

WinMax Transform Plane

Quick Reference Guide

What is Universal Rotary?

The Hurco WinMax control is programmed using Universal Rotary for multi-sided programming. Simply program the tool as it would rotate around the part, and don't think about how the part is moving.

- Designed to operate on any 4 or 5-axis Hurco machine
- Control determines the necessary rotary movements based on the axes available
- All rotations are incremental from original WPC
- Programs can be shared between different machine configurations

What is Universal Rotary?

PROGRAM PROPERTIES

DISP UNITS: INCHES

NAME: NONAME1.HWM

PATH:

MATERIAL: UNSPECIFIED

DESCRIPTION:

PROGRAM TYPE: TILT A, ROTARY C

WRITE PROTECTION:

- STANDARD
- ROTARY A
- ROTARY A, TILT B
- TILT A, ROTARY C
- ROTARY B
- TILT B, ROTARY C
- UNIVERSAL ROTARY**

Make sure the program type is set to Universal Rotary in Program Properties

- INPUT
- PROGRAM MANAGER
- PROGRAM PROPERTIES

What is Universal Rotary?

CONVERSATIONAL SETTINGS	
MATH ASSIST STYLE	ULTIMAX CLASSIC
CHECK CALC ASSIST INCONSISTENCIES	NO
DEFAULT CONVERSATIONAL PROGRAM TYPE	UNIVERSAL
DISPLAY MACHINE AXES FOR UNIVERSAL TYPE	STANDARD
HD3 SAVE PROGRAM TYPE	ROTARY A
WARN BEFORE SAVING IN OLD FORMAT	ROTARY A, TILT B
DATA BLOCK TOOL ENTRY	TILT A, ROTARY C
FEED AND SPEED UPDATE	ROTARY B
PROMPT REPLACE MACHINE ENTRY	TILT B, ROTARY C
	UNIVERSAL

Select the default program type when creating new HWM files.

PRESS MANUAL MODE, POWER, AND START CYCLE TO RESTORE POWER.

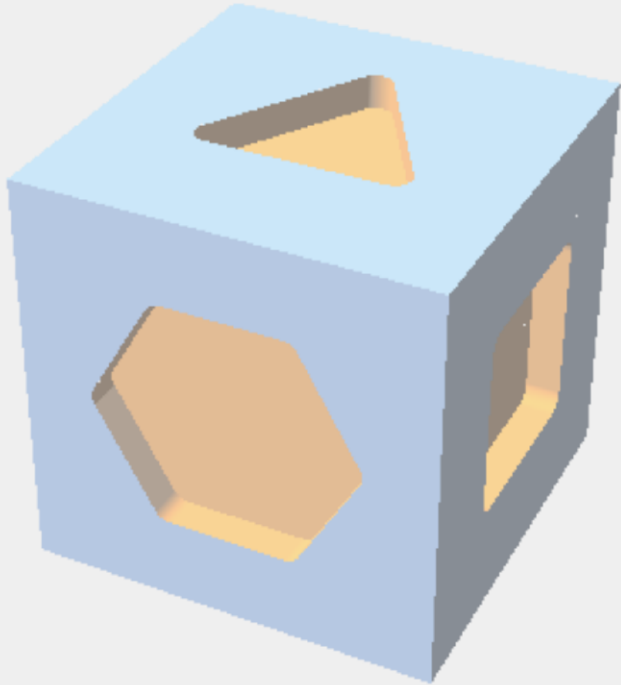
STANDARD	F1
ROTARY A	F2
ROTARY A TILT B	F3
TILT A ROTARY C	F4
ROTARY B	F5
TILT B ROTARY C	F6
UNIVERSAL	F7
EXIT	F8

