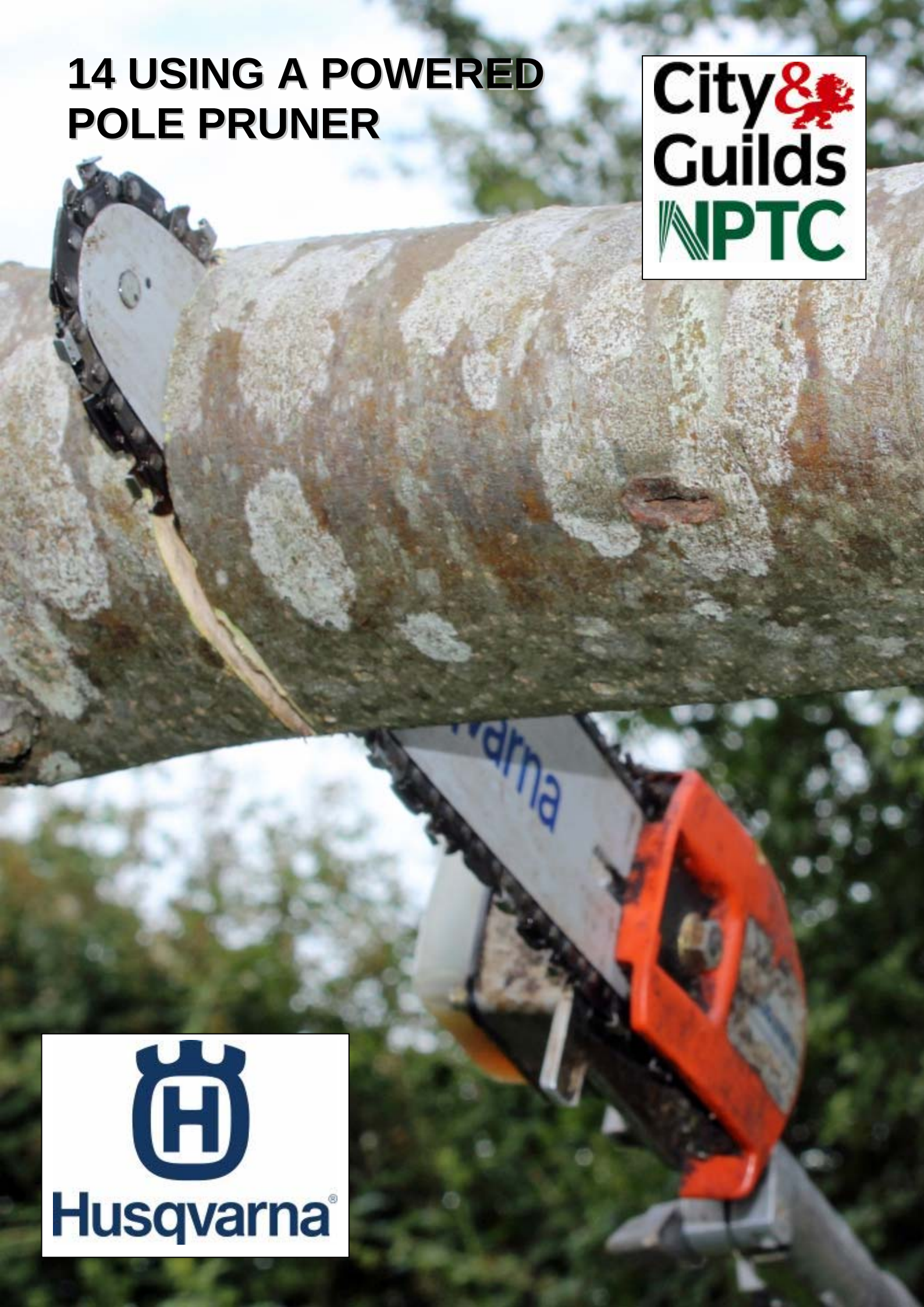
14 USING A POWERED POLE PRUNER



Use of this worksheet

This worksheet is part of a series of interactive worksheets that has been produced in association with Husqvarna to support the delivery of training for the City & Guilds (NPTC) suite of chainsaw qualifications.

