February 14th revision in 2009

AutoNC NC soft for Machine Shop

Home Page http://www.autonc.jp

Circle Cut Cycle Manual

The feature of the NC controller has the Fixed-cycle of the hole end.
I made the same feature in circle profile milling.

[Circle Fixed Cycle]

It turns around at the same height several times by offset mode.
The approach is only once, because it turns with the continuation.
Mainly, it uses for finish cut.

[Cut Deep Z is Up]

The movement is the same about "Cut Deep Z is Up" and "Cut Deep Z is Down".
It digs the hole with some depth.
The difference is that Z value of the hole data is up or down.

" Cut Deep Z is Up " is digging in the hole from the upper Z value.
The Method is helical milling.
(It is no need to use a drill for prepared hole.)

[Cut Deep Z is Down]

" Cut Deep Z is Down " is digging in the hole from the lower Z value + Depth.
The Method is helical milling.
(It is no need to use a drill for prepared hole.)

【Positioning】

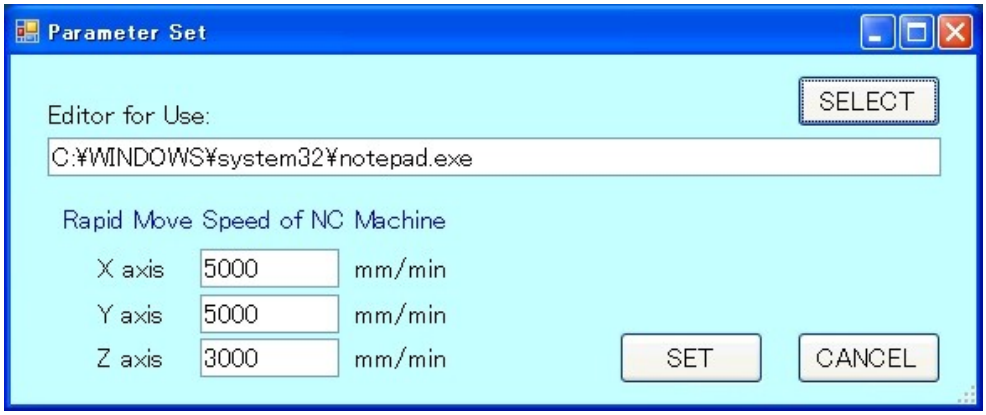
Reading the hole position table of the character data, CSV data (EXCEL)
The NC data of the positioning can be created.
However, of course, it is OK by manual Input.

【Japanese】

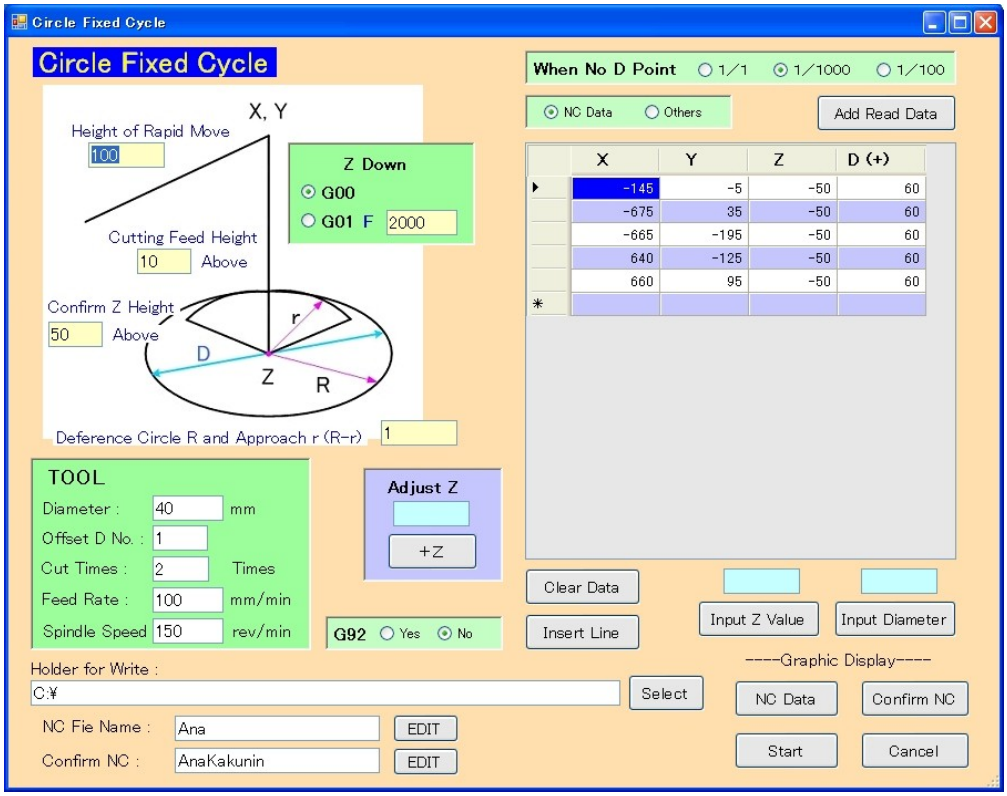
When pushing this button, it becomes Japanese display.

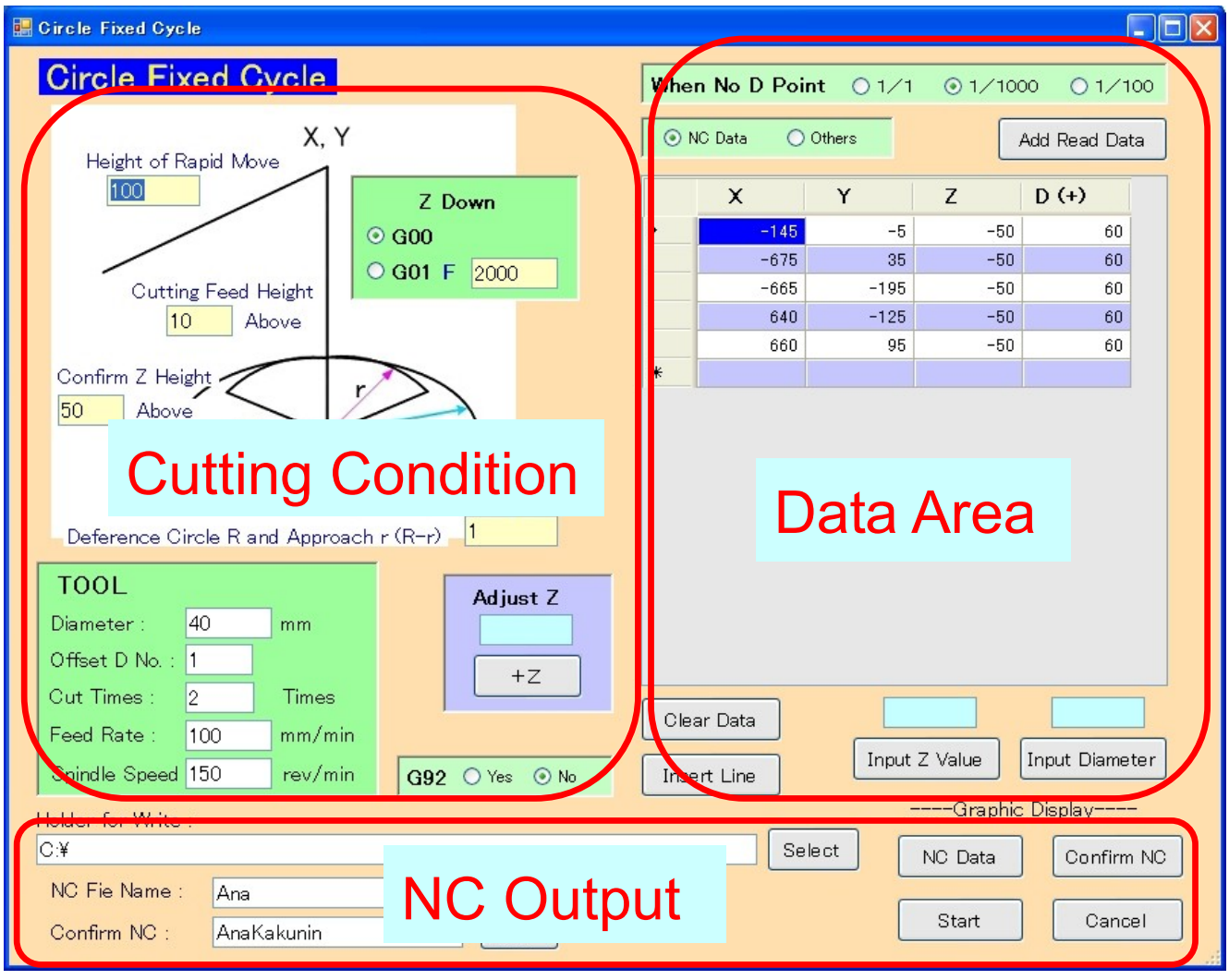
【Parameter】

It specifies an editor for the editing.
"Edit" button of the program starts up this editor.
At present, it isn't using the Rapid Move Speed of NC Machine.

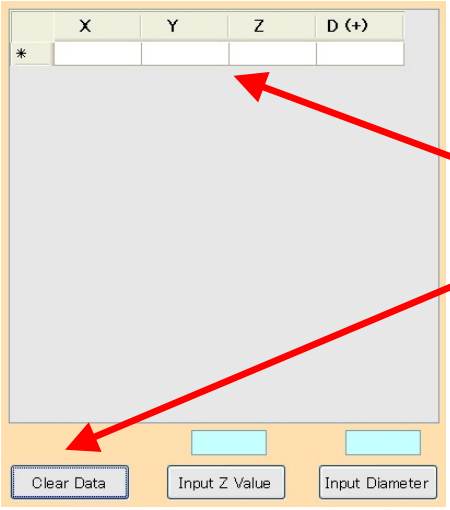


[Circle Fixed Cycle]





The data area

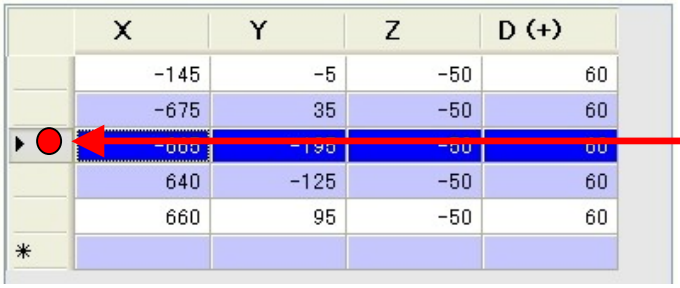


When pushing the “Clear Data”button, a data area is cleared.

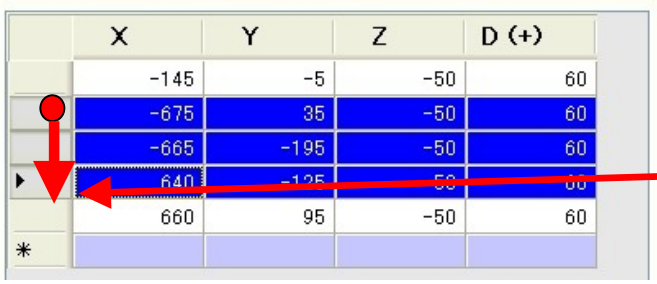
Input the data by manual.
If there is no data below the decimal point, the decimal point can be omitted.

When pushing "Tab" key, move to the right.
When pushing "Enter" key, move down.

The line which changed to the blue can be deleted when pushing the "Delete" button.

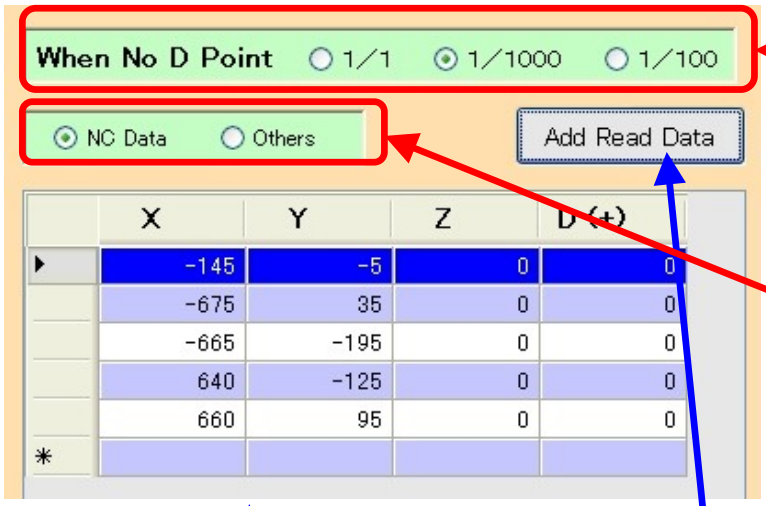


When clicking, one line can be chosen.



