

ProtoTRAK OFFLINE PROGRAMMING ASSIGNMENT

MEEG 301

30 August 2018

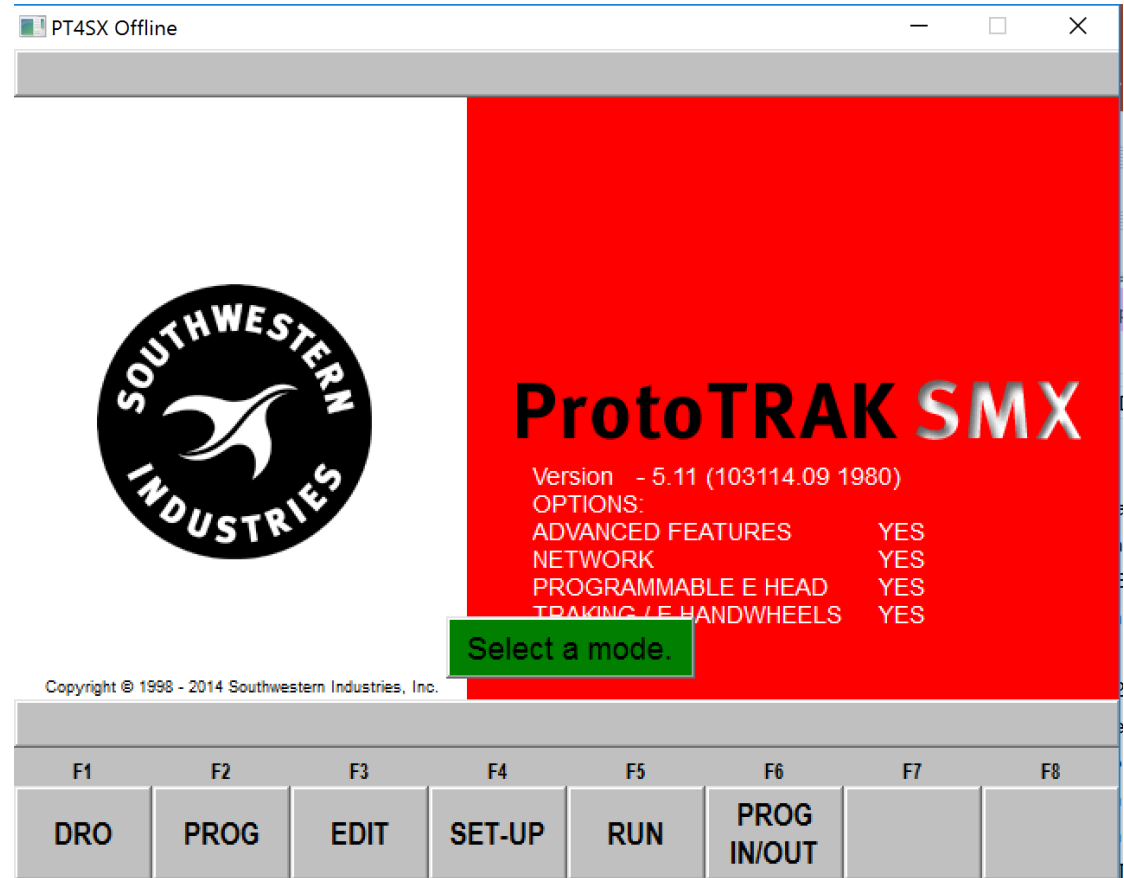
*This assignment should not
take longer than one hour to complete.*

(Note: These instructions apply to ProtoTRAK OFFLINE PT4SXOL, Version 5.11)

THE ASSIGNMENT

For this assignment you will be asked to:

- Download the ProtoTRAK SMX offline software
- Program a sample part
- Take a screenshot of your completed part
- Print out and bring a copy of your screenshot to your machining appointment.



WHY?

Completing this assignment will:

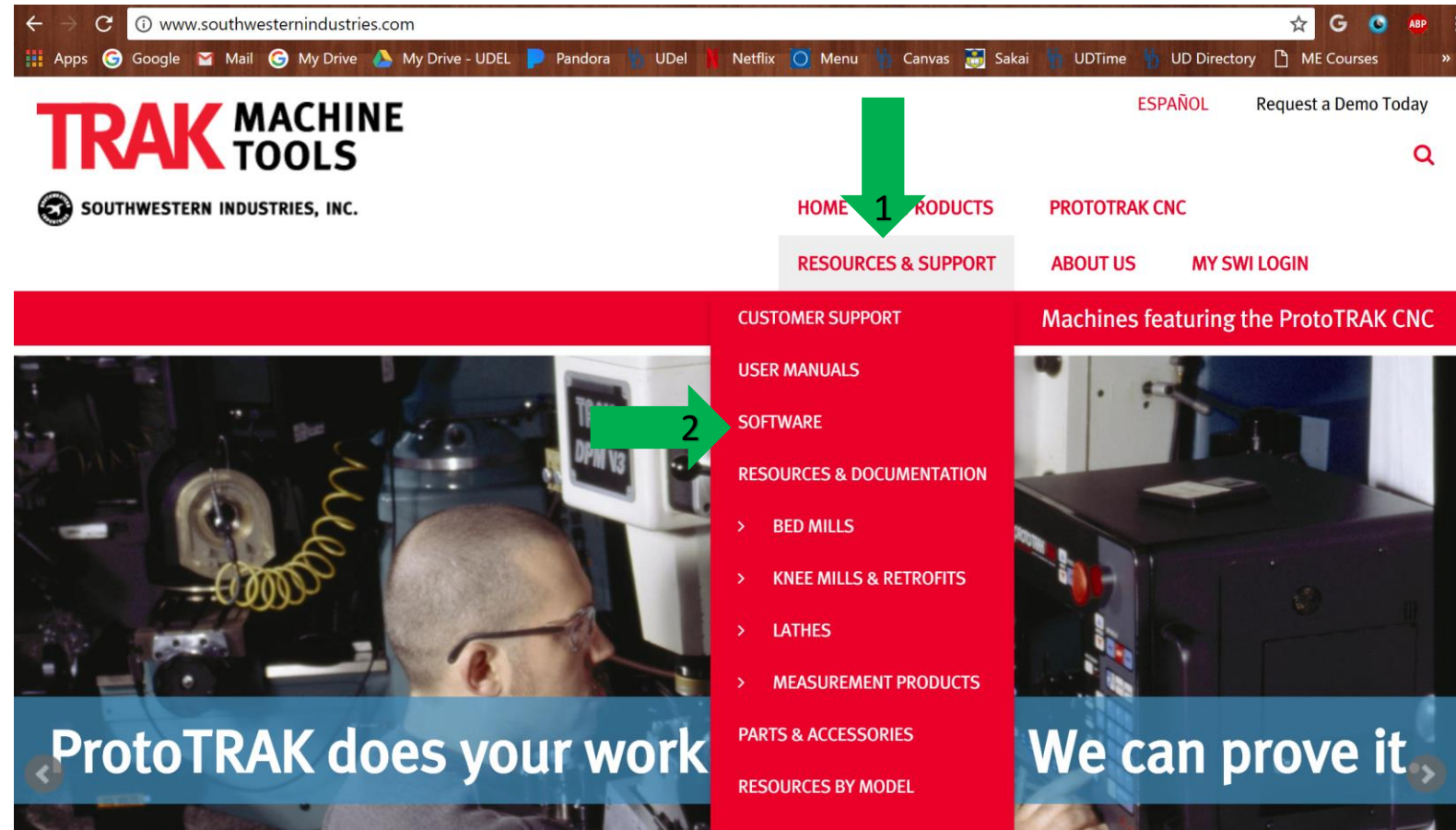
- Prepare you for your machining appointment
- Help you learn how to program the CNC mills
- Make sure you can get your part made in the 2 hour appointment
- Count toward your grade for the machining project

