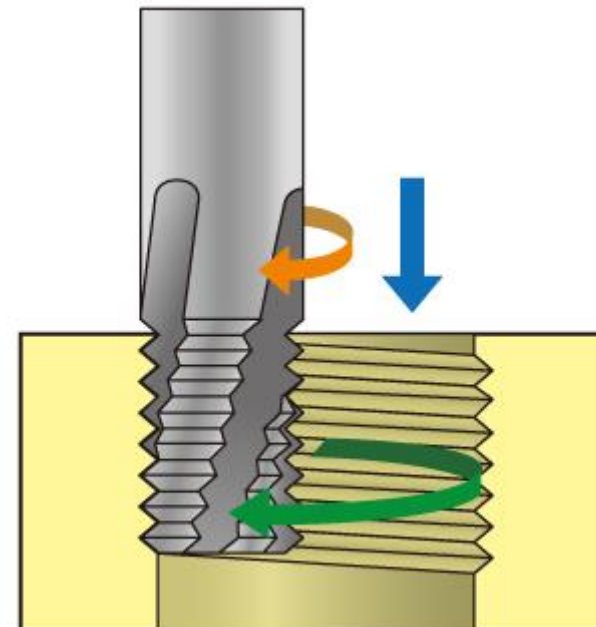
Continuous type

# Climb milling (Down-cut) / Conventional milling (Up-cut)

For an internal right-hand thread, climb milling (down-cut) refers to cutting upward from the bottom. While conventional milling (up-cut) refers to cutting downward from the hole entrance to bottom. It depends on whether right or left-hand thread and milling direction of the tool.



Climb milling  
For tool durability



Conventional milling  
For finishing quality

# Number of Passes

ThreadPro

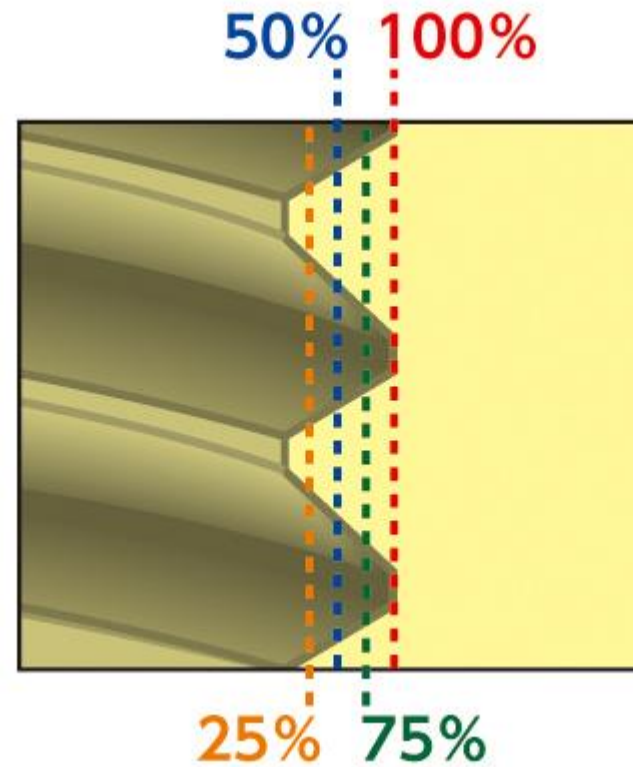
Work Material  
Low Carbon Steel (<C0.25%)

Pass Type  
Stairs

Conventional/Climb  
Climb

**Number of Passes**  
4

Pass 1	Pass 2	Pass 3	Pass 4
<input type="text" value="100"/> (%)	<input type="text" value="100"/> (%)	<input type="text" value="0"/> (%)	<input type="text" value="100"/> (%)
Cutting Speed(m/min)		Feed(mm/t)	
Pass 1	<input type="text" value="80"/>	<input type="text" value="0.04"/>	
Pass 2	<input type="text" value="80"/>	<input type="text" value="0.04"/>	
Pass 3	<input type="text" value="80"/>	<input type="text" value="0.04"/>	
Pass 4	<input type="text" value="80"/>	<input type="text" value="0.04"/>	



The amount of cut can be adjusted on each pass. Also, by entering 100% in “Pass-1” you can easily create a zero-cut path program.

