

## Further reading

<i>Extraction by skidder</i>	AFAG502
<i>Extraction by forwarder</i>	AFAG503
<i>Extraction by cable crane</i>	AFAG504
<i>Mechanical harvesting</i>	AFAG603
<i>Mechanical roadside processing</i>	AFAG605
<i>Emergency planning</i>	AFAG802
<i>Electricity at work: Forestry and arboriculture</i>	AFAG804
<i>Training and certification</i>	AFAG805
<i>Managing public safety on harvesting sites</i>	978 0 7176 2671 7
<i>First aid at work: Your questions answered</i>	INDG214
<i>Protect your hearing or lose it!</i>	INDG363
<i>PUWER 98: How the Regulations apply to agriculture and forestry</i>	AIS27

These publications are available from HSE Books - see 'Further information'.

## Notes

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## Further information

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**This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.**

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Printed on paper made using 50% recycled fibre from post-consumer sources.

AFAG501

Reprinted 08/08

C25

Printed and published by the Health and Safety Executive



# Tractor units in tree work



## Introduction

This leaflet covers driving tractor base units in forestry operations and other tree work and highlights the machine features and operating requirements. For guidance on specific operations involving tractor base units see AFAG leaflets 502 *Extraction by skidder*, 503 *Extraction by forwarder*, 504 *Extraction by cable crane*, 603 *Mechanical harvesting* and 605 *Mechanical roadside processing*.

You can use this leaflet, along with the manufacturer's handbook, as part of the risk assessment process to help identify the controls to put in place when using tractor base units in forestry and other tree work.

You must also assess the effect of the site and the weather as well as following this guidance.

All operators must have had appropriate training in how to operate the machine and how to carry out the tasks required (see AFAG leaflet 805 *Training and certification*).

## Personal protective equipment (PPE)

- 1 Use the following PPE when driving tractor base units:
  - Safety helmet - complying with EN 397 (to be worn when the risk assessment identifies a need for one).
  - Suitable hearing protection where the 'A-weighted' noise level exceeds 85 dB (see HSE pocket card INDG363 *Protect your hearing or lose it!*).
  - Suitable protective gloves when handling materials such as fuel, ropes or chemicals.
  - Protective boots with good grip and ankle support (complying with BS EN ISO 20345).
  - Non-sag outer clothing appropriate to the prevailing weather conditions.
  - High-visibility clothing, complying with EN 471 (to be worn when the risk assessment identifies that it is needed).
- 2 You will also need:
  - hand-cleaning material such as waterless skin cleanser or soap and water and paper towels;
  - first-aid kits (see HSE leaflet INDG214 *First aid at work: Your questions answered*);
  - an emergency kit for spills of fuel, oil or chemicals.

## General advice

- 3 On all reasonably foreseeable approaches to the worksite, erect warning and prohibition signs conforming to the Health and Safety (Safety Signs and Signals) Regulations 1996, indicating a

hazardous worksite and that unauthorised access is prohibited. In areas of very high public access, your risk assessment may indicate that additional controls (eg barrier tape, barriers, extra manning) are required.

## The machine

- 4 Before starting the job, assess what sort of work is being carried out so that you can identify the type of machine required.
- 5 A rollover protective structure (ROPS) needs to be fitted to protect the operating position if the machine can roll over in use. Seat restraints are required where there is a risk of the operator being injured during rollover.
- 6 A falling object protective structure (FOPS) needs to be fitted, if not incorporated in the design of the ROPS and the machine is used in circumstances where trees, cut timber or other objects can fall onto the operating position.
- 7 An operator protective structure (OPS) needs to be fitted and designed to minimise the risk of injury from objects entering the cab, for example whipping saplings, branches, broken winch lines and chain shot. An OPS can take the form of a framework with mesh grills or bars, safety glazing or polycarbonate. The risk assessment will determine the level of protection required. OPS design should take account of the need for the operator to have good all-round visibility. Doors and windows should not be removed from the machine.

