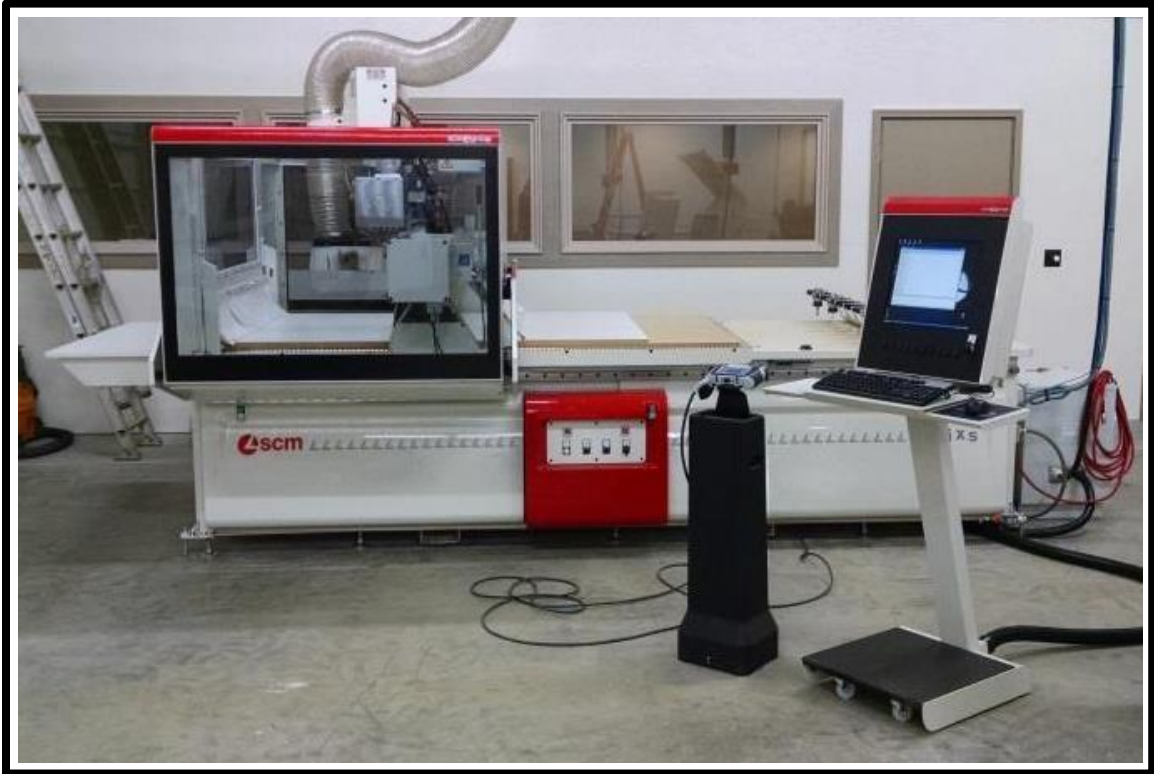


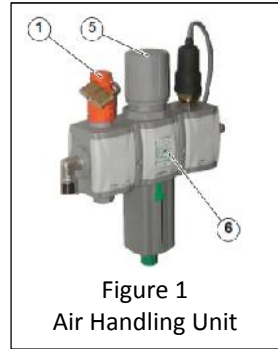
# SCM Pratic S Training Manual





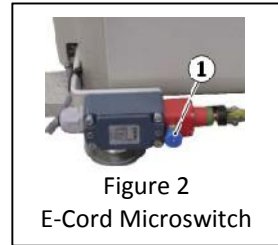
**1<sup>st</sup> Edition**  
**December 28, 2014**  
**Written By: John Croce**

## Startup Procedure

101. Check Electrical Power to the machine. Make sure breaker is switched on.
102. Turn On Pneumatic Air to the machine. Push Orange On-Off Valve (Figure 1.1) on the Air Handling Unit down and turn clockwise.
103. Check Air Pressure on the Pressure Gauge (Figure 1.6). Needs to be 6.5 bar (95psi). Use the Regulator (Figure 1.5) to adjust pressure. First Pull up. Turn Clockwise to increase. Counter clockwise to decrease.
104. Make sure Dust Extraction is connected and running.
105. Turn general switch (main disconnect) to the On position.



106. Check Emergency Cords (Trip Wires). Pull the blue button (Figure 2.1) on the microswitch and make sure it stays out. Adjust tension on the trip cord if it does not hold out.
107. Check Electro-mechanical (Safety) Bumpers. Pull and check switches are set properly.
108. Check the E-Stop Mushroom Button (Figure 3.2) on the Sintesi. Make sure it is pulled out.
109. Push the Reset Button  on the machine control panel.
110. Push the On Button  on the machine control panel. The white LED light will come on. If the light does not come on, recheck emergency stops, make sure air pressure is on and at the correct pressure, and make sure the axis are not over limit.



### Common Startup Problems

- One of the Emergency switches is in alarm. Recheck all safety devices.
- Air valve is not turned on. Turn on, push reset button and then push power button.
- Machine was jogged over limit in the X-Direction. Shut machine off, and manually push so electrospindle is over the table.

## Reference Procedure

---

201. From the Main Menu push the “REFERENCE” Button.



202. Push the “START CYCLE (S)” Button. The machine will automatically run the calibration procedure.



### Common Reference Problems

- Machine is jogged over limit in the X-Direction. Drill #1 needs to be over the table in order for the machine to reference. Shut down machine and manually push the safety enclosure so Drill #1 is over the table.
- Machine is over limit in the Z-Direction. Hold down the Power Button and carefully Jog the machine in the Z-Direction so it is not over limit.
- Machine was shut down during a tool change. Address Tooling issues first. Machine may need to be jogged to a limit switch to find position.

# Vacuum Pump On/Off Procedure

301. From the Main Menu Push the “EXEC” Button.



302. From the Execute Menu Push the “RIGHT ARROW” Button.



303. Push the “VACUUM 1” and/or “VACUUM 2” Buttons to toggle each On/Off.





## Load & Run a Program Procedure

---

401. Make sure dust collection is running to the machine.

402. Make sure the vacuum pump is turned on.

403. Load the material you will be machining onto the machine.

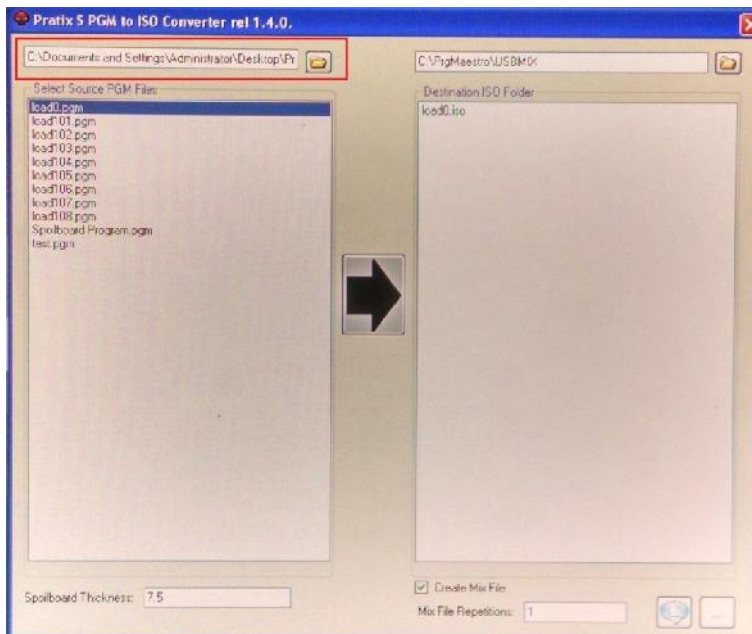
404. Press the Vacuum Button(s) on the machine. Green LED lights in the buttons come on, the pins will drop and vacuum runs to the table. Make sure the vacuum sensors are set properly for your material.



