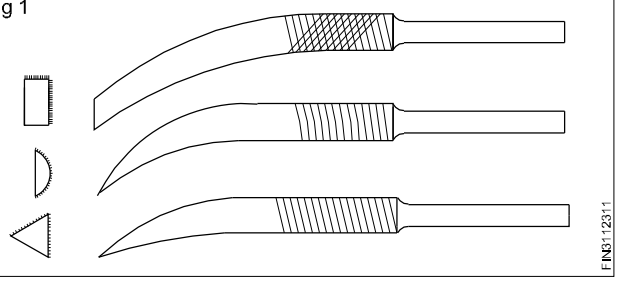
Special Files

Objectives : At the end of this lesson you shall be able to
- **describe the different types of special files**
- **state the uses of special file.**

In addition to the common type of files, files are also available in a variety of shapes for 'special' applications. These are as follows.

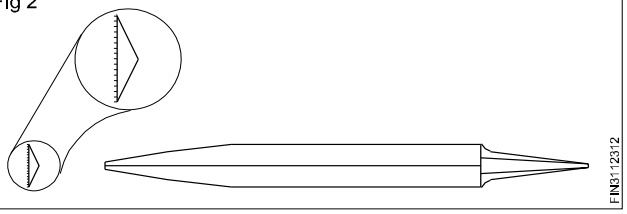
Riffler files (Fig 1): These files are used for die-sinking, engraving and in silversmith's work. They are made in different shapes and sizes and are made with standard cuts of teeth.

Fig 1



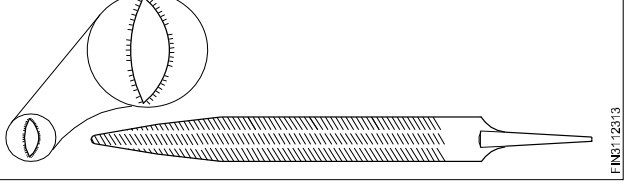
Barrette file (Fig 2): This file has a flat, triangular face with teeth on the wide face only. It is used for finishing sharp corners.

Fig 2



Crossing file (Fig 3): This file is used in the place of a half round file. Each side of the file has different curves. It is also known as "fish back" file.

Fig 3



Rotary files (Fig 4): These files are available with a round shank. They are driven by a special machine with a portable motor and flexible shaft. These are used in diesinking and mould-making work.

Mill saw files (Fig 5): Mill saw files are usually flat and have square or rounded edges. These are used for sharpening teeth of wood-working saws, and are available in single cut.