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Content

This worksheet covers the following outcomes:

Be able to use a powered pole pruner

Know how to use a powered pole pruner

Why safety features are fitted to a powered pole pruner and how they function

The powered pole pruner has a number of features fitted to it to meet legal requirements; they include things to improve safety and protect the operator from the hazards of a powered pole pruner, specifically features which:

- **reduce vibration**
- **reduce emissions**
- **reduce noise.**

Functions of the safety features on a powered pole pruner

There are a number of key safety features built into a powered pole pruner which are essential in keeping the operators and those around them safe.

After discussion with your trainer, name each of the safety features listed and explain the function of each one in the spaces provided.

Safety feature	Name and function
	**Name:** **Function:**
	**Name:** **Function:**

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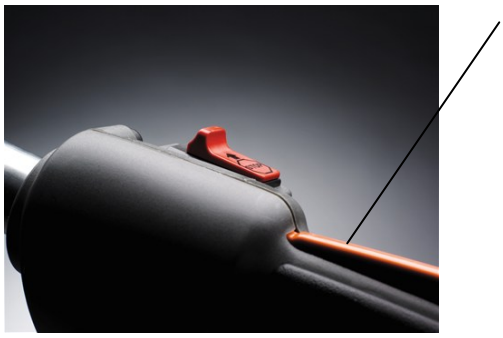
Safety feature	Name and function
	**Name:** Chain with low kick back characteristics **Function:**
	**Name:** **Function:**
	**Name:** **Function:**
	**Name:** **Function:**

Safety feature	Name and function
	**Name:** **Function:**
	**Name:** **Function:**

The function and maintenance requirements of individual components

A powered pole pruner needs to be serviced regularly to ensure that it all the features operate correctly and the pole pruner works efficiently. Basic servicing can be carried out by the operator in accordance with the guidance provided in the manufacturer's handbook. It is particularly important to check the safety features when carrying out maintenance.

There are a number of tools and pieces of equipment that need to be used correctly whilst carry out maintenance activities.

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Name each item in the picture below.

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Below, and on page 9, is a table containing pictures of individual pole pruner components.

You are required to explain the function of each component and briefly explain how each should be maintained.

Picture	Function	Maintenance
	**Cooling system:**	
	**Exhaust system:**	
	**Clutch/drive system:**	
	**Starter mechanism:**	
	**Sprocket:**	

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Picture	Function	Maintenance
	**Greasing/lubrication:**	
	**Air filter:**	
	**Guide bar:**	
	**Chain:**	
	**Fuel/oil filters:**	

Problems that may be encountered when a chain and guide bar are worn, damaged or poorly maintained

There are a number of problems that may be encountered by the operator when a chain and guide bar on a powered pole pruner are worn, damaged or poorly maintained.

After discussion with your trainer describe the problems that may be encountered.

Problems that may be encountered with a worn chain	
	**1.** **2.** **3.** **4.** **5.** **6.**

Problems that may be encountered with a worn guide bar	
	**1.** **2.** **3.** **4.**

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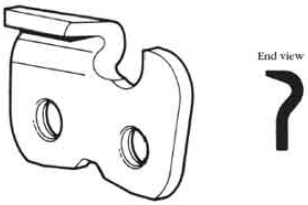
Different chain types and their application

There are two main 'cutter types' found on pole pruners, these are:

- **Semi Chisel**
- **Micro Chisel**

Semi-Chisel chain has a rounded working corner formed by a radius between the top and side plates.



Micro Chisel chain is similar to the semi-chisel design but has a smaller radius corner between top and side plates and is easier to sharpen. Performance is similar to good semi-chisel.

