



Basic chainsaw felling and manual takedown

INTRODUCTION

This guide contains industry agreed safe working practices which should be followed when using a chainsaw to fell and take down trees.

It does not cover techniques where the trees are too small to accommodate a sink cut, nor does it include where wire cable, rope or machinery is used in the directional or assisted felling of trees.

Where proposed work falls outside the scope of this guide, competent advice should be obtained and agreed safe methods of work implemented. Those agreed safe methods of work should be developed and recorded in a revised, suitable and sufficient site-specific risk assessment. This must be authorised by the Forest Works Manager (FWM) or person in control of the works.

Where they are competent to be involved, the Landowner, or his representative, must also be consulted about the changes to the risk assessment/working method.

For guidance on PPE, the machine, preparing to work, maintenance, fuelling and starting procedures see FISA Leaflet 301 *Using Chainsaws*.

PURPOSE OF THE GUIDE

It should be used by Operators, Landowners, Managers, and Supervisors to ensure safe working, reduce accidents and check operational work practices against agreed industry standards. Individuals using this guide must be adequately trained and sufficiently experienced, along with an ability to correctly interpret and implement good practices relevant to any task or machine described.

The contents of this guide may be used to help identify:

- The suitability of a defined safe system(s) of work;
- Compliance with risk assessment and/or method statements;
- Training needs for individuals in conjunction with guide 805.
- This guide can be used as a check list to record relevant information when undertaking site safety checks.

This guide, in conjunction with the chainsaw manufacturer's handbook, should be used as part of the risk assessment process to help identify suitable control measures when using chainsaws.

RISK ASSESSMENT

All risk assessment processes, either Operational or Environmental, must have considered the range of hazards likely to be encountered and adopted sufficient control measures to ensure safe working.

Within this process a designated and named person should be identified e.g. Team Leader, Site Safety Coordinator, Works supervisor. Sufficient risk assessment must be undertaken prior to chainsaw related activities taking place and such assessments should be undertaken at the planning stage and reviewed and implemented at the start of works by competent individuals, incorporating effective communications and an assessment review process between all parties on site.

On sites where cutters need to be out of direct site of colleagues for any time and are therefore at greater risk, then regular radio or phone contact can be a good control, an agreed check in time between the chainsaw operator and designated contact on site should be established, i.e every 20 minutes. It has to be a site based decision for when work cannot be organised to maintain visual contact. If communications are lost then chainsaw work must stop until communications or visual contact is restored. This should be regarded as a vital part of the Site Specific Risk Assessment (SSRA).

Chainsaw users should be particularly aware of the potential hazards, e.g. of being cut by the saw, hit or crushed by moving timber, the site conditions where work is to be undertaken, the weather operators may be exposed to, noise, vibration, and other work equipment or activities on site.

Relevant and defined emergency procedures, specific to the worksite, should form an integral part of the assessment process.

TOOLS AND EQUIPMENT

1. Check that all necessary aid tools and ancillary equipment are available and in a serviceable condition. Aid tools which may be needed include:
 - a breaking bar/felling lever;
 - a sledgehammer;
 - small and large alloy or plastic wedges;
 - high lift wedges;
 - hydraulic or mechanical felling wedges;
 - hydraulic toe jack and/or appropriate tree lifting jack;
 - a hand winch complete with handle, cable, pulleys and stops. (*Use of the hand winch is detailed in FISA Leaflet 310*).

Ancillary equipment which may be needed include:

- Two way radio sets and/or mobile phones for use on sites to ensure adequate communication between chainsaw operator(s) and a designated person on site.

PREPARING TO FELL

2. It is important to remember that tree felling is a one-person operation and a safe working distance of two tree lengths must be maintained, unless exceptional conditions and a comprehensive risk assessment dictate otherwise.

3. Safe Working Distances:

For all work locations it must be ensured that safe working distances are applied between operators, machinery, third parties and any local infrastructure.