Fig 4

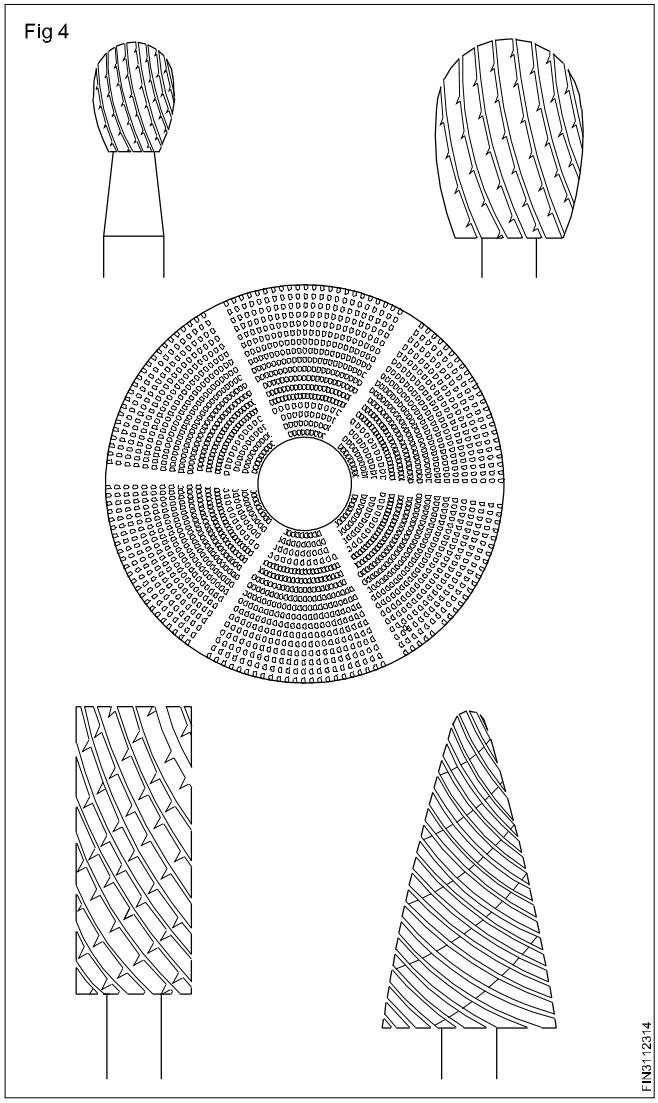
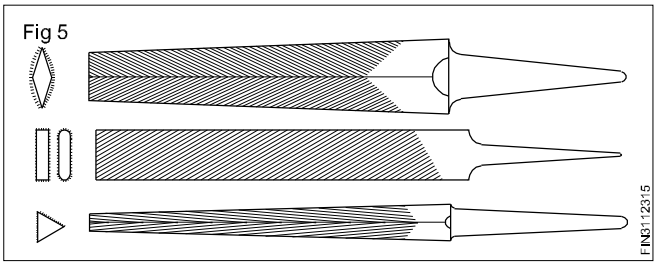
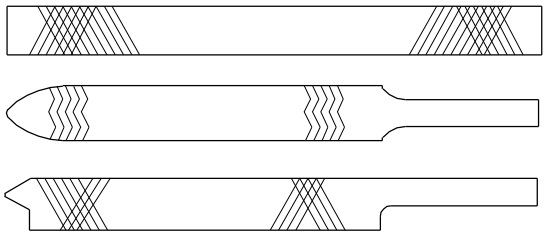


Fig 5



Machine files for hand filing machine (Fig 6): Machine files are of double cut, having holes or projections to fix to the holder of the filing machine. The length and shape will vary according to the machine capacity. These files are suitable for filing the inner and outer surfaces, and are ideal for diesinking and other tool-room work.

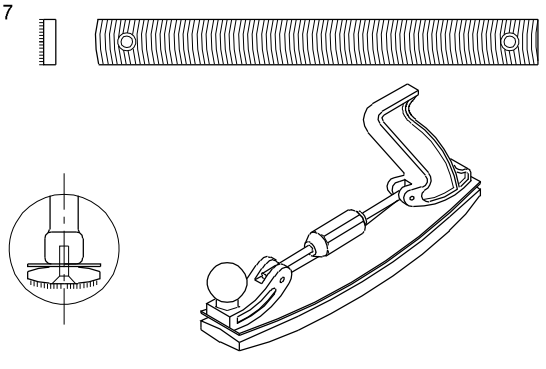
Fig 6



FIN3112316

Tinker's file (Fig 7): This file has a rectangular shape with teeth only at the bottom face. A handle is provided on the top. This file is used for finishing automobile bodies after tinkering.

Fig 7

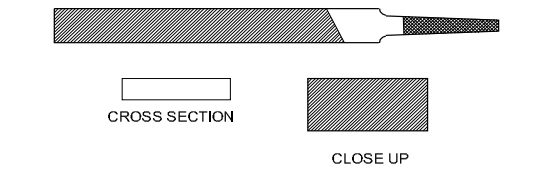


FIN3112317

Pillar file (Fig 8)

A usually double-cut file that is rectangular in section, parallel in width with one safe edge, and tapered in thickness form the middle both ways and that is especially suitable for narrow work.

