

**CAL**

**Product of Orbit Technology Corporation**

**CAL 2D**  
**Getting Started**  
**Features and Manual**

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## 1. Getting the information

The CAL bending software meets a touch-enabled high-performance computer.

This allows you to operate CAL bending software on site with touch screen computer (tablet PC) such as HP touchsmart series and Dell Inspiron duo.

We encourage you to use a touch screen computer to maximize the EASY TOUCH function of this great bending software.

### System requirements

1.66GHz or faster preferable (minimum 1GHz)

2GB memory preferable (minimum 1GB)

1024 x 600 or higher resolution

Microsoft Windows XP or later Windows

## 2. Features

This bending software CAL has the following features:

- Automatic bending sequence
- Automatic tool selection
- Automatic bending program for machine depth value and back-gauge position (Length)
- Automatic collision check
- Lock-in important bend length
- Insert/hardware and embossing check
- Bending simulation
- Able to load custom tools
- The best tooling library
- Captures all factors of bending with one sample
- Automatic predictions of angle and back-gauge position
- Automatic bend deduction, K-Factor, bend allowance and inner radius finder (It calculates from one sample in Bend Table.)
- Able to create own bend table
- Able to import your bend table saved CSV format from Excel file.

### 3. Installing bending software “CAL”

- 1) Connect Dongle
- 2) Insert CD ROM or UBS to install software

#### **Important information: Before starting**

Before starting CAL/Press Brake operator, follow the setting that suit its operation.

- i. Unit (Inch/Metric), Machine name and Ram stroke axis type
- ii. Punch and die

#### Step 1: Unit, Name and Ram

Please select Unit (inch/metric) name and ram stroke axis type as follows:

MANAGER> OPETIONS> GENERAL for Unit

MANAGER> OPTIONS> MACHINE for name and ram

Please refer to manual page 7.

#### Step 2: Punch and Die

You need to add all punches and dies in the software before you use this bending software.

All punches and dies are gray color that means there are no tools added into the software. This bending software CAL will use only punch and die that you selected from tooling library. Here is how to setup the punches and dies for your operation.

Please refer to page 8.

1. Click CAL short-cut to open CAL
2. Click MANAGER tab located top left
3. Pull down menu and select TOOLS
  
4. Click Punches tab (it may open)

5. Click punch or punches from left side of library.
6. Click ADD button located in right side.

We have the most punches number from main suppliers.

Please do the same procedure for the dies.

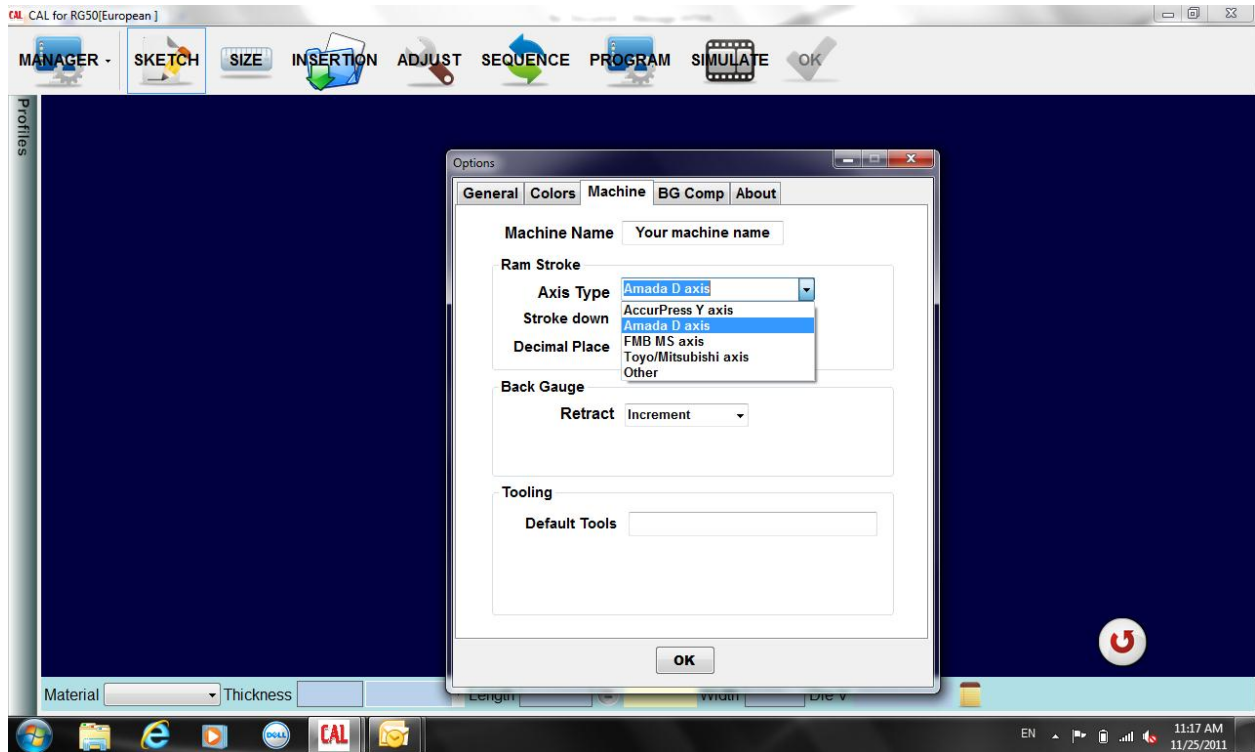
1. Click Dies tab
2. Click die or dies from left side of library.
3. Click ADD button located in right side.

If you have custom tools then click custom punches or custom dies tab to load from your computer.

Refer to manual page 15 and 16.

Now you can use Bending Software and Bend Table.

## HOW TO SELECT MACHINE NAME AND RAM STROKE AXIS TYPE BEFORE STARTED



You can name your software with your machine name that is designated to use this software.

Click MANAGER

Select OPTIONS from pull-down menu

Select General for unit, Machine for name and Ram stroke axis type

General:

You can select English (inch) or Metric (millimeter)

Machine:

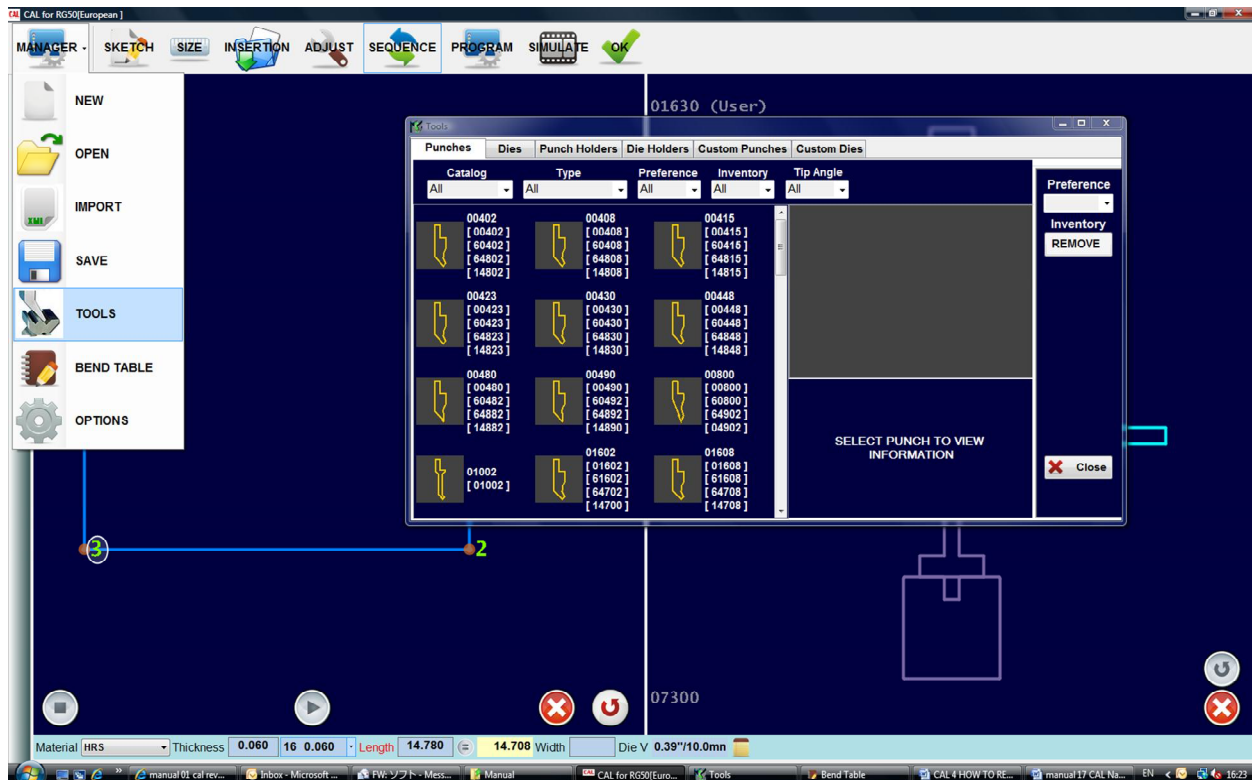
Just type name in the Machine Name box

Select Axis type from pull-down menu

## HOW TO USE TOOLING LIBRARY

CAL tooling library (How to use)

<http://www.youtube.com/watch?v=XRnbgNAkjPU>



This Cal video will show you how to organize the tooling inventory for faster search results.

