- when it has to be right

Leica Viva Quick Guide

Determine Coordinate System 1 Point Localisation

One Point Localisation can be used to create new Coordinate Systems for use with your GPS kit. A single point defines the Coordinate System – this point must be surveyed with the GPS kit and you must know the Eastings, Northings and Orthometric Height you want to assign the point in your new Coord System.

The new Coord System can also be downloaded (with your job) to Leica Geo Office and used there.

This guide outlines the two commonly used methods:

- **Local (Arbitrary) Co-ordinate System**

In this case an arbitrary value of 2000mE, 1000mN and 50mZ is required. The grid is then rotated about that point to be oriented as required.

NB: by using local coords the geoid model cannot be used.

- **'Pseudo OS' Co-ordinate system**

In this case the site is centred on an OSGB grid position and orientated to OSGB grid north, but 'true' OSGB co-ordinates are not desirable as a site scale factor of 1 is required. For this method the geoid model OSGM02 can be used.

NB: start from the beginning of the guide for either method.

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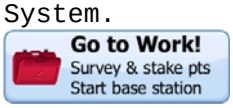
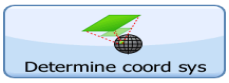
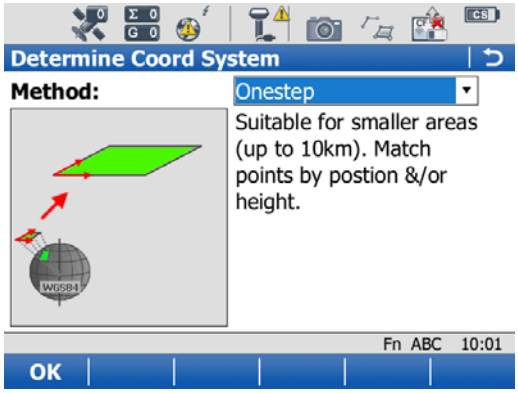
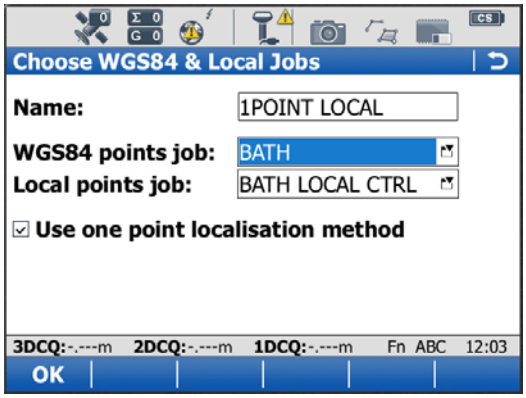
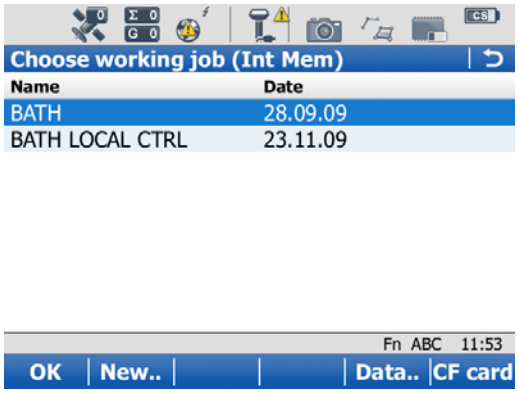
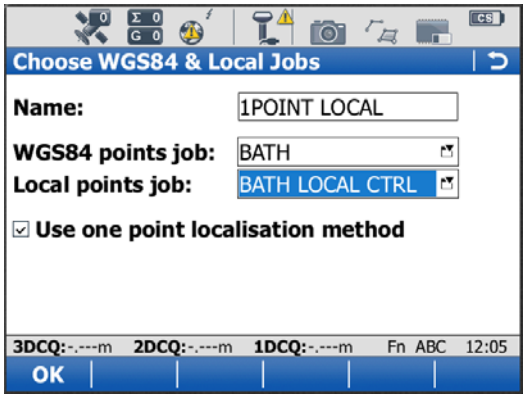
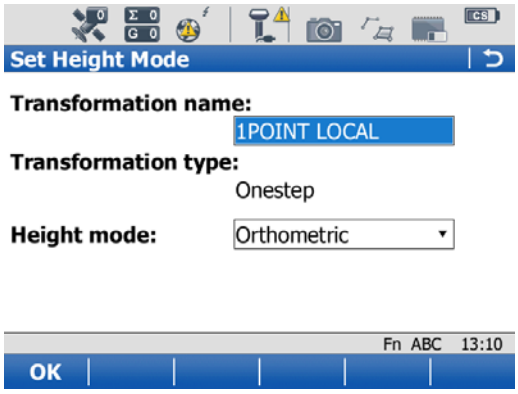
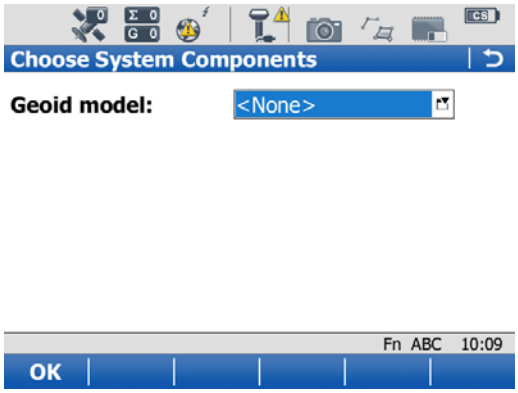
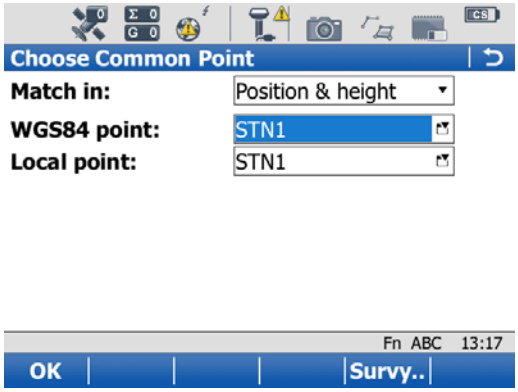
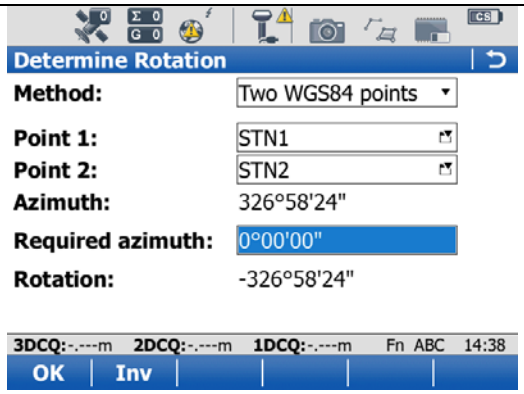
- Leica Viva Quick Guide
  - Determine Coordinate System 1 Point Localisation