More than one line can be chosen when clicking and dragging.

"Add Read Data" can read the NC data, Text data, CSV data, and so on.



When there is not a decimal point in the data to read, it follows this unit.
When there is a decimal point, it follows that.

You choose NC data or the others.
As for the others, the data is independent every line.
Even if the NC data moves only a X axis, the previous Y and Z position is kept.

"Add Read Data" When pushing the button, the file selection screen is displayed and it is possible to be chosen by it.

NC data　　1/1000 to read

```
%
(test)
(X100.0Y200.0Z300.0)
N0001G90
N0002G92X0Y0Z0
N0003M03
(test)
(X100.0Y200.0Z300.0)
N0004G00X-145000Y-5000
N0005X-675000Y35000
N0006X-665000Y-195000
N0007X640000Y-125000
N0008X660000Y95000
N0009G80
N0010G00X0Y0
N0011M02
%
```

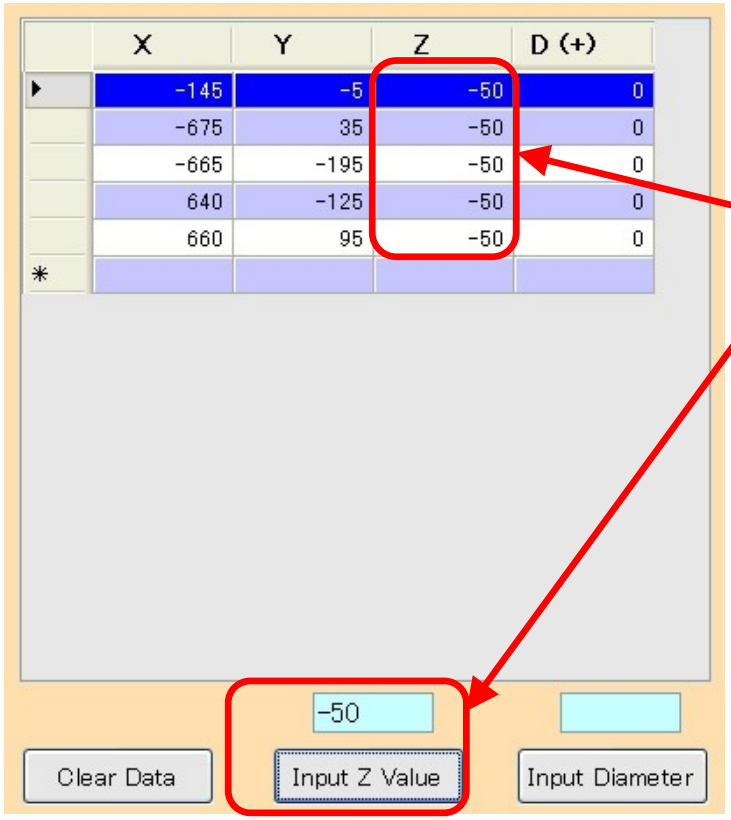
In the reading of the NC data, it is skiped the following line.

1. Including the (　) data.
2. The line of X0Y0.
3. The line where there is not a movement.

It isn't possible to read from the NC data except the X, or Y, Z.

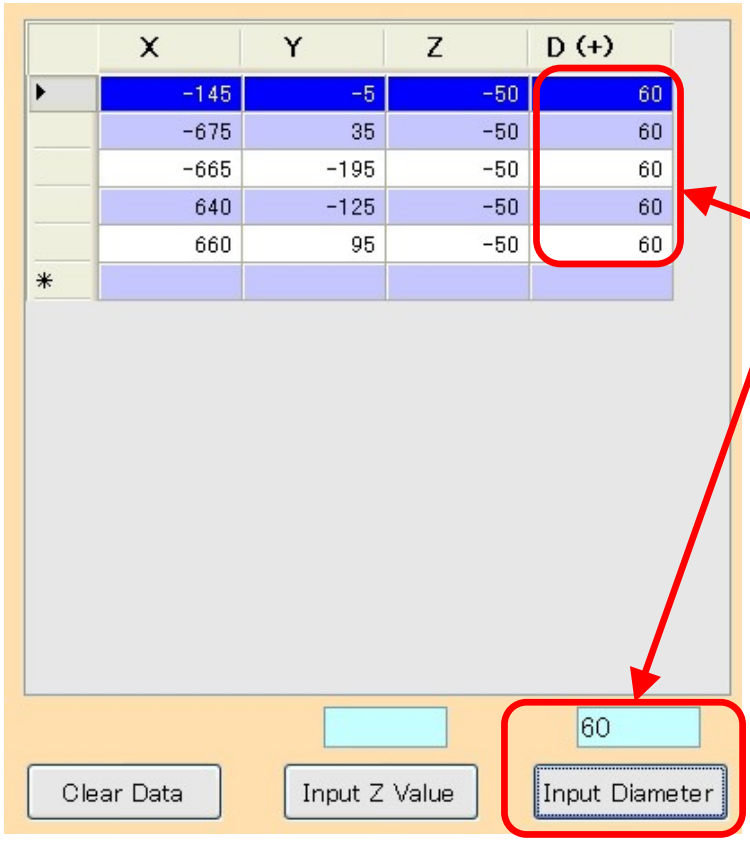
Make the data to read here positioning data in circle center.

You add a Z value to every line. Or, it is possible to add Z value at once by "Input Z value".



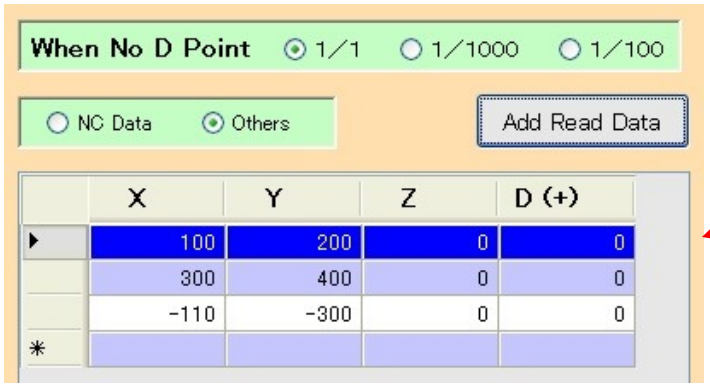
Input Z value in the text box of the light blue on the button, and pushing the "Input Z value" button, the same Z value is stored in all lines of the table.

You add a diameter to every line. Or, it is possible to add a diameter at once by "Input Diameter".



Input D value in the text box of the light blue on the button, and pushing the "Input Diameter" button, the same Diameter value is stored in all lines of the table.

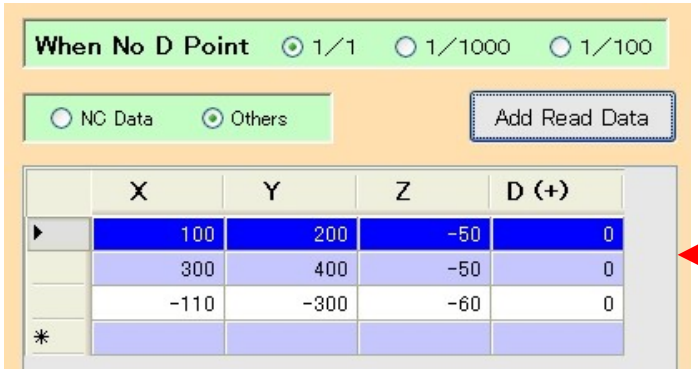
The reading in of the other data



The text file

```
100 200
300 400
-110 -300
```

When four columns of data aren't enough, it handles the remainder as 0.



The text file

```
X100  Y200  Z-50  60  40
X300  Y400  Z-50  70  40
X-110 Y-300 Z-60  80  50
```

When there are X, Y, Z value and no symbol value in a line except the NC data(for example: measurement data), symbol value has priority.
In this case, it isn't possible to read except the X, Y, Z value.

The text file

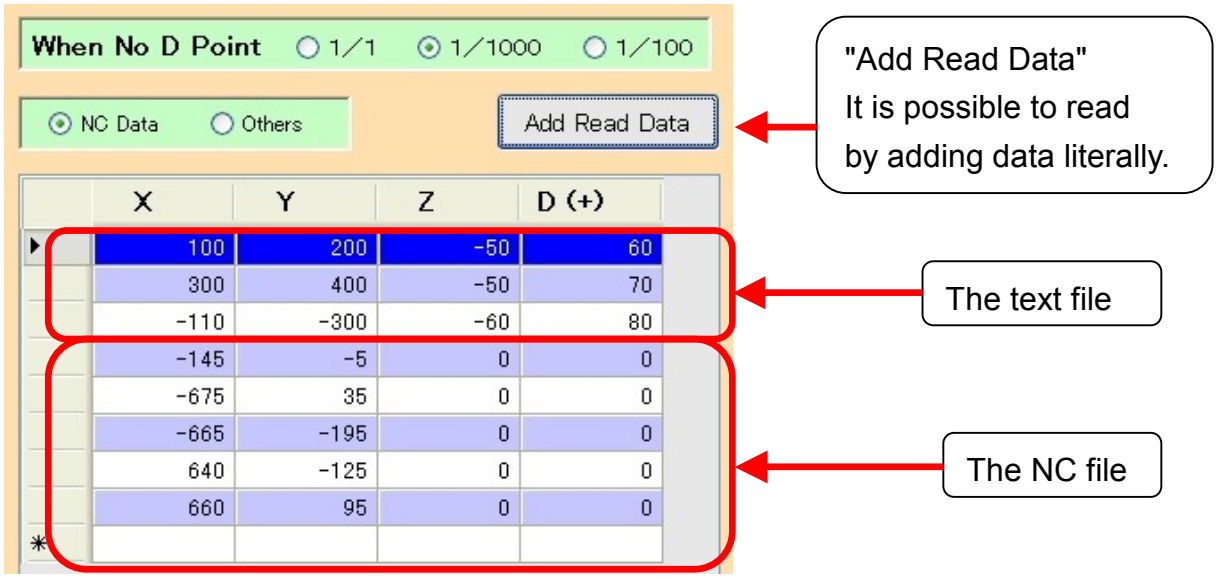
```
100 200 -50 60 40
300 400 -50 70 40
-110 -300 -60 80 50
```

No symbol data are read by the order of the X,Y,Z,D.
When the data columns are over, remainder is skipped.
Also, skips the line that head character is (.