Click manager---then tools.

Cal lets you create search parameters for your tool searches by using

CATALOG TYPE PREFERENCES INVENTORY

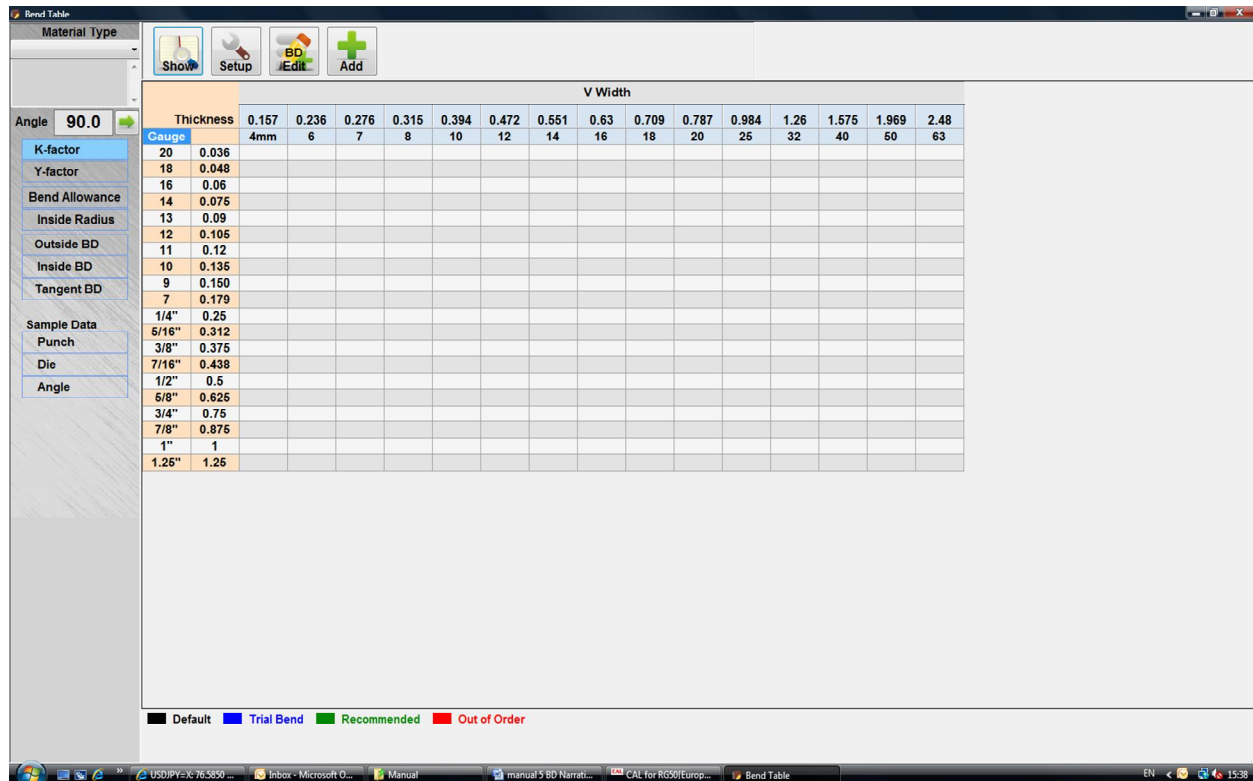
To remove a tool from your list, highlight the tool ....The right side of the screen will show the tooling info so you can verify that it is the one you want. ... Click the remove button on the right side of the screen.



## HOW TO MAKE SAMPLE DATA WITH BEND TABLE

Bend table sample data operation

<http://www.youtube.com/watch?v=5OM3fjafts0&feature=related>



The screenshot shows the Bend Table software interface. On the left, there is a sidebar with various settings: Angle (90.0), K-factor, Y-factor, Bend Allowance, Inside Radius, Outside BD, Inside BD, Tangent BD, Sample Data, Punch, Die, and Angle. The main area contains a table with columns for Thickness and V Width. The table is organized into sections for different thicknesses and V widths.

	Thickness	0.157	0.236	0.276	0.315	0.394	0.472	0.551	0.63	0.709	0.787	0.984	1.26	1.575	1.969	2.48
		4mm	6	7	8	10	12	14	16	18	20	25	32	40	50	63
Gauge	20	0.036														
	18	0.048														
	16	0.06														
	14	0.076														
	13	0.09														
	12	0.106														
	11	0.12														
	10	0.136														
	9	0.150														
	7	0.179														
	1/4"	0.25														
	5/16"	0.312														
	3/8"	0.375														
	7/16"	0.438														
	1/2"	0.5														
	5/8"	0.625														
	3/4"	0.75														
	7/8"	0.875														
	1"	1														
	1.25"	1.25														

This Cal video shows how to input new material sample data into the Bend Table.

You will enter the information from your bend sample.

Remember it does not need to be a specific angle, but approximately 100° is recommended.

Click **“add new Material”** from the top left corner.

Enter the material name & a description for future clarification---

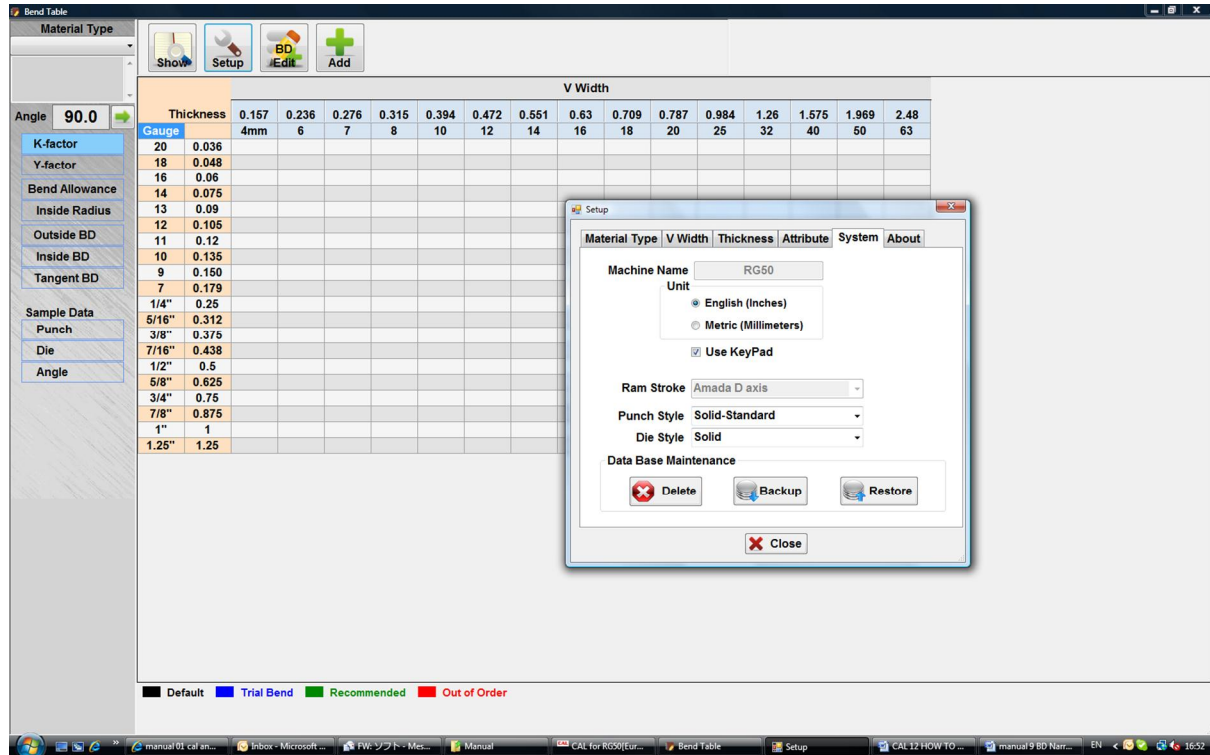
When you are done clk add

Go to the top of your screen; click the **“add”** icon button for the bend data form