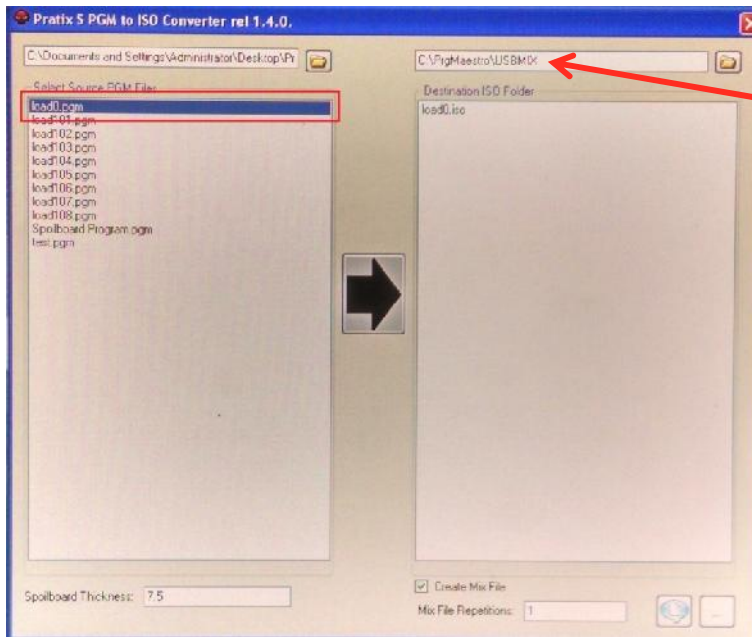
405. Open the PGMtoISO Converter Program.



406. Choose the folder where your program files are located.

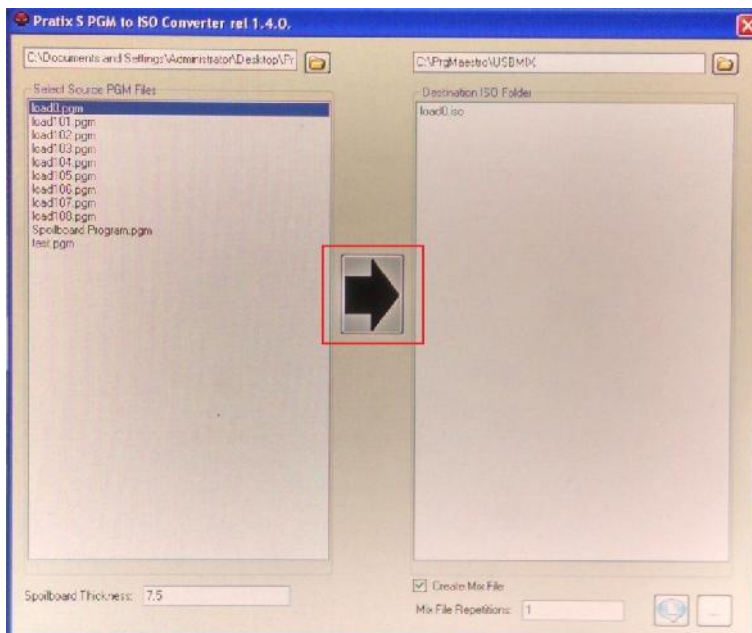


407. Select the program file or files you want to run on the machine.



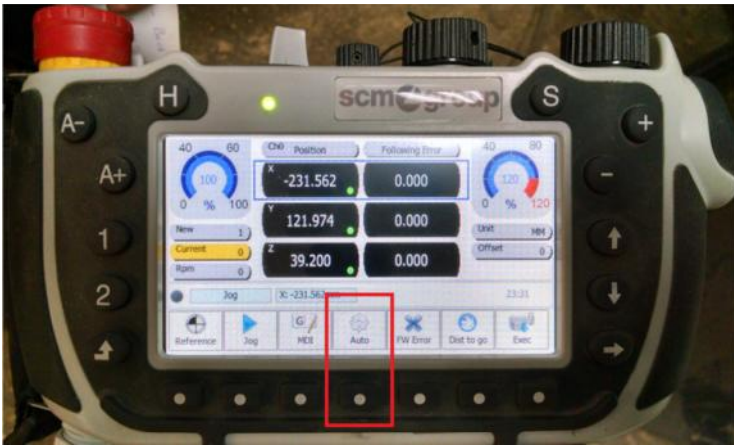
The destination folder always has to be  
C:\PrgMaestro\USBMIX

408. Click the Right Arrow to convert the selected “.PGM” file(s) to machine ready “.ISO” file(s).  
Make certain the spoilboard thickness is correct. This value will override the default value in the program.  
The machine will execute the files in the order they are listed.

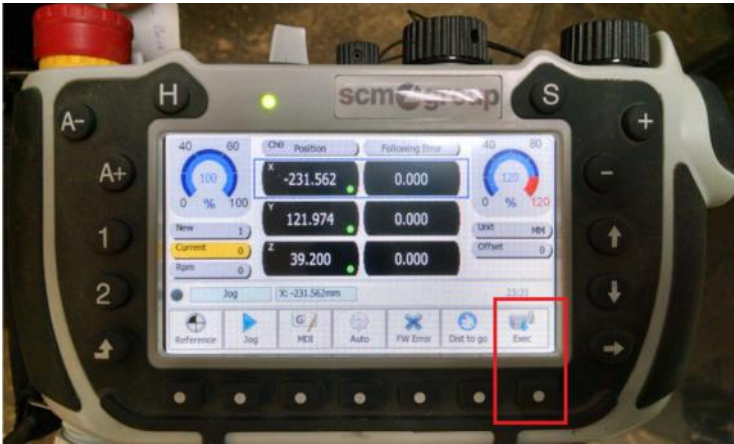


**IMPORTANT!**  
Make certain the spoilboard  
thickness is accurate, and that the  
unit of measure is correct.

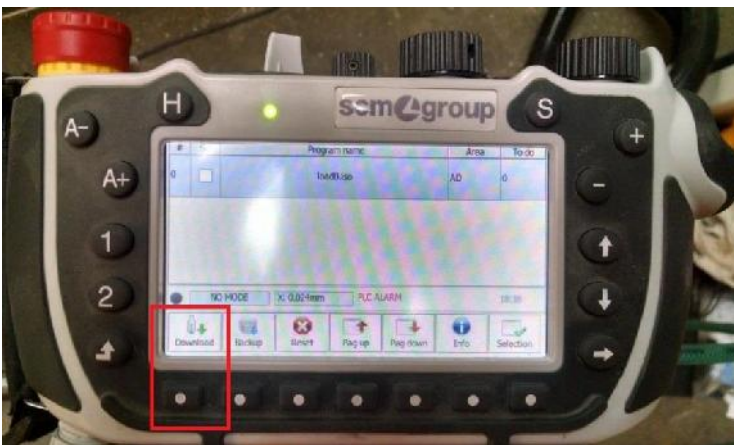
409. From the Main Menu press the “AUTO” Button.



