

Woodchippers

Safe operation and maintenance

TOWABLE • TRACKED • PTO POWERED



Prepare the site and understand the controls before starting.

Illustrated learner workbook

Common operating principles, maintenance variations and practical records

Learner name

Course date

Your learning route

Use the lessons with supervised practice and the instructions for the actual machine. Complete the checks and learning spaces as you work through the course.

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Using the illustrations

The cartoons explain common arrangements and safe working principles. They are not engineering drawings or a procedure for a particular machine. Controls, access methods, torques, clearances and service intervals must be confirmed from its current instructions.

Record what you learn

Use the writing spaces to explain decisions and record actual settings. Try the knowledge questions before reading the answers, and discuss practical tasks with your instructor.

01 INTRODUCTION AND MACHINE TYPES

Working safely with woodchippers

A woodchipper pulls, cuts and throws material with enough force to cause fatal injury. Safe work depends on the whole job: choosing a suitable machine, preparing the site, checking protection, controlling feeding and isolating every source of energy before access. A stopped feed roller does not mean the cutting rotor has stopped.

What you will learn

- Plan the work, protect other people and agree an effective emergency response.
- Recognise the components, controls and protection fitted to the machine you will use.
- Complete pre-start checks, identify defects and carry out authorised routine maintenance.
- Explain blade types, safe blade replacement, anvil clearance and torque requirements.
- Set up, operate, shut down and transport towable, tracked or PTO-powered equipment within its limits.

Using this workbook

The lessons explain common principles and the important variations found on small and medium hand-fed woodchippers. Use them alongside supervised practical training and the current operator manual for the actual machine. Read its identification plate and confirm that the instructions cover its serial number and fitted equipment.

Only undertake tasks for which you have been trained, found competent and authorised. A general operating course does not automatically authorise blade grinding, hydraulic repairs, electrical fault-finding or tractor driving. Mechanically fed chippers, whole-tree processing and combined machine operations require additional planning and training.

Apply it What type of chipper will you use, and which tasks are you authorised to carry out?

01 INTRODUCTION AND MACHINE TYPES

Recognise the main arrangements



Towable

Tracked

PTO powered

The carriage and power source change the setup and transport checks.

Arrangement	What changes for the operator
Towable	Coupling, brakes, tyres, lights and towing limits; stable parking and any turntable or hopper transport locks.
Tracked	Travel controls, visibility, slope limits, track condition and loading onto a suitable transport trailer.
PTO powered	Tractor compatibility, three-point linkage or drawbar connection, correct shaft speed and complete shaft guarding.

A separate engine may be petrol or diesel. Cutting may use a disc, drum or another approved cutter arrangement. Material may be drawn by powered rollers or a self-feeding cutting action. Do not assume that all machines have reverse, automatic feed control or the same emergency stop arrangement.

Apply it Find two differences between the training machine and one you have used before.

01 INTRODUCTION AND MACHINE TYPES

Get familiar before starting

Walk around the machine with the instructor while it is shut down. Locate the controls from the normal working position, then identify how to stop feeding, stop the power unit and prevent restart. Practise the actions without putting any part of your body into the hopper.

Locate in the manual	Confirm on the machine
Identification and intended use	Correct instructions, permitted material and maximum feed dimensions.
Operating controls	Start, speed, feed, reverse where fitted, protective stop, emergency stop and reset.
Working limits	Ground conditions, gradients, discharge arrangements and exclusion requirements.
Maintenance information	Isolation points, service schedule, lubricant grades and access arrangements.
Cutting assembly	Knife specification, fastener instructions, torque, clearance and wear limits.
Transport information	Mass, attachment points, coupling or track loading instructions and securing positions.

Before accepting a hired or shared machine

Check its condition, instructions, recent maintenance and outstanding defects. Ask for a proper handover. A different control layout, missing label or unexpected modification is a reason to stop and seek clarification before use. Never copy another operator's button sequence without checking what each control does.

Apply it Record the stop and isolation controls and the location of the operator manual.

02 LEGISLATION AND DUTIES

Know who is responsible

In Great Britain, the Health and Safety at Work etc. Act 1974 requires employers to protect employees and others affected by their work, so far as reasonably practicable. Workers must take reasonable care, cooperate and use safeguards properly. Contractors also have duties; hiring a machine or holding a certificate does not transfer responsibility for planning the job.

Role	Practical responsibility
Employer or contractor	Provide suitable equipment, competent people, instruction, supervision, maintenance, welfare and emergency arrangements.
Site controller	Explain access restrictions, services, nearby work and site hazards; coordinate contractors and the public.
Supervisor	Confirm the method, roles, communication, equipment condition and response to change.
Operator	Complete checks, use the agreed method, protect others and stop and report defects.
Assistant	Prepare and present material without crowding the feeder; keep routes clear and respect signals and exclusions.

Training and authorisation

Training must match the tasks and equipment. Familiarisation is needed when controls or operating arrangements change. Young, new or inexperienced workers need particular attention to ability, supervision and restrictions. No one should operate while affected by alcohol, drugs, fatigue or illness that makes the task unsafe.

Apply it Who is responsible for deciding that the machine and site are ready today?

HSE guidance on work equipment duties

02 LEGISLATION AND DUTIES

Turn legal duties into controls

Requirement	Action on a woodchipping job
Management Regulations 1999	Assess significant risks, organise safe work, brief the team and review the plan when conditions change. Record significant findings where legally required; use a written site plan for training.
PUWER 1998	Use suitable, maintained equipment with effective guards and controls. Provide training and inspections appropriate to deterioration and risk. Keep an existing maintenance log up to date.
PPE Regulations 1992 as amended	Assess and provide suitable PPE without charging eligible workers; maintain it and explain use. The 2022 amendment extended duties to relevant limb (b) workers.
COSHH 2002	Assess and control exposure to dust, exhaust, fuels, oils, cleaners and biological contaminants. Provide washing and suitable protective measures.
Noise at Work Regulations 2005	Reduce noise exposure, assess daily exposure and provide hearing protection and health surveillance where required.
Manual Handling Regulations 1992	Avoid unnecessary handling; assess what remains and reduce loads, reach, twisting and repetition.
First-Aid Regulations 1981	Provide trained people, equipment and arrangements suited to the site and likely injuries.

Safety signs support a safe system but do not replace barriers, guarding or supervision. Highway work, transport, environmental controls and any lifting operation may bring additional duties. Agree those arrangements before work starts.

HSE PPE duties and the 2022 changes

02 LEGISLATION AND DUTIES

Checks inspections and records

A pre-use check, a planned service and a formal equipment inspection serve different purposes. A quick walkround cannot establish the condition of hidden safety-critical components. Equally, a recent service does not excuse a missing guard found this morning.

Record	What it should show
Pre-use check	Machine identity, date, hours, operator, checks made, defects and decision to use or isolate.
Maintenance and repair	Work completed, parts and settings used, person responsible and next scheduled work.
Equipment inspection	Scope, findings, action required and confirmation by the appropriate competent person.
Handover	Restrictions, outstanding faults, service status and information needed by the next user.
Incident or near miss	What happened, immediate controls, who was informed and action to prevent repetition.

Act on a defect

Stop, isolate and label unsafe equipment. Tell the responsible person and prevent another operator taking it into use. Only an authorised person should release it after the defect has been corrected and the required checks completed. Do not bridge a switch or tie a stop bar out of the way to finish a job.

Incident reporting

Report injuries, dangerous events and near misses through the workplace system. The responsible person must consider RIDDOR 2013 reporting duties, including specified injuries, over-seven-day incapacity, occupational disease and prescribed dangerous occurrences. Not every near miss is reportable to HSE, but each can reveal a serious weakness in the work method.

Apply it A stop bar works only sometimes. What happens to the machine and its keys?

03 RISK ASSESSMENT AND SITE PLANNING

Assess the actual job

A hazard can cause harm. Risk considers how likely that harm is and how serious it could be. Look at the task, people, machine, material, ground and surrounding activities together. “Wear PPE” alone does not control someone being pulled into a chipper.

Step	What to do
Identify hazards	Walk the work area and transport route. Check branches, machinery, services, traffic, people and ground.
Identify people at risk	Include the team, other contractors, drivers, visitors and the public. Consider how they might approach.
Choose controls	Avoid or remove hazards first; use suitable equipment, guarded systems, separation and a safe method. Use PPE for remaining exposure.
Record and brief	State the significant hazards, controls, roles, stop signal and emergency arrangements. Confirm understanding.
Review	Reassess after relocation, changing material, new people, worsening weather, a defect or an incident.

