ZENITH

INSTALLATION MANUAL

The zenith will arrive (if exported) in two crates the larger of the two (190 x 156 x 181) weighing 600kgs, contains the zenith cmm, the second crate (156 x 106 x 29) weighing 675 kgs contains the granite.

Firstly, remove the top of the large crate, using large flat blade screwdriver

Once the top has been removed look inside the crate then remove the front panel (see below)

Remove all the loose items from the shelf.

Remove the shelf by removing screws from the top

Also remove cross members

Next remove the remaining three sides

Next remove the three long bolts from under the crate base the bolts are 160mm long M10 with 17mm A/F nuts. Two are located at the back the third is at the front.

Next locate the feet and caps and the 3 stainless steel balls

Position the feet as close as possible to where the machine will be located.

Next, using suitable lifting equipment, ideally a fork lift, lift the zenith machine from underneath and remove the base of the crate, next move machine to its position which should align with the three feet already positioned. The balls in the feet must locate with the mating part under the machine, if you look under the machine you should clearly see where the balls locate.

Slowly lower the machine and move the feet so the ball locates correctly. Before the granite can be moved into position the bridge must be moved to the side of the machine, so the granite has no obstruction. The photo below shows the bridge placed on a trolley beside the machine to allow clear access to the granite.

Before moving the granite, locate the anti tip tubes and place them in the holes in the chassis as shown below.

Locating the granite

Unpack the granite by removing the screws, remove the top then one of the longer sides insert the M16 eyes into the accessible side, using a fork lift place shackles around the eye bolts and pull the granite forward, this will enable you to place the other two eye bolts in the back of the granite. Position the lifting straps through the eyebolts.

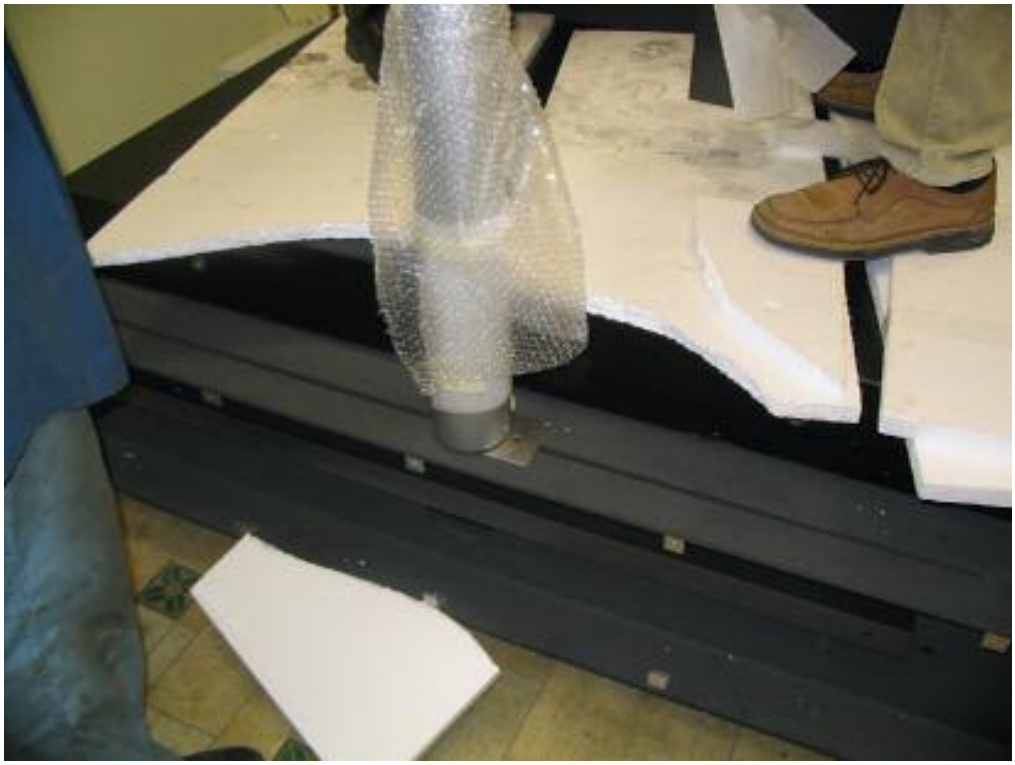
Raise the granite using the forklift and straps

Position granite so it is 80-90mm from the back of the machine and 80-90mm from the front of the machine, ensuring granite is square to the machine, then remove straps and eye bolts.

