ISO Ns – Next Step

HM and Fixed Cycles

1 PREFACE

This document describes the Hm and Fixed Cycles functions for IsoNs.
These functions are provided by source code, so can be changed by operator for functional change

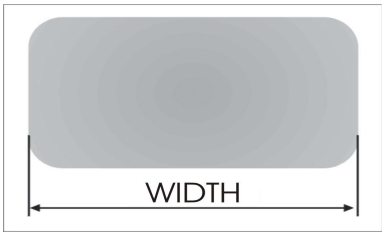
The extended functions of HM IsoNs, called from the parts program, performing complex machining.
The canned cycles allow the programming of **“conversational“** functions HM

2 HM 100 – Emptying pockets Rectangular

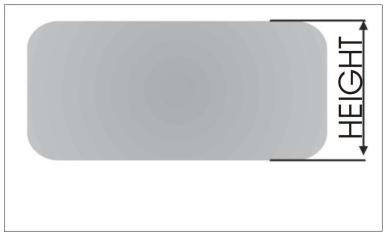
This function allows the emptying of pockets Rectangular with various programming options.

Parameters:

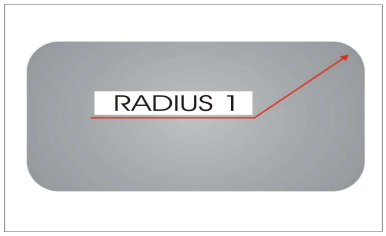
Width
Define the pocket Width



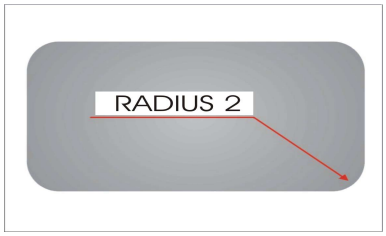
Height
Define pocket height



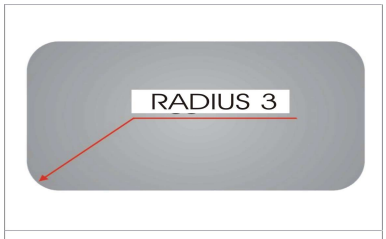
Radius 1
Defines the radius of curvature on the first corner
If ZERO = Tool radius fillet



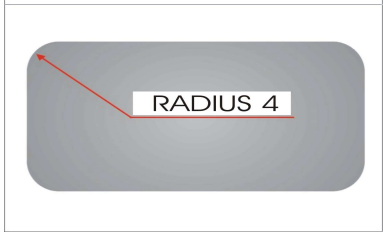
Radius 2
Defines the radius of curvature on the second corner
If ZERO = Tool radius fillet



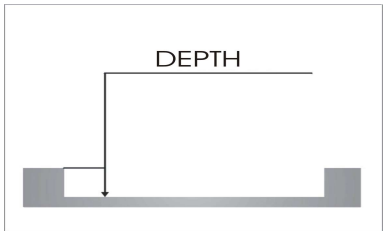
Radius 3
Defines the radius of curvature on the third corner
If ZERO = Tool radius fillet



Radius 4
Defines the radius of curvature on the fourth corner
If ZERO = Tool radius fillet

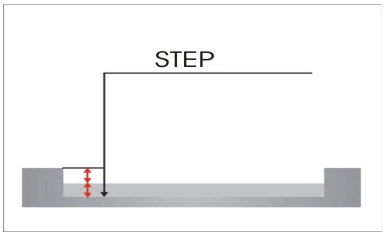


Pocket Depth
Defines the total depth of the pocket empty



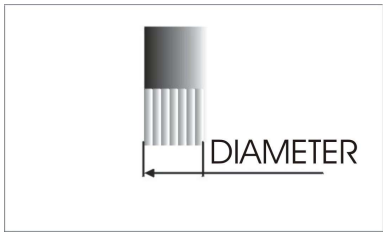
Step Sinking

Defines the step of emptying the pockets sinking up to his total depth.
Emptying is repeated by increasing the depth axis of the step indicated



Tool Diameter

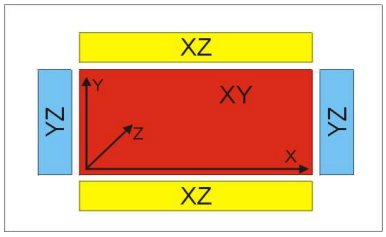
Define the diameter of the tool being used.
Tool diameter equal to -1 if the value taken from the table tool selected with **Tn**



Work plane

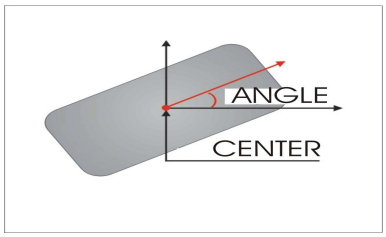
Identifies the work plan where the pocket is processed

0	**X,Y**	**Depth Z**
1	**X,Z**	**Depth Y**
2	**Y,Z**	**Depth X**



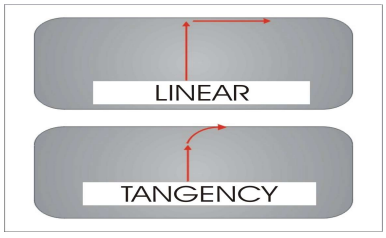
Rotate Angle

Defines the rotation angle of the pocket relative to the center of this



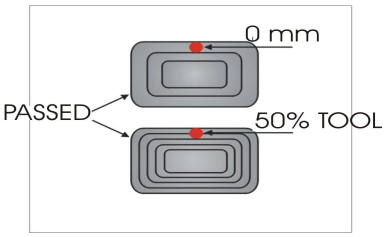
Tangency Input

Defines the type of attack that should have the tool to the material
0 Linear Attack
1 tangency



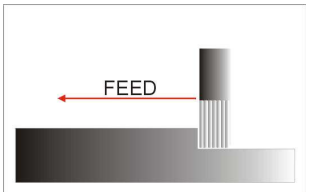
Overlap Tool

Defines the amount of overlap that must have passed between the tool and other drainage



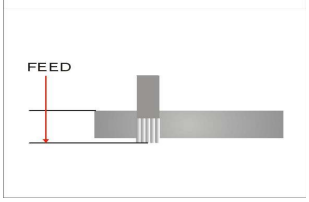
FEED Work

Execution speed of emptying pockets



FEED Depth

Speed of sinking for STEP

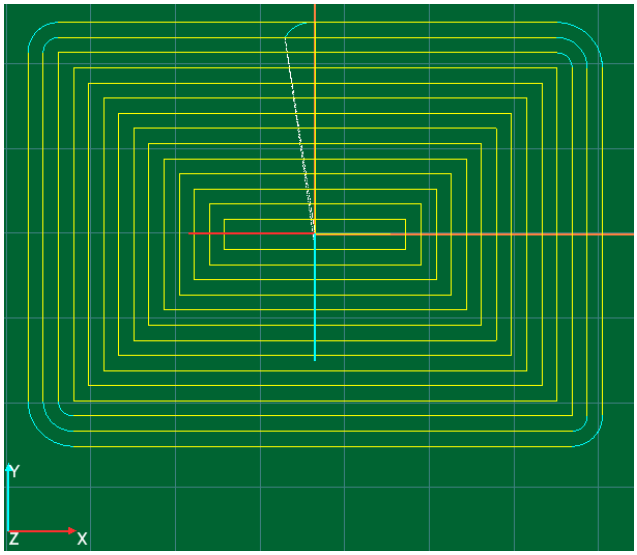


Examples HM100

Invoke HM100 Width Height Radius1 Radius2 Radius3 Radius4 Depth Step ToolDiam WorkPlane RotAngle ToolInp Overlap FeedWork FeedDepth