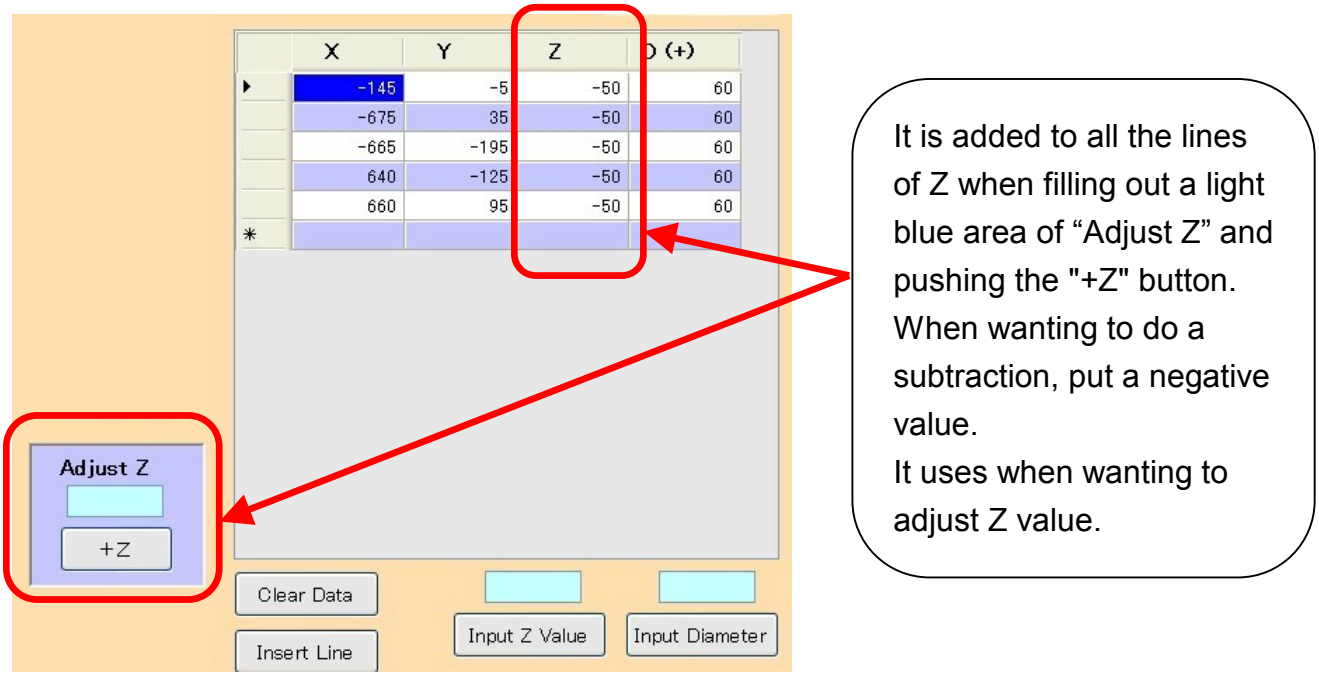
The CSV file

```
( This is the test data of the CSV file. )
100,200,-50,60,40
300,400,-50,70,40
-110,-300,-60,80,50
```

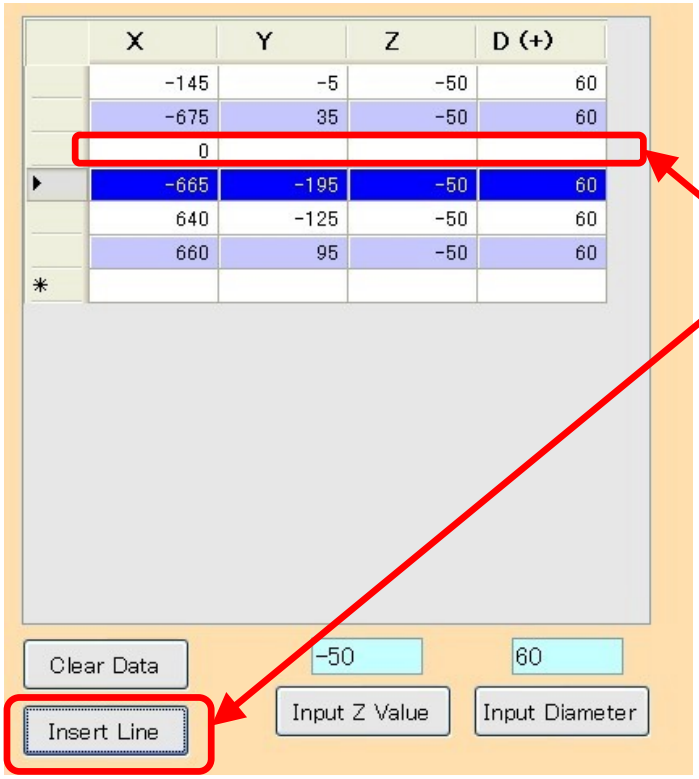
The addition reading in of the data



You can add or subtract constant value to Z value.

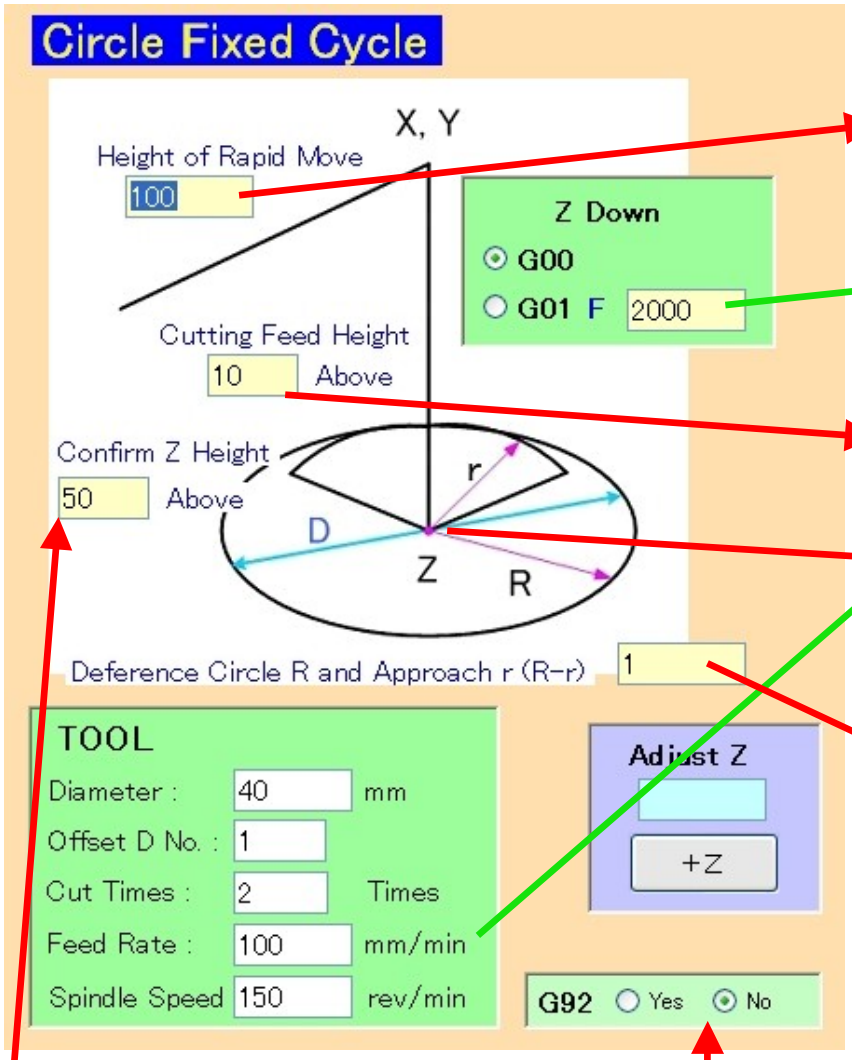


The insertion of the data line



A line is inserted onto it when choosing the head of the data line and pushing "Insert Line" button.

Cutting Condition



Rapid move Z height

G01F2000

Cutting Feed height

F100

Z value

Over 10mm than Z value

D of the data is 60 mm (radius 30 mm) and the difference between the circle radius and approach radius is 1 mm.
So, approach radius is 29mm. (30-1=29 mm)

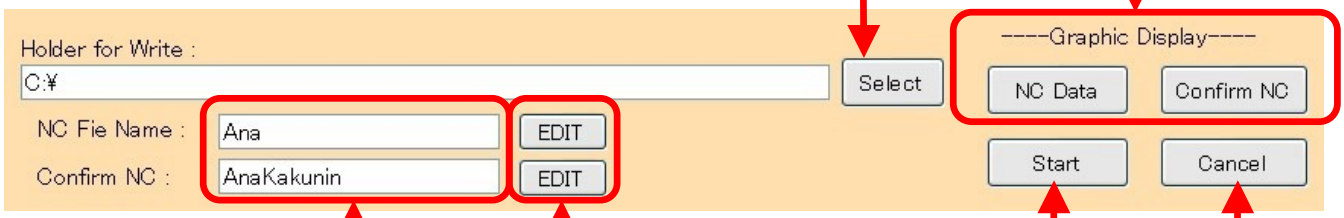
At the NC data for the confirmation, at " the Z + this height ", it turns around circle once.

You choose Yes or No at the <G92>.
When you choose Yes, G90G92X0Y0Z(the rapid move z height) is stored.
When it is No, G90X0Y0; G01Z(the rapid move z height) is stored.
(For the details, you refer to the NC data).

```
-----
G01G41X120.506Y71.506D2
G03X100.000Y80.000I-20.506J-20.506
G03X100.000Y80.000I0J-30.000
G03X100.000Y80.000I0J-30.000
G03X79.494Y71.506I0J-29.000
G01G40X100.000Y50.000
-----
```

Because cut times are 2, it turns twice as approached.

NC Output



It is possible to display the NC data.

“Select” At the button, it selects a write folder.

You enter a file name.
“Confirm NC file” turns around circle on the Confirm Z height over than Z value.

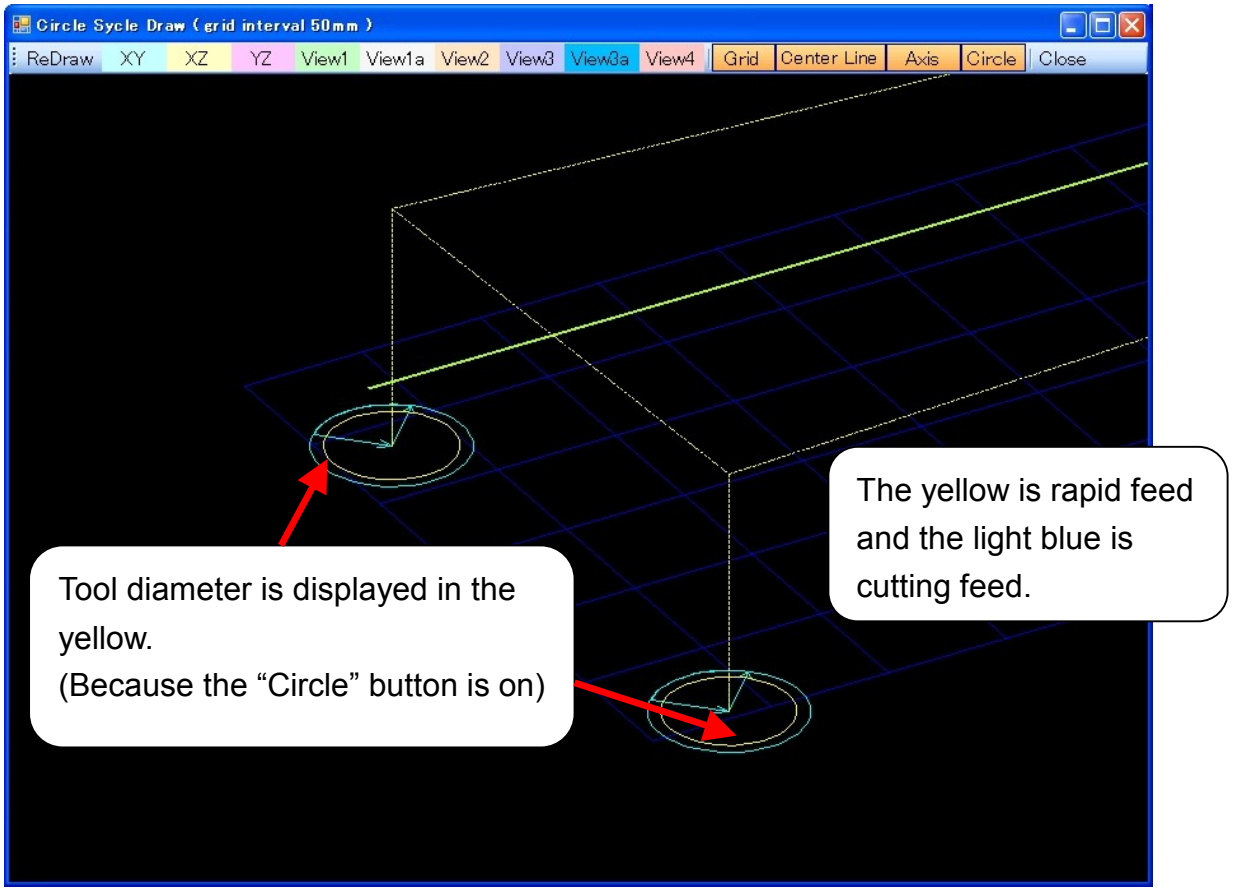
When pushing the "Start" button after fill in all data, the NC data of the file name is created in folder.

"EDIT" When pushing the button, the editor starts up and opens a file.