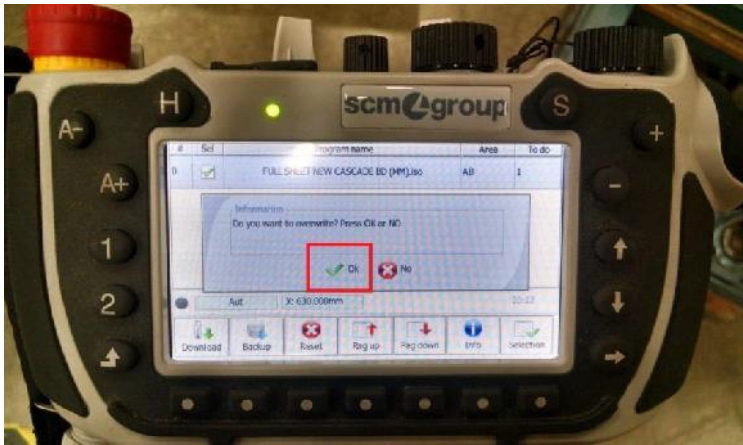
410. From the Main Menu press the “EXEC” Button.



411. From the Execute menu press the “DOWNLOAD” Button.



412. Press "OK" on the pop up window.



413. Press "OK" in the pop up window or the "1" Button.



414. Press the "START CYCLE (S)" Button to start machine operation.



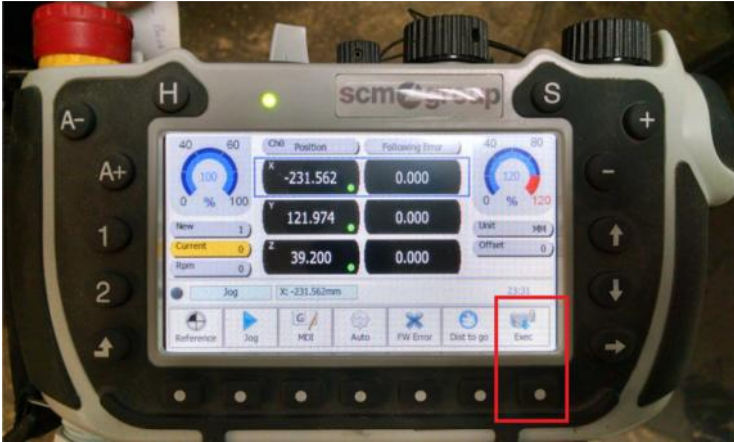
### Common Problems

- The Vacuum Pump has not been turned on.
- One or more of the emergency cords has been tripped.



## Activate Simulated Vacuum Switch “V0”

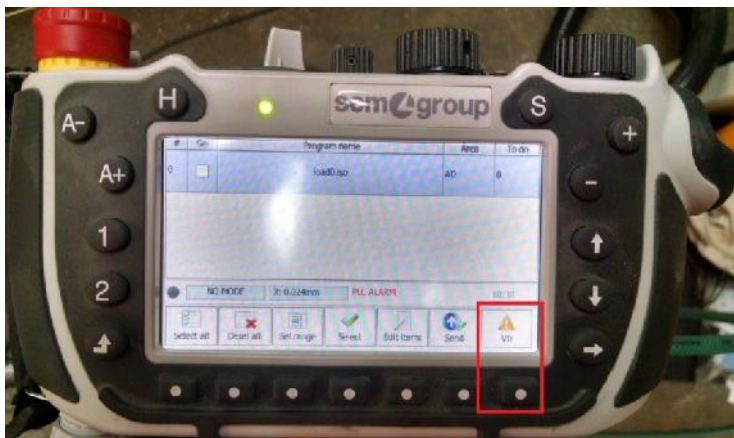
501. From the Main Menu push the “EXEC” Button.



502. From the Execute menu press the “SELECTION” Button.

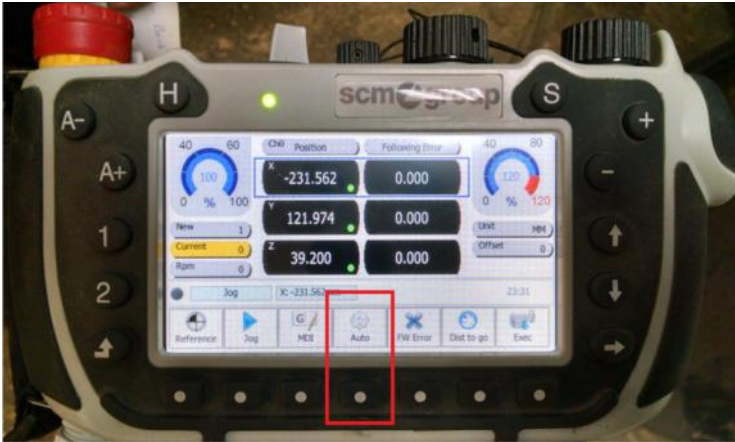


503. From the Selection menu press the “V0” Button.



## Measure a Tool with the Automatic Probe

701. From the Main Menu press the "AUTO" Button



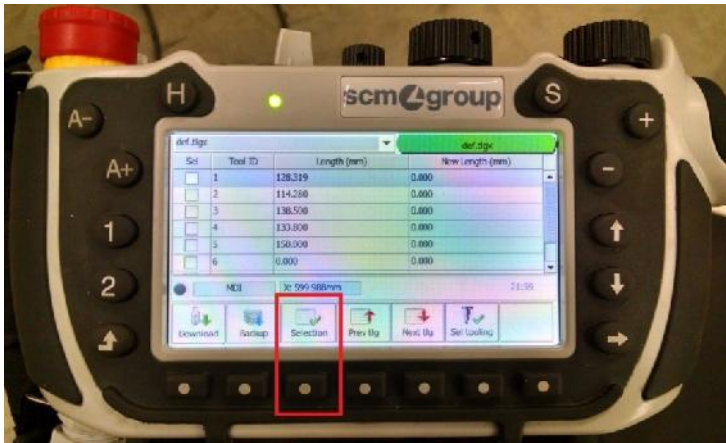
702. Then press the "RIGHT ARROW" Button.