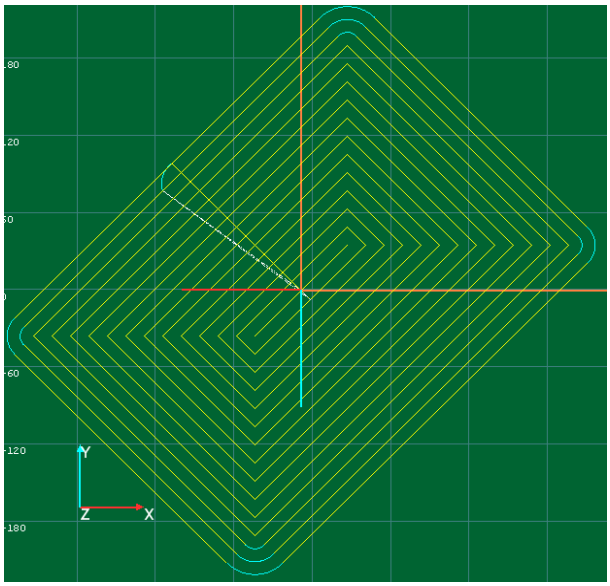
```
HM100 400 300 40 30 40 30 10 5 20 0 0 1 0 5 5
```

Width= 400 (mm)
Height= 300 (mm)
Radius 1= 40 (mm)
Radius 2= 30 (mm)
Radius 3= 40 (mm)
Radius 4= 30 (mm)
Depth=10 (mm)
Step=5 (mm)
Tool Diam=20 (mm)
Work plane =0 (X,Y)
Rotate Angle = 0 (gradi)
Tool Input = 1(tangency)
Overlap=0 (mm)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)



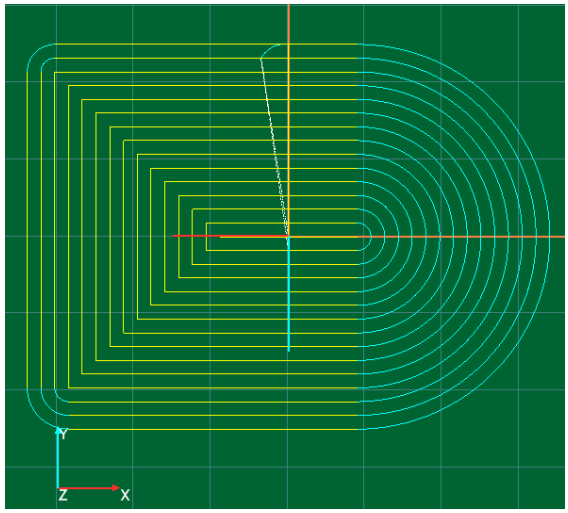

```
HM100 400 300 40 30 40 30 10 5 20 0 45 1 0 5 5
```

Width = 400 (mm)
Height= 300 (mm)
Radius 1= 40 (mm)
Radius 2= 30 (mm)
Radius 3= 40 (mm)
Radius 4= 30 (mm)
Depth=10 (mm)
Step=5 (mm)
Tool Diam=20 (mm)
Work plane =0 (X,Y)
Rotate Angle= 45 (gradi)
Tool Input = 1(tangency)
Overlap=0 (mm)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)



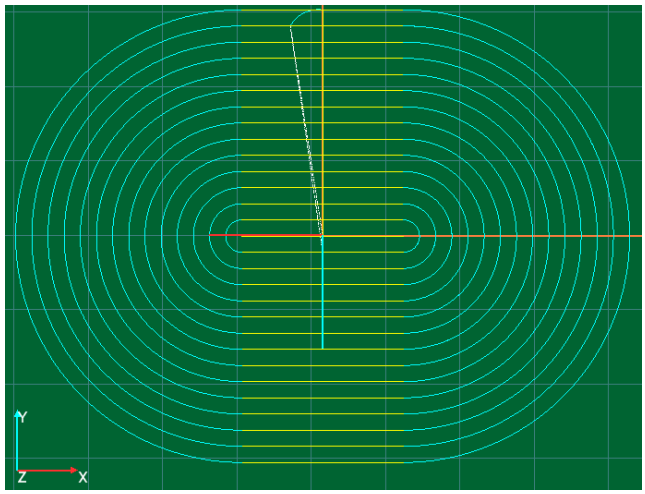
HM100 400 300 150 150 40 30 10 5 20 0 0 1 0 5 5

Width = 400 (mm)
Height= 300 (mm)
Radius 1= 150 (mm)
Radius 2= 150 (mm)
Radius 3= 40 (mm)
Radius 4= 30 (mm)
Depth=10 (mm)
Step=5 (mm)
Tool Diam=20 (mm)
Work plane =0 (X,Y)
Rotate Angle = 0 (gradi)
Tool Input = 1(tangency)
Overlap=0 (mm)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)



HM100 400 300 150 150 150 150 10 5 20 0 0 1 0 5 5

Width = 400 (mm)
Height= 300 (mm)
Radius 1= 150 (mm)
Radius 2= 150 (mm)
Radius 3= 150 (mm)
Radius 4= 150 (mm)
Depth=10 (mm)
Step=5 (mm)
Tool Diam=20 (mm)
Work plane =0 (X,Y)
Rotate Angle = 0 (gradi)
Tool Input = 1(tangency)
Overlap=0 (mm)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)

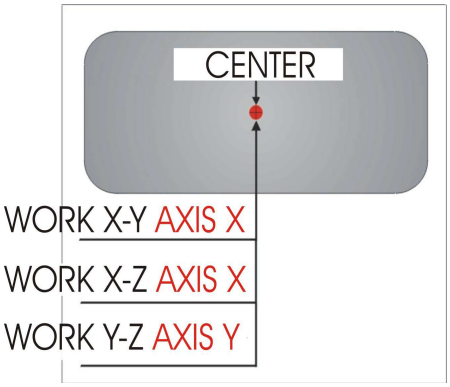


3 HM 100 From Browser Fyxed Cycles

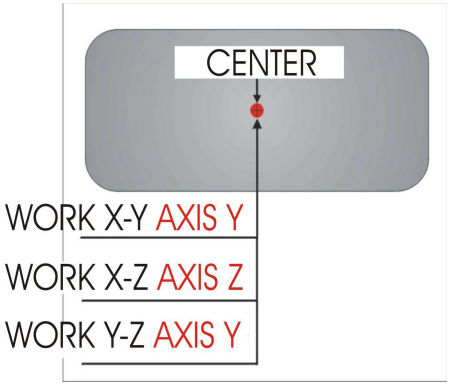
The HM100 function can be used by the **Fyxed Cycles Browser,** in this case allowing a conversational programming parameters.
Canned cycles are added in some features not found in the function HM100 natively.
Here are described only additional parameters to the function HM100.