# Type of CNC

ThreadPro

Format Output

CNC Type  
brother ▾

Metric / Inch  
Metric ▾

Use radius compensation  
P:Tool peripheral ▾

Absolute / Incremental  
Incremental ▾

Program Name / Number  
[Input field]

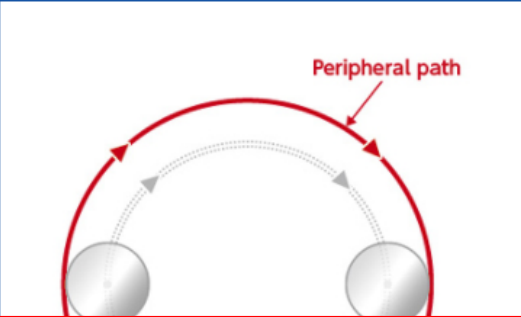
Position  
X= [Input field] 0.0    Y= [Input field] 0.0    Z= [Input field] 0.0

Tool Number ( T= )  
[Input field] 1

Tool Length Offset ( H= )  
[Input field] 1

Tool Diameter Offset ( D= )  
[Input field] 1

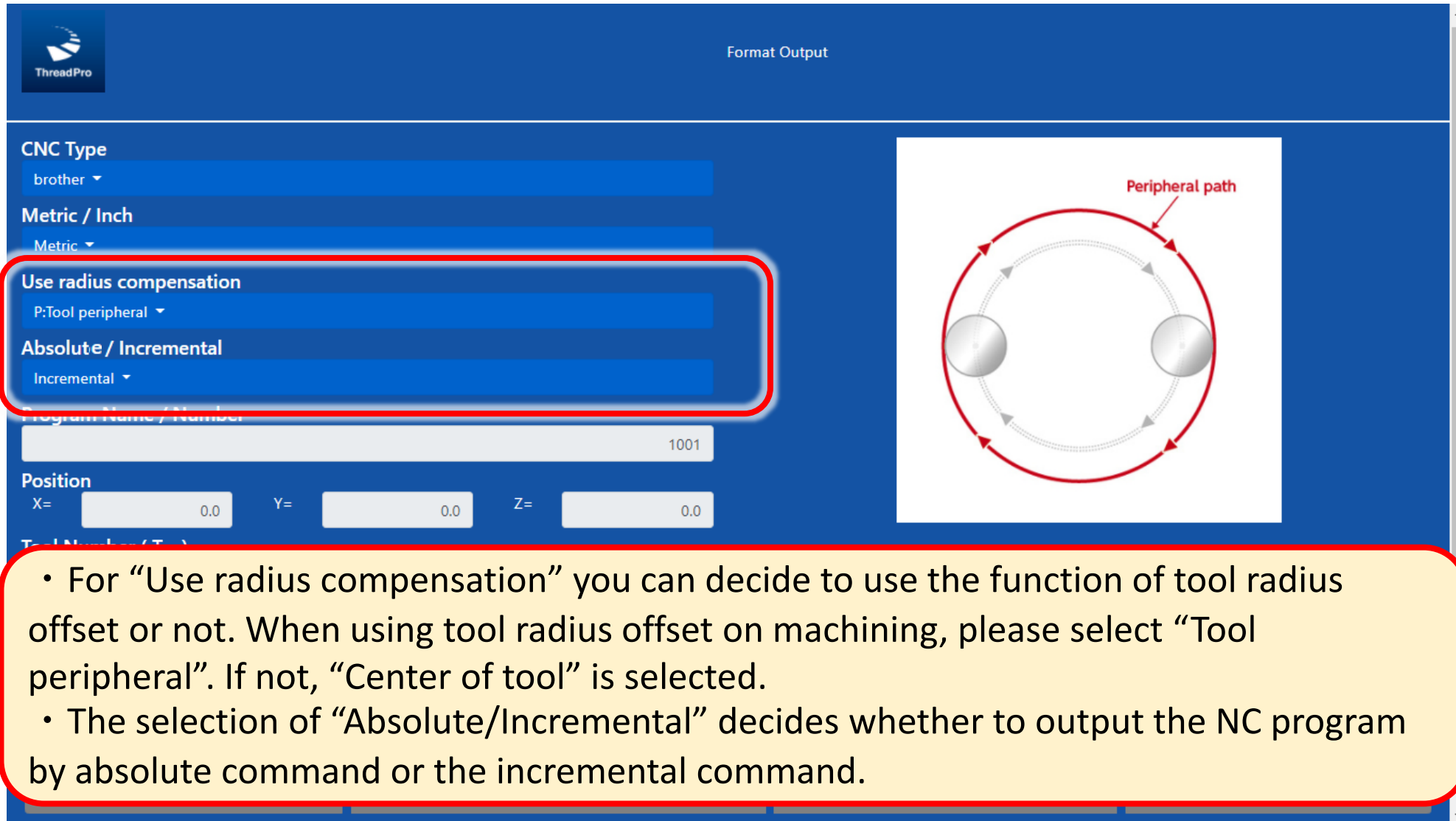
Start    Language / Region    Previous    Go