## HOW TO BACK UP AND RESTORE THE BEND TABLE DATA

Bend table how to save the data

<http://www.youtube.com/watch?v=0r7nZk7u2bg&feature=related>



This Cal video will show you how to both back-up and restore your bend table files

1<sup>st</sup> Click your Set-up icon at the top of your page

Click the System tab and the back-up button

Now select the folder you created for your Bend Table Back-up

& click OK

A detail pop-up screen appears confirming completion. Click the OK button to close.

We recommend checking your Bend Table back up folder to verify that your data was saved.

You should have 1 folder and 3 files:

Tooling folder and the Bend samples, Bend Table database, machine files

To restore files

Click the set-up icon, Systems tab and the Restore button.

Select your Bend Table folder & click OK.

The detail screen appears confirming restoration

Click OK for your screen to automatically close.

## HOW TO USE CAL

CAL basic operation 1

<http://www.youtube.com/watch?v=gQj602CPCx0>



Welcome to the overview of how to use CAL

To choose your measurement preference

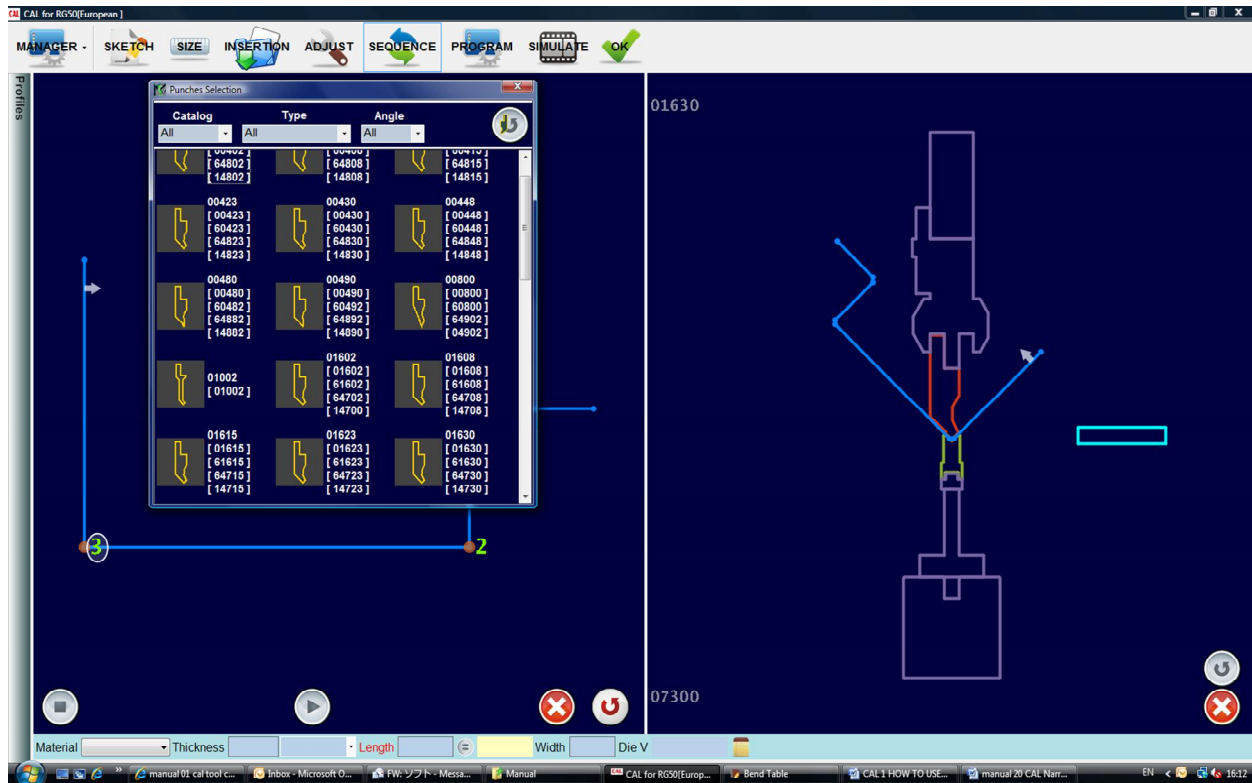
Click manger icon and then English or metric measurement

-Then go to the Machine tab.

## HOW TO CHANGE TOOLING

CAL tool change

[http://www.youtube.com/watch?v=5\\_bKYJNIK5Q](http://www.youtube.com/watch?v=5_bKYJNIK5Q)



This CAL video will show you how to manually change the tooling.

Click the punch to show the punch list. These are grouped by shape and tip radius.

-select the specific bracketed # of the tool for proper information. You can scroll in to view the changes.

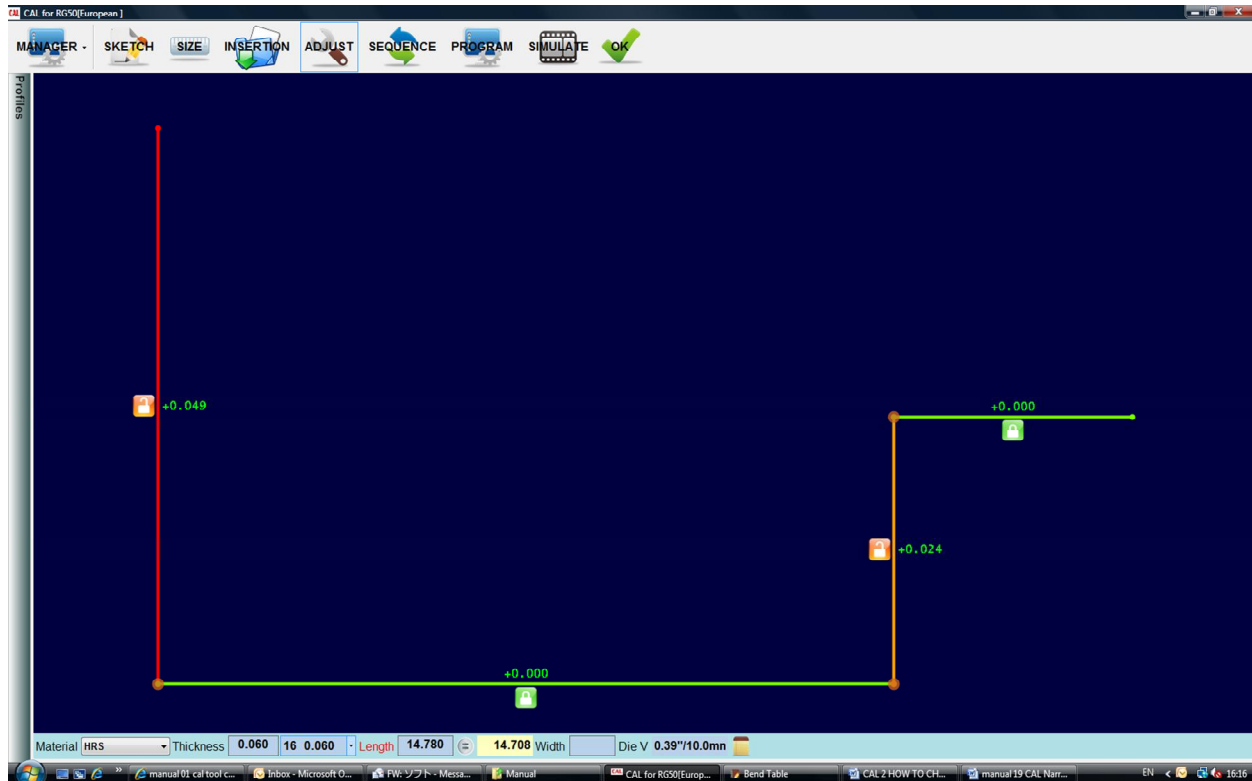
-Click the die for the die list to pop up. To narrow down the choices we are selecting a V-width of 0.157.