703. Now press the "TOOLING" Button.



704. Press the "SELECTION" Button.



705. Press the "UP" and "DOWN" Arrows to highlight the tool you want to measure.



706. Then press the "SELECT" Button.





707. Press the "SEND" Button.



708. Press the "START" Button.



709. Then Press the "START CYCLE (S)" Button to measure the tool.





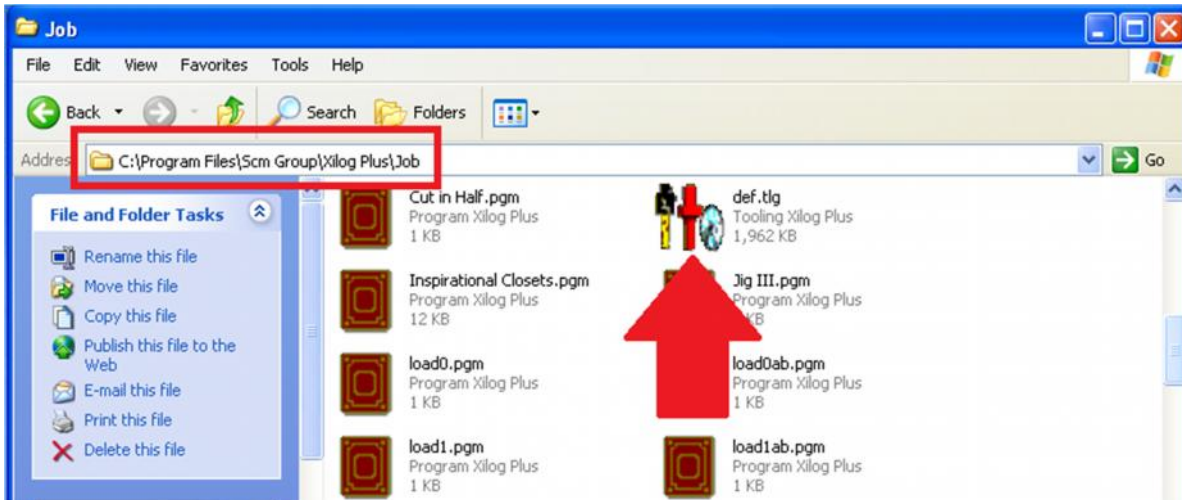
710. The Sintesi will display a value in the “New Length (mm)” column. This is the length of the tool.



711. Open the tool file “DEF.TLG”.



(File Destination - C:\Program Files\Scm Group\Xilog Plus\Job)



712. Expand the “EXTERNAL TOOLS” menu and select the tool you measured. Then type in the “New Length (mm)” from the Step 710 into the “CUTTER LENGTH” field and SAVE.

The screenshot shows a software interface with a list of external tools on the left and a parameter list on the right. The tool 'Tool E1 (Half Inch Compression)' is selected. The parameter list includes various tool settings, with 'Cutter Length' highlighted in red and set to '+127.80'.

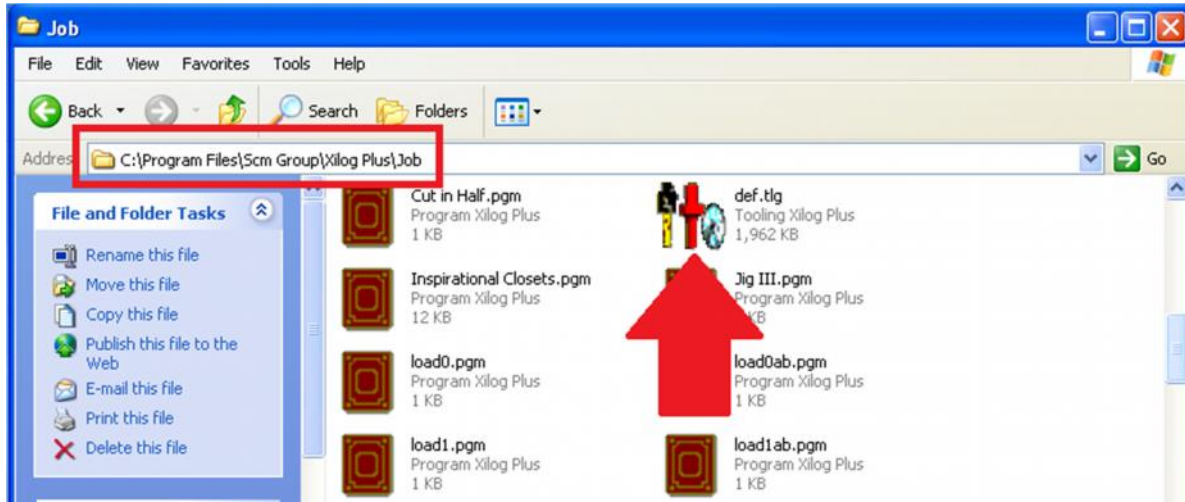
List parameters	Value
Type (V,U,O,T,O=N,D.,P,F,D,T,S,I,M,N,O)	F
Cutter Length:	+127.80
Cutter Diameter:	+12.70
Working Length:	+30.00
Working Diameter:	+12.70
Wear coefficient in Length:	+0.00
Wear coefficient in diameter:	+0.00
Max wear in Length:	+0.00
Max wear in diameter:	+0.00
Correct Length:	+0.00
Correct Diameter:	+0.00
Max. speed (if < 100 in m/min otherwise in mm/min):	+25000.00
Standard speed (if < 100 in m/min otherwise in mm/min):	+18000.00
Max.Rotation(rpm):	+18000.00
Rotation standard (rpm):	+18000.00
Direction of rotation (+=dx, -=sx):	+
Speed G0/B (if < 100 in m/min otherwise in mm/min):	+3500.00
Windowed tool change not allowed (0=NO; 1=YES):	0
Tool Counter position X:	E1
Tool Counter position Y:	E1
Number store:	0
Positions store:	1
Machining Surface:	0
Overall dimensions:	+110.00
Offset X:	+0.00
Offset Y:	+0.00
Distance Z:	+0.00
Offset R:	+0.00
Distance D:	+0.00
Angle A (B for type 'D') (degrees):	+0.00
Number Total:	0
Automatic management of tool length (0=NO; 1=YES):	0
Angolo Perno - Paletta:	+0.00
Raggio Paletta:	+0.00
Numero perni di riferimento:	0
Code:	

## Change Tool Parameters

801. Open the tool file “DEF.TLG”.



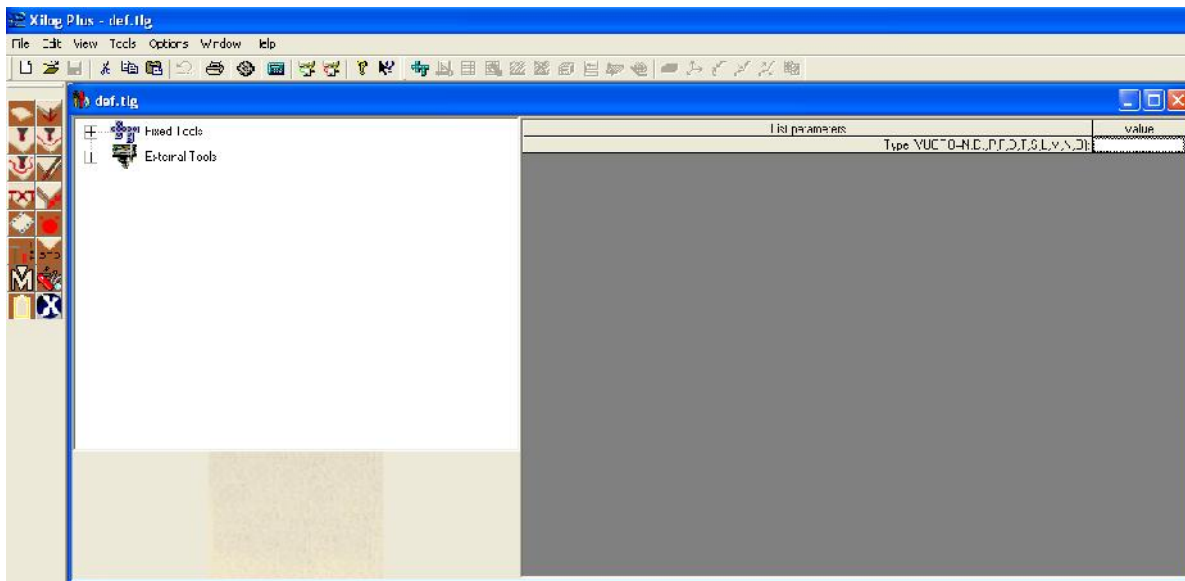
(File Destination - C:\Program Files\Scm Group\Xilog Plus\Job)