Peripheral path

- Please select the type of CNC from the pull-down menu.
- Metric or Imperial for the numerical unit of output NC program can be selected.

# Tool radius offset



The screenshot shows the ThreadPro software interface with the following settings:

- CNC Type: brother
- Metric / Inch: Metric
- Use radius compensation: P:Tool peripheral
- Absolute / Incremental: Incremental
- Program Name / Number: 1001
- Position: X= 0.0, Y= 0.0, Z= 0.0

The diagram on the right illustrates the peripheral path compensation. It shows two circular tools (represented by grey spheres) moving along a circular path. The outer path is a solid red line with arrows, labeled "Peripheral path". The inner path is a dashed grey line with arrows, representing the center of the tool. The tools are positioned at the left and right ends of the path.

- For “Use radius compensation” you can decide to use the function of tool radius offset or not. When using tool radius offset on machining, please select “Tool peripheral”. If not, “Center of tool” is selected.
- The selection of “Absolute/Incremental” decides whether to output the NC program by absolute command or the incremental command.

# Optional items

The screenshot shows the ThreadPro CNC control interface. On the left, there are several dropdown menus: 'CNC Type' set to 'brother', 'Metric / Inch' set to 'Metric', 'Use radius compensat' set to 'P:Tool peripheral', and 'Absolute / Incremental' set to 'Incremental'. A yellow callout box with a red border contains the text: 'The following optional items can be set as necessary freely.' followed by a bulleted list: '• Program Name/Number', '• Position (X, Y, Z)', '• Tool Number', '• Tool Length Offset', and '• Tool Diameter Offset'. Below this, a red-bordered rounded rectangle highlights the input fields for 'Program Name / Number' (value: 1001), 'Position' (X= 0.0, Y= 0.0, Z= 0.0), 'Tool Number ( T= )' (value: 1), 'Tool Length Offset ( H= )' (value: 1), and 'Tool Diameter Offset ( D= )' (value: 1). To the right of these fields is a diagram of a circular tool path. At the bottom, a 'Go' button is highlighted with a red-bordered yellow callout box containing the text 'Please click "Go"'. Other buttons at the bottom include 'Start', 'Language / Region', and 'Previous'.

The following optional items can be set as necessary freely.

- Program Name/Number
- Position (X, Y, Z)
- Tool Number
- Tool Length Offset
- Tool Diameter Offset

Please click "Go".