WHERE SHOULD I WORK ON THE OFFLINE PROGRAMMING?

1. On your personal PC or laptop. Must be a PC, there isn't a Mac version. Follow the installation steps provided.
2. 103 Spencer Lab is already set up as a CAD/CAM Computer lab. There will be Office Hours in this lab to help throughout the semester.
3. Currently, you cannot install the software onto eCalc machines in Spencer.

WHERE DO I GET THE OFFLINE SOFTWARE?

- Go to Southwestern Industries' ProtoTRAK Offline Software page
- <http://www.southwesternindustries.com/software#prototrak-offline-software>
- Also can be found by Googling Southwestern Industries, Under Resources & Support click Software



WHICH IS THE RIGHT SOFTWARE TO DOWNLOAD?

- ProtoTRAK offers many software downloads, make sure you get the right one.
- Make sure you are downloading “ProtoTRAK Offline Software”
- Make sure you are downloading for the “SMX & SLX Controls”
- Click “Full Instructions”

ProtoTRAK Offline Software

Title	File Name	Version
ProtoTRAK TMX Offline Software	tmxol_2.0.0.exe	2.0.0
Full Instructions		
ProtoTRAK RMX CNC Offline Software	rmxol_1.0.15.zip	1.0.15
Full Instructions		
ProtoTRAK OFFLINE PT4SXOL	sxol_511h.exe	5.11 (SMX & SLX Controls)
Full Instructions		



HOW DO I DOWNLOAD IT?

- After selecting *Full Instructions*, select “DOWNLOAD OFFLINE SOFTWARE HERE”
- Follow the onscreen instructions to install

ProtoTRAK OFFLINE PT4SXOL

CURRENT VERSIONS IN THIS RELEASE:

Software 5.11
Parasolid 1.06
Verify 1.08
DXF 3.3

[Download Instructions](#) (For Windows XP and later)

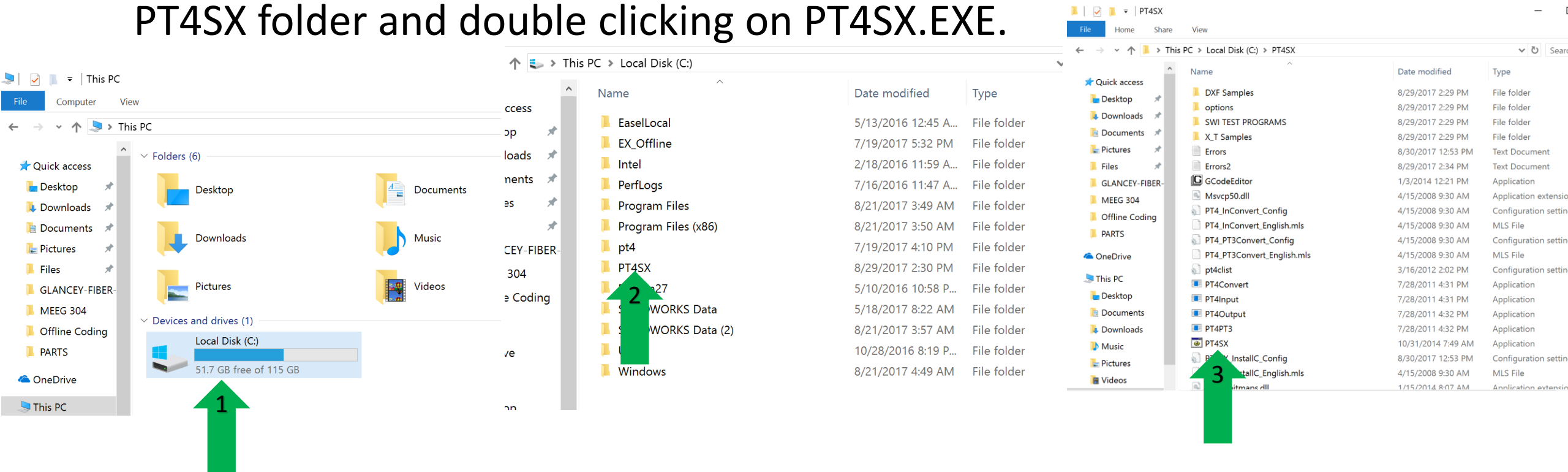
Click on the Download button below, and when prompted, choose to save the file to a temporary location, such as your Windows desktop.

DOWNLOAD OFFLINE SOFTWARE HERE	sxol_511h.exe	22.6 MB
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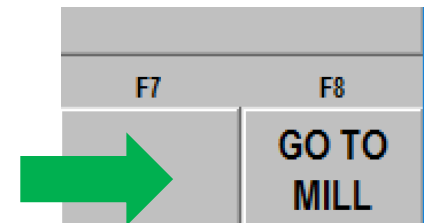
HOW DO I RUN ProtoTRAK SMX OFFLINE AFTER I INSTALL IT?

- Step 7 of the installation guide says to look in the C:\PT4SX folder and click on the PT4SX.EXE file. This can be found by going to your Computer's file navigator opening your C: drive then opening the PT4SX folder and double clicking on PT4SX.EXE.



HOW DO I SET UP MY ProtoTRAK SMX SOFTWARE CORRECTLY?

- If everything was downloaded you should see this.
- If you do not see this, you may have downloaded the wrong software.
- MAKE SURE YOU SEE **SMX** ON YOUR SCREEN HERE.
- If you see **SLX**, you will need to click GO TO MILL in the bottom right corner.



WHERE ARE ALL THE BUTTONS?

