

This guide is for the OptiDrill only, not the EVO series of drills

Drilling Off Axis

NOTE: *Never Loosen the lens chucks before checking all of these possibilities*

- Check for a bent probe. Remove the probe and roll across a flat surface and visually check for a wobble. A straight probe will roll without any undulation. A bent probe will cause the hole placement to appear that the drill is off axis.
- Loose drill motor. This will cause fluctuations in the drilling location.
- Check to see if there is movement during drilling. This could be caused by a worn leap block, torque from the blocking pad, clamps that need to be replaced, etc.... These problems can also cause holes to be more oblong or diamond shaped. Salem offers a hard, plastic Weco block that is available in full and half eye in 2, 6 & 8 base. These blocks are recommended for use with the drill for anyone with Weco style blocks.
- Probe needs to be cleaned or even polished (See probing issues.)

Checking Axis



photo 1

- After checking all of the above possibilities for axis error, block 2 flat axis test lenses to place in right & left chucks. These lenses are flat with a straight line all the way to the edge. Enter “horizontal – 1.00”, “vertical – 0.00” and “hole size – 1.00”. Drill the lenses in the flat position. If holes are parallel, adjust high or low in manual calibration. If holes are one above and one below, make a reference line with a pencil from the table to the chuck. Rotate the chucks in the proper direction. Re-drill adding 2mm to the horizontal position (horizontal – 3.00), (vertical – 0.00) and hole size – 1.00) until the holes are drilling on the line.

Probing Issues

- Plastic particles can accumulate on the disc of the probe stylus causing it to “grab” the lens during the probing process. If the disc “grabs” the lens, instead of moving smoothly upward and away from the lens, polish the disc of the stylus (ref. photo 3). Polishing the disc periodically will keep this condition from occurring. To polish, remove the probe and polish on a buffing wheel to a bright, smooth surface.
- A screen-saver on the drill computer can cause the probe to move too far in on the lens. If a screen-saver has been installed on your drills’ computer, please remove it.

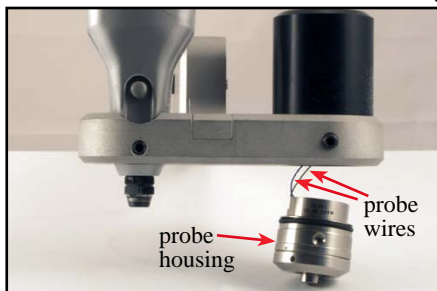


photo 2

- A broken wire in connection to the probe. Inspect the 2 wires in the probe housing to determine if the connection is broken or weak. These wires are located in the black housing behind the drill spindle.

No Response From Probe

- Go into “my computer/control panel/games controllers or gaming options” and confirm that “2 axis-2 button joystick is installed. Then go into “properties/test” and you should see 2 buttons; one should be lit. When

you move the probe, it should go off. Then touch and pull all the probe cable you can see all the way back to the computer. When doing this the light should NOT flicker. If it does, there is a defect in the cable or plug. Also be aware of how old the operating system is. It may be necessary to reload the drivers for the games card.

Probe Missed Error

- The most common culprit for this error is a broken wire or solder. Older machines had a RCA style plug located on the top of the probe housing. Remove the RCA plug and solder the wires together. Be sure to insulate the connection with heat tubing or electrical tape.
- If you are running a thin lens, 1mm or 1.5mm center thickness, this can also cause the error. Adding blocking pads may help put additional pressure to make the lens more rigid and less likely to flex.

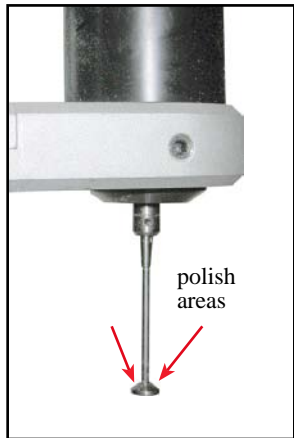


photo 3

- A “probe-missed” error may be caused by a probe that needs to be cleaned or polished. To polish a probe, remove the probe and polish on a buff wheel to a bright, texture free surface.

