

10 Steps to Improved Cutting

By FRANK McDONALD, Product Mgr., Pioneer Chain Saws

A PROPERLY FILED and jointed chain on a chain saw adds life to your machine by allowing it to cut faster and smoother at minimum engine stress.

But you won't get more life out of your saw just by taking a few quick whacks at the chain with a file. To assure maximum life and performance from your saw, adopt the following step-by-step guide to joint and sharpen the chain properly:

1. Clamp the chain in a vise to prevent the chain from moving sideways as you file it. Chain movement restricts ability to control the plane and achieve an even cut. Furthermore, placing the chain in a vise assures optimum control because you can use both hands on the file to prevent biting and skipping. If your chain needs limited touching up, but you are in the field where a vise isn't available, increase the chain tension to minimize movement.

2. Select the correct size chain

saw file. You can determine proper size by consulting your owner's manual or a dealer, who will need the chain pitch and brand to help you. Incidentally, use the next smaller size file when cutters on the chain are worn back halfway. It will be easier to obtain the correct undercut and side plate angle.

3. Place the file in a cutter opposite your side. The sharpening angle may vary depending upon the type of chain, but manufacturers generally suggest you hold the file parallel to cutting edge at 35 degree bevel angle with the side plate edge 80 to 90 degrees from the cutter's base line. If you follow these instructions carefully the top plate undercut or cutting angle will be correct. This angle, which makes the chain pull itself into the wood, results from the side plate angle and the file position relative to being horizontal. These angles will give satisfactory performance under average cutting conditions.

4. Always let one-fifth of the file diameter protrude above the cut-

ting edge to assure the correct undercut. If the file is held too high, the cutter will have a blunt and slow-cutting edge. Stress and extra pressure required to make it cut will produce wear and eventually break the chain. Similarly, a thin and quick-dulling edge (with hook) will result if the file is held too low. A hooked cutter will tend to grab while cutting and cause wear on the guide bar rails.

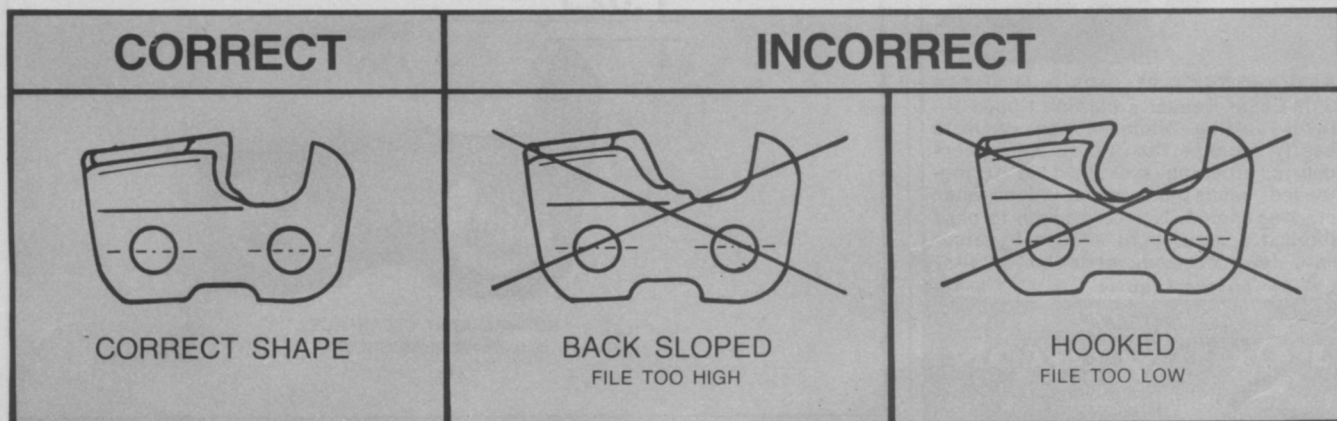
5. Keep the file snug to the top edge of the tooth and apply two or three firm strokes against the edge. The outside surface of the cutting edge is very hard (chrome plated), so you'll preserve the file by pushing it outward in a straight line. Filing in a straight line can be assured by stiffening your wrist and pretending your underarm is a solid extension of the file.

6. Leave the file in the cutter between individual filing strokes. However, apply pressure only on the outward stroke and move the file away from the cutting edge on the return stroke to avoid dulling the edge. Never remove more metal than necessary, and finish all cutters on one side before doing the other side. Your best measure of sharpening accuracy is a visual check to make certain the cutters are not back sloped or hooked, which are two common sharpening mistakes.

7. Next check the joint clearance, because correct joint height is vital to a fast cutting and smooth operating chain. The joint may vary depending upon the manufacturer, but the normal joint on chains is 0.025-inch.