--- A new tooling list appears--- again, you can scroll in to view the part closer. Finally, verify your tooling changes by opening the program screen.

## HOW TO ADJUST LOCK THE IMPORTANT SIZE

CAL lock the dimension

<http://www.youtube.com/watch?v=jy4IOPpAm0A&feature=related>



<Manual cal adj>

This CAL video shows how to lock in a measurement on a blank. .04

While you are on the size page, input the actual blank length by clicking the LENGTH box.

---This is important if the actual blank length was cut based off a different bend deduction.

If you have an area that must be to exact measurement ...CAL allows you to lock-in those lengths , redistributing the bend error to the unlocked line.

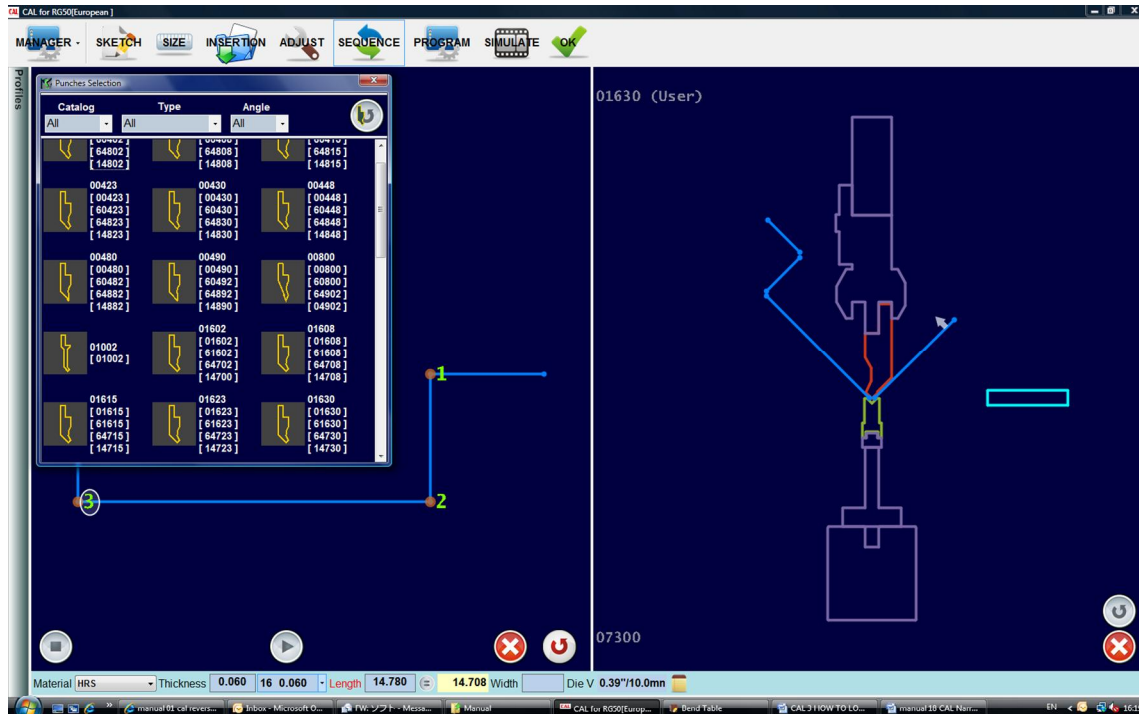
Click the ADJ icon. (SAY SLOWLY) Then click on the lock icon of the line that must be exact. Notice how the line turns green and that CAL redistributes the error difference to all of the unlocked lines.

Cal is the only program that gives you the ability to lock specific measurements- --We believe that this is one of the best features of CAL.

## HOW TO REVERSE TOOLING AND BACK-GAUGE

CAL tool reverse

<http://www.youtube.com/watch?v=gFq4lGOHul>



This Cal video will show you how to reverse the punch, die and Back gauge position

Click on your PUNCH for your punch list to appear.

Press the reverse button located at the top of the list.

You can scroll in to view your changes.

Click on your DIE for the die list to appear.

You can press the reverse button located at the top of the list.

Scroll in to view your changes.

The arrow will indicate the material's top side.

CLK the reverse button on the lower R.S. to change the BG position.

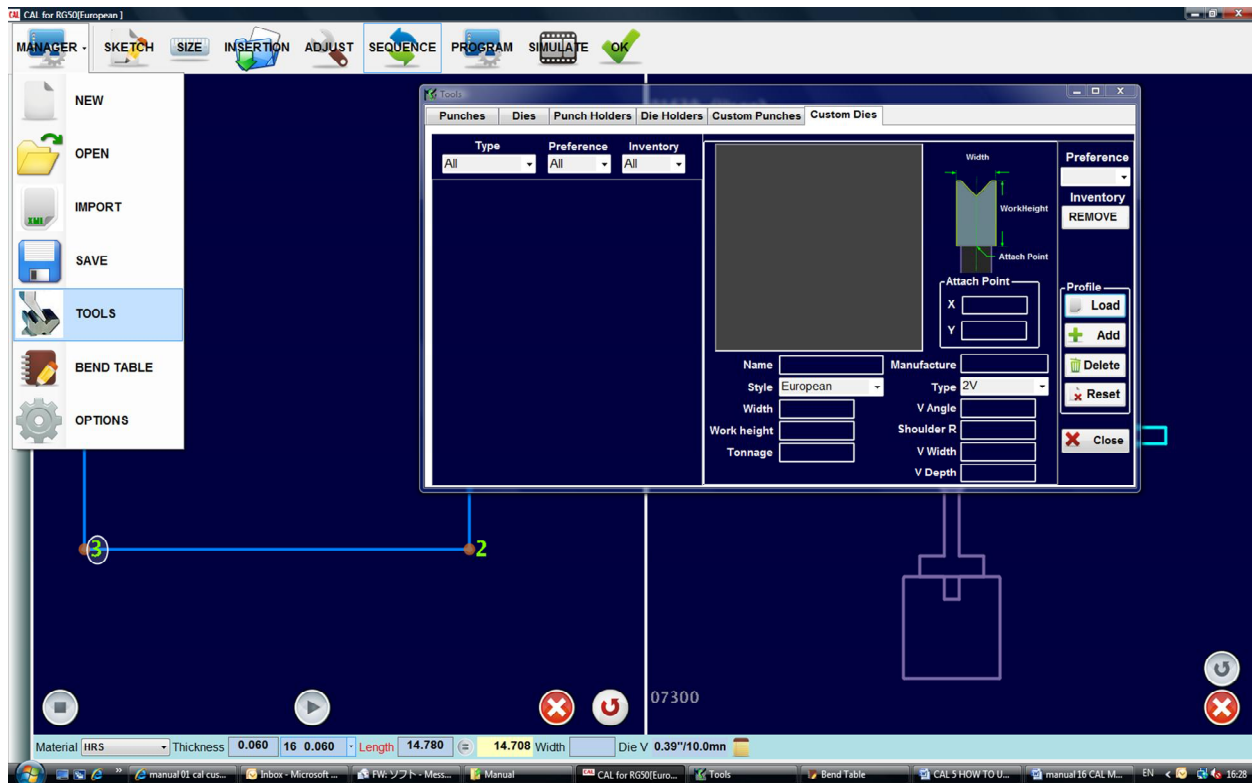
Notice that the Back gauge has moved and the material also has changed position.

## HOW TO IMPORT CUSTOM DIE

CAL custom die

Manual 01 cal custom die

<http://www.youtube.com/watch?v=Y3lIVBbah3A>



This Cal video will show you how to add a custom die into your inventory.

Click on the manager icon----Then tools---Choose the custom Die tab & click the profile Load button

To import the .dxf or .txt file of the Die profile information, shown on the screen. The profile will appear.

