

LEVEL 2

**CERTIFICATE OF COMPETENCE
IN
CHAIN SAW AND RELATED OPERATIONS**

ASSESSMENT SCHEDULE

CS30 - MAINTAIN AND OPERATE THE CHAINSAW

This unit covers the regular operator maintenance required for petrol driven chainsaws in workshop and field conditions, including starting procedures and pre-work checks and cross cutting

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NPTC LEVEL 2 CERTIFICATE OF COMPETENCE IN CHAIN SAW AND RELATED OPERATIONS

Introduction

The scheme is administered by NPTC.

NPTC will:

- Publish
 - scheme regulations
 - assessment schedule
 - assessment material
- Approve centres to co-ordinate and administer the scheme
- Set standards for the training of Verifiers and Assessors
- Recruit, train and deploy Verifiers
- Manage verification
- Issue certificates to successful Candidates

The Certificate of Competence/ID Card

Certificates of Competence/ID Cards will be awarded to Candidates who achieve the required level of competence in the Units to which their Certificate relates.

Instruction

Attendance at a course of instruction is not a pre-requisite to an application for an assessment but potential Candidates are strongly advised to ensure that they are up to the standard that will be expected of them when they are assessed.

NPTC does not hold a register of instructors; however instruction will normally be available from recognised training providers and/or centres of further or higher education active in the areas covered by this certificate. Further information on training may be obtained from the local Assessment Centre.

Access to Assessment

Assessment Centres will be responsible for arranging assessment on behalf of a Candidate. Assessment may only be carried out by an Assessor approved by NPTC for that scheme. Under no circumstances can either instructors involved in the preparation of candidates, or the candidates work place supervisors, or anyone else who might have a vested interest in the outcome, carry out the assessment.

The minimum age limit for Candidates taking certificates of competence is 16 years. There is no upper age limit.

Assessment

Assessment is a process by which it is confirmed that the Candidate is competent in the Units within the award to which the assessment relates. It is a process of collecting evidence about his/her capabilities and judging whether that evidence is sufficient to attribute competence.

The candidate must be registered through an NPTC approved Assessment Centre for this qualification prior to assessment.

The schedule of assessment contains the criteria relating to:

- Observation of practical performance
- Assessment of knowledge and understanding

When all the criteria within the Units for which assessment has been sought have been completed the result(s) will be recorded on the Candidate Assessment Report Form(s).

Performance Evaluation

At the Assessment the Assessor will evaluate each activity against the following criteria:

- 4 = Exceeds the requirements of the assessment criteria for both the practical performance and the underpinning knowledge, with no 'critical' faults. Delivering a safe, polished, efficient, unsupervised performance of the practical skill.
- 3 = Satisfies the requirements of the assessment criteria for both the practical performance and the underpinning knowledge, with no 'critical' faults. Candidate has sufficient fluency to perform the task safely, unaided and unsupervised.
- 2 = Does not fully satisfy the requirements of the assessment criteria. Candidate required some support or excessive time to perform the task satisfactorily and/or potentially causes a "critical fault". Weaknesses in performance exceed strengths.
- 1 = Does not satisfy the requirements of the assessment criteria. Candidate is unable to demonstrate sufficient skill or underpinning knowledge and weaknesses in performance substantially exceed strengths and/or causes a "critical fault".

A list of registered Assessment Centres is available from NPTC. (www.nptc.org.uk)

Verification

Verification is a process of monitoring assessment; it is an essential check to confirm that the assessment procedures are being carried out in the way that NPTC has laid down. The overall aim of verification is to establish a system of quality assurance that is acceptable in terms of both credibility and cost effectiveness.

Approved Assessors will be subject to a visit by the Verifier at a time when assessments are being undertaken.

A selection of assessment reports completed by the assessor will be evaluated by NPTC.

Compliance with the verification requirements is a pre-requisite for Assessors remaining on NPTC's list of approved assessors.

Safe Practice

At all times during the assessment, the chainsaw and other equipment must be operated in a safe manner in accordance with industry best practice, whatever the task being carried out.