Fig 8

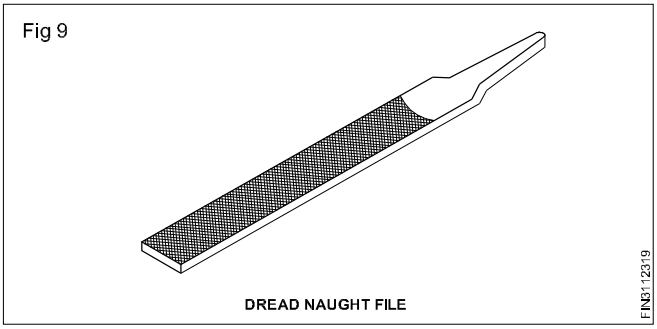


FIN3112318

Dread naught file (Fig 9)

A file is a metalworking, wood working and plastic working tool used to cut fine amounts of material from a work piece. It most commonly refers to the hand tool style, which takes the form of a steel bar with a case hardened surface and a series of sharp, parallel teeth. Most files have a narrow, pointed tang at one end to which a handle can be fitted.

Fig 9



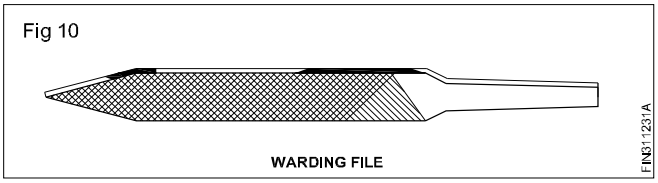
FIN3112319

A similar tool is the rasp. This is an older form, with simpler teeth. As they have larger clearance between teeth. As they have larger clearance between teeth, these are usually used on softer, non-metallic materials.

Related tools have been developed with abrasive surfaces, such as diamond abrasives or silicon carbide.

Warding files (Fig 10)

Fig 10



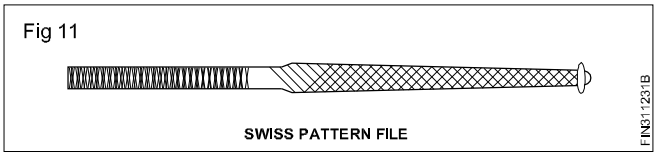
FIN3112314A

Warding files are tapersed to a point for narrow space filing. They have double cut faces and single cut edges. Warding files are used for lock repair or for filling wardnotches in keys.

Swiss pattern files (Fig 11)

Swiss pattern files are made to more exact measurements than American pattern files. They are primarily finishing tools used on all sorts of delicate and intricate parts. Swiss pattern files come in a variety of styles, shapes, sizes, and double and single cuts to insure precision smoothness.

Fig 11



FIN3112318B

Testing scraped surfaces

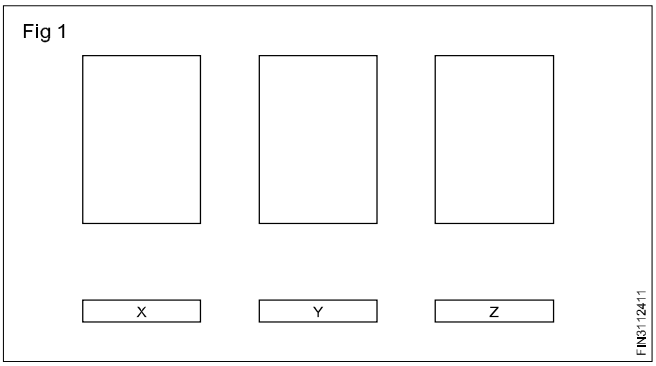
Objective: At the end of this lesson you shall be able to
- **testing a scraped surface by 3 plate method. (with worth principle).**

How does on obtain a flat surface?

It is easy to say that it scrapped but how does one know where to take off the high points.