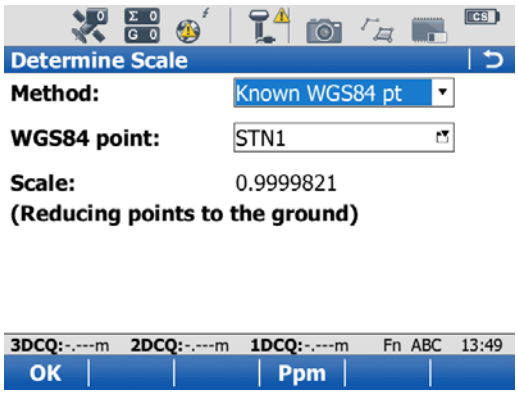
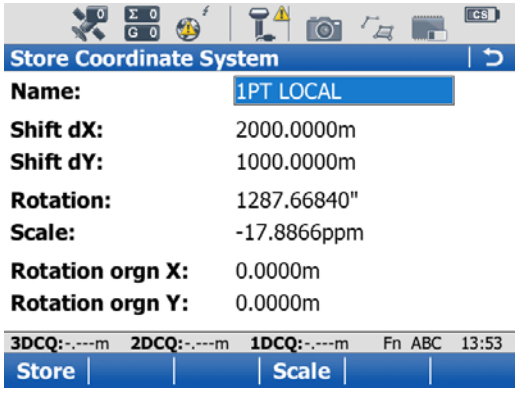
Step	Instruction	Screenshots
1.1	From the main job screen, use the following buttons to access Determine Coordinate System.   Select the Onestep method for sites up to 10km in length.	
1.2	Name your new Coordinate System. Since the Coordinate System will be site specific, it is recommended to incorporate the site name. Tick **Use one pt localisation method**. The **WGS84 points job** is the containing the GPS surveyed points. Highlight the WGS84 Points Job then press Enter .	
1.3	The current memory device is shown in the blue bar at the top (in this case **Internal Memory**). **F6** toggles between the internal memory, CF card, USB stick, SD card to locate your job. Select the job which contains your GPS measurements then press **OK**.	

Step	Instruction	Screenshots
1.4	The **Local points job** is the job which contains the keyed-in Eastings, Northings, Ortho Height coordinate. This can be the same job as the WGS84 points job if you want. If you want to create a new job press enter then **F2 New**. The Coordinate System you choose for this new job is not relevant (as long as you don't choose WGS84). **OK**	
1.5	Set height mode. **If a local (arbitrary) Coordinate System is required, set this to Orthometric and go to step 1.1** **If a 'pseudo OS' grid is required, set to Ellipsoidal and go to step 2.1** **OK**	

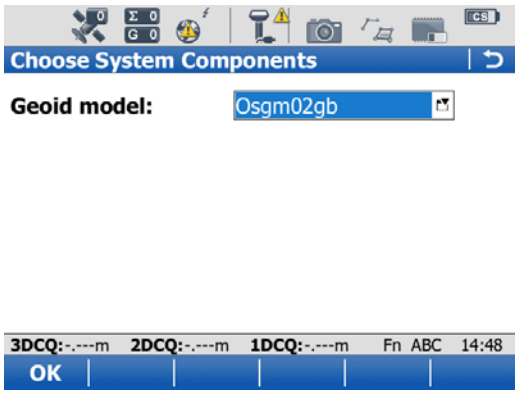
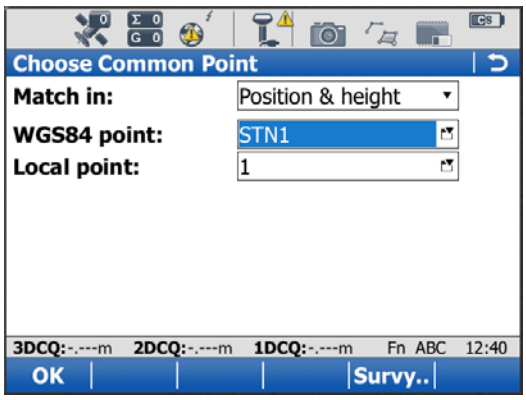
- Determine Coordinate System 1 Point Localisation
  - Local (Arbitrary) Co-ordinate System

