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Department of LABOR AND INDUSTRIES

Basic Tree Felling

This presentation is not intended to make you a professional tree feller. It is intended to make you aware of improper cutting techniques. The presentation does not take into consideration diseased trees, leaning trees or other felling hazards. We highly recommend that you hire a professional cutter or arborist when you need trees removed from your property.

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Understanding the Hazards

A professional cutter can normally look at a stump of a tree and tell how well the basic cutting rules were followed. It's like how a crime scene investigator or forensics expert looks at a scene to determine the facts. The same goes with stumps or as the professionals call it, "stump forensics."

In order to look at a stump and tell how well it was cut, you first need to know some of the basic mechanics of tree felling.

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Before you start cutting

1. Determine the direction you want the tree to fall.
2. Look for overhead hazards such as dead limbs or tops, loose bark, power lines, etc.
3. Make sure the entire area is clear of falling hazards.
4. Plan and clear your escape route.
5. Check the wind conditions. Wind can cause a tree to fall prematurely or in another direction.
6. Make sure no one else is in the cutting area.
7. Make sure you have all of your required personal protective equipment. (Head, eye, leg and ear protection. Review Presentation on Logger PPE.)
8. Make sure your saw has been inspected and is in good working order.

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What do these stumps tell you?

You should be able to tell after you complete this module.

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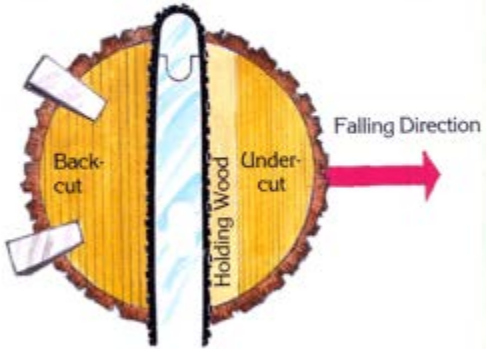
3 Basic Parts To Felling Safely

1. **Undercut**
2. **Backcut**
3. **Holding Wood or Hinge**



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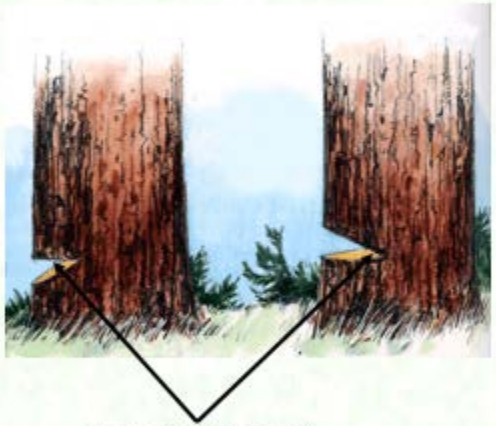
The Undercut

The undercut should be 1/3rd to 1/4th of the tree's diameter.

The two cuts meet at the apex of the angle and neither cut bypasses the other.



Do not let either cut bypass the apex.

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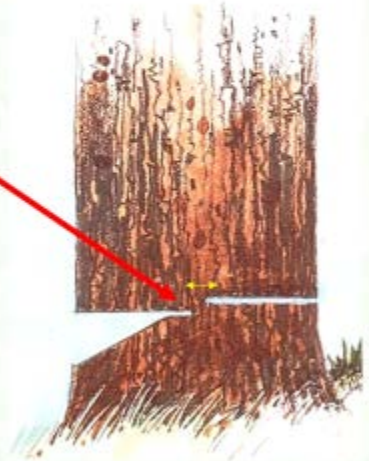
Undercut – cuts don't match

A "Dutchman" is one of the main causes of cutting injuries and fatalities.

- Shelf of wood called a "Dutchman"



Bad Undercut!

This photo shows a "bypass."

The straight cut went way past the apex of the angle. The results of this cut will leave a "dutchman."

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The undercut on this tree was cut too deep and the tree went over backwards.

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Another that went over backwards right toward where the cutter was standing!