ADDITIONAL PARAMETERS:

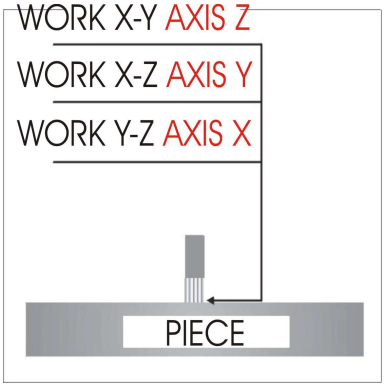
X Start
Work plane X-Y or X-Z
identify start axis X point
Work plane Y-Z
identify start axis Y point



Y Start
Work plane X-Y or Y-Z
identify start axis Y point
Work plane X-Z
identify start axis Z point



Z Start
Work plane X-Z
identify start axis Y point
Work plane Y-Z
identify start axis X point
Work plane X-Y
identify start axis Z point



Use Tool Table

Yes	Use ISONS Tool Table (read from this the tool diamater)
NO	Use inserted diameter

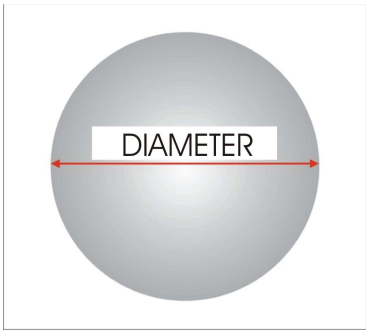
Tool Tabel
Tool Table Index (valid only if **Use Tool Table=yes**)

4 HM 101 – Emptying pockets Circular

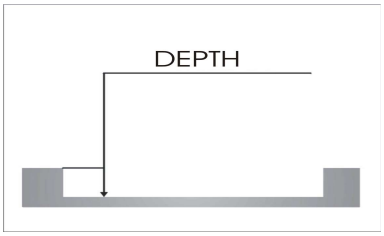
This function allows the emptying of pockets Circular with various programming options.

Parameters:

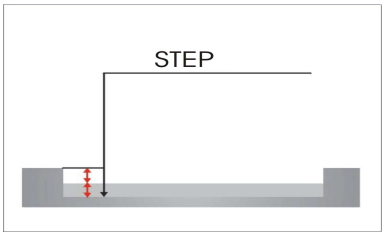
Hole Diameter
Diameter Hole to emptying



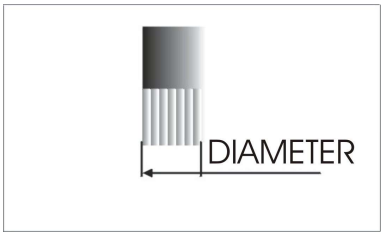
Pocket Depth
Defines the total depth of the pocket empty



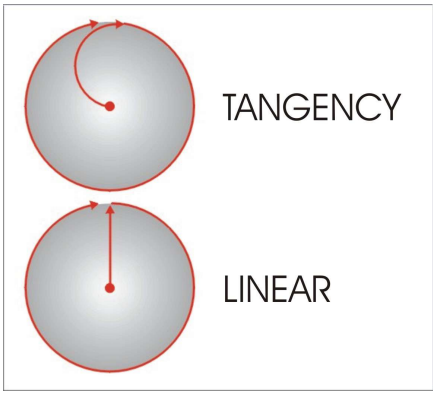
Step Sinking
Defines the step of emptying the pockets sinking up to his total depth.
Emptying is repeated by increasing the depth axis of the step indicated



Tool Diameter
Define the diameter of the tool being used.
Tool diameter equal to -1 if the value taken from the table tool selected with **Tn**

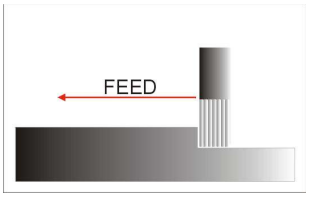


Tangency Input
Defines the type of attack that should have the tool to the material
0 Linear Attack
1 tangency



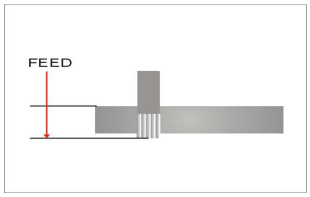
FEED Work

Execution speed of emptying pockets



FEED Depth

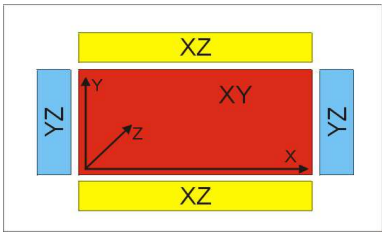
Speed of sinking for STEP



Work plane

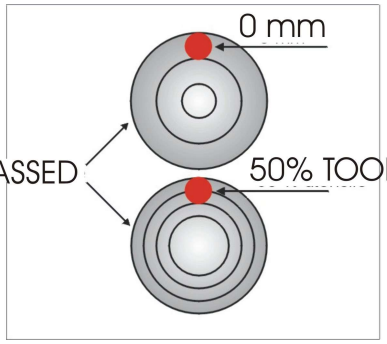
Identifies the work plan where the pocket is processed

0	**X,Y**	**Depth Z**
1	**X,Z**	**Depth Y**
2	**Y,Z**	**Depth X**



Overlap Tool

Defines the amount of overlap that must have passed between the tool and other drainage

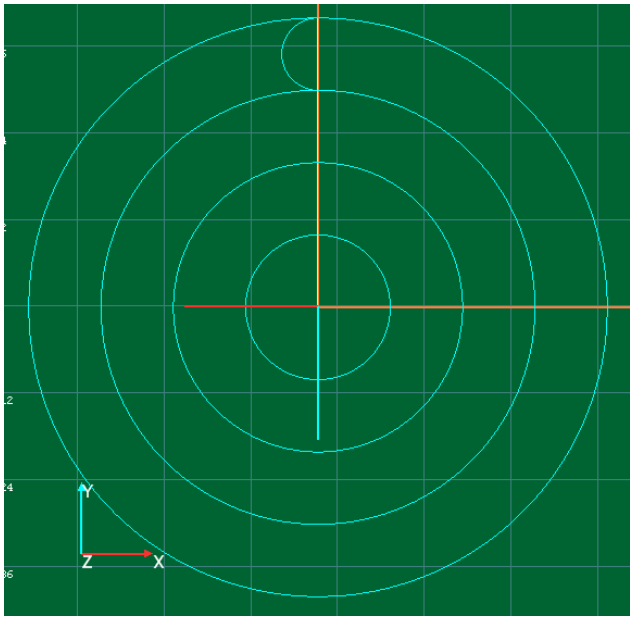


Examples HM101

Invoke HM101 Diameter Depth Step ToolDiam ToolInput FeedWork FeedDepth WorkPlane Overlap

