



Torchmate Version 4 Multi-Tool Set up Guide

This guide will walk you through how to properly set up your software for multiple tool actions during a single program.

First, you will want to open up Torchmate CAD (Version 7.1.1, 8.1, or EDU is compatible). Go to [Machine > Tool Library]

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	Tool Library	4 8 12 16 20
	Material Library	
	Use Easy Templates	
	Cut Template Wizard	
	Create Tool Path	
	Apply Tool Path	
	Delete Tool Path	
	Edit Tool Path	
	Convert To Online Tool Path	
	Edit Start Point	
	Job Analysis	
	24 28	

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Name	Туре	Parameters	
Plasma	Plasma 💌	D1	0.059
Oxy-Acetylene		Turret	1
Plasma		Color	Р 🔻
		Priority	1
Filter By Type			
Add Update Delete			Close

Next you will notice the current tools you have in your library.

This is where you will add your Plate Marker tool. To create a new tool, simply start typing in the "Name" box. After typing in Plate Marker, click on "D1" which is highlighted below. Change "D1" to "0.030".

Plate Marker D1 0.030 Oxy-Acetylene Plasma Turret 1 Plasma Image: Color of the second	Name	Type	Paramete	irs
Oxy-Acetylene Plasma Filter By Type	Plate Marker	Plasr	D1	0.030
Plasma Color Priority 1 Filter By Type	Oxy-Acetylene		Turret	1
Filter By Type	Plasma		Color	P
	Filter By Type			

Hit the "Enter" key on the keyboard and it will turn blue. Now click on "Turret" and change it to "2" and hit "Enter" on the keyboard.



Finally, click on "Add" and you will notice the Plate Marker will be added to the list.

Tools Library			×
Name	Туре	Parameters	
Plate Marker	Plasma 💌	D1	0.030
Oxy-Acetylene		Turret	2
Plasma Plate Marker		Color	P 🔽
		Priority	1
Filter By Type			
Add Update Delet	9		Close
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File	Edit	Layout	Arrange	Machine	Trans	form	n Im
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	Tool L	ibrary				F	
	Mater	ial Library					
	Use Ea	sy Templ	ates				
	Cut Te	emplate V	Vizard			H	
	Create	e Tool Pat	h		•		
	Apply	Tool Patł	n		•		
	Delete	Tool Pat	h				
	Edit To	ool Path					
	Conve	ert To Onl	ine Tool Pa	ith			

Now go to [Machine > Machining Defaults]

Click the arrow on "Selected Driver" and scroll down to "Torchmate Dual Tool Driver" and select it. Now click "Apply" and you're done!



For the next phase of the setup, you will work in the **Torchmate 4 Driver Software**. Navigate to **[Configuration > Programming > M-Code Definitions].**



On the next screen you will notice a list of M-Codes and their descriptions.

rogramming				
			General	
		M Code	Description	
User Variables		50	Plasma On	
Counters		51	Plasma Off	
- Cutter Compensation		52	Plate Marker On	
Import		53	Plate Marker Off	
Cycles		54	Oxy On	
ools		55	Oxy Off	
- Tool Library	IL			
- Tool Life Management 🗍	1			
Tool Change				

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You will need to change the "50" to "22" and "51" to "23" so that it looks like the picture below:



Next you will move down that same screen and change the "22" to "50" and "23" to "51" so that it looks like the picture below:

M-Code	es to Control Output Lines			(For L	ine C	olumns	: '1' =
	General						- A
M Code	Description	Program Line First Action	M-Co Firs Actic	de Del t (se	ay c)	Ln. 1	Ln. 2
22	Plasma On	M-Cd	SetL	.n 0.1		1	
23	Plasma Off	M-Cd	SetL	.n 1.0		0	-
52	Plate Marker On	M-Cd	SetL	.n 0.2		-	-
53	Plate Marker Off	M-Cd	SetL	.n 1.0		-	-
54	Oxy On	M-Cd	SetL	.n 3.0		-	-
55	Oxy Off	M-Cd	SetL	.n 1.0		-	-
		M-Cd	SetL	.n 0.0		-	-
		M-Cd	SetL	.n 0.0		-	-
		M-Cd	Set Ln	ı 0.0		-	-
		M-Cd	SetL	.n 0.0		-	-
		M-Cd	SetL	.n 0.0		•	-
			•				
M-Code	es to Execute Macros						
M Code	Description	Macro			Pr Lir A	ogram ne First .ction	Dis Out
20	Plasma Only	IF #AVHC :	-		N	4-Cd	No
50	Mulit Tool Start	IF #CURR	roo		N	4-Cd	No
51	Multi Tool Stop	IF #CURR	roo		N	4-Cd	No
					N	4-Cd	No
					N	4-Cd	No
						104	bl -

Now you will need to edit the macro associated with those M-Codes (50 and 51). If you click on the text that says, "IF #CURRTOO..." then a pop up arrow will appear.

		•				
M-Code	s to Execute Macros					
M Code	Description	Macro		Program Line First Action	Display in Dutput Box	^
20	Plasma Only	IF #AVHC =		M-P		
22	Mulit Tool Start	IF #CURRTOO	-			
23	Multi Tool Stop	IF #CURRTOO		M-Co		
				M-Cd	No	
				M-Cd	No	
				M-Cd	No	

Click on that arrow and an "Edit M-Code Macro" window will pop up.

	Edit M-Code Macro	x
	IF #CURRTOOL = 0 THEN M00 "No Tool Selected"	*
	ELSEIF #CURRTOOL = 1 THEN M50 M101 I1 "No Pierce Signal From AVHC"	
	ELSEIF #CURRTOOL = 2 THEN M52	
•	ELSEIF #CURRTOOL = 3 THEN G04 x#preheat M54	
	ELSE M00 ''Invalid Tool Selected''	
	ENDIF	
•		
		Ŧ
	OK Cancel	

Where it says,

ELSEIF #CURRTOOL = 1 THEN

M50

M101 I1 "No Pierce Signal From AVHC"

Change the "50" to "22" so it looks like the picture below:

I	Edit M-Code Macro
	IF #CURRTOOL = 0 THEN ADD ''No Tool Selected''
	ELSEIF #CURRTOOL = 1 THEN M22 M101 I1 "No Pierce Signal From AVHC"
	ELSEIF #CURRTOOL = 2 THEN M52 ELSEIF #CURRTOOL = 3 THEN G04 x#preheat M54 ELSE M00 "Invalid Tool Selected" ENDIF
	OK Cancel

Click "OK" and then open the "Edit M-Code Macro" window for M-Code 23.

M-Code	-Codes to Execute Macros							
M Code	Description	Масто	Program Line First Action	Display in Output Box				
20	Plasma Only	IF #AVHC =	M-Cd	No				
22	Mulit Tool Start	IF #CURRTOO	M-C-	No				
23	Multi Tool Stop	IF #CURRTOO 💻	<					
			M-Co-	No				
			M-Cd	No				
			11.01	NI-				

You should see this:

	IF #CURRTOOL = 0 THEN M00 ''No Tool Selected''	
ķ	IF #CURRTOOL = 0 THEN M00 ''No Tool Selected''	
E	ELSEIF #CURRTOOL = 1 THEN M51	
E	ELSEIF #CURRTOOL = 2 THEN M53	
E	ELSEIF #CURRTOOL = 3 THEN M55	
E	ELSE M00 "Invalid Tool Selected"	
E	ENDIF	
		-
	OK Cancel	

Where it says,

ELSEIF #CURRTOOL = 1 THEN

M51

Change the "51" to "23" so it looks like the picture below:

	Edit M-Code Macro	×	
	IF #CURRTOOL = 0 THEN M00 "No Tool Selected"	*	
	ELSEIF #CURRTOOL = 1 THEN M23		
	ELSEIF #CURRTOOL = 2 THEN M53		
	ELSEIF #CURRTOOL = 3 THEN M55		
	ELSE M00 "Invalid Tool Selected"		
1	ENDIF		
		~	
	OK Cancel		

Click "OK" and then navigate to the "M-Code Execution" screen show here:

Notice where it says "Full" and change "Feedrate Move" from "20" to "50".

