

12 AERIAL CUTTING (FREEFALL TECHNIQUES)



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:

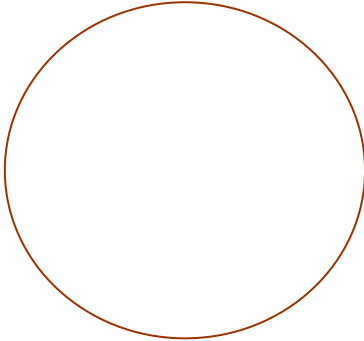
Be able to carry out aerial cutting of trees with a chainsaw using free-fall techniques

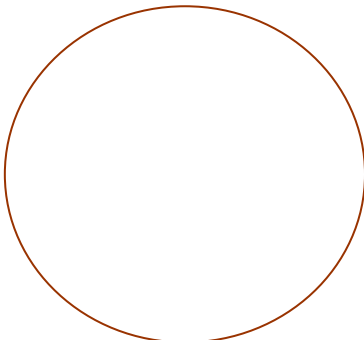
Understand how to carry out aerial cutting of trees with a chainsaw using free-fall techniques

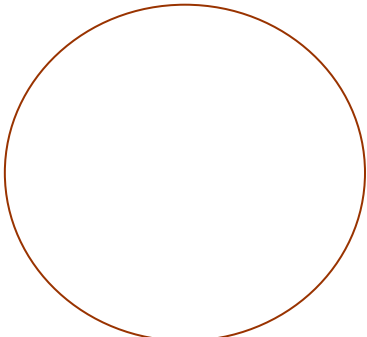
Different types of cuts and when they may be used

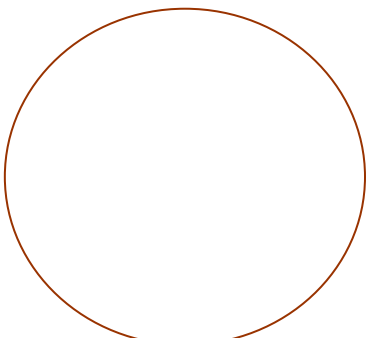
There are number of different types of cuts that can be used to sever material from the tree; it is important to know when it is appropriate to use each type of cut.

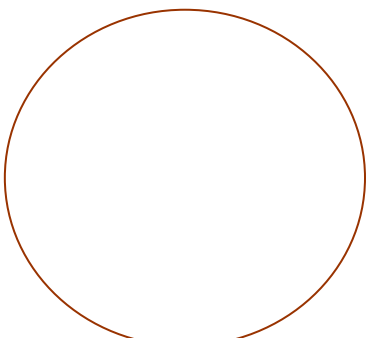
Draw a diagram of various cuts and state when it would be appropriate to use the cut.

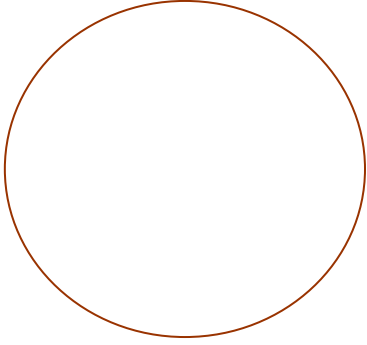
| Tree | Stump | Cut |
|---|--|-----|
| <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 100%;"></div> |  | |