## Features the machine must have

- 8 A power take-off (PTO) shield or fixed cover which also guards the couplings.
- 9 An engine-stopping device (not self-returning), clearly marked with the method of use and purpose, eg pull/stop, readily accessible to the driver from the normal driving position.
- 10 Controls which are clearly marked to show what they do and how they operate.
- 11 All risk zones specified by the machine manufacturer clearly and prominently marked.
- 12 An electricity warning sign prominently displayed in the cab. This should incorporate the maximum machine height in the recommended (non-operational) travelling position plus the maximum working height.
- 13 A hearing protection warning sign displayed in the cab where the noise level inside the cab exceeds 85 dB.
- 14 All dangerous parts guarded.

## Features the machine should have

- 15 A securely mounted, adjustable seat and suitable footrests.
- 16 Suitable mounting step(s) and suitable handhold(s).

- ❑ **17** Windscreen wipers and washers, where a fixed windscreen is fitted.
- ❑ **18** Lights, rear-view mirror, horn and at least one amber warning beacon, if it is to be used on a road outside the worksite to which the public have access.
- ❑ **19** Suitable fire extinguisher(s) which are firmly fixed, regularly serviced and readily accessible.
- ❑ **20** There should be access to an adequate tool kit.

## Fuelling

- ❑ **21** Any spillage of petrol or diesel has the potential to cause environmental harm. An emergency environmental procedure, with appropriate contacts, must be undertaken and followed in the event of a spillage.
- ❑ **22** Use the designated storage area and fuelling point which should be:
  - in a shaded area away from direct sunlight;
  - away from sources of ignition such as fires or cigarettes;
  - away from watercourses or drains;
  - secured and out of public view if possible.
- ❑ **23** Avoid lifting heavy containers. Wherever possible, use pump systems.
- ❑ **24** Do not suspend grab tanks for refuelling. Where gravity feed is required, ensure that grab tanks are placed securely on suitable earth banks or purpose-made stands.
- ❑ **25** Plastic and metal containers must be designed and approved for use with petrol or diesel, clearly labelled and have secure caps.
- ❑ **26** Replace all fuel and oil caps securely and wipe off spillage.
- ❑ **27** Keep fuel from contacting the skin. If fuel gets into the eyes wash out with sterile water immediately and seek medical advice as soon as possible.

## Emergency procedures

- ❑ **28** Ensure that a designated and responsible person knows the daily work programme and agree with them a suitable emergency procedure. Where reasonably practicable use a mobile phone or radio and a pre-arranged call-in system.
- ❑ **29** Ensure the operators can provide the emergency services with enough detail for them to be found in the event of an accident, eg the grid reference, the distance from the main road, the type of access - suitable for car/four-wheel drive/emergency service vehicles. In urban situations street names are essential. Know the location details before they are needed in an emergency. (Also see AFAG leaflet 802 *Emergency planning*.)

## General maintenance

- ❑ **30** Carry out maintenance in accordance with the manufacturer's handbook which should be available.
- ❑ **31** Keep a maintenance record.
- ❑ **32** Choose a level site with good footing.
- ❑ **33** Check the machine has fully stopped and the ignition key has been removed. If appropriate, isolate the electrical system.
- ❑ **34** Put all controls in the neutral position except parking brakes.
- ❑ **35** Secure all parts that could move or fall.
- ❑ **36** Use only the appropriate tools and techniques.
- ❑ **37** Where bolts have to be replaced they must be replaced by the same grade and type of bolt.
- ❑ **38** Do not use your hand to check for hydraulic fuel leaks - use a piece of paper or cardboard. Hydraulic fluid under pressure can penetrate the skin. If such contamination occurs seek medical attention at once.
- ❑ **39** Use axle stands or props when working under any part of the machine which has been raised. Do not rely on the machine's hydraulic system.
- ❑ **40** No procedure should be attempted for which the operator has not been trained.
- ❑ **41** Where there is a risk of falling from the machine, take appropriate measures to ensure operator safety. This can include the use of fall-arrest systems where appropriate.
- ❑ **42** Do not attempt to operate a double acting ram that has a broken pipe. Use other controls to lower the boom to a safe position and release the load if required.
- ❑ **43** Ensure all hydraulic pressure in the systems to be maintained or repaired is released before work starts. Where this it is not possible, ease the residual pressure by careful slackening of joints.
- ❑ **44** Before starting to remove the damaged pipe or hose, switch off the engine, disengage the hydraulic pump and release the hydraulic pressure.
- ❑ **45** Ensure connections are compatible before fitting hydraulic pipes.
- ❑ **46** Always use two spanners to refit a pipe or hose to avoid twisting the hose.
- ❑ **47** Damaged glazing must be replaced by the same grade of glazing - mounted to the original specification.
- ❑ **48** ROPS (ie safety cabs, frames or roll bars) must not be modified, altered or repaired as this may affect their approval or

certification. **Any damaged ROPS must be examined by the manufacturer or their agent before repair or further use.** If the manufacturer or their agent is no longer available, the examination and repair work must be carried out by a qualified engineer. Engineering certification may be required to show that the original cab approval has not been invalidated.