The ATTACH POINT: these X and Y measurements are obtained by physically measuring the die. Notice that the die is set to low in the current diagram. However when you enter the correct Y measurement it will correctly show the die position.

Fill in your confirmation information using the reference picture on the upper right side.

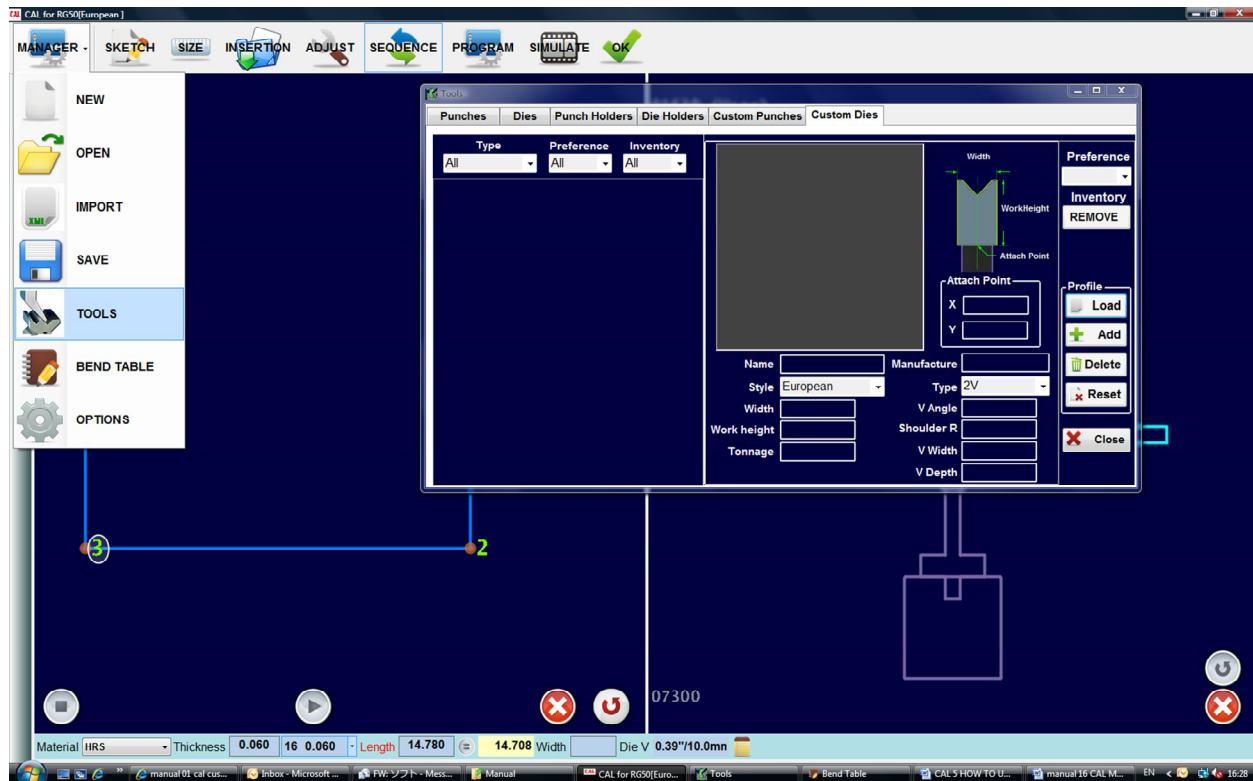
The WIDTH: 0.5"      Your WORK HEIGHT: is the measurement from the neck to the bottom = 2"

## HOW TO IMPORT CUSTOM PUNCH

CAL custom punch

Manual 01 cal custom punch

<http://www.youtube.com/watch?v=j6Q5D3R1gFE>



This Cal video will show you how to add a custom punch into your inventory.

Click on manager icon---& then Tools---Check your custom Punches tab and then the profile LOAD BUTTON

Import the .dxf or .txt file of the punch profile as shown on the screen. The profile will appear.

Fill in the confirmation information using the reference picture on the upper right side.

We will use Test1 for the Name                      The STYLE of this punch is European                      WIDTH: 0.5"

Your WORK HEIGHT is the measurement from the neck to the bottom, which is 3"                      TONNAGE: 30

We will type in TEST 1 for the MANUFACTURE                      The TYPE of this punch is Acute Angle

The TIP ANGLE is 30° & the TIP RADIUS is 0.0078

Now Click the Profile +ADD button

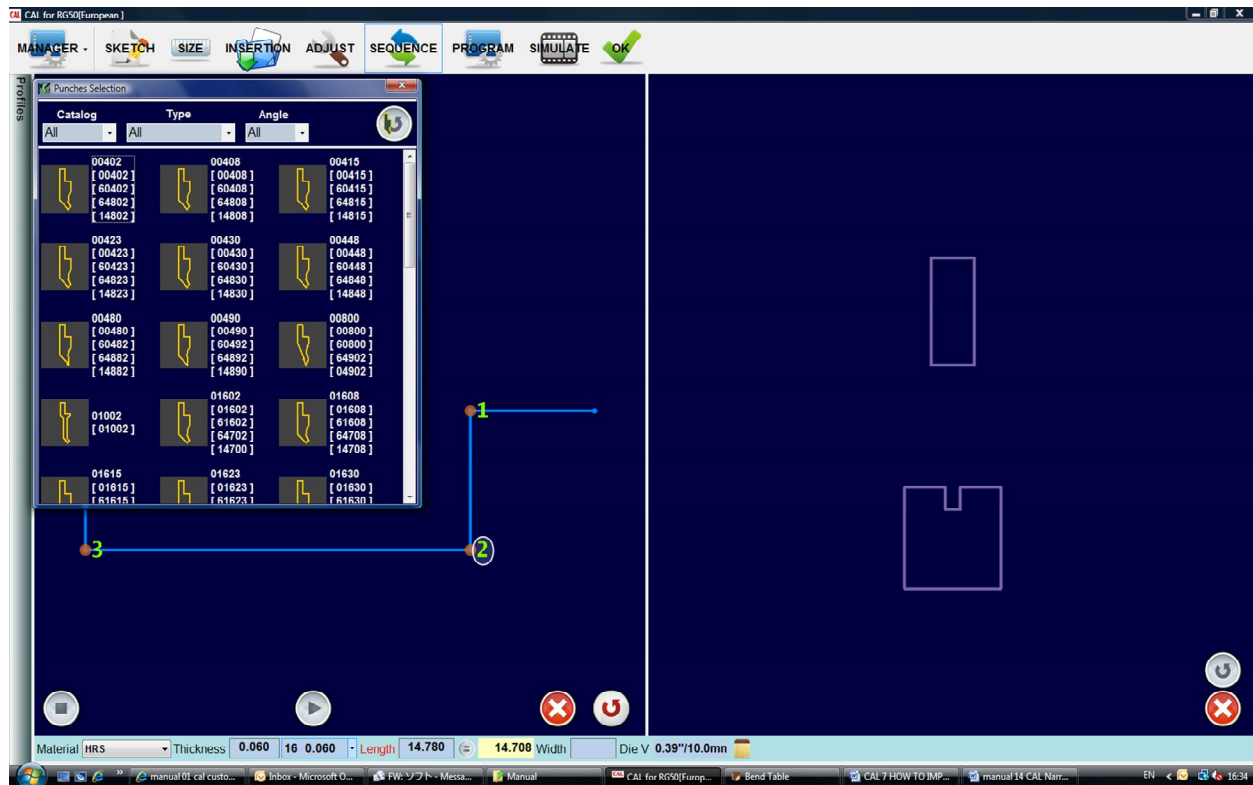
Your new custom punch is added to the inventory box on the left side of your screen. Also note that this will reflect back to your total PUNCH inventory



## HOW TO SELECT TOOLS MANUALLY

CAL choose tooling manually

<http://www.youtube.com/watch?v=xm0jJ7sQrD0>



This CAL video will show you how to manually select your tools.

Click the space where the punch would be for the punch list to appear

Choose the specific bracketed tool # for the correct info.

---Then click the play button to complete the bend sequence.