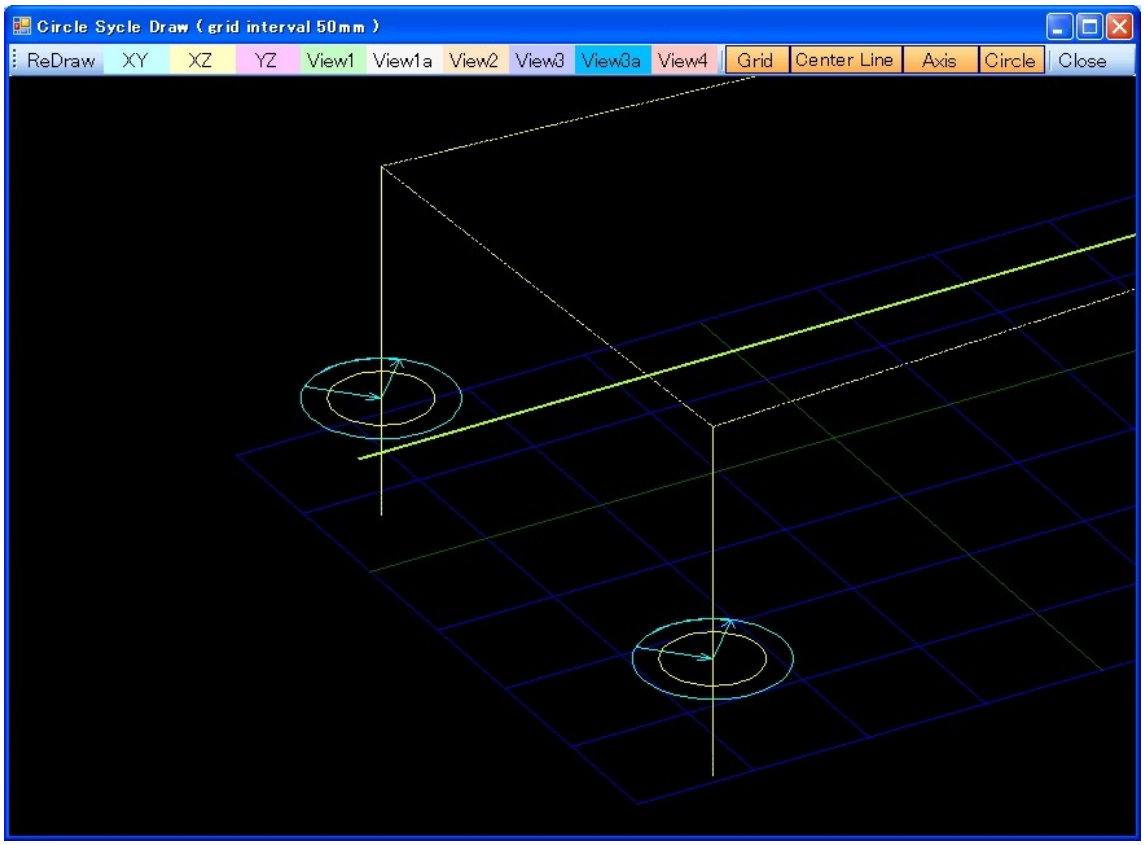
When pushing the “Cancel” button, it ends.
Input data is saved and is restored in the next time.

The Display of the NC data

The following figure shows by "Graphic Display". This figure is shown in "VIEW1".



The following shows "Confirm NC data". Once it goes down to the cutting Z height. And it goes up to the Confirm Z height over than Z value, and turns around circle.



The Display menu

You can select the display direction.
XY plane, XZ plane, YZ plane, View1, View1a, View2, View3, View3a, View4.
View* is the show which was seen from the diagonal top.
View1, View2, View3, View4 are the show which was seen from 30 degrees above from just beside.
View1a, View3a are the show which was seen from 60 degrees above from just beside.

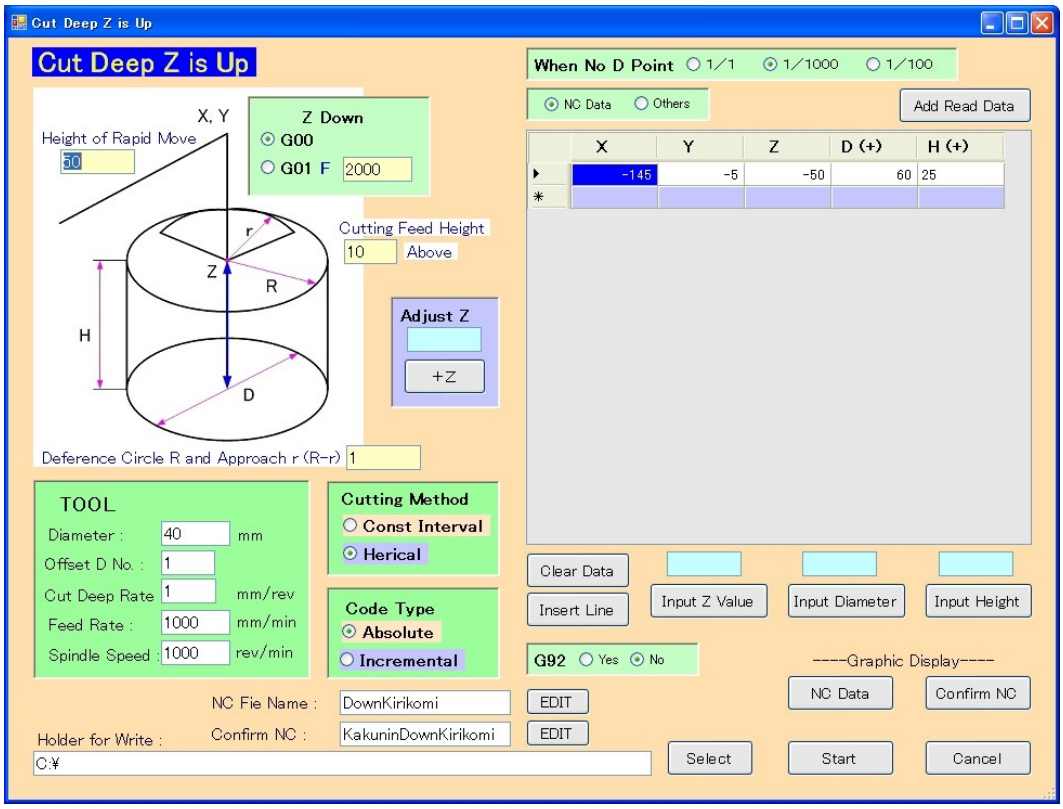
The show button of Grid, the centerline, the Axis, Circle becomes on.

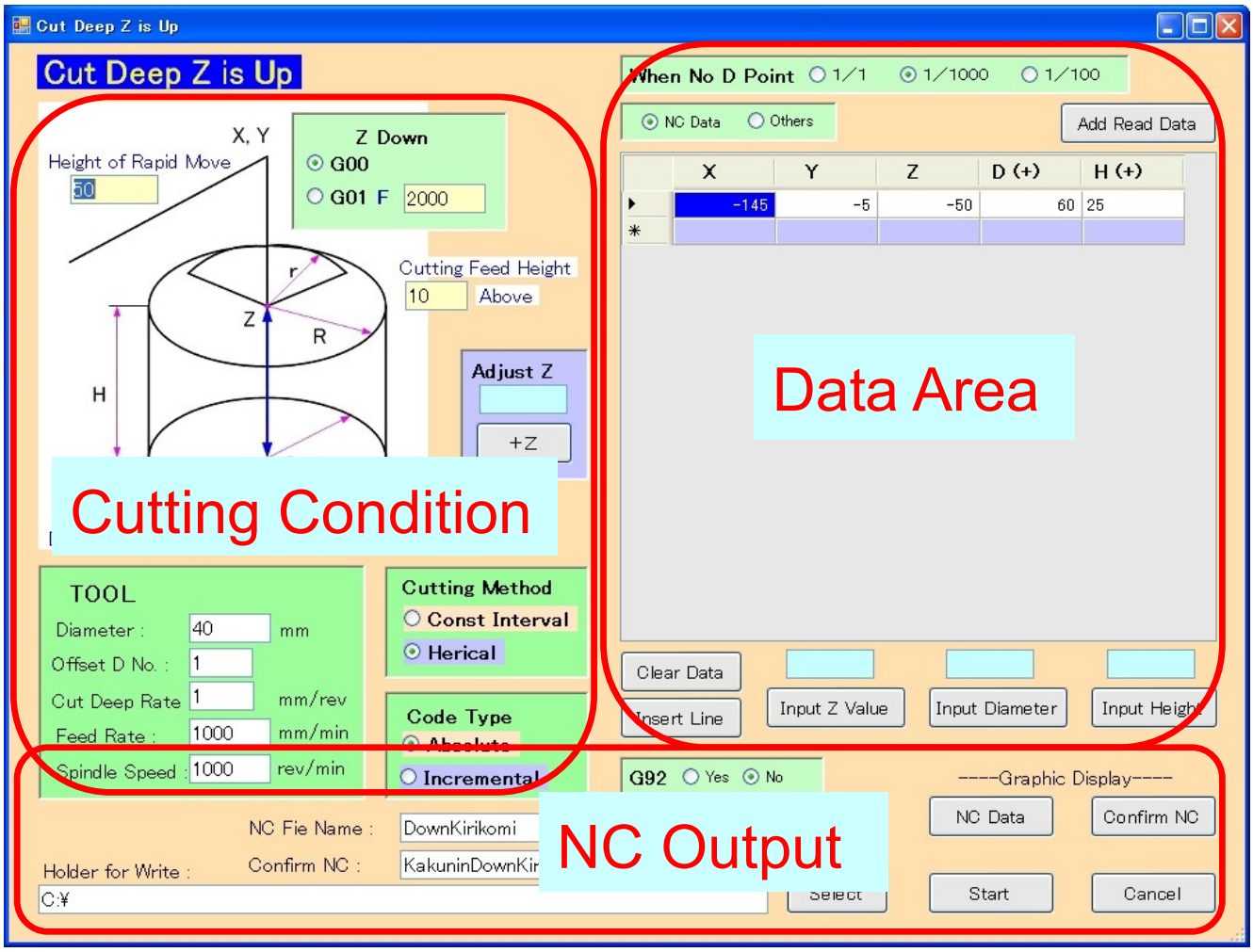
When making "Grid" off, the grid of blue 50 ㎜ disappears.
When making "Centerline" off, the olive-green X axis, the Y axis, the Z axis disappear.
When making "Axis" off, the coordinate system of the X, the Y, Z disappears.
When making "Circle" off, the tool diameter display disappears.

> The part can be displayed in the expansion when clicking with the mouse and dragging.

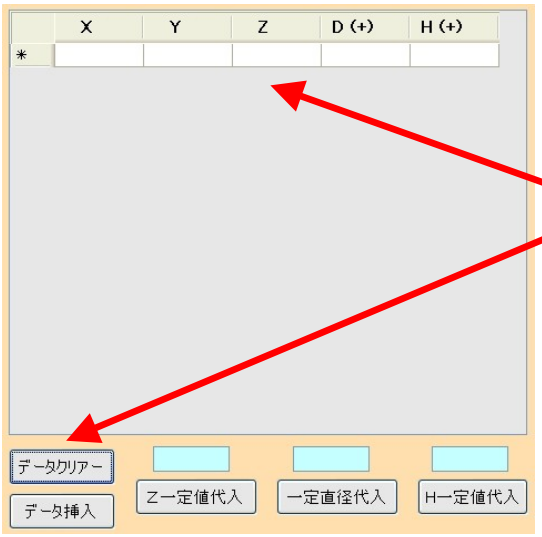
It returns to the ex-screen by "Close".

【Cut Deep Z is Up】



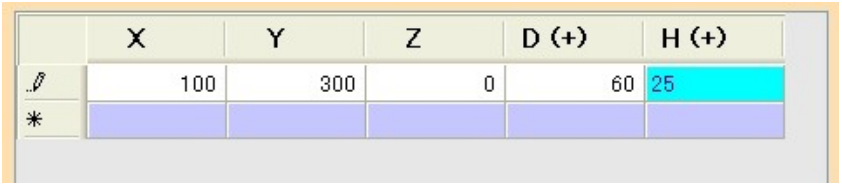


The data area



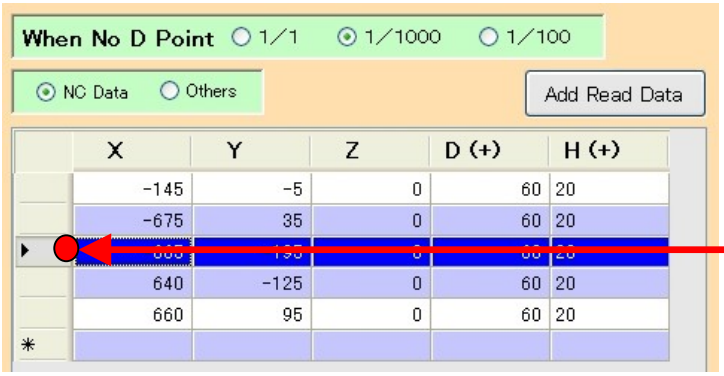
When pushing the “Clear Data” button, a data area is cleared.