1. Assessors must hold a current 'First Aid at Work' Certificate.
2. It is strongly recommended that Candidates hold at least a recent, recognised 'Emergency First Aid' Training Certificate.
3. All chain saws used in the assessments must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301 in terms of safety features, and be a model and size suited to the task(s) required.
4. Recommended guide bar lengths should be observed, although variations may be accepted at the discretion of the Assessor where this is appropriate to the task.
5. Candidates should be familiar with the saw that they are going to use.
6. A spare working chainsaw must be available.
7. Appropriate Personal Protective Equipment (PPE) must be worn at all times. All PPE used must comply with AFAG Safety Guides 301, 401, 801, Health and Safety Executive publications and current legal requirements in terms of specification and use.
8. A First Aid kit meeting current regulations, of the appropriate size for the number of persons on site, must be available.
9. The candidate must be equipped with a personal first aid kit.
10. The Assessor must ensure a Risk Assessment has been carried out, and sufficient control measures implemented. In particular, the location of the site and weather conditions should be assessed, details of access, etc, which may be required by emergency services must be noted, as well as the nearest Accident and Emergency Hospital Unit. The means of contacting the emergency services must be established. Manual handling techniques must comply with current legislation.
11. Any necessary permissions must have been granted, and notifications made as appropriate: (e.g. Local Planning Authority, Forestry Commission, Forest Enterprise, Highways Authority, Private owners, Statutory undertakers, Police, etc).
12. All equipment being used for this assessment must comply with relevant requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998.
13. Information may be sought from the relevant operator manuals or any other appropriate training or safety publication.
14. The current Regulations for transport, handling and storage of fuel and oils must be complied with.
15. Provision must be made to avoid the risk of environmental pollution.
16. It is the responsibility of the Assessor and the Candidate to ensure that any additional requirements and provisions are met as relevant to this qualification.

If these conditions are not observed this may result in the Candidate not meeting the required standard.

Complaints and Appeals

NPTC and its Assessment Centres have a formal Complaints and Appeals procedure. In the event of a any dissatisfaction with the arrangements and conditions of assessment, the candidate should first contact the Assessment Centre through whom the assessment was arranged and submit the complaint in writing.

For further information on NPTC's Equal Opportunities Policy and Complaints and Appeals Procedures, please refer to www.nptc.org.uk

CS 30 – Maintain and Operate the Chainsaw

Learning Outcomes

The candidate will be able to:

1. Identify, inspect and comment on key parts of the chain saw
2. Prepare the chain saw for work safely without risk to themselves, other people or the environment
3. Carry out daily and routine maintenance on the chain saw
4. Operate the chainsaw safely and effectively and comfortably in accordance with the practical risk assessment
5. Operate the chainsaw safely without risk to themselves, other people and the environment
6. State the identified knowledge that underpins understanding of operating a chainsaw
7. Identify the risk assessment and emergency procedures on a work site

The assessment is divided into 2 compulsory units

- Unit 30.1 Maintenance of the Chainsaw
- Unit 30.2 On-site preparation and basic crosscutting

Candidates must successfully achieve all Assessment Activities unless otherwise specified.

Assessment and site requirements:

- The assessment for unit 30.1 should ideally be undertaken under workshop conditions. Maintenance of the saw can be completed at the work site, if the saw can be held securely for sharpening and the assessment can be conducted effectively without compromising other site work activities
- The candidate should be equipped with a chainsaw appropriate to their normal working environment in good condition with a maximum recommended guide bar length of 380mm (15") for Unit 30.1.
- The candidate should be equipped with the correct tools, equipment, product and maintenance manuals appropriate to the model of the saw to enable the chainsaw to be maintained and used in accordance with the manufacturers guidance.
- The candidate should be equipped with sufficient fuel and oil, appropriate to the make and model of the chainsaws, for the assessment for unit 30.2.
- Warning signs must be erected as appropriate to risk assessment.
- Sufficient timber of suitable dimensions and finish appropriate to the candidates normal working environment should be available to allow the minimum 10 cuts to be completed safely and the cut produce stacked accordingly.
- The length and weight of the timber must be sufficient to exert tension and compression forces, which has the potential to trap the saw.

