SHOP TOOL SAFETY

Grinders, Sanders,
Drills, Lathes,
Saws,
Shear,
Break, Punch,
And Roller

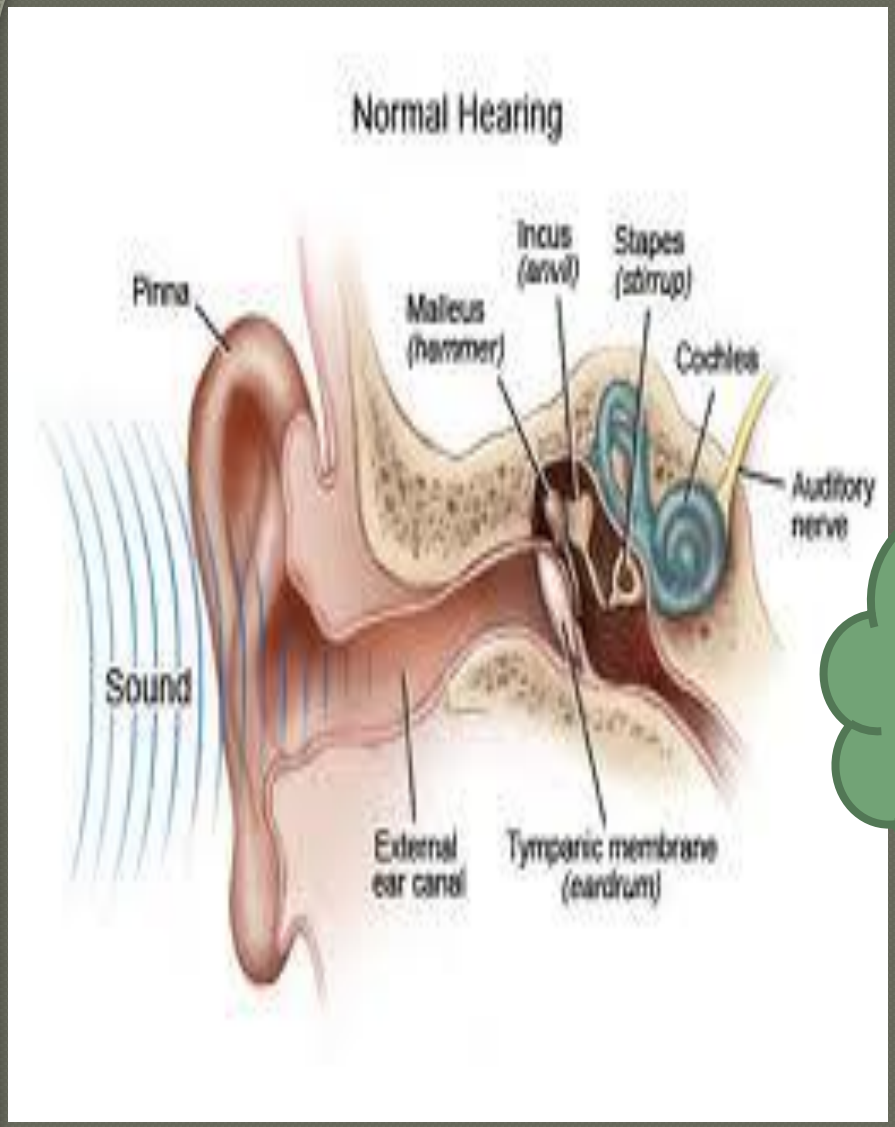
Personal Protective Equipment:

A welder must be aware of possible dangers to the body during any welding or cutting operation and learn the safe practices for **personal welfare**.

Suitable **eye** protection, **clothing**, and **ear** protection are **necessary!**

Coveralls (cover – all) your loose clothing!

4" rule: keep your fingers 4" away from **all** moving parts!



Ear protection?

WHAT?

Safety Boots

Recommended

In most cases

Other measures as required

Right Tool for the Right Job

- Hand tools can sometimes get the job done faster.
- Electricity is not a toy but a tool.
- Compressed air.

Know the shop layout

1. Exits
2. Fire Extinguishers
3. First Aid / Eye wash
4. M.S.D.S.
5. Trash Containers
6. Recycle Bins
7. Brooms/Dust Pans/Mop

FILE SAFETY

- **Always use the correct file for the job.**
- **Never use a file without a properly fitted matching handle. Do not use a file as a hammer, or as a pry bar.**
- **Do not strike the file with any other tool.**
- **Always clean a file after use with a file cleaning brush.**
- **Store files properly to keep teeth sharp. e.g. in sleeve or wrapped in cloth.**

FILE SAFETY

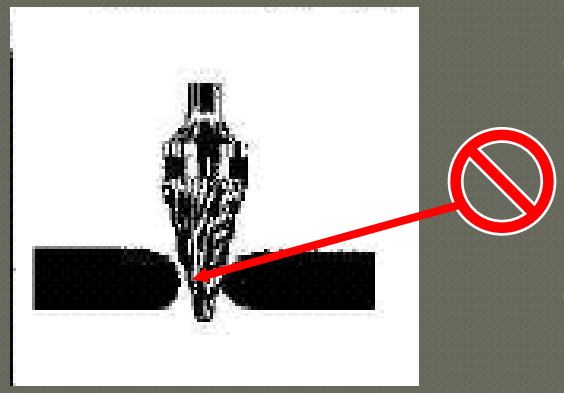
- **This is the correct method of using a file.**
- **Hold file handle in one hand and guide the stroke of the file with the other hand.**
- **This ensures the file will not slip, and possibly cause injury.**

Die Grinder Safety

CARBIDE BUR SAFETY

- **Carbide Burs are hard and brittle- Keep running speeds high to minimize tooth loading and chipping.**
- **Only 30% of the diameter of the bur should be in contact with the work-piece at any time. Any more may cause jamming and chipping.**