Input the data by manual.
If there is no data below the decimal point, the decimal point can be omitted.

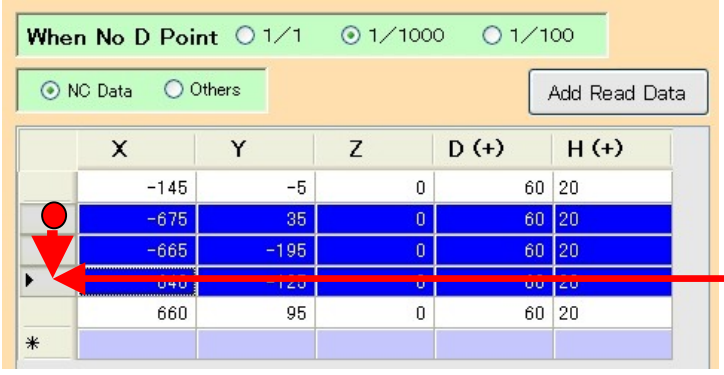


When pushing "Tab" key, move to the right.
When pushing "Enter" key, move down.

The line which changed to the blue can be deleted when pushing the "Delete" button.

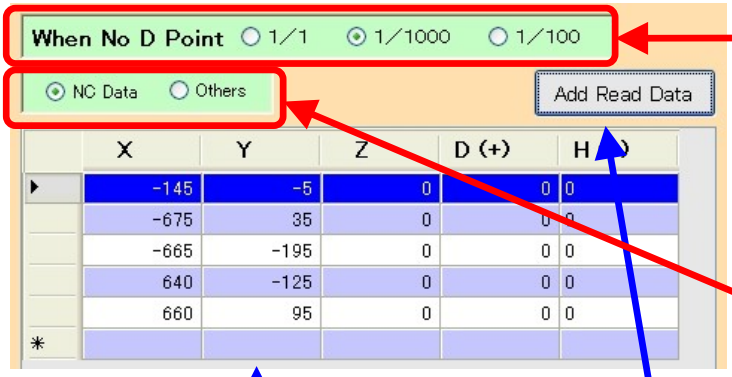


When clicking, one line can be chosen.



More than one line can be chosen when clicking and dragging.

"Add Read Data" can read the NC data, Text data, CSV data, and so on.



When there is not a decimal point in the data to read, it follows this unit.
When there is a decimal point, it follows that.

You choose NC data or the others.
As for the others, the data is independent every line.
Even if the NC data moves only a X axis, the previous Y and Z position is kept.

"Add Read Data" When pushing the button, the file selection screen is displayed and it is possible to be chosen by it.

The NC data 1/1000 to read

```
%
(test)
(X100.0Y200.0Z300.0)
N0001G90
N0002G92X0Y0Z0
N0003M03
(test)
(X100.0Y200.0Z300.0)
N0004G00X-145000Y-5000
N0005X-675000Y35000
N0006X-665000Y-195000
N0007X640000Y-125000
N0008X660000Y95000
N0009G80
N0010G00X0Y0
N0011M02
%
```

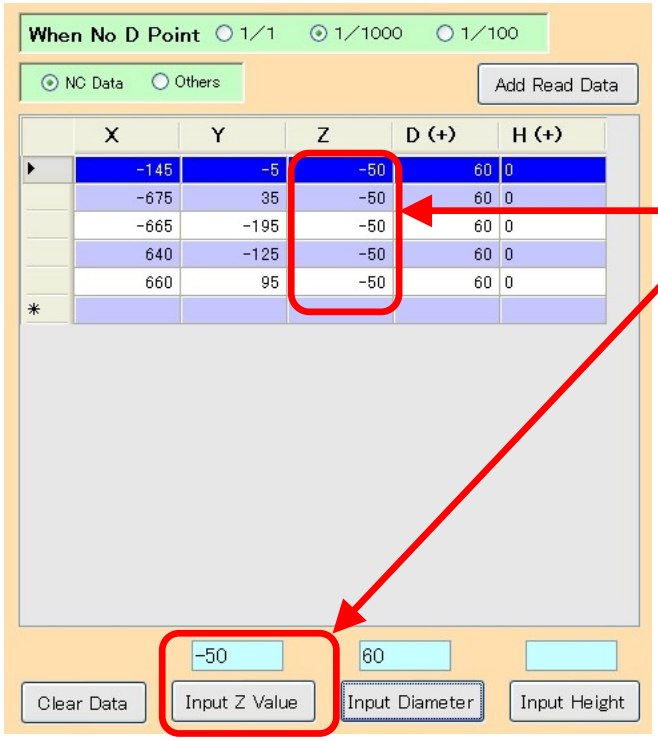
In the reading of the NC data, it is skiped the following line.

1. Including the ( ) data.
2. The line of X0Y0.
3. The line where there is not a movement.

It isn't possible to read from the NC data except the X, or Y, Z.

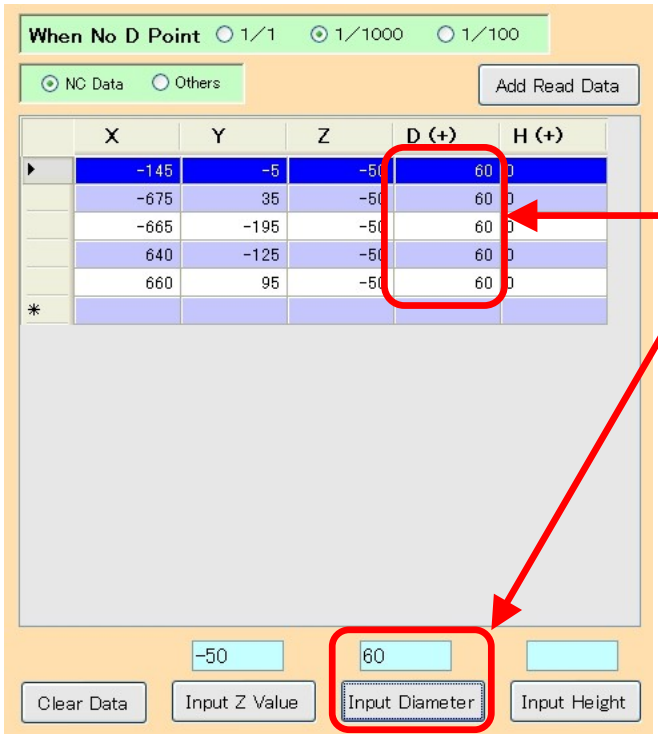
Make the data to read here positioning data in circle center.

You add a Z value to every line. Or, it is possible to add Z value at once by ”Input Z value".



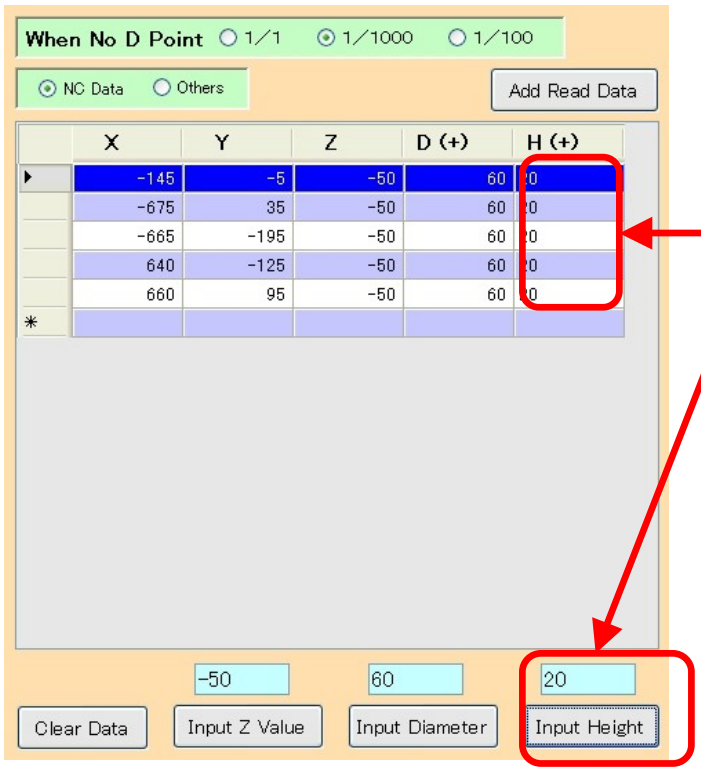
Input Z value in the text box of the light blue on the button, and pushing the "Input Z value" button, the same Z value is stored in all lines of the table.

You add a diameter to every line. Or, it is possible to add a diameter at once by "Input Diameter”.



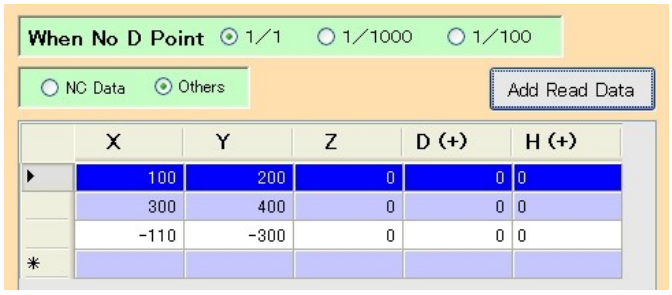
Input D value in the text box of the light blue on the button, and pushing the "Input Diameter" button, the same Diameter value is stored in all lines of the table.

You add a height to every line. Or, it is possible to add a height at once by "Input Height".



Input H value in the text box of the light blue on the button, and pushing the "Input Height" button, the same Height value is stored in all lines of the table.

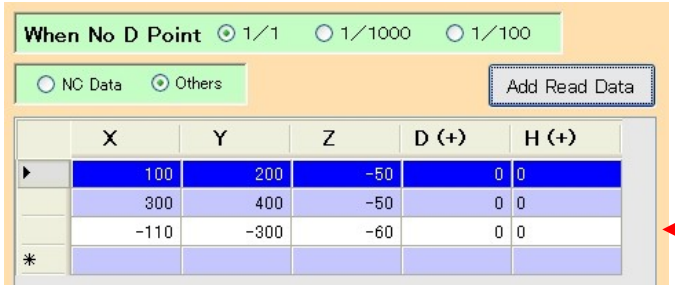
The reading in of the other data



The text file

```
100 200
300 400
-110 -300
```

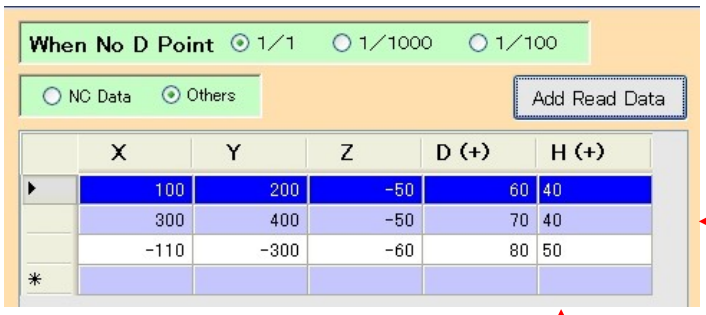
When five columns of data aren't enough, it handles the remainder as 0.



The text file

```
X100  Y200  Z-50  60  40
X300  Y400  Z-50  70  40
X-110 Y-300 Z-60  80  50
```

When there are X, Y, Z value and no symbol value in a line except the NC data (for example: measurement data), symbol value has priority. In this case, it isn't possible to read except the X, Y, Z value.