## Before starting

- ❑ **49** Ensure information has been provided about all worksite hazards identified in the risk assessment, and that the control measures are fully understood.
- ❑ **50** Do not allow anyone to ride on the tractor unless legally permitted and on a seat provided for that purpose.
- ❑ **51** Carry out pre-start checks, ensuring that safety guards and attachments are securely fixed in position.

## Machine starting procedure

- ❑ **52** When getting in and out, always face into the cab and use the step(s) and handhold(s) provided. Maintain three points of contact.
- ❑ **53** Do not store any loose objects in the machine cab which could cause injury should the machine tip or roll over.
- ❑ **54** Ensure the parking brake is applied and the gear, hydraulic and power take-off drive shaft (PTO) levers are in the neutral position.
- ❑ **55** Ensure no one will be endangered when the tractor is started.
- ❑ **56** Close the cab doors (if fitted).
- ❑ **57** Adjust the seat to a comfortable working position and fasten the seat restraint.
- ❑ **58** Only start the tractor from the driving seat.
- ❑ **59** Do not run the engine in a closed building without adequate ventilation.

## Driving

- ❑ **60** Do not drive if vision is obscured.
- ❑ **61** Avoid steep side slopes, soft ground and other major obstacles.
- ❑ **62** Where possible, descend straight down the gradient of a slope, rather than driving diagonally across it.
- ❑ **63** Remember, when working across slopes, stones and bumps on the uphill side and holes and dips on the downhill side significantly increase the risk of overturning.
- ❑ **64** Drive with your thumbs outside the rim of the steering wheel.
- ❑ **65** Ensure that independent brake pedals are locked together when independent braking is not required, and at all times when travelling on roads.

- ❑ **66** Engage the differential lock only when wheelspin is anticipated. Disconnect it when this requirement no longer exists.
- ❑ **67** If the machine begins to slide when travelling downhill, steer straight downhill, release the brakes and increase the engine speed gradually until traction is regained. Do not depress the clutch.
- ❑ **68** Do not attempt to jump clear of an overturning tractor fitted with a safety cab/frame - sit tight and stop the engine.
- ❑ **69** Be aware that weather conditions will affect the machine-handling characteristics.

## Parking the tractor

- ❑ **70** Apply the parking brake but be aware that when parking on slopes, the tractor parking brake alone may not be effective. If you have to park on a slope take additional precautions, such as chocking the wheels.
- ❑ **71** Lower all equipment and attachments to a safe position.
- ❑ **72** Immobilise the tractor and remove the keys.

## Mounted and trailed equipment

- ❑ **73** Ensure the tractor unit and any mounted/trailed equipment are in a secure position before attaching/detaching.
- ❑ **74** Ensure the linkage and PTO speed of the tractor unit and equipment is compatible and guarded as necessary.
- ❑ **75** Ensure the PTO is out of gear and the engine is stopped before attaching or removing the PTO shaft, or carrying out any remedial action.
- ❑ **76** Equipment must only be attached to the approved tractor mounting points in accordance with the manufacturer's handbook.
- ❑ **77** Be aware of the potential instability of the combined units when tipping trailers, especially on sloping or soft ground.
- ❑ **78** Beware of overhead electric lines when tipping trailers.

## Fitting and removing bandtracks

- ❑ **79** All equipment used in the fitting operation should be suitable for the job and inspected before use.
- ❑ **80** If two people are involved in fitting the bandtracks, one person (usually the person on the ground) must be in charge of the operation and they must agree a suitable communication system.
- ❑ **81** After fitting the tensioning chains, but before the machine moves, all people in the risk zone must move to a position that is diagonally opposite the bandtrack to be fitted, so that the machine is between them and the chains. Be aware that other systems of tensioning bandtracks that do not involve use of chains are available, and should be used if possible.