Also, make Universal Rotary the default programming type in User Preferences

- AUXILLIARY
- UTILITY SCREEN
- USER PREFERENCES
- CONVERSATIONAL SETTINGS
- SET DEFAULT TO UNIVERSAL

...It's as easy as 1-2-3

6" x 6" x 6" Cube

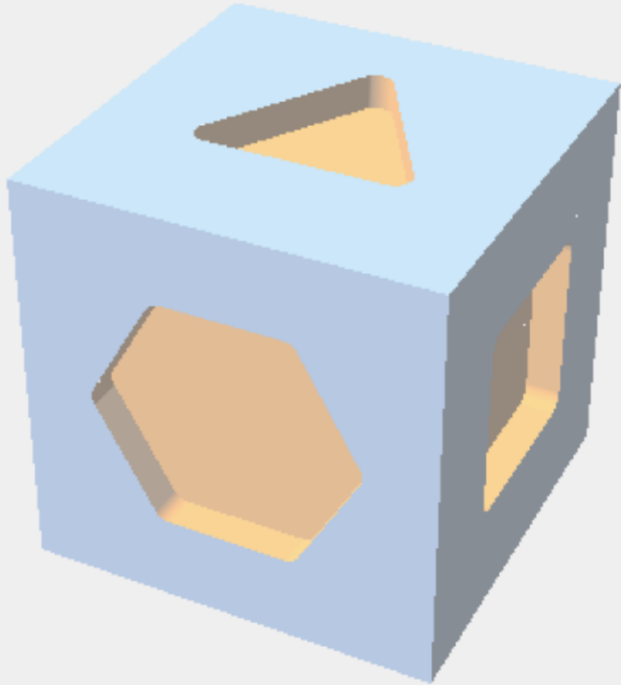


Right Side

- Example: you have determined that the top center of a 6" cubed block is the zero location for your Part Setup, but now you want to machine features on the right side of the part
- Programming from a location on the top side of the block - for features on the right side - doesn't make sense.

...It's as easy as 1-2-3

6" x 6" x 6" Cube

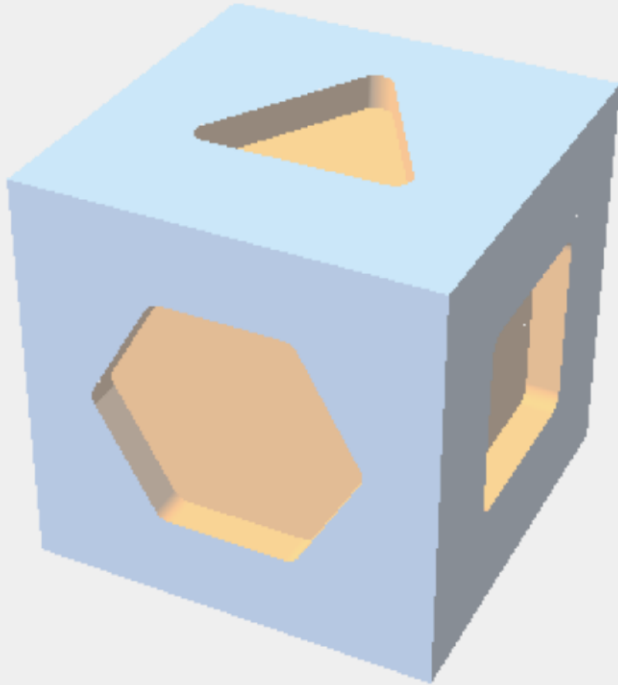


Right Side

- Use the Universal Transform Plane block to accomplish the three simple steps needed to complete the task
- It's as easy as 1-2-3