802. Expand the “Fixed Tools” or “External Tools” menu depending on what tool parameters you want to change.

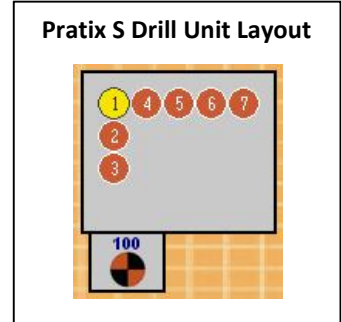
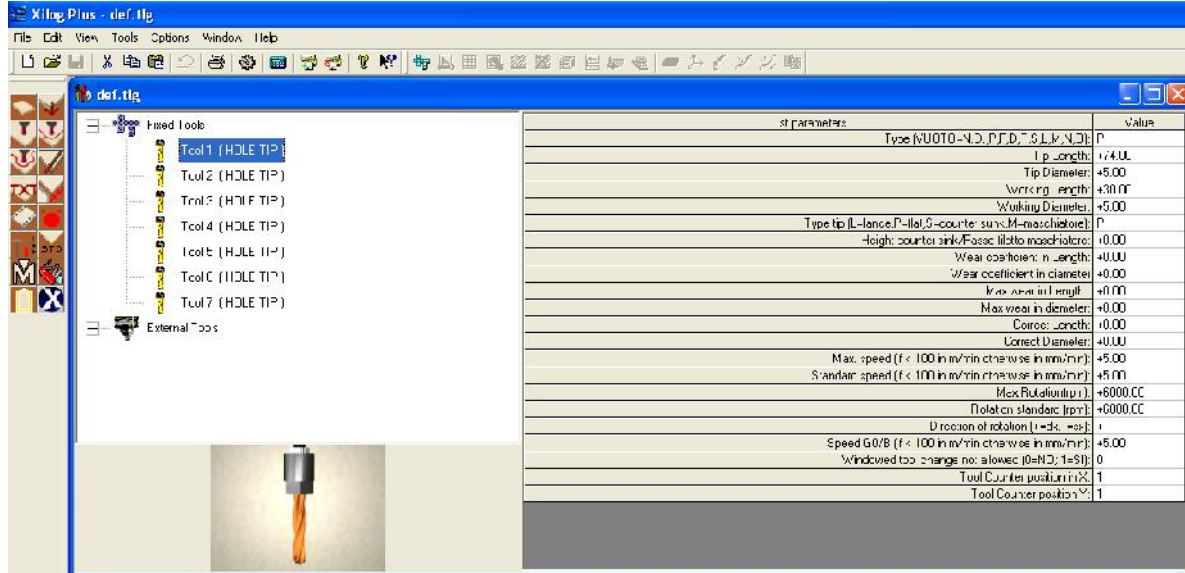
Fixed Tools – tools installed on the drill block

External Tools – tools in HSK holders on the tool rack

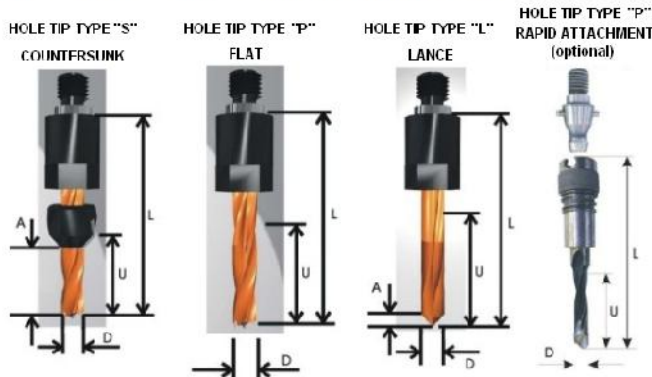


803. To change a parameter select the field you wish to change, enter the new value, and hit "ENTER".  
Some fields will require a password. Type in "xilog3".

## Fixed Tools



### 4.1.2.1 Fixed Tools: Example with Hole Tips



<b>Tip length</b>	Tool length (see figure, L).
<b>Tip diameter</b>	Tool diameter (see figure, D).
<b>Working length</b>	Maximum thickness tool can machine (see figure, U).
<b>Working diameter</b>	Tool diameter (see figure, D). Must coincide with the "Tip Diameter"; if the value is 0, the "Tip Diameter" is the one that counts. For a bit mounted as an <i>external tool</i> , it represents the diameter of the bore; if the value is 0, the "Tip Diameter" also represents the bore diameter.
<b>Type tip</b>	Type of tool to be configured: S = tip with countersink P = flat tip L = flat tipped tip
<b>Height countersink</b>	Distance from the lower tip of the tip to the beginning of the countersink (see figure, A).
<b>Wear coefficient in length</b>	Not enabled.
<b>Wear coefficient in diameter</b>	Not enabled.
<b>Max. wear in length</b>	Not enabled.
<b>Max. wear in diameter</b>	Not enabled.
<b>Correct length</b>	Not enabled.
<b>Correct diameter</b>	Not enabled.
<b>Max. speed</b>	Parameter invalid for the boring unit.
<b>Standard speed</b>	Parameter invalid for the boring unit.
<b>Max. rotation</b>	The boring unit has a fixed speed (this parameter makes no difference).
<b>Rotation standard</b>	The boring unit has a fixed speed (this parameter makes no difference).
<b>Direction of rotation</b>	The boring unit has a fixed rotation (leave empty).
<b>Speed G0/B</b>	Speed at which tool is made.
<b>Windowed tool change not allowed</b>	Change of tool on main spindle while the drilling machine is operating (default value=NO).
<b>Tool counter position in X</b>	Number of the tool to be used for mirrored boring in X.
<b>Tool counter position in Y</b>	Number of the tool to be used for mirrored boring in Y.

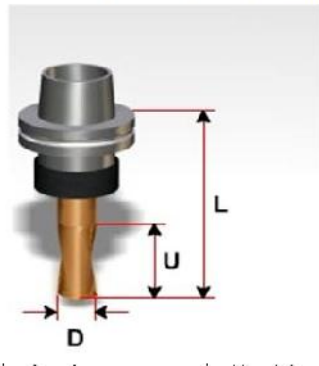


## External Tools

The screenshot shows the Xlog Plus software interface. On the left, a tree view lists various tools, with 'Tool F1 (Type F)' selected. Below the tree is a 3D model of a cylindrical tool with red arrows indicating rotation. The main area displays a table of parameters for the selected tool.