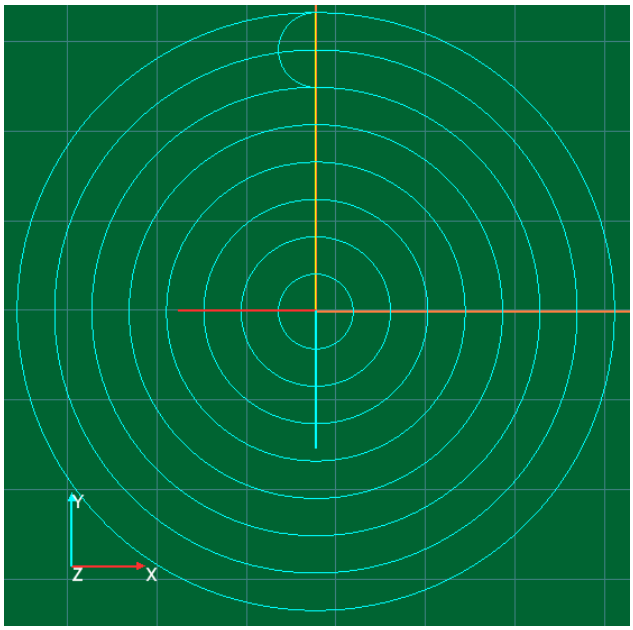
```
HM101 100 20 10 20 1 5 5 0 0
```

Diameter = 100 (mm)
Depth=20 (mm)
Step=10 (mm)
Tool Diam=20 (mm)
Tool Input = 1 (tangency)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)
Work plane =0 (X,Y)
Overlap=0 (mm)




```
HM101 100 20 10 20 1 5 5 0 5
```

Diameter = 100 (mm)
Depth=20 (mm)
Step=10 (mm)
Tool Diam=20 (mm)
Tool Input = 1 (tangency)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)
Work plane =0 (X,Y)
Overlap=5 (mm)

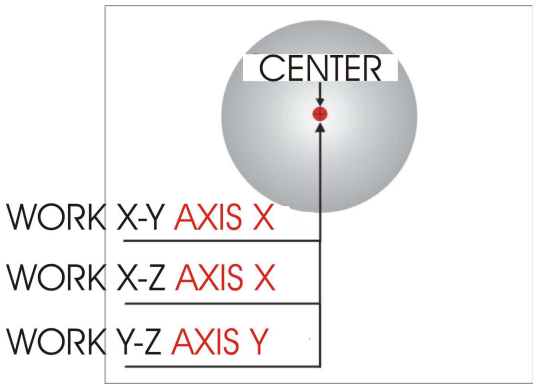


5 HM 101 From Browser Fyxed Cycles

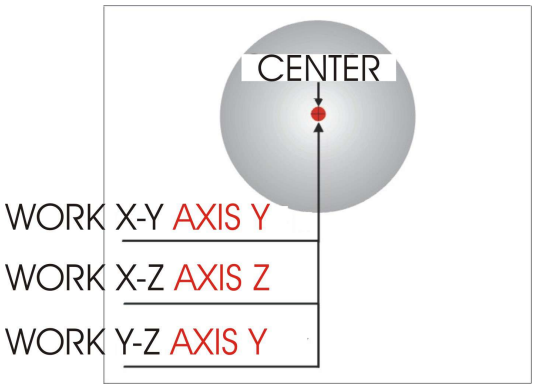
The HM101 function can be used by the **Fyxed Cycles Browser,** in this case allowing a conversational programming parameters.
Canned cycles are added in some features not found in the function HM101 natively.
Here are described only additional parameters to the function HM101.

ADDITIONAL PARAMETERS:

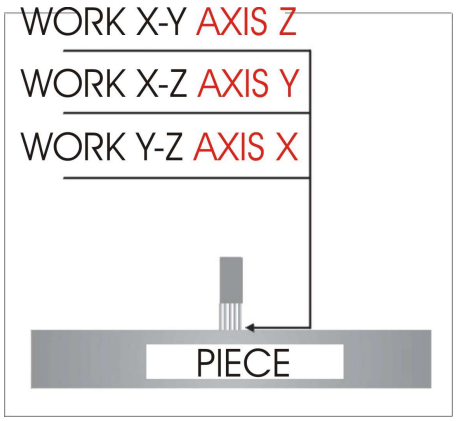
X Start
Work plane X-Y or X-Z
identify start axis X point
Work plane Y-Z
identify start axis Y point



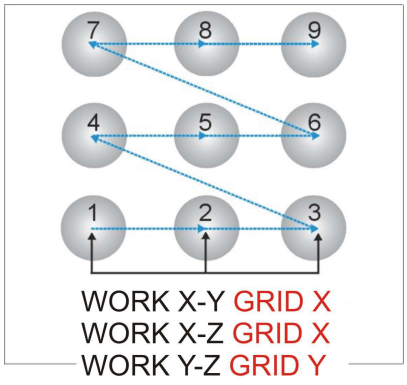
Y Start
Work plane X-Y or Y-Z
identify start axis Y point
Work plane X-Z
identify start axis Z point



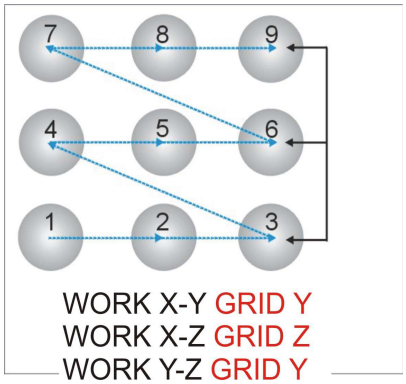
Z Start
Work plane X-Z
identify start axis Y point
Work plane Y-Z
identify start axis X point
Work plane X-Y
identify start axis Z point



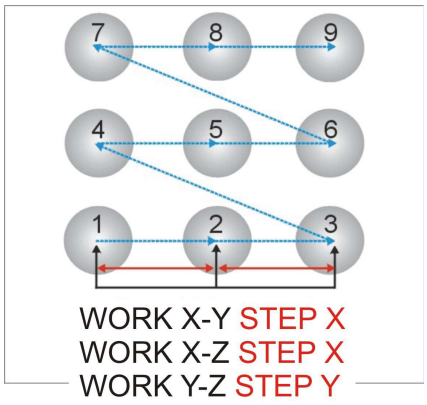
X Grid
Number of holes in X



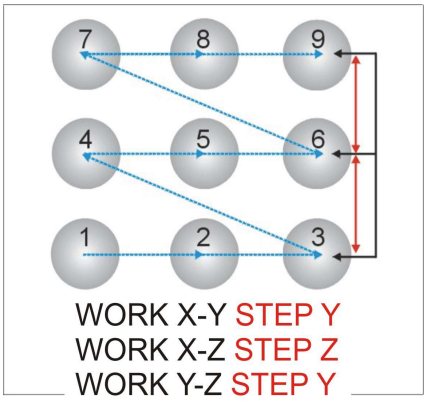
Y Grid
Number of holes in Y



X Step
Distance of holes in X



Y Step
Distance of holes in Y



Use Tool Table

Yes	Use ISONS Tool Table (read from this the tool diamater)
NO	Use inserted diameter

Tool Tabel

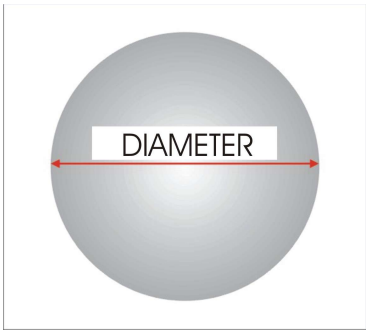
Tool Table Index (valid only if **Use Tool Table=yes**)

6 HM 102 – Circular Drilling

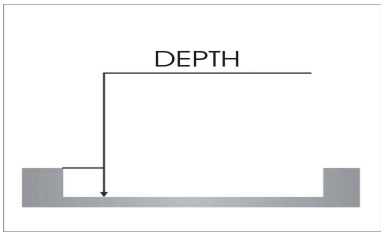
This function allows the Circular Drilling with various programming options.

