

GRINDING PROCESS

Introduction

- ✓ Some manufacturing processes cannot produce the required dimensional accuracy or surface finish
- ✓ An abrasive is a small, hard particle having sharp edges and an irregular shape
- ✓ Abrasives is removing of small amounts of material from a surface through a cutting process that produces tiny chips
- ✓ Sandpaper or emery cloth can smoothen surfaces and remove sharp corners

Grinding wheels

- ✓ Grinding wheels can sharpen knives and tools
- ✓ Grinding wheels are produced by mixing the appropriate grain size of abrasive with required bond and then pressed into shape
- ✓ The characteristics of the grinding wheel depends on number of variables
- ✓ Specified by dia. of wheel, dia. of spindle hole and face width of wheel

Designation and selection

- ✓ Grinding wheels designation and selection have been described by the characteristics of
 - Abrasives
 - Bonds

Abrasives

- ✓ Commonly found in nature are emery, corundum (alumina), quartz, garnet and diamond
- ✓ Abrasives that have been made synthetically:
 - Aluminum oxide (Al_2O_3)
 - Silicon carbide (SiC)
 - Cubic boron nitride (CBN)
 - Diamond

Grinding Fluids

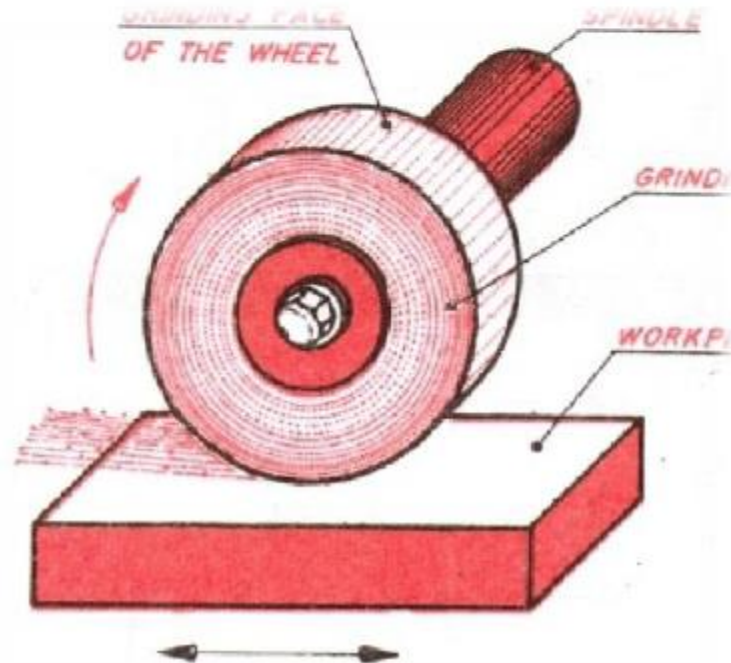
- ✓ The correct selection of grinding fluid can greatly affect the grinding process
- ✓ Grinding fluids serves for
 - Reduce temperature in the work piece
 - Lubricate the contact area between wheel and work piece (prevent chip sticking)
 - Removing common grinding dust which is hazardous to the health of operator

Grinding Process

- ✓ Grinding is a surface finishing operation where very thin layer of material is removed in the form of dust particles.
- ✓ Thickness of material removed is in range of 0.25 to 0.50 mm.
- ✓ Tool used is a abrasive wheel
- ✓ Grinding machine is a power operated machine tool where, the work piece is fed against constantly rotating abrasive wheel to remove thin layer of material from work.