...It's as easy as 1-2-3

6" x 6" x 6" Cube

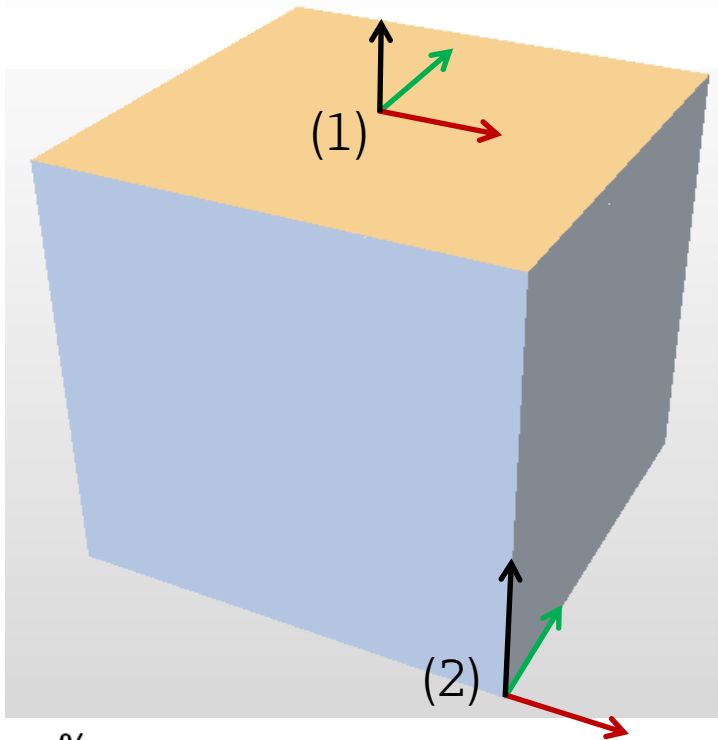


Right Side

1. Relocate the origin point
2. Rotate the workplane
3. Program 3-axis features

Right Side

1. Move the origin point



BLOCK	<input type="text" value="3"/>	TRANSFORM PLANE	
ORIENT METHOD	<input type="text" value="ANGLES"/>		
ORIGIN POINT		ROTATION ANGLES	
X	<input type="text" value="3.0000"/>	R(X)	<input type="text" value="0.000"/>
Y	<input type="text" value="-3.0000"/>	R(Y)	<input type="text" value="90.000"/>
Z	<input type="text" value="-6.0000"/>	R(Z)	<input type="text" value="0.000"/>

%

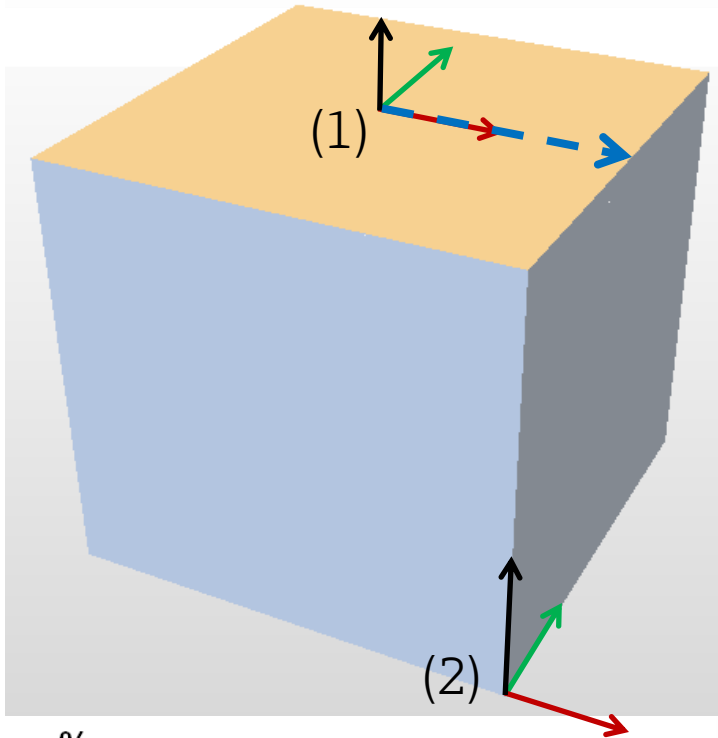
T1M6

G68.2 X3.0 Y-3.0 Z-6.0 B90

G0 X2.566 Y1.3582

Right Side

1. Move the origin point



BLOCK	3	TRANSFORM PLANE	
ORIENT METHOD	ANGLES		
ORIGIN POINT		ROTATION ANGLES	
X	3.0000	R(X)	0.000
Y	-3.0000	R(Y)	90.000
Z	-6.0000	R(Z)	0.000