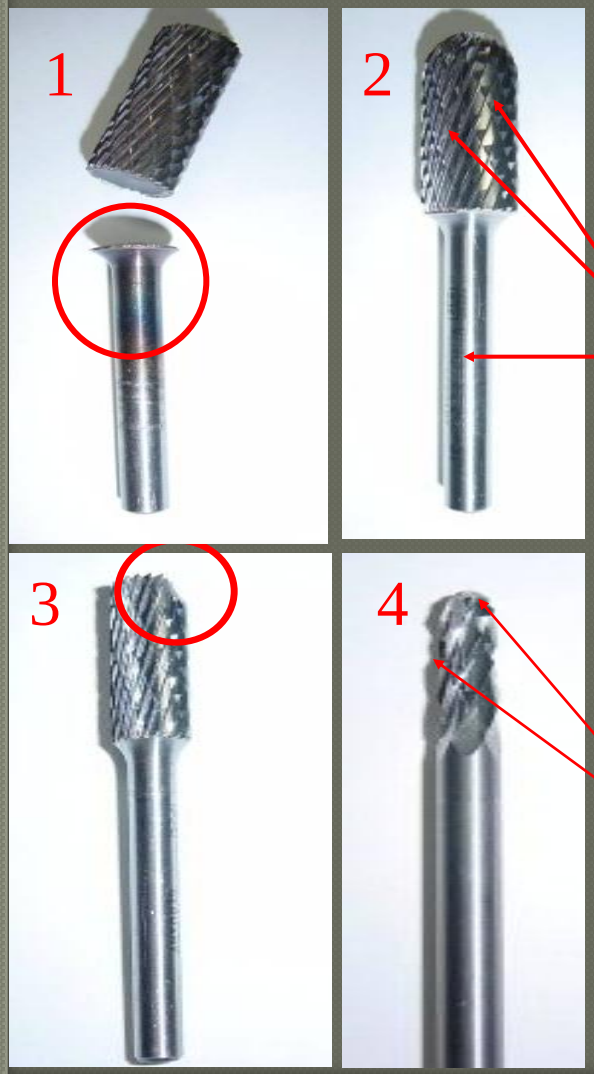
CARBIDE BUR SAFETY



- Do not allow bur to contact material on both sides of a hole. This will cause it to jam.
- Store burs in plastic case, not loose in toolbox.
- Do not drop burs, they are brittle & may crack.
- Be especially careful in handling die grinder with bur attached. Throwing or dropping tool on bench can damage the bur, and it may fail on next use.

CARBIDE BUR SAFETY

SIGNS OF MISUSE



- **(1) Head has come off shaft.**
  Usually due to excessive pressure, excessive speed and/or no free running. Signs of this are brazing has melted. Blue/black discoloration especially under the head.
- **(2) Radial or helical pattern chipping.**
  Normally caused by jamming bur in a corner or hole. Also identified by collet/jaw marks on shank.
- **(3) "Chunk" of carbide broken in otherwise undamaged bur.**
  Suggests bur has been dropped, often while still in the machine.
- **(4) Erratic Chipping.**
  Probably due to insufficient speed (e.g. in a pistol drill). Bur will usually chip immediately at low speed.

Bench Grinder
Belt Sander
Safety

Always stand to the **side** to start until the motor is up to operation speed.

Sanding or Grinding?
What is the difference?

Most bench grinders have a stone grinding wheel those wheels are porous like a sponge.

Who knows what the person before you was grinding on **That** machine before you?

Aluminum, copper, zinc, brass, bronze, lead, cadmium, or beryllium bearing metals.

All these metals and more can get inside of the porous type holes and cool as grinder slows but when grinder is turned back on…