Tool parameter	Value
Tool ID	Tool F1 (Type F)
Cutter Length	+127.80
Cutter Diameter	+12.70
Working Length	+30.00
Working Diameter	+12.70
Wear coefficient in length	+0.00
Max. wear in diameter	+0.00
Max. wear in length	+0.00
Max. wear in diameter	+0.00
Lower Length	+0.00
Correct Diameter	+0.00
Max. speed (1:10) in m/min operative in normal	0
Standard speed (1:10) in m/min operative in normal	20
Max. Rotations/min	+1800.00
Rotation standard (1:10)	1500
Direction of rotation (1:10)	+
Speed G0/B (1:10) in m/min operative in normal	+20.00
Windowed tool change not allowed (0-N): 1-5	0
Tool counter position in X	1/2
Tool counter position in Y	0
Number store	0
Machining surface	2
Use of diameter	+17.00
Offset X	+0.00
Offset Y	+0.00
Distance Z	+0.00
Offset P	+0.00
Distance D	+0.00
Angle A/B (to type D) degrees	+0.00
Number of turns	0
Acceleration management of tool length (0-N): 1-YES	0
Speed limit	+0.00
Radius	+0.00
Number of increments	0
Code	
Comment	Half Inch Comp

### 4.1.2.3.1 Example of a Type F Cylindrical Tool



<b>Cutter length</b>	Tool length; is used in programming to calculate the route in Z (see figure, L).
<b>Cutter diameter</b>	Maximum tool diameter (see figure, D).
<b>Working length</b>	Maximum thickness machined by the tool (see figure, U).
<b>Working diameter</b>	Diameter of tool used to calculate compensation (see figure, D). In this case, equal to the cutter diameter, if the value is 0, the "Cutter diameter" counts.
<b>Wear coefficient in length</b>	Not enabled.
<b>Wear coefficient in diameter</b>	Not enabled.
<b>Max. wear in length</b>	Not enabled.
<b>Max. wear in diameter</b>	Not enabled.
<b>Correct length</b>	Not enabled.
<b>Correct diameter</b>	Not enabled.
<b>Max. speed</b>	Tool maximum operative speed.
<b>Standard speed</b>	Tool operative speed. This value cannot exceed the maximum speed. You can set this parameter when programming the work piece.
<b>Max. rotation</b>	Maximum number of turns at which the tool can rotate (in turns per minute). <b>Warning!</b> Check the speed engraved on the head. To modify this parameter, a password must be inserted: contact service department for assistance.
<b>Rotation standard</b>	Tool rpm during use. This value cannot exceed the maximum rotation. You can set this parameter when programming the work piece.
<b>Direction of rotation</b>	Tool direction of rotation: + clockwise (right-hand tool) - anti-clockwise (left-hand tool)
<b>Speed G0/B</b>	Descent speed in the sector which goes from the safety dimension to the machining dimension. You can set this parameter when programming the work piece with (-) or X(+).
<b>Windowed tool change not allowed</b>	Change of tool on main spindle while the drilling machine is operating (default value=NO).
<b>Tool counter position in X</b>	Number of the tool to be used for mirrored routing in X.
<b>Tool counter position in Y</b>	Number of the tool to be used for mirrored routing in Y.
<b>Number store</b>	Number of the magazine containing the tool. Must be 0 if the machine has only one store. Not enabled for NWT machines.
<b>Positions store</b>	Position of the tool in the magazine. Not enabled for NWT machines.
<b>Machining surface</b>	Face on which the tool carries out machining.
<b>Overall dimensions</b>	Tool length from the taper to the opposite end.
<b>Code</b>	Tool identification code, if present (max. 11 characters).
<b>Comment</b>	Comment, if present (max. 40 characters).

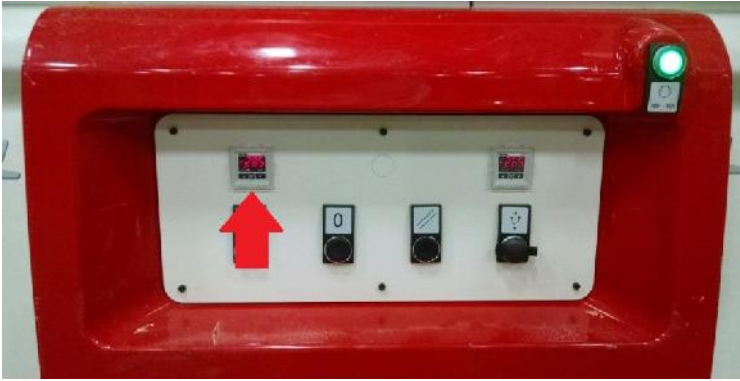
N.B. Any parameters not indicated in the example are not used for vertical tools.

804. "SAVE" the file.

## Change Vacuum Sensor Settings

---

901. Remove the cover on the electronic readout display for the zone you want to change by pulling up and out.



902. Press the "SET" Button. You will see "P1" flash on the display. You can now change the settings.



903. Press the "UP" or "DOWN" Arrows to adjust "P1".



904. Press "SET" to save the new setting and display "P2".



905. Press the “UP” or “DOWN” Button to adjust “P2”.



906. Press “SET” to save the new setting and display “P3”. P3 and P4 are not used by the Pratih S.

907. Press “SET” again to display “P4”.

908. Press “SET” once more, the display will stop blinking, and display the current vacuum value.

909. Replace the plastic cover.

## Jog The Machine

1001. From the Main Menu select the axis you wish to Jog by pressing the touch screen.  
Make sure a blue box highlights the axis you've chosen.



**IMPORTANT!**  
**DO NOT Jog the machine in the Z-Direction unless absolutely necessary. The electro-spindle will plunge into the table and damage the machine.**

1002. Then press the "JOG" Button.





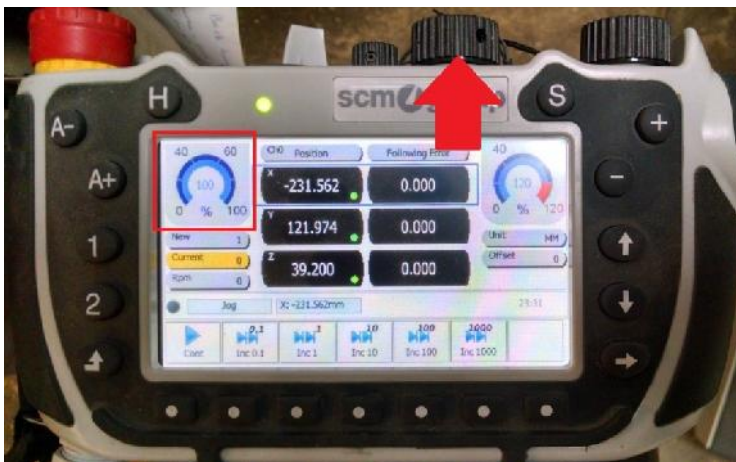
1003. Select a Jog Mode. The default is “CONT” (continuous) mode. The machine will jog as long as you hold down the “+” or “-” Button (see Step 1005) at the speed you’ve selected with the Axis Speed Adjustment Potentiometer (see Step 1004).

“INC” buttons are jog increments of the unit of measure (Sintesi default is millimeters).

For Example, press the “INC 100” button and the machine will jog 100 mm in the axis you chose in Step 1001 when pressing the “+” or “-” Buttons.



1004. Turn the Axis Speed Adjustment Potentiometer (Rapid Speed Turret) to adjust movement speed. The meter on the top left of screen will reflect the changes (100% equals 25 m/min (82 ft/min)).



1005. Press the “+” or “-” Button to Jog the machine in the axis you chose in Step 1001 and the mode you chose in Step 1003.