%

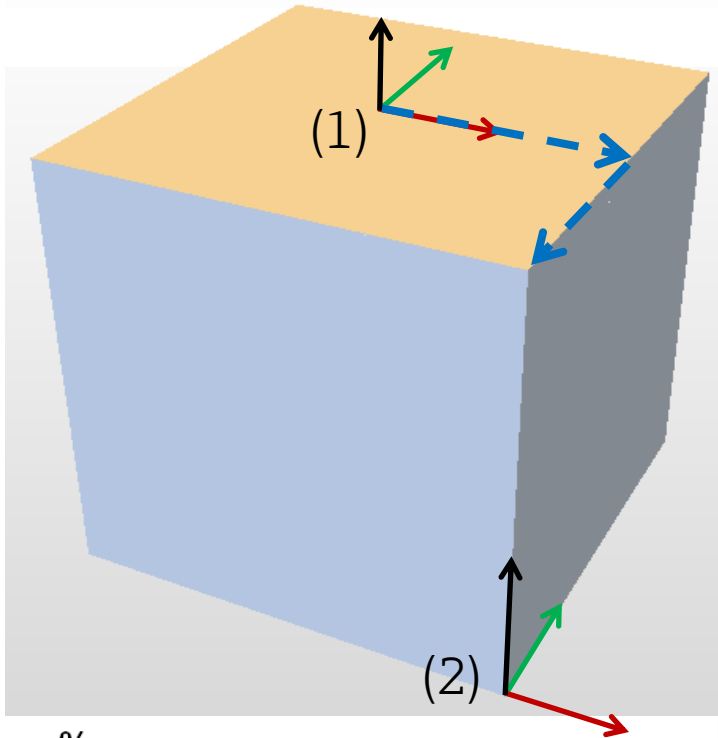
T1M6

G68.2 X3.0 Y-3.0 Z-6.0 B90

G0 X2.566 Y1.3582

Right Side

1. Move the origin point



BLOCK	<input type="text" value="3"/>	TRANSFORM PLANE	
ORIENT METHOD	<input type="text" value="ANGLES"/>		
ORIGIN POINT		ROTATION ANGLES	
X	<input type="text" value="3.0000"/>	R(X)	<input type="text" value="0.000"/>
Y	<input type="text" value="-3.0000"/>	R(Y)	<input type="text" value="90.000"/>
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%