Bench Grinder Safety Scale

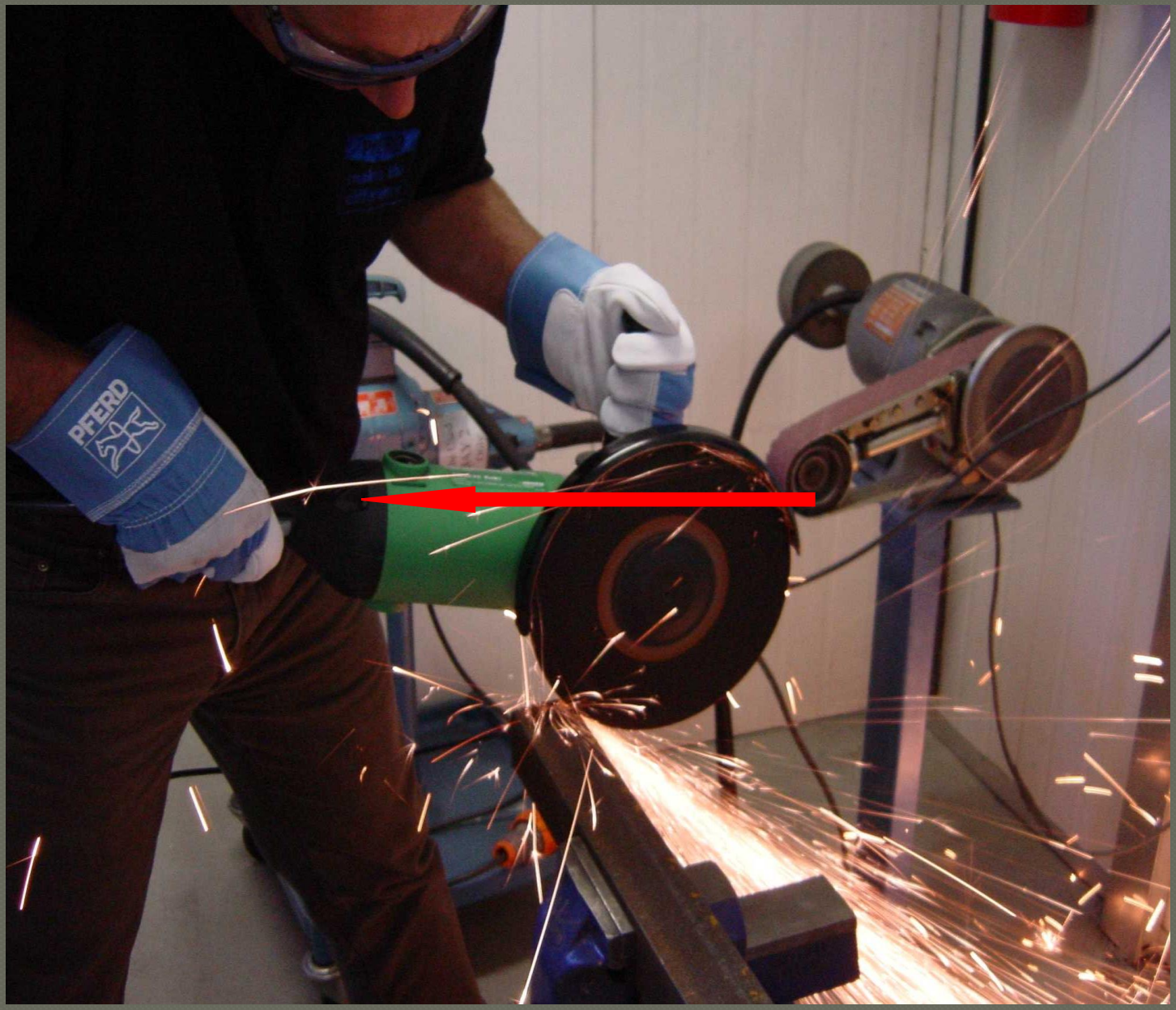
¼ gap at the top of wheel guard

NO BIGGER than 1/8 gap at tool rest

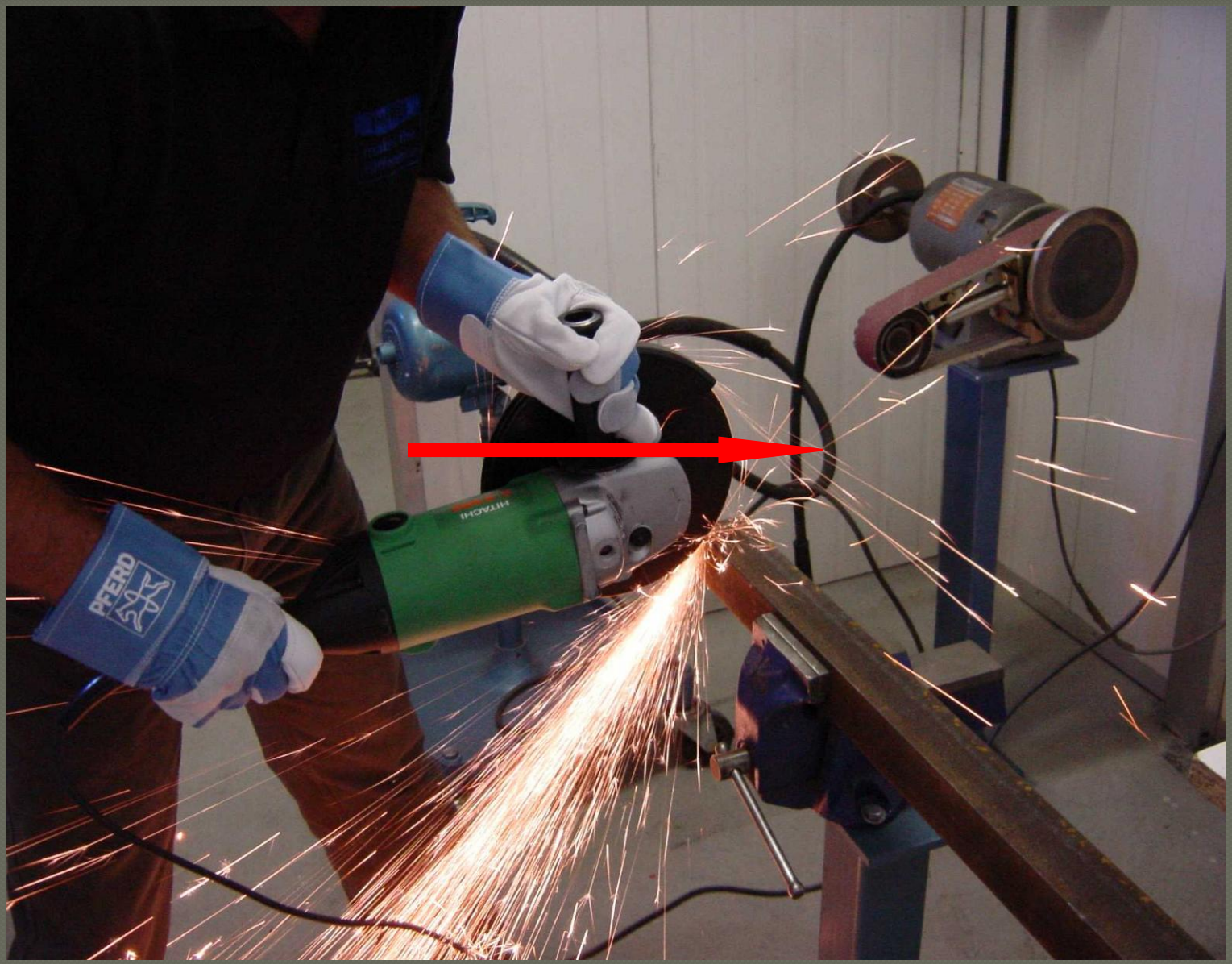
Angle Grinder Safety

4 ½” Grinder

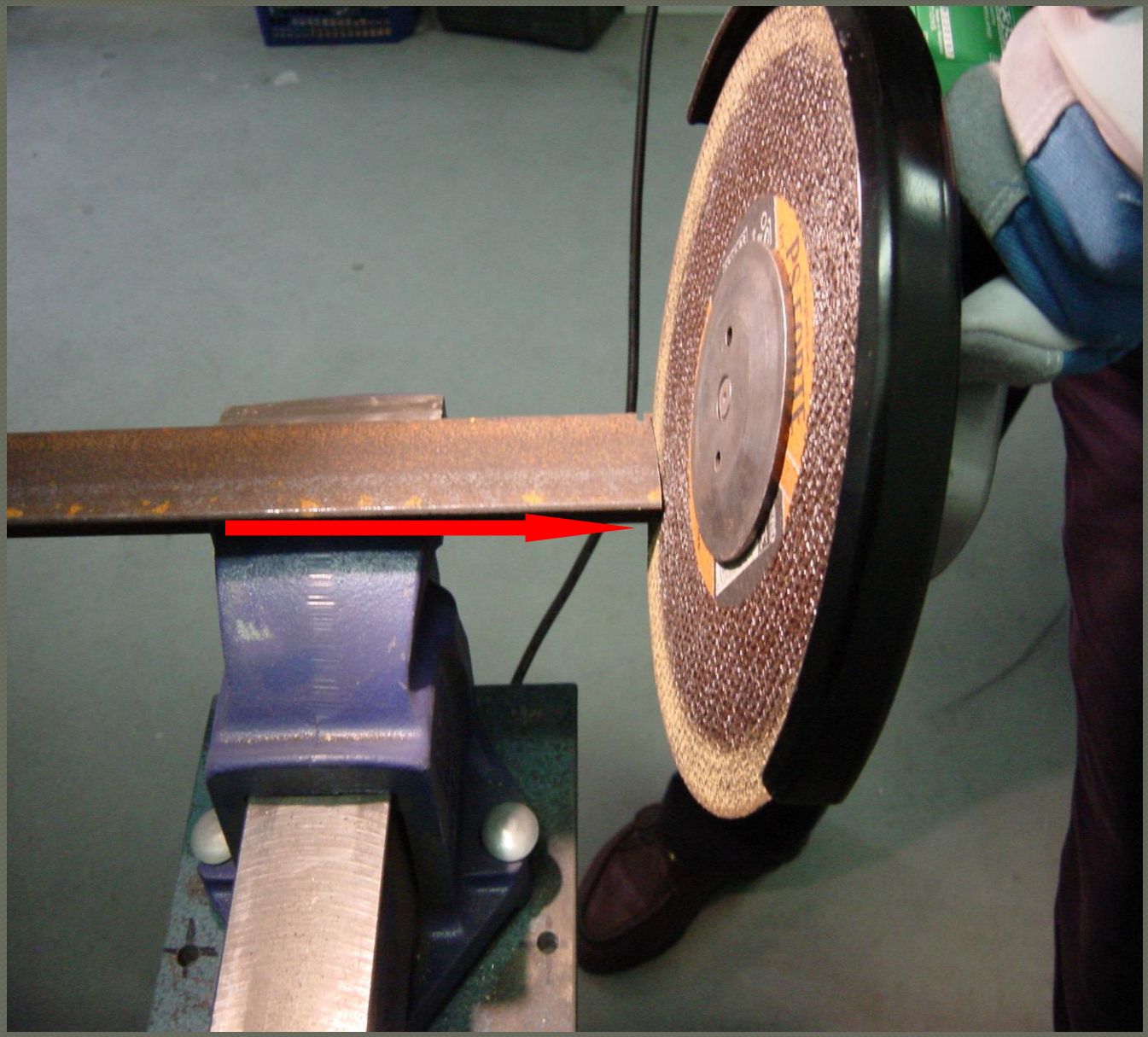
9” Grinder



Recommended Direction of Cutting



Non Preferred Direction of Cutting



<u>NEVER</u> Apply Side Pressure on Wheel

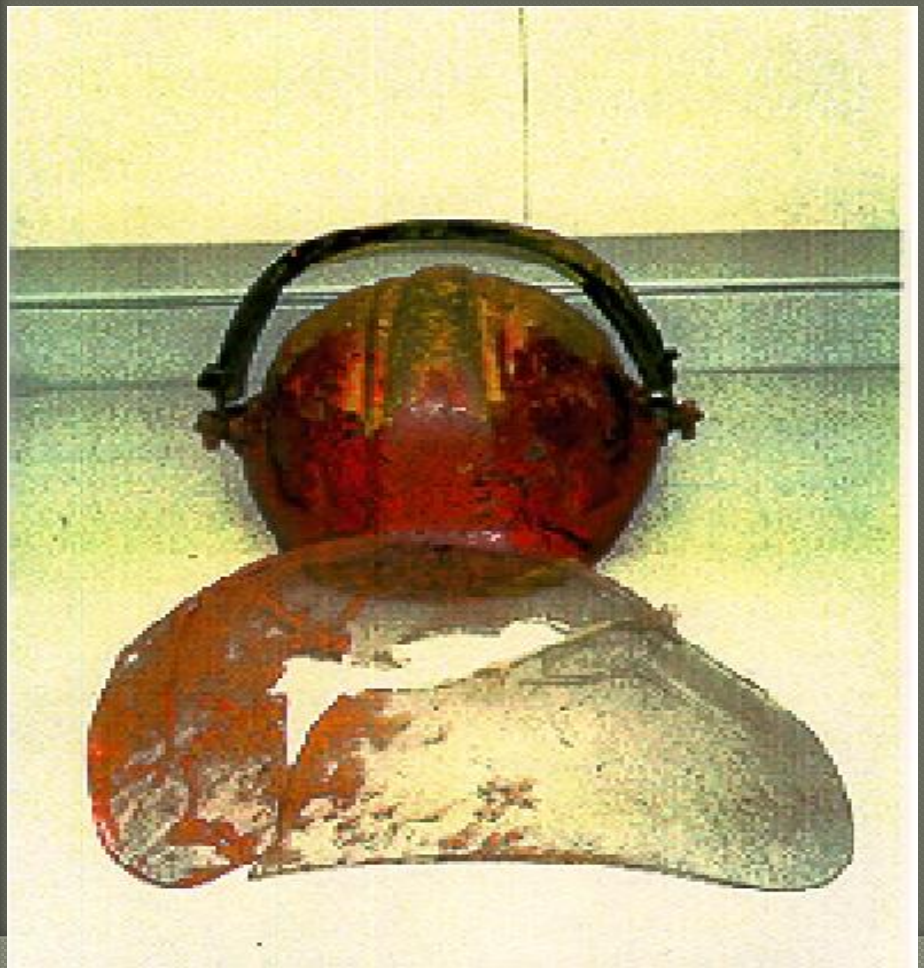
<u>DO NOT</u>

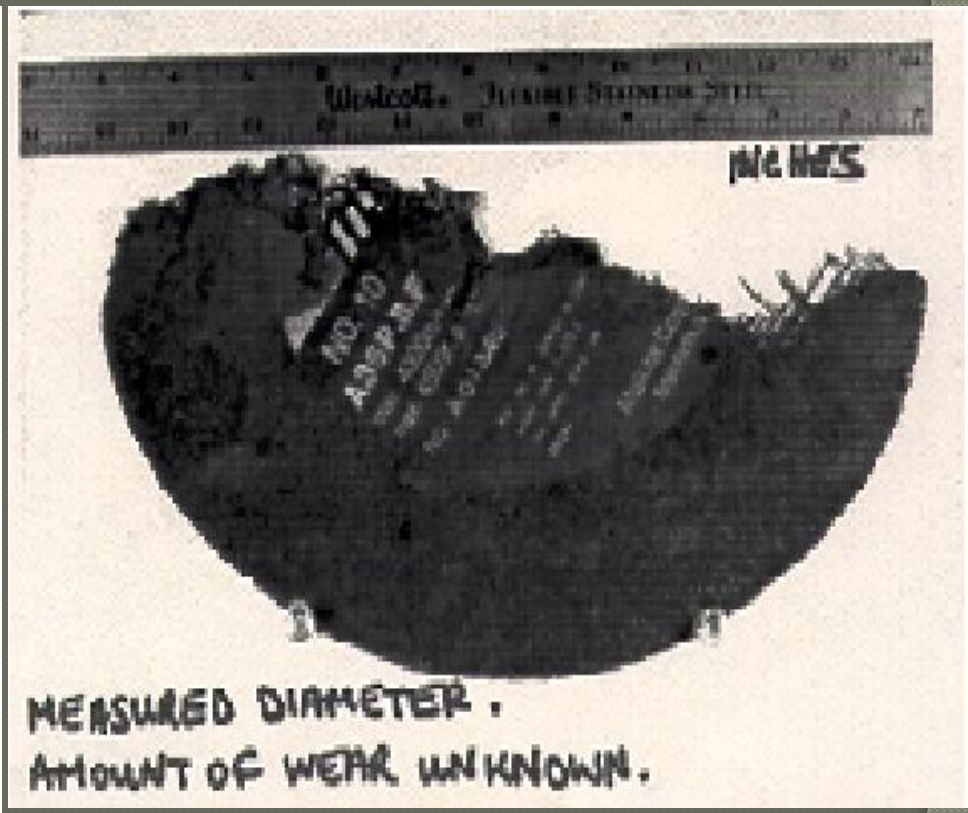
attempt to use grinders in overhead situations

GRINDER SAFETY CASE STUDY