How to obtain the correct filing information for a chain and why it is necessary

It is important to select the correct file size and to identify the filing angles for the chain before attempting to sharpen it. The chain must be sharpened according to the manufacturer's recommendations. A properly sharpened chain enhances the performance of the powered pole pruner.

Information can be found:

- **on the chain itself**
- **in information provided by the manufacturer**
- **on chain charts**
- **on the box the chain was supplied in (if appropriate)**

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Example of a chain chart

CHAIN TYPE		PITCH (INCHES)	FILE (MM/INCHES)	CUTTING TOOTH SHAPE	
HUSQVARNA	OREGON				
H30 "Pixel"	95VP	.325"	4.8 / 3/16"		Semi-Chisel
H25	21BP	.325"	4.8 / 3/16"		Semi-Chisel
H42	73LP	3 / 8"	5.5 / 7/32"		Chisel
H36	91VG	3 / 8"	4.0 / 5/32"		Chamfer Chisel
H37	91PX	3 / 8"	4.0 / 5/32"		Chamfer Chisel
H64	27	.404"	5.5 / 7/32"		Micro Chisel

In order to be able to use a chain chart effectively, information must be correctly interpreted from the chain.

Label each chain indicating the meaning of the information stamped into the chain.

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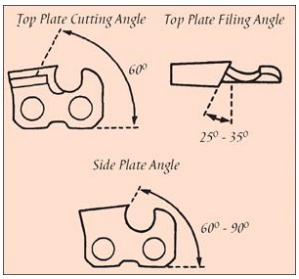
Filing angles

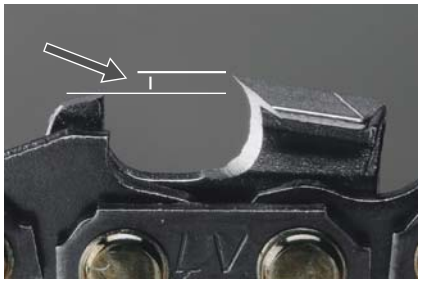


If you use a filing gauge you do not need to think about the different angles to ensure a good result, providing that the instructions are properly followed.

It is important that each cutter is the same length after filing as this:

- **prevents increased vibration**
- **prevents inaccurate cutting; and**
- **reduces the risk of kickback**

Depth gauge setting



It is important to have the correct depth gauge setting as it:

- **reduces the risk of kick back**
- **reduces chain vibration; and**
- **ensures that the chainsaw achieves optimum cutting speed**

It is recommended that the depth gauges are filed after the cutting teeth have been filed 3 – 5 times during normal wear.

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Maintaining the cutting system in accordance with the operator's handbook using appropriate tools

State the reasons for wearing the items of PPE in the picture.

PPE	**Reason for wearing**
	**Boots:** **Gloves:** **Eye Protection:**

For the powered pole pruner to operate at peak efficiency it is essential that the cutting system is properly maintained. The cutting system consists of the:

- **bar; and**
- **chain**

The two tables on the following pages summarise routine maintenance of the bar and chain, however all maintenance activities should be performed in accordance with the manufacturer's recommendations.

The following Oregon publications are all excellent sources of information:

The Chain Troubleshooting Guide

The Saw Bar Troubleshooting Guide; and

The Rim and Spur Sprocket Troubleshooting Guide

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Bar	Maintenance includes:
  	identification of uneven and damaged rails checking the straightness of the bar checking the bar groove depth identification of any blueing, cracking or burring removal of burs clearing the bar groove and oil holes inspecting the sprocket nose for security and condition greasing the bar nose sprocket turning the bar following maintenance to reduce wear

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Chain	Maintenance includes:
  	checking the cutters for damage, selecting the first one to sharpen securing the bar/chain in a vice on a bench or timber vice on site selecting and using the correct file with a handle fitted correct maintenance of the top and side plate angles throughout ensuring a consistent cutter length is maintained removing burrs (when appropriate) maintaining the height and profile of the depth gauges – ***as per the example to the bottom left.***