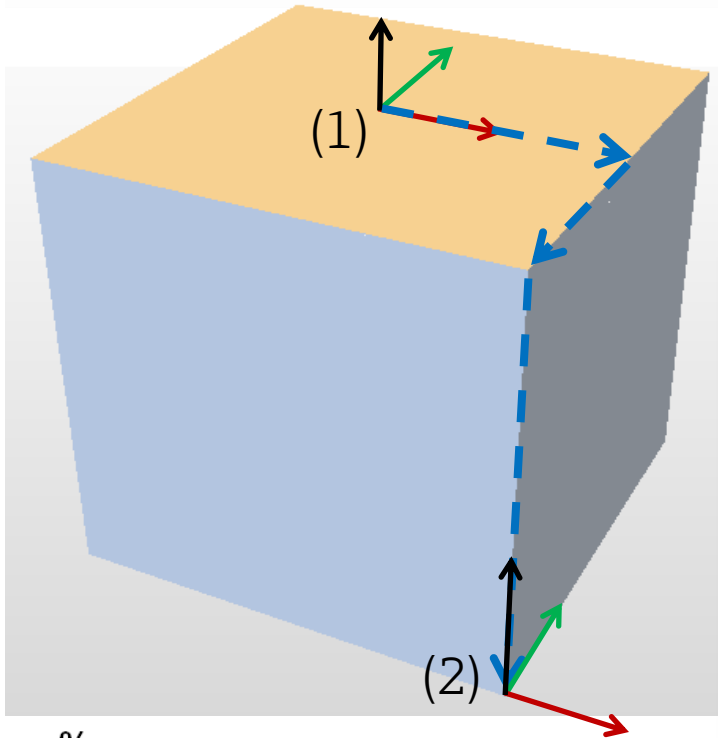
T1M6

G68.2 X3.0 Y-3.0 Z-6.0 B90

G0 X2.566 Y1.3582

Right Side

1. Move the origin point



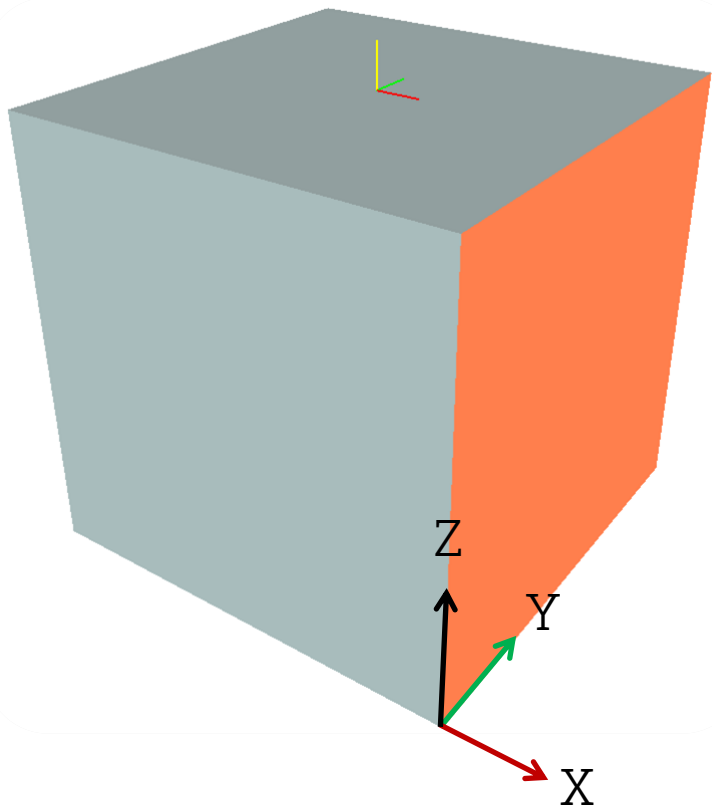
BLOCK	<input type="text" value="3"/>	TRANSFORM PLANE	
ORIENT METHOD	<input type="text" value="ANGLES"/>		
ORIGIN POINT		ROTATION ANGLES	
X	<input type="text" value="3.0000"/>	R(X)	<input type="text" value="0.000"/>
Y	<input type="text" value="-3.0000"/>	R(Y)	<input type="text" value="90.000"/>
Z	<input type="text" value="-6.0000"/>	R(Z)	<input type="text" value="0.000"/>

%

T1M6

G68.2 X3.0 Y-3.0 Z-6.0 B90

G0 X2.566 Y1.3582



Right Side

2. Rotate the workplane

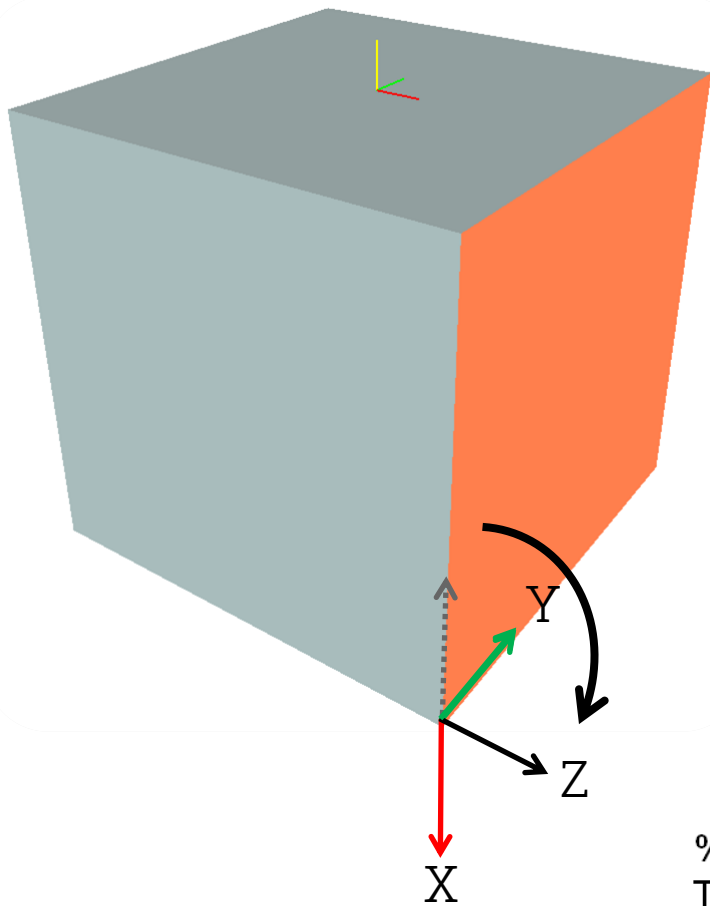
BLOCK	<input type="text" value="3"/>	TRANSFORM PLANE	
ORIENT METHOD	<input type="text" value="ANGLES"/>		
ORIGIN POINT		ROTATION ANGLES	
X	<input type="text" value="3.0000"/>	R(X)	<input type="text" value="0.000"/>
Y	<input type="text" value="-3.0000"/>	R(Y)	<input type="text" value="90.000"/>
Z	<input type="text" value="-6.0000"/>	R(Z)	<input type="text" value="0.000"/>