:CALGARY, CANADA –APRIL 2000

:FATAL INJURY- WORKER HIT BY FRACTURED CUTTING WHEEL





GRINDER SAFETY CASE STUDY

WHAT HAPPENED?

Worker was cutting grooves in cast iron with a cut- off wheel fitted to a 9” air angle grinder.

The cut- off wheel fractured during use and a large fragment pierced the workers face shield and into his face.

THE WORKER DIED AS A RESULT OF HIS INJURIES

GRINDER SAFETY CASE STUDY

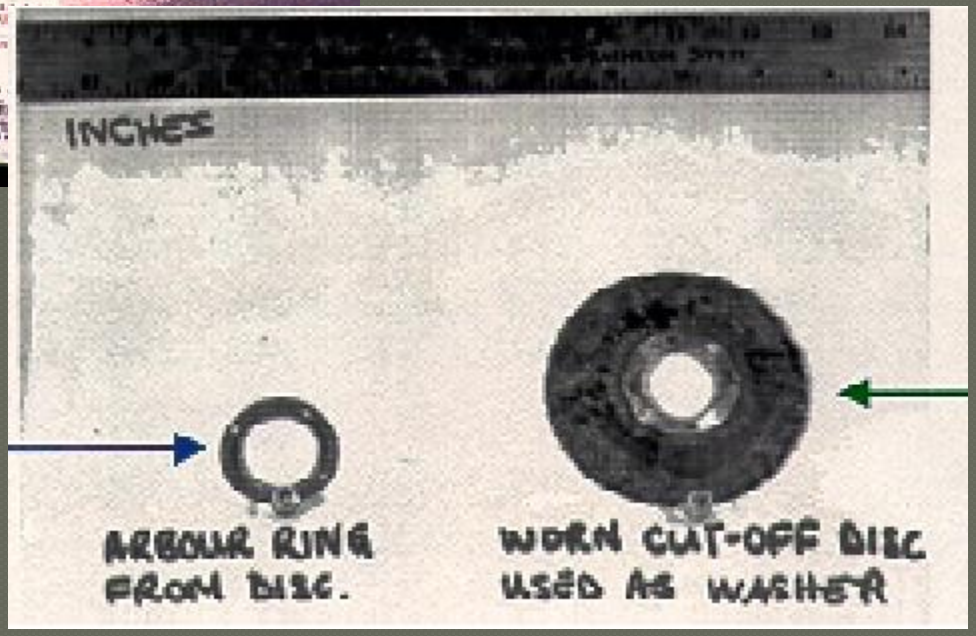
WHY DID IT HAPPEN?

- **Wheel was larger than recommended for grinder (grinder 7”, wheel 10”)**
- **Guard had been removed to allow fitting of larger wheel**
- **Handle of grinder had been removed from side of grinder and relocated to top.**
- **Bore size was incorrect (grinder 7/8”, wheel 1”). No bushing was used.**
- **The speed of the grinder was 7,600 rpm. The wheel was rated at 4,500 rpm.**
- **The wheel was designed for stationary vertical cutting, not for use on an angle grinder.**
- **The flanges used were designed for depressed center wheels, not flat cutting wheels, and were unequal in size, distorting the wheel.**