Parameters:

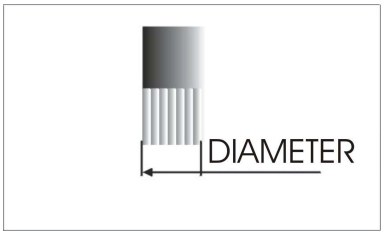
Hole Diameter
Diameter Hole to emptying



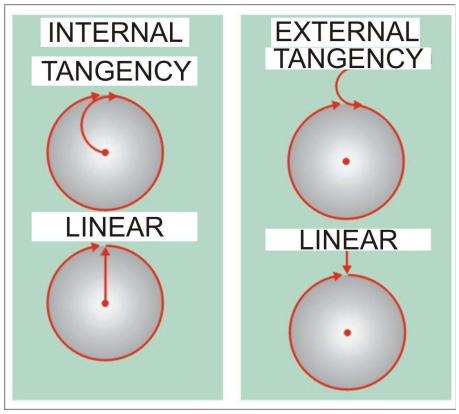
Cut Depth
Defines the total depth of the pocket empty



Tool Diameter
Define the diameter of the tool being used. Tool diameter equal to -1 if the value taken from the table tool selected with **Tn**

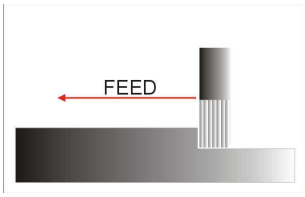


Tangency Input
Defines the type of attack that should have the tool to the material
0 Linear Attack
1 tangency



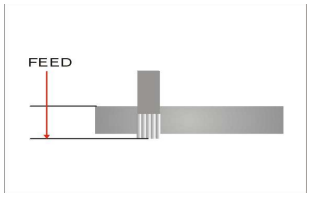
FEED Work

Execution speed of emptying pockets



FEED Depth

Speed of sinking for CUT

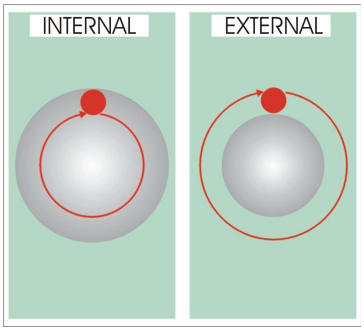


Tool Path

Tool Path

0 **Internal**

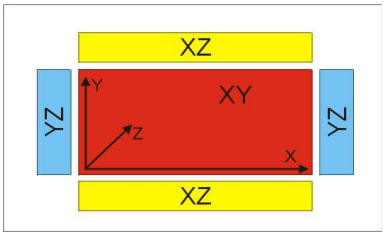
1 **External**



Work plane

Identifies the work plan where the pocket is processed

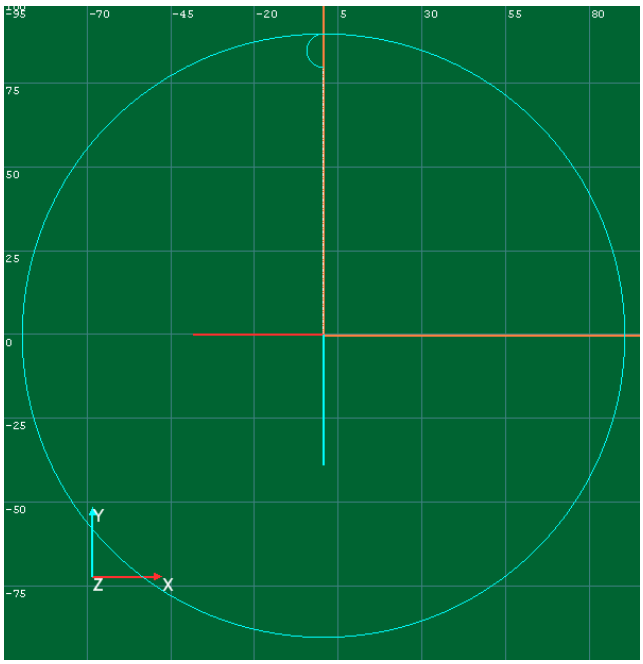
0	**X,Y**	**Depth Z**
1	**X,Z**	**Depth Y**
2	**Y,Z**	**Depth X**



Examples HM102
Invoke HM102 Diameter Depth ToolDiam ToolInput FeedWork FeedDepth ToolPath WorkPlane

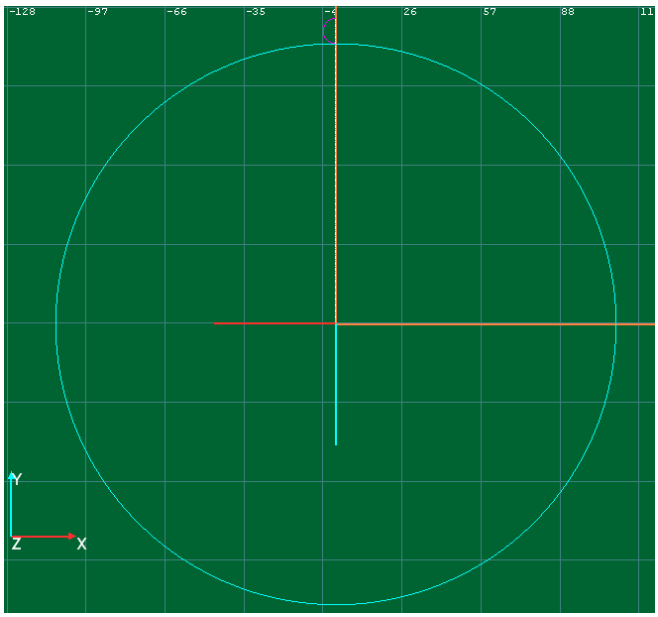
```
HM102 200 10 20 1 5 5 0 0
```

Diameter = 200 (mm)
Depth=10 (mm)
Tool Diam=20 (mm)
Tool Input = 1 (tangency)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)
Tool Path=0 (internal)
Work plane =0 (X,Y)




```
HM102 200 10 20 1 5 5 1 0
```

Diameter = 200 (mm)
Depth=10 (mm)
Tool Diam=20 (mm)
Tool Input = 1 (tangency)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)
Tool Path=1 (external)
Work plane =0 (X,Y)