Unit 30.1: Maintenance of the chainsaw

ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Observe safety precautions and wear appropriate PPE	Unless otherwise stated in manufacturers handbook or operator manual, PPE should include: <ul style="list-style-type: none"> - Safety boots - Work gloves - Eye protection for airline use - Washing facilities in case of petrol/oil contact with skin. - All debris resulting from cleaning operations is correctly disposed of
2. Demonstrate knowledge of what is involved in a Risk Assessment	Risk Assessment must be specific to <ul style="list-style-type: none"> - Site - Task - Machine Risk Assessment must contain: <ul style="list-style-type: none"> - Identified hazards - Evaluated risk - Control measures to be implemented - Emergency procedures - Risk Assessment must be communicated to operator
3. Demonstrate knowledge of Emergency Procedures planning.	<ul style="list-style-type: none"> - OS map Grid Reference - Location name - Designated meeting place - Nearest main road junction - Nearest accident and emergency hospital phone number - Type of access - Public road - 4x4 vehicles - Suitable air ambulance landing area - Own contact telephone number
4. Demonstrate knowledge of advantages of maintenance under workshop conditions	<ul style="list-style-type: none"> - More accurate sharpening is achieved - Variable cutter length can be corrected accurately using callipers - Benches, vices, better lighting available to allow more thorough checks to be made - Availability of tools, spare parts, cleaning facilities for more extensive repair. - Safe, comfortable working environment - Chain held firmly permitting accurate filing
5. Identify and explain the function of the safety features of the chainsaw	<ul style="list-style-type: none"> - Positive clearly marked on/off switch - Front hand guard/manual or inertia chain brake - Head/eye/ear defender symbol - Safety throttle - Chain catcher - Rear hand guard - Anti-vibration mounts - Exhaust directing fumes away from operator - Chain cover - Chain type/low vibration/guard link - Optional heated handles to reduce the risk of Hand Arm Vibration Syndrome (HAVS)
6. Identify component parts of the chain and state their function	Drive link <ul style="list-style-type: none"> - Straight back of link driven along by sprocket - Shape and profile of tang must be maintained to clear bar groove of debris and carry oil along the bar - The gauge must match the thickness of the bar groove Tie strap and rivets <ul style="list-style-type: none"> - Hold chain components together and rivets provide flexibility and act as bearings Cutters <ul style="list-style-type: none"> - Can be obtained in a variety of shapes for different applications - Depth gauge regulates the amount of wood the cutter contacts, and are sometimes ramped to act as guard link Guard links <ul style="list-style-type: none"> - Smooth out cutting action of the chain - Reduce potential for kick back - Reduce vibration

ASSESSMENT ACTIVITES	ASSESSMENT CRITERIA
<p>7. Demonstrate knowledge of information required to select a replacement chain for a given saw</p>	<ul style="list-style-type: none"> - Chain pitch - Gauge/thickness of drive links - Number of drive links/chain/bar length - Cutter type
<p>8. Sharpen chain in accordance with manufacturers information</p> <p>Demonstrate knowledge of reasons for chain maintenance taking into account:</p> <p>Filing angles</p> <p>Cutter length</p> <p>Depth gauge setting</p>	<ul style="list-style-type: none"> - Identify correct sharpening angles and file size - Check chain for damage and select 1st cutter to sharpen - Chain secured in chain vice or on bar in bench vice(ensuring correct chain tension) or timber vice - Cutters sharpened using file of correct size with handle fitted - Top and side plate angles maintained - Consistent length of cutters maintained - Burrs removed if applicable - Height and profile of depth gauges maintained <ul style="list-style-type: none"> - Enhances cutting performance - Working corner must be properly sharpened <ul style="list-style-type: none"> - Cutter length directly affects cutter height <p>Variations can lead to:</p> <ul style="list-style-type: none"> - Increased vibration - Reduced efficiency - Saw not cutting in straight line - Increased risk of kick back - Uneven wear of bar <ul style="list-style-type: none"> - Reduces risk of kick back - Reduces risk of chain breakage - Reduces chain vibration and thus the risk of 'White Finger' - Reduces excessive wear on chain components - Achieves optimum cutting speed
<p>9. Demonstrate knowledge of effects of incorrect chain tension</p>	<p>Chain too tight:</p> <ul style="list-style-type: none"> - Wear on bottom of tie straps and cutter body - Slow pick-up on acceleration - Power loss on small engine saws - Damage to sprocket and bearings - Over heating bar and chain - Excessive wear on bar and rails <p>Chain too slack:</p> <ul style="list-style-type: none"> - Wrong cutting angle - Excessive vibration - Increased risk of chain derailing - Wear on rivets and heel - Excessive wear between bar rails - Increased wear at topside of bar on entry and underside of bar at nose sprocket - Chain creep at tickover
<p>10. Maintain guide bar</p> <p>Demonstrate knowledge of reasons for maintaining guide bar</p>	<ul style="list-style-type: none"> - Identify uneven and damage rails and correct - Bar groove depth checked - Blueing and cracking identified and commented on - Burrs removed correctly - Groove and oil holes cleared correctly - Nose sprocket greased if applicable - Straightness of bar checked and commented on - Bar turned to reduce wear <ul style="list-style-type: none"> - Reduce vibration and allow straight cutting - To prevent burr formation - Prevent over-heating - Allow lubrication of chain - Reduce sprocket wear - Bar turned to maintain even wear