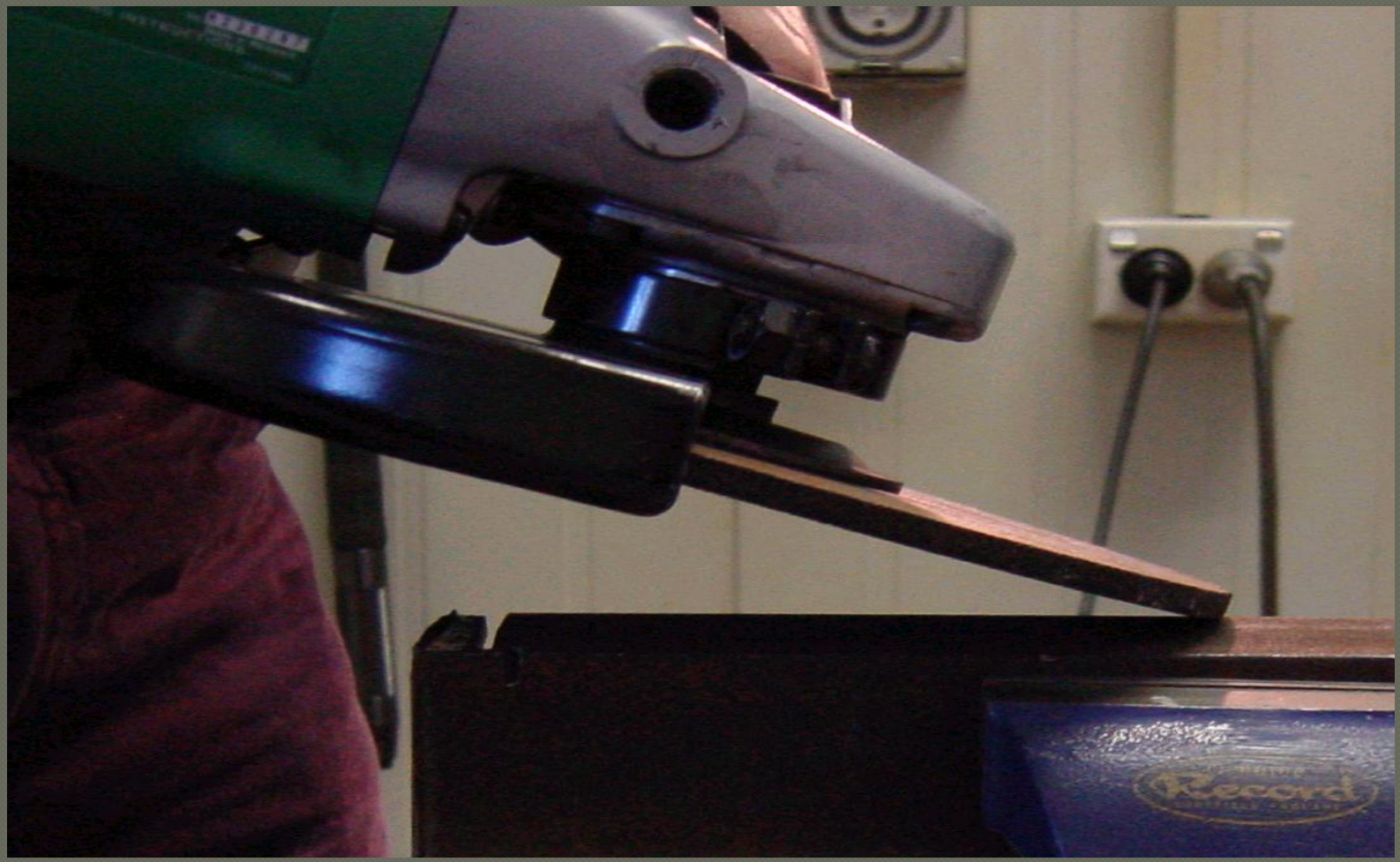
GRINDER SAFETY CASE STUDY

GRINDER SHOWING GUARD & HANDLE REMOVED

WORN CUT-OFF DISC USED AS BACKING WASHER



Helpful Hints

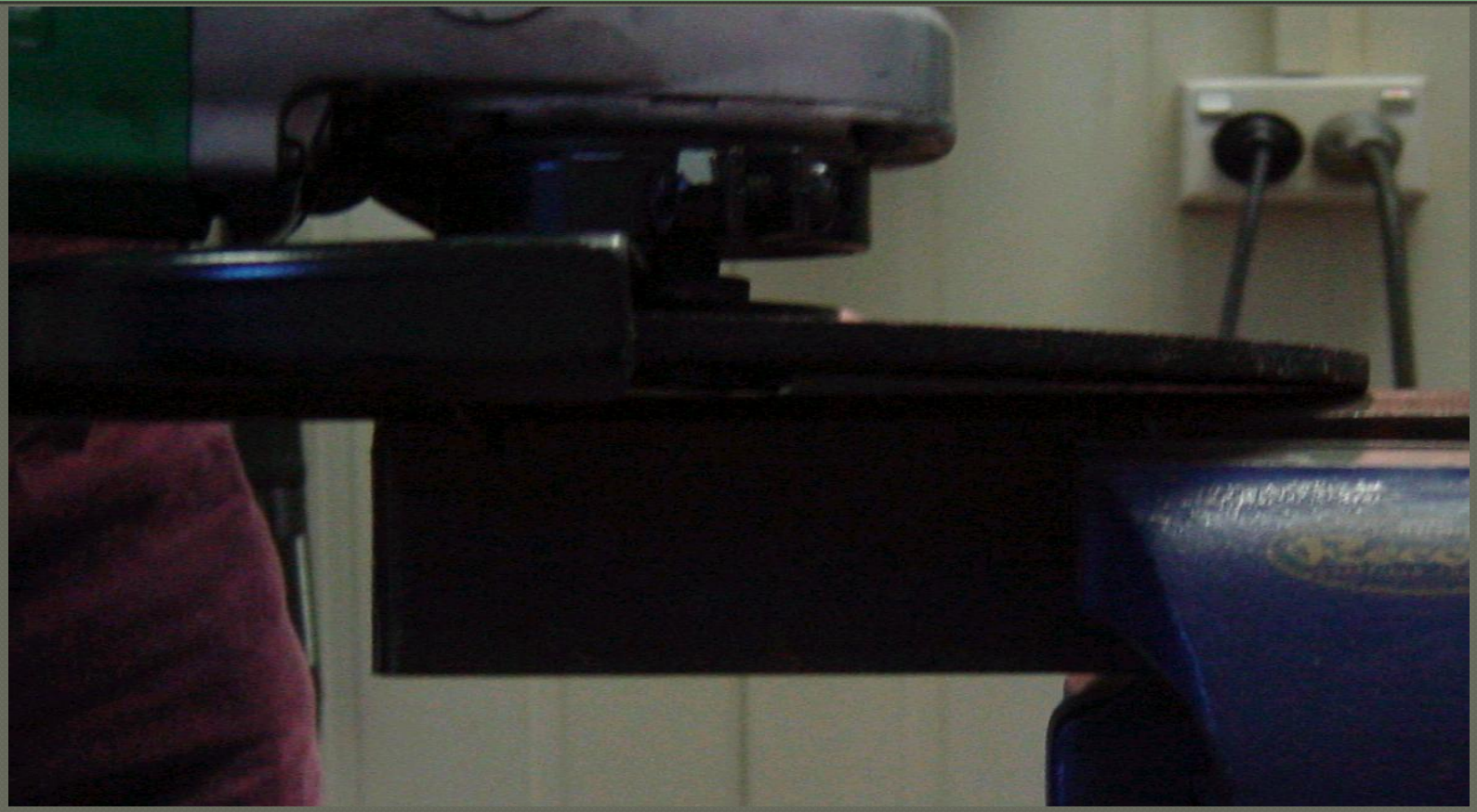


Recommended Angle of Grinding

Helpful Hints

Higher Angle of Cut for more aggressive grinding.