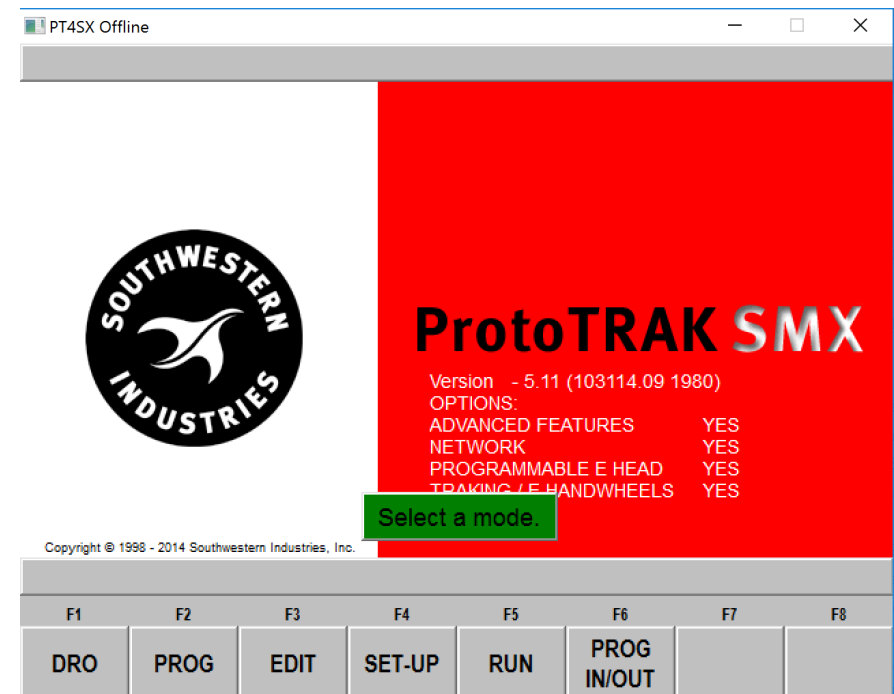
The full controller in the shop has a whole panel of hard keys on the right on the display that you will not see on your screen.

Display on the Mill in 104 Spencer Lab



Source: xyzmachinetools.com

Offline Software Display



HOW DO I USE THESE BUTTONS?

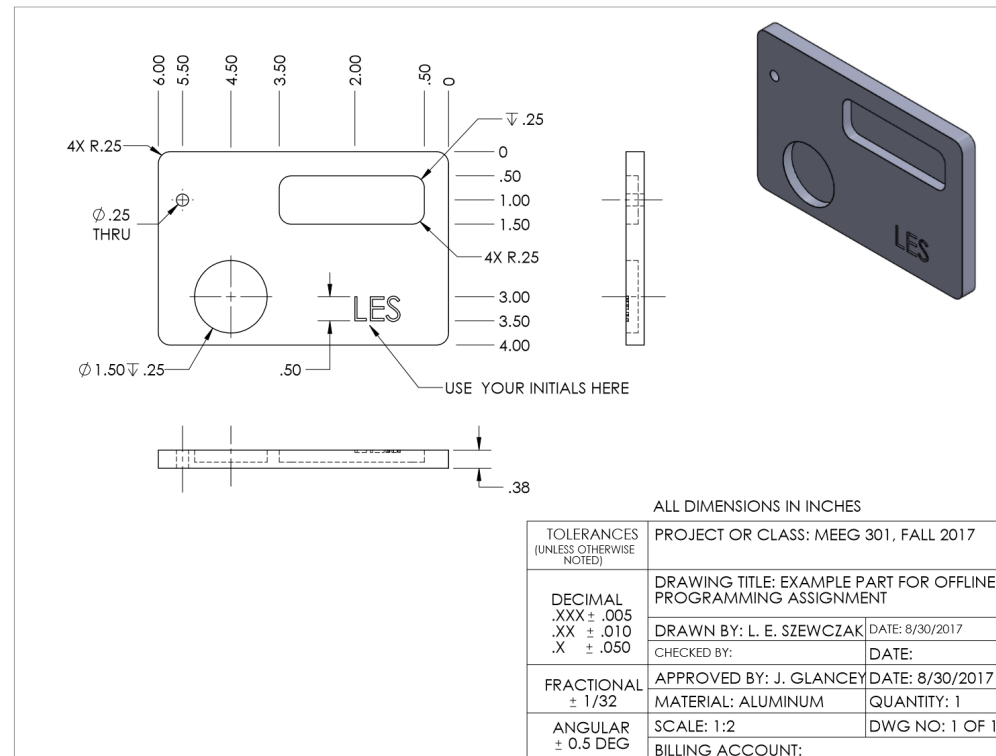
- Below is a cheat sheet, for Keyboard equivalents for each hard key. This will also be posted to Canvas. You should print this out for your use.

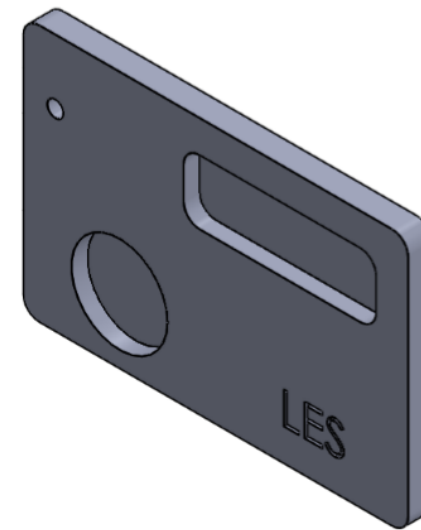
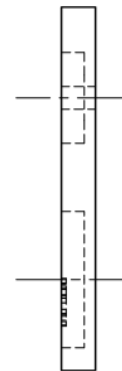
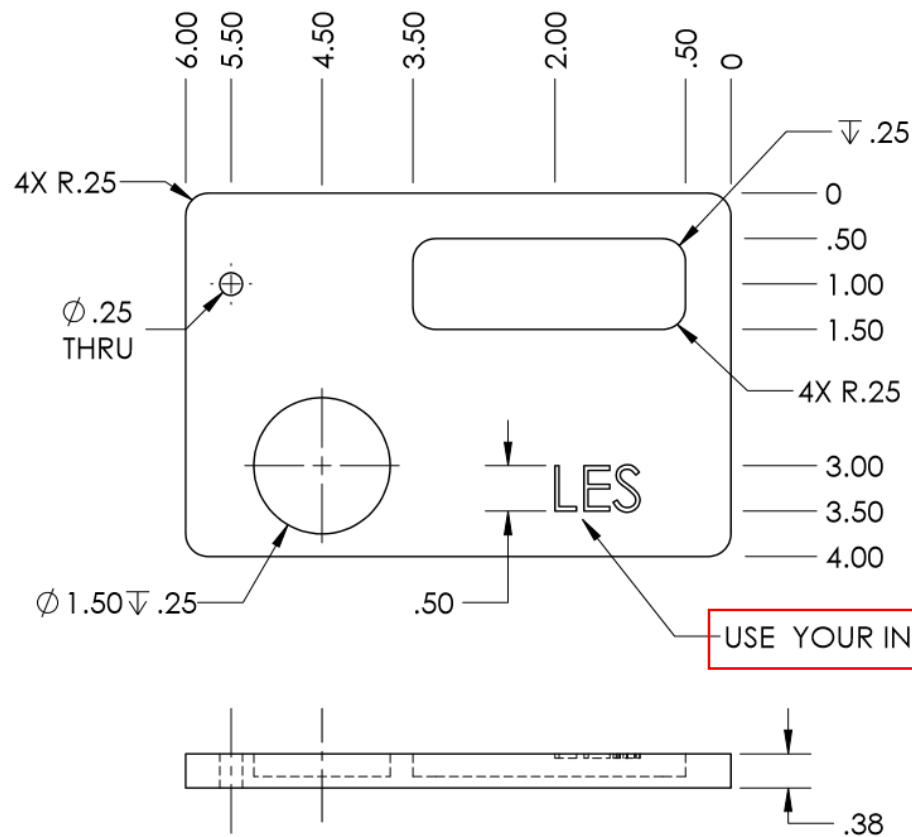
ProtoTRAK SM Key	Keyboard Equivalent
GO	Alt + G
STOP	Alt + S
ACCESSORY	Alt + C
F / C	Alt + Z
INC SET	Alt + I
ABS SET	Alt + A or Enter
X	X
Y	Y
Z	Z
MODE	Alt + M or ESC key