Locating the bridge

Clean all y axis slideways

Also clean all air bearings on the bridge where the bridge mates with the chassis.



Using at least 3 people lift the bridge into place, in order for the left leg bearing holder to fit through the slot lift the bridge several inches higher and lower the bridge squarely downwards, one person needs to guide the left leg. Also position the metal plate (used in the packaging) to hold the left leg slightly off the chassis.

Fit the pear drop

Locate the airbearing on the ball ended stud, and feed air pipe as shown, this bearing may also be feed from the narrow end, the bearing rotation is restricted by a pin in the pear drop which locates in airbearing (not shown above)

Connect Y axis pre-load bearing bracket as shown :-

Fitting z axis cover and counterbalance

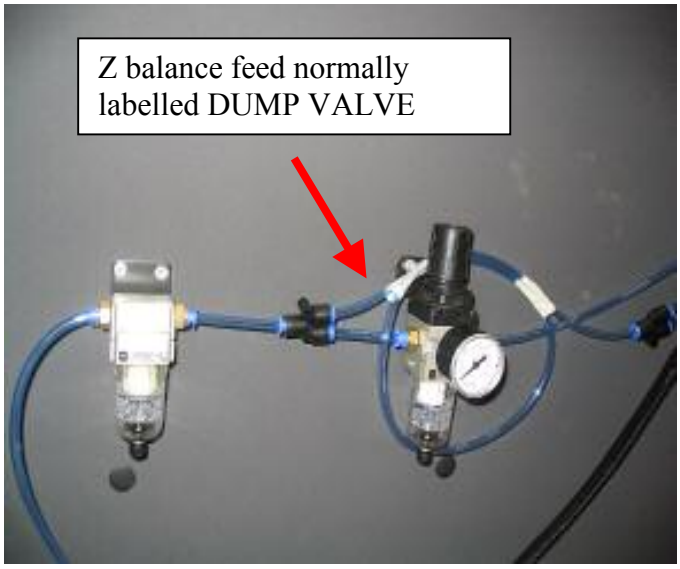
Fit cover as shown, and secure with 4 screws

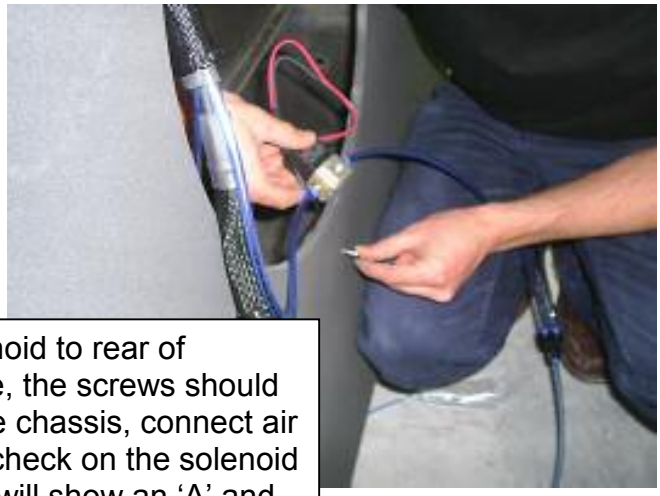
Feed z balance wire so it doesn't obstruct the energy chain, feed it through the small hole in the plate as shown, then clamp with the two pieces of square bar

Attach plate to top of cover, make sure it is secure. At this point the cable is slack, but of course when the air on switched on, this wire will become taught.

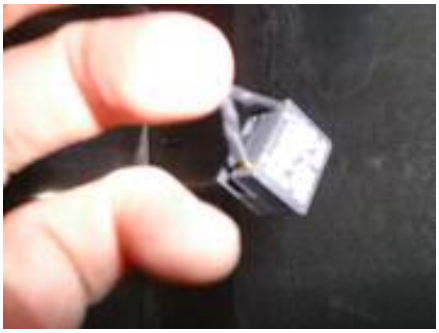
Open z balance regulator fully, this is in preparation for setting the balancing pressure – **note**, with this fully open the balance will not take the weight, and the z will drop when air is switched on, so make sure z axis is resting on the endstop, or something is under the bottom of the z quill.