Working Principle

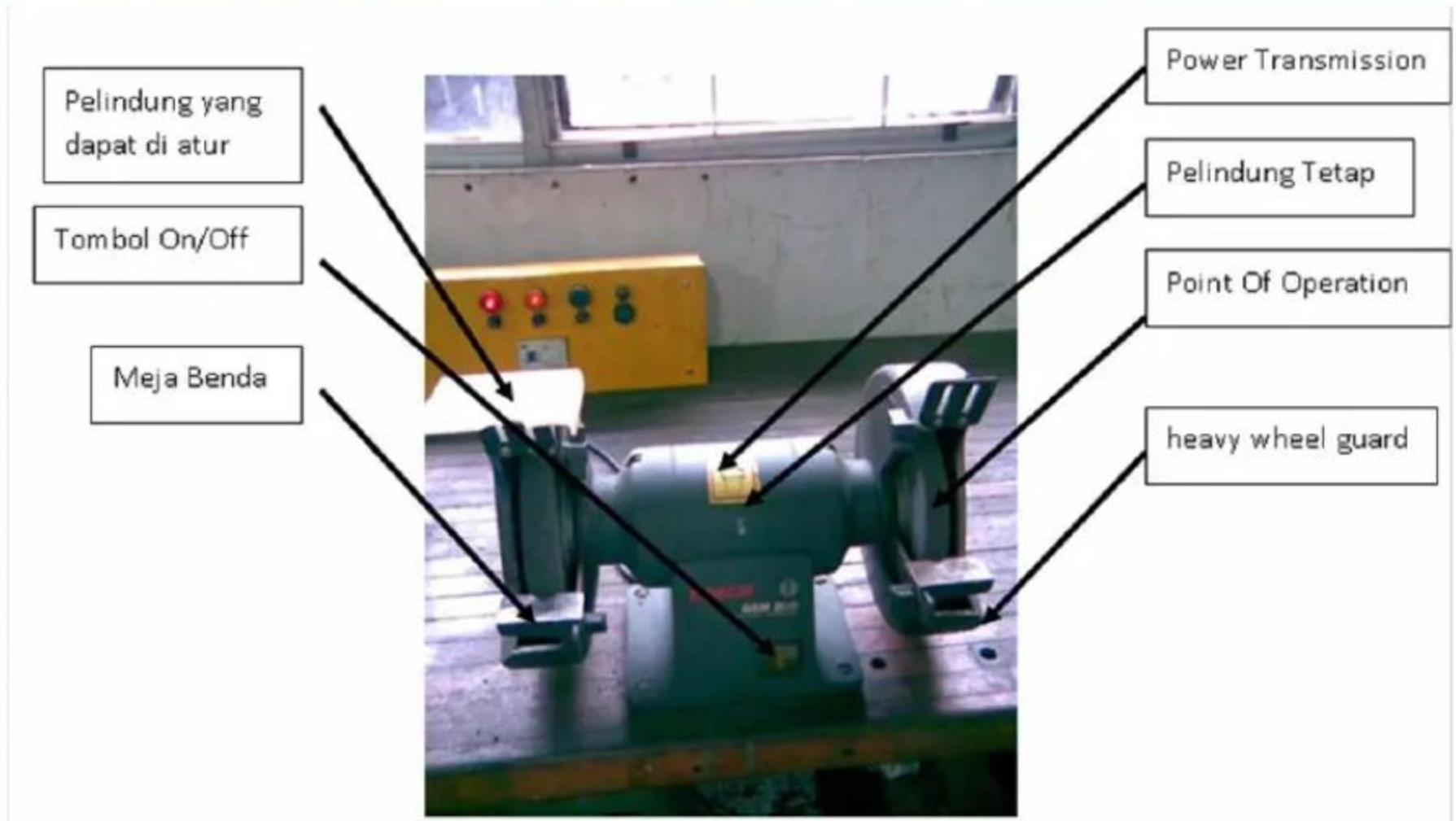
- ✓ Work piece is fed against the rotating abrasive wheel.
- ✓ Due to action of rubbing or friction between the abrasive particles and work piece material is removed.