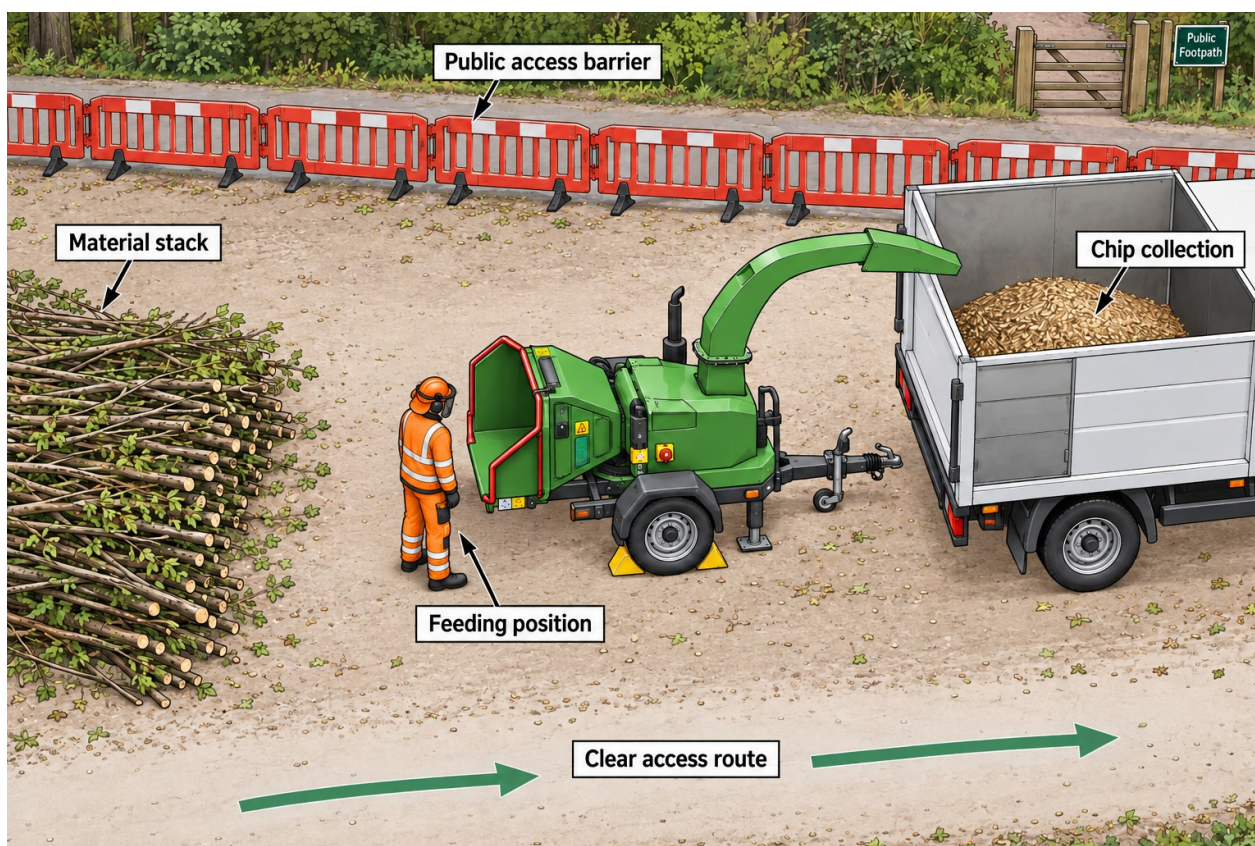
Worked example

A public path runs beside the proposed infeed area. Walkers could be struck by moving branches or enter the feed zone. Move the chipper and branch stacks away from the path where possible; agree lawful access controls, barriers and supervision. Direct discharge away and stop if access cannot be controlled. A warning sign alone is insufficient.

Apply it Write one hazard, who could be harmed, the control and the point at which you would stop.

03 RISK ASSESSMENT AND SITE PLANNING

Arrange the work area



Separate material handling, feeding, discharge and public access. Adapt the layout to the site.

- Choose firm, stable ground with safe footing at the hopper; avoid feeding from a bank or steep slope.
- Provide working space for long branches and room to move away from a swinging butt.
- Keep the discharge zone clear and direct chips into a suitable collection area or vehicle.
- Set the exclusion distances from the manual and site assessment; increase them for ricochet, wind or poor visibility.
- Keep access to controls, first aid, fire equipment and the escape route clear.

Plan the movement of the chip vehicle separately. Stop feeding before anyone enters its loading area or changes its position. Recheck the chute and exclusion area after repositioning. Never stand in a chip body while it is being filled.

Apply it Mark the feeder position, branch stack, discharge zone and emergency access on your site plan.

03 RISK ASSESSMENT AND SITE PLANNING

Protect the public and other workers

Consider every foreseeable approach, including footpaths, woodland tracks, buildings and vehicle access. Use signs that can be understood before someone reaches danger. Where necessary, use physical barriers and an agreed lookout position with reliable communication. Stop whenever separation is lost.

Roadside work

Arrange the necessary permissions and a suitable traffic management plan before placing equipment on or beside a road. Only competent people should establish traffic controls. Keep the operator and branch handling on the protected side where the machine permits, and keep chips, dust and branches off the carriageway. Do not improvise a lane closure.

Services and nearby operations

- Check overhead lines against the maximum raised chute, plant and branch reach; obtain the network operator's advice where work could approach them.
- Avoid placing stabilisers, ramps or machines over weak covers, drains or buried services.
- Keep chipping separate from felling, chainsaw work and moving plant unless a coordinated system controls all interacting risk zones.
- Do not operate an engine where exhaust can accumulate in a building, covered loading bay or poorly ventilated enclosure.

Wind can move discharge and dust beyond the original zone. Rain, ice, heat and fading light affect footing, visibility and concentration. Stop or relocate when the planned controls no longer work.

Apply it What change would make today's public protection arrangements ineffective?

04 PPE AND HEALTH

Choose and check protection



Protection must fit, work together and avoid snagging on material.

Use suitable eye and face protection, hearing protection, close-fitting work clothing, gloves with snug cuffs, and safety footwear with grip and ankle support. Wear head protection where the risk assessment or machine instructions require it. Choose fitted high-visibility clothing for the traffic and site risks.

A mesh visor does not stop fine dust or every small fragment; choose compatible eye protection for the exposure. Secure long hair and remove loose jewellery, scarves, cords and dangling straps. Keep glove cuffs tucked or closely secured. Gloves cannot stop entanglement or protect against a moving cutter.

Apply it Check your PPE fit and condition before the practical session.

04 PPE AND HEALTH

Control noise dust and fumes

Noise

Reduce exposure by maintaining the machine, keeping cutters effective, choosing the work position and planning time at the task. Noise figures in a manual describe test conditions; actual exposure also depends on material, duration and other equipment. Hearing protection must provide suitable attenuation while allowing the agreed signals to be understood.

The lower and upper daily or weekly noise exposure action values are 80 and 85 dB(A). The exposure limit is 87 dB(A), taking hearing protection into account. These are exposure values, not a rule that every brief reading below a number is safe. The employer must assess exposure and arrange the required controls and health surveillance.

Dust and bioaerosols

Keep people out of the discharge plume, choose a position that avoids blowing dust toward the team and use practical dust controls. Dry or mouldy material may produce substantial dust and biological particles. Avoid shaking or blowing deposits into the air. RPE, where required by the assessment, must be suitable for the hazard; tight-fitting RPE needs face-fit testing and an effective seal.

Fumes and substances

Run engines in adequately ventilated outdoor positions. Keep exhaust away from people and enclosed spaces. Use suitable containers and the safety information for fuels, oils and cleaners. Wash contaminated skin and change soaked clothing; do not clean hands with fuel.

Apply it Which control reduces exposure before you rely on PPE?

HSE noise exposure limits

04 PPE AND HEALTH

Handling hygiene and fitness

Handle branches without fighting them

Arrange the stack so butt ends are easy to reach. Reduce the size or weight away from the chipper where necessary, use mechanical aids or an agreed team lift, and avoid long carries and twisting. Never hold on and compete with the feed rollers once material is gripped. Stop and reorganise when fatigue changes your footing or grip.

Look after your health

- Take suitable breaks and drink regularly; adjust the work rate for heat, cold and heavy clothing.
- Cover cuts, wash before eating or drinking and keep food away from contaminated work gloves.
- Avoid direct contact with animal urine, stagnant water and sharp contaminated waste.
- Check for ticks after outdoor work and obtain appropriate medical advice about bites, rashes or illness.
- Identify hazardous plants and irritant material before handling; obtain a suitable control plan.
- Report persistent ringing in the ears, skin problems, breathing symptoms, pain or numbness early.

Communication and readiness

Agree a stop signal that works with hearing protection and engine noise. Never distract a person who is feeding. Keep phones and loose communication leads secured. Tell the supervisor if illness, medication, poor sleep or stress affects safe participation, and change the task if necessary.

Apply it How would you reorganise a pile of awkward heavy branches to reduce handling?

05 EMERGENCIES

Stop and make the scene safe

Know the fastest effective stop action from the feeding position before the machine runs. Protective feed controls may stop rollers while the rotor continues. The engine stop, emergency stop and PTO disengagement may act differently. Demonstrate the actual controls and the effect of each during familiarisation.

If someone is caught or injured

- Raise the alarm and operate the appropriate stop immediately without entering the danger area.
- Stop and isolate the power source, prevent restart and wait for dangerous movement to cease.
- Call 999 or 112, give the location and explain that machinery and a trapped casualty may be involved.
- Keep others away. Do not reach in, remove guards, pull the casualty or restart or reverse the machine as an improvised rescue.
- Follow the emergency services' instructions and the planned rescue arrangements. Give first aid only where it is safe and within your training.

Fire or fluid injection

For fire, stop and withdraw, raise the alarm and call for help. Use an appropriate extinguisher only if trained, the fire is small and an escape route remains clear. For suspected high-pressure fluid injection, obtain immediate emergency medical treatment and tell clinicians what fluid was involved, even if the puncture looks minor. Do not wait for pain or swelling.

Apply it Demonstrate the stop action from each normal working position without starting the machine.

05 EMERGENCIES

Prepare an emergency plan

Test the plan before work. A phone without signal, a locked gate or an inaccurate location can turn a treatable injury into a much more serious event. Everyone should know the arrangements, including the assistant and relief operator.

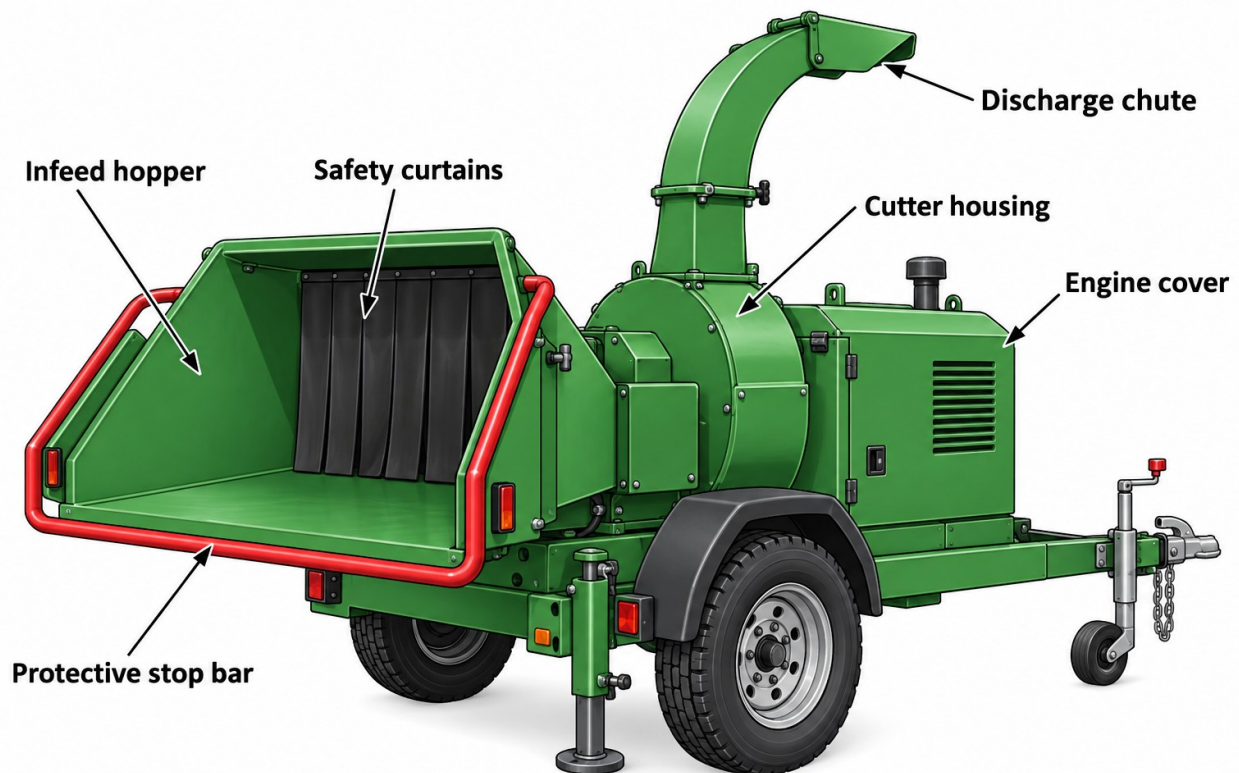
Confirm	Record for this site
Location	Site name, address, grid reference or coordinates and a clearly identifiable meeting point.
Access	Route suitable for emergency vehicles, gates, keys and restrictions.
Communication	Charged phone or radio, tested coverage and a backup method.
People	First-aider, caller, person meeting emergency services and person controlling access.
Equipment	Suitable first-aid kit, personal provision, fire equipment, spill kit and accessible stop controls.
Contact	Supervisor or responsible person who knows the programme and expected return or check-in.