Connect the air filter and air regulator. As shown, the feed to the z balance, bypasses the air pressure regulator to ensure a higher pressure feed to the z balance, hence the pipe is split after the filter. Trim the pipe so there is not the coil of air tubing around the pressure gauge as shown in the picture.





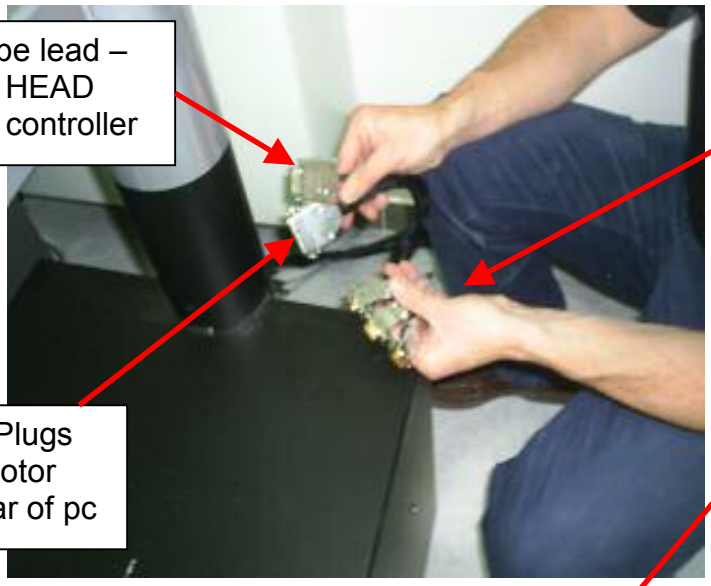
Fit solenoid to rear of machine, the screws should be in the chassis, connect air tubing, check on the solenoid base, it will show an ‘A’ and ‘P’, A =appliance (zenith), P = pressure source. Connect inlet supply to P and other tube to A



Fit the switch block to the E-stop, you will have to see where the E-Stop button is from the front of machine because you need to reach inside the chassis.

Connecting up the controller

Position pc stand as shown, the shelf will need to fitted and secured by the supplied bolt.