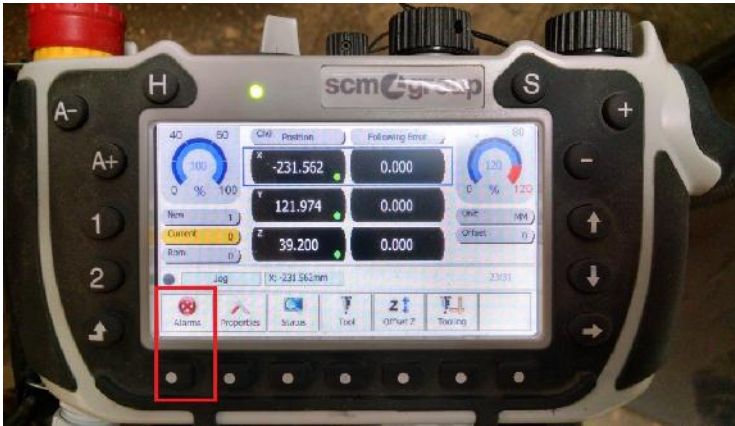


## Check Alarms

1101. From the Main Menu press the "RIGHT ARROW" Button.



1102. Press the "ALARMS" Button.



1103. View Alarms.




## Shutdown Procedure

---

1201. Jog the machine so the electro-spindle is over the working table (See Jog The Machine Section).

1202. Turn the Vacuum Pump Off (See Vacuum Pump On/Off Procedure Section).

1203. Shutdown the PC. Wait for the rainbow bands to disappear from the monitor.

1204. Push the Off Button on the Control Panel. 



1205. Turn the Main Disconnect off.



1206. Turn Air off. Turn Orange On-Off Valve on the Air Handling Unit counter-clockwise.





# Maintenance Routines

(Page 9.6 of the SCM Manual)

Frequency (hours)	Component	Operations to perform	Ref. PARA
8	EMERGENCY BUTTON	Check they work correctly	6.10
	EMERGENCY CORD		
	ELECTRO-MECHANICAL BUMPERS		
	FIXED GUARDS ATTACHED TO THE MACHINE	Inspect the guards	
	The whole machine	General cleaning	9.4
	Electro-spindle	Visual control Clean the tool connector	9.9
	Bush for positioning aggregate tool on electro-spindle	Clean with a clean cloth. Inspect the surfaces in contact with the aggregate tool pin.	--
	Tool store	Inspect the flexible grippers	9.6
	Air handling unit	Pressure control and adjustment	9.5
	Tool holder spindle	Clean and inspect the HSK-F63 connector cone.	9.8
	Aggregate tool		
Tools	Check they are sharp	--	
40	ADHESIVE SAFETY LABELS	Inspect	6.15 6.16
	Vacuum pump filter	Clean	
	Linear guides of X, Y and Z axes	Perform linear guide lubricating cycle	9.7
	Ball recirculation screws on the Z-axis		
	Linear guide of drilling unit (if present)		
	Tool holder spindle	Lubricate the HSK-F63 connector cone	9.8
Aggregate tool			
180	Air handling unit	Clean the filter	9.5
500	Drilling head	Lubricate	9.10
	Electrical Cabinet	Clean filters	

## Daily Maintenance (8 Hours) Highlights

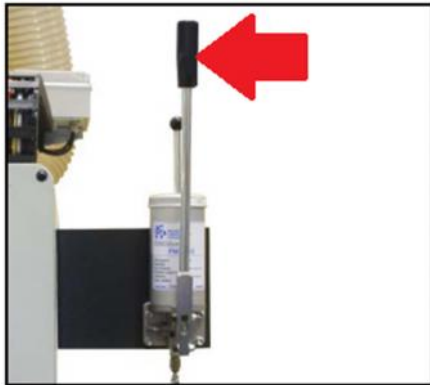
- Central Lubrication (Page 9.16)

- Step 1. Alarm on Sintesi indicates “PLC135: TO GREASE THE MACHINE”.



- Step 2. Pump the lever 7 times.

Lubricates linear guides on X, Y and Z axes & recirculating bearing screw on the Z axis.



- **Clean & Inspect HSK-F63 (Page 9.18)**

- Step 1. Use compressed air to remove dust from internal & external surfaces  
Figure 5.1 and Figure 5.2.

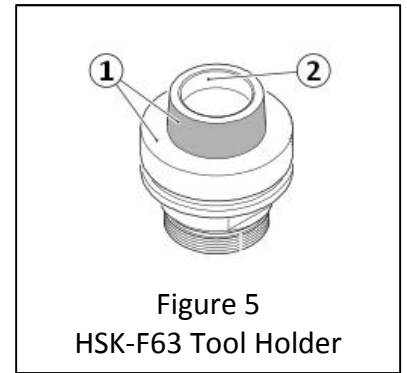
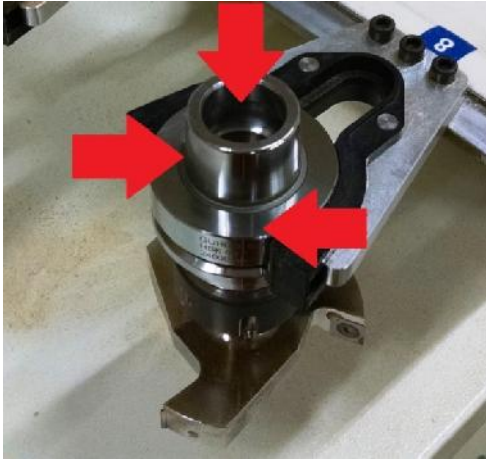
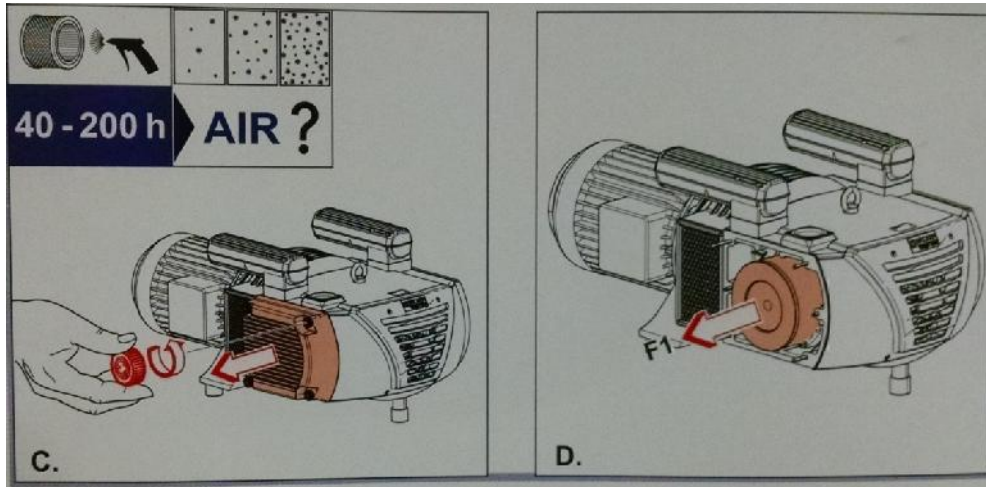


Figure 5  
HSK-F63 Tool Holder

- Step 2. Clean surfaces with a soft clean and unfrayed cloth.
- Step 3. Inspect tool holders for damage. Do not use if rusted, damaged or dented.