First-aid needs depend on the work and remoteness. Arrange competence and equipment for severe bleeding and delayed assistance where relevant. Maintain access throughout the task and review the plan when the machine moves. Do not rely on an assistant who has not been briefed.

Apply it Record the emergency location, access route and who will make the call.

06 COMPONENTS AND SAFETY CONTROLS

Follow material through the machine



External guards remain fitted during operation. This drawing identifies the main areas.

The hopper guides material toward the feed system. Powered rollers, where fitted, draw it into the cutting chamber. A rotating disc or drum carries knives that cut against a fixed anvil. Fans or paddles and the rotor airflow carry chips through the discharge chute.

The engine or tractor supplies power through a drive system. Hydraulic circuits may operate feed rollers, tracks or other functions. Guards separate people from belts, shafts and cutters; curtains or flaps reduce ejection at the hopper. Each safeguard has a distinct job and must remain effective.

Apply it Locate the hopper, feed controls, cutter housing, drive guards and discharge chute.

06 COMPONENTS AND SAFETY CONTROLS

Know what each control does

Control or safeguard	Purpose and limitation
Feed forward and reverse	Control roller direction where fitted. Reverse may help reject material using the approved procedure; it is not permission to reach into the hopper.
Protective stop bar or device	Stops dangerous feeding when actuated as designed. Confirm every accessible section works and the reset behaviour is correct.
Emergency stop	Stops the functions specified by the maker. It may not remove stored energy or bring the rotor instantly to rest.
Guard or interlock	Prevents access or operation in an unsafe configuration. It is not a substitute for isolation before maintenance.
Automatic load control	Pauses and restarts feeding to manage engine or rotor load. It protects performance; it is not a personal safety device.
Ignition and isolation	Stops the power unit and enables control of restart. Further isolation may be required for the task.

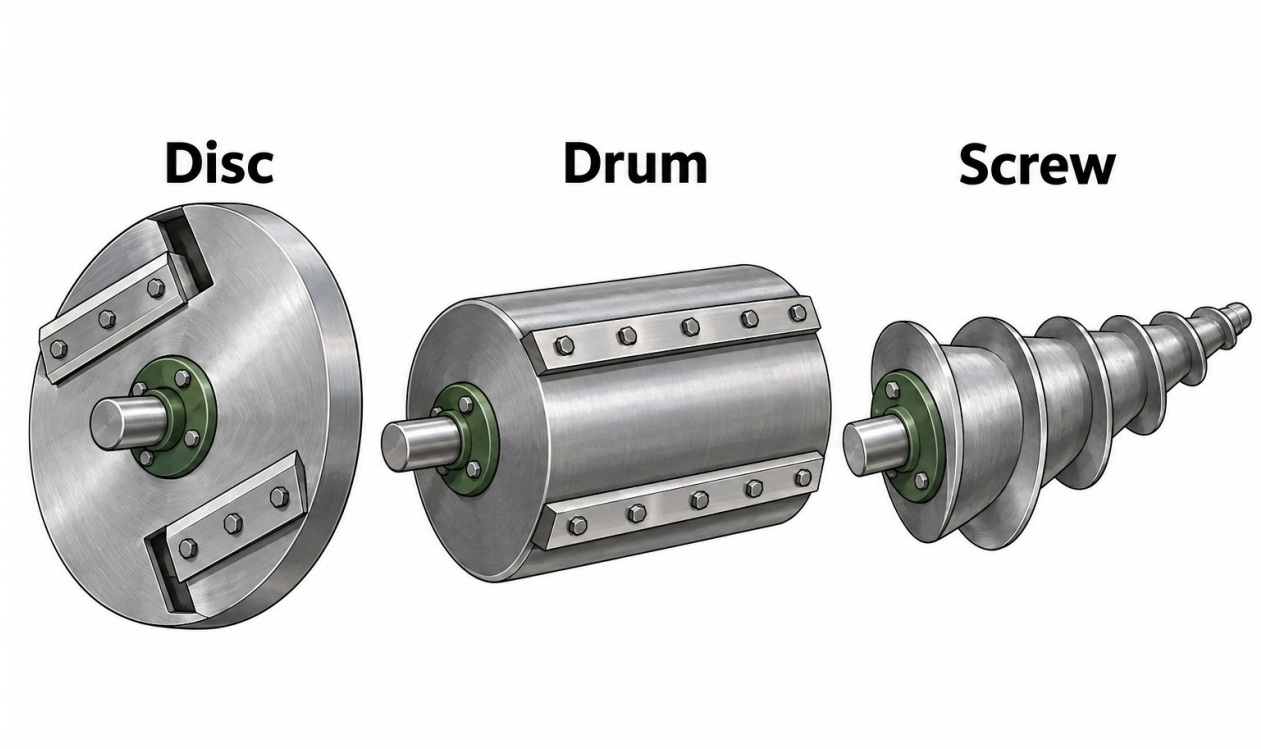
A protective stop must require the deliberate reset and restart actions specified for the machine. If releasing a bar causes unexpected feeding, stop use and have the system checked. Never defeat a safety control, change its sensitivity or hold it clear to improve production.

Apply it Explain why rollers that have paused under automatic load control could start again.

HSE woodchipper protection guidance

06 COMPONENTS AND SAFETY CONTROLS

Disc drum and self feeding systems



Cutter concepts

Concept views of cutter arrangements. These are not access or adjustment instructions.

Arrangement	Operating implication
Disc	Knives are mounted on a rotating disc. Stored rotational energy remains after power is removed.
Drum	Knives are mounted around a cylindrical rotor. Knife count, projection and retention vary.
Self feeding or screw system	Material may be drawn in by the cutter itself, without separate powered rollers. Stopping the power may be the only way to stop intake; follow its specific controls and method.

Hand-fed does not mean hand-controlled cutting. Once the machine grips material, it can accelerate, rotate or whip. Never assume a familiar hopper shape means a familiar feeding system. The permitted material, operating speed and safe stopping method come from its instructions.

Apply it Which cutting and feeding arrangement is fitted here?

07 DAILY CHECKS AND DEFECTS

Complete a cold walkround

Park on stable ground, isolate against restart and confirm standstill before any inspection involving access. Use the manual's daily list. Open only the covers you are authorised to open and secure them as instructed.

Area	Look for
General condition	Damage, loose or missing fixings, fluid leaks, debris on hot parts and readable safety labels.
Hopper and discharge	Secure hinges, catches, flaps and locks; no hidden foreign material or blockage.
Guards and controls	Complete guards, sound switches and cables, free movement of protective controls and no bypasses.
Engine and cooling	Correct oil and coolant levels where fitted, clean air intake and cooling surfaces, sound hoses and belts.
Hydraulics	Correct level in the specified machine position, leaks, rubbing, cracks or damaged fittings.
Cutting assembly	Knife and anvil condition through the approved isolated access method; secure fixings and no signs of contact.
Carriage or PTO	Tyres, wheels, brakes and coupling; tracks and undercarriage; or shaft guards and linkage as applicable.

Keep hands away from knife edges. Do not test sharpness with a finger or try to tighten a critical fastener by feel. Follow the specified access, locking and torque procedure. Record defects before starting.

Apply it Which defect would make you isolate the machine immediately?

07 DAILY CHECKS AND DEFECTS

Test functions before feeding

Complete the cold checks, refit guards and clear people and material. Start only by the normal procedure and from the correct position. The operator should understand the expected result of each control test before it is carried out.

- Check instruments and warning indicators; listen for abnormal noise and watch for leaks from a safe external position.
- With the hopper empty, test feed forward, stop and reverse where fitted using the manufacturer's sequence.
- Test all protective bars, buttons and other stopping devices as instructed, from safe positions outside the hopper.
- Confirm the required reset prevents unintended restart.
- Check emergency stopping and normal shutdown as instructed, then restart only after everyone is ready.
- Test again at the frequency in the manual and after interruptions, relocation or work that may affect safety controls.

Use the correct test method

Do not put a hand or tool into the intake to prove a stop works. Do not defeat an interlock to observe the mechanism. If a safety function is uncertain, intermittent or behaves differently from the instructions, shut down and report it. A machine that chips well can still have unsafe protection.

Apply it Record the controls tested, the expected response and the actual response.

07 DAILY CHECKS AND DEFECTS

Recognise warnings and act

Observation	Action
New vibration or knocking	Stop, isolate and investigate through a competent person. Suspect damage, imbalance, loose parts or contact.
Stringy chips or poor intake	Stop and assess material, cutter condition, anvil clearance and feed system within your authority.
Repeated load-control cycling	Reduce feed to the approved method; if abnormal, stop and find the cause rather than altering protection.
High temperature or low oil warning	Stop as instructed; allow cooling and investigate. Never open a hot pressurised cooling system.
Hydraulic mist or hose damage	Keep clear, stop and isolate. Do not search for a pressure leak with hands.
Defective guard or stop control	Withdraw from use until repaired and checked.