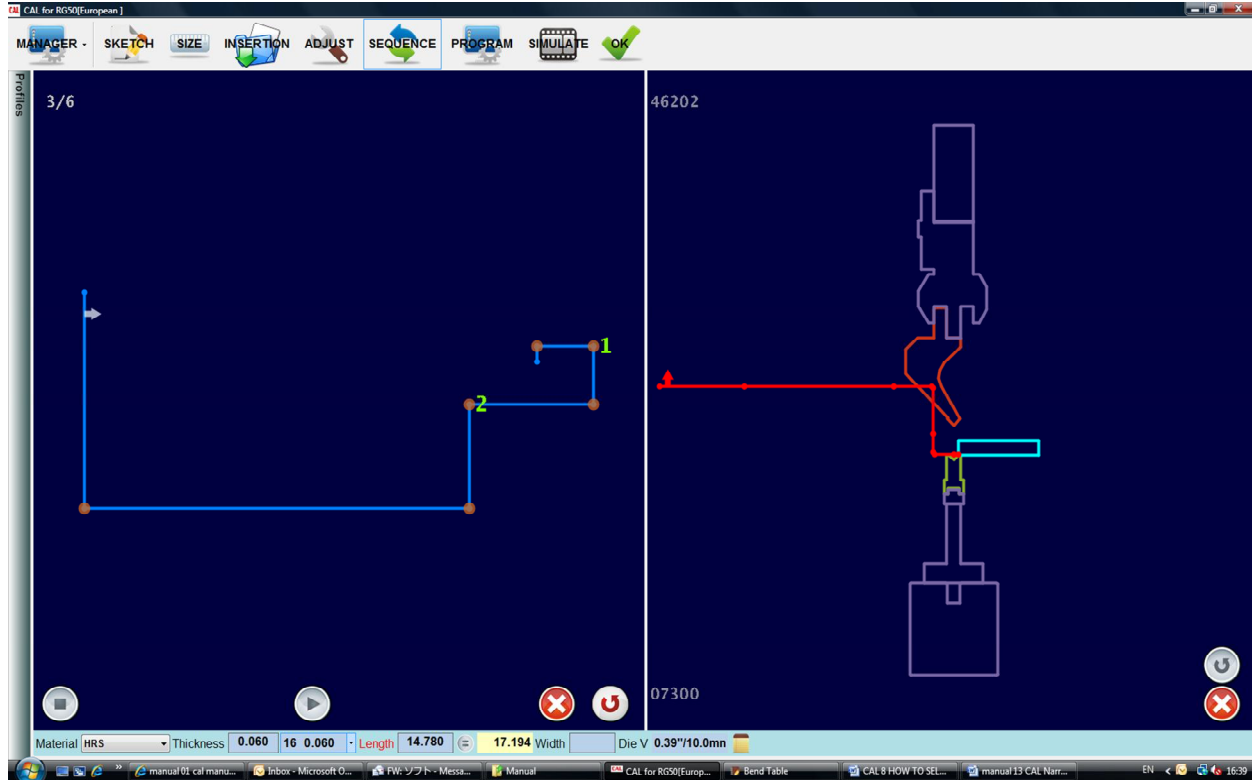
---CAL automatically chooses the die. You can also click on the die to change it.

Scroll in to view your changes.

## HOW TO VERIFY THE COLLISION MANUALLY

CAL manual bend sequence

<http://www.youtube.com/watch?v=ZmlkddJHwjU>



This Cal Video shows you how to correct a manual sequence collision.

When you are using manual sequencing and the number flashes orange –it is warning you of a future bend collision.

--to force the bend, clk on the #. This will stop the flashing and allow you to choose the next bend in the sequence.

Notice that this #3 bend flashes red and shows a collision.

---You can choose a different bend area for bend 3 to work. However, a future collision still remains as shown by #4 flashing red.

To fix this problem clear the sequencing back to the first bend, then choose a different bend sequence.

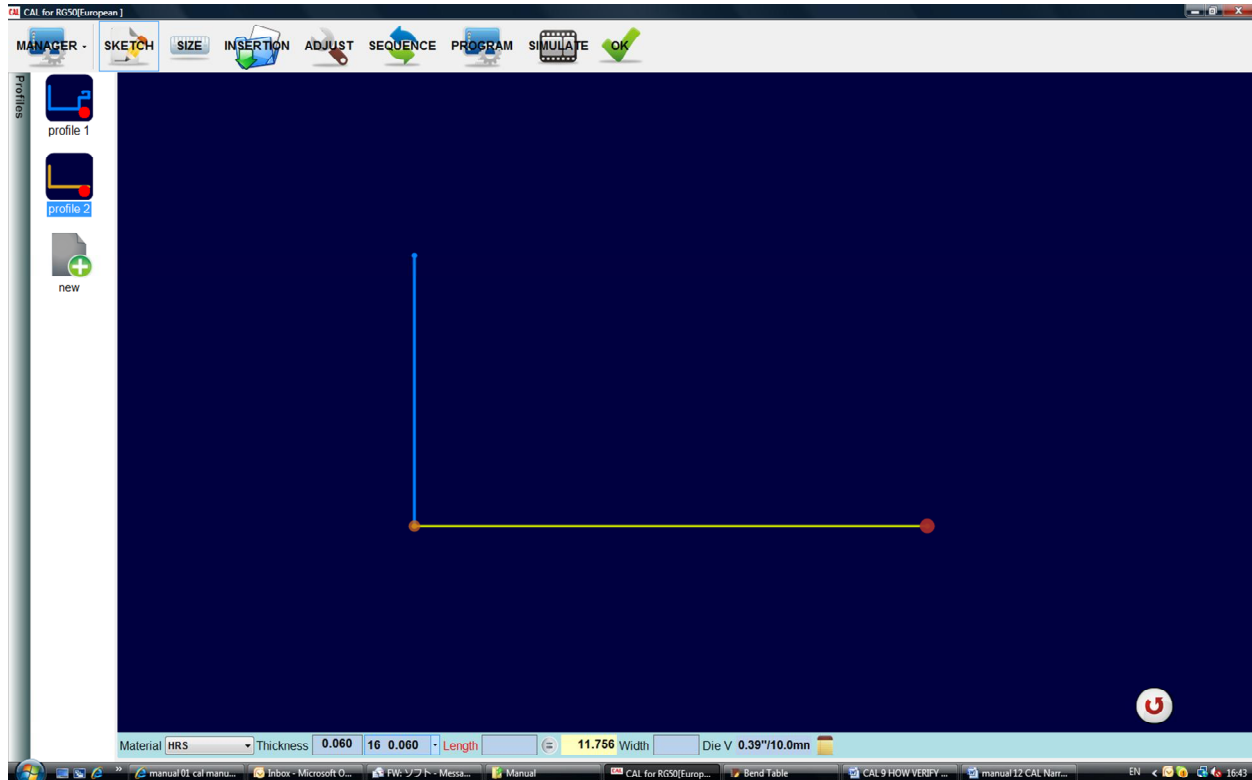
---Now #3 flashes a warning.

Click the undo button to the #2 bend, choose a different bend for the 3<sup>rd</sup> and 4<sup>th</sup> bend to complete.

## HOW TO CREATE MULTIPLE PROFILES

CAL multiple profiles

<http://www.youtube.com/watch?v=TGcZi8LLf4>



Manual 01 Cal multiple profile

This Cal video explains how to create multiple profiles for parts, like box enclosures.

Start by making your first profile and then click on the profile bar located on the left side of the screen.

Click the new profile icon and create the second profile side of your part.

Once you have finished the multiple profiles you will complete the regular process of sizing, adjusting and sequencing the 1<sup>st</sup> profile.

--When that is complete, click on profile 2 to repeat.

The bend sequence page will continue to show each profile separately.

However, the program page will show the total combined bends of both profiles in order. The simulation page also shows your profiles in succession.

## HOW TO USE CALCULATOR FOR DEPTH VALUE AND BACK-GAUGE L VALUE

CAL DLC

Manual 01 Cal DLC

<http://www.youtube.com/watch?v=OAxR0xB4-Mw>



	Profile	Angle	Flange	Adjust	BD	Bend W	BG L	BG H	Retract	Punch ID	Die ID	Depth	1 <sup>st</sup>	M Angle
1	1	90.000	1.556	-0.497			1.004	0.000	0.000	46202	07300			
2	1	90.000	3.257	-0.423			2.780	-0.615	1.180	46202	07300			
3	1	90.000	0.343	-0.086			0.203	0.295	0.000	46202	07300			
4	2	120.000	0.343	-0.086			-1.000	0.295	0.000	46202	07300			
*														

Material: HRS Thickness: 0.060 BG Comp: 0.000

This Cal video explains how to use CAL's program page as a Depth Length calculator or DLC

You can use it as a DLC to find the bend deduction, back gauge length and depth value for any angle that you need to find.