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Personal Protective Equipment (PPE)

The items of PPE required to operate a powered pole pruner are the same as for operating a chainsaw and are covered in worksheet **01 Health and Safety in Ground based Operations.**

Identifying trees to be pruned

Trees for pruning may be identified in the following ways:

- **from marks on the trunk – paint/blaze**
- **by species identification (individual trees)**
- **from an O/S map or plan**
- **from details contained on a work order/sheet**

How the condition of trees and the time of year affect the approach to pruning

In the boxes provided below describe how the condition of the tree and the time of year may affect the work.

How the condition of the tree affects the work:

How the time of year affects the work:

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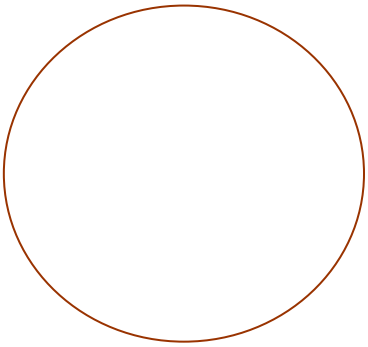
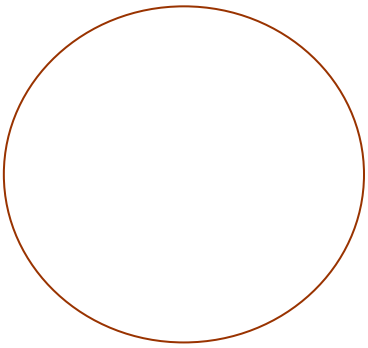
Appropriate pruning methods using a powered pole pruning saw

There are number of different types of cut that can be used to sever material from the tree; it is important to know when it is appropriate to use each type of cut.

For each of the cuts, draw a diagram and state which cut it is.

Tree	Stump	Cut
		

Tree	Stump	Cut
		

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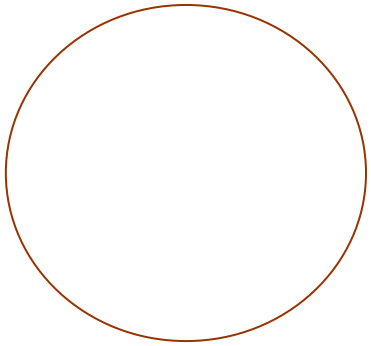
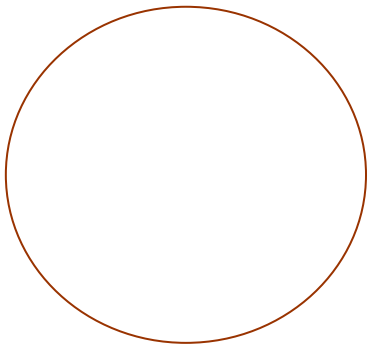
Tree	Stump	Cut
		

Tree	Stump	Cut
		

Target pruning

Target pruning, which is sometime referred to as ‘natural target pruning’ relies on the principle of pruning to branch collars or bark ridges.

Pruning cuts should always be made at a union or if necessary against the main stem; avoid leaving stubs, which can die back, allowing disease to enter and lead to the formation of cavities.

Large branches should not be removed unless it is absolutely unavoidable. If they have to be removed the pruning wounds should be kept as small as possible, with the cuts as smooth as is practicable.

Cuts into live wood should be avoided when removing dead branches and stubs.

Where a branch collar is present the final cut should be just outside it.