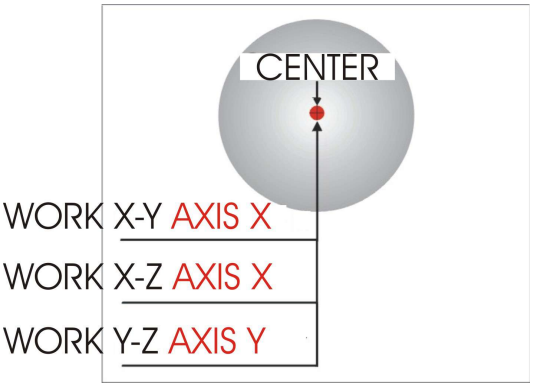


7 HM 102 From Browser Fyxed Cycles

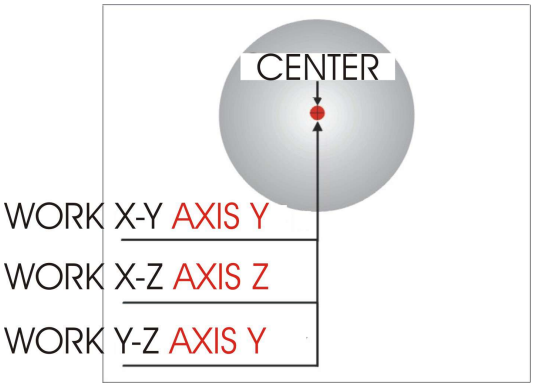
The HM102 function can be used by the **Fyxed Cycles Browser,** in this case allowing a conversational programming parameters.
Canned cycles are added in some features not found in the function HM102 natively.
Here are described only additional parameters to the function HM102.

ADDITIONAL PARAMETERS:

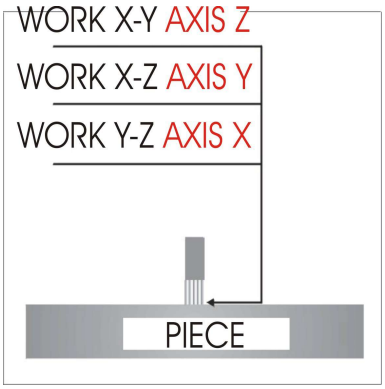
X Start
Work plane X-Y or X-Z
identify start axis X point
Work plane Y-Z
identify start axis Y point



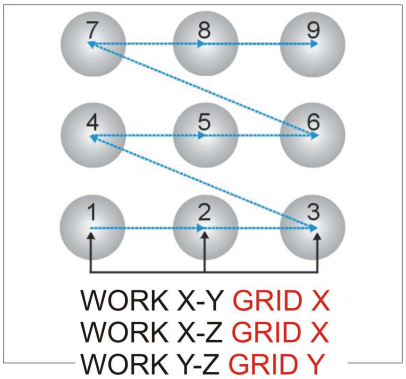
Y Start
Work plane X-Y or Y-Z
identify start axis Y point
Work plane X-Z
identify start axis Z point



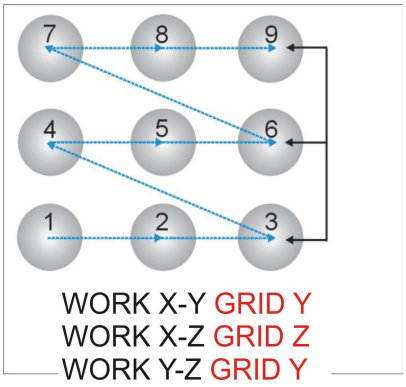
Z Start
Work plane X-Z
identify start axis Y point
Work plane Y-Z
identify start axis X point
Work plane X-Y
identify start axis Z point



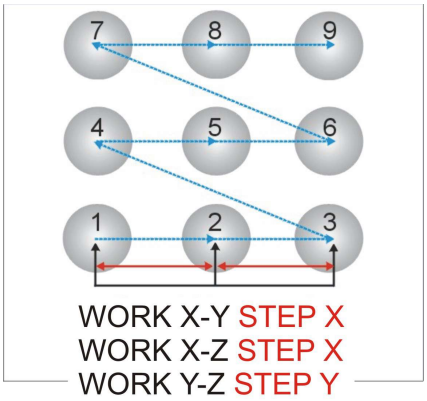
X Grid
Number of holes in X



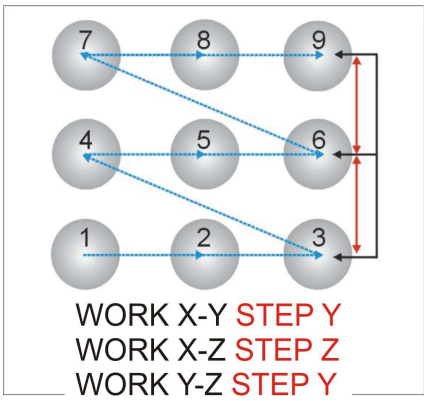
Y Grid
Number of holes in Y



X Step
Distance of holes in X



Y Step
Distance of holes in Y



Use Tool Table

Yes	Use ISONS Tool Table (read from this the tool diamater)
NO	Use inserted diameter

Tool Tabel

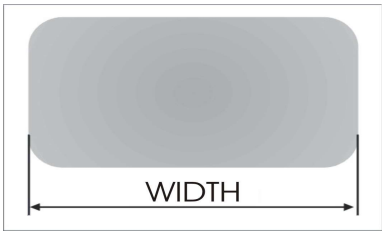
Tool Table Index (valid only if **Use Tool Table=yes**)

8 HM 103 – Rectangular Cut

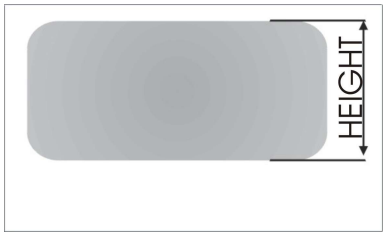
This function allows the Rectangular Cut with various programming options.

Parameters:

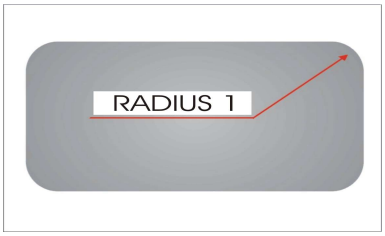
Width
Define the pocket Width



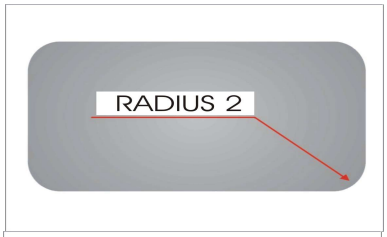
Height
Define pocket height



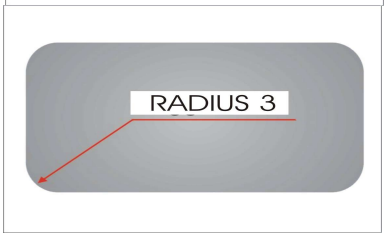
Radius 1
Defines the radius of curvature on the first corner
If ZERO = Tool radius fillet