Automatic Execution Mode	
C None	
C Basic	
Start (After Hold): M	
Feed Hold: M	
Full	
Feedrate Move: M 50	
All Other Timers M. Et	
All Other Times: M ST	

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Click "OK" in the bottom left of the screen

Configuration		
- Output Lines	M-Code Execution	🗖 Display Shortcut
Variable Output	Automatic Execution Mode	Execute After Motion Errors
Programming	C None	After Limit/Safetu/Spindle Error: M
	O Basic	
- G-Code	Start (After Hold): M	
User Variables		Execute at Start/End of Motion
- Counters	Feed Hold: M	Start of Motion: M
Cutter Compensation		
Import	• Full	End of Motion: M
- Cycles	Feedrate Move: M 50	
Tool Library	All Other Times: M 51	Execute During Ramping
- Tool Life Management		Beginning of Ramp: M
Tool Change		
Tools in Changer	Execute When Idle	End of Ramp: M
⊡ ⊡ Sensing	On Feed Hold/Safety Tripped: M	
- Program Zero Sensing	,,	Execute While Connecting/Disconnecting
Touch Probe	On Change of Input Line State	Connecting: M
Preferences	Input State Execute	
Main Screen	None - Tripped	Disconnecting: M
Point List	None Tripped	,
	None Tripped	
- Pendant	None Tripped	
Files		
Messages		
Security		

You will want to save your setup at this point so that you won't have to make this change again. To do this, go to [File > Save Setup].



As a precaution, we also recommend making a backup file of this setup. To do this, go to **[File > Save Setup As]**. When naming the file, just add "BACKUP" to the end and save it. Then to go **[File > Open Setup]** and open up your original setup file. Now in case something happens to the original, you can always load the backup and be okay. Additionally, we recommend you save these two setup files to a USB flash drive or external hard drive. This way you will be covered if your computer crashes or is otherwise not operational.

Now, if you haven't setup your tool offset yet, I will explain how to do that now. Jog your torch over a piece of material and zero your program coordinates (Click on "SET" and then click "Zero All")





Go to the "AUX" menu and turn your plasma from OFF to ON

Once you see sparks, turn the plasma off.



You should now have a pierce mark on the material as shown below:



Now jog the machine until your plate marker is exactly over the pierce hole. You may want to bring the plate marker down physically and see if it dives exactly into the middle of that hole as shown below:



Once the plate marker fits in the pierce mark, go to [Coordinates > Define Tool Offset]



Make sure to click on "Plate Marker" and that X and Y are checked as shown below:

Define Tool Offset Use DRO Tool Program #1 - Plasma Machine #3 - Oxy Fuel Relative #6 Set Axes #8 Y #10 #10 #11 #12 #13	
Use DRO Tool • Program #1 - Plasma #2 - Plate Marker #3 - Oxy Fuel #4 #5 #6 #7 #5 #6 #7 #8 #9 #10 #11 #11 #12 #13	
 Program Machine Relative Set Axes ▼X ♥Y #1 - Plasma #2 - Plate Marker #3 - Oxy Fuel #4 #4 \$ Oxy Fuel #4 #7 #8 #9 ¥10 #11 ¥12 #13 	
C Machine #3 - Oxy Fuel C Relative #4 C Relative #5 #6 #7 Set Axes #8 ♥ X #10 ♥ Y #12 #13 #13	
○ Relative #5 #6 #7 #7 #8 #9 #9 I I X #10 I I Y #12 #13 #13	
Set Axes #7 I I X #8 I I X #10 I I Y #11 I I Y #12 #13 #13	
#9 ▼ X #10 ▼ Y #11 #12 #13	
▼ Y #11 #12 #13	
#13	
#14	
Description: Plate Marker	
Set Cancel	

If the "Define Tool Offset" window looks like what is pictured before, click on "Set".



Finally, go to [File > Save Tooling]

It is also important to create a backup of that file as well. You are now ready to create multi-tool files and run them inside Torchmate 4.