ASSESSMENT ACTIVITES	ASSESSMENT CRITERIA
11. Demonstrate knowledge of air filter maintenance	<ul style="list-style-type: none"> - Filter prevents debris entering carburettor and needs to be clean to maintain air/fuel ratio and therefore performance - Filter cleaned using brush or washed in water with detergent then dried - Excess debris removed from around filter prior to removal - Filter removed, protecting carburettor - Filter maintained appropriate to condition - Filter refitted correctly
12. Clean power unit/covers and inspect for damage	<ul style="list-style-type: none"> - Debris removed from fins/air intake - External screws, nuts and bolts present and secure
13. Maintain chain brake mechanism Demonstrate knowledge of replacement procedure	<ul style="list-style-type: none"> - Clear debris from chain brake mechanism/clutch housing. - Chain brake band checked for wear and commented on - Replace the whole unit or band in accordance with manufacturers instruction - If damaged and repair not possible label saw 'not to be used defective chain brake'
14. Demonstrate knowledge of sprocket types and replacement procedure for relevant saw type	<ul style="list-style-type: none"> - Rim sprocket - Spur sprocket - Ideal ratio: 1 sprocket to 2/3 chains <p>In board clutch:</p> <ul style="list-style-type: none"> - Remove retaining clip - Dismantle sprocket assembly - Sprocket checked for wear and comment made on condition <p>Outboard clutch:</p> <ul style="list-style-type: none"> - Remove spark plug - Engage piston stop - Unscrew clutch weights according to manufacturers guidance - Sprocket checked for wear and comment made on condition <ul style="list-style-type: none"> - Needle bearing lubricated in accordance with manufacturers guidance
15. Reassemble chain, bar and side plate Tension chain	<ul style="list-style-type: none"> - Chain and bar refitted to power unit - Ensure tensioning mechanism correctly located - Side plate fitted and nuts hand tightened - Final tension confirmed and side nuts tightened
16. Service the spark plug	<ul style="list-style-type: none"> - Engine cover and spark plug removed - Plug cleaned or replaced as necessary - Wear/damage assessed visually - Gap size is checked and set if necessary <ul style="list-style-type: none"> - If fuel rich, dark brown to black - If fuel starved, light brown to white
17. Service recoil starter mechanism	<ul style="list-style-type: none"> - Starter cover removed and air holes cleared - Cord inspected for wear - Cord and coil spring released and re-tensioned - Pull toggle checked for security <ul style="list-style-type: none"> - Slack spring cord does not fully retract - Over tight spring binds before cord fully extended <p>Cord wears at:</p> <ul style="list-style-type: none"> - Base of toggle - At attachment to pulley wheel
18. Demonstrate knowledge of fuel/ oil filter maintenance	<ul style="list-style-type: none"> - Fuel cap removed - Filter located and removed from tank using appropriate tool - Condition of filter determined - Cleaning procedures using non flammable detergents followed by rinsing and drying or replacement as appropriate <ul style="list-style-type: none"> - Drain tank - Flush with appropriate solvent

