

Woodworking Machinery

A circular saw should be stopped when the operator leaves it. It is not sufficient to cut the switch and walk away since amputations have been caused by saws still idling with the power off. An electric brake attached to the motor arbor offers fast, positive stopping action. Another effective method is shown in Fig 27-4. Sawdust slivers should be cleared away from a saw with a brush or a stick, never with the hands.

Under no circumstances should either the saw guard or the fence gauge be adjusted while the saw is running. Parallel setting of the gauge is of particular importance.

To enable the operator to set the gauge without removing the guards, it is good practice to mark the top of the saw table with a permanent, distinctive line directly in front of and in line with the saw.

Circular saw blade maintenance

The characteristics and condition of circular saws have an important bearing on the safety of the men who use them. Saw manufacturers have published much valuable information on the selection, use, and care of saws.

The circular saw is a thin disk of metal that revolves rapidly as the result of power applied at its center. At the same time, since resistance is applied to its rim at one point at a time, that point on the rim where the resistance is applied tends to drag. That portion of the rim forward of the cut tends to run ahead, thus producing a stretching action, and that portion which has not yet reached the cut tends to be compressed.

In designing, building, and tensioning a saw, the maker gives it enough rigidity and tensile strength to withstand these forces without harmful distortion. Altering a saw from its original design, operating it at other than its rated speed, or changing its balance or tension seriously affects its efficiency and safety.

Some faults of circular saws that may cause difficult, unsatisfactory operation are

- **SAW OUT OF ROUND** If some teeth are longer than others, the long teeth do most of the work. An unequal strain is thus imposed on the saw, which may cause it to run out of line, to heat up, and to warp.

- **SAW NOT STRAIGHT (OUT OF PLANE)** Lumps or warps can be checked with a straightedge the length of the diameter of the saw.

- **IMPROPER HOOK OR PITCH OF TEETH** Ripsaw and cutoff teeth differ in design for different kinds of wood and for different purposes. Combination saws may be used for both crosscutting and ripping.

- **IMPROPER OR UNEVEN SET** A circular saw has to cut a kerf thicker than the blade to give clearance which permits the saw to pass through the wood. Set or swage is given the teeth by bending alternate teeth right and left or by spreading the point of every tooth so that each is slightly wider than the saw.

- **CRACKED BLADES** Saw blades should be inspected for cracks each time the teeth are filed or set. Some cracks are so small that they may be invisible to the naked eye. The Magnaflex method for testing saw blades is extensively used. If cracked saw blades are continued in service, the crack frequently grows larger and eventually may cause partial fragmentation.

Most cracks start in the gullets. As soon as a crack is visible to the naked eye, the blade should be removed from service. The blade usually can be repaired either by welding the crack or by slotting the saw to remove the material on both sides of the crack and then making other slots to balance the blade.

Whatever method is used, the saw blade must be retensioned after repairs have been made. This is a job for a sawsmith, and unless the company has the services of such a man, the blade should be repaired by the manufacturer.

Excessive heat and vibration cause saw blades to crack. To prevent cracking, these precautions should be followed:

- 1 The saw blade should be tensioned for the speed at which it will operate. Otherwise, the blade will wobble and vibrate and, as a result, will heat, expand, and crack.
- 2 The teeth must have sufficient clearance (set or hollow grinding) to prevent burning, with consequent heating and cracking.