The following factors must be considered when agreeing safe working distances to be applied:

- The potential for falling trees to strike other operators.
 - The potential for trees to strike third parties and infrastructure.
 - Material breaking up upon impact and flying debris.
 - The risk zones of machinery.
 - Terrain and weather.
 - Contract specifications/requirements.
 - Existing risk assessment and/or method statement requirements.
4. Ensure that all underground and overhead services such as gas, water, sewage, electricity and telephone have been identified before felling commences.
5. When felling adjacent to overhead power lines a clearance of not less than twice the height of the trees must be maintained. Felling should be directed away from the power line and when felling is within two tree lengths advice of the owner of the overhead lines must be sought. Specific details are given in *FISA Leaflet 804*.
6. Do not fell if wind conditions are such that control over the felling direction will be lost.
7. Inspect the tree to be felled and adjacent crowns for dead wood, insecure branches and any signs of decay. Be constantly aware of likely danger, especially when the tree begins to fall.
8. Decide the direction of fall and select a suitable escape route (see figure 1). Ensure the escape route is clear of obstructions.
9. Plan the work and felling techniques to minimise manual handling.
10. Remove debris from around the base of the tree and any vegetation which might obstruct the operation. Flatten any soft vegetation which could restrict the dispersal of chainsaw exhaust fumes.

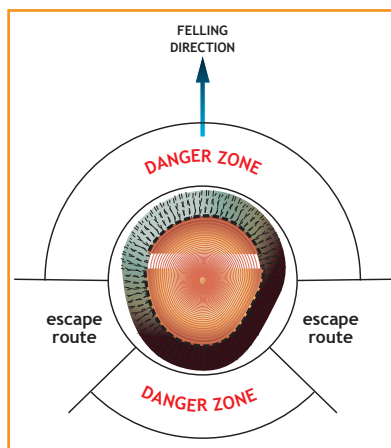


Figure 1: Escape routes

11. When removing low branches from the tree (brushing) ensure the operator is protected from potential kickback by keeping the guide bar out of line with the body and by using the stem for protection.
12. Ensure the body of the saw is not raised above shoulder height during brushing. The guide bar can be tilted upwards to maximise brushing height provided the bar remains out of line with the operator and does not go above head height.
13. Check the condition of the tree for signs of decay and grain direction which might affect the effectiveness of the felling cuts and or strength of the hinge.

FELLING

14. Always make a sink cut. The two cuts forming the sink should be aligned to achieve the required felling direction, meet exactly to ensure the hinge is not weakened and be of a size and shape to suit the species terrain, work system, site and weather conditions.
15. Make the main felling cut at or slightly above the level of the horizontal sink cut. Use appropriate aid tools or holding cut techniques where there is a possibility of the tree moving and trapping the saw.
16. To achieve good directional control leave an appropriately sized parallel sided hinge at right angle to the direction of fall.
17. Where rot is found, or suspected, ensure that the felling cuts, hinge dimensions and felling height are adjusted to maintain control of the felling direction.
18. When removing buttresses prior to felling, adopt a technique and sequence of cuts which ensures the tip of the guide bar does not come into contact with the trunk.
19. If the chainsaw becomes trapped in the main felling cut use correctly positioned appropriate felling aids to open the cut. If the tree has to be left, appropriate measures should be taken to ensure the exclusion zone is maintained and the situation must be reassessed before continuing the felling operation
20. Where necessary upon completion of the main felling cut, use an appropriate felling aid to lever the tree over. When using a breaking bar/felling lever, employ correct manual handling techniques for lifting: keep both hands on the lever, bend the knees and keep the back straight and use the leg muscles for lifting.
21. Once any felling cut has been started on a tree the tree must not be left standing. Do not start a new operation until the tree has fallen.
22. When the tree begins to fall, and site conditions permit, **move at least 3 metres into the escape route, to ensure a safe distance from the butt of the tree.** Monitor the movement of the tree, watching for falling branches and tops. Beware of the butt rebounding or the whole tree sliding when felling on a slope.

