3 The blade should be in perfect round and balance

4 The blade must be kept sharp at all times A dull blade will not cut Rather, it will pound itself through the wood, so that vibration and heating, then cracking, result

Repairs should always be made by a specially trained employee, using instructions available from saw manufacturers

Terms used for ordinary care and repair of saws are

JOINTING Restoring a saw to round

STRAIGHTENING Restoring the blade to a straight plane surface

TENSIONING Giving every part of the saw the proper tension for the type of work it has to do

FILING AND GRINDING Sharpening the edges of the teeth and restoring them to the correct pitch (angle with relation to the center of the saw) and shape

GUMMING Deepening and rounding the gullets between the teeth As the teeth wear shorter, the gullets need to be deepened

SWAGING AND SETTING Thickening or bending the teeth so that the saw kerf will be thicker than the blade

Proper operation. A saw in good condition and running at correct speed should cut easily The operator should not crowd the saw, that is, force the stock faster than it can be easily cut If the saw does not cut as fast as it should, or if it does not saw a clean, straight line, it is probable that something is wrong with the saw or the running speed These conditions, potential sources of accidents, should be checked and remedied

Most production hand and power-feed saws run at 3600 rpm (actually about 3450 rpm) This will give a 12-in blade a rim speed of 10,839 sfm, a 12-in blade, 14,451 sfm, and an 18-in blade, 16,258 sfm

Some saws, however, are tensioned to run at higher speeds, which are marked on the saw by the manufacturer Following is the formula for determining the peripheral or rim speed of a saw when revolutions per minute are known

$$S = 0.26\,Dr$$

where S = rim speed in fpm
D = diam of blade, in
r = revolutions per min

The saw should properly fit the mandrel The arbor or mandrel on which the saw is hung must be true and must fit the bearing boxes without chattering, end play, or heating The stem of the mandrel must be true if the saw is to slip easily up to and against the fixed collar

Only the outer edge of the collar should come in contact with the saw when it is tightly clamped in position If the inside of the collar has not been machined out properly, it will force the rim of the saw out of line When the saw blade comes in contact with the stock being cut, a buckling effect on the saw is produced After the loose collar is fastened securely in place, it is well to test the saw with a straightedge This test is of considerable importance on head rig circular saws as well as on edgers and trimmers

A pin or stop should be provided to prevent men from placing on the mandrel a saw larger than allowable for the speed of the mandrel

Overhead swing saws and straight line pull cutoff saws

Overhead swing saws and cutoff saws cause hand injuries because of several characteristics of the saw Hands are cut with the saw in idling position when the operator reaches to remove a sawed section of board or a piece of scrap or when he measures a board or places it in position for the cut

The operator's hands may likewise be struck by the saw as it bounces forward from the idle position, or swings or drifts forward when the spring or counterweight fails The operator may pull the saw against his hands or may suffer body cuts from a saw that swings beyond its safe limits

Guards Cutoff saws should be guarded with a hood guard Some guards cover the lower half of the saw when the saw is not cutting, and ride on top of the stock as the saw cuts (Fig 27-5)