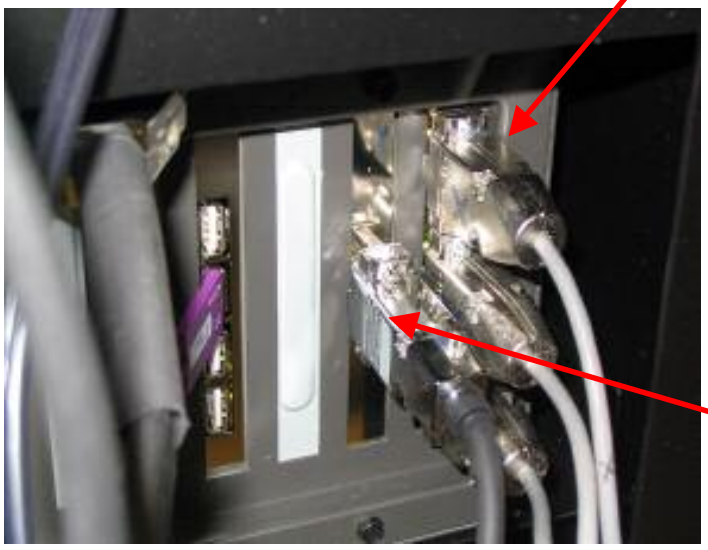


PH10 probe lead – plugs into HEAD socket on controller

Motors – Plugs into the motor socket rear of pc

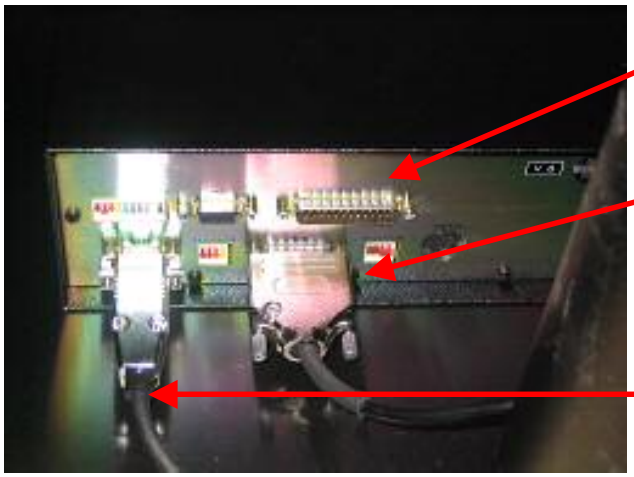
Connect plugs:-

There are 3 x 15 way 3 row D type plugs, labelled x,y and z, these are the readhead plugs, which fit into the Deva 004 motion control card, the order is X Y Z, with Z nearest the motherboard.



This plug is the probe which is a 9 way 2 row D type, this lead will come direct from the Zenith if non-indexible or manual indexible probe, or if motorised, this lead will come from the probe controller unit, the other end of the cable will also be 9 way 2 row D type, which plugs into PICS OUT socket

Connect dongle into free USB port, **s/w will not without it** and feed monitor cables and mouse receiver cables as shown



RS cable goes here, the other end of the cable goes to COM 1 in back of pc.

Probe head cable from Zenith

PICS OUT cable which connects to probe socket in back of pc, next to the readheads

Also plug in the computer peripherals :- Joystick, mouse receiver, power leads etc

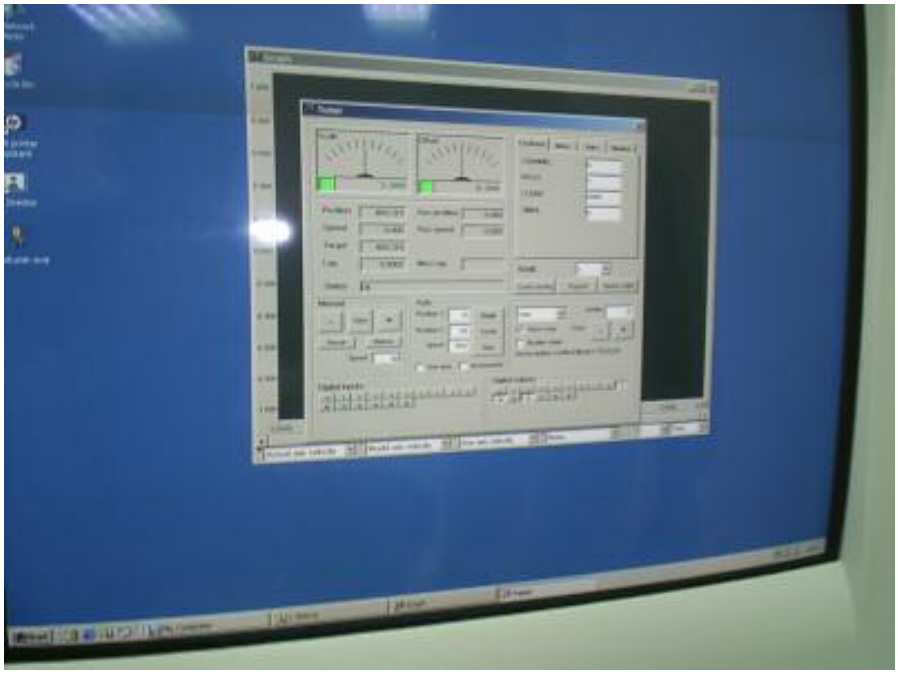
Setting the Axis

Switch on the PC, when the window log in appears, there are two levels, first level is the Administrator and the normal user level will be Zenith neither will have passwords.

Log on as Administrator, on the desk top will be my computer etc, and Aberlink 3D icon and an axis tuner icon.

DO NOT START UP ABERLINK UNTIL MACHINE IS FULLY SET UP

All set up of the axis should by done using axis tuner, so double click axis tuner icon



With axis tuner you can turn the amp on or off and turn the air on and off.

