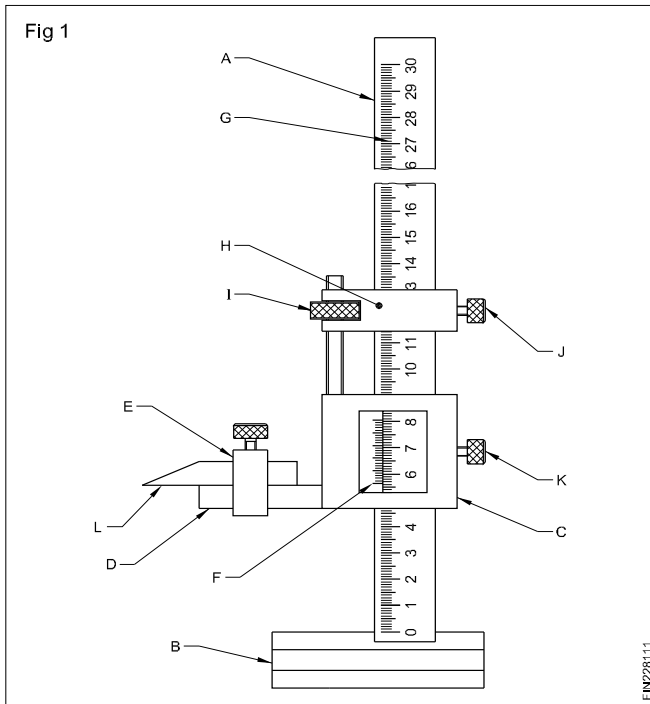


**Vernier height gauge**

**Objectives:** At the end of this lesson you will be able to

- identify and name the parts of a vernier height gauge
- state the constructional features of a vernier height gauge
- state the functional features of a vernier height gauge
- identify the various applications of the vernier height gauge in engineering.

**Parts of a vernier height gauge (Fig 1)**



- A Beam
- B Base
- C Main slide
- D Jaw
- E Jaw clamp
- F Vernier scale
- G Main scale
- H Finer adjusting slide
- I Finer adjusting nut
- J&K Locking screws
- L Scriber blade

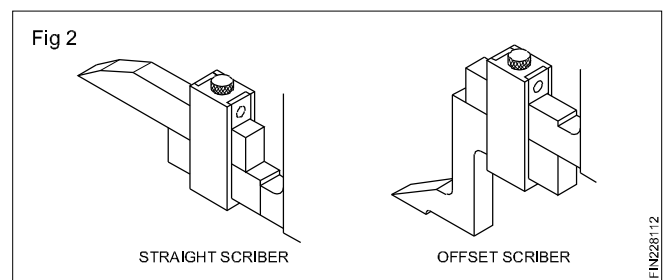
**Constructional features of a vernier height gauge:**

The construction of a vernier height gauge is similar to that of the vernier caliper that it is vertical with a rigid base. It is graduated on the same vernier principle which is applied to the vernier caliper.

The beam is graduated with the main scale in mm as well as in inches. The main slide carries a jaw upon which various attachments may be clamped. The jaw is an integral part of the main slide.

The vernier scale is attached to the main slide which has been graduated, to read metric dimensions as well as the inch dimensions. The main slide is attached with the finer adjusting slide. The movable jaw is most widely used with the chisel pointed scriber blade for accurate marking out as well as for checking the height, steps etc. Care should be taken to allow for the thickness of the jaw depending on whether the attachment is clamped on the top or under the jaw for this purpose.

The thickness of the jaw is marked on the instrument. As like in a vernier caliper, the least count of this instrument is also 0.02 mm. An offset scriber is also used on the movable jaw when it is required to take measurement from the lower planes. (Fig 2) The complete sliding attachment along with the jaw can be arrested on the beam to the desired height with the help of the lock screws. The vernier height gauges are available in ranges of capacities reading from zero to 1000 mm.