Helpful Hints

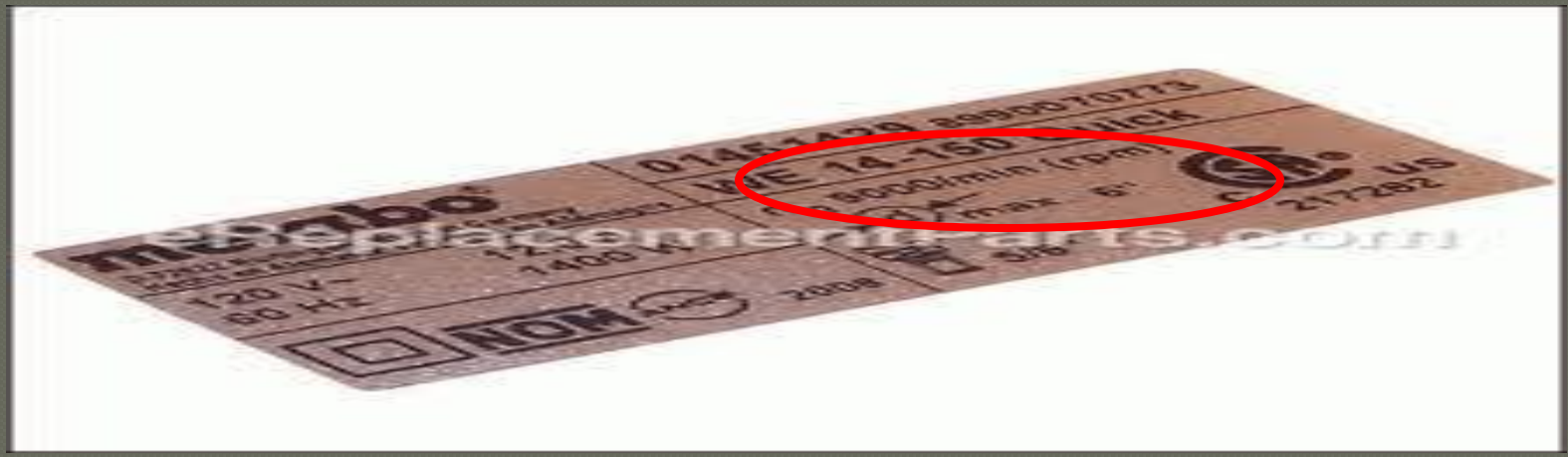


Flat Grinding causes Premature Edge wear & Grit Shedding

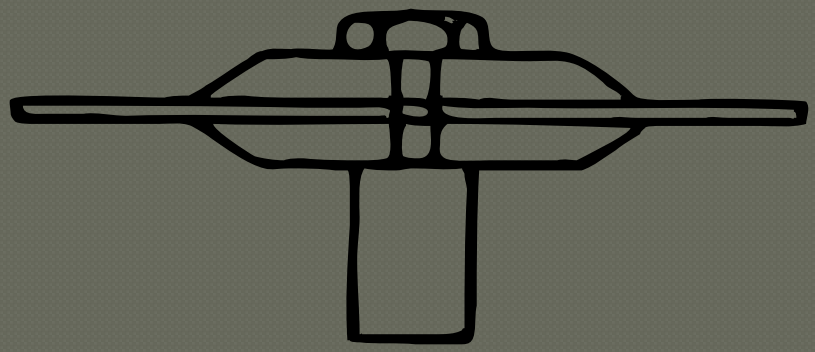
Helpful Hints

Dressing edge of Grinding Wheel

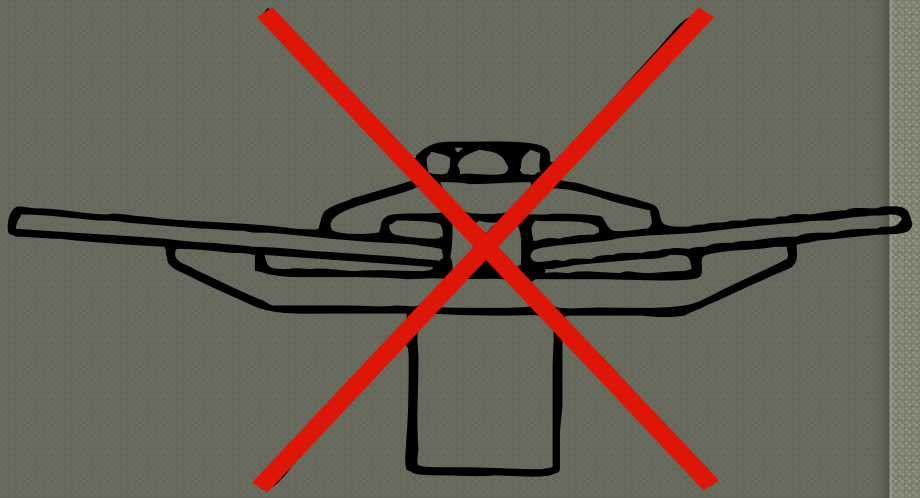
Wheel/disc speed rating must exceed the grinder speed rating!



Flanges



Correct



Incorrect

Grinding/Cutting Wheels

Sanding discs

Buffing and Polishing

Drill press And lathe safety


© PAUL COMBS
KNOW YOUR RISKS
Read
Review
Understand
Comply
Post

Metal should always
be clamped down or put in vice/chuck

Speed is adjusted by turning speed control knob or tee handle when drill is ON
OR
when drill is OFF then adjust speed belts.

- The Bigger the Drill bit the slower the drill speed.

- Any hole size above 1/4 “ should be drilled with pilot hole first

"I" *Saw* Safety

- Keep table area clean
- Hands clear of cutting area
- ONE PERSON operating machine at a time!!!!

