VISUAL GUIDE MANUAL

DRO INSTALLATION ON KONDIA FV1 MILLING MACHINE

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<th>Basic Installation Principles</th>
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<td>scale should be centered and be aligned such that it could cover the whole travel length of the machine. If in any case it does not cover the whole travel length, it is advisable to install a screw to limit the travel so that the scale will not be accidentally damaged by over-traveling.</td>
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<td>2</td>
<td>The preferred method is to mount the scale to the moving axis and the reader head to stationary axis, this is to prevent cable from wear and tear during operation. Normally it can be done for X axis, but Y axis, most of the time the reader head will be on the moving axis.</td>
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<td>You can install the scale facing downwards /outwards, but it should not be install upside down, as it will expose the scale to coolant or metal chips</td>
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X axis installation
X1. Dismantle the 8 screws from the Red plastic securing the reader head.
X2. Put the scale and roughly align the scale to the center of the table.
X3. Align the X axis scale to the base of the table. Use a scriber to mark the slot on the table.
X4. Drill and Tap at the centre of the slot.
X5. Mount the scale by using the cap screw. Tighten the scale and align it to the base of the table.
X6. At the other end of the scale, Mark the slot with a scriber
X7. Move the scale away and Drill and Tap at the centre of the slot
X8. Loosely mount the scale by using the cap screw and align it to the base of the table. (To align the scale to the base of the table, you may like to use the mounting block)
X9. Move the X axis table to the mechanical/electrical stop.
X10. Put a Dial Indicator at the end and set it to zero.
X11. Move the X axis table to the other end and check how much is the misalignment. Adjust the height to achieve zero error and tighten the screw. (Recommended error to be within 0.020mm).
X11. Move the X axis table to the mechanical/electrical stop.
X12. Position the Reader Head such that it has an allowance of about 5mm from the end of the scale.
X13. With the Red Plastic in between the reader head and the scale (this is to get the gap correct), use the scriber to mark the 2 holes. Or you can use a F-clamp to clamp the reader head to the scale and use a dot punch to mark the hole.
X14.  Move the Reader Head away.
X15. Drill and Tap holes for the reader head/ scanning head.
X16. Mount the Reader Head to the machine. You may need to use the pecking shims to centralize the reader head.
X17. Visually the Red Plastic Check should fill the gap nicely. The red plastic must also be able to move in and out without difficulty. Tighten the Reader Head and check again.
X18. Remove the Red Plastic Clips and secure the cables so that it does not interfere with the table movement
X19. For better coolant protection, we recommend to stick a strip of foam double side tape (not included) or applying silicon glue on the cover.
X20. Align and stick the cover above the scale, the cover should not be in contact with the scale (approx 2~3mm away).
X21. Mark the holes, drill and tap for the cover.
X22. Install the cover and tighten the screws.
X23. Drill and Tap a hole for mounting the cable holder near the edge of the table. Secure the cable.
X24. X axis installation is completed
Y axis installation
Y1. Dismantle the 8 screws from the Red plastic securing the reader head.
Y2. Move the table towards you till it reaches the end of the travel.
Y3. Decide the configuration of mounting brackets and how you want to mount the Scale and Reader Head.
Y4. You can mount the Y axis in various configuration as shown in the following pictures.
Y5. Use a scriber to mark the slot of the scale.
Y6. Drill and Tap holes for mounting the scale.
Y7. Mount the scale with the screw.
Y7. Use a Vernier Caliper to gauge the distance from the table slide to the scale height, lock the vernier. We will use this distance to level the scale at the other end. (see the next slide).
Y8. Using the locked vernier, align the scale so that it will be parallel.
Y9. With the scale aligned, use a scriber to mark the slot
Y10. Move the scale away and Drill and Tap.
Y11. Drill and Tap another hole below, this is for securing the cable later.
Y12. Remove the scale.
Y13. Mount the scale with the mounting block.
Y14. Install the scale on the other end using the Mounting Block.
Y15. This is the view of the scale with the mounting block installed.
Y16. Check visually that the scale is install parallel. If alignment is out by too much, try to realign again before using dial gauge.
Y17. Set the dial gauge to zero to check the scale flatness.
Y18. Travel to the other end and check the dial.
Y19. Add a shim to make the scale flat and check the dial again.
Y21. Use the dial to check the parallelism of the scale
Y22. Adjust the scale to try to reduce the parallelism error. Within 0.020mm will be recommended.
Y23. Estimate the position of the mounting bracket and use a scriber to mark the holes to drill.
Y24. Drill and Tap the holes
Y25. Mount the bracket and tighten the screws.
Y26. Check the space between the scale and the Reader Read. If the red plastic can move in and out nicely, it is installed correctly.
Y27. Mount the cable to the machine with the provided screws and clip, so it is tidy and prevent entanglement.
Y28. Mount the cover.
Y29. Drill and Tap the mounting holes, then screw it on.
Y30. Proceed to drill, tap and screw for the 2nd mounting hole
Y30. Proceed to drill, tap and screw for the 2nd mounting hole
Y31. Y axis installation is completed.
DRO installation
D1. Decide where to install the DRO Arm. Adjust the position and mark the 2 holes using a scriber.

Mark the hole using a scriber
D2. Drill and Tap the 2 mounting holes
D3. Attach the Earth cable to one of the screws. Tighten the 2 screws.
D4. Tighten the 4 leveling screws to make sure the Arm is straight.
D5. Install and tighten the 4 screws for the DRO base.
D6. Tighten the screws and the nut for adjustment of viewing angle.
D7. Install the DRO with the collet holder plate. Tighten the nut at the bottom.
D8. Connect the Power cable, Scales connector and Earth cable.
D9. The mTECH DRO accept 100~240Vac and there are normally 2 ways to connect the power to the DRO.

a) If there is a power socket on your machine, you can plug in directly.

b) If there is NO power socket, you need to check if the electrical cabinet has any suitable source of electric supply. (Normally, we can get it from the transformer.)

c) You can also connect it to any external power source independent of the machine. (e.g. your wall socket).
D10. Check if the electric supply on the transformer is suitable.

We will connect to 220Vac

(1 wire will go 220V and the other wire will go to 0V)
D11. Drill a hole for the power cable. Pull the power cable through.
D12. Tie a knot on the cable to prevent it from being pulled out of the cabinet. Strip the cable.
D13. **Power OFF the machine.** Then connect the cables. (the black cable to 0V and the white cable to 220V). It is advisable to connect the green cable to Earth/Ground.
D14. Power on and check that the DRO is ok.
Check that Scales are reading correctly.
D15. Tied the cables together with the cable-ties provided. (DRO side)
D16. Tied the cables together with the cable-ties provided. (Scales side)
D17. Installation is completed. Give yourself a pat on the shoulder.
Any questions/doubts, please email info@thedrostore.com
We are always glad to be of service to you. Cheers.