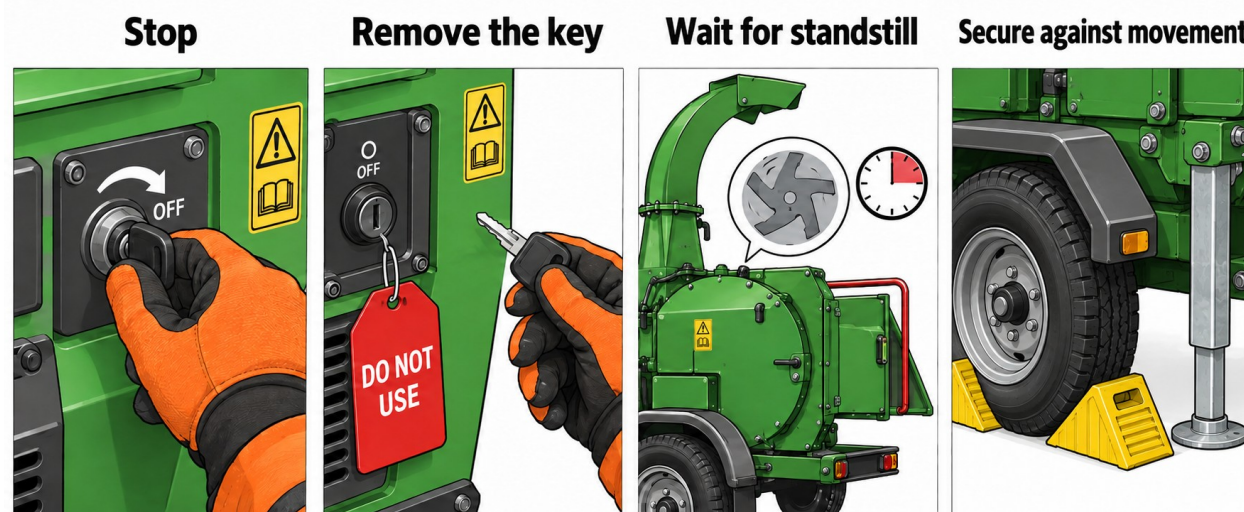
Make the report useful

Record machine identity and hours, what you observed, when it happened, the material or operation involved and what action you took. Avoid repeatedly restarting to reproduce a potentially dangerous fault. State clearly whether the machine is safe to use, restricted or isolated.

Apply it Write a defect report for a new metallic knocking noise after a stone entered the hopper.

08 ROUTINE OPERATOR MAINTENANCE

Make maintenance safe



Stopping is only the first step. Use all isolation and securing measures required for the task.

- Choose stable ground, clear the work area and tell others that maintenance is taking place.
- Stop feeding and shut down by the prescribed sequence. Remove and retain the key and isolate other energy sources as required.
- On PTO equipment, stop the tractor, remove its key and disconnect the shaft where required before access.
- Wait for complete standstill; use the specified means to confirm it. Never rely on sound alone.
- Restrain rotor movement and support raised parts with the manufacturer's approved devices before working within their danger area.
- Release or secure stored hydraulic, spring and gravitational energy using the approved procedure.

A rotor can turn under its own weight while a blade is removed. A raised roller or cover can fall even with the engine stopped. Battery disconnection, hydraulic depressurisation and lockout may be needed in addition to taking the key. Confirm the full method before opening the machine.

Apply it Identify all energy sources that could affect the task you are about to do.

08 ROUTINE OPERATOR MAINTENANCE

Engine oil fuel and cooling

System	Routine checks and important variations
Engine oil	Check on the specified ground and after the specified settling time. Read the dipstick by the maker's method, use the correct grade and avoid overfilling.
Oil and filter change	Only if authorised: use the correct interval, drain safely, renew seals and filter as instructed, collect waste and check for leaks after return to service.
Fuel	Confirm the correct fuel, clean cap and filler, inspect lines and filters, and keep contamination out. Fuel systems differ; do not loosen high-pressure injection pipes.
Liquid cooling	Check the expansion tank or approved cold fill point. Use the correct coolant mixture; never remove a pressure cap while hot.
Air cooling	Keep fan intake, fins and covers clean. Missing shrouds can cause overheating.
Battery	Check security, terminal covers and obvious damage. Prevent short circuits; isolate or charge only by the correct procedure.

Refuelling

Stop and allow the machine to cool as needed. Keep ignition sources away and use a stable, ventilated place away from drains and water. Use approved labelled containers and avoid skin contact. Clean spills safely, replace the cap and move contaminated materials to suitable storage. Never refuel a running engine.

Apply it Record the oil grade, cold coolant check point and fuel type for today's machine.

08 ROUTINE OPERATOR MAINTENANCE

Filters cooling surfaces and cleanliness

A chipper works in dust, chips and sap. Blocked cooling surfaces raise temperature; a damaged air filter allows abrasive dust into the engine. Inspect at the manual's interval and increase attention in dusty conditions without improvising a different servicing method.

Air intake

- Clean around the filter housing before opening it so debris does not fall into the intake.
- Identify the outer element, any inner safety element, seals and dust valve.
- Clean only where the manufacturer permits, using the stated method and limits. Do not assume compressed air or washing is acceptable.
- Replace damaged, contaminated or service-expired elements and seat them correctly.
- Refit the cover and clamps, and never run the engine with a filter or intake guard removed.

Cooling and cleaning

With the machine isolated and cool, remove deposits from radiator screens, cooling fins and the engine area by the approved method. Avoid driving dirt deeper into a radiator or bending fins. Do not direct pressure washing into bearings, electrical components, seals, the air intake or labels. Let equipment dry before service and deal with wash water responsibly.

Keep a service record

Record hours and work completed. Different engines use different filters and intervals. Use the part and fluid specification matched to the machine; similar size does not prove compatibility. A persistent overheating warning needs investigation, not repeated topping up.

Apply it Find the filter servicing method and the cleaning restrictions in the manual.

08 ROUTINE OPERATOR MAINTENANCE

Belts bearings and lubrication

Belts transmit power, bearings support shafts, and lubricated joints allow movement. Too little maintenance can cause wear and failure; too much grease, wrong lubricant or excessive belt tension can also damage equipment.

Item	Check and maintain
Belts	With isolation and guards removed only as authorised, check cracks, fraying, glazing, contamination and alignment. Measure tension by the prescribed force and deflection or approved gauge.
Adjustment	Use the specified adjuster, alignment and tightening sequence. Replace matched belt sets where required; do not mix worn and new belts indiscriminately.
Bearings	Check security, seals and signs of overheating or play by the approved method. Sealed bearings may not require greasing.
Grease points	Identify each actual point, wipe it clean, use the specified grease and amount and wipe off excess. A remote nipple is only useful if its line is sound.
Roller slides and pivots	Clean and lubricate only the surfaces specified. Do not apply grease to belts, braking surfaces or parts that must remain dry.

Recheck belt tension after the prescribed bedding-in period. If a guard must be removed, refit and secure it before any powered test. Never apply lubricant to a rotating shaft or moving belt. Investigate repeated loss of tension, heat or noise rather than masking it with more lubricant.

Apply it Locate the lubrication chart and record one point, lubricant, amount and interval.

08 ROUTINE OPERATOR MAINTENANCE

Hydraulics rollers and undercarriage

Hydraulic systems

Check the reservoir in the specified machine position and condition. Keep the filler area clean and use the exact approved fluid; incompatible oils can damage seals and affect operation. Inspect hoses for abrasion, bulges, exposed reinforcement and leaks. Do not disturb pressurised fittings or use a hand to find a leak. Hose replacement, pressure adjustment and pump work require appropriate competence.

Feed rollers

Check teeth, bearings, springs, slides and guards by the approved isolated procedure. The upper roller may be heavy and spring-loaded. Use the prescribed lifting and supporting method before reaching beneath it. Do not rely on hydraulics to hold it up, and never sharpen roller teeth with the feed running.

Tracks and carriage

Remove packed debris when isolated. Inspect rubber or steel tracks, rollers, sprockets and visible fasteners. Measure track sag in the prescribed supported position and follow the correct adjustment method. Grease tensioners can hold high pressure: do not remove or loosen components beyond the manual's instructions. Never work beneath equipment supported only by a jack or hydraulic lift.

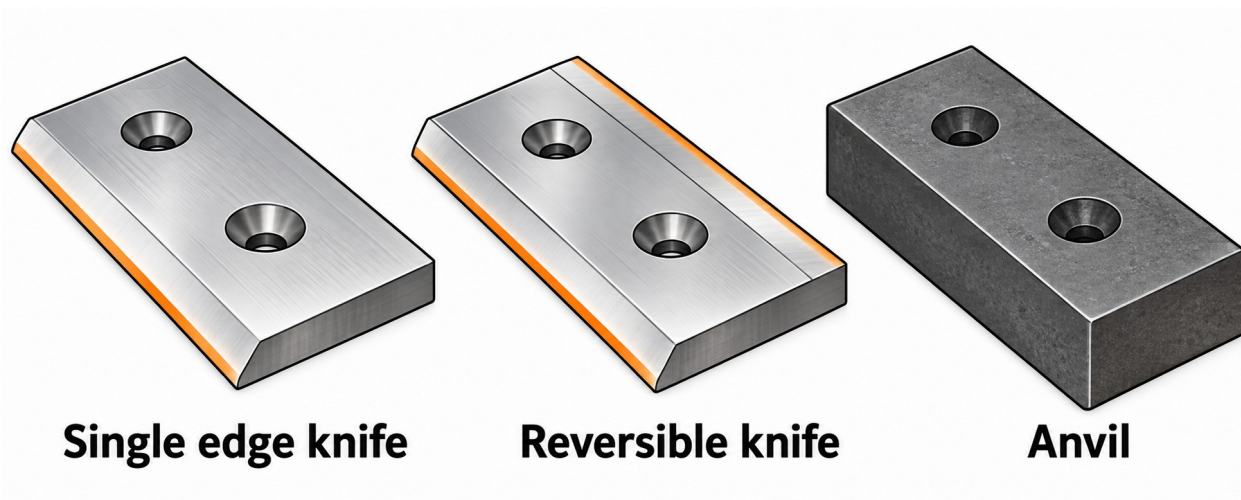
When the task exceeds routine maintenance

Stop and refer structural cracks, loose cutter bearings, damaged threads, unreliable interlocks and hydraulic faults to the responsible competent person. Restore guards, account for tools and record all work before controlled return to service.

Apply it Which maintenance tasks here require a specialist or additional authorisation?

09 BLADES ANVILS AND TORQUE

Different cutting edges



Typical forms only. Fit the exact knife and anvil specified for the cutting assembly.

Some knives have one cutting edge and are sharpened to a specified profile. Others are reversible so an approved second edge can be presented. Reversible does not automatically mean disposable, and a blade that can be reground still has a minimum permitted size. Some systems use replaceable inserts or specialised cutters requiring a different procedure.