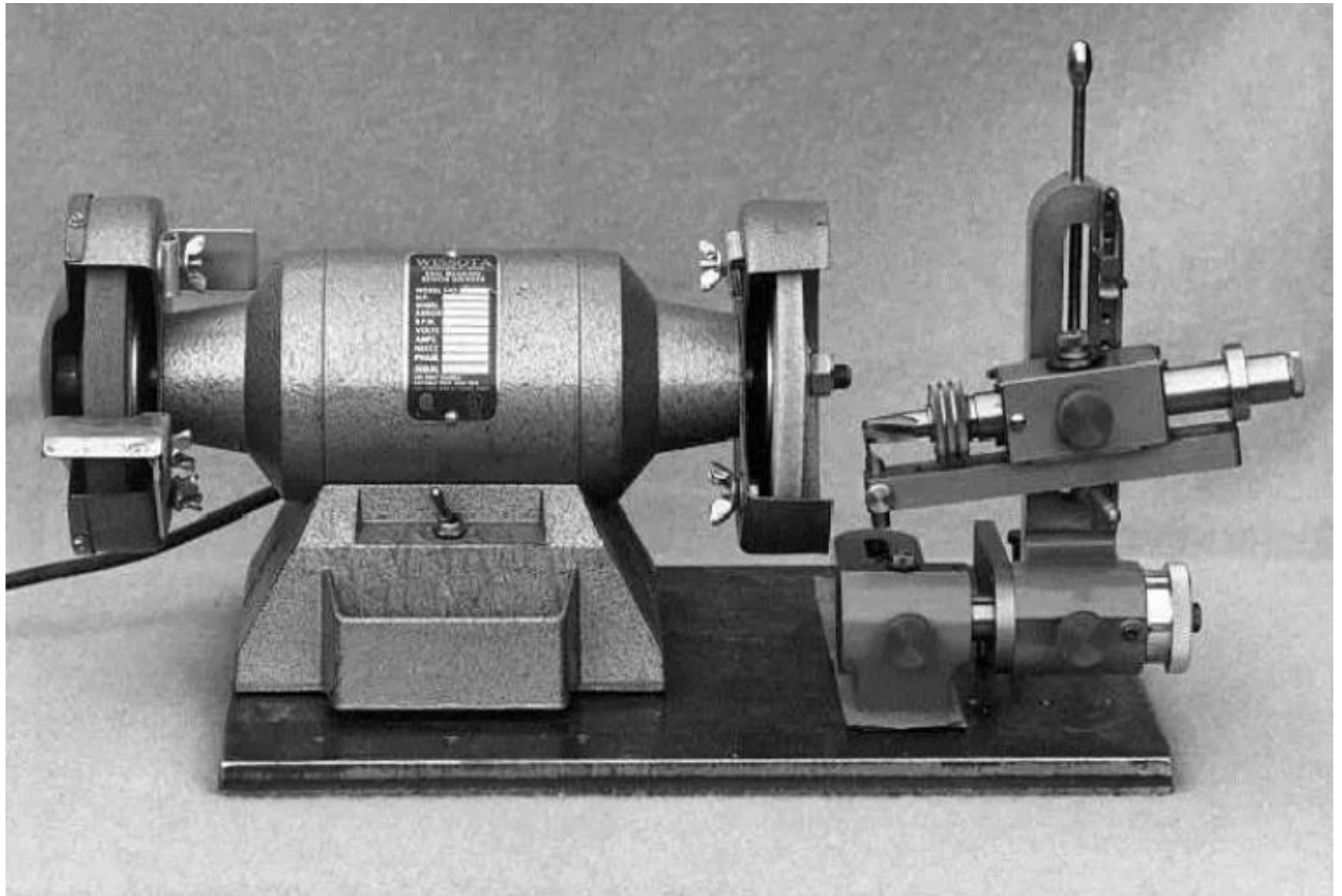


Classification of grinding machine

- ✓ Bench grinding machine
- ✓ Surface grinding machine
- ✓ Cylindrical grinding machine
- ✓ Center less grinding machine
- ✓ Internal grinding machine
- ✓ Special purpose grinding machine

PART OF GRINDING MACHINE

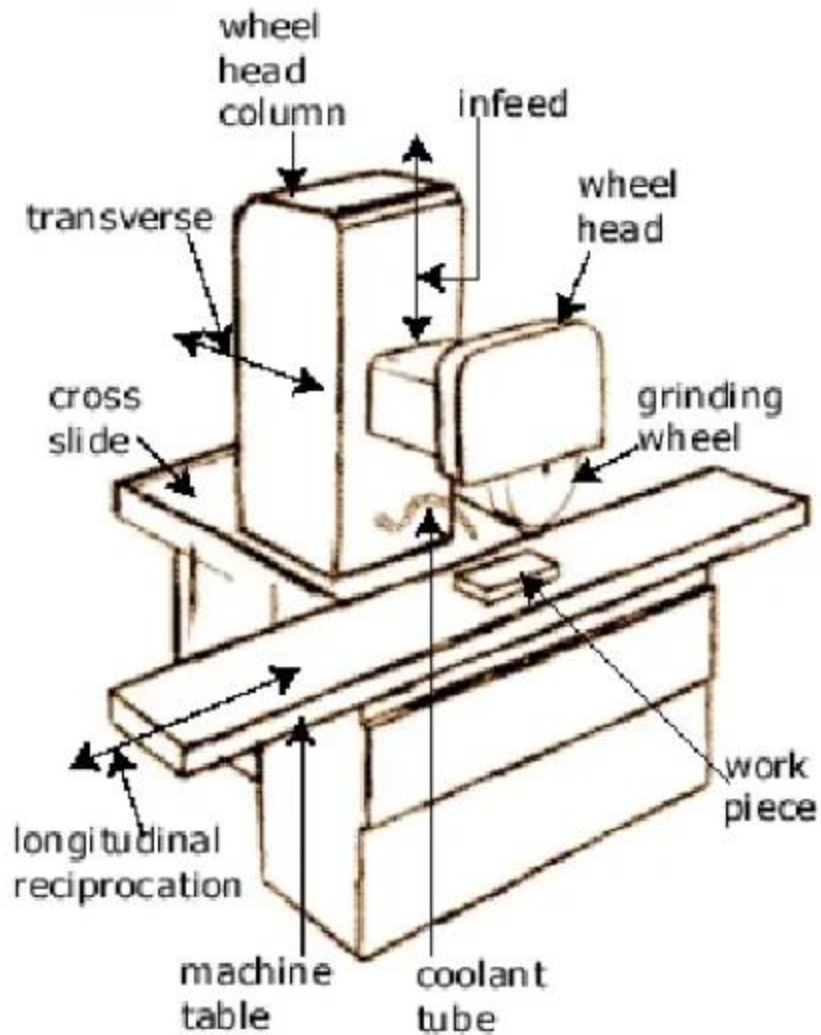




CUTTER GRINDER



PART OF GRINDING MACHINE



GRINDING OPERATION