%

T1M6

G68.2 X3.0 Y-3.0 Z-6.0 B90

G0 X2.566 Y1.3582



Right Side

2. Rotate the workplane

BLOCK	<input type="text" value="3"/>	TRANSFORM PLANE
ORIENT METHOD	<input type="text" value="ANGLES"/>	
ORIGIN POINT		ROTATION ANGLES
X	<input type="text" value="3.0000"/>	R(X) <input type="text" value="0.000"/>
Y	<input type="text" value="-3.0000"/>	R(Y) <input type="text" value="90.000"/>
Z	<input type="text" value="-6.0000"/>	R(Z) <input type="text" value="0.000"/>

%

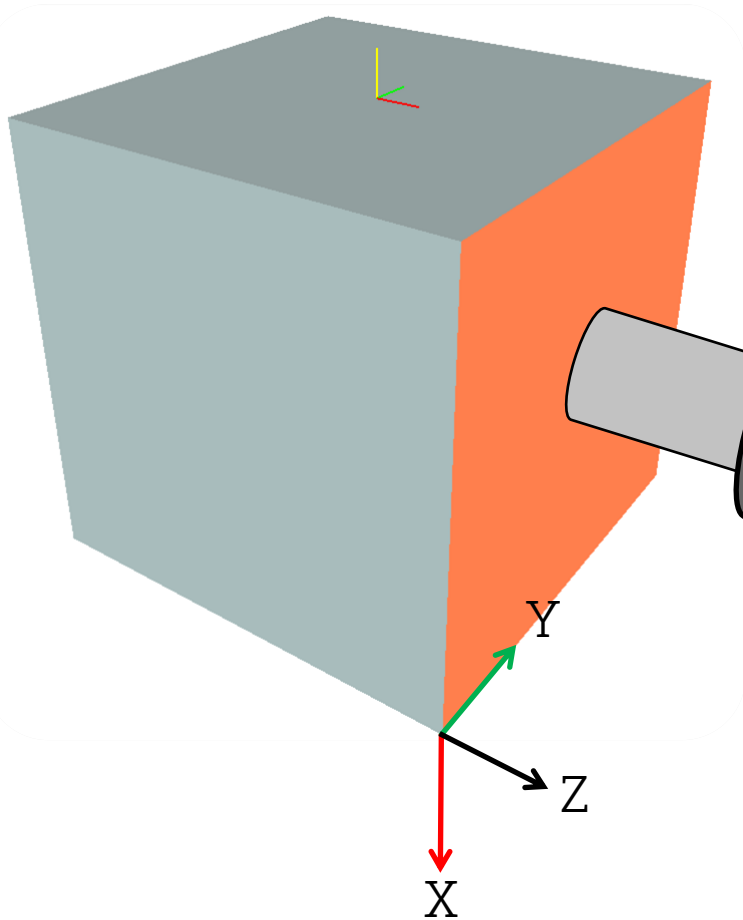
T1M6

G68.2 X3.0 Y-3.0 Z-6.0 B90

G0 X2.566 Y1.3582

Right Side

2. Rotate the workplane



The tool axis is now perpendicular to the newly created workplane

Right Side

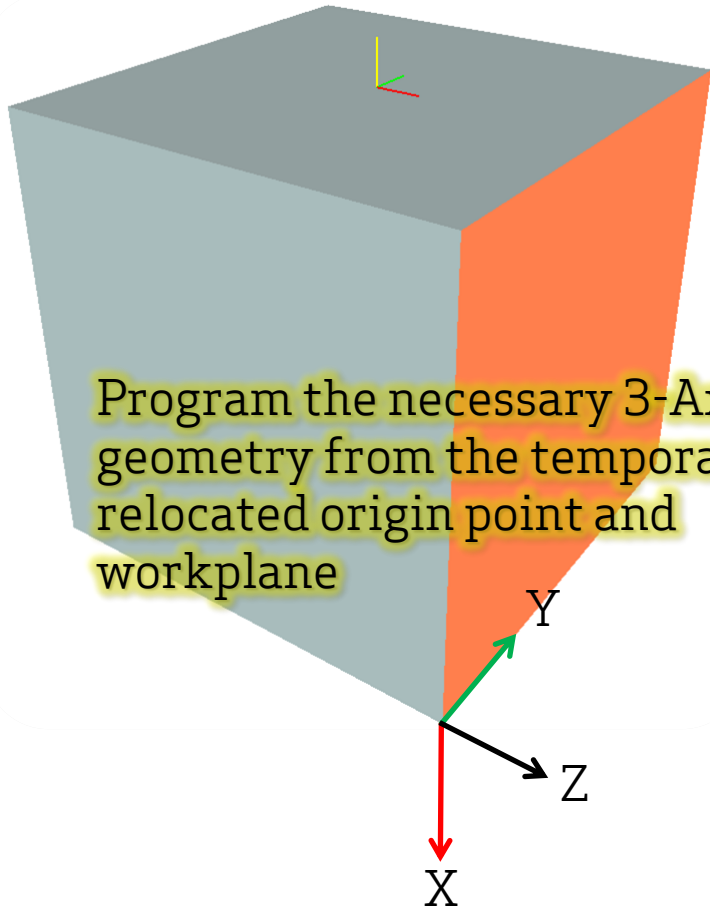
3. Program 3-axis features

