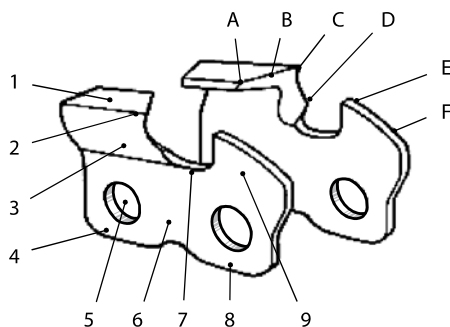


## PROPERLY SHARPENED CUTTER

### CUTTER FEATURES

1. Top Plate
2. Square or Round Working Corner
3. Side Plate
4. Heel
5. Rivet Hole
6. Chassis
7. Gullet
8. Toe
9. Depth Gauge

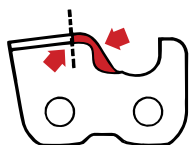


### SHARPENED CUTTERS HAVE:

- A. Correct angle on top plate (degree of angle depends on chain type).
- B. Razor-edge on top plate (no light should reflect from this edge).
- C. Slightly protruding "hook" or point (curve on non-chisel chain).
- D. Razor-edge (with no nicks) on side plate.
- E. Top of depth gauge at correct height below top plate.
- F. Front of depth gauge rounded off.

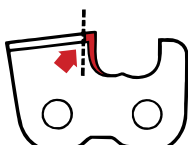
## FILING ERRORS

### Backslope on side plate cutting edge. Cutter won't feed into wood.



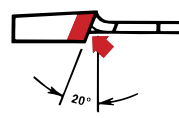
**Cause**  
File held too high.  
**Remedy**  
Refile cutters to recommended angle.

### Flat-top plate cutting angle. Chain won't feed into wood, won't cut.



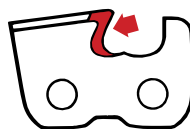
**Cause**  
File handle held too high.  
**Remedy**  
Refile properly at recommended angle.

### Top-plate angle less than recommended. Causes slow cutting, excess wear on chain and bar.



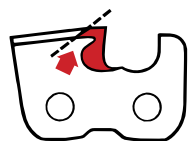
**Cause**  
File held at less than recommended angle.  
**Remedy**  
Refile at correct angle.

### Hook in side plate cutting edge. Cutters grab, cut rough.



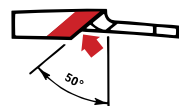
**Cause**  
File held too low, or file is too small.  
**Remedy**  
Refile to recommended angle with right size file.

### Too thin top plate causes rapid dulling.



**Cause**  
File handle held too low.  
**Remedy**  
Refile properly, at recommended angle.

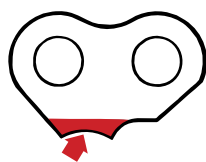
### Top-plate angle more than recommended. Side-plate cutting edge is thin and dulls rapidly.



**Cause**  
File held at more than recommended angle.  
**Remedy**  
Refile at correct angle.

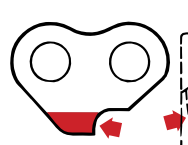
## DRIVE LINK WEAR

### Rounded concave bottom.



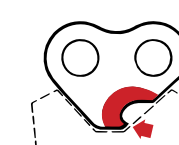
**Cause**  
Shallow groove on bar tip.  
**Remedy**  
Regroove bar tip. Bar may need replacing.

### Sides worn round at bottom.



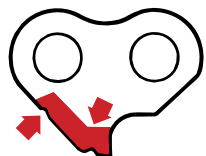
**Cause**  
Chain wobbled in bar groove. Caused by uneven cutters or worn bar rails.  
**Remedy**  
Rework bar rails and groove. Correct chain filing.

### Front point turned up.



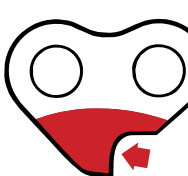
**Cause**  
Drive links bottoming in sprocket. Sprocket worn.  
**Remedy**  
Replace sprocket. Sharpen tangs. Check for burrs.

### Nicked bottom or back.



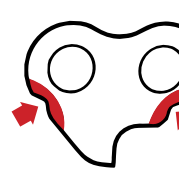
**Cause**  
Cutting with loose chain. Or wrong pitch sprocket.  
**Remedy**  
Adjust chain tension. Install correct sprocket. File off burrs. Replace damaged drive links.