As you can see, CAL automatically adds one empty row at the bottom of the table.

To use the DLC function:

- click on the empty angle box- enter 115°
- click on the empty flange box- enter 3"
- click on the empty punch ID box to choose your punch
- Now click the empty punch id box to choose your Die

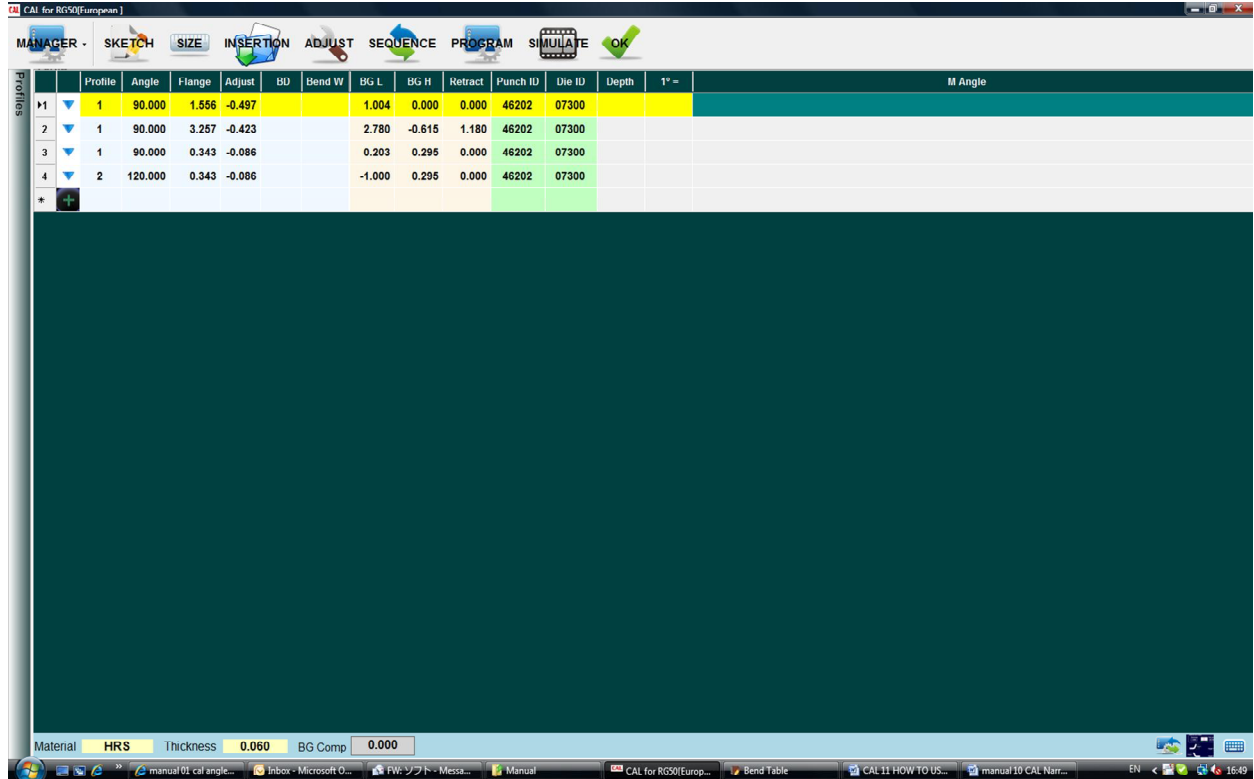
This will provide you the: depth, value, bend deduction, back gauge length

**HOW TO USE ANGLE CORRECTION**

CAL bend angle adjust

This CAL video shows you how to adjust your bend angle.

[http://www.youtube.com/watch?v=Stclfb\\_GX9I](http://www.youtube.com/watch?v=Stclfb_GX9I)



CAL predicts the depth value from the sample data that you created in Bend Table.

If the angle result needs to be adjusted---open the program page to enter your actual material's measured angle into the measured angle box located on the far right side of the table.

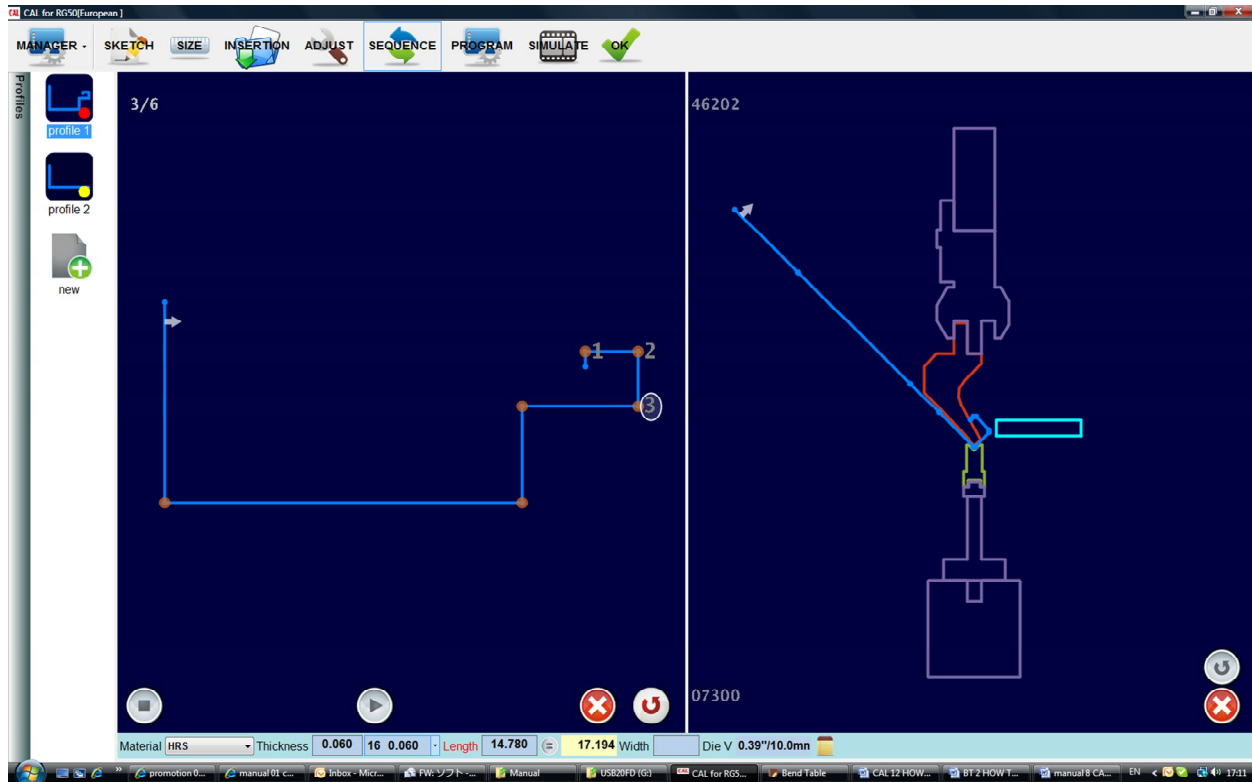
We will input 87° click enter.

Notice that the resulting depth changes from .109 to .112.

## HOW TO USE MULTIPLE PUNCHES

CAL multiple punch operation

<http://www.youtube.com/watch?v=8v-J0xUQoes>



Cal multi-punch

This CAL video shows you how to choose multiple punches in the bending sequence.

Manually select the 1<sup>st</sup> bends in your sequence by clicking the corner bend----then press the stop button to finish using that tool. The numbers will turn gray.

- Select the next bend, by clicking the corner of the bend and clk the punch to bring up your punch list.
- Select the specific bracketed # of the tool for proper information & complete the manual sequencing.
- Finally--- to set your tooling change press the stop button again. Notice that all of the numbers are gray.

To view the tooling change sequence ....you can click on the left side for the 1st bends and the right side for any of your later bends.