Now to actually add the Plate Marker to your tool set. Go to [Controller > Output Line Control]

🐼 Output Line	Control		
Line	Description	State	Line
1	Plasma	Off	17
2		Off	18
3		Off	19
4		Off	20
5		Off	21
6		Off	22
7		Off	23
8		Off	24
9		Off	25
10		Off	26
11		Off	27
12		Off	28
13		Off	29
14		Off	30
15		Off	31
16		Off	32
			1

From here, start clicking the "Off" buttons starting at "2" one at a time. If you already have your Plate Marker set up with air, it will activate the Plate Marker. If not, then you should hear the click coming from the Torchmate Universal Relay. If you do not hear a click or your Plate Marker does not fire, then just move to the next line and activate it. Now that we know which line it's on. Go to [Configuration > I/O > Output Lines]. Type in "Plate Marker" on the line it was activated on. For the sake of this guide, I'm going to say it was on line two. It should look like this:

Ē~1/0 →	Output l	lines					Display Short	cut
Input Lines								
Output Lines Variable Output	Line #	Description		Button Text (replaces Description)	Display Warning	Display in Aux Panel	Display in Output Box	*
🖻 Programming		Plasma			Before On	Yes	Yes	
- M-Code Definitions	2	Plate Marker			Before On	Yes	Yes	-
- M-Code Execution		T Idle Marker			Before Un	Yes	No 🖛	
G-Code	4				Before On	Yes	No	-
User Variables	5				Before On	Yes	No	-
- Counters	6				Before On	Yes	No	-
Cutter Compensation	7				Before On	Yes	No	-
Import					Before On	Yes	No	-
- Cucles	9				Before On	Yes	No	-
Tools	10				Before On	Yes	No	-
Tool Library	11				Before On	Yes	No	-
Tool Life Management	12				Before On	Yes	No	
Tool Change	13				Before On	Yes	No	-
Task in Change	14				Before On	Yes	No	-
i cois in Changer	15				Before On	Yes	No	-
	16				Before On	Yes	No	-
I ool Length Sensing	17				Before On	Yes	No	-
Program Zero Sensing	18				Before On	Yes	No	-
Touch Probe	19				Before On	Yes	No	-
Preferences	20				Before On	Yes	No	-
Main Screen		1		1		1	1	
- Viewports								
- Point List	Safety I	nterlocks (Invalio	l Output Line	Combinations)				
Jogging	Output	t Casta	Output	Catta A				
Pendant	Line #	Secto	Line #	Secto				
- Files	None	🚽 On	None	On				
Messages	None	On	None	On				
	None	On	None	On				

Now make your way down to your M-Code Definitions one last time. You'll need to add on/off commands on the appropriate line. If your Plate Marker is on Line 2, then it should look like this:

			v.			·· ·		-
	General					A	Action	
M Code	Description	Program Line First Action	am M-Code Delay irst First (sec)		Ln. 1	Ln. 2	Ln. 3	
50	Plasma On	M-Cd	Set Ln	0.1	1	-	-	
51	Plasma Off	M-Cd	Set Ln	1.0	0	-	-	
52	Plate Marker On	M-Cd	Set Ln	0.2	-	1	-	Γ
53	Plate Marker Off	M-Cd	Set Ln	1.0	-	0 -	•	Γ
54	Oxy On	M-Cd	Set Ln	3.0	-	-	-	Γ
55	Oxy Off	M-Cd	Set Ln	1.0	•	-	-	Γ
		M-Cd	Set Ln	0.0	•	-	-	Γ
		M-Cd	Set Ln	0.0	•	-	-	Γ
		M-Cd	Set Ln	0.0		-	-	Γ
		M-Cd	Set Ln	0.0	•	-	-	Γ
		M-Cd	Set Ln	0.0	-	-	-	
			•					

Once that is done, click OK in the bottom left and then go to [File > Save Setup]. You should be all done here in the Driver Software for now.