Metal should always
be clamped down or put in vice/chuck

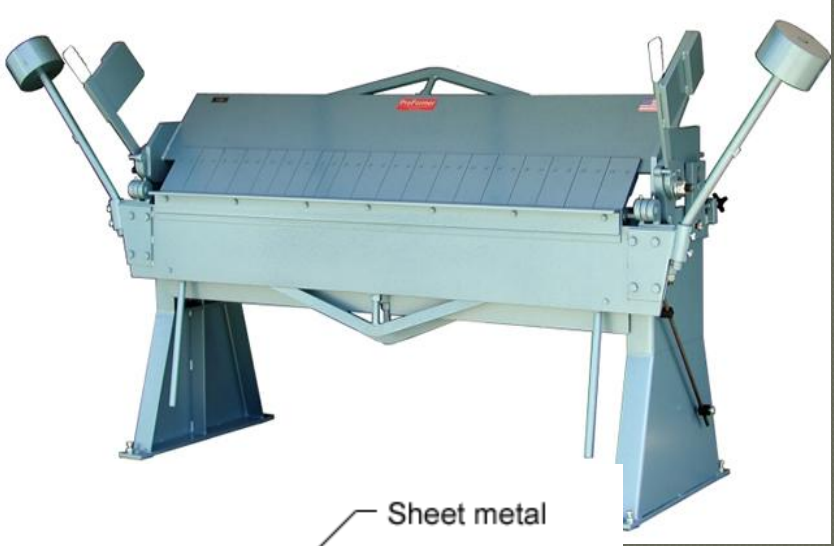
Shear SAFETY

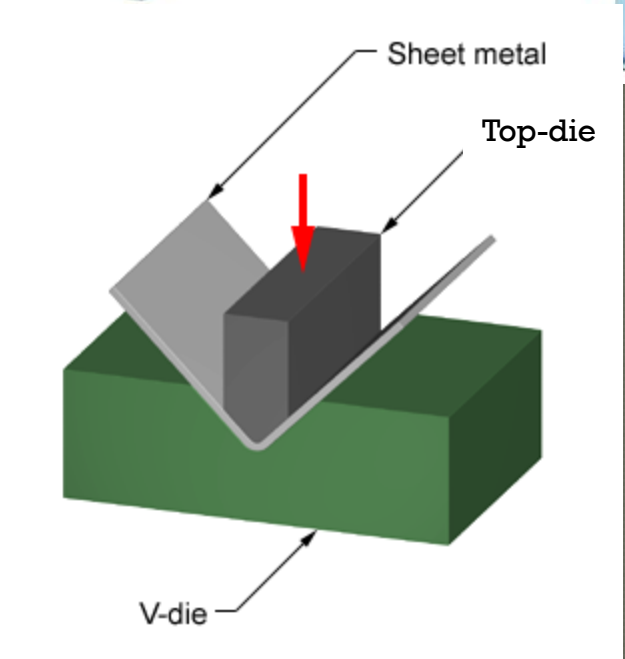
X

65 ton

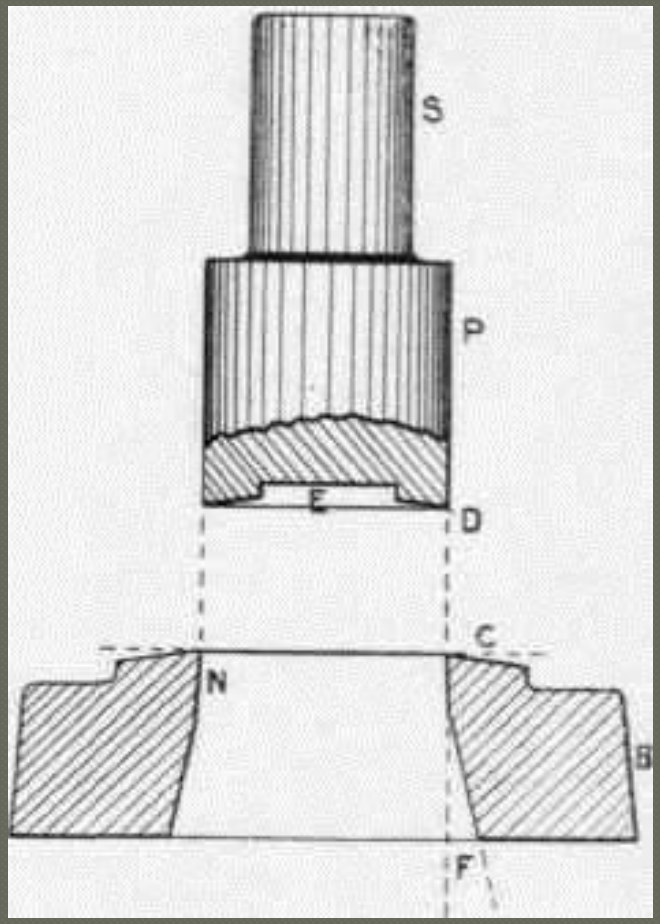
=

Break SAFE



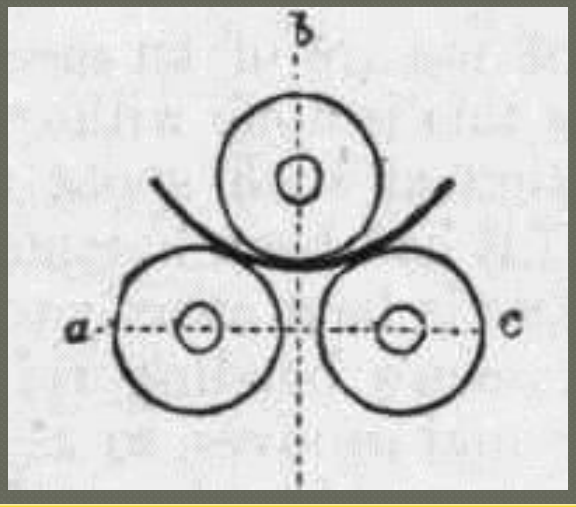

Sheet metal
Top-die
V-die


SOME TOOLS ARE IRREPLACEABLE
PROTECT YOUR HANDS
SO THEY LAST A LIFETIME



Punch Safe?

Roller Safety



All loose Clothing, Hair, and any other objects should be pulled back out of the way of all moving parts