ProtoTRAK SM Key	Keyboard Equivalent
Numbers 0 - 9	Numbers 0 - 9
+/-	+ and -, default is positive
INC/ABS	Alt + [
IN/MM	Alt +]
LOOK	Alt + L
RESTORE	Use back/clear key
SYS	Alt + W
▲	Alt + up arrow
▼	Alt + down arrow
HELP	Alt + H
BACK	Alt + B
RESTORE IN AGE	Alt + Backspace

WHAT WILL YOU BE PROGRAMMING?

- Below is a simple model that you will program now, just to get a feel for the basic operation of how to program the 2-axis CNC mills in the shop.
- Mr. Nelson and Mr. Ricketts will go into more detail at your machining appointment.
 - You should print out a copy of the final engineering drawing *of your plate* to work from when you come to your shop appointment.





ALL DIMENSIONS IN INCHES

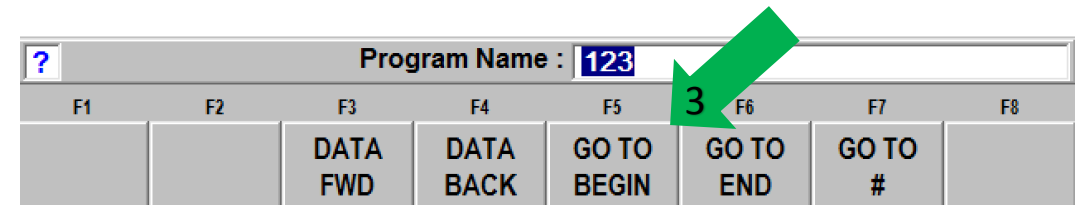
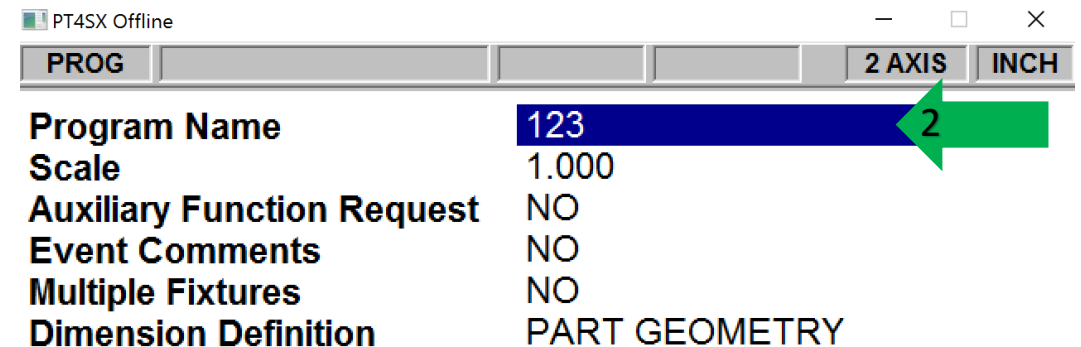
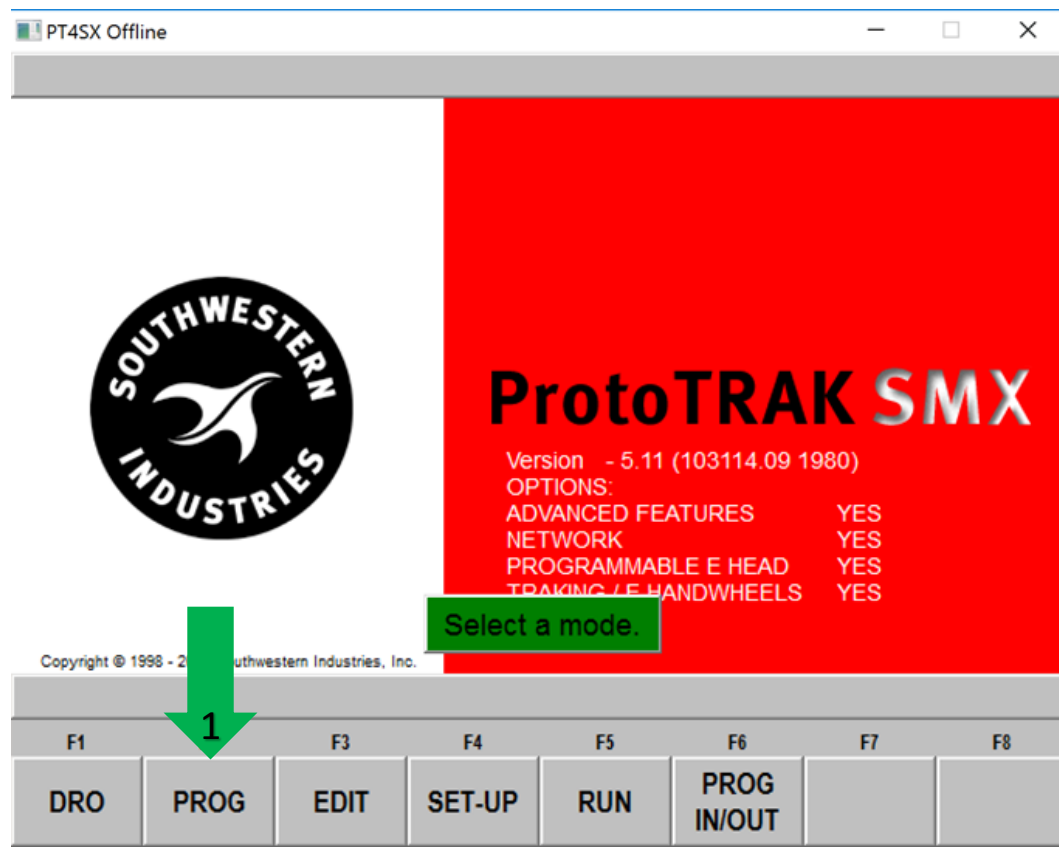
Program this plate, not your own plate!