Now we need to create a Multi-Tool file. The part you will be making is going to be very basic, but will help you understand the fundamentals of multi-tool programs. First, start by creating a rectangle. Any size will do.



Now create a circle inside of that rectangle. Again, any size (as long as it fits inside the rectangle) will do.





With the circle selected, go to [Machine > Create Tool Path > Online].

Please note, if you do not see "Create Tool Path", uncheck "Use Easy Templates"

(1)Select "Plate Marker". (2)Make sure your direction is set to "Conventional". (3)Enter in your feed rate. It is important to remember that your feed rate <u>MUST</u> be entered in at this screen. Otherwise the program will not work when opened inside the Torchmate software. A feed rate anywhere between 25 and 35 is acceptable. I prefer 25 inches

per minute because it helps reduce the dot matrix effect that may happen at higher speeds. Once you've entered in your feed rate, click "OK".



File Edit Layout Arrange Machin	ne Trans	form Image View Options	Help						
Output Machining Defaults Tool Ontions	Alt+P	↔ 8.506 100.000 ↓ 3.397 100.000	C 0.000	о 2 Р					
Tiling				2	🦗 💆 💿	🚖 🤩 差	6	 	 9 10
Cut Template Tool Library Material Library									
Use Easy Templates Cut Template Wizard	ſ								
Create Tool Path	•	Online							
Apply Tool Path Delete Tool Path Edit Tool Path	×	Male Female Fill							
Convert To Online Tool Path Edit Start Point Job Analysis		Torch Path Drill Matrix Drill Contour							
Object Total Area		Drill Center Drill Corner							•
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Select the rectangle and go to [Machine > Create Tool Path > Male].

Pretty much the same rules apply in this tool path creation as they did when you created an online path. You'll need to choose your tool, set your direction, and choose your feed rate. All of these things are important to make sure your file works properly when you open it up inside of the Torchmate software. (1)Select your plasma tool. (2)Select "Climbing" for your direction.(3)Enter in your feed rate.

Male: Default Male Template
Template ✓ Basic Cut ✓ Lead In/Out Control Tool ✓ Øffset Plasma ✓ Plasma 100A 1/2 MILD STEEL Plasma 100A 1/2 MILD STEEL Plasma 50A 1/2 MILD STEEL Plasma 50A 1/2 MILD STEEL Plasma Fine cut Plasma Fine cut Plasma Fine cut Plasma Fine cut Plasma Fine TOA 1/8 MILD STEEL Plasma Fine CUT Plate Marker Proline 100A 3/8 MILD STEEL Proline 70A 1/4 MILD STEEL Proline 70A 3/16 MILD STEEL Proline 70A 3/16 MILD STEEL Proline 70A 3/16 MILD STEEL
Direction Conventional C 轮 2 Climbing · 🗪
Tool Path Comering Sharp • Roll • Rol
Move Control Feed rate: 100.000 $\stackrel{\checkmark}{\checkmark}$ in/min Power 0 $\stackrel{\checkmark}{\checkmark}$ % Assist 0.000 $\stackrel{\checkmark}{\checkmark}$ Dwell time: 0.000 $\stackrel{\checkmark}{\checkmark}$ s
Lock Template Add Change OK Cancel Help

Now move on to your "Lead In/Out" tab and adjust your lead ins as you see fit. Afterwards, click "OK".

Now would be a good time to save your progress [File > Save]. That way if you have any problems, you can always open up your saved file and make adjustments.

By now you should have your original drawing and your tool path on the screen.



At this point, getting the file in the right order is crucial. Even though we made the tool path on the circle first, that doesn't necessarily mean it will start at the circle. To check and correct this, we need to go to the sequence manager. To go [Layout > Sequence > Start Sequence By List].