If three plates are compared with one another in alternate pairs, they will only mate perfectly in all positions when they are absolutely flat. (Fig 1)

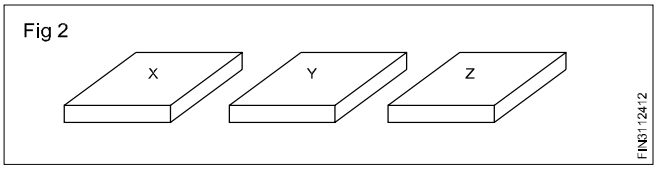
Fig 1



Procedure

File and ensure that all the three plates are finished to size and square. (Fig 2)

Fig 2

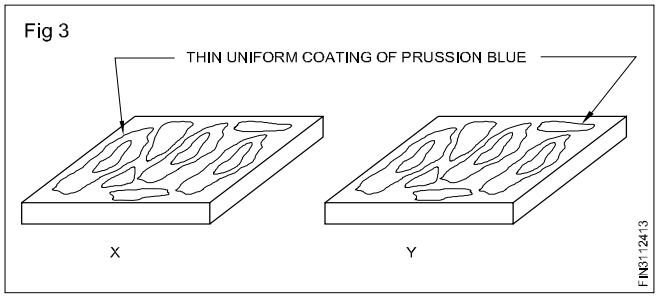


Check the level with the knife edge/straight edge.

Stamp the plates X,Y and Z with a letter punch.

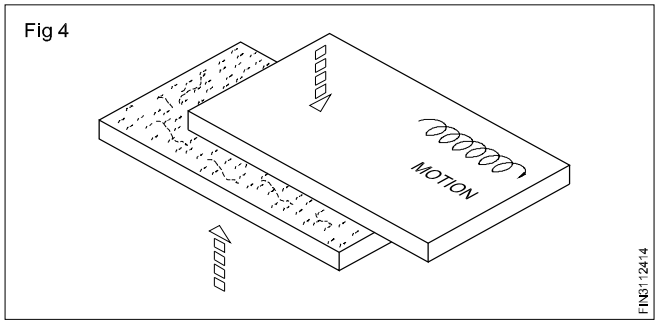
Apply a very thin uniform coating of purssion blue on the faces of plates X and Y whcih are to be scraped. (Fig 3)

Fig 3



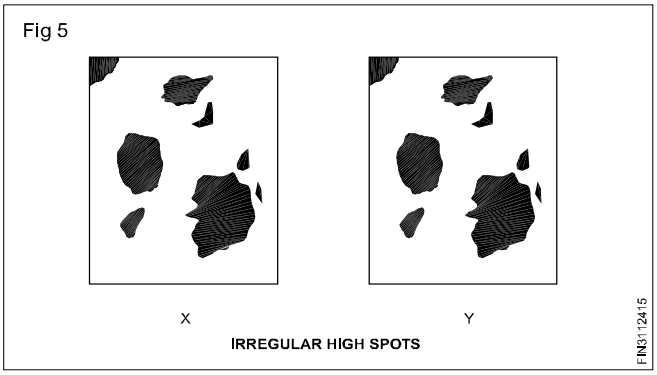
Keep both the pieces together and rub the plates back and forth against each other. (Fig 4)

Fig 4



Observe the high spots on the plates X and Y and remove by scrapping. (Fig 5)

Fig 5



Clean the faces with knitted cotton cloth,

Apply an oilstone gently to remove the burrs and again clean with knitted cotton cloth.

Repeat the same procedure till both the faces are mating with good bearing surfaces.

Apply a very thin uniform coating of purssion blue on the face of the plate Z which is to be scraped.

Keep the faces of the plates X and Z together and rub the plates back and forth against each other.

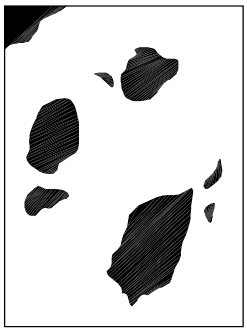
Observe the high spots on the plat Z and remove by scraping. (Figs 6 and7)

Do not scrape plate X. This is taken as a reference surface.