Flat-ground and hollow-ground profiles are not interchangeable. The angle, thickness, bolt seating and projection form part of the design. Never modify an incorrect knife to make it fit. The fixed anvil supports the wood during cutting; it may have usable alternative edges, but only where its instructions permit turning or repositioning.

Apply it Identify the fitted knife type, usable edges and the wear limit in the manual.

09 BLADES ANVILS AND TORQUE

Read chip quality and anvil condition

Sharp knives cutting against a sound, correctly set anvil produce more consistent chips with less unnecessary load. Dull edges, damaged knives or worn anvils can increase vibration, fuel use, stringy output and feed problems. Material species, moisture and size also affect the result, so chip appearance alone does not prove a particular fault.

Finding	What needs checking after safe isolation
Long stringy pieces	Knife sharpness and damage, anvil edge condition and specified clearance.
Poor pull or slow production	Material suitability, feed roller condition, engine speed, load control and cutter condition.
Uneven chips or new vibration	Damaged or mismatched knives, loose retention, contamination or other mechanical faults.
Evidence of cutter contact	Do not restart. Investigate clearance, security, rotor bearings, alignment and damage.

Anvil variations

A machine may have a main bed anvil, a side anvil or more than one cutting support. Some are fixed; others use adjustment screws, shims or indexed edges. Do not assume every anvil can be ground, turned or adjusted by the operator. Follow the maker's limits and refer dealer-only work.

The correct gap may differ at specified measuring positions. Never set every point to one convenient figure without reading the diagram and instructions. Too little clearance can cause contact; too much reduces cutting support and performance.

Apply it What would distinguish a material problem from a cutter defect?

09 BLADES ANVILS AND TORQUE

Prepare for a blade change

Blade replacement is safety-critical maintenance. Only a trained and authorised person should do it, using the correct instructions, tools and parts. If the manual is missing, unclear or inconsistent, stop and obtain the correct procedure before dismantling.

- Confirm the correct knife, anvil and fastener specifications for the machine and serial range.
- Prepare suitable cut-resistant handling gloves, eye protection, edge protection, a clean bench and a container for removed knives.
- Provide the specified sockets and tools, an in-calibration torque wrench, clearance gauges and approved locking or supporting devices.
- Shut down, isolate all relevant energy sources, retain the key and confirm complete standstill.
- Secure covers, raised rollers and the rotor by the approved method. Plan how the knife will be supported as its last fixing is removed.
- Clean access areas and fastener recesses so tools seat fully and debris cannot fall behind the new knife.

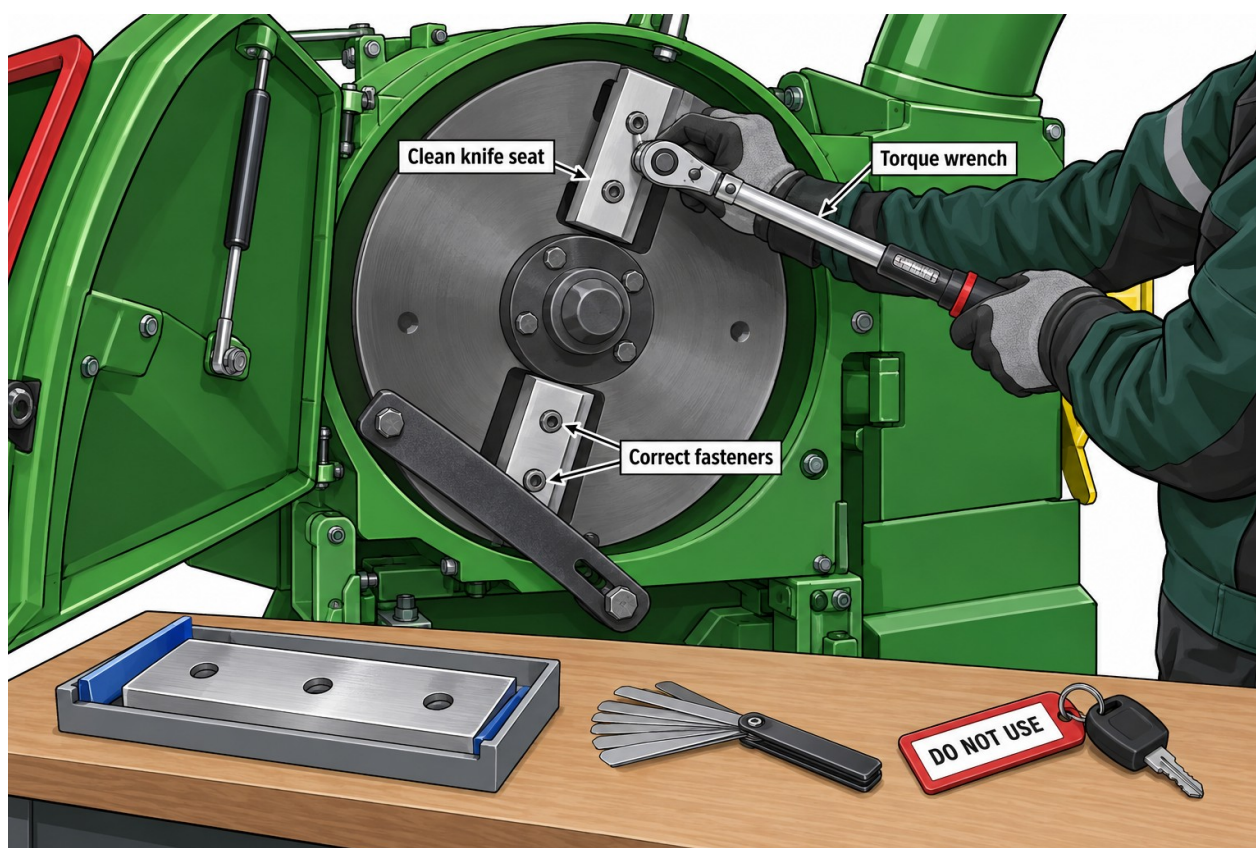
Understand the retention system

Knives may be held by countersunk screws, bolts and nuts, clamps or holders. Some require new fasteners at every change; others have inspection or replacement limits. Washers, thread treatment, fastener grade and length are part of the specification. Do not substitute hardware from a general bolt box.

Apply it List the parts, locking method and special tools needed for the training machine.

09 BLADES ANVILS AND TORQUE

Remove and refit knives correctly



Use the specified retention, clean seating surfaces and a suitable calibrated torque wrench.

- Follow the prescribed removal order with the rotor restrained. Support the knife so it cannot drop or trap fingers.
- Store the removed knife with its edge protected. Inspect the seat, holder and fastener threads; stop if damaged.
- Clean mating surfaces thoroughly. Even small trapped deposits can prevent proper seating and allow a knife to loosen.
- Fit the correct matched knife set or replacement arrangement, correct way round, with only the approved shims and fasteners.
- Apply the specified thread condition and tighten in the stated sequence and stages using the actual torque value.
- Check the specified knife projection and anvil clearances before closing the chamber.

Do not use a cutting edge as a handhold. Never turn the rotor by energising the starter or PTO during maintenance. Reposition and relock it only by the manufacturer's approved manual procedure, keeping clear of cutting and trapping points.

Apply it Explain why cleanliness behind the knife matters as much as the final torque.

09 BLADES ANVILS AND TORQUE

Use the correct torque and clearance

There is no universal woodchipper blade-bolt torque. The required value depends on the exact fastener, joint and specified thread condition. Some systems require clean dry threads, others a named lubricant or locking compound. Applying the same torque to a differently prepared thread changes the clamping force.

- Read the specific blade-change instructions and any current service information. A general torque chart must not override a specific joint requirement.
- Check the unit: N m and lbf ft are different. Set the wrench to the required unit and value within its working range.
- Use the correct socket and approved adapters. Pull smoothly at the handle position specified by the tool maker.
- Follow the sequence, stages and any bedding-in recheck. Do not add extra pulls after a click or use impact tightening as the final torque check.
- Measure the anvil gap at every specified location and blade position using the approved gauge and isolated procedure.

Settings record for the actual machine	Verified value and source
Knife and fastener specification	_____
New fasteners required and thread treatment	_____
Blade fastener torque and unit	_____
Anvil fastener torque and unit	_____
Clearance and measuring positions	_____
Recheck interval and manual page	_____

If values disagree or the setting cannot be achieved, do not run the machine. Obtain clarification or repair and record who confirmed the correct specification.

09 BLADES ANVILS AND TORQUE

Sharpening and return to service

Maintain the designed edge

Send knives to a competent sharpening service where required. The correct angle and flat or hollow profile, edge finish, dimensions and heat control must be retained. Hand grinding without the proper process can overheat the steel, change projection and upset balance. Do not weld, straighten, drill or reshape damaged knives.

Measure against the stated wear mark or minimum dimensions. Replace cracked, badly damaged or undersize knives. Keep the required set matched for size and mass; do not combine random sharpened and new knives where a balanced set is required. Store and transport knives with protected edges.