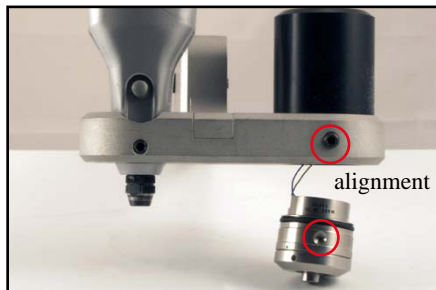


photo 4

- Check to see if the probe assembly is loose. If it is loose, tighten the metric allen screw (3 millimeter allen wrench) making sure the screw is in the proper countersink located on the probe.

- On the bottom left corner of the optidrill screen, there is a circle with a black dot. This dot blinks on and off when the probe makes contact confirming the connection is good. If the dot does not blink during contact, there is a connection issue and the drill will not recognize the presence of a lens. Check probe cable connections both to the drill and to the PC.

Drilling Depth Issues

- If the drill is not drilling deep enough, check the drill motor to be sure it is seated all the way down in the mounting table. If it is not, this will cause shallow drilling depths.
- To drill a hole deeper, go to the “redrill” option which appears after drilling the lens. Select to redrill and to make the hole deeper by the selected amount. It will then redrill the hole without probing the edge.
- If the drill consistently does not drill deep enough, the drill was probably calibrated with a flat lens. See the proper procedures under “Calibrations”.

Calibrations

- Go to the calibration drop-down menu in the top left of the software. ****Before doing any calibration, be sure that the probe is not bent and that the Proxxon motor has been installed straight and seated all the way down in the mounting plate.**

XYZ and Horizontal Calibrations

- Perform the XYZ calibration making sure the table and the bottom of the probe are clean and free of any plastic particles. This calibration determines the exact location of the table to set all 3 axis'.

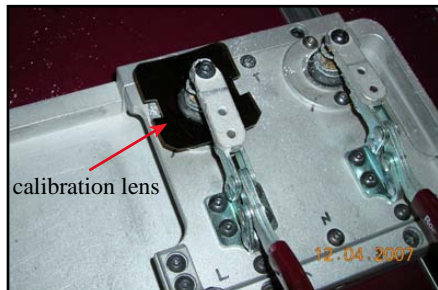


photo 5

- The Horizontal calibration will follow the XYZ calibration. Use a 6 base (not flat), plastic lens (not polycarbonate), square shape, no bigger than eye (55 – 65). Edge the calibration lens for rimless only, not hide-a-bevel. It will cut a notch out of the temple and nasal. It is normal for the notches to be different. These notches are used by the drill to set the x, y & z axis. It is important to use tight fitting blocks that have absolutely no play. A new drill bit will help make clean, deflection free cut.

ONLY Perform the Horizontal and XYZ Calibration:

- After Proxxon spindle has been replaced
- After a major crash involving the tilt table and the spindle
- Replacing the control board
- After working on or removing the probe assembly

NOTE: Performing a daily calibration is not necessary and can cause accuracy issues.

Holes Are Too Big

- The drill motor may need to be replaced
- The drill motor may be loose
- The drill bit may be out of spec or may not be intended for drilling and milling.
- The drill motor mounting plate may be worn to the extent that it allows slight movement of the motor. This plate is aluminum so, over time, it will experience wear and may need to be replaced.
- Check the data on the frame style, data could be entered incorrectly
- Check the data under settings and lens materials to confirm that it is correct

Notches Are Too Deep On One Side

- Check for a bent probe
- Check for a loose Proxxon motor

Holes Are Too High On One Side and Too Low On The Other

- Check for a bent probe
- Check for a loose Proxxon motor
- If the probe assembly has been removed and the holes and notches are slightly off, check to see if the probe assembly was installed properly. There is a deep hole in the side where the set screw must be set. If not, the probe will be too high, too low or possibly not vertical.

Drill Bit Is Drilling Into The Chucks Or Into The Table

- A flat lens or blank was used for calibration. See the calibration procedure.