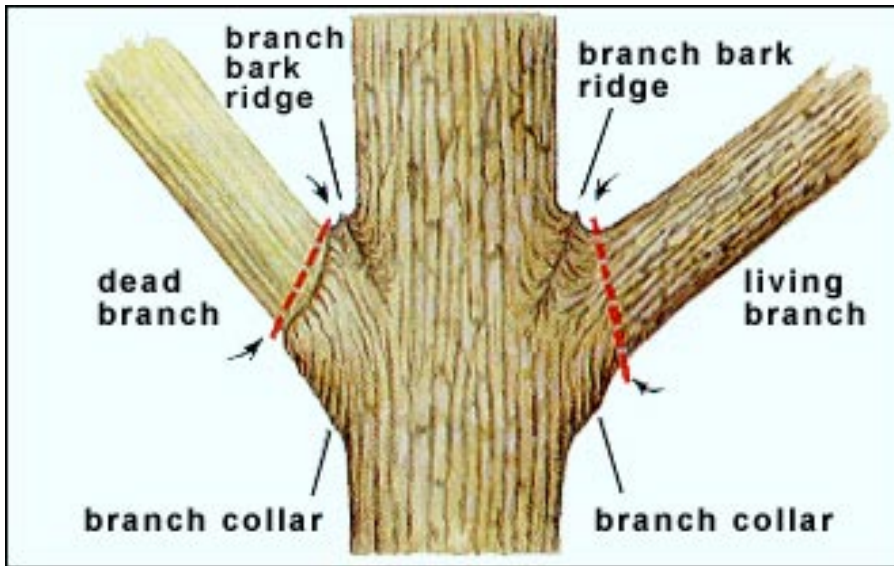
| Tree | Stump | Cut |
|---|--|-----|
| <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 100%;"></div> |  | |

| Tree | Stump | Cut |
|------|--|-----|
| |  | |

| Tree | Stump | Cut |
|------|---|-----|
| |  | |

| Tree | Stump | Cut |
|------|--|-----|
| |  | |

| Tree | Stump | Cut |
|------|--|-----|
| |  | |
| | | |
| | | |



Example: an outboard step cut, showing final removal to the branch ridge.

Note: With all techniques the following must be taken into consideration:

- condition of the tree
- the likely response of the tree to pruning
- time of year ('bleeding' and subsequent infection)
- characteristics of the timber (e.g. brittle).

The potential effects of tree section removal on retained parts of the tree

There can be a number of effects on a tree when sections are removed; some are desirable other, less desirable.

The possible effects are (fill in the missing words):

- allowing _____ to form



- allowing pathogens into the _____



- removal of the tree's _____ boundaries (flush cuts)



- potential to allow the development of _____



- reduction of potential _____ reserves and adventitious buds (branch collar removal)



- potential for _____ infestation, development of _____ and dead spots



- development of _____ sprouting



- promotion of _____



- promotion of _____



- stability of _____ structure



The importance of accurate and appropriate cuts when removing tree sections and their effect on the section being left

The accuracy and appropriateness of the cuts made to a tree will affect both the behaviour of the sections being removed, and the health of the sections being left. Accurate cuts will ensure that **(fill in the missing words)**:

- the cut is in the place _____
- the section being _____ goes in the _____ direction
- _____ is maintained over the section being removed
- the work is carried out in an _____ manner
- there is no damage to the _____ system of the saw and the chain remains in place
- there is no _____ of the wood, the resulting cut is 'clean'
- the sections removed land in the _____, resulting in _____ damage.

Inappropriate or inaccurate cuts may lead to the saw being trapped.



In the box below explain how to safely remove a trapped saw.

Procedure for safely removing a trapped saw:

-
-
-
-
-

How to select appropriate anchor points / position of access equipment so that the anchor point will not be compromised by the work being carried out

All anchor points must be carefully selected, assessed for suitability and weight tested before they are used.

The main anchor point must always be installed in a branch fork and around the main stem of the tree. After installation it needs to be tested by two climbers 'bouncing' on the climbing line.

The selection of suitable anchor points must include a consideration of :

- position
- size; and
- strength

How to assess the timber diameter, length and weight to be removed

The methods of assessing timber diameter, length and weight include:

- visual estimation
- measuring aids (measuring callipers and tapes)
- log chart tables

In the box below state the advantages and limitations of visual estimation.

| Advantages of visual estimation | Limitations of visual estimation |
|---------------------------------|----------------------------------|
| | |

Measuring aids



Name:

