

Ministry of high Education and Scientific Research
Middle Technical University
Electrical Engineering Technical College

Training package
in
Workshops
(Mechanical tools and devices)

For
Students of first class
Department of Medical Instrumentation Techniques Engineering



By

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**Mechanical tools and
devices**

23th & 24th

23th & 24th

modular

units

1/ Overview

1 / A –Target population :-

For students of first class

Department of Medical Instrumentation Eng. Techniques

1 / B –Rationale :-

This unit introduces principles of mechanical tools and devices in the workshop

1 / C –Central Idea :-

The major topics discussed in this unit are included in the following outline.

- Rasps
- Vernier Caliper

2/ Performance Objectives :-

After studying the first modular unit, the student will be able to-

1. Used the mechanical tools and devices

3/ Pre test :-

Circle the correct answer:-

1. it is has a teeth appear to have a random pattern

- a- Bellota
- b- Corradi
- c- Vallorbe
- d- all above

2. The uses of the Vernier Caliper are:

- a- Measure internal diameter and measure external diameter
- b- Measure thickness and measure depth
- c- Measure length
- d- All above

4/ the text :-

➤ Mechanical tools and devices

I. Rasps

Rasps are super tools for shaping and smoothing stock- particularly convex and concave profiles.



➤ Types of rasps

1- Bellota

The Bellota Smooth Cabinet rasp is the most conventional looking of the three, with teeth cut in straight, staggered rows. This makes it, much more similar to a wood rasp. As you can see in the photo below, it has the largest teeth among the three rasps - and larger teeth leave a rougher finish.



2- Corradi

The Corradi is about the same length as the Bellota, but at 8-7/8" it has a shorter face. At 1-1/4" it's the second widest of the seven rasps. The top 2-1/2" of the rasp tapers to 3/4" wide at the point, somewhat narrower than the Bellota.



3- Vallorbe

The Vallorbe it is has a teeth appear to have a random pattern



Flat side: Bellota, Corradi, Vallorbe



Bellota

Corradi

Vallorbe

II. Vernier Caliper

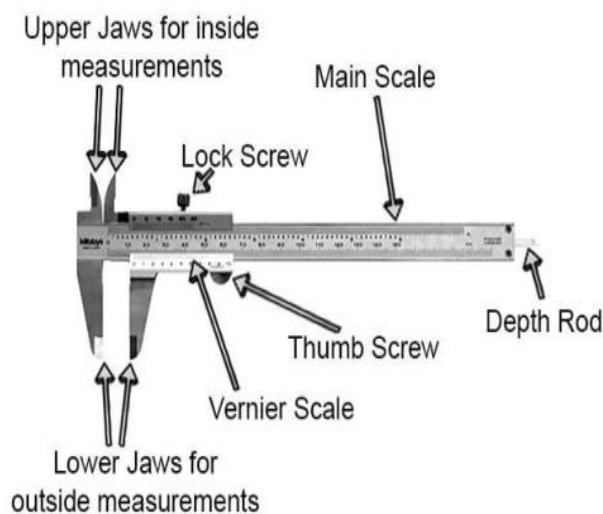
French mathematician Pierre Vernier invented Vernier Caliper in 1631. The uses of the Vernier Caliper are:

- 1- Measure internal diameter
- 2- Measure external diameter
- 3- Measure thickness
- 4- Measure depth
- 5- Measure length



TYPE OF VERNIER CALLIPER

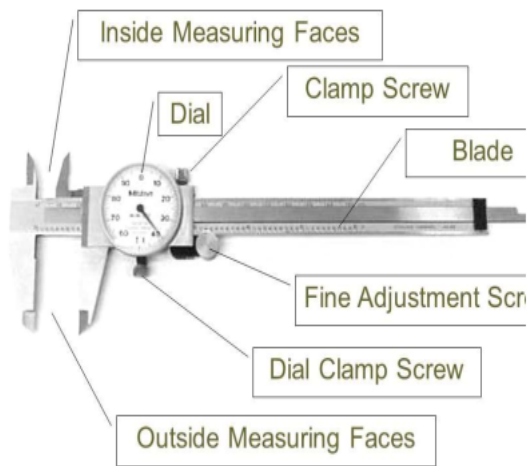
1. analog Vernier calliper
2. dial Vernier calliper
3. digital Vernier calliper



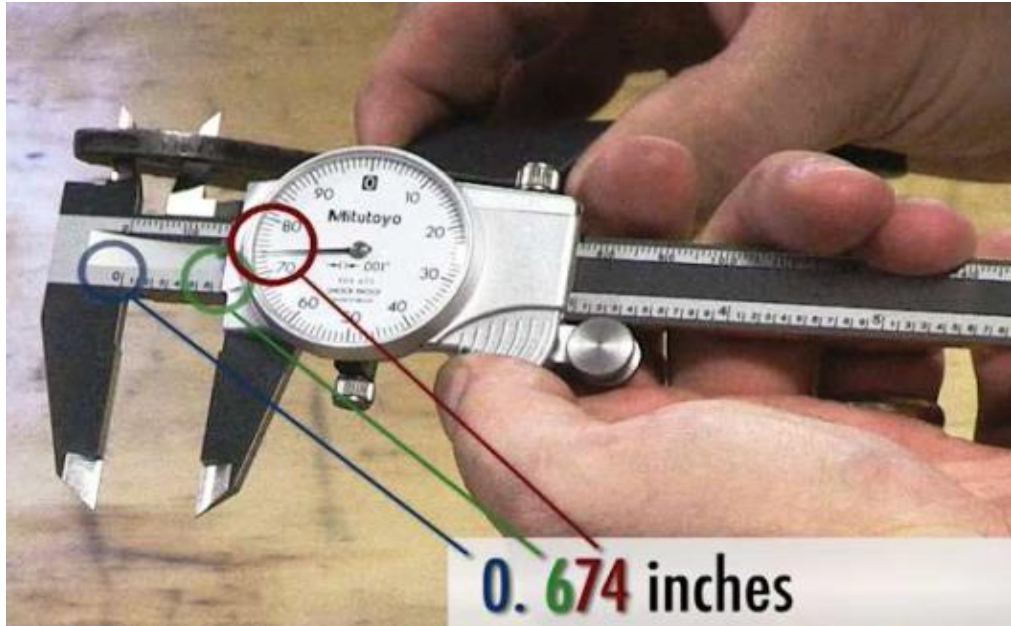
ANALOG VERNIER CALLIPER



Dial Caliper Parts



DIAL VERNIER CALLIPER



DIGITAL VERNIER CALLIPER

5/ Post test :-

Circle the correct answer:-

1- Types of Vernier Caliper

- a- Analogue
- b- Dial
- c- digital
- d- all above

2- Super tools for shaping and smoothing stock- particularly convex and concave profiles.

- a- Rasps
- b- Vernier Caliper
- c- holder
- d- all above

6/ key answer :-

1- Pre test :-

1. a
2. d

2- Post test :-

1. d
2. a

7/References :-

1. Encyclopedia of Electronic Components Volume 1 (Charles Platt).
2. <https://www.electricaltechnology.org/2013/03/how-to-remember-direction-of-pnp-and.html>