**Functional features of the vernier height gauge:**

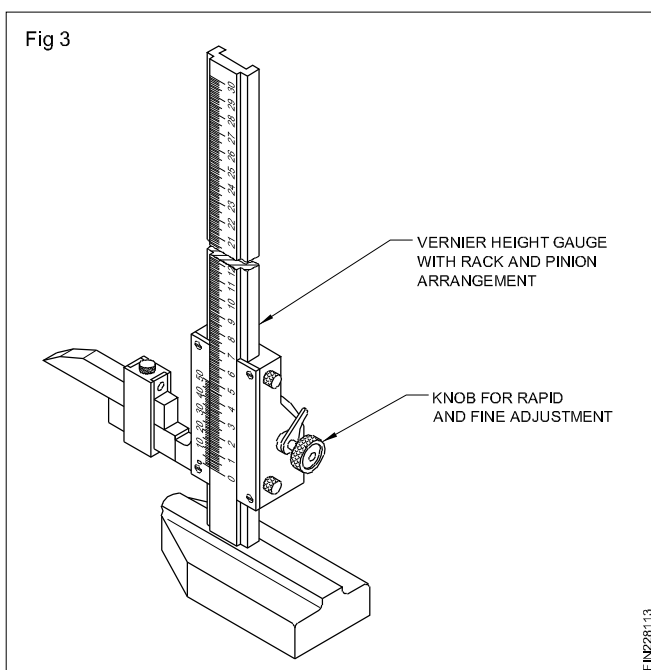
Vernier height gauges are used in conjunction with the surface plate. In order to move the main slide, both the locking screws of the slide and the finer adjusting slide have to be loosened. The main slide along with the chisel pointed scriber has to be set by hand, for an approximate height as required.

The finer adjusting slide has to be locked in position, for an approximate height as required. To get an exact markable height, the finer adjustments have to be carried on the slider with the help of the adjusting nut. After obtaining the exact markable dimension, the main slide is also to be locked in position.

Modern vernier height gauges are designed on the screw rod principle. In these height gauges, the screw rod may be operated with the help of the thumb screw at the base. In order to have a quick setting of the main slide, it is designed with a quick releasing manual mechanism. With the help of this, it is possible to bring the slide to a desired approximate height without wastage of time. For all other purposes, these height gauges work as ordinary height gauges. In order to set the 'zero' graduation of the main scale for the initial reading.

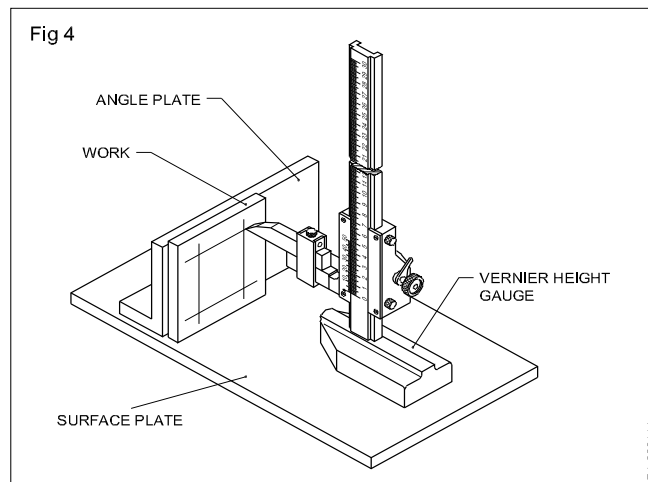
Some vernier height gauges are equipped with a sliding main scale which may be set immediately for the initial reading. This minimises the possible errors in reading the various sizes in the same setting.

Another kind of modern vernier height gauge has a rack and pinion set up for operating the sliding unit. This is shown in Fig 3.



**Various applications of a vernier height gauge:** The vernier height gauge is mainly used for layout work. (Fig 4)

It is used for measuring the width of the slot and external dimension.



The vernier height gauge is used with the dial indicator to check hole location, pitch dimensions, concentricity and eccentricity.

It is also used for measuring depth, with a depth attachment.

It is used to measure sizes from the lower plane with the help of an offset scriber.

**Vernier height gauge is made of invarsteel/ stainless steel.**

#### Care and maintenance of vernier height gauge

- After using the vernier height gauge, you should wipe the measuring faces with a clean, dry cloth.
- After use, it is important that you should check the beam of your vernier height gauge for any unwanted residue that may affect the sliding motion of the vernier scale.
- Apply a small drop of oil to the beam of the height gauge, clean it with a cloth and slide the vernier scale backward and forward a couple of times.
- Vernier height gauge should be stored in a well ventilated humid free environment.
- Most height gauge come with a protective case to keep them safe when not in use.
- You should regularly check the calibration of your height gauge, to make sure that it is working correctly.