## HOW TO ADD A BEND IN PROGRAM

CAL program page

Manual 01 Cal adding a bend in program

<http://www.youtube.com/watch?v=JjGo9mOajNA>



This Cal video explains how to use CAL's program page to add a bend to your part.

Click the blue triangle where you want to add a row of new bend information.

& Click the plus button to insert the row

- Click on the empty angle box- enter your angle °
- Click on the empty flange box- enter your flange size
- Choose your punch by clicking on the empty punch ID box
- Choose your die by clicking on the empty die ID box

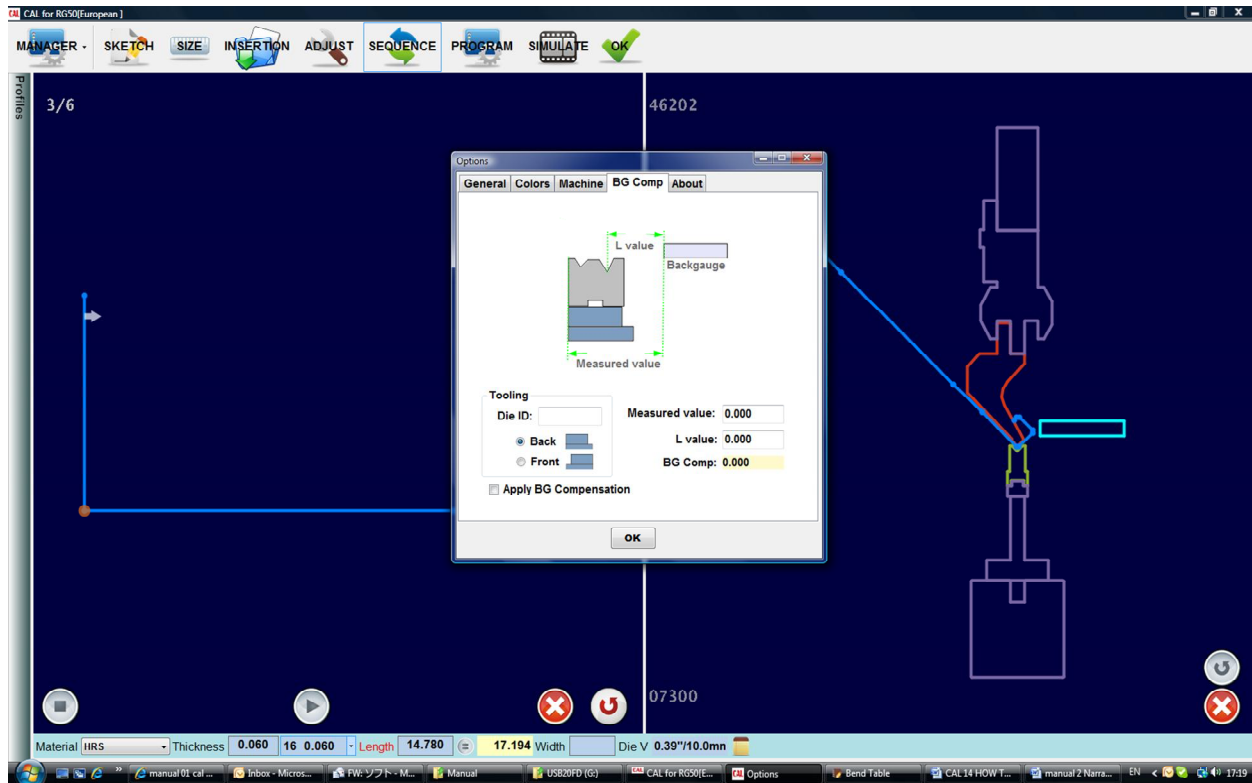
This will provide you with the bend deduction---back gauge length & depth value.

You can adjust the bending sequence by clicking on the blue triangle button of the bend that you want to move and clicking on the down arrow. Also, you can use the up arrow to move it up. Or delete a bend by choosing the red delete button. PLEASE NOTE THAT This Depth Length calculator function was added for your convenience. ---All changes created on the program page do not reflect back to your originally drawn parts. ----

## HOW TO USE BACK-GAUGE COMPENSATION

CAL back gauge compensation

<http://www.youtube.com/watch?v=6Sm7XBSRRwA>



This CAL video will show you how to verify the back gauge compensation for your machine and tooling

Click the manager icon -> options -> BG comp tab.

- Make sure that the die ID is the same as the one you are using.
- Measured value is physically measured on the shop floor
- Your L value is the readout from your machine's display.

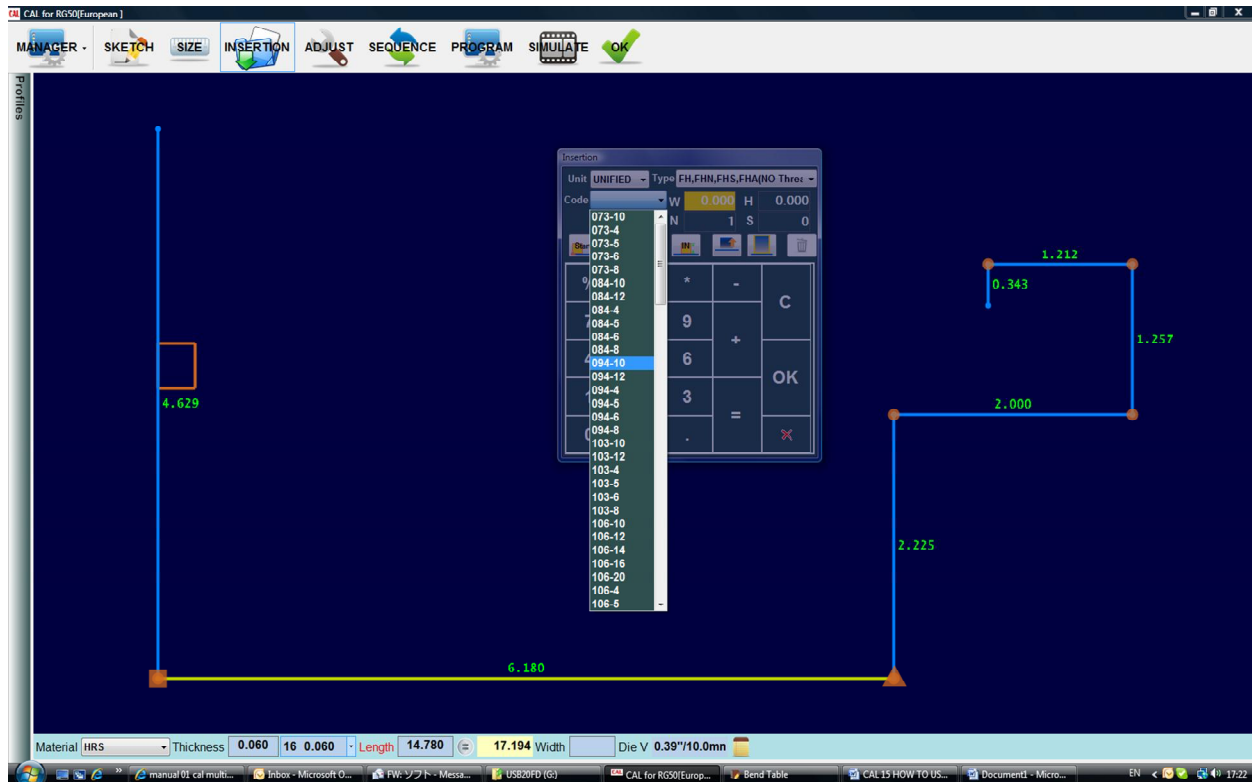
Click the apply BG comp button to reflect this information on your program icon page.

Click OK

Finally, Click program icon to verify the Back Gauge compensation was updated or to review your information.



## HOW TO USE INSERTION



Click type to choose pull down menu from library

Click code from pull down menu

Enter the distance from start or end

Enter number of fasteners

Enter the space between fasteners

You can select

“start” or “end” for the distance

“in” or “out” for distance is from inside of material or outside of material

“edge” or “center” (default is center)

“in” or “out” for fastener height is inside of material or outside of material (clinch nut is IN)

Custom or special fasteners can be inserted by entering the height and width.

## Contact information

**Products of Orbit Technology Corporation**

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