Now you are ready to put air pressure to the machine, **remember the z balance has continuous feed and is not controlled by the solenoid. That is why you should have the z axis supported and the regulator fully open.**

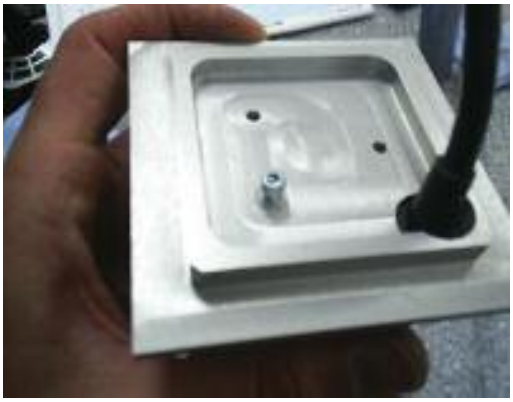
Double check this before you apply air pressure.

Apply the air pressure, the z should not move because it should be still clamped by the pre-loaded air bearings. Click 9 and 10 on the digital outputs in axis tuner (bottom right hand side) if the air doesn't come on, check the E-stop is not pushed in. 9 turns the air on and off, 10 turns the amp on, the air can not come on if the amp is off (there should be a green light on the Aberlink amp to signify it has power).

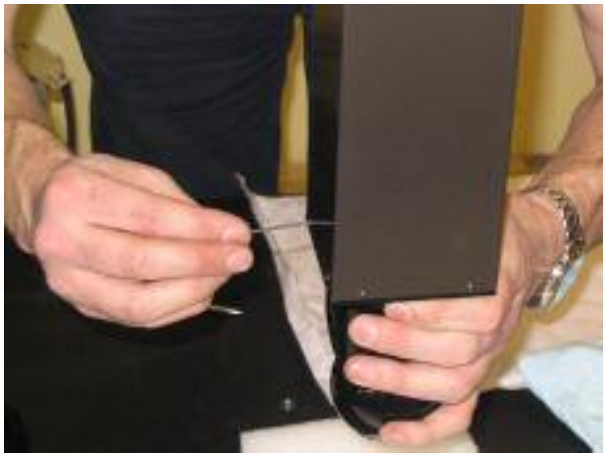
With the air on the machine will now float in axis, but at the moment the z axis is not balanced hence so avoid moving in X and Y axis. Stand on the granite behind the y axis and wind in the air regulator, you will notice the wire become tight, keep turning regulator until z holds its own weight, applying too much pressure will cause the z to be pulled upwards.

Next we will fit the probe so turn the air off by clicking button 9.

Regardless of probe, supplied with machine will be probe plate and the necessary screws.



Feed probe cable through the probe plate and secure probe via the 3 screws – Make sure screws are tight and obviously line up front of probe with front of machine.



Once fitted, re-balance the z axis

The probe plate is fixed to the z quill via several M3 grub screws at the base of the quill, push up plate into quill and tighten all screws - **NOTE any looseness at this stage will produce accuracy errors (Obvious I know)**

Switch output 9 on and slowly move the machine in X and Y axis, move slowly just in case there is any dirt which could get caught under a air bearing. Once traverse has been checked, the machine will be ready for fitting of the drive rails

Fitting of drive Rails

Position the bridge so it is at the front of the machine to give enough room for the rail. Locate the drive rail, which will not have the black end stops, the bar has a internal thread at one end. Push it up from the bottom of the carriage and push it through the bore of the drive drum, push until it locates in the rubber boot at the top of the Z cover, and secure rail by using the screw as shown in above picture.

Fitting y axis rail

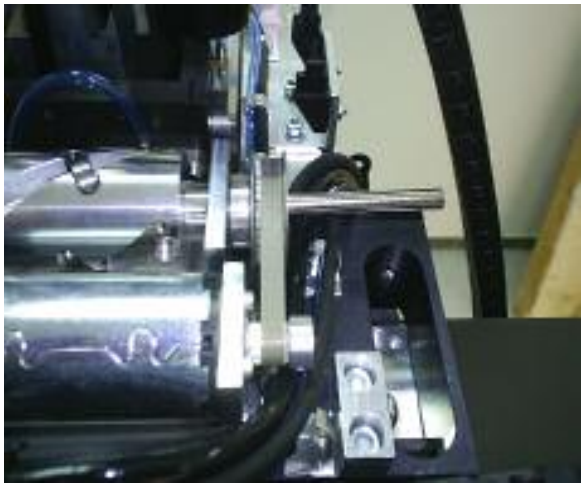
Locate the Y axis drive rail, which is the longer of the two, one end of the rail has the black end clamp fixed to the rail. The fixed endstop needs to go at far end of y axis, nearest the ref. mark

When securing the end nearest the ref. mark move the bridge all the way to the end, to make sure the end stop locates o.k in the hole in the bridge.