Drill Motor Will Not Come On

- The drill motor may be worn out.



photo 6

• The problem may be the control transformer. To check the motor, go under setup under calibration. Enter "bolsetup" and a diagnostic screen will appear. This screen is used to check the drill motor and each axis on the Optidrill. You have the option of replacing the transformer and continuing to use 220 volt motors or by-passing the transformer and using 115 volt motors. To by-pass the transformer, power the machine down. Remove the back plate from the machine and you will see a square transformer which is normally positioned at the top right of the machine. Hard wire the 2 wires straight to the 115 volt Proxxon motors, making

a clear note on the outside of the drill that this machine uses only the 115 volt spindle. To replace the control transformer, replace the wires one side at a time making note where the wires attach. *The item number is MEVO-S.*

If The Motor Stops Spinning Sporadically With No Error Messages

- Check the door lock for any obstructions, such as a piece of plastic.
- Check the fuse. It will be on the extreme right side of the control board. You will see 2 fuses. The one relating to the Proxxon motor is the lower of the 2.

Lost Manufacturer Information From The Database

- This will require copying the entire database and sending Salem Vision Group a zipped copy. We will advise Berkshire Labs to retrieve the files and repair. To make a copy, go into the C:Drive, open Optidrill folder, copy the data, then zip.

If The Table Will Not Return To The Home Position

- It may move forward when it is initially started, but then does not go to the starting position. Check the limit switch. The limit switch can be examined by removing the tilt table and then removing the red (or blue) plate so that they can see underneath. An ohm or voltage meter is required to check the limit switches. Visually inspect the limit switch for a slow or sticking plunger, indicating a worn limit switch. Replace both limit switches if one is defective.

Error "9" Emergency Stop

- Check the emergency stop button by removing the tilt table, removing the 6 small screws around the edge of the base plate (do not remove the ones that hold the rubbers in place) and the 3 screws at the back. The base may need a lever on the front as double-sided tape is used there. You will then expose the button. If the button moves by 360, then it is very possible that a wire could have been damaged.

Replacing The Drill Motor

- Open the Optidrill door
- Disconnect all power to the Optidrill



• Open white junction box. There are 2 screws which only turn 90 degrees and release.

Using a small, flat head screwdriver, disconnect the 2 wires in the white connector.

- Using a 3 millimeter allen wrench, loosen and remove old drill motor.
- Place new motor in receptacle and tighten the metric allen screw. Check for movement making sure motor is all the way down in receptacle.
- Connect wires and close junction box.
- An XYZ and horizontal calibration are required after installing the new motor. (See XYZ calibration procedure)

Tips

- If you replace a limit switch (the x, y or z) replace both limit switches. There are 2 limit switches per axis.

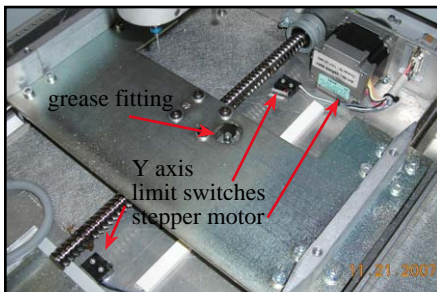
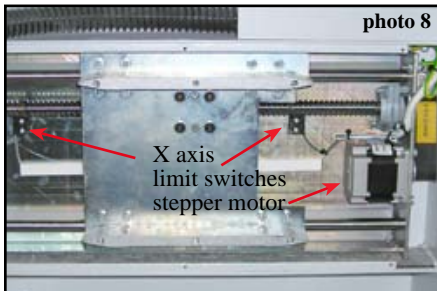


photo 10

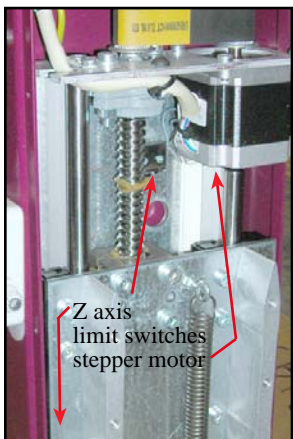


photo 11

- Annually replace the fan motor on the control board. These fans are required to keep the board cool and extend the life of the electronics. If the fan stops working, it is very possible that the control board will sustain damage. This is accessed by removing the back panel after the power has been disconnected.

