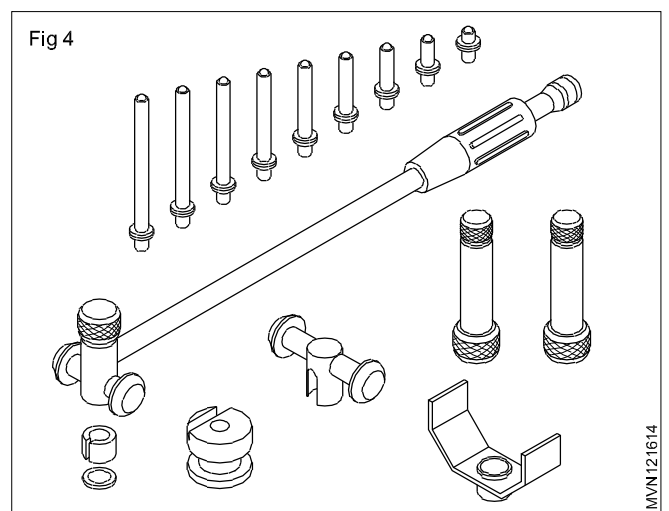


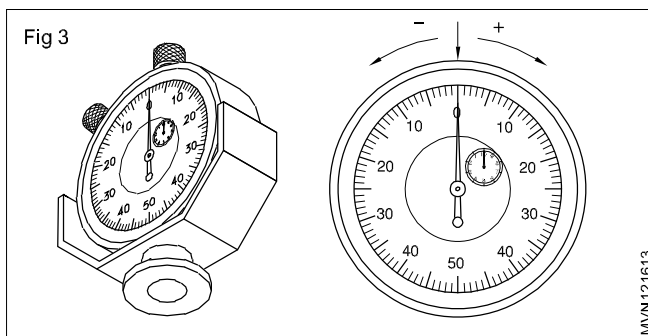
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The accuracy of the instrument depends on the type of graduations on the dial. The most frequently used instruments have accuracies of 0.001 mm and 0.01 mm.

The dial gauge should be set to zero before taking measurement. Setting rings are available for zero setting. (Fig 5)



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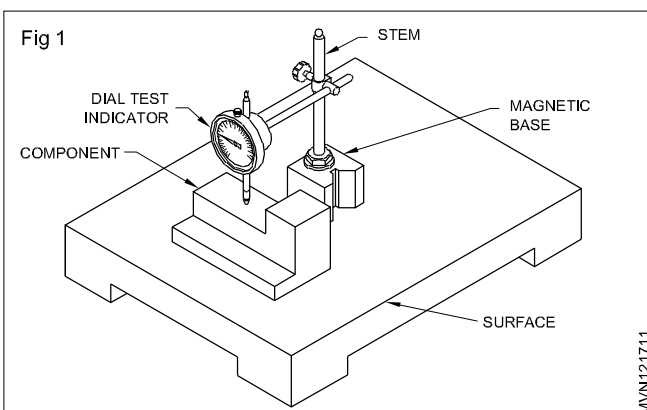
Dial test indicators

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

- state the principle of a dial test indicator
- state the types of dial test indicator
- identify the parts of a dial test indicator
- state the important features of a dial test indicator
- state the functions of a dial test indicator
- identify the different types of stands
- state the important of straight edge.

Dial test indicators

Dial test indicators are instruments of high precision, used for comparing and determining the variation in the sizes of a component. These instruments cannot give the direct reading of the sizes like micrometers and vernier calipers. A dial test indicator magnifies small variations in sizes by means of a pointer on a graduated dial. This indirect reading of the deviations gives an accurate picture of the conditions of the parts being tested. (Fig 1)



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Principle of working

The magnification of the small movement of the plunger or stylus is converted into a rotary motion of the pointer on a circular scale.

Types

Two types of dial test indicators are in use.

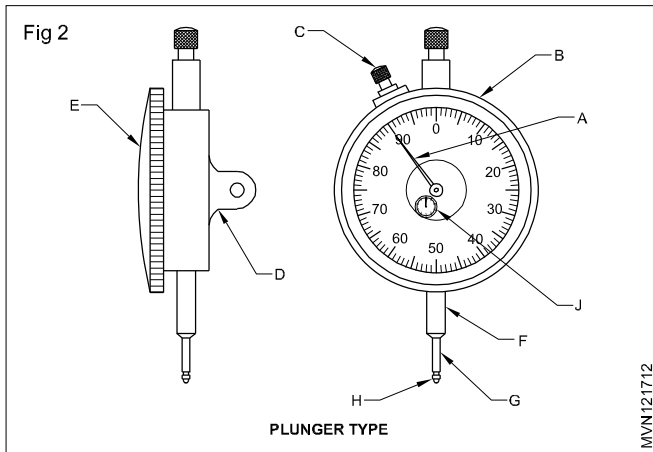
They are the

- Plunger type (Fig 2)
- Lever type. (Fig 3)

The plunger type dial test indicator

The external parts and features of a dial test indicator are as shown in the (Fig 2).