23. So far as is reasonably practicable, complete any necessary de-limbing of a felled tree before felling another tree onto it.

TAKEDOWN OF HUNG UP TREE

24. Risk assess the situation as soon as the tree becomes lodged and determine whether it can be dealt with immediately, safely and effectively with the equipment available to the operator.

25. **Do not:**

- fell the supporting tree in an attempt to free the hung-up tree.
- fell another tree across the hung-up tree in an attempt to dislodge it;
- climb a hung-up tree
- walk or work under a hung-up tree;
- cut product length pieces off the butt end in an attempt to dislodge it. Very short lengths may be removed in order to facilitate the movement of the tree over or around a localised obstacle which cannot be removed;
- leave the hung-up tree unattended. If this is not possible the danger area around the tree must be taped off, others on site informed of the danger and FWM and other interested parties informed by phone as necessary.

26. Carefully assess the tree to decide the safest and most effective method of take down, identify the danger areas around the tree and from possible breakages within the tree it is hung up on. Consider the likely movement of the tree(s) during take down to enable adequate and appropriate escape routes to be established. When working on slopes be aware of materials moving down the slope and establish escape routes on the uphill side wherever possible.

27. Ensure that no other persons is within two tree lengths nor directly below on steep slopes.

28. When using a chainsaw to remove part or all of the hinge, work from a safe position at the side of the tree.

29. When rolling a lodged tree with a felling lever and cant hook, use a pushing movement: never pull as this will bring the tree towards the operator. Stay outside the danger areas directly under and behind the tree whilst using the lever/hook.

30. When levering the butt backwards using a pole, operate from the side of the tree avoiding the danger areas, keep behind the pole and provide the necessary movement by using the leg muscles to push.

31. When the tree begins to fall, let go of the pole or lever and step into the escape route.

32. When moving the tree using a hand winch ensure the estimated weight of the tree is within the capacity of the winch and that no-one is within the danger area which is deemed to be the area between the winch anchor, offset point and the target tree when the system is offset/re-directed and directly inline and slightly to the side on a straight line pull. The winch should be

checked to ensure that all safety features are present and correct; all components to be used in the system are compatible with the pulling capacity of the winch and checked for condition. When the tree starts to fall, let go of the winch handle and move into a safe area.

33. If the tree cannot be taken down using manual techniques, establish adequate exclusion zones and move to an alternative felling area outside these zones until any necessary equipment is available and the hung-up tree can be safely dealt with. It is important for site safety that the hung-up tree is dealt with safely as soon as practically possible after becoming lodged. Additional measures to prevent access to the risk zone around the hung-up tree must be considered if access on to the site by third parties is to be expected.

34. When working in conjunction with a machine to complete the safe and effective take down of the lodged tree, ensure the estimated weight of the tree is within the capabilities of the machine – this will be a decision taken by the machine operator and **NOT** the chainsaw operator.

As a joint decision between the machine operator and chainsaw operator, determine safe systems of work to sever the hinge and get the tree onto the ground.

Establish:

- a clear sequence of events to be followed by each operator,
- clear and effective communication systems – preferably by voice but hand signals are acceptable if agreed by all in advance.
- clear escape routes and safety zones around the operation taking into account the machine risk zone and or 2 tree length rule for tree felling.

Name:

Checklist verified by:.....

Date:

Further information

This guide is one of a series produced by the Forestry Industry Safety Accord (FISA) in association with the Arboricultural Association (AA).

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Copies of this guide are available as electronic or hard copy via either office or either website shown above. There is also a wide range of additional safety information in relation to forestry on the FISA website and to arboriculture on the AA website.

This guide sets out evidence of good practice for a specific forestry task. Deviation from the guide should only be considered after a full risk assessment has been undertaken by competent persons. Health and safety obligations MUST be met at all times.

THINK SAFE / STAY SAFE

For more general information about health and safety related to tree work, please visit the Health and Safety Executive website: <http://www.hse.gov.uk/treework/index.htm>