

MACHINE TOOLS

to strike the cutter while adjusting or setting up

Splash guards, especially on automatic machines, should be installed and kept in good condition. Enclosure guards over the chuck confine hot metal chips and oil splashes, and also act as exhaust hoods for removal of fumes.

When steel and some other materials are turned on lathes, the chip produced is in a

Drills

The most common causes of injury in drilling operations are

1. Contact with the spindle or with the tool
2. Breaking a tool
3. Using dull tools
4. Being struck by insecurely clamped work
5. Catching hair or clothing in the revolving parts
6. Sweeping chips off by hand
7. Leaving key or drift in chuck

To guard a spindle, a simple sleeve guard or other barrier that protects the operator from contact with the spindle can be used (Fig 24-5)

The tool itself can be guarded by a telescoping guard that covers the end of the tool, leaving only enough of it exposed to allow easy placement into the piece being worked.

A spring safety guard can be attached to a small drill press and as the head descends, the spring compresses so that it can contain

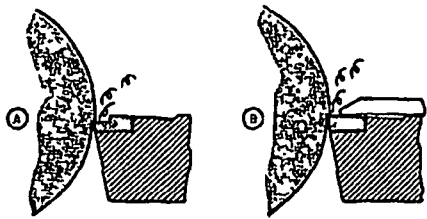


Fig. 24-4. Chip breakers may be ground into the tip of the tool (A) or a breaker in the form of a piece of metal may be clamped or brazed onto the tool itself (B)

continuous spiral which frequently causes hand and arm injuries. To eliminate this exposure, one of two types of chip breaker should be used (Fig 24-4)

Boring Machines

Boring consists of cutting a round hole by means of drills, boring cutters, or reamers. The drill press, in its various forms, is probably the best known machine tool because of its frequent use in home workshops. Drilling machines are equipped with rotating spindles, handles, and chucks carrying pointed or fluted cutting tools. Operations performed with drilling machines include countersinking, reaming, tapping, facing, spot facing, and routing.

Boring mills use a cutter, either single- or double-edge, mounted on a supporting shaft to true up or enlarge a hole that has already been roughed out by a drill or formed in a rough casting or forging.



Fig 24-5. Guards that afford protection against chips and broken drills and yet preserve visibility. The filler on these guards is wire mesh.