- Settings – the password is "boloptidrill". These screens are used to control all of the Optidrill parameters. None of these should ever be changed without consulting Berkshire or Salem Vision Group.
- If the computer boots up, lights on the drill come on, but the drill won't initialize, check the serial cable. This is a classic symptom of connecting it to the wrong port.
- If you are switching from a flat table to a tilt table or have lost the tilt table setting Right click on Optidrill short cut, select properties. In the target box, you will find C:\Optidrill\Optidrill.exe. Change this to C:\Optidrill\Optidrill.exe /tilt

NOTE: **it is important that you put a space between the last "e" in exe and /tilt)**

- If you want to speed up the drill, go to "materials", go to the material that you wish to increase the speed (plastic, poly, trivex). The options that control the speed are "milling rate", "drilling rate" and "peck depth". The recommended setting for the "milling rate" is 2.0. This can be changed to 3.0 in order to speed up the drill. The "drilling rate" is normally 5.0. This can be changed to 6.0. The "peck depth" is normally set at 0.75. This can be changed to 1.0.
- If the Z axis will go to the side, but will not move down, this can sometimes be caused by a power surge or if the probe or drill bit hits the clamps or table causing a "probe-missed" error. Save your data and re-load the software. You may need to retrieve the settings from a back-up, but this should clear the error.
- Before incurring the expense of replacing the z-axis, check the bearings. They could be drying out. Push the axis to the right. You will see a plastic cap. Remove this and there will be a grease fitting.
- To install any upgrade in another language, go to settings, press next until the language page and select the one you prefer.
- If #5 Syntax-error, shut off the drill from the back, back completely out of the computer, wait a few minutes and turn it back on. This relates to a scramble in the control board.
- Backup frame data to an external drive on a regular basis. (A, CD, or removable drive)

Passwords

Settings – boloptidrill

Setup- bolsetup

Optidrill part numbers

MDR-SMLS	Sub-micro limit switch for CNC Optidrill (w/solder posts)
MDR-P	Probe stylus for CNC Optidrill
MDR-SM	Stepper motor for CNC Optidrill
CDRL-D	1.0mm red-collar drill bits, pk of 10
MDR-DP	1.0mm green-collar drill bits, pk of 10
MDR-D	1.0mm blue-collar drill bits, pk of 10
CDRL-D14	1.4mm drill bits, pk of 10
CDRL-D8	0.8mm drill bits, pk of 10
CDRL-GS	Gas struts for door on CNC Optidrill
CDRL-PC	Probe cable for CNC Optidrill
MDR-HPC	Probe cable (hardwired) for CNC Optidrill
MDR-XC	X-axis cable for CNC Optidrill
MDR-YC	Y-axis cable for CNC Optidrill

MDR-ZC	Z-axis cable for CNC Optidrill
CDRL-SC	Serial cable for CNC Optidrill
MDR2-BC	Blocking chucks (set of 2) for CNC Optidrill **must specify type of leap blocking using in your lab**
MDR2-C	Clamps for tilt table for CNC Optidrill
MDR-BSC	Black compression cups for clamps on CNC Optidrill
MDR2-SPR	Springs for clamps on tilt table for CNC Optidrill
MDR2-SMP	Proxxon motor mounting plate for CNC Optidrill
MDR2-LB	“L” bracket w/ball bearing for CNC Optidrill
CDRL-S	220/240 volt Proxxon motor for CNC Optidrill
MEVO-S	115 volt Proxxon motor for CNC Optidrill
MDR-PMT	Proxxon motor transformer for CNC Optidrill
MDR-PMR	Proxxon motor relay for CNC Optidrill
MDR-RF	Rear-mounted cooling fan for control board on CNC Optidrill
MDR-TF	Top-mounted cooling fan for control board on CNC Optidrill