Repeat the same procedure till both the faces of the plates X and Z are mating with good bearing surfaces.

Repeat the procedure till the faces of plates Y and Z are mating with good bearing surfaces.

Fig 6

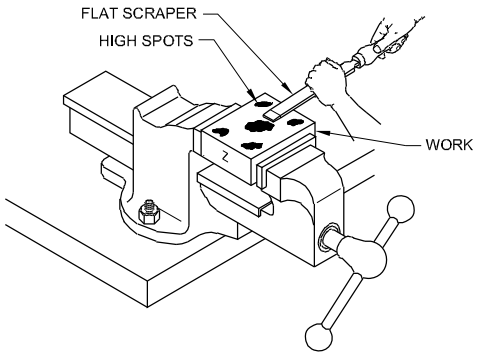


Z

IRREGULAR HIGH SPOTS

FIN3112416

Fig 7



FIN3112417

Now one cycle of operation is completed

Note

Plate X will mate with plates Y and Z but Y and Z will not mate. All the three plates mate only when all the three are flat.

Testing scraped surfaces, ordinary surfaces without a master plate

The prussion blue techique is a colour transfer test associated with hand scraping of cost iron plates and machine ways, although well known but less used in recent years.

In this test a contour difference is observed between the surfaces of the work and the master plate by the transfer to one surface of a visible colour applied as a thin oil film on the other surface.

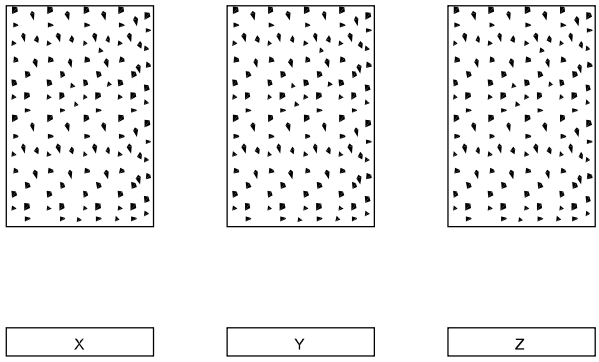
Reapeat the cycle a number of times till interchangeable, flat, good bearing surfaces are achieved.

Clean all the plates with kerosene.

Use knitted cotton cloth for cleaning

A good bearing surface is achieved when 5 to 10 points are visible and uniformly distrubed per cm^2 on the workpiece surfaces after finishing. (Fig 8)

Fig 8



FINISHED SURFACE

FIN3112418

Three trainees will work in a group for this exercise.

Each trainee will be given one plate for scrapping.

Each trainee will compare his plate with those of the other trainees as per the above procedure and generate flat surfaces by the three-plate method.

Sharpening a flat scraper

Objective: This shall help you to

- **sharphen a flat scraper by grinding and honing.**

Flat scrapers are sharpened by grinding the cutting edge and honing both faces.

To avoid overheating while grinding, use wet wheel grinding or ensure that there is a cooling arrangement for the pedestal/bench grinder.

Select a grinding wheel with fine grain. (Fig 1)

Soft grade aluminium oxide grinding wheel with large diameter gives best results.

Check for gap between the work-rest and the grinding wheel, and adjust, if necessary.