BLOCK	5	MILL CIRCLE	
X CENTER	-3.0000	Z START	0.1000
Y CENTER	3.0000	Z BOTTOM	-0.5000
RADIUS	2.5000		

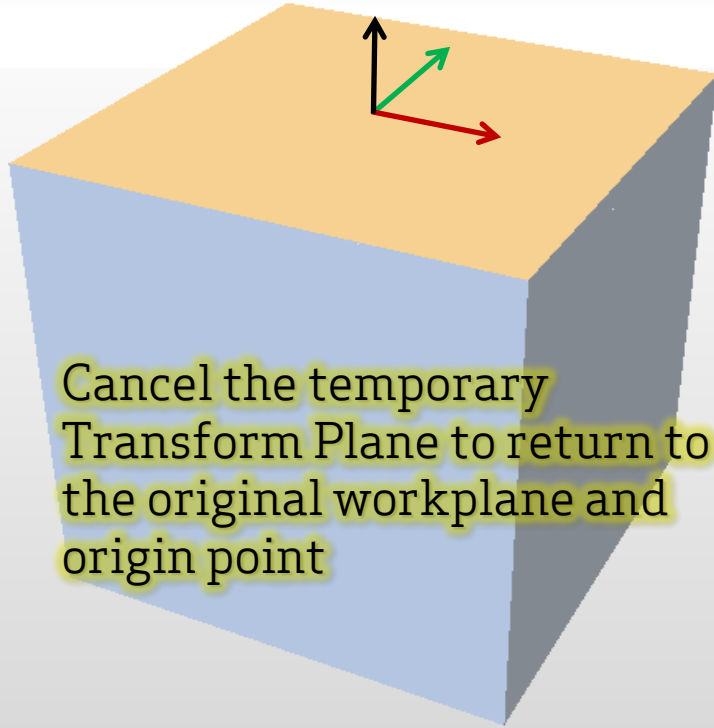
Conversational - OR - G Code

```
%  
O2012(HURCO ENGRAVE)  
(MATERIAL - ALUMINUM INCH - 2024)  
( T1000 | 1/8 BALL ENDMILL )  
N100 G20  
N102 G0 G17 G40 G49 G80 G90  
N104 T1000 M6
```

Program the necessary 3-Axis geometry from the temporarily relocated origin point and workplane



Right Side



Cancel the temporary Transform Plane to return to the original workplane and origin point

PROGRAM REVIEW SCREEN

DATA BLOCKS	SUB BLOCKS
1. TRANSFORM PLANE	
2. MILL CIRCLE (POCKET BOUNDARY)	
3. TRANSFORM PLANE END	
END OF PROGRAM	

Conversational - OR - G Code

```
X1.56 Y2.1224  
G53 Z0  
G69  
G0 A0 B0  
M30
```