Table 6.1 Reference log mass chart (green Oaks logs, SG 1.0) in kg units

Diameter of section in cm

| length in cm | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|
| 20 | 3.5 | 6 | 10 | 14 | 19 | 25 | 30 | 40 | 50 | 55 | 65 | 75 | 90 | 100 | 115 | 125 | 140 | 155 |
| 30 | 5 | 9 | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 85 | 100 | 115 | 135 | 150 | 170 | 190 | 215 | 235 |
| 40 | 7 | 13 | 20 | 30 | 40 | 50 | 65 | 80 | 95 | 115 | 135 | 155 | 175 | 200 | 225 | 255 | 285 | 315 |
| 50 | 8.8 | 16 | 25 | 35 | 50 | 65 | 80 | 100 | 120 | 140 | 165 | 190 | 220 | 250 | 285 | 320 | 355 | 395 |
| 60 | 11 | 19 | 30 | 40 | 60 | 75 | 95 | 120 | 145 | 170 | 200 | 230 | 265 | 300 | 340 | 380 | 425 | 470 |
| 70 | 12 | 22 | 35 | 50 | 65 | 90 | 110 | 135 | 165 | 200 | 230 | 270 | 310 | 350 | 395 | 445 | 495 | 550 |
| 80 | 14 | 25 | 40 | 55 | 75 | 100 | 125 | 155 | 190 | 225 | 265 | 310 | 355 | 400 | 455 | 510 | 565 | 630 |
| 90 | 16 | 30 | 45 | 65 | 85 | 115 | 145 | 175 | 215 | 255 | 300 | 345 | 400 | 450 | 510 | 575 | 640 | 705 |
| 100 | 18 | 30 | 50 | 70 | 95 | 125 | 160 | 195 | 240 | 285 | 330 | 385 | 440 | 505 | 565 | 635 | 710 | 785 |
| 125 | 22 | 40 | 60 | 90 | 120 | 155 | 200 | 245 | 295 | 355 | 415 | 480 | 550 | 630 | 710 | 795 | 885 | 980 |
| 150 | 25 | 45 | 75 | 105 | 145 | 190 | 240 | 295 | 355 | 425 | 500 | 575 | 665 | 755 | 850 | 955 | 1065 | 1180 |
| 175 | 30 | 55 | 85 | 125 | 170 | 220 | 280 | 345 | 415 | 495 | 580 | 675 | 775 | 880 | 995 | 1115 | 1240 | 1375 |
| 200 | 35 | 65 | 100 | 140 | 190 | 250 | 320 | 395 | 475 | 565 | 665 | 770 | 885 | 1005 | 1135 | 1270 | 1420 | 1570 |
| 225 | 40 | 70 | 110 | 160 | 215 | 285 | 360 | 440 | 535 | 635 | 745 | 865 | 995 | 1130 | 1275 | 1430 | 1595 | 1765 |
| 250 | 45 | 80 | 125 | 175 | 240 | 315 | 400 | 490 | 595 | 705 | 830 | 960 | 1105 | 1255 | 1420 | 1590 | 1770 | 1965 |
| 275 | 50 | 85 | 135 | 195 | 265 | 345 | 435 | 540 | 655 | 780 | 915 | 1060 | 1215 | 1380 | 1560 | 1750 | 1950 | 2160 |
| 300 | 55 | 95 | 145 | 210 | 290 | 375 | 475 | 590 | 715 | 850 | 995 | 1155 | 1325 | 1510 | 1700 | 1910 | 2125 | 2355 |
| 350 | 60 | 110 | 170 | 245 | 335 | 440 | 555 | 685 | 830 | 990 | 1160 | 1345 | 1545 | 1760 | 1985 | 2225 | 2480 | 2750 |
| 400 | 70 | 125 | 195 | 285 | 385 | 505 | 635 | 785 | 950 | 1130 | 1325 | 1540 | 1765 | 2010 | 2270 | 2545 | 2835 | 3140 |
| 450 | 80 | 140 | 220 | 320 | 435 | 565 | 715 | 885 | 1070 | 1270 | 1495 | 1730 | 1990 | 2260 | 2555 | 2865 | 3190 | 3535 |
| 500 | 90 | 155 | 245 | 355 | 480 | 630 | 795 | 980 | 1190 | 1415 | 1660 | 1925 | 2210 | 2515 | 2835 | 3180 | 3545 | 3925 |

Notes

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