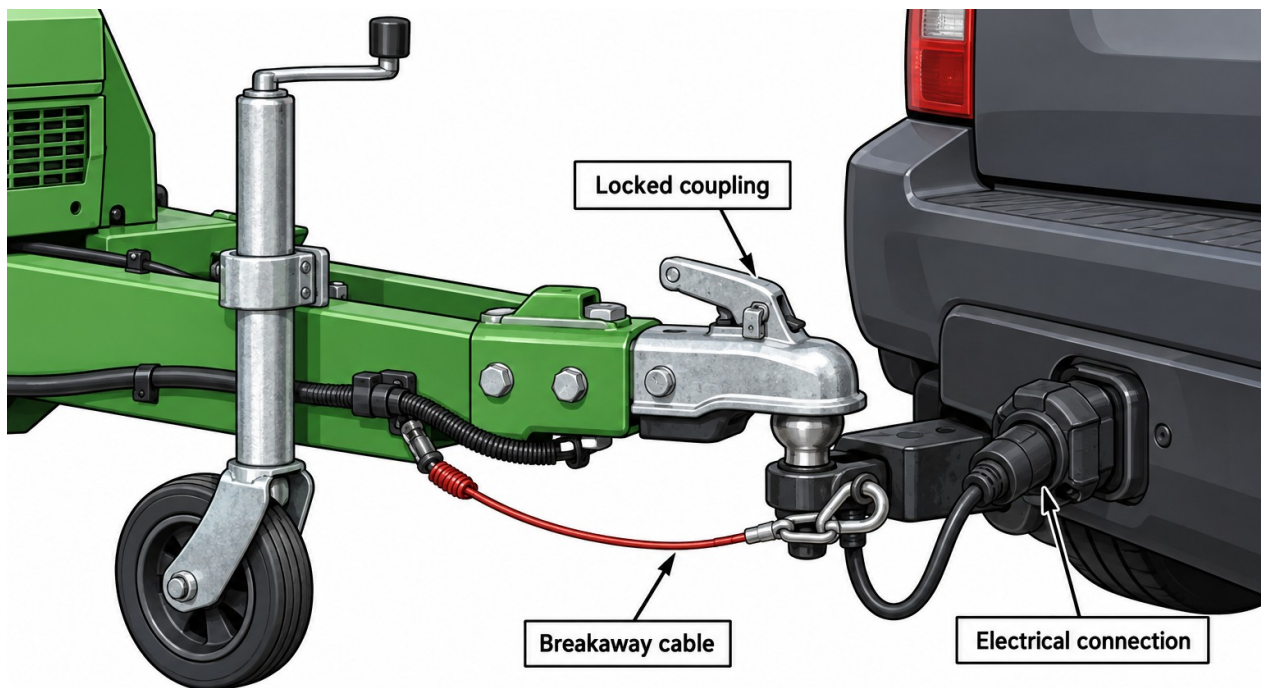
Before powered operation

- Confirm all knives and anvils are secure, all required gaps are measured and the work is recorded.
- Use the approved manual rotation and clearance-check procedure; stop if there is contact or resistance.
- Account for tools, gauges, loose hardware and approved rotor locking devices. Remove maintenance locks only at the prescribed stage.
- Refit every cover, guard, catch, support and interlock correctly before restoring power.
- Clear the area, start from the normal control position and test safety functions without material.
- Stop immediately for abnormal noise or vibration. Conduct any initial trial and recheck at the interval specified.

Apply it State three reasons to reject a knife and three checks required before restart.

10 TOWABLE MACHINES

Couple the chipper safely



Confirm that the coupling is fully seated and locked on the correct tow ball before moving.

Check that the tow vehicle, towbar, coupling and chipper combination are compatible and within their limits. Use firm ground, secure both vehicles against movement and keep people clear of the crush area. Reverse with an agreed banksman only where needed; stop if communication or sight is lost.

- Inspect the coupling and ball or pin for wear and damage; prepare them as their instructions require.
- Lower the coupling onto the correct hitch, close and secure it, then verify engagement by the manufacturer's method.
- Attach the prescribed breakaway cable or secondary coupling to the approved attachment point.
- Connect electrics, raise and secure the jockey wheel and stabilisers, and check cable routing.
- Release the trailer brake and remove chocks only when correctly connected and ready to move.

A breakaway cable on a braked trailer applies its brakes if separation occurs. An unbraked trailer needs the appropriate secondary coupling. They are different devices; fit and route the arrangement required for the trailer, without dragging or restricting turns.

Apply it Demonstrate how you verify that the coupling is actually engaged.

10 TOWABLE MACHINES

Check before road travel

Confirm licence entitlement, vehicle and trailer plated limits, permitted towing mass, nose load and axle loads for the actual combination. Account for fuel, equipment and material carried. A vehicle capable of moving a chipper is not necessarily legally or mechanically suitable to tow it.

Check	What must be right
Tyres and wheels	Correct load rating and pressure, legal tread and sound sidewalls; wheel fixings secure to the required torque.
Brakes and coupling	Correct engagement, cable or secondary coupling, parking brake released for travel and effective service brakes where fitted.
Lights and visibility	Working lights, reflectors, indicators, matching number plate and adequate rearward view.
Transport locks	Hopper, chute, turntable, covers and supports secured in their prescribed transport positions.
Loose items	Tools, ramps, spare blades and other loads restrained; no debris left to fall onto the road.
Route and driver	Suitable route, speed, stopping distance, clearances and arrangements for manoeuvring.

Complete a lights check and a final walkround before moving. Drive smoothly, allow for extra width and length, and recheck security at a safe opportunity. Do not carry people on the chipper. Commercial use may involve further road transport requirements; the employer must confirm which rules and exemptions actually apply.

Apply it Where will you find the combination limits and the trailer wheel torque?

DVSA trailer safety checks

10 TOWABLE MACHINES

Uncouple and park securely

Choose firm, stable ground where the uncoupled machine will not roll, tip or obstruct access. Confirm whether it is designed to operate detached from the towing vehicle and which supports must be deployed. Do not assume a jockey wheel alone gives adequate working stability.

- Stop the towing vehicle and secure it. Apply the trailer parking brake where fitted and position suitable wheel chocks.
- Lower the prescribed jockey wheel or support before releasing the hitch load. Keep hands and feet clear of crush points.
- Disconnect electrics and the breakaway or secondary connection at the correct stage, avoiding cable damage.
- Release the coupling using the approved method and raise it clear. Move the vehicle only when everyone is safe.
- Deploy stabilisers as instructed and check the machine's stability before preparing it for work.
- Secure the key and prevent unauthorised movement when leaving the machine.

Moving by hand

Do not attempt to control a heavy machine on a slope by hand. Use the manufacturer's permitted method and sufficient assistance or a suitable vehicle. Never pull on a safety stop bar or a component not intended as a handle. Plan the route and keep toes clear of wheels and supports.

Apply it Explain the order of actions that prevents the trailer rolling during uncoupling.

11 TRACKED MACHINES

Travel with a tracked chipper



Example with a designated standing platform. Use only the operator position approved for the machine.

Check track condition and the route before travelling. Confirm gradient limits, operating position, travel speed and whether the machine must be configured differently for movement. Shut down the chipping function and secure movable parts as instructed. Never chip while travelling unless the machine is expressly designed and authorised for that operation.

- Look for soft edges, hidden holes, obstructions, overhead branches and services.
- Keep the operator in the permitted position with a clear view and a safe route away.
- Keep everyone out of the crush space between the machine and walls, vehicles or trees.
- Travel slowly, avoid abrupt turns and follow the prescribed slope direction.
- Stop if the machine slips, tilts, loses traction or goes out of sight. Do not exceed limits to finish a manoeuvre.

Apply it What route or ground condition would make you refuse to track the machine?

11 TRACKED MACHINES

Track care and a displaced track

Greasing and track tension

Clean mud, stones and trapped branches from the undercarriage with the machine stopped and isolated. Inspect rubber, guides, rollers, idlers and sprockets for damage and wear. Keep hands clear of trapping points. Grease only the service points and sliding surfaces specified in the manual; do not coat rubber tracks or their running surfaces with grease.

Different jobs	Follow the correct instructions
Lubricating service points	Clean each nipple and grease-gun coupler. Use the stated grease, quantity and interval. Some rollers and bearings are sealed. Variable-width chassis slides may need separate lubrication.
Setting track tension	Where a grease-operated adjuster is fitted, grease moves the idler to tension the track. Use the stated measuring position, deflection and adjustment method; there is no universal setting.

Only adjust within your training and authorisation. Too little tension can allow a track to come off; too much strains the track, bearings and drive. Stop if tension does not respond normally. Pressurised grease can inject through skin: never remove an adjuster fitting or improvise pressure release. Keep clear of the outlet and follow the exact manual procedure. Suspected injection needs immediate professional medical treatment, even if the mark looks small.

If a track comes off

- Stop travel immediately. Do not keep driving or steering to force it back on.
- Shut down and isolate. Keep everyone clear, especially downhill and in crush zones. If unstable, arrange competent recovery before approaching.
- Report the defect. Refitting needs a planned method, suitable lifting and rated supports; never work under a machine supported only by a jack.
- A trained, authorised person must release tension, refit and tension the track using the manufacturer's procedure. Never push or lever a track by hand while someone powers the tracks.

Before release for use, find the cause: wrong tension, debris, damaged guides, worn sprockets or rollers, or a failed adjuster. Check the track for cuts, damaged reinforcement and correct engagement. Refit guards, clear tools and people, then complete the prescribed controlled test and recheck tension.

Apply it Record the grease specification, tension-check method and who is authorised to refit a track.

HSE guidance on pressurised grease and injection injury

11 TRACKED MACHINES

Load onto transport safely

Use a suitable trailer or vehicle with sufficient payload and approved loading and restraint points. Confirm its stability, brakes and supports. Loading ramps must be rated, secured against slipping, correctly spaced and set within the machine's permitted loading angle.

- Choose firm level ground, establish an exclusion area and align machine, ramps and deck.
- Check track grip and remove mud or loose debris from contact surfaces.
- Use the prescribed direction of travel and operator position. Keep a clear view; use a banksman where needed.
- Travel slowly without sharp steering on the ramps. Stop if alignment or traction is lost.
- Once positioned, stop and isolate, secure attachments and use the designated tie-down points with suitable restraints.
- Check load distribution, axle and total limits, ramp stowage and restraint security before road travel.

Do not stand beside an unstable ramp edge, between machine and headboard, or downhill of a machine that could slide. Never depend on hydraulic travel brakes or tracks alone to restrain the load during transport. Do not attach lashings to guards, stop bars, hoses or the discharge chute.

Apply it Record the ramp rating, loading direction and approved tie-down points.

12 PTO MACHINES

Match the tractor and chipper

A PTO chipper depends on both the tractor and the implement being suitable. Confirm the required tractor power, linkage category, lifting capacity, ballast, stability, PTO speed and direction. A shaft that fits the splines is not proof that the combination is correct.