Unit 30.2: On-site preparation and basic cross cutting

ASSESSMENT ACTIVITIES		ASSESSMENT CRITERIA
1.	Demonstrate knowledge of the safety clothing to wear when using the chainsaw	The PPE as stated in the AFAG safety guide should include: <ul style="list-style-type: none"> - Chainsaw boots - Chainsaw gloves - Head, ear and eye protection - Chainsaw trousers - Non-slag outer clothing - Personal first aid kit
2.	Demonstrate knowledge of safe lifting and handling practices	<ul style="list-style-type: none"> - Use aid tools such as timber tongs - Use safe lifting techniques - Pivot loads rather than carry them - Move the lightest pieces to the heavy pieces - Drag, roll, move end over end
3.	Demonstrate knowledge of 'reasonable' precautions necessary when organising a work site	<ul style="list-style-type: none"> - Relevant authorities informed about work - Warning signs erected - Exclusion zone set up - Safe working distance of 5 metres or twice the length of the longest product, whichever is the greatest, is maintained - All operators to carry whistle to raise the alarm in the event of an accident - Suitable first aid kit available
4.	Demonstrate knowledge of the requirements when selecting an appropriate re-fuelling site	An appropriate site would be: <ul style="list-style-type: none"> - A safe distance from buildings - In a shaded area away from work and equipment - A safe distance from any source of ignition - Away from a main fuel store - A position selected to minimise damage to the environment
5.	Demonstrate knowledge of the environmental health considerations affecting the selection of lubricants	<ul style="list-style-type: none"> - High quality 2 stroke oil produces less smoke and affords better lubrication - Vegetable chain oils are not toxic to the operator or plants and pose less of a hazard to the environment
6.	Demonstrate knowledge of the needs for a correct fuel mix	<ul style="list-style-type: none"> - Prevents overheating and engine seizure - Prevents poor performance due to an oil rich mix and smoke
7.	Demonstrate knowledge of the safety considerations when selecting a site for starting a chain saw	<ul style="list-style-type: none"> - Chainsaw being clear of obstructions - Chainsaw to be clear of people by 5 metres - Selection of level area free of objects which could catch the chain - Chainsaw being a safe distance from fuelling point
8.	Demonstrate knowledge of reasons for maintaining correct stance	<ul style="list-style-type: none"> - Reduce the risk of overbalancing - Ensure legs and feet are clear of the chain - Ensure the chainsaw base is stable during the starting procedure - Reduces the risk of muscular/skeletal injury
9.	Check chainsaw for condition and pre-use operational safety	<ul style="list-style-type: none"> - Chain tension checked - Safety features checked and condition assessed - External nuts and bolts checked for security - Chainsaw contains sufficient fuel and chain oil for operations
10.	Start chainsaw from cold	<ul style="list-style-type: none"> - Remove chain cover - Place saw on ground - Ensure no debris can catch chain - Secure rear handle - Engage half throttle - Engage choke - Apply decompressor (if appropriate to saw) - Switch saw on - Ensure chain brake set according to manufacturers instructions - Find compression - Pull starter cord sharply and firmly - Choke released when engine fires. - Half throttle released when engine runs

ASSESSMENT ACTIVITES	ASSESSMENT CRITERIA
11. Demonstrate knowledge of alternative starting procedure when warm starting and where conditions are unsuitable for ground start	<ul style="list-style-type: none"> - Remove chain cover - Control set - Chain brake applied if appropriate - Rear handle of saw gripped firmly between legs - Front handle held firmly - Compression found - Starter cord pulled sharply and firmly
12. Check operational safety of chain saw	<ul style="list-style-type: none"> - Ensure chain lubrication functioning - Ensure chain brake functions by completing chain brake test in accordance with manufacturers instruction - Chain stationary at tick over - On/off switch functions
13. Demonstrate knowledge of actions to take if operational safety checks indicate incorrect saw preparation	<ul style="list-style-type: none"> - The chain creeps around the bar without throttle application - The engine stalls, does not tick over - Check the tank has oil - Remove the bar and check the oil holes and guide bar groove are clear of debris - Adjust the oil flow if appropriate - Apply the chain brake - Close the choke - Turn off saw - Check mechanism correctly aligned and brake band is intact - If still defective, Label saw 'Do Not Use' and arrange for repair - Repair or replace
14. Demonstrate knowledge of: The terms 'tension' and compression' The procedure for removing trapped saw	<p>Tension:</p> <ul style="list-style-type: none"> - Found on the outside edge of strained timber and when cut into the cut opens <p>Compression:</p> <ul style="list-style-type: none"> - Found on the inside edge of strained timber and when cut into the cut closes - Switch off engine and/or apply chain brake - Lever the timber to open the cut - Withdraw the saw - Use another saw to free the trapped saw cutting the timber at least 300mm (12") from the trapped saw
15. Demonstrate knowledge of chain brake use during cross cutting operations	<ul style="list-style-type: none"> - When walking with the engine running - If the saw has to but put down whilst moving cut material - Before taking a hand off the saw
16. Demonstrate knowledge of symptoms associated with poor cutting performance	<ul style="list-style-type: none"> - Wood dust being produced by blunt saw - Fine chips produced if depth gauges not lowered - Saw may cut in a curve if teeth are different lengths or blunt on one side - Vibration (or kick back) during cutting because of poor sharpening angles and/or too low depth gauge setting
17. Crosscut timber in accordance with site requirements using cuts appropriate to the size and type of timber and site conditions	<ul style="list-style-type: none"> - Safe stance - Bar aligned to maintain accuracy - Head out of line of chain - Use of throttle to cut safely and efficiently - Cutting techniques employed to complete severance of timber - Sequence of cuts to prevent saw becoming trapped - Tension and compression cuts should meet - Chain brake used appropriately - Aid tools used correctly and when appropriate - Products moved efficiently and ergonomically - Site left safe and clear of debris. - Saw switched off and left in safe position, bar cover replaced