- Pointer (A)
- Rotatable bezel (B)
- Bezel clamp (C)
- Back lug (D)
- Transparent dial cover (E)
- Stem (F)



Plunger (G)

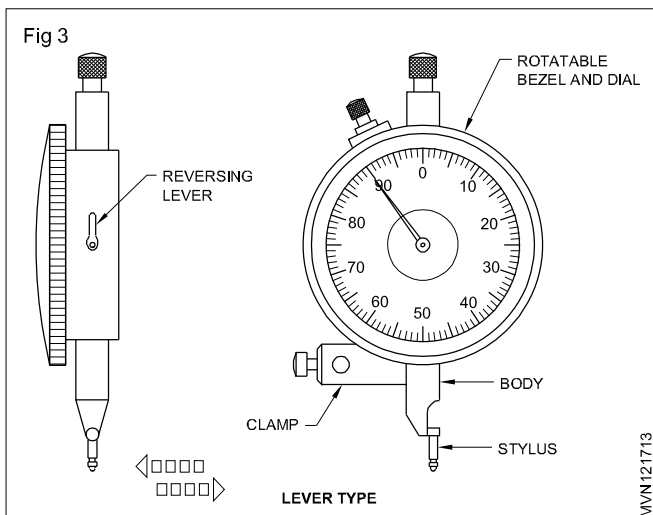
Anvil (H)

Revolution counter (J)

For converting the linear motion of the plunger, a rack and pinion mechanism is used.

The lever type dial test indicator (Figs 3,4,5)

In the case of this type of dial test indicators, the magnification of the movement is obtained by the mechanism of the lever and scroll.



It has a stylus with a ball-type contact, and it has an oscillating movement as against the reciprocating movement in the plunger type indicator.

This can be conveniently mounted on a surface gauge stand, and can be used in places where the plunger type dial test indicator application is difficult.

Important features of dial test indicators

An important feature of the dial test indicator is that the dial can be rotated by a ring bezel, enabling the zero to be get in any position.

Many dial test indicators read plus in the clockwise direction from zero, and minus in the anticlockwise direction so as to give plus and minus indications.

Uses

- To compare the dimensions of workpiece against a known standard, eg. Slip gauges.
- To check plane surfaces for parallelism and flatness.
- To check straightness of shafts and bars.
- To check concentricity of holes and shafts.

Indicator stands (Fig 4 & 5)

Dial test indicators are used in conjunction with stands for holding them so that the stand itself may be placed on a datum surface or machine tool.

The different types of stands are:

- Magnetic stand with universal clamp
- Magnetic stand with flexible post
- General purpose holder with cast iron base.

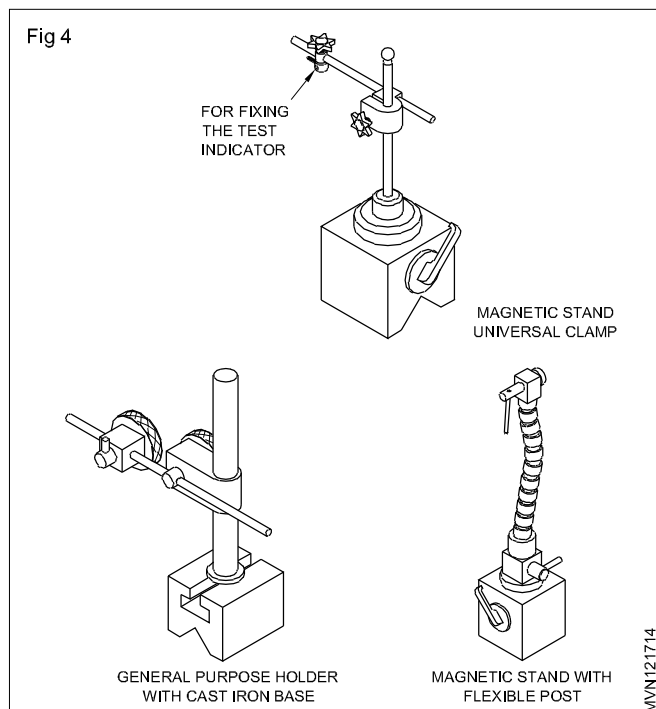
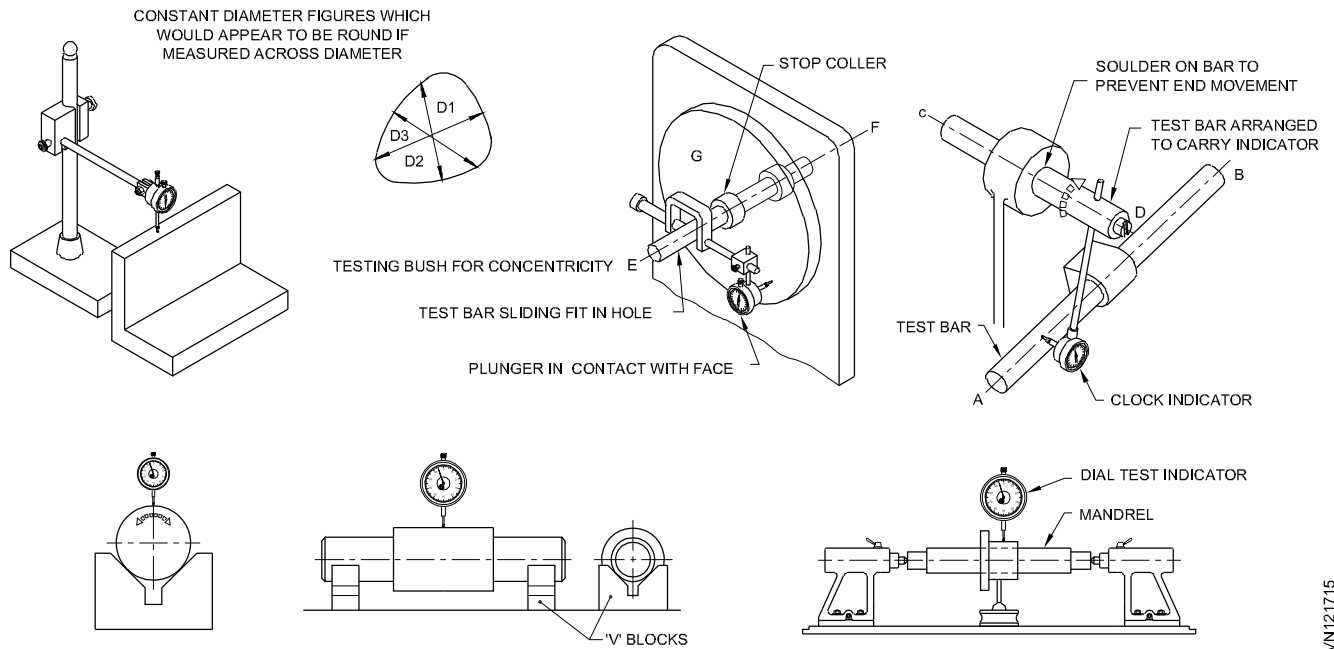