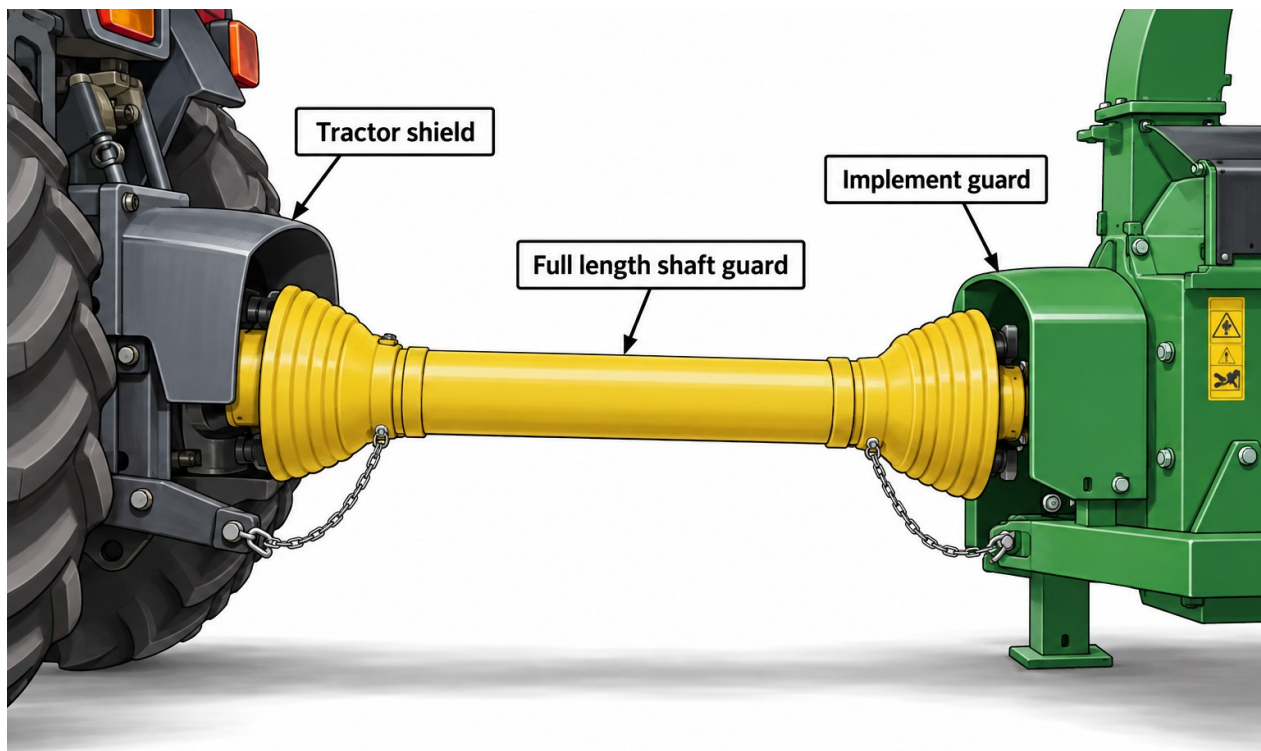
Check	Why it matters
Attachment	Correct pins, retainers, top link and stabilisers keep the implement secure and in the intended position.
Shaft length	Adequate engagement throughout movement without bottoming out at the shortest distance. Incorrect length can damage equipment or cause separation.
Shaft angles	Universal-joint angles and alignment must stay within the shaft and chipper limits.
Speed and power	Select the specified PTO setting and engine speed. Excess speed can cause catastrophic cutter failure.
Overload protection	Use the specified shear bolt or clutch arrangement. Never fit a stronger substitute or defeat protection.
Services	Correct electrical and hydraulic connections, routed clear of movement and heat.

Connection must be carried out with safe tractor shutdown and controlled linkage movement. Do not stand between moving equipment or work beneath an unsupported implement. Shaft shortening, clutch setting and compatibility decisions require the correct instructions and competence.

Apply it Record required PTO speed, power range and the method used to confirm shaft length.

12 PTO MACHINES

Guard the whole drive shaft



Inspect with power isolated

The tractor shield, shaft guard and implement guard must protect the complete driveline.

Check the tractor master shield, the full-length telescopic shaft guard and the implement input guard. Guard cones must cover the joints with the required overlap. Guards must be sound, correctly fitted and restrained as designed so that the protective cover does not rotate with the shaft.

- Verify coupling locks are fully engaged and the shaft is supported correctly when disconnected.
- Attach guard restraining chains to the approved stationary points with allowance for movement.
- Check guard bearings, tubes and cones; repair damage before use.
- Lubricate the shaft and guard bearings only by the specified isolated procedure.
- Never step over a PTO shaft, even when guarded. Walk around it.

Apply it Point out each guard and show where the restraining chains attach.

HSE PTO shaft guidance

12 PTO MACHINES

Operate and isolate PTO equipment

Set the tractor and implement on the specified stable ground and working supports. Confirm guards, coupling locks, clear intake and safe discharge. Establish how the person feeding can stop intake and power quickly. Do not operate if essential controls cannot be reached or communication is unreliable.

Starting and operating

Follow the tractor and chipper engagement sequence, normally engaging at the prescribed low engine speed before increasing to the required operating speed. Never guess the speed from sound. Use the correct PTO selector position and confirm the indicated operating speed. Keep people away from the driveline and tractor-implement crush area.

Before leaving the controls or gaining access

- Stop feeding and complete the prescribed shutdown sequence.
- Disengage the PTO, secure the tractor, stop its engine and remove and retain the key.
- Wait until the PTO, rotor and other moving parts have stopped completely.
- Disconnect the shaft and isolate other sources where the maintenance or blockage procedure requires it.
- Lower or mechanically support the implement and raised parts as instructed. Secure against unexpected movement.

Disengaging the PTO alone is not isolation. The rotor can coast and may back-drive parts of the transmission. Follow the complete procedure before opening a cover, adjusting the chute, clearing a blockage or changing a knife.

Apply it Why is a stationary tractor with its engine running not safe for blade access?

13 SETUP AND STARTING

Prepare the machine for work

After transport, carry out a fresh site assessment and convert the machine fully into its working configuration. Confirm the trained team, agreed signals and emergency plan. Keep material out of the hopper until checks and safety tests are complete.

- Park securely and apply the required brake, chocks, stabilisers or implement support.
- Deploy and latch the hopper or feed tray as instructed; verify its intended working geometry.
- Set the discharge chute and deflector toward the controlled collection area and lock them securely.
- Release transport or rotor locks only as required by the starting procedure; account for every tool and locking device.
- Check all guards, access covers, flaps, labels and safety controls.
- Check oil, coolant, fuel and hydraulic levels as applicable, and record defects and operating hours.
- Confirm the hopper and cutter housing are clear using the safe inspection method.

Last check before starting

Look beyond the machine. Is the assistant in position? Is anyone approaching? Is the chip vehicle ready? Is there a clear escape route and space for branch swing? If the work area has changed since the briefing, stop and resolve it first.

Apply it Talk through the setup from transport condition to ready for a no-load test.

13 SETUP AND STARTING

Start without creating a new hazard

Start from the intended operating position using the manufacturer's sequence. Make sure nobody is maintaining or inspecting the machine, guards are closed and the intake is empty. Never bypass a start interlock, bridge starter terminals or use improvised starting methods.

- Check warning lamps or display indications and the specified warm-up procedure.
- Engage the drive and set the recommended working speed as instructed.
- Test safety and feed functions with no material, using the sequence in Module 7.
- Listen and observe from outside the danger area. Stop for unusual vibration, knocking, leaks or persistent warnings.
- Give the agreed ready signal before the first material is presented. Start with suitable material and observe the result.

Automatic feed control

The load-control system may stop and restart rollers as the rotor or engine slows and recovers. Let it work within the intended limits; do not hold material, push harder or change protection to defeat it. Persistent cycling with normal material is a reason to check the cause.

A failed start

Follow the manual's limits on cranking and fault response. Do not repeatedly crank an engine or engage a blocked rotor. Isolate before investigation and refer faults beyond your authority.

Apply it Which start-up observations would make you shut down before feeding?

14 MATERIAL PREPARATION AND SAFE FEEDING

Check material before chipping

Inspect each batch and each piece before it reaches the hopper. Look particularly for wire, fencing staples, nails, screws, stones, soil and other foreign objects. Stones and grit blunt cutting edges; metal can chip or break knives, damage the rotor or anvil and be thrown from the machine. Wire and rope can snag or entangle people and machinery. Never feed suspect material to see whether it will pass.

Material or issue	Decision
Clean branches and stems	Present within the permitted size, usually butt first, arranged to reduce handling and whipping.
Forked or awkward branches	Reduce or separate them safely away from the chipper if necessary; do not force them through.
Stones soil and roots	Keep material off dirty ground where practical. Remove loose grit and stones away from the hopper; reject pieces that cannot be cleaned or checked safely. Do not feed roots unless the machine permits them.
Wire nails rope or straps	Pay particular attention to hedge and fence-line timber. Look around the whole piece for embedded metal. Separate suspect material and remove contamination safely away from the chipper or reject it.
Treated painted or unknown waste	Do not assume it is suitable. Confirm both machine permission and a lawful destination.
Short pieces and sweepings	Use only the approved feeding method and aids; never sweep in grit or reach after a piece.

Stay within permitted material sizes; a hopper opening is not proof that an awkward piece will pass. Prepare manageable stacks and keep tools clear of the feed area. Chainsaw preparation needs a separate safe area, competent operator and appropriate PPE.

If a foreign object enters, stop and isolate, report it and arrange inspection of knives, anvil and rotor before restart. Do not assume that picking the object out leaves the machine safe.

Apply it Identify three contaminants that could blunt or damage blades and explain your action.

14 MATERIAL PREPARATION AND SAFE FEEDING

Feed from a safe position



Stand to the side, release the branch when gripped and keep the control area clear.

Use stable footing to the side of the intake and stay within easy reach of the protective stop. Present the permitted material by the instructed method, commonly butt first. Keep your body out of the path of a twisting or swinging branch and release the material as soon as the feed or cutter grips it.

- Never put hands, feet or any other part of your body into the hopper while running.
- Do not lean into the intake, climb onto the tray or stand on the machine.
- Never sit on, ride, straddle or wrap an arm around material being fed.
- Keep the ground clear and move away from branch sweep after release.
- Stop if material catches clothing or the safe working position is lost.

Apply it Demonstrate the release point and your position after the branch is gripped.

14 MATERIAL PREPARATION AND SAFE FEEDING

Short material and team working

Short pieces create a temptation to reach farther into the hopper. Keep the same body exclusion rule. Use the manufacturer's approved push aid or suitable long piece of timber to advance material while remaining outside. FISA 604 describes a push-stick at least 1.5 m long; it must also suit the machine's instructions and geometry.

Feeding aids

Use only an aid permitted for the machine. Do not use metal tools, a foot or a hand. Avoid holding a short offcut against the rollers, chasing the last piece or feeding a loose bundle that could snag around you. If material will not enter by the safe method, stop and deal with it under the blockage procedure.

Coordinate two people

- Nominate one feeder for the immediate hopper position.
- The assistant prepares and brings material without pushing into the feeder or obstructing the controls.
- Keep separation between branch handling, chip discharge and vehicle movement.
- Use an agreed ready and stop signal; anybody can call stop.
- Pause the job to change roles, clear debris or discuss a problem.

Do not increase production by having people crowd both sides of a narrow hopper. The team size and method must suit the equipment, material and site. Reassess if one person cannot feed without repeated awkward lifts or reaching.

Apply it Explain how you will chip the last short piece without approaching the rollers.