The text file

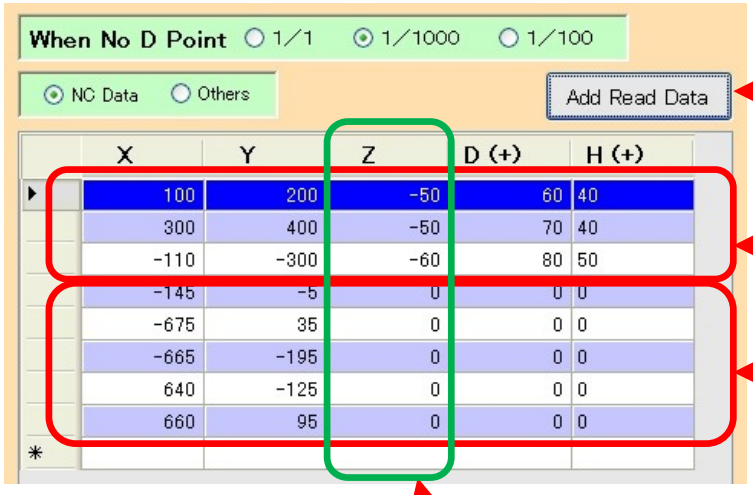
100 200 -50 60 40
300 400 -50 70 40
-110 -300 -60 80 50

The CSV file

(This is the test data of the CSV file.)
100,200,-50,60,40
300,400,-50,70,40
-110,-300,-60,80,50

No symbol data are read by the order of the X,Y,Z,D,H.
When the data columns are over, remainder is skipped.
Also, skips the line that head character is (.

The addition reading in of the data

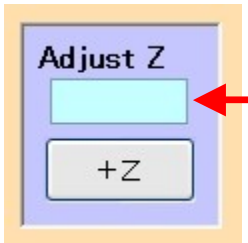


"Add Read Data"
It is possible to read by adding data literally.

The text file

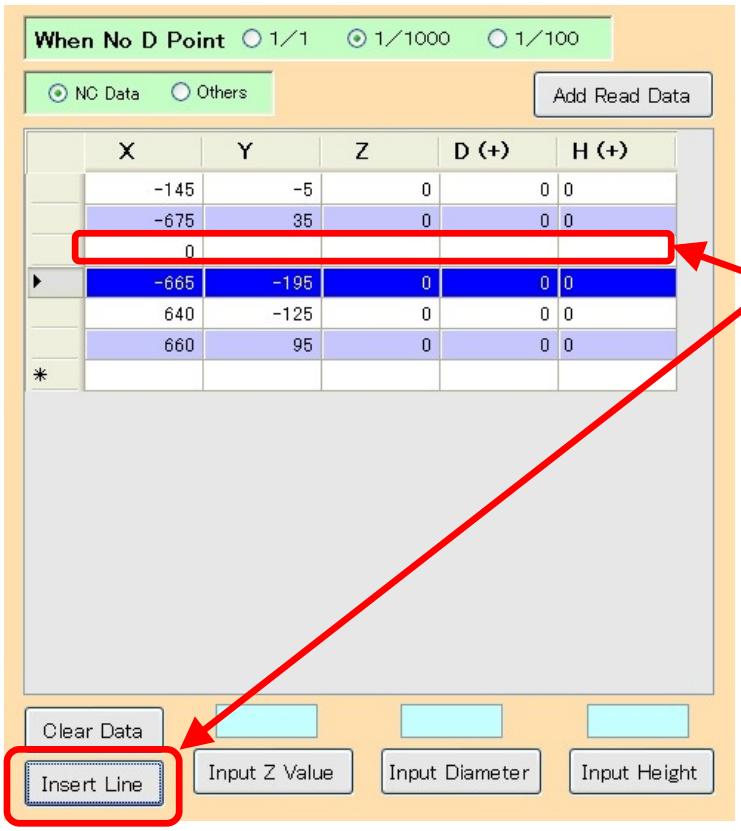
The NC file

You can add or subtract constant value to Z value.



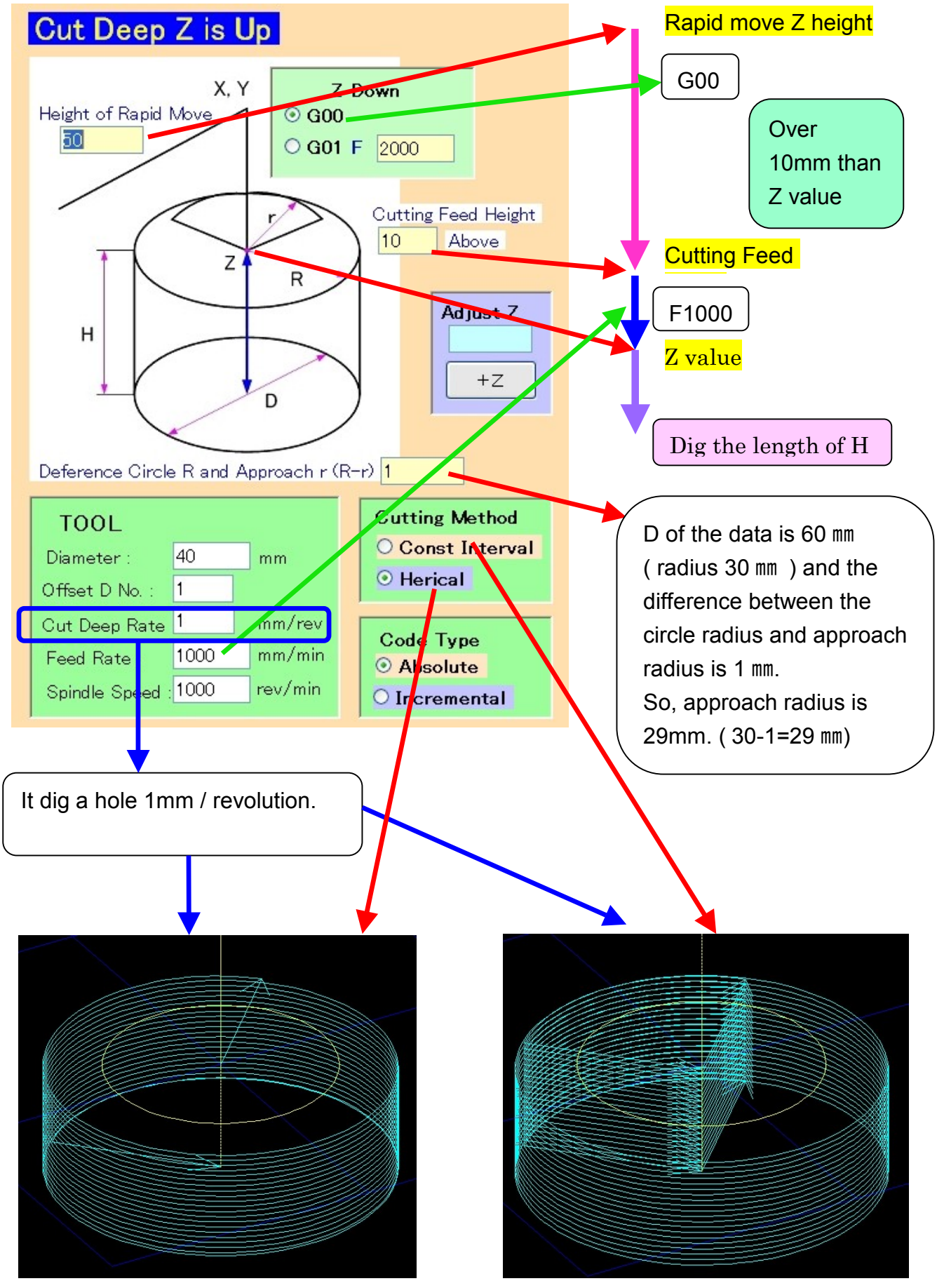
It is added to all the lines of Z when filling out a light blue area of" Adjust Z"and pushing the "+Z" button.
When wanting to do a subtraction, put a negative value.
It uses when wanting to adjust Z value.

The insertion of the data line



A line is inserted onto it when choosing the head of the data line and pushing “Insert Line" button.

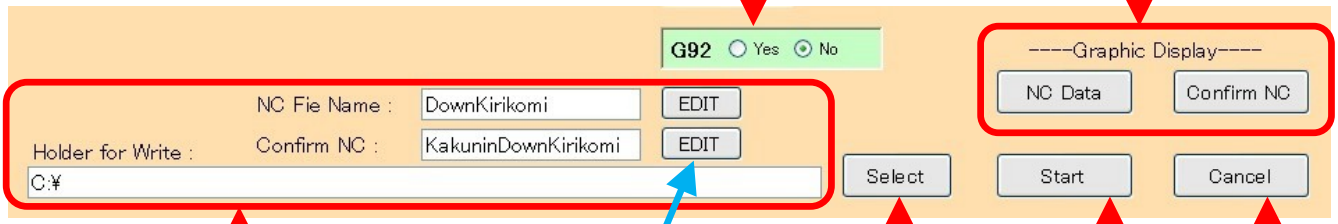
Cutting Condition



The NC output

It is possible to display the NC data.

You choose Yes or No at the <G92>.
When you choose Yes, G90G92X0Y0Z(the rapid move z height) is stored.
When it is No, G90X0Y0; G01Z(the rapid move z height) is stored.
(For the details, you refer to the NC data).



You enter a file name.
“Confirm NC file” turns around circle on the Z height.

“Select” At the button, it selects a write folder.

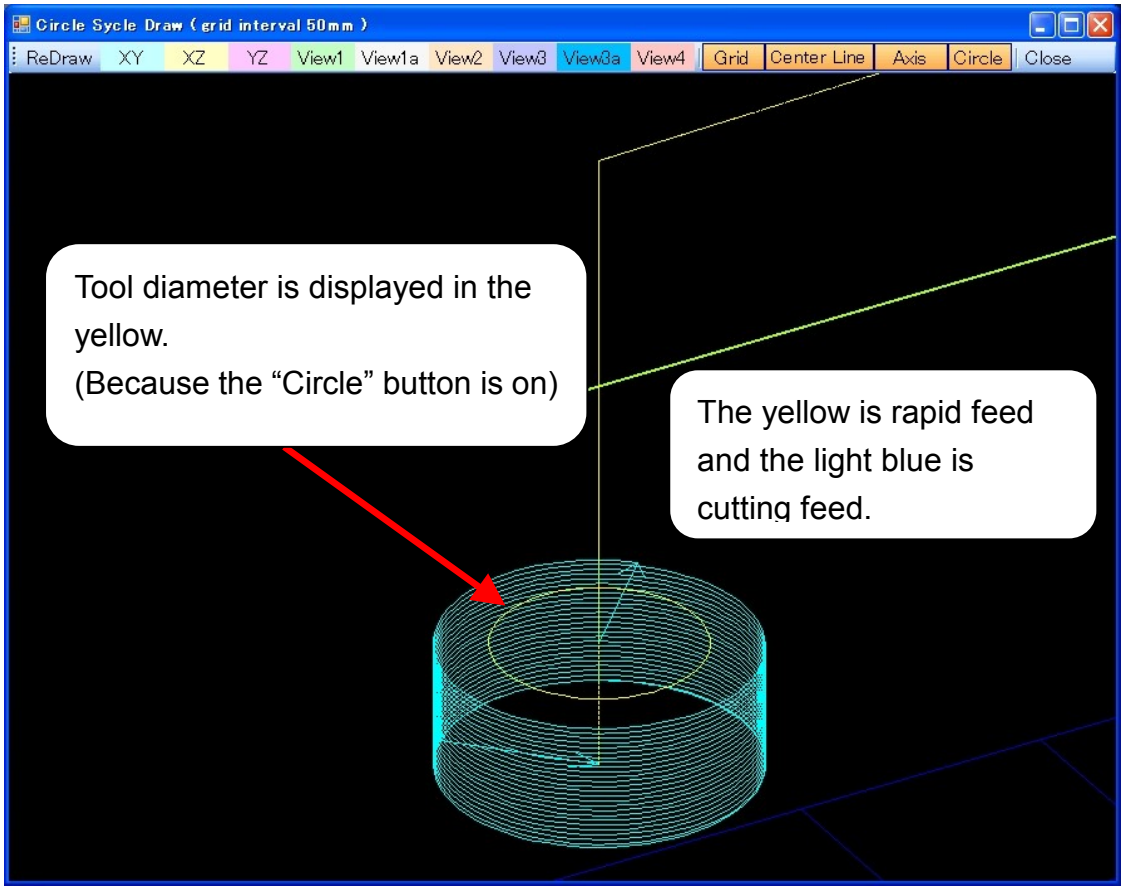
When pushing the "Start" button after fill in all data, the NC data of the file name is created in folder.

When pushing the “Cancel” button, it ends.
Input data is saved and is restored in the next time.

