

# TOOL AND CUTTER GRINDER

## INTRODUCTION

Grinding is a metal cutting operation performed by means of a rotating abrasive wheel that acts as cutting tools. Mostly grinding is a finishing operation because it removes comparatively less metal (0.25 to 0.50 mm).

## Advantages

1. Machine parts made by grinding of accurate size.
2. These parts have fine finishing.
3. Unnecessary cutting and wastage of metal is saved
4. It saves time for more production.
5. It is the economical process of cutting hard material.

## GRINDING MACHINE

The machine by which grinding operation is done called Grinder or Grinding Machine.

## Type of Grinder

1. Rough Grinder (Pedestal Grinder, Hand Grinders etc. )
2. Precision Grinder (Surface Grinder, Cylindrical, Grinder. Tools and Cutter Grinder)

## TOOLS CUTTER GRINDER

A tool and cutter grinder is used to sharpen milling cutters and tool bits along with a host of other cutting tools.

## PARTS

**Base** – it attach with all the other part of the machine

**Saddle** - it is on the top of body, it carriage the table and traverses cross wise to the table movement.

**Table** - it is on the saddle. It reciprocate and can be swiveled to the required angle

**Column** – It is on the back of the machine and it carries the wheel head which moves up down for the depth of cut.

**Wheel head** – it has two grinding wheel on both ends of the spindle and can be swiveled to the required angle up to  $360^{\circ}$

**Work head** – it is separate part and is fitted on the table.

## SPECIFICATION

1. Maximum diameter of wheel that can be held in the spindle
2. Maximum height x length x breadth of job that can be ground
3. Type of drive – Electrical, Hydraulics

## GRINDING WHEEL

It is a tool for metal cutting with innumerable cutting edge. The innumerable tiny particle on the grinding wheel, which acts as different cutting edge these particles are called abrasive. It also know as grain.

### Type of abrasive

Abrasive are following type

**NATURAL** - (Emery, Sand stone, Quartz)

**ARTIFICIAL** -

**Aluminum Oxide ( $Al_2O_3$ )** -

- Regular Aluminum oxide (A),
- White Aluminum Oxide (AA, VA, WA)

**Silicon carbide (SC)**

Black SC - (C)

Green SC - (GC)

### GRAIN

No of holes per Inch fill through sieve

Coarse - (8,10...20) Medium - (24, 30....60) Fine - (70,80...150) Very fine (180,220..320)  
Very thin - (400,500,600)

### GRADE

Grade of grinding wheels means the measurement of their power to hold the abrasive grain

High <sup>SOFT</sup> (A-D), Soft (E- H), Medium (I-M), Hard (N-S) Very hard (T to Z)

### STRUCTURE

Structure means of grinding wheels the blank space between grains and density.

Dense, - 1 to 5, Medium - 6 to 10, Open - 11 to 15

### BOND

By bond we means a binding agent i.e material used to hold particle of abrasive together in a grinding wheel.

Verified bond - Symbol - V.....

Resinoid or Bakelite -B, Shellac - E, Silicate -S, Rubber - R,  
Oxichloride - OXY, Metallic - M

### Specification of wheel

Standard wheel marking

Diameter of wheel

Bore diameter

Thickness of wheel

Type (shape) of the wheel

### Standard making system

Manufacture Symbol - S

Abrasive - A

Grain - 36

Grade - H

Structure - 6

Bond - V