Fig 5



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Straight edges

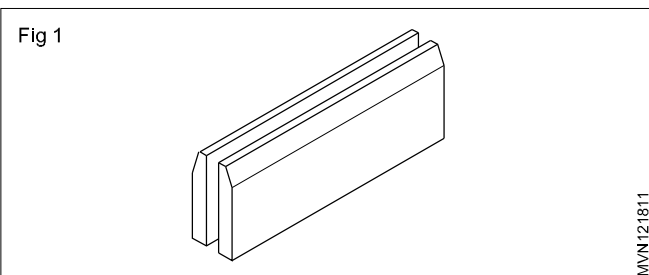
Objectives: At the end of this lesson you shall be able to

- name the different types of straight edge
- state the straight edge uses edge
- state the different method of testing straightness.

For testing straightness and to use a guide for marking long straight lines. Straight edges made of steel or cast iron are used.

Steel straight edges

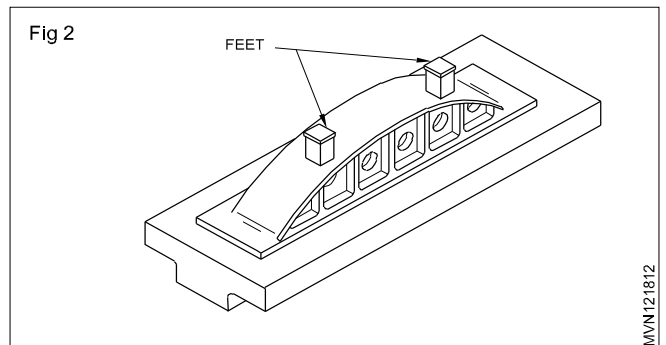
These are usually available up to 2 meters in length and may be rectangular in cross-section or have one edge beveled (Fig 1)



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Cast iron straight edges (Fig 2)

These are made from close-grained, grey, cast iron and can be considered as narrow surface plates. They are available up to 3 meters length and are used for testing machine tool sideways, cast iron straight edges have ribs, and bow-shaped tops to prevent distortion. These straight edges are shaped tops to prevent distortion. These straight edges are provided with feet to prevent distortion under their own weight.

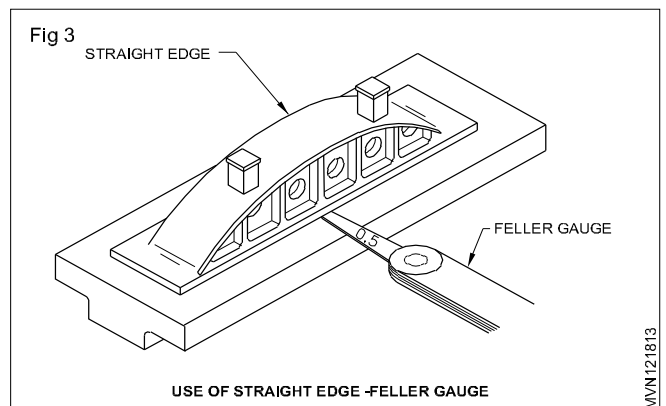


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Use of straight edges

Checking with feeler gauges

In certain situations when the gap between the surface and the straight edge is more. A feeler gauge can be used (Fig 3) to determine the extent of deviation.



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