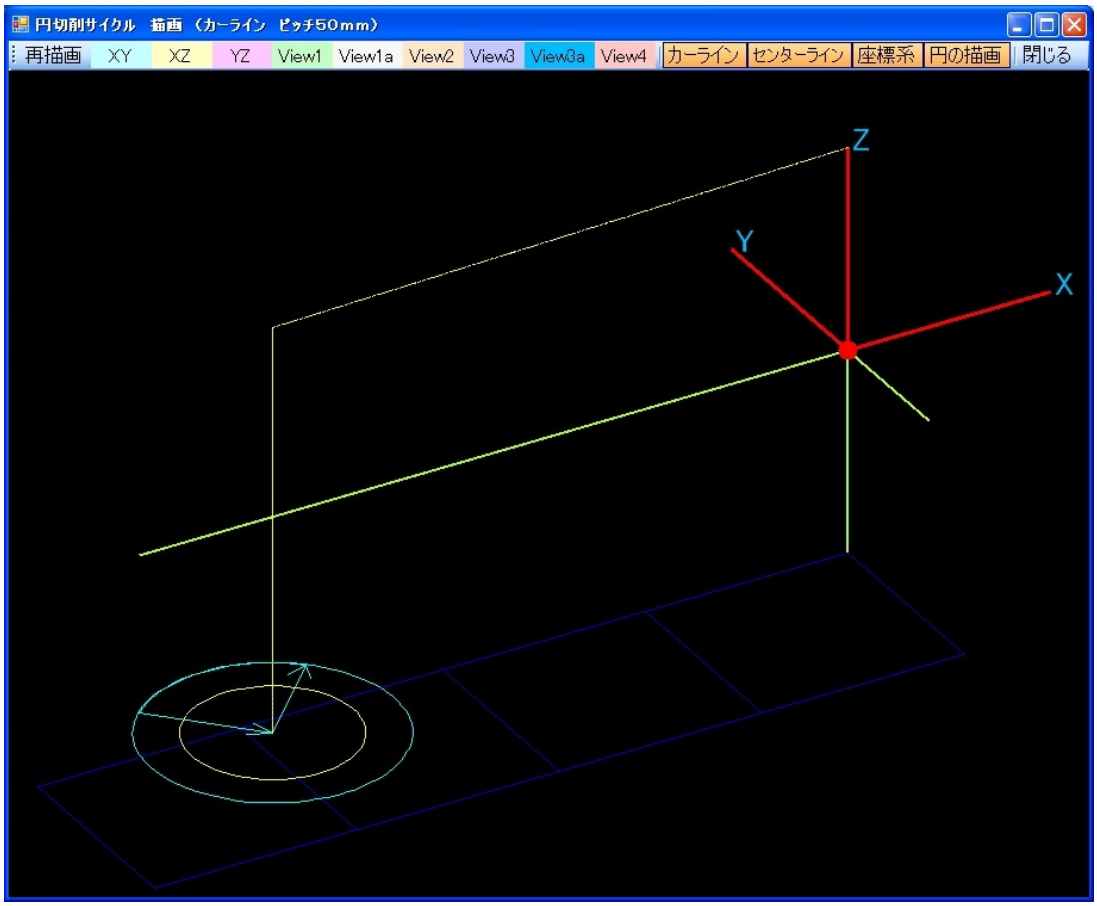
"EDIT" When pushing the button, the editor starts up and opens a file.

The Display of the NC data

The following figure shows by "Graphic Display". This figure is shown in "VIEW1".



The following shows "Confirm NC data". It turns once at the Z height.



The Display menu

You can select the display direction.
XY plane , XZ plane ,YZ plane, View1, View1a, View2, View3, View3a, View4.
View* is the show which was seen from the diagonal top.
View1, View2, View3, View4 are the show which was seen from 30 degrees above from just beside.
View1a, View3a are the show which was seen from 60 degrees above from just beside.

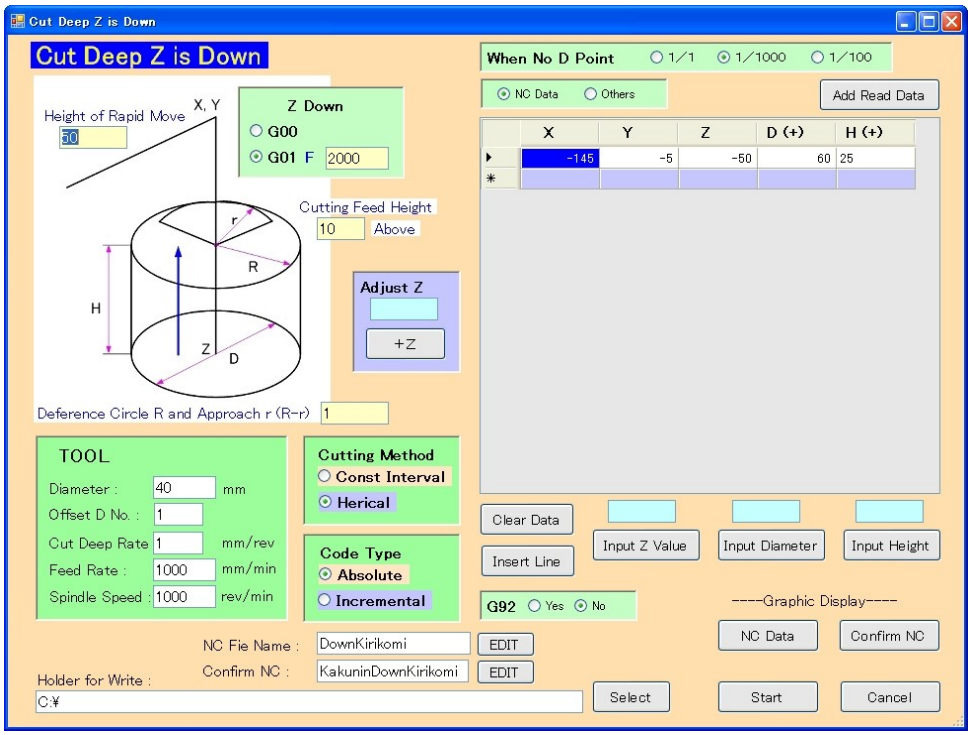
The show button of Grid, the centerline, the Axis, Circle becomes on.

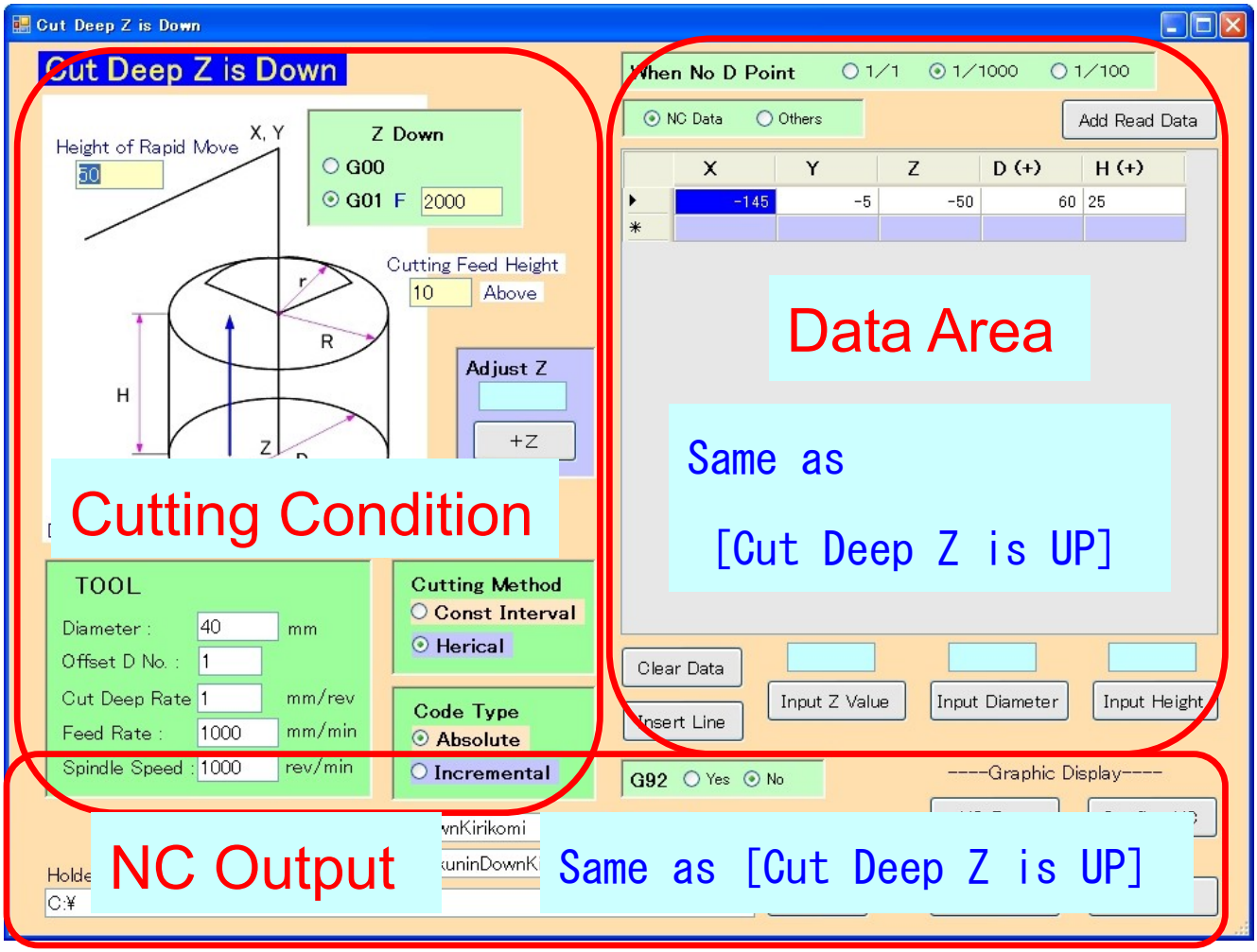
When making "Grid" off, the grid of blue 50 ㎜ disappears.
When making "Centerline" off, the olive-green X axis, the Y axis, the Z axis disappear.
When making "Axis" off, the coordinate system of the X, the Y, Z disappears.
When making "Circle" off, the tool diameter display disappears.

> The part can be displayed in the expansion when clicking with the mouse and dragging.

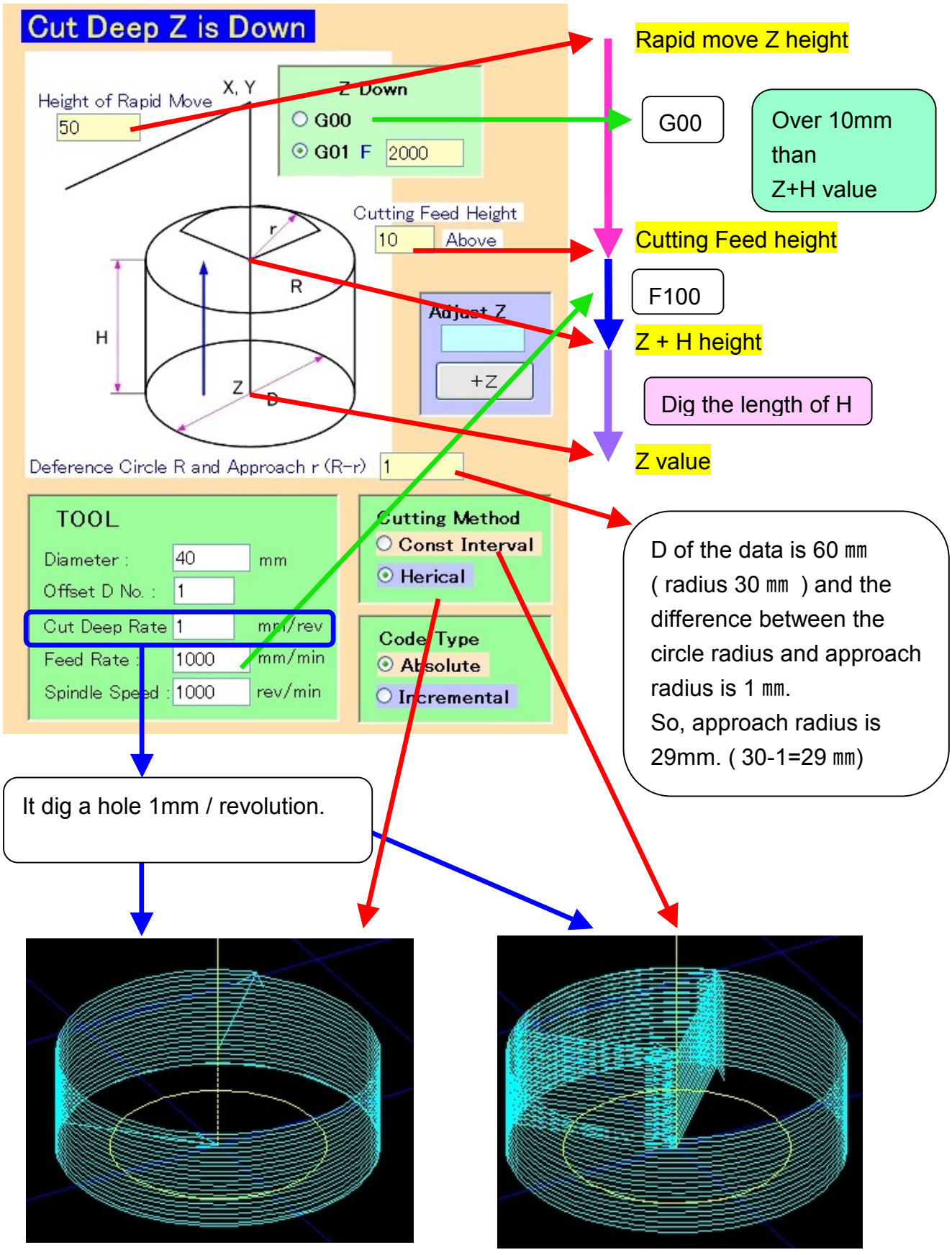
It returns to the ex-screen by "Close".