# Creation of NC program

ThreadPro

NC Code

Please make sure if the program works well before actual milling

Cutting time

RPRG 3.69

Zmin -11.837

Finally, the program will be created based on all the input information.  
Before going actual machining, please do not forget to check and test running fully.

Copy Text data output PDF data output

```
%  
O1001( 7.5x22.5P1.5 RPRG=3.69 )  
(T1 D=7.5 ZMIN=-11.837 )  
G90 G94 G17 G49 G40 G80  
G21  
G28 G91 Z0.  
G90  
T01 M06  
S3397 M03  
G54  
G00 X0 Y0  
G43 Z5. H01
```

Start Language / Region Previous Next

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# Reference information

The screenshot shows the ThreadPro software interface for NC Code. At the top, there is a blue header with the ThreadPro logo on the left and 'NC Code' in the center. Below the header is a yellow warning banner with the text 'Please make sure if the program works well before actual milling'. Underneath is a table of machining parameters:

Parameter	Value
Cutting time	0m24s
RPRG	3.69
Zmin	-11.837

Below the table are three buttons: 'Copy', 'Text data output', and 'PDF data output'. At the bottom of the interface is a navigation bar with buttons for 'Start', 'Language / Region', 'Previous', and 'Next'. The footer contains '(C)OSG Corporation 2020' and the 'OSG' logo.

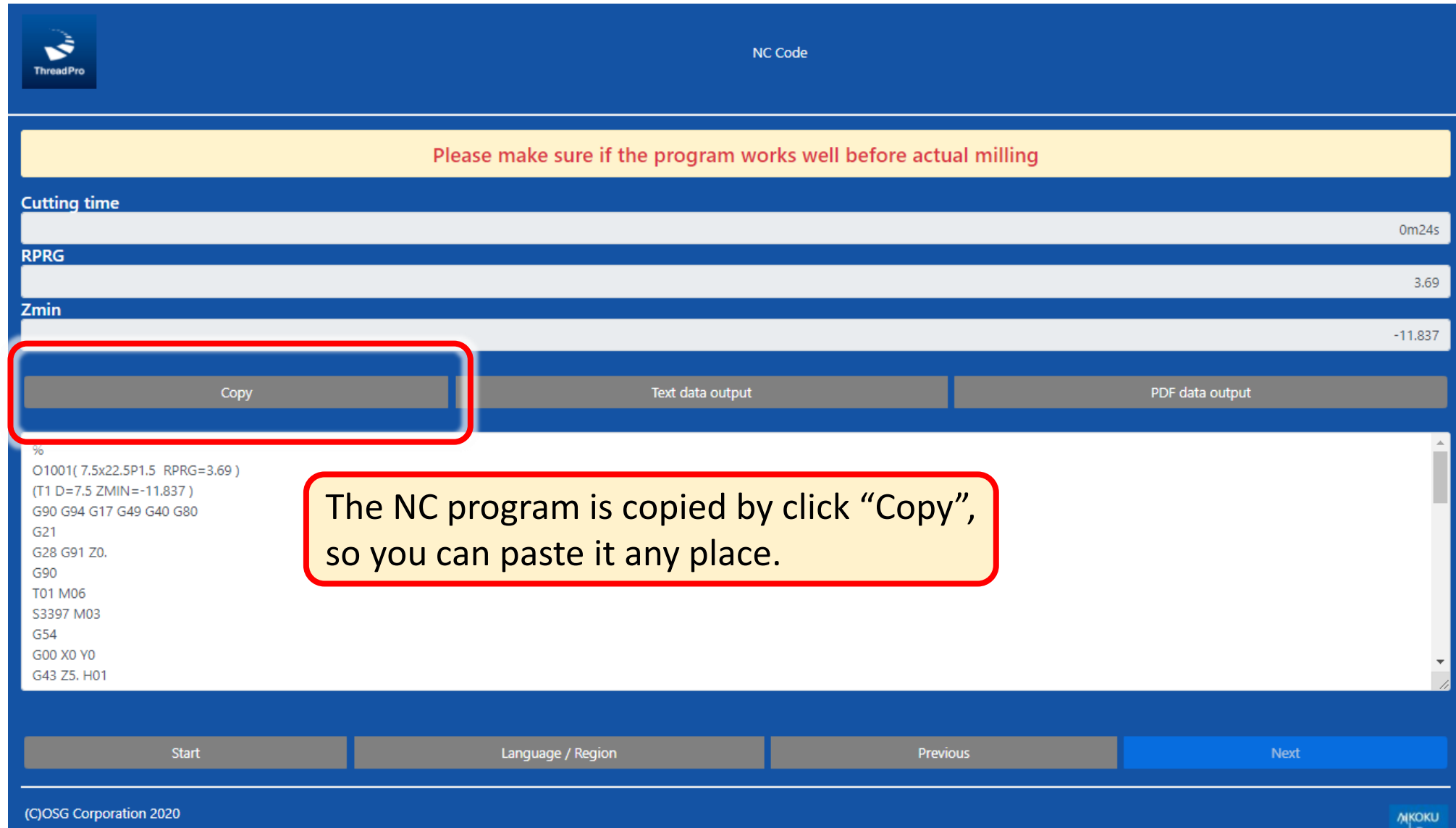
A red-bordered callout box on the right side of the screenshot contains the following text:

The following machining information are referred.

- Cutting time : Approximate running time per 1 hole (thread)
- RPRG : Tool radius offset value for the first try
- ZMIN : The lowest position of the tool during machining.

The background of the callout box is yellow and has a red border. The text is black and left-aligned.

# Function 1 (Copying NC program)



The screenshot shows the ThreadPro NC Code interface. At the top left is the ThreadPro logo. The title bar reads 'NC Code'. A yellow warning banner states: 'Please make sure if the program works well before actual milling'. Below this, there are three input fields: 'Cutting time' with a value of '0m24s', 'RPRG' with a value of '3.69', and 'Zmin' with a value of '-11.837'. A row of three buttons is visible: 'Copy', 'Text data output', and 'PDF data output'. The 'Copy' button is highlighted with a red rectangular box. Below the buttons is a text area containing the following NC program code:

```
%  
O1001( 7.5x22.5P1.5 RPRG=3.69 )  
(T1 D=7.5 ZMIN=-11.837 )  
G90 G94 G17 G49 G40 G80  
G21  
G28 G91 Z0.  
G90  
T01 M06  
S3397 M03  
G54  
G00 X0 Y0  
G43 Z5. H01
```

At the bottom of the interface, there are four buttons: 'Start', 'Language / Region', 'Previous', and 'Next'. The 'Next' button is highlighted in blue. The footer contains the text '(C)OSG Corporation 2020' and the 'MIKOKU' logo.

The NC program is copied by clicking "Copy", so you can paste it any place.

# Function 2 (Download NC program)

ThreadPro

NC Code

Please make sure if the program works well before actual milling

Cutting time 0m24s

RPRG 3.69

Zmin -11.837

Copy Text data output PDF data output

%  
O1001( 7.5x22.5P1.5 RPRG=3.69 )

S3397 M03  
G54  
G00 X0 Y0  
G43 Z5. H01

Start Language / Region Previous Next

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Click “Text data output” to download the NC program with the file name “sample.nccode”. Change the extension of “nccode” to convert the other files. (Ex. “Sample.txt” etc.)

# Function 3 (Download in PDF)

ThreadPro

NC Code

Please make sure if the program works well before actual milling

Cutting time 0m24s

RPRG 3.69

Zmin -11.837

Copy Text data output PDF data output

```
%  
O1001( 7.5x22.5P1.5 RPRG=3.69 )  
(T1 D=7.5 ZMIN=-11.837 )  
G90 G94 G17 G49 G40 G80  
G21  
G28 G91 Z0.  
G90  
T01 M06  
S3397 M03  
G54  
G00 X0 Y0  
G43 Z5. H01
```

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