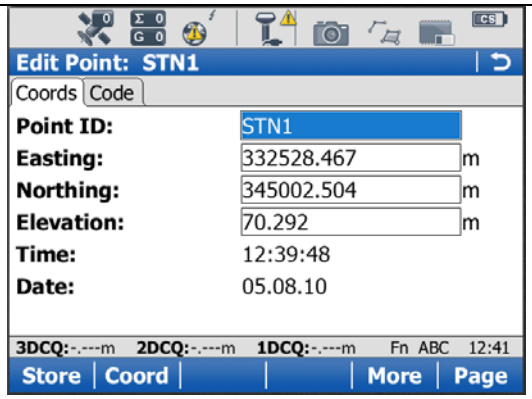
Step	Instruction	Screenshots
2.1	Leave Geoid Model set to **<None>** **OK**	
2.2	This screen is where the GPS surveyed point is matched to the corresponding point with known local grid co-ordinates. If you have already surveyed the point with GPS then select it from the list, otherwise press **F5 <Survy>** and observe it now. The **Local point** coordinates can be selected from the list or typed in by pressing Enter then **F2 New**. *Note: Points will only be available in the 'WGS84 point' if they have been surveyed with GPS. Also, GPS surveyed points won't be available in the 'Local point' field. OK	
	Here you can define the orientation of your new grid's north direction. Four methods are supported: **WGS84 North**: site is orientated to WGS84 "true"	

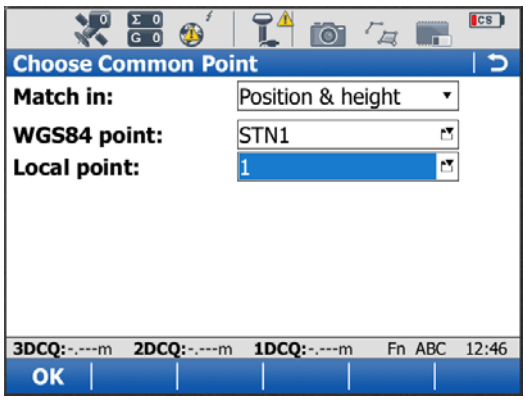
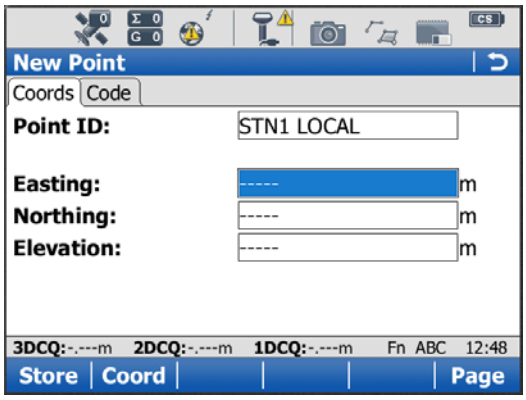
2.3	north. **User entered**: Rotation fro WGS84 true north is specified by the user. **Convergence angle**: Orientate to an existing grid north, eg OSGB, at the point specified. **2 WGS84 points**: user measures two points and specifies the bearing between them. **OK**	

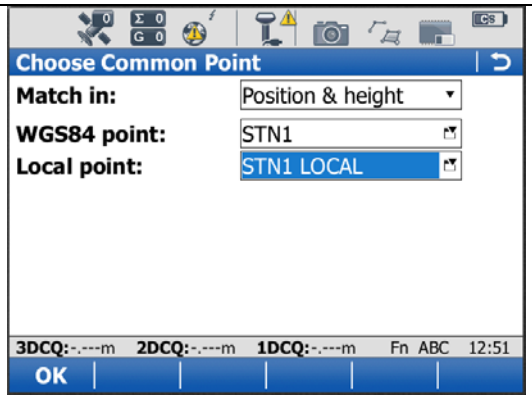
Step	Instruction	Screenshots
2.4	For Method, choose **Known WGS84 pt**. For the WGS84 point, choose the point you used you used to define the new Coordinate System. **NB** the scale will not say 1.00. Do not worry. This is the scale at the ellipsoid surface. At ground level the S.F is 1.00 **OK**	
2.5	A summary is displayed. **F1 Store** saves the New Coordinate System, attaches it to your job containing the GPS measurements and returns you to the main menu. **N.B.** by default, the next new Job you create will inherit this Coordinate System so always check the **Coord system** tab when creating new jobs.	