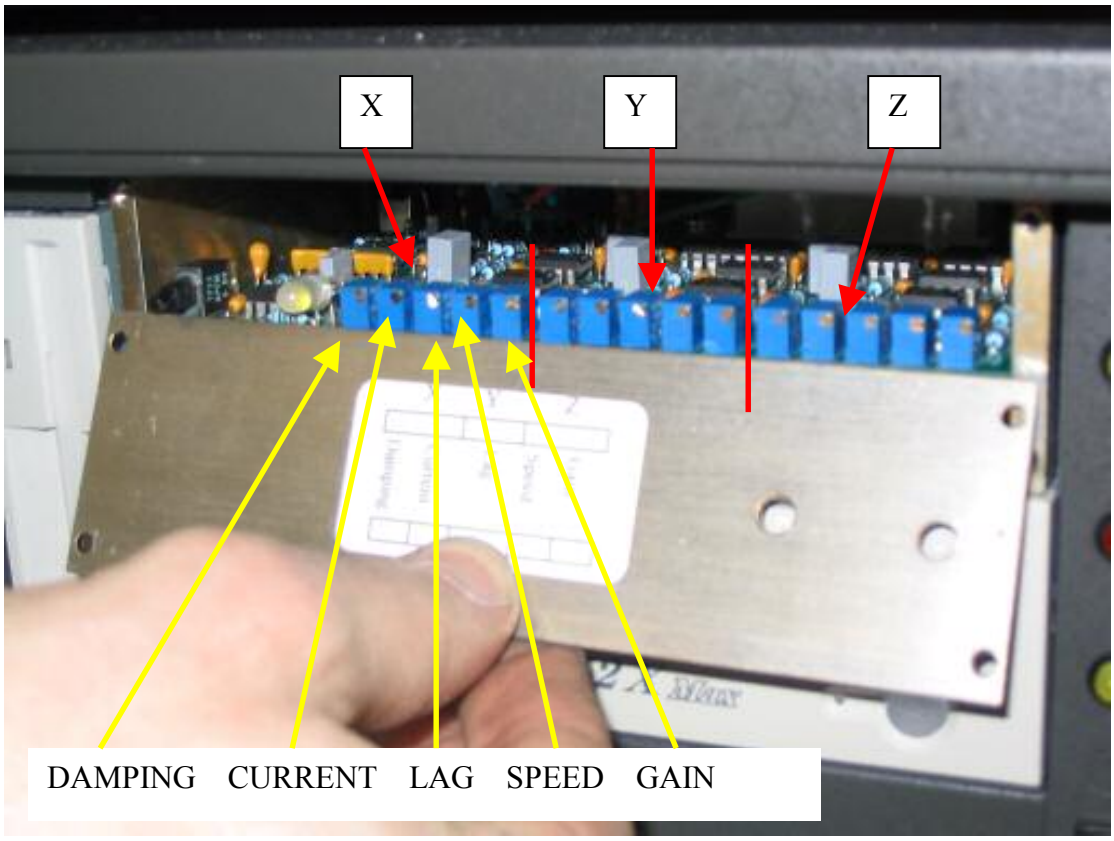
X axis drive rail

Repeat procedure for the X axis, push the carriage to the endstop then tighten screw, to avoid mis-alignment between rail and x axis.

Timing belt tension, check tension of all three belts and adjust if too loose, if too loose the machine will exhibit vibration on probing moves



Tuning the axis



Please refer to tuning instructions, the machine has already been tuned at Aberlink so you should **not need** to adjust anything.

The machine, once your calibration equipment has normalised is now ready for calibration.

IF YOU HAVE ANY COMMENTS OR IMPROVEMENT SUGGESTIONS FOR THIS MANUAL PLEASE EMAIL THEM TO chris@Aberlink.co.uk, AND INCLUDE ANY PHOTOGRAPHS THAT MAY HAVE BEEN TAKEN.