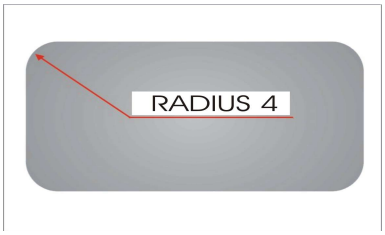
Radius 2
Defines the radius of curvature on the second corner
If ZERO = Tool radius fillet



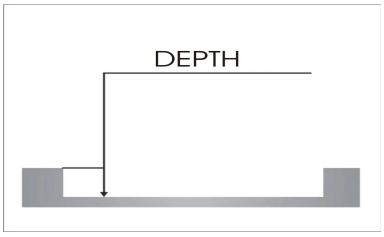
Radius 3
Defines the radius of curvature on the third corner
If ZERO = Tool radius fillet



Radius 4
Defines the radius of curvature on the fourth corner
If ZERO = Tool radius fillet

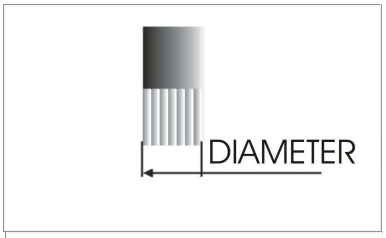


Pocket Depth
Defines the total depth of the pocket empty



Tool Diameter

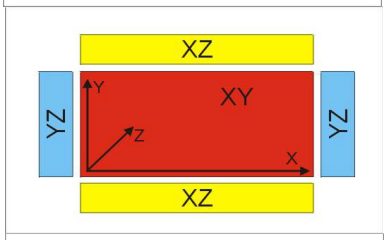
Define the diameter of the tool being used. Tool diameter equal to -1 if the value taken from the table tool selected with **Tn**



Work plane

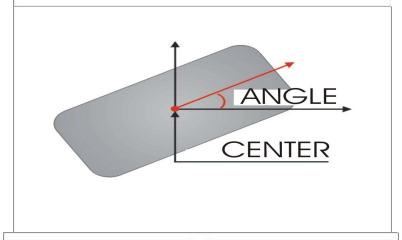
Identifies the work plan where the pocket is processed

0	**X,Y**	**Depth Z**
1	**X,Z**	**Depth Y**
2	**Y,Z**	**Depth X**



Rotate Angle

Defines the rotation angle of the pocket relative to the center of this

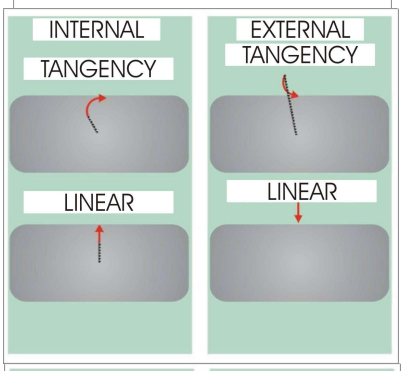


Tangency Input

Defines the type of attack that should have the tool to the material

0 Linear Attack

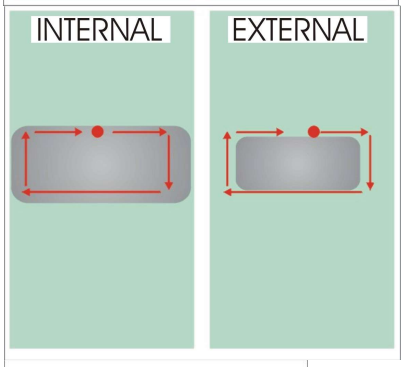
1 tangency



Tool Path

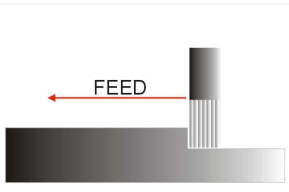
Tool Path

0	**Internal**
1	**External**



FEED Work

Execution speed of emptying pockets



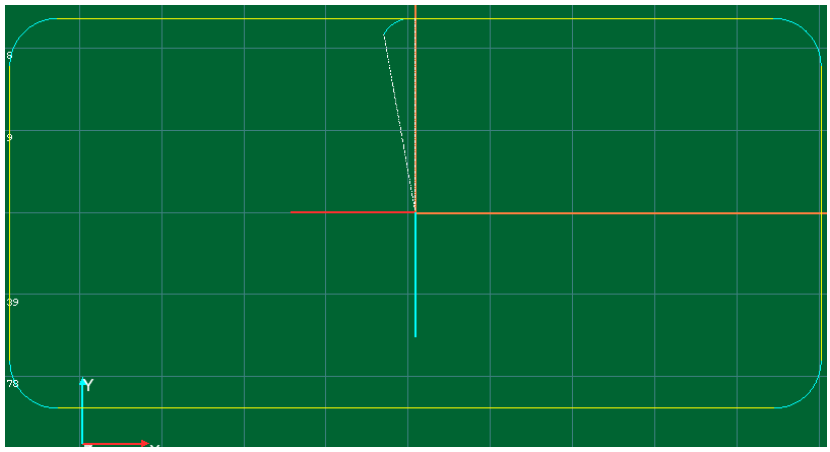
FEED Depth

Speed of sinking for CUT

Examples HM103
Invoke HM103 Width Height Radius1 Radius2 Radius3 Radius4 Depth ToolDiam WorkPlane RotAngle ToolInp ToolPath FeedWork FeedDepth

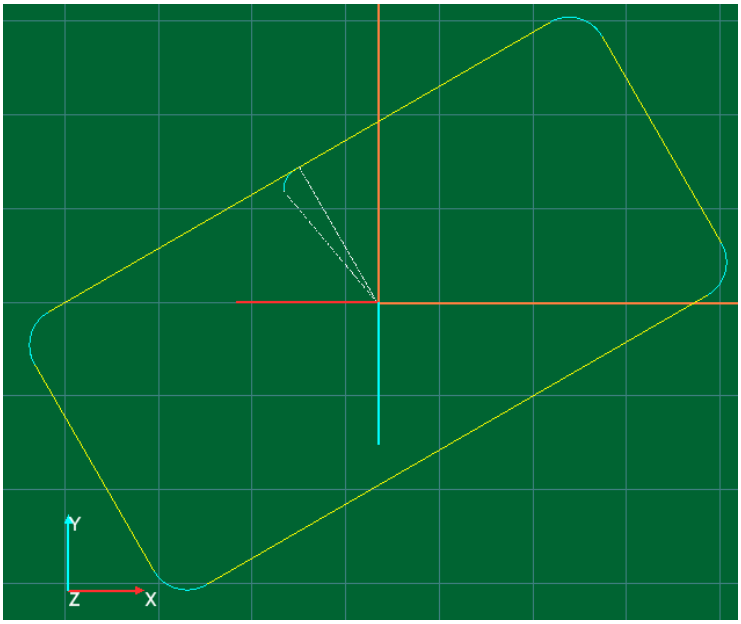
```
HM103 400 200 30 30 30 30 10 15 0 0 1 0 5 5
```

Width = 400 (mm)
Height= 200 (mm)
Radius 1= 30 (mm)
Radius 2= 30 (mm)
Radius 3= 30 (mm)
Radius 4= 30 (mm)
Depth=10 (mm)
Tool Diam=15 (mm)
Work plane =0 (X,Y)
Rotate Angle = 0 (degrees)
Tool Input = 1(tangency)
Esterno=0 (internal)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)