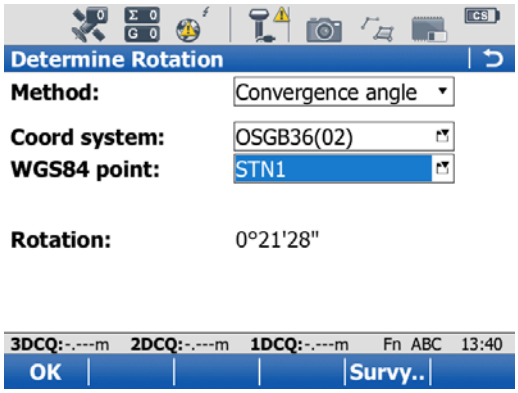
- Determine Coordinate System 1 Point Localisation
  - Pseudo OS Co-ordinate System

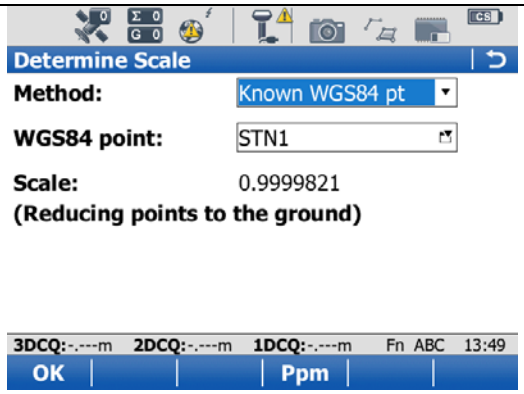
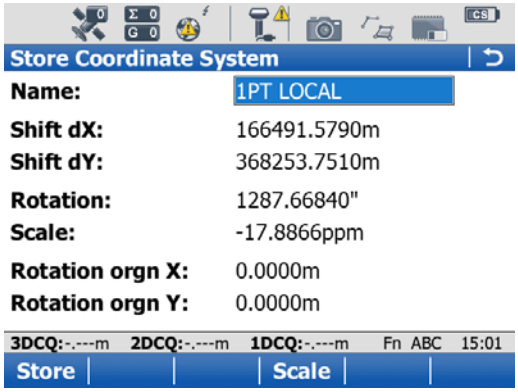
Step	Instruction	Screenshots
3.1	Set Geoid Model to **OSGM02GB** **OK**	
3.2	This screen is where the GPS surveyed point is matched to the corresponding point with known local grid co-ordinates. If you have already surveyed the point with GPS then select it from the list, otherwise press **F5 <Survy>** and observe it now. Still highlighting WGS84 point, press Enter ↵ then **F3 Edit**.	

3.3	Make a note of the Easting, Northing and Elevation. **F1 Store** **OK**	

Step	Instruction	Screenshots
3.4	Now highlight Local Point and press Enter ↵ then **F2 New**.	
3.5	Enter a Point ID for the local coordinates (e.g. STN1 LOCAL) and type in the coordinates you noted down earlier. **F1 Store** **OK**	

3.6	**OK**	

Step	Instruction	Screenshots
3.7	Set the Method to **Convergence angle**. Set the Coord system to **OSGB36(02)**. Select the point you used to define the Coordinate System. The **Rotation** value shown is the calculated difference between WGS84 true north and OS grid north at your location. **OK**	
3.8	For Method, choose **Known WGS84 pt**. For the WGS84 point, choose the point you used to define the new Coordinate System. **NB** the scale will not say 1.00. Do not worry. This is	

	the scale at the ellipsoid surface. At ground level the S.F is 1.00 **OK**	
3.9	A summary is displayed. **F1 Store** saves the New Coordinate System, attaches it to your job containing the GPS measurements and returns you to the main menu. **N.B.** by default, the next new Job you create will inherit this Coordinate System so always check the **Coord system** tab when creating new jobs.