## Weekly Maintenance (40 Hours) Highlights

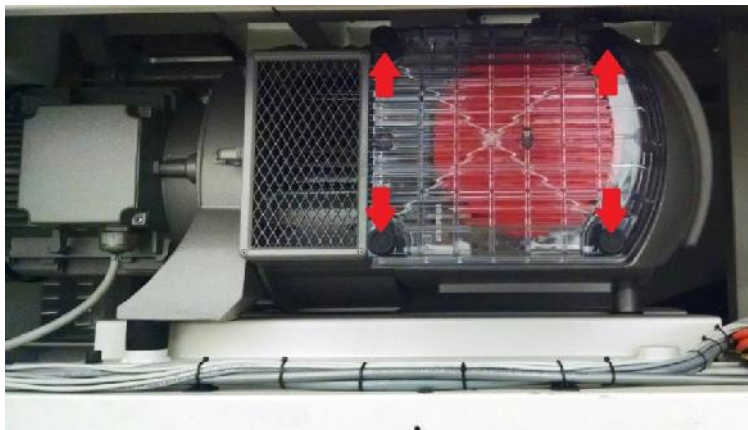
- Clean Vacuum Pump Filter



- Step 1. Remove the side panel. Use a 3mm Alan wrench to loosen the three screws on the bottom (3 total), then lift up the side panel about an inch and pull out.



- Step 2. Unscrew the thumb screws and pull the cover straight out.





- Step 3. Pull the air filter out.



- Step 4. Use compressed air to clean the filter.

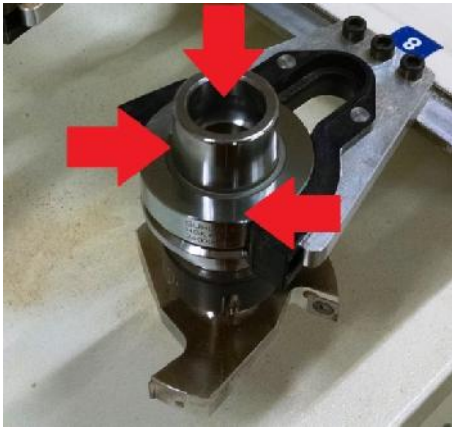


- Step 5. Replace the filter.

- Step 6. Replace the side panel.

- **Lubricate HSK-F63 Tool Holders (Page 9.18)**

- Step 1. Use compressed air to remove dust from internal & external surfaces.



- Step 2. Clean surfaces with a soft clean and unfrayed cloth.

- Step 3. Inspect tool holders for damage. Do not use if rusted, damaged or dented.

- Step 4. Hold the CRC Teflube 6" to 8" away from the tool holder and spray evenly to coat the outside surfaces. Do not spray the inside of the tool holder.




Product Code: 00F0904694C



- **Lubricate the Electro-Spindle (Page 9.20)**

- Step 1. Jog the head to a convenient place for maintenance.

- Step 2. Press the “NORMAL STOP”  Button and make certain the LED on the “POWER” Button turns off.

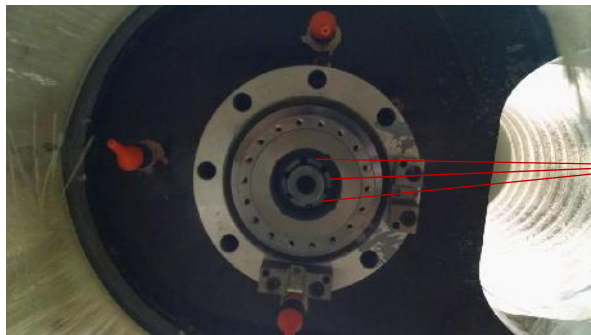
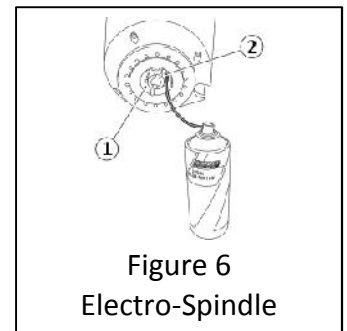


- Step 3. Check confirmation of the change of state to NO MODE on the Sintesi.

- Step 4. Remove the door from the safety enclosure.

- Step 5. Carefully clean the internal surfaces of the tapered housing of the spindle shaft using a clean cloth, Figure 6.1.

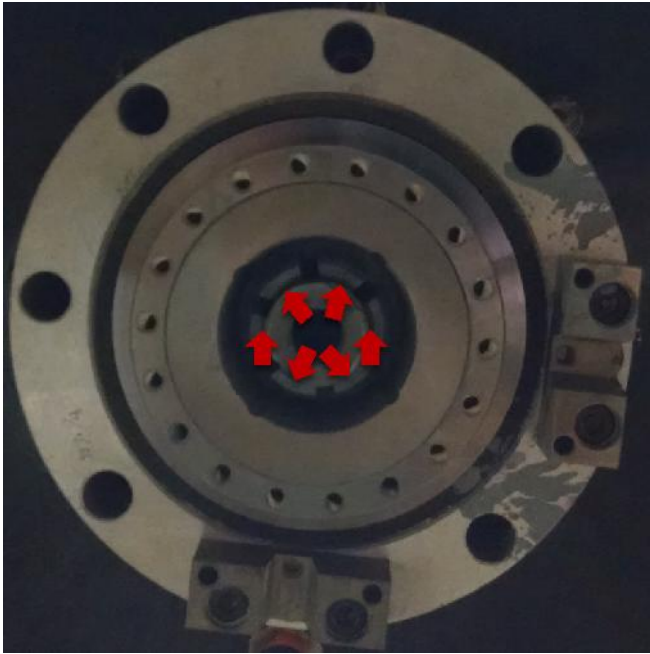
- Step 6. Spray LUSIN LUB PM spray between the gaps in the “petals” of the internal gripper of the locking device, Figure 6.2. Always use the straw supplied to direct the spray between the petals and the cone. Spray one microburst per petal. There are six petals total.



Petals

Product Code: 0002400035C



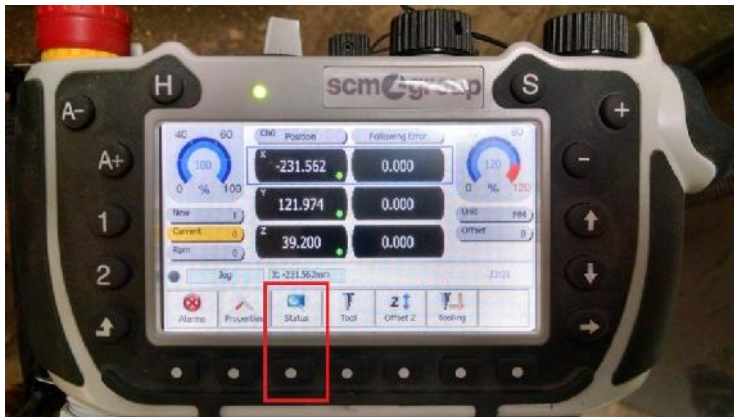


Spray LUSIN LUB PM between petals and center of gripper.

- Step 7. From the Main Menu press the "RIGHT ARROW" Button.



- Step 8. Then press the "STATUS" Button.







- Step 9. Now press the “LOCK/UNLOCK” Button to cycle the gripper. Perform 10-15 cycles (20-30 button presses).



- Step 10. Remove any excess lubricant with a clean cloth.

- Step 11. Replace the removable panel to the safety enclosure.

- Step 12. Press the “RESET”  Button.

- Step 13. Press the “POWER”  Button and see that the “LED” light comes on.

- Step 14. Check HSK-F63 Tool Holders after running the machine and wipe off excess LUSIN PM LUBE. Reapply CRC Teflube to the tool holder if necessary.