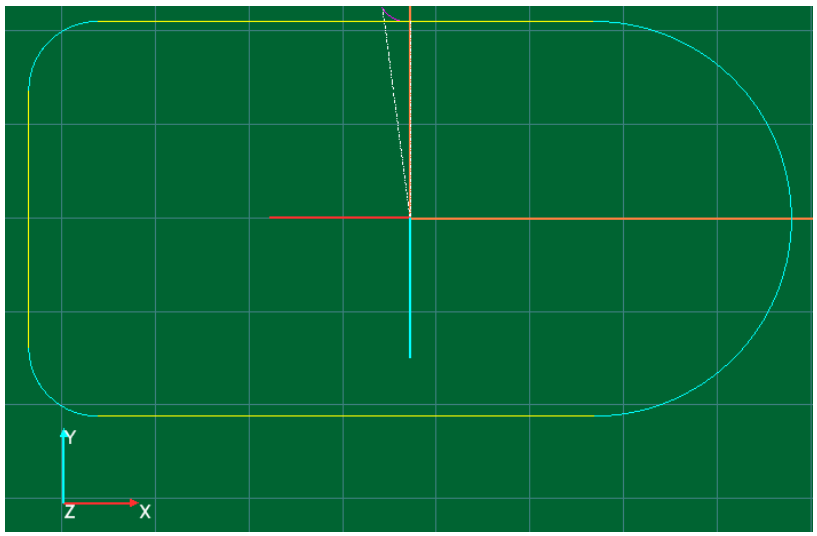

```
HM103 400 200 30 30 30 30 10 15 0 30 1 0 5 5
```

Width = 400 (mm)
Height= 200 (mm)
Radius 1= 30 (mm)
Radius 2= 30 (mm)
Radius 3= 30 (mm)
Radius 4= 30 (mm)
Depth=10 (mm)
Tool Diam=15 (mm)
Work plane =0 (X,Y)
Rotate Angle = 35 (degrees)
Tool Input = 1(tangency)
Esterno=0 (internal)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)



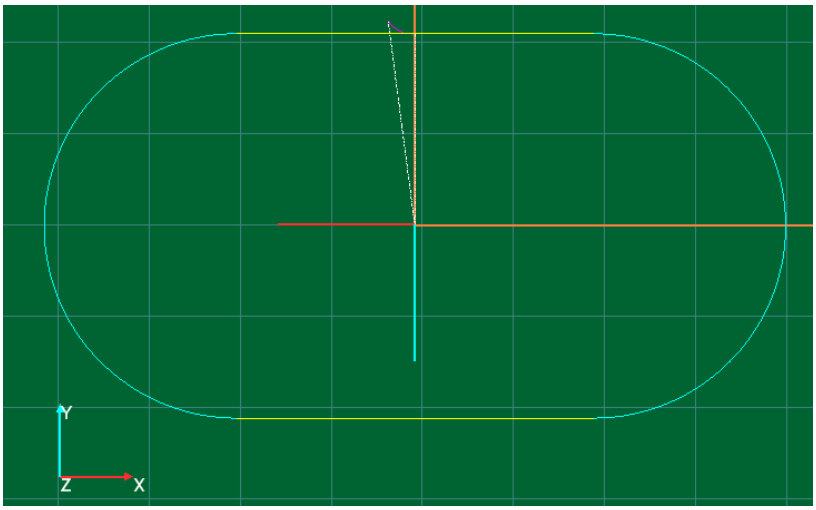
HM103 400 200 100 100 30 30 10 15 0 0 1 1 5 5

Width = 400 (mm)
Height= 200 (mm)
Radius 1= 100 (mm)
Radius 2= 100 (mm)
Radius 3= 30 (mm)
Radius 4= 30 (mm)
Depth=10 (mm)
Tool Diam=15 (mm)
Work plane =0 (X,Y)
Rotate Angle = 0 (degrees)
Tool Input = 1(tangency)
Esterno=1 (external)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)



HM103 400 200 100 100 100 100 10 15 0 0 1 1 5 5

Width = 400 (mm)
Height= 200 (mm)
Radius 1= 100 (mm)
Radius 2= 100 (mm)
Radius 3= 100 (mm)
Radius 4= 100 (mm)
Depth=10 (mm)
Tool Diam=15 (mm)
Work plane =0 (X,Y)
Rotate Angle = 0 (degrees)
Tool Input = 1(tangency)
Esterno=1 (external)
Feed Work=5 (mt/min)
Feed Depth= 5 (mt(min)

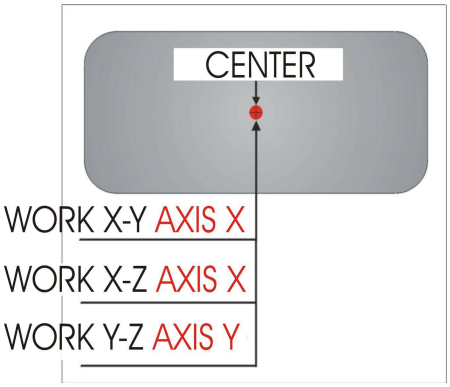


9 HM 103 From Browser Fyxed Cycles

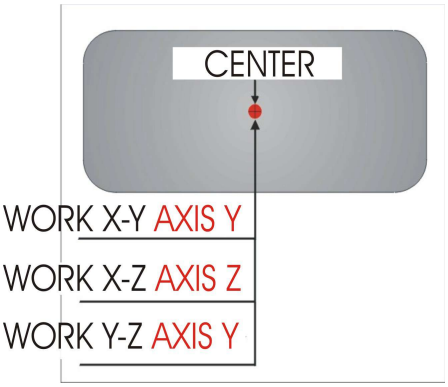
The HM100 function can be used by the **Fyxed Cycles Browser,** in this case allowing a conversational programming parameters.
Canned cycles are added in some features not found in the function HM100 natively.
Here are described only additional parameters to the function HM100.

ADDITIONAL PARAMETERS:

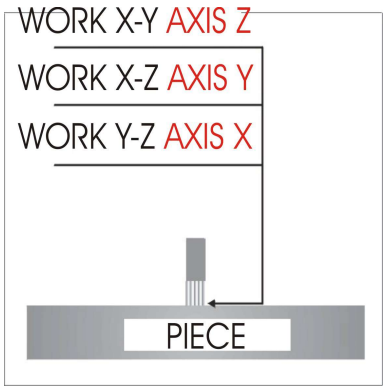
X Start
Work plane X-Y or X-Z
identify start axis X point
Work plane Y-Z
identify start axis Y point



Y Start
Work plane X-Y or Y-Z
identify start axis Y point
Work plane X-Z
identify start axis Z point



Z Start
Work plane X-Z
identify start axis Y point
Work plane Y-Z
identify start axis X point
Work plane X-Y
identify start axis Z point



Use Tool Table

Yes	Use ISONS Tool Table (read from this the tool diamater)
NO	Use inserted diameter

Tool Tabel
Tool Table Index (valid only if **Use Tool Table=yes**)

Index