

CLIL - Surveying instruments. Roads. - Unit 2

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Theodolite Set Up – Part 1



Two levelling screws are rotated *thumbs-in* or *thumbs-out* to center the plate level vial bubble of Nikon DTM-831 total station, whose sensitivity is $30''/2\text{ mm}$. Its telescope has a magnification of 33 X.

Theodolite Set Up – Part 2

I take the tripod, extend the legs out, set the tripod properly over the point. I'm going to use a Nikon DTM-831 total station. I take two legs by themselves and look through the optical plummet at the top of the peg or the tack on the ground.

To center the circular bubble, I move a leg raising and lowering, being careful its end it's not pulled out of the ground. I'll do that two or three times.

At this point I'm going to look at the sensitive vial level. If the alidade doesn't rotate, I don't force it, I simply unscrew the clamp. Then I set it parallel to a couple of levelling screws, which are rotated thumbs-in or thumbs-out until I center the vial bubble. After turning the alidade ninety degrees, I move the third screw by itself in order to do the centering along the new direction.

I check at the peg or the tack on the ground through the optical plummet, then I loosen the centering screw on top of the tripod and make adjustments by shifting laterally the instrument. Then I check the level one more time.

Now the theodolite is set up well over the point. I must then look at the target and prism and I do so at first by the optical sight on the telescope, I rotate the clamp – without forcing it – to prevent the alidade from moving, then I move the horizontal tangent screw left or right and the vertical tangent screw up or down.

Now, as I look through the telescope, I can see the target. I focus it by the large knob which is behind the eyepiece. I must see also the reticule cross-hairs sharp; in order to do so, I rotate the small eyepiece screw. I make sure that both the cross-hairs and the target are sharp, then I move my eye left or right and up or down to look properly at the target on the cross-hairs.

Before the measurement of angles, I set, if necessary, the zero at the beginning of the survey. I then unclamp and set the sight towards the next target, remembering never to force. Also I need not overtighten the clamps. Distances between the point and the targets are measured by the prism.