[Cut Deep Z is Down]



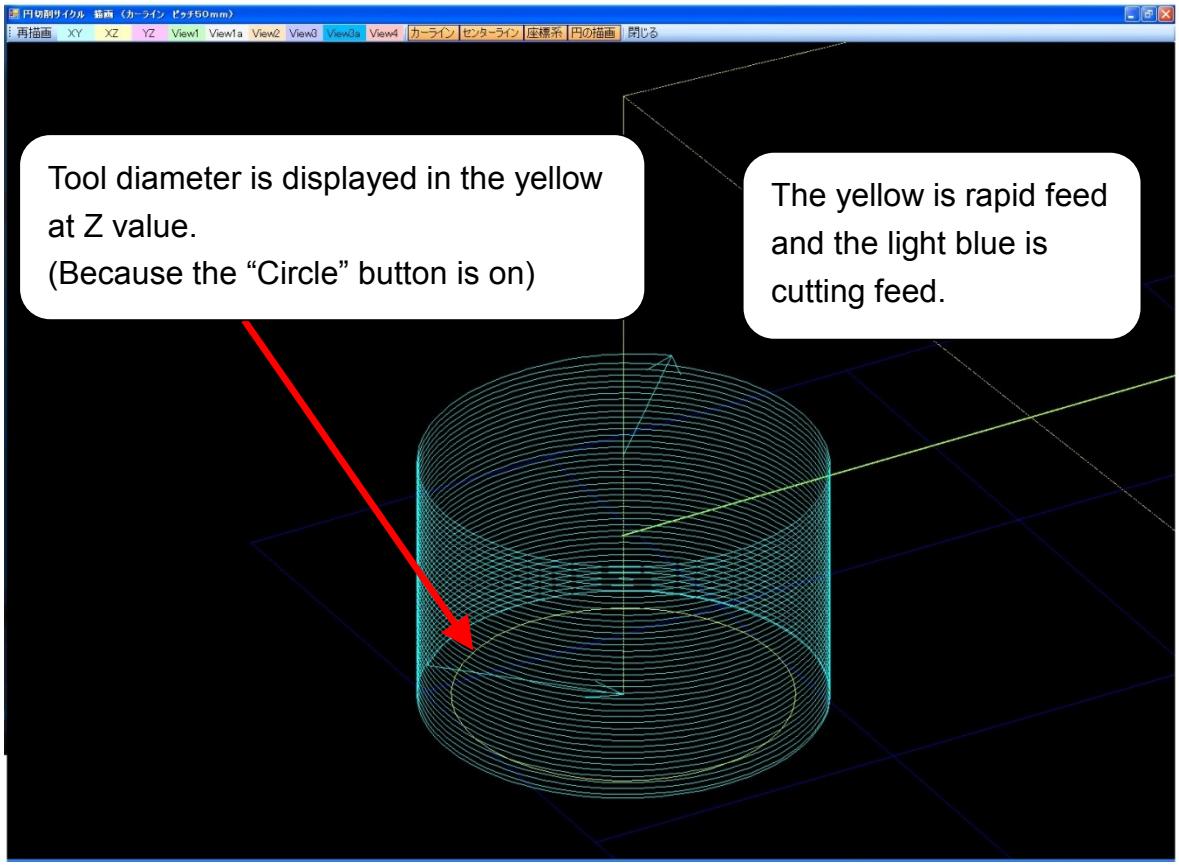


Cutting Condition

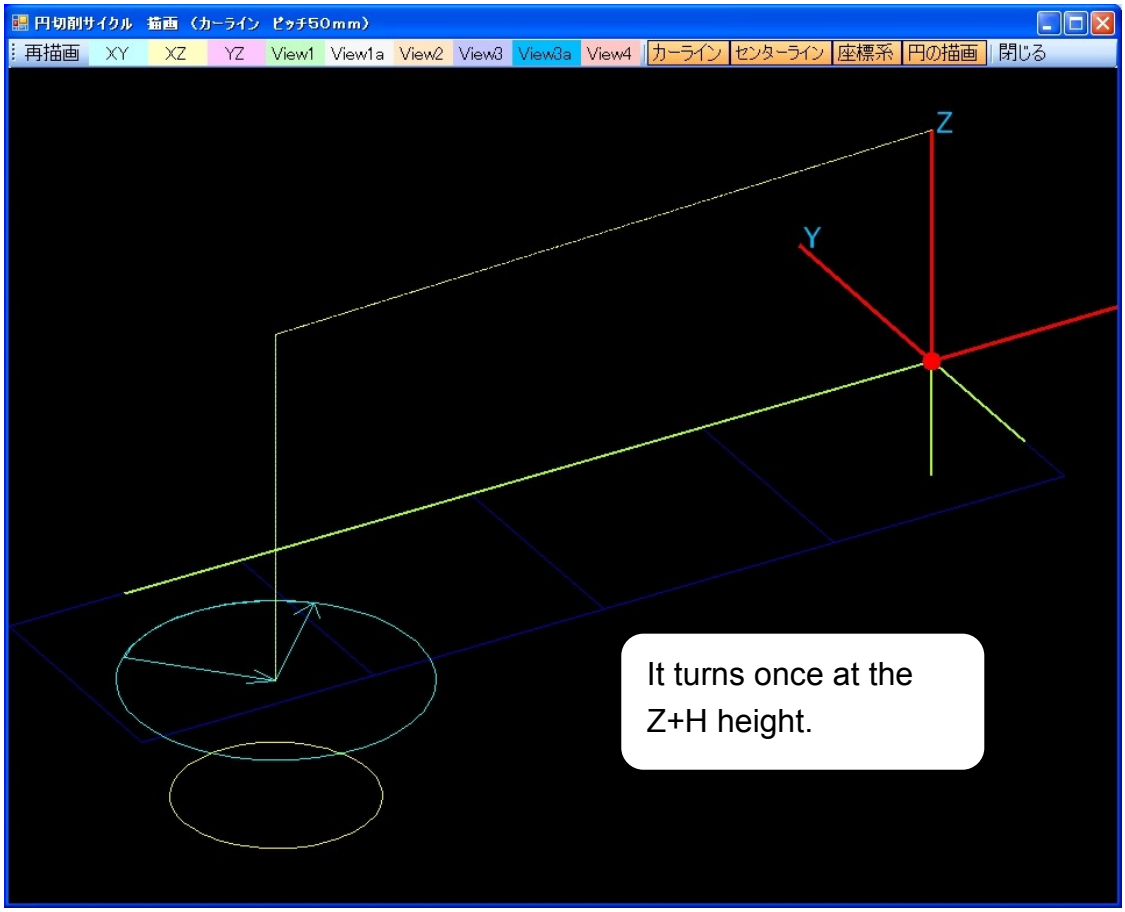


The Display of the NC data

The following figure shows by "Graphic Display". This figure is shown in "VIEW1".



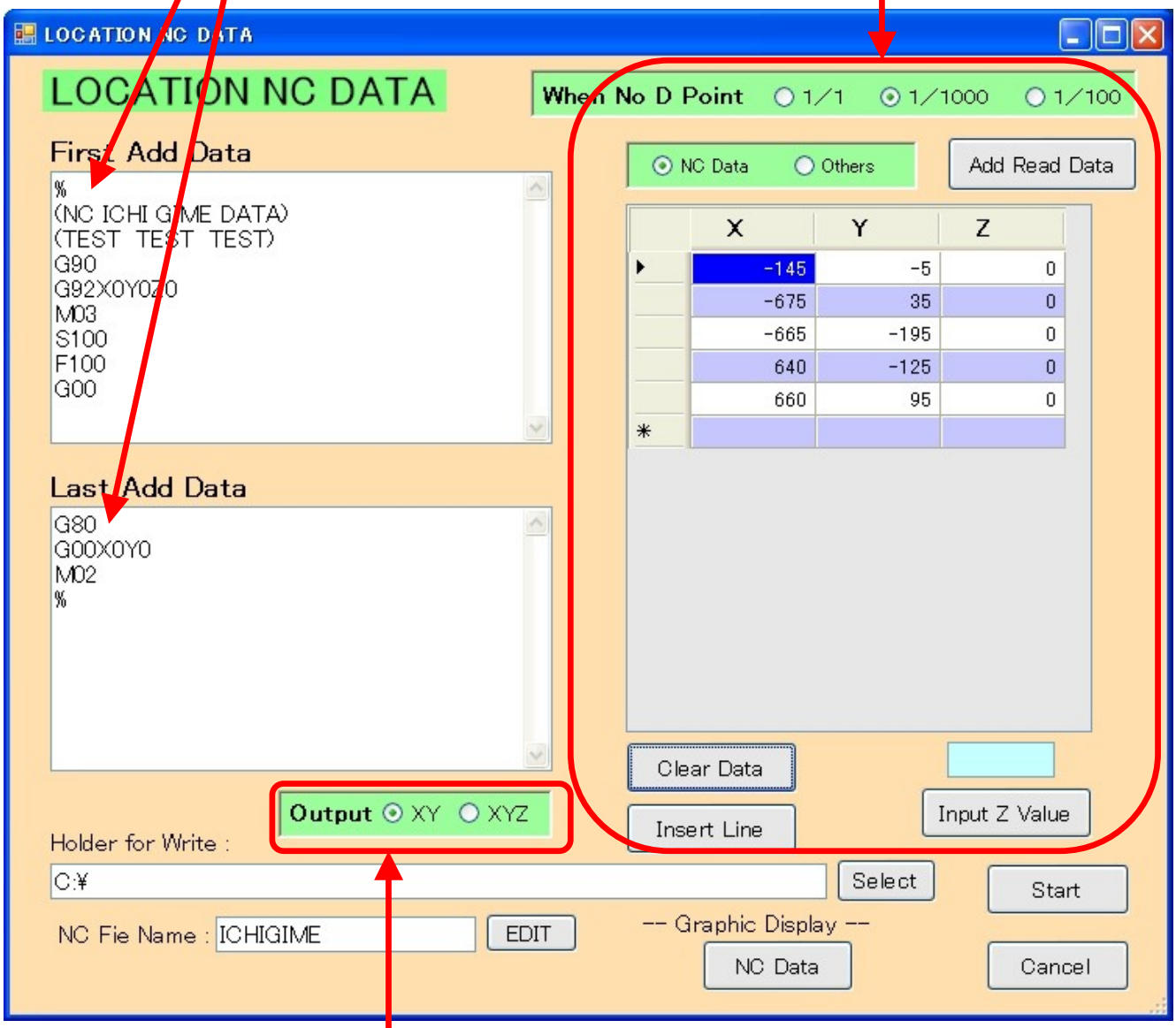
The following shows "Confirm NC data". It turns once at the Z+H height.



[Positioning]

You enter the character string to add in the head of the NC data and of it last.
These are saved and it is possible to use in the next time.

You enter positioning data respectively.
The way of the entry is the same as "Circle Fixed Cycle".



The output of the NC data includes Z or not.
You choose XY or XYZ.

The above