TOLERANCES (UNLESS OTHERWISE NOTED)	PROJECT OR CLASS: MEEG 301, FALL 2017	
DECIMAL .XXX \pm .005 .XX \pm .010 .X \pm .050	DRAWING TITLE: EXAMPLE PART FOR OFFLINE PROGRAMMING ASSIGNMENT	
	DRAWN BY: L. E. SZEWCZAK	DATE: 8/30/2017
	CHECKED BY:	DATE:
FRACTIONAL $\pm 1/32$	APPROVED BY: J. GLANCEY	DATE: 8/30/2017
	MATERIAL: ALUMINUM	QUANTITY: 1
ANGULAR ± 0.5 DEG	SCALE: 1:2	DWG NO: 1 OF 1
	BILLING ACCOUNT:	

HOW DO I START PROGRAMMING?

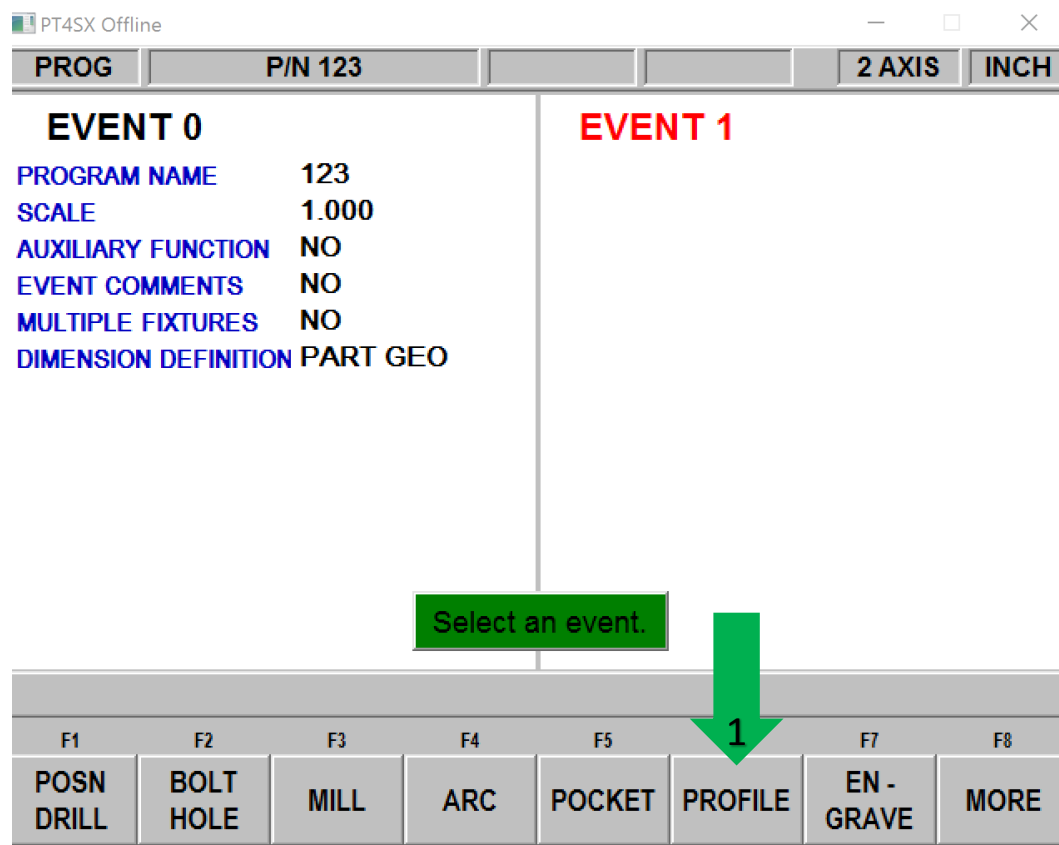
- To begin programming, press MODE <ALT+M>
- Click PROG for programming

Type in a Program Name, Hit ENTER
Click GO TO BEGIN to program a feature

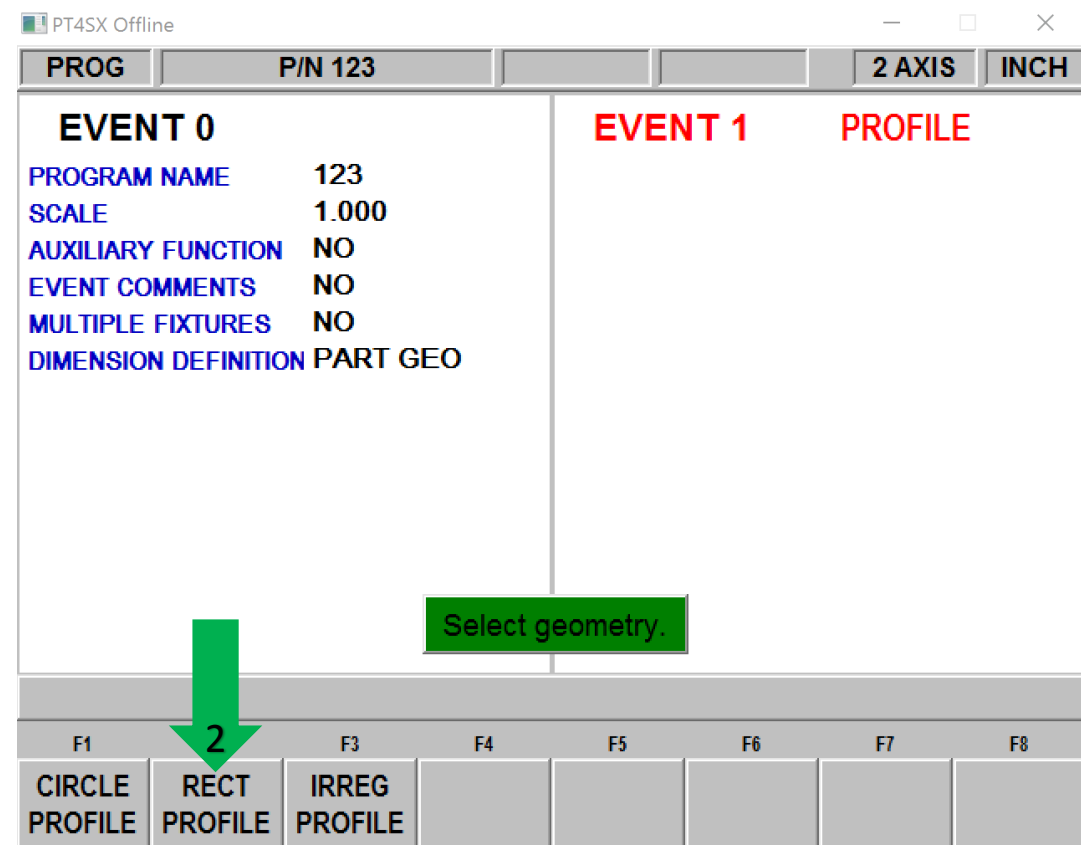


HOW DO I PROGRAM MY FIRST FEATURE?