### Scars on sides.



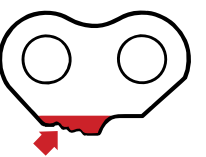
**Cause**  
Loose chain jumping off bar.  
**Remedy**  
Adjust chain tension. Replace bent drive links. Refile at correct angle.

### Front or back peened.



**Cause**  
Wrong pitch sprocket or prolonged chain chatter.  
**Remedy**  
Replace sprocket. Adjust chain tension. Chain may be damaged beyond repair.

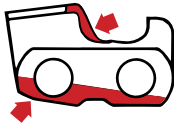
### Battered and broken bottom.



**Cause**  
Chain jumped bar. Spur sprocket hit drive links.  
**Remedy**  
Replace damaged drive links, sharpen tangs with round file. Remove burrs.

## CUTTER AND TIE STRAP WEAR

### Excessive heel wear on cutters and tie straps.



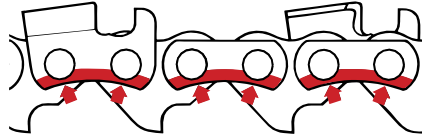
**Causes**

1. Blunt top plate filing.
2. Forcing dull chain to cut.
3. Lack of lubrication.
4. Low depth gauge settings.
5. Forcing chain to cut frozen wood.

**Remedy**

File cutters properly. Don't force dull chain to cut. Use oil freely.

### Concave wear on bottom of cutters, connecting tie straps



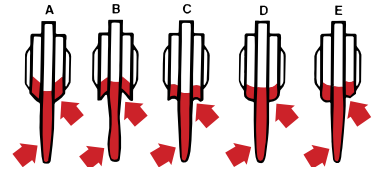
**Causes**

1. Chain tension too tight.
2. Normal wear from undercutting (cutting with top of bar).

**Remedy**

Adjust chain tension. Reduce cutting with top of bar.

### Excess wear on bottom of all chain parts.



- A.** Open Bar Groove. **B.** Severe abrasion and wobbly chain on thin bar rails. **C.** Rails not flat. **D.** Wobbly chain, rails too thick. **E.** One rail too thin or soft.

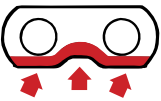
**Causes**

Uneven filing, worn bar rails cause chain to wobble.

**Remedy**

File chain properly. Recondition bar rails or replace bar. Replace chain if necessary.

### Edges burred and notch peened on tie straps.



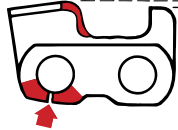
**Cause**

Chain chatter due to loose chain tension and improper filing.

**Remedy**

Correct chain tension. Refile chain properly. Replace sprocket if badly worn.

### Cracks under rear rivet holes on cutters and opposing tie straps



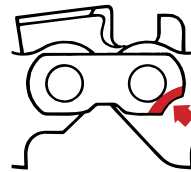
**Cause**

Excessive pressure on dull or misfiled cutters. Common during winter.

**Remedy**

File chain correctly. Use oil freely

### Peening on front corner of cutters and intermediate tie straps. Causes tight joints



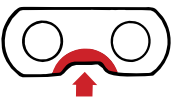
**Cause**

Chain striking bar entry. Sprocket too small. Or loose chain tension.

**Remedy**

Use proper bar and sprocket. Adjust chain tension correctly.

### Peened notch in tie strap. Causes tight joints and broken drive links.



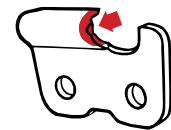
**Cause**

Chain run on badly worn spur sprocket or wrong pitch sprocket.

**Remedy**

Replace worn sprocket. Chain may need replacing.

### Light damage on cutting edges of top and/or side plates.



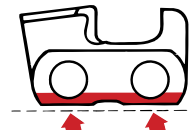
**Cause**

Cutters hit sand or dirt, other foreign material.

**Remedy**

File cutters to remove all damaged area.

### Excessive wear on bottom of cutters and tie straps.



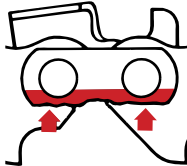
**Cause**

Depth gauges too high. Cutting edge cannot get into wood.

**Remedy**

Lower depth gauges to proper setting. Keep cutters filed correctly.