8. Use caution if more joint is required, because an improper joint

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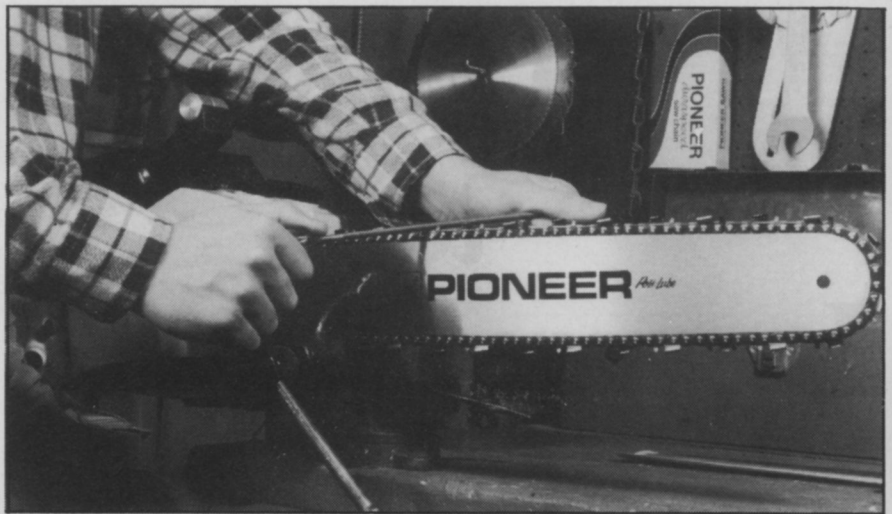


A visual check reveals whether cutters have been sharpened properly. Back sloped or hooked cutters are two common sharpening mistakes.

will cause excessive wear and shorten the life of the bar and chain. Excessive joint will cause cutters to bite too deep, forcing chain to grab and overload the engine. Conversely a shallow setting will prevent cutters from biting into wood.

9. Correct improper joint either with a flat file or a jointing gauge but, whenever possible, use a gauge for optimum results. When jointing with a flat file, a steady firm stroke will remove 0.002 to 0.003 inch of metal. File all depth gauges with an identical number of strokes and pressure. To protect against excessive jointing, never make more than two passes of a file before retesting the joint. Two passes with a file will remove about 0.005 inch of metal.

10. When using a gauge, set the filing block to the desired joint. Place gauge on chain so the depth gauge protrudes through the hole in the filing block. Hold the gauge firmly with your left hand and file down depth gauge to top of the filing block. Always file depth gauges from the same side of the guide bar. □



Hold file parallel to cutting edge at 35 degree bevel angle with side plate edge 80 to 90 degrees from cutter's base.

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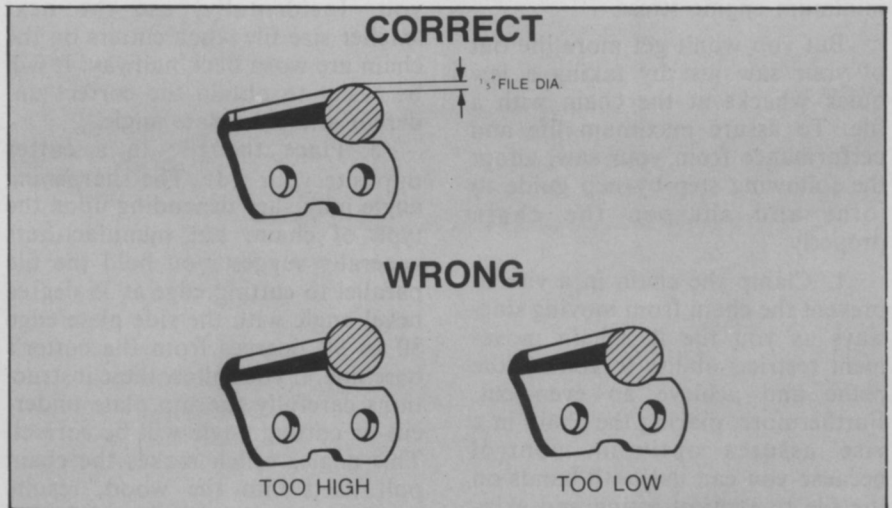
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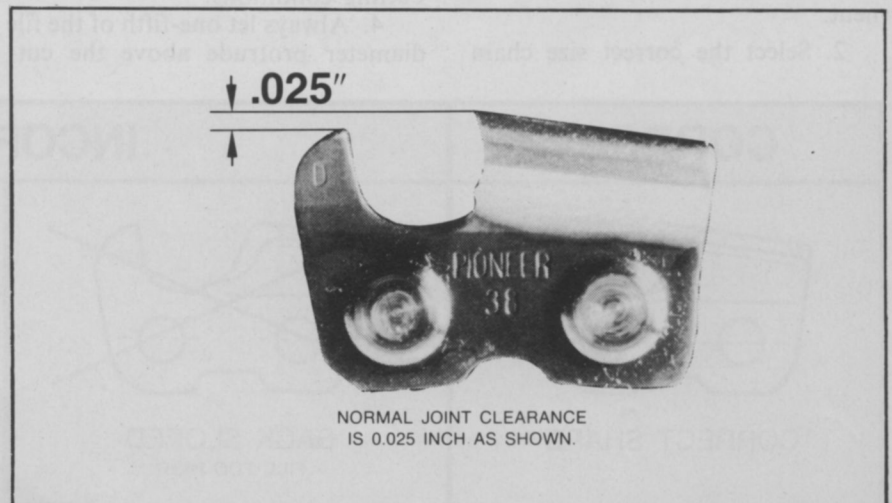
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One-fifth of the file diameter should protrude above the cutting edge to assure correct undercut.



Joint clearance is vital to fast cutting and smooth operating chain. The normal joint on chains is 0.025-inch.