- We're going to start by programming the outside shape of our part
- This shape is going to be a rectangular profile.
- Start by clicking PROFILE



Then click RECT PROFILE



WHAT TO I NEED TO ENTER IN?

- Read the drawing provided and fill out the feature below.
- We need to program the coordinates of two opposite corners of the rectangle and include the corner radius (CONRAD).

PT45X Offline

PROG	P/N 123	2 AXIS	INCH
EVENT 0		EVENT 1 RECT PROFILE	
PROGRAM NAME	123	X1	0.0000 abs
SCALE	1.000	Y1	0.0000 abs
AUXILIARY FUNCTION	NO	X3	-6.0000 abs
EVENT COMMENTS	NO	Y3	-4.0000 abs
MULTIPLE FIXTURES	NO	CONRAD	0.2500
DIMENSION DEFINITION	PART GEO	DIRECTION	CW
		TOOL OFFSET	LEFT
		FIN CUT	0.0000
		RPM	1200.00
		FEEDRATE	3.0
		TOOL #	1

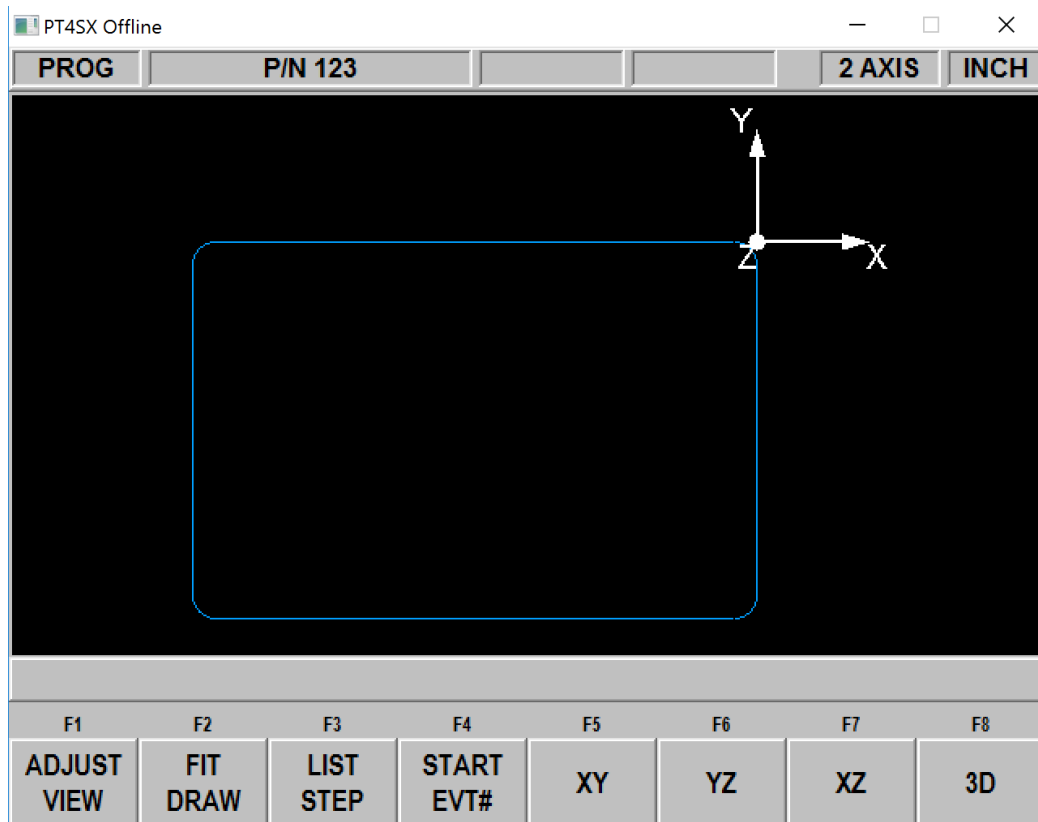
X1 : 0.0000 abs

F1	F2	F3	F4	F5	F6	F7	F8
PAGE FWD	PAGE BACK	DATA FWD	DATA BACK	DATA BOTTOM	INSERT EVENT	DELETE EVENT	

- Type a number and press ENTER to move down.
- If you make a mistake you can move up and down by using the DATA FWD and DATA BACK buttons.
- When you have more features programmed you can go through them by pressing PAGE FWD and PAGE BACK buttons.

DID I DO THAT RIGHT?

- You can and should check your work after every event by pressing LOOK <ALT+L>.



- Your screen should look like this.
- You can return to your programming screen by again pressing LOOK <ALT+L>
- If at any point you get lost press MODE <ALT+M> until you return to the main screen. Then press PROG then GO TO BEGIN, to navigate to your program.

HOW DO I PROGRAM THE SECOND FEATURE?

- Second, we will program the rectangle in the top right corner.
- This will be a Rectangular Pocket. Click POCKET then RECT POCKET

PT4SX Offline

PROG P/N 123 2 AXIS INCH

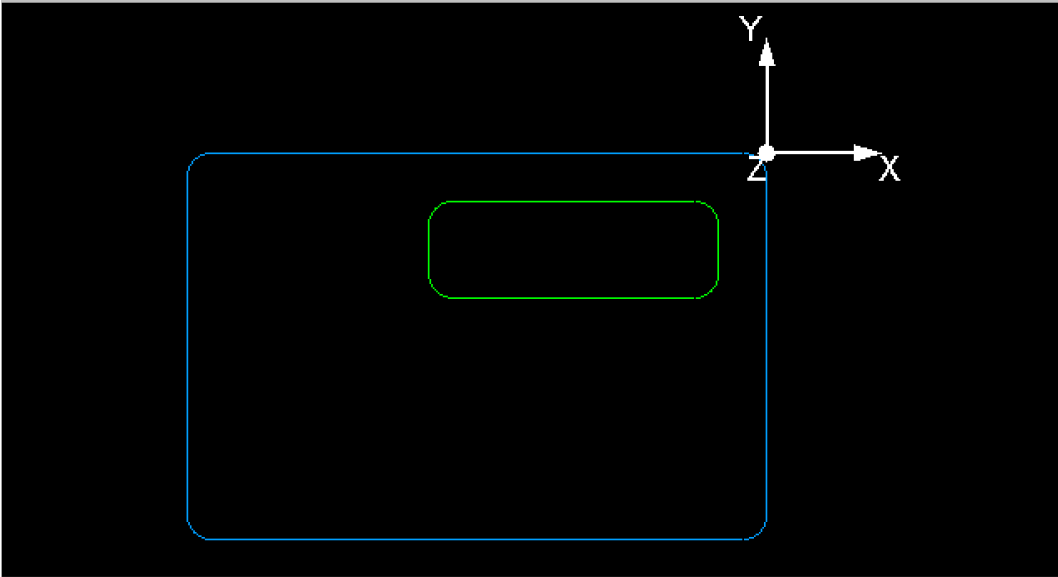
EVENT 1	RECT PROFILE		EVENT 2	RECT PCKT	
X1	0.0000	abs	X1	-0.5000	abs
Y1	0.0000	abs	Y1	-0.5000	abs
X3	-6.0000	abs	X3	-3.5000	abs
Y3	-4.0000	abs	Y3	-1.5000	abs
CONRAD	0.2500		CONRAD	0.2500	
DIRECTION	CW		DIRECTION	CCW	
TOOL OFFSET	LEFT		FIN CUT	0.0000	
FIN CUT	0.0000		RPM	1200.00	
RPM	1200.00		FEEDRATE	3.0	
FEEDRATE	3.0		TOOL #	1	
TOOL #	1				