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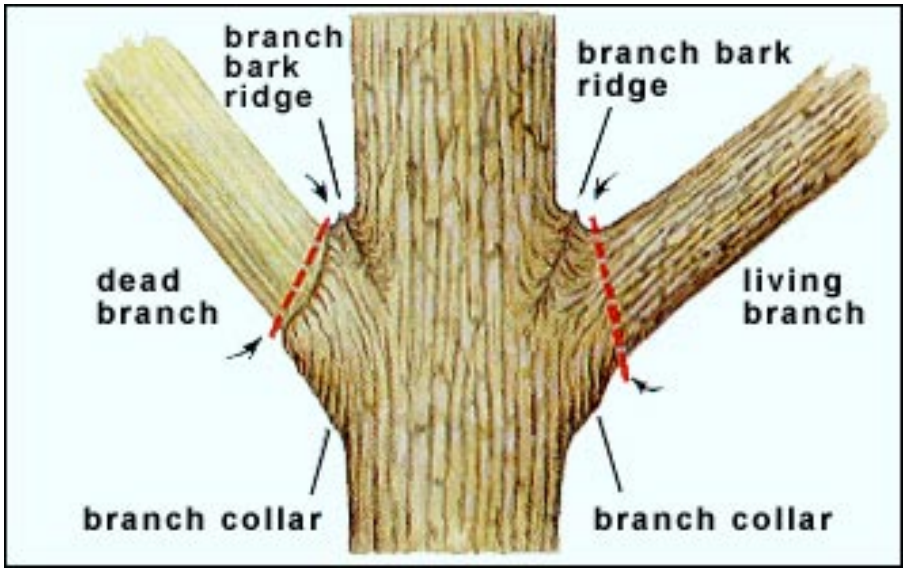
Where there is no branch collar the cut should mirror the branch bark ridge.

Natural target pruning, diagram

Diagram of well-placed cuts to be made at the outer edge of the branch bark collar/ridge on both a dead and a living branch.



Tension and compression in branches

It is vitally important to be able to identify where timber is under tension and where it is under compression if cuts are to be made safely and without risk of damage to the pole pruner. An incorrect cut can result in the branch splitting or the guide bar of the saw becoming trapped.

Tension is found on the outside edge of strained timber and when the cut (kerf) opens.

Compression is found on the inside edge of strained timber and when the cut (kerf) closes.

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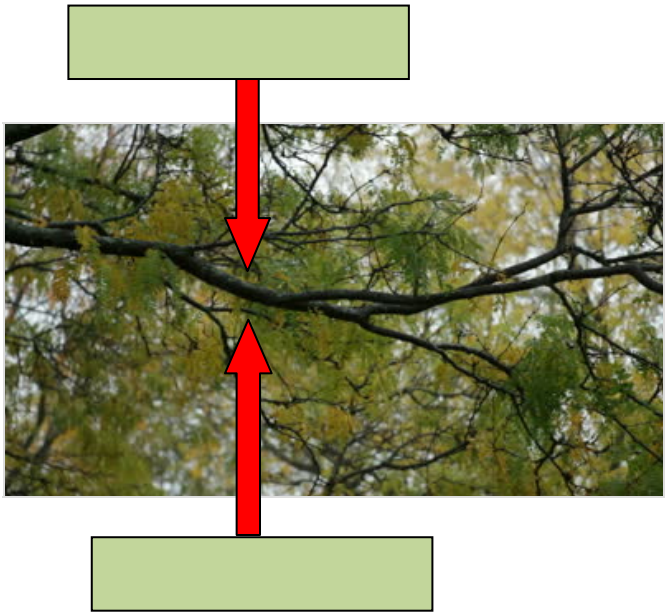
Identify tension and compression in the picture below.



How to reduce and prune heavy and long branches

There are specific methods that can be used when operating a powered pole pruner to prune heavy and long branches.

In the box below describe how a heavy, long branch should be pruned.

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How to remove a powered pole pruner trapped in a cut

There may be occasions when the powered pole pruner becomes trapped in a cut. It is important to know how to remove it without damage to the pole pruner or the branch being severed.

In the box below describe three methods of achieving safe removal without damage to the saw or branch.

Method 1.

Method 2.

Method 3.

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