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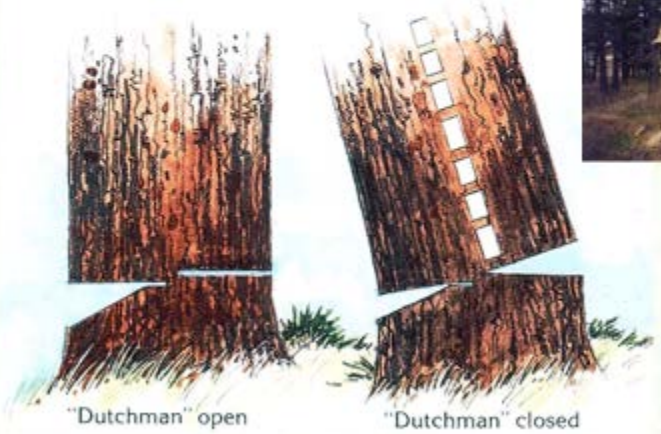
A "Dutchman" acts like a splitting wedge



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Which causes a “Barber Chair?”

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The possible result of a "Barber Chair"

Instead of the tree leaving the front of the stump, part of the tree can come off the back of the stump toward the cutter.

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What Barber Chairs look like

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No Undercut at all!

No undercut has the same effect as an improper undercut. You have no control over where the tree is going to fall and the tree, more likely than not, will barber chair.

Note: Any tree over 6 inches in diameter requires an undercut.

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This stump has no undercut. Notice that there is no hinge wood left on the stump. When a tree is cut like this, there is a high potential for a "Barber Chair." Remember, a proper undercut is suppose to dictate the direction of fall for the tree.

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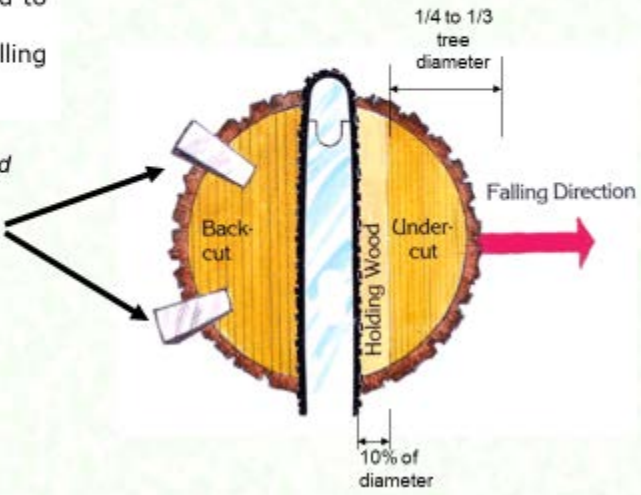
Back cuts

Back cuts are designed to release the wood that holds the tree from falling over the undercut.

Wedges are used to prevent the tree from sitting back on the saw blade.



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Back cuts

When they're too low, the tree can kick back off the stump. Notice the hinge wood is insufficient and undercut is too deep.

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Sloping cuts

Tree can slip off the stump and fall in any direction!!

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More Than One Mistake…

Increases the Odds of Disaster

Where would this tree have fallen?

Right, you don't know. It could have fallen in any direction.

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One side of the hinge wood was cut off causing this tree to fall 90° off of it's intended direction of fall.

A fatality resulted from this improper cut.

Undercut too deep & one side of hinge cut off

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This undercut is too deep and the back cut is too low. Notice one side of the hingewood is cut off. This tree did not fall in the intended direction.

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Remember:

Anyone can cut down a tree if they cut on it long enough.

But doing it SAFELY means following the correct procedures!

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The "Hinge" Is the Key

The purpose of the hinge is to provide sufficient wood to hold the tree to the stump during the majority of the tree's fall, and to guide the tree's fall in the intended direction.

The position of the hinge will affect the direction of fall.

The size of the hinge is important to prevent splitting, fiber pull, barber chairs, and other undesirable and unsafe actions.

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The Hinge

- The length of the hinge should be 80% of the diameter of the stump.
  Example: For a 12-inch diameter tree the hinge should be 9.6 inches long (12 inches ×0.8).
- The width of the hinge should be 10% of the diameter of the tree at stump.
  Example: For a 12-inch diameter tree the hinge should be 1.2 inches long (12 inches ×0.1).
- The hinge on a tree with no side lean should be perpendicular to the intended direction of fall.

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This is why they call it “Hingewood”

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Hingewood Saves Lives!!

The tree goes where the cutter wants it to, not where the tree decides to go

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Stumps will tell the story of how the tree was cut and the evidence stays there for a long time.

You can evaluate your own work by just looking at the stump.

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Conclusion

- Please review the complete Logging operations, Safety standards; WAC Chapter 54 at: https://lni.wa.gov/safety-health/safety-rules/rules-by-chapter/?chapter=54