X1 : -0.5000 abs

F1	F2	F3	F4	F5	F6	F7	F8
PAGE FWD	PAGE BACK	DATA FWD	DATA BACK	DATA BOTTOM	INSERT EVENT	DELETE EVENT	

PT4SX Offline

PROG P/N 123 2 AXIS INCH



F1	F2	F3	F4	F5	F6	F7	F8
ADJUST VIEW	FIT DRAW	LIST STEP	START EVT#	XY	YZ	XZ	3D

THE NEXT FEATURE?

- Next, we will program the circle in the bottom left corner.
- This will be a circular pocket. Click POCKET then CIRCLE POCKET.

PT4SX Offline

PROG P/N 123 2 AXIS INCH

EVENT 2	RECT PCKT		EVENT 3	CIRC PCKT	
X1	-0.5000	abs	X CENTER	-4.5000	abs
Y1	-0.5000	abs	Y CENTER	-3.0000	abs
X3	-3.5000	abs	RADIUS	0.7500	
Y3	-1.5000	abs	DIRECTION	CCW	
CONRAD	0.2500		FIN CUT	0.0000	
DIRECTION	CCW		RPM	1200.00	
FIN CUT	0.0000		FEEDRATE	3.0	
RPM	1200.00		TOOL #	1	
FEEDRATE	3.0				
TOOL #	1				

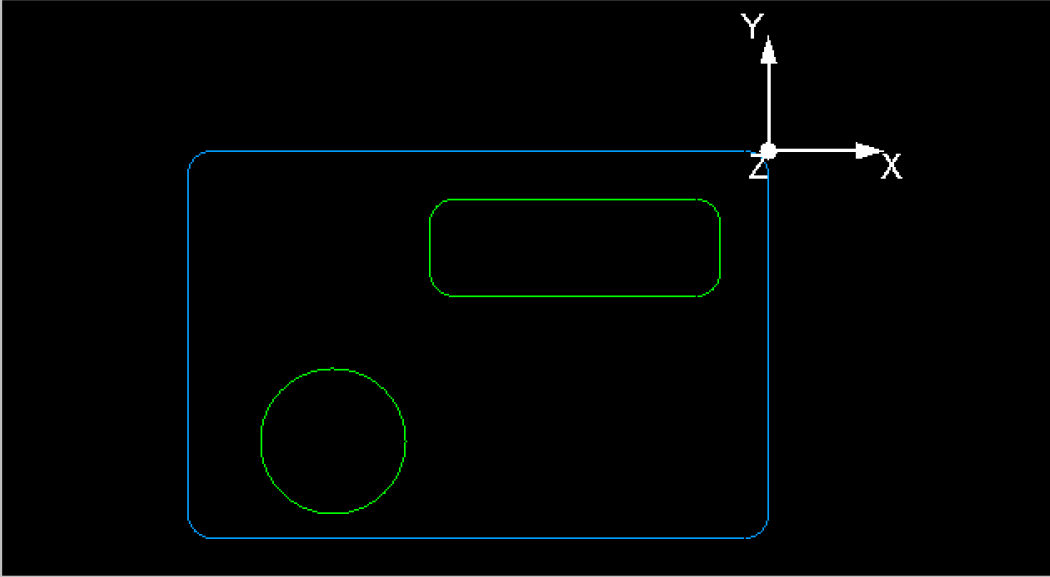
X CENTER : -4.5000 abs

F1 F2 F3 F4 F5 F6 F7 F8

PAGE PAGE DATA DATA DATA INSERT DELETE
FWD BACK FWD BACK BOTTOM EVENT EVENT

PT4SX Offline

PROG P/N 123 2 AXIS INCH



F1 F2 F3 F4 F5 F6 F7 F8

ADJUST FIT LIST START XY YZ XZ 3D
VIEW DRAW STEP EVT#

HOW DO I PROGRAM A DRILL HOLE?

- The small hole in the top left corner will be a drill hole.
- Click POSN DRILL to select a position/drill move.

PT4SX Offline

PROG P/N 123 2 AXIS INCH

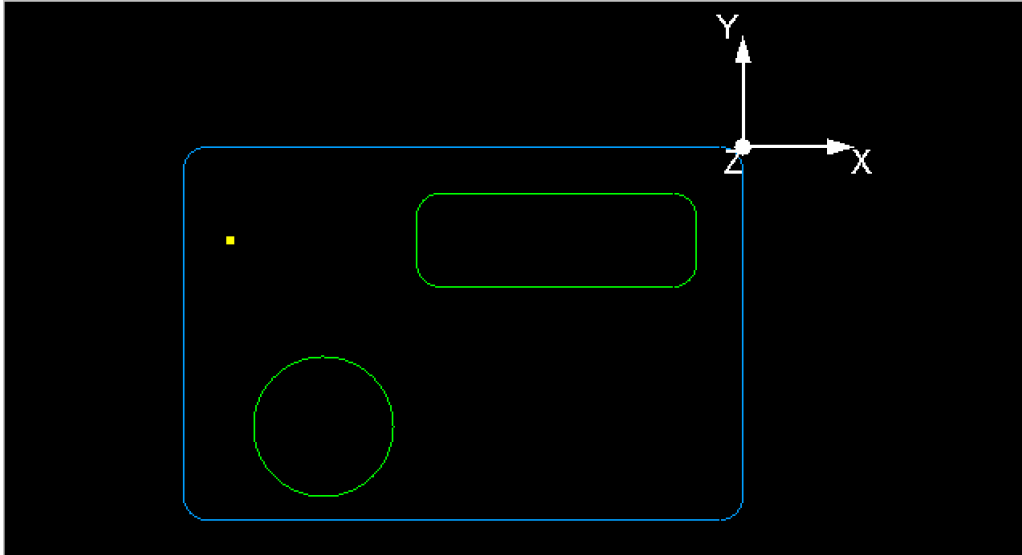
EVENT 3	CIRC PCKT		EVENT 4	POSN DRILL	
X CENTER	-4.5000	abs	X END	-5.5000	abs
Y CENTER	-3.0000	abs	Y END	-1.0000	abs
RADIUS	0.7500		RPM	1000.00	
DIRECTION	CCW		TOOL #	2	
FIN CUT	0.0000				
RPM	1200.00				
FEEDRATE	3.0				
TOOL #	1				