### Peening on bottom of cutters and tie strap causes tight joints.



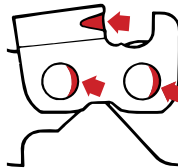
**Cause**

Loose chain tension. Result of dull cutters and forcing dull chain into wood.

**Remedy**

Keep proper tension. Keep cutters sharp. Chain may need replacing.

### Severe damage on either side of top and/or side plates.



**Cause**

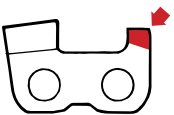
Cutters hit abrasive materials.

**Remedy**

File cutters to remove all damage.

## DEPTH GAUGE CORRECTION

### Blunt depth gauge Causes rough cutting



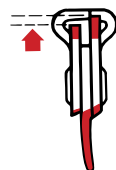
**Cause**

Uneven filing.

**Remedy**

Use correct depth gauge. Jointer to lower gauges evenly.

### Uneven depth gauge Height. Chain won't cut straight.



**Cause**

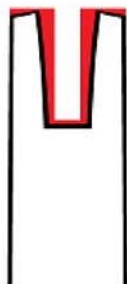
Improperly filed depth gauge.

**Remedy**

Round off front corner to Maintain original shape.

SAW BAR PROBLEMS

Worn Bar Rails

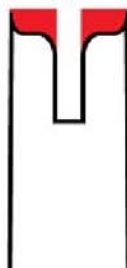


**Cause**  
Worn bar rails are normal for a bar that has been in service for a period of time.

**Result**  
Shallow groove.

**Remedy**  
Replace bar

Wire Edge Bar Rail

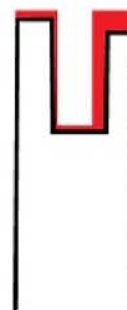


**Cause**  
Normal wear caused by pressure of chain on edges of bar rails.

**Result**  
Rail edges may chip if wire edge is not removed.

**Remedy**  
Use a flat file on edge of bar rail to remove wire edge.

Thin Rail and Low Rail

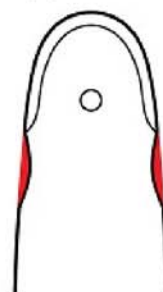


**Cause**  
Chain leaning over, cutting crooked. Forcing dull chain to cut. Damage to cutters on one side of chain.

**Result**  
Thin rail on one or both sides of bar. Rail could be blue color in thin area.

**Remedy**  
Bar cannot be repaired if rail is thin and uneven. Replace it. Make sure chain doesn't continue to lean. If it does, replace with a new chain.

Chipped Rail



**Cause**  
Chipping of rails behind hard tip. Continual pressure of bar on one area. Dull chain. Loose bar tension.

**Result**  
Material chipping out of one or both rails behind the hard tip.

**Remedy**  
Reverse bar to reduce wear. Reweld bar by qualified repair shop. Replace bar. (This chipping can cause chain damage)

SPROCKET NOSE BAR PROBLEMS

Blue Discoloration on Bar Nose

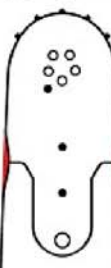


**Cause**  
Nose was pinched. Friction from revolving sprocket caused heat and area turned blue. Could be lack of lubrication.

**Result**  
Entire edge turns blue, or only in one or two spots.

**Remedy**  
If this happens in the nose bearing area the bar is no longer serviceable. Replace bar if laminated bar.

Chipping at Nose Connection (replaceable nose)



**Cause**  
Loose chain tension. Continual pressure in this area. Heavy limbing at this point.

**Result**  
Chipping at connection of both body and nose assembly.

**Remedy**  
Replace nose assembly and dress rail of bar and nose to match.

Spread Nose Rails and Bearing Loss



**Cause**  
Chain jumped off bar. Carving with nose. Limb caught nose. Twisting nose. Any operating accident.

**Result**  
Spread nose rails and loss of bearings.

**Remedy**  
Replace bar. Replace nose of RSN bar.

Section Broken Out of Sprocket



**Cause**  
Irregular operating condition which forced drive link sideways. Throwing the chain when limbing. Chain tension run too loose.

**Result**  
Open nose. Broken sprocket. Bearings fall out. One or two broken teeth.

**Remedy**  
Replace bar nose assembly.