

Uses of Theodolite in Surveying

Theodolite uses for many purposes, but mainly it is used for measuring angles, scaling points of constructional works. For example, to determine highway points, huge buildings' escalating edges theodolites are used. Depending on the job nature and the accuracy required, theodolite produces more curved of readings, using paradoxical faces and swings or different positions for perfect measuring survey.

Followings are the major uses of theodolite:

- Measuring horizontal and vertical angles
- Locating points on a line
- Finding the difference in the level
- Prolonging survey lines
- Ranging curves
- Setting out grades
- [Tachometric surveying](#)

The theodolite helps us a good within the engineering field. This instrument plays a major role in measurement horizontal angles, vertical angles, bearing, etc. To use theodolite, it is necessary to know about theodolite parts, types of theodolite and for what it is used wisely in the field.

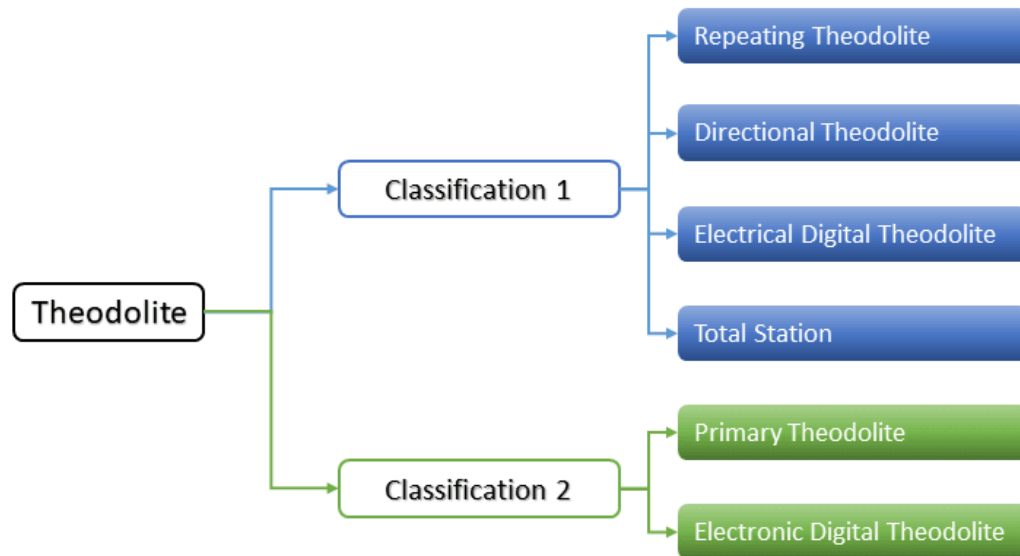
Types of Theodolite

There are various kinds of theodolites for different purposes of different constructional works. Usually, four types of theodolites are uses in site works for different measuring points. Such as-

1. Repeating Theodolite
2. Directional Theodolite
3. Electrical Digital Theodolite
4. Total Station

To clearly saying, theodolites can be also classified into two types

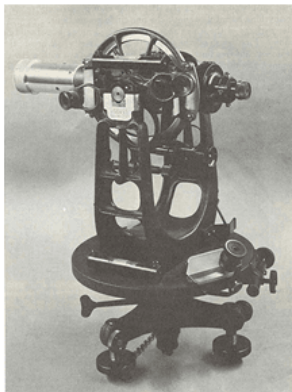
1. Primary Theodolite
2. Electronic Digital Theodolite



These types of theodolites are briefly discussed below.

Theodolite Classification 1

This classification of theodolite contains four types of theodolite which are discussed below.



Repeating Theodolite



Directional Theodolite



Electrical Digital Theodolite



Total Station

Repeating Theodolite

This design facilitates horizontal angles to be remeasured any number of times and added directly on the instrument circles. This type of instrument is restricted for locations where

- the support is not steady, or
- area for using other such instruments is limited.

Directional Theodolite

Angles are obtained by deducting the first direction reading from the second direction reading. This reads *directions* rather than angles. The non-repeating instrument has no minor motion.

Electrical Digital Theodolite

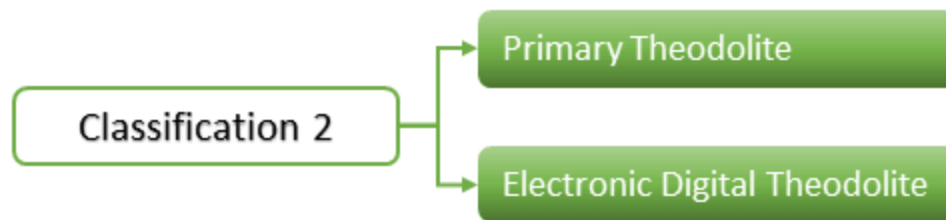
Naturally interprets and records horizontal and vertical angles. Eliminates the standard reading of scales on graduated circles

Total Station

The total Station accommodates the functions of a theodolite for measuring angles, an EDM for measuring gaps, digital data, and information documentation. Examples of Total Stations are the Nikon DTM 801, Topcon, and Geodimeter 400 series.

Theodolite Classification 2

This classification of theodolite contains two types of theodolite which are discussed below.



Primary Theodolite

Primary Theodolite can be two types.

- i. **Transit Theodolites:** A theodolite is named a transit theodolite once its telescope will be transited i.e. rotated through a whole revolution regarding its horizontal axis within the vertical plane.
- ii. **Non-Transit Theodolite** In this kind, the telescope cannot be transited. They are inferior in utility and have currently become obsolete.

Electronic Digital Theodolite

This type of theodolite provides the worth of observation directly within the viewing panel. The exactitude of this sort of instrument varies within the order of 1" to 10". It has also two types.

- i. **Vernier Theodolites:** For reading the graduated circle, verniers are used to correct reading of measuring points and this theodolite is termed as a Vernier theodolite.
- ii. **Micrometer Theodolites:** A micrometer provides to browse the graduated circle identical be termed as a Micrometer theodolite.

This Digital theodolite is also known as Modern Theodolite and can perform the following functions:

- Distance measurement
- Angular measurement
- Data processing

- Digital display of point details
- Storing data is an electronic field book