For grinding the cutting edges, hold the scraper horizontal and flat on the tool rest. (Fig 2)

Move the scraper in an arc to provide a slightly concave surface on the cutting edge. (Fig 3)

If the scraper is carbide -tipped use silicon carbide or diamond wheels. (Fig 4)

Fig 1

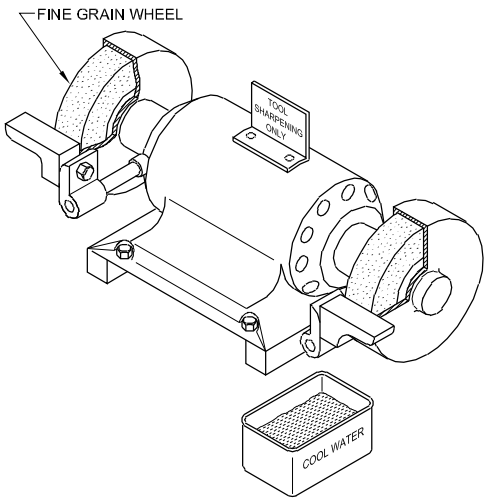


Fig 2

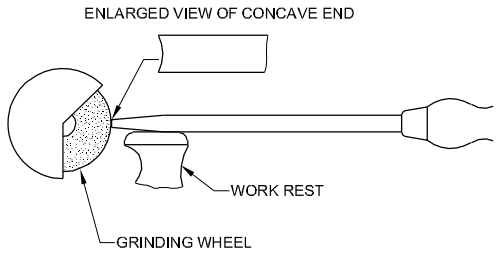


Fig 3

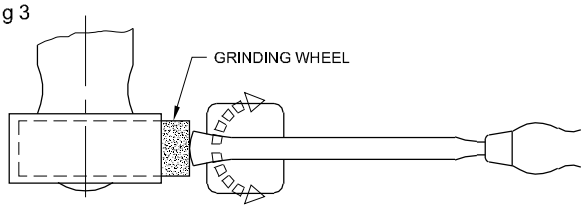
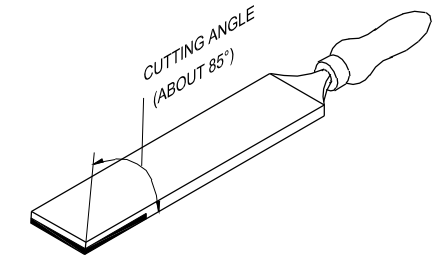


Fig 4



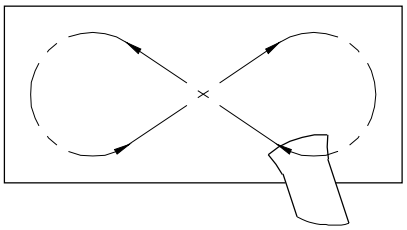
The cutting edges sharpened by grinding should be honed. Honing removes grinding marks and provides keen cutting edges.

While honing use a lubricant.

Mix light mineral oil with kerosene for preparing the lubricant.

Hone the faces first with a movement as shown in Fig 5.

Fig 5



Then hone the cutting end by placing the scraper in an upright position on the oilstone with a rocking movement. (Figs 6 and 7)

Fig 6

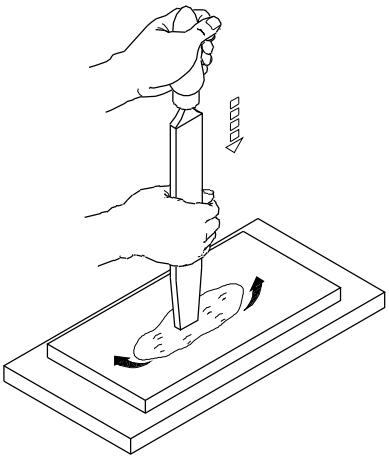
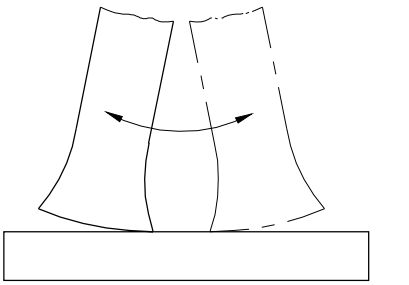


Fig 7



What should be the cutting angle? it should be

- for rough scraping - 60°
- for final scraping - 90°