File	Edit Layout Arrange	Machine	Tra	nsform	Ima	ige	View	N O	ptions	Help		
	Size / Move Arrange and Distribute		•	: ⊨+ (: I ().000).000		+ 1 + 1	00.000 00.000) •%) •%		୯	0.000
	Group	Ctrl+G		6 . 🕥	6		iΩ	<u>a</u> 5	A			
	Ungroup	Alt+G			5		<u></u>		0.5	1		¹
	Ungroup All											
	Array											
	Auto Layout											
	Sequence		۲	St	art Se	quer	ice					
	Badges			St	art Se	quer	nce b	y Vec	tor			
	Page Control			St	art Se	quer	nce b	y List		<		
	Go To Page			St	art Se	quer	nce b	y Trai	ts		•	
	Templates		×				Г					
	Clip Art Go To		×.									
	Clip Art Viewer											
	Clip Art Categories Setup						⊢					
	Custom Parts											
	Common Line Cutting		F									
	Material Size											
	Material Blank Object											
	:			·								

It will show you the objects you currently have in the program and list them in their cut order.

We won't be concerned with regular objects, so click on "Tool Paths Only"



You should see something like this after click that button:

Sequen	ce by List	×
1	Tool Path	To Front
2	Tool Path	To Back
	~	Forward One
		Back One
		Reverse Order
		Set To: -1
		Tool Paths Only
		Sign blank only
Use shi	ft key to navigate without changing	order.
		OK Cancel

To alter the cut order, click on the object you want to move and then use the buttons to the right to move it in a direction. In this case, we want to take the circle and move it "To Front".



After that, click "OK". Now we need to export this file to G-Code. Go to **[View > Show Tool Paths Only]**.



So now all that should be visible is your tool path.



It is important that you now take the tool paths and move them to the zero location on the grid space.

Now select both the circle and rectangle and go to [Machine > Output].

Output	P ↔ 8.834	100.000		€ 0.000	10 2 2					
Tool Ontions	± 3.515	⊡ 100.000	⊡ % —		P					
Tiling	i 🚯 🚯 i	📱 🕰 🖓			i 🖏	V. U. U. I	🗓 📀 🚑 🖨	* 🖌		
rinng	-16	14 -12	-10		- ⁶	4 -2		2		
Cut Template										
Tool Library										
Material Library										
Use Easy Templates										
Cut Template Wizard										
Create Tool Path	>									
Apply Tool Path	•									
Delete Tool Path										
Edit Tool Path										
Convert To Online Tool Path										
Edit Start Point										
Job Analysis										
Object Total Area										
								1		
									\checkmark	
▋								<u> </u>		

At this point, a bar will pop up with a whole lot of icons on it. For this guide, we will only be concerned with two of them. Click the calculator icon to generate the G-Code.

	D	To evic	ol M :e T	lulti-ti orchi	ool mate	▼ Dual	 I Toc	Ŧ		Rep 1	eats]		i⊷i Ī	100 100	.000 .000			↓	x: y:	0.00 0.00	0 0			i↔i Ī	0.00)0)0	
.	<u>0</u>			4					12		1	B	1	20			24.		28			32		3	<u>6</u>		40	
8	ſ	Cut	Тоо	lbox																								_
	l	ੇ	1	×.	N	3	4	+		€	Q	Q	Q	Q	<u>_</u>	L		artt	he N	ume	terical		*		مح ∧ M		er	
	ľ				-		-							-		-					inca			(140		may		
3	ŀ																											
20																												
2																												

This will generate the G-Code on the right hand of the screen. It should look like this:



After that, click on the scissor icon on the same bar the calculator icon

is on.



At this point, you will need to name your file and save it. It will automatically select FGC as an extension. This is the native G-Code that opens inside of the Torchmate software.



After you save the file, open up your Torchmate software. Go to



[File > Open G-Code].

Now just navigate to the file you just saved. Select it and then click "Open".



This will bring your file into the Torchmate software with all of the tool changes and feed rates already entered in for you. All you need to do is (1)zero out your program coordinates and (2)hit Start.



- Call, Fax, or Email
 When building the table if a question or concern arises or a part is missing, please contact Torchmate technical support.
 - Technical support will also help you with operating the CNC system, and troubleshooting problems.
 - Torchmate Technical support is available Monday through Friday from 6 AM to 4 PM (06:00 to 16:00) Pacific Time Zone.



Call us for Consumables, or visit our web store



www.TorchmateStore.com



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