FISA 604 woodchipper guidance

15 BLOCKAGES

Respond to a feed stoppage

A feed pause can be normal automatic load control, an operated safety device, oversized material or a fault. Do not assume it is safe to approach because the rollers are still. They may restart without warning when a load-control condition clears.

From the normal control position

- Stop presenting material and keep everyone clear.
- Check indicators and the machine's approved response without reaching into the intake.
- If permitted, use the specified reverse or reject function from the safe operating position and keep clear of material being returned.
- If the obstruction does not clear promptly by the permitted control sequence, stop and isolate.
- Do not repeatedly cycle controls, pull against powered rollers or use the engine to force a jam.

Before any access

Shut down, retain the key, isolate all power sources and wait for complete standstill. Secure the rotor and raised or spring-loaded feed parts by the specified method. Relieve or restrain stored energy. A trapped branch can spring out when released, and a roller can fall when its support is removed.

Use the manufacturer's clearing procedure and suitable tools only within your training. If it requires lifting a roller, dismantling a guard or entering a cutter area beyond your authorisation, secure the machine and obtain competent assistance.

Apply it What is the difference between using reverse normally and reaching in to clear a jam?

15 BLOCKAGES

Clear the cause before restarting

Reduced discharge, a blocked chute, an abrupt stall or severe vibration may indicate a blockage or damage in the cutting and discharge system. Stop feeding immediately. Do not continue adding material, look down the chute or remove its clamp with the machine moving.

An isolated clearing task

- Use the full isolation and standstill procedure, including PTO disconnection where required.
- Secure access covers and heavy components before opening the permitted access point.
- Identify trapped material, cutter movement, sharp edges and any spring or hydraulic forces.
- Remove debris using the approved tools and method without reaching past unrestrained cutters.
- Inspect for foreign objects, knife or anvil damage, loose parts and the reason for the blockage.
- Refit all guards and discharge components, account for tools and follow the controlled restart checks.

A sudden stop may have damaged knives, belts, bearings or retention even if the obstruction is removed. Do not restart until the machine is confirmed fit for use. Investigate poor cutter condition, wrong speed, unsuitable material, overfeeding or restricted discharge rather than accepting repeated blockages.

Apply it A metal object has stopped the rotor. List what must happen before restart.

16 WOODCHIP AND ENVIRONMENTAL CARE

Uses for processed woodchip

Agree the destination before chipping. Clean processed wood can become a useful product, but its species, particle size, moisture and contamination must suit the use. Keep suitable material separate from dirty, treated or restricted waste. These are common examples, subject to the recipient's requirements.

Potential use	What to confirm
Garden and landscape mulch	Clean chips can suppress weeds and help retain soil moisture around trees, shrubs and beds. Apply as a surface mulch, keeping stems clear. Confirm species and plant-health suitability.
Paths and amenity areas	Chips can provide a loose surface for garden, allotment or woodland paths. Select suitable clean material and plan drainage and replenishment as it breaks down.
Composting and soil improvement	Chipped woody material can be part of a managed composting mix. It takes time to break down; fresh chips are not finished compost or ready-made potting compost.
Biomass heating	Suitable chips can fuel a designed biomass boiler. Meet its particle-size, moisture and contamination specification; mixed tree-work arisings are not automatically fuel grade.
Specialist products	Some processors accept suitable wood for further manufacture. Animal bedding or playground surfacing needs its own specification and acceptance; do not supply ordinary mixed chip as suitable without confirmation.

Do not pass on chips containing metal, stones, plastics, treated timber or restricted plant material as a clean product. Check plant-health restrictions and the lawful rules for transport, storage and use. Record the recipient and agreed use; giving chips away does not remove waste duties.

Apply it Name two possible uses for today's chips and the quality checks needed for each.

RHS guidance on woodchip and other mulches

Forest Research guidance on woodfuel processing

16 WOODCHIP AND ENVIRONMENTAL CARE

Prevent pollution and unsafe storage

Protect the site

Keep chips, dust, fuel and wash water out of drains and watercourses. Place fuel and oils securely with spill controls and keep a spill kit available. If pollution occurs, stop its source where safe, protect drainage, notify the responsible person and follow the site reporting procedure. Do not wash a spill away.

Store with a plan

Woodchip piles can heat, produce dust and biological exposure, and in some conditions catch fire. Set storage size, separation, turnover and monitoring through the site's competent plan. Keep ignition sources away. Never climb an unstable pile, enter a chip store with moving machinery or disturb a suspected fire casually.

Waste and wildlife

Whether material is waste depends on its origin and intended management. Confirm the rules for chipping, storage, transport and use with the relevant regulator. Registrations, authorisations, transfer records and duty-of-care requirements may apply. Rules differ between Scotland, England, Wales and Northern Ireland; do not assume an English exemption applies elsewhere.

Check agreed restrictions for nesting birds, protected species, habitats and plant health before moving stacks or entering new ground. Stop and seek advice when unexpected wildlife or contamination is found. Avoid damaging retained trees, soils and drainage while positioning or recovering machinery.

Apply it Record the pollution controls and the person to contact for an environmental incident.

SEPA waste regulation

Environment Agency guidance on treating wood and plant material

17 SHUTDOWN TRANSPORT AND STORAGE

Finish the operating session

Stop introducing material and let the machine clear itself only by the normal procedure while everyone remains outside the danger area. Complete the specified run-down or cooling period, stop the power source and remove and retain the key. Wait for all rotating parts to stop before access.

- Isolate before cleaning, inspection or clearing accumulated material.
- Clean the machine and surrounding ground by the approved method; control dust and sharp debris.
- Inspect for new damage, leaks, loose parts and cutter wear, then record defects and operating hours.
- Replenish or service only when safe, cool enough and within your authorisation.
- Prepare the hopper, chute, turntable, supports and any rotor lock for transport as instructed.
- Leave the work area safe and tell the responsible person about faults and outstanding work.

Do not leave an unsafe handover

Take the key with you when leaving the machine unattended. If a fault remains, isolate and label it clearly rather than assuming the next user will read a note. Keep sharp removed knives in protected storage and retain the information needed for their replacement or sharpening.

Apply it Talk through the difference between normal shutdown and isolation for cleaning.

17 SHUTDOWN TRANSPORT AND STORAGE

Secure transport and longer storage

Before movement, repeat the applicable towable, tracked or PTO transport checks. Secure every component and tool. Use only designated restraint or lifting points. Do not lift the machine by its hopper, chute, safety bar or a convenient opening in a guard.

Prepare for storage

- Clean, dry and inspect the machine; repair or clearly record defects.
- Choose firm secure parking, apply the required brakes, supports and chocks, and prevent unauthorised use.
- Follow the engine and machine instructions for fuel, battery care, corrosion protection and frost protection.
- Protect controls and electrical parts without trapping moisture or blocking ventilation needed by stored equipment.
- Store knives safely, keep records available and note services due before reuse.

Return after storage

Inspect for rodent damage, corrosion, degraded fuel, leaks, perished hoses, seized controls and loss of pressure or tension. Complete the scheduled service and full pre-use checks. Test safety functions without material before returning to production. A machine that was safe when parked can deteriorate in storage.

Apply it What extra checks would you make after the machine has stood unused for several months?

18 KNOWLEDGE AND PRACTICAL RECORDS

Check your understanding

Answer in your own words before looking at the next page. Discuss any uncertainty during the practical session.

Apply it 1 The feed rollers pause automatically. Why must you still stay out of the hopper?

Apply it 2 What must be done before opening a cutter cover or clearing a blockage?

Apply it 3 Why can you not use one torque value for every chipper knife?

Apply it 4 What must you check when fitting sharpened or reversed knives?

Apply it 5 How do you feed short material and the final piece safely?

Apply it 6 Name the additional risks introduced by a PTO driveline.

18 KNOWLEDGE AND PRACTICAL RECORDS

Discuss the answers

1 Automatic feed pause

The load-control system can restart feeding as operating speed recovers. A pause is not a protective stop or isolation, and the rotor may still be turning.

2 Access to dangerous parts

Stop, isolate every relevant energy source, remove and retain the key, confirm standstill and secure rotor, rollers and raised parts as required. Follow the actual clearing or maintenance procedure and remain within your competence.

3 Torque

The joint, fastener grade and size, retention design and thread condition determine the required torque. Use the exact instructions, correct units, specified parts and a suitable calibrated wrench. Resolve conflicting figures before proceeding.

4 Replacement knives

Check correct type, profile, wear limits, matched set requirements, clean seats, fasteners and thread treatment. Set projection and all specified anvil gaps; restore guards and complete the controlled restart and recheck procedure.

5 Short material

Stay outside the hopper and use the approved aid or suitable long timber according to the instructions. Do not reach, use a foot or a metal tool, or chase the last piece. Isolate if the safe method will not clear it.

6 PTO risks

Entanglement, coupling failure, unsuitable shaft length or angle, incorrect speed, implement movement and continued rotation after disengagement. Correct matching, complete guarding and full tractor and implement isolation are essential.

Apply it Which answer needs further explanation or practical demonstration?

18 KNOWLEDGE AND PRACTICAL RECORDS

Example pre use check sheet

Adapt this record to the actual manual. Mark each applicable item, describe defects and decide whether the machine may be used. A tick is a record of a check, not permission to ignore a fault.

Machine identification and hours

Date site and operator

Check	Pass	Defect or action
Site plan, access, team and emergency arrangements	☐	
PPE, communication and housekeeping	☐	
Guards, flaps, catches, labels and covers	☐	
Fluids, leaks, cooling, filters and drive condition	☐	
Knife and anvil checks by the approved method	☐	
Towable, tracked or PTO checks as applicable	☐	
Hopper clear and discharge secured safely	☐	
No-load safety control and reset tests	☐	
Transport or maintenance locks correctly dealt with	☐	

Defects reported to and action taken

Decision to use or isolate and authorised release where needed

18 KNOWLEDGE AND PRACTICAL RECORDS

Record practical learning

Use this page to record the tasks demonstrated and practised. State any limits on your authorisation and the next training needed. Completing the workbook alone does not establish competence.

Practical task	Evidence or further practice needed
Assess site and brief the team	_____
Identify controls and demonstrate stopping	_____
Complete checks and report a defect	_____
Carry out authorised maintenance	_____
Explain knife change, torque and clearances	_____
Set up, start and feed suitable material	_____
Explain blockage isolation and safe restart	_____
Shut down and prepare for transport	_____

Tasks practised and limits of authorisation

Further practice agreed

Useful guidance

FISA 604 Wood chippers

HSE safe use and maintenance of work equipment

HSE woodchipper protection and PTO guidance