X END : -5.5000 abs

F1	F2	F3	F4	F5	F6	F7	F8
PAGE FWD	PAGE BACK	DATA FWD	DATA BACK	DATA BOTTOM	INSERT EVENT	DELETE EVENT	

PT4SX Offline

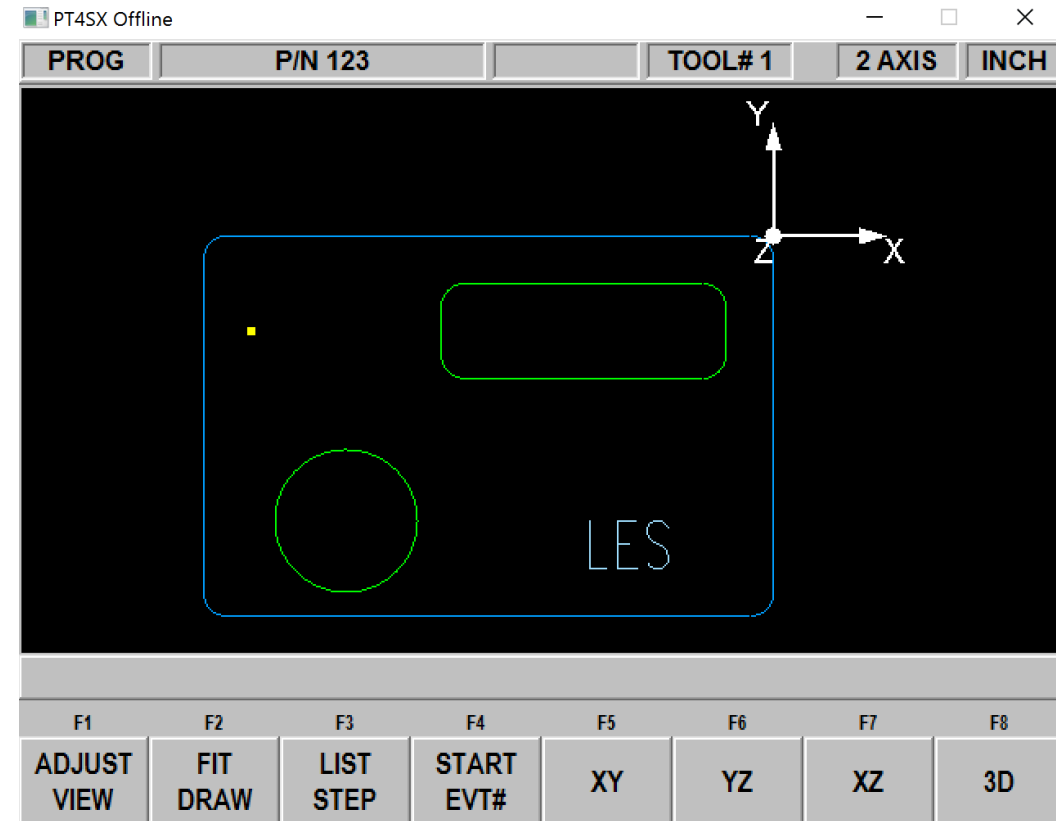
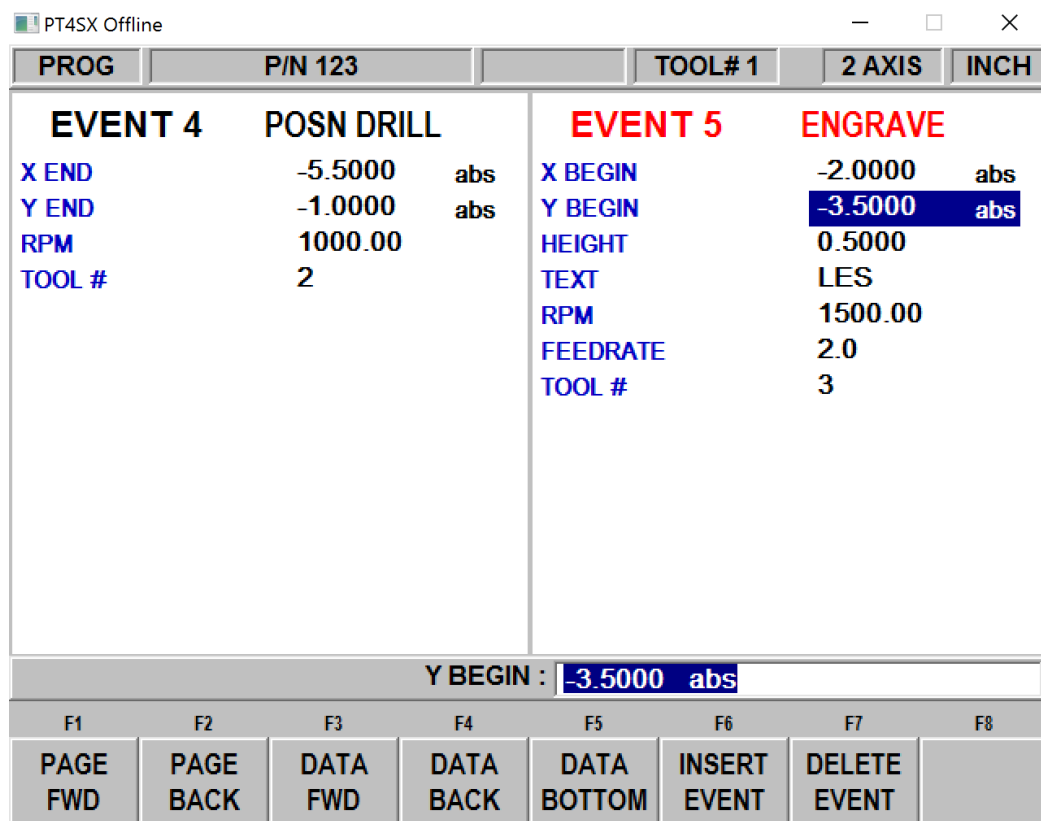
PROG P/N 123 2 AXIS INCH



F1	F2	F3	F4	F5	F6	F7	F8
ADJUST VIEW	FIT DRAW	LIST STEP	START EVT#	XY	YZ	XZ	3D

HOW DO I ENGRAVE MY INITIALS?

- Click EN-GRAVE to select the engrave feature.
- Make sure you enter **YOUR INITIALS** as the text.



HOW DO I GET CREDIT FOR MY WORK?

- Take a screen shot of your final LOOK screen that has **YOUR INITIALS** on it.
- Print it out and bring it along with you to your Machining Appointment in the shop.
- Your screenshot should look like this, it has all 5 features programmed and your initials engraved on it.

