Prepare and operate a tractor with attachments

Note: This section is in two parts

Operate a tractor and its attachments

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PART 1

Operate a tractor and its attachments

Health & Safety Regulations

For details see the section 'Monitor and maintain health and safety'

Preparation for use

A) Before you go near a tractor ask yourself:
   a) Have you been trained to drive the vehicle?
   b) Are you wearing suitable clothing and footwear?
   c) Have you read and understood the instruction manual?
   d) Do you know how to carry out the work you intend to do?
   e) Have you carried out pre-start checks of the machinery?
   f) Do you know enough to work safely?

B) It is essential that you use the SAFE STOP procedure when leaving the tractor seat
   a) Make sure the handbrake is on.
   b) Make sure all controls are left safe in neutral.
   c) Stop the engine.
   d) Remove the key.

C) Check that no one is in danger before you move off. Take special care when there are people and animals around.

D) Equipment, loads or weather conditions make it harder to see – use a banksman or lookout when visibility is reduced, especially when reversing with a trailer or other tall-sided equipment.

E) Only carry someone else if a proper seat is fitted. IT IS ILLEGAL TO CARRY CHILDREN UNDER 13 ON ANY TRACTOR.

F) You are most likely to have an accident when hitching or unhitching a machine from your tractor:
   a) Always:
      i. Use SAFE STOP
      ii. Operate controls from the correct position. (Seated in the tractor).
   b) Never:
      Stand between the tractor and other machines or behind them.
G) Unguarded power take-off (PTO) shafts, machine blockages and maintenance work cause many serious injuries. Correct guarding is essential, and you must remember SAFE STOP procedure.

   a) Make sure guards are in place.
   b) Report any faults immediately.
   c) Never use a machine with a damaged PTO shaft guard.

H) A tractor can overturn anywhere – even on the flat. Most accidents, however, happen on slopes. NEVER DRIVE ON SLOPES UNLESS YOU ARE PROPERLY TRAINED.

Remember:
   a) Match the equipment to the tractor.
   b) Always couple, maintain and use trailer brakes.
   c) Make sure a safety cab or roll frame is fitted.
   d) If the site rules, or risk assessment require seat belts to be used, make sure you use them correctly at all times.
Working within the tractor’s capabilities

The tractor is a workhorse not a racehorse.

Never rush or hurry

Never use any tractor or implement unless fully trained in its safe use.

A) Tractor capabilities vary depending on variables such as:
   a) Driver experience.
   b) Weather conditions.
   c) Ground surface.
   d) Uneven ground.
   e) Slopes.
   f) Load.
   g) Curves and turns.
   h) Machines involved.
   i) Visibility.

The higher the risk, the slower you should go, and the longer the stopping distance allowed.

B) Maintenance

Always make sure that tractors and machines are properly equipped and maintained. Consult the manufacturer’s handbook and routinely check to make sure that:
   a) Brakes on tractors and equipment are connected and working properly.
   b) Independent brakes are properly balanced and the pedal latch is free from wear.
   c) Check the hand brake operates correctly.
   d) Steering and wheel bearings etc. are maintained so that there is no excessive free movement or play on any part of the system.
   e) Tyres are inflated to the correct pressure, have adequate tread and are free from dangerous cuts or other damage.
   f) Lubricant and hydraulic fluid levels are correct.
   g) Wheel nuts are checked and tightened as necessary.

C) A safe working system

Always plan work in advance so that the work methods are safe at all stages. For example:
   a) Always turn uphill when working across a slope.
   b) Always descend straight down the gentlest possible gradient of a slope, rather than drive diagonally across it.
   c) Remember that although a tractor can be driven up a slope with a hard surface, it cannot necessarily come down the same slope safely.
   d) Select the correct gear at the beginning of a slope, so that there is no need to change gear on the slope.
   e) Engage four-wheel drive (if available) before working on slopes.
   f) Keep away from banks and ditches, especially when turning.
   g) Ensure that you use a tractor of adequate size for the machine or trailer you are using,
taking account of the weight of the machine, trailer and any load.

h) Remember that when using rear-mounted fertiliser spreaders or sprayers, tractor rear-wheel grip reduces as the load is discharged. The steady weight reduction reduces traction when going up a slope and increases the possibility of sliding, especially when coming down the slope.

i) Avoid working across slopes if your tractor has large diameter, tubeless, low ground pressure tyres.

j) Remember when working across slopes, stones and bumps on the uphill side and holes and dips on the downhill side significantly increase the risk of overturning.

D) Training

a) Train drivers adequately. They need to be able to recognise all potentially dangerous situations that may cause loss of control such as:
   - the tractor being driven too fast;
   - inappropriate use of brakes;
   - inadequate braking;
   - insufficient wheel grip;
   - using a tractor that is unsuitable for the task;
   - being unaware of the effect of ground conditions especially slopes;
   - being aware of the effects of trailers and implements;
   - incorrect hitching and load distribution.

b) Training should emphasise the need for care and concentration and the importance of recognising changes in ground conditions, which may affect the safety of an operation.

c) Drivers should know that, after losing wheel grip, control of a tractor sliding on a slope will not be regained by applying the tractor brakes. They should be trained in, and understand the procedures for regaining control in such situations.

d) Suitable training courses are available from LANTRA, agricultural colleges and other training organisations. Specialist courses are available for driving on slopes.

E) Don’t drive too fast for the task or situation

Select the correct gear and speed for each operation. Drive slowly when:

- a) on rough, soft or slippery ground;
- b) cornering;
- c) using independent brakes;
- d) on slopes;
- e) crossing gulleys;
- f) near ditches.

F) Driving up and down slopes

- a) Before starting, select the correct gear to safely go up the slope without changing gear or to achieve adequate engine braking when going downhill.
- b) Where the tractor is fitted with four-wheel drive, front-wheel grip and traction will be improved if sufficient ballast/weight is attached to the front.
c) Tractors can generally climb steeper slopes than they can be safely driven down.

d) Tractors with four-wheel drive fully engaged will be less likely to slide out of control during a descent than a similar two-wheel drive tractor. Remember, like two-wheel drive tractors, four-wheel drive tractors also have a slope working limit which, if exceeded, could result in a severe accident.

e) Four-wheel drive systems that are not positive (i.e. where the front wheels are engaged when pulling, but not under engine braking) may not achieve any improvement.

f) Use of the differential lock may be appropriate – assess the ground conditions.

The diagram shows the kind of hard, dry slope which can be safely ascended by a tractor, but which cannot always be safely descended.

G) Towing equipment on slopes

a) Safe control depends on adequate grip of the tractor driving wheels, which means adequate weight in relation to the drawbar load.

b) Some equipment (such as rollers, four-wheel trailers, forage harvesters with coupled trailers) creates thrust with no added drawbar weight and may cause the combination to slide away.

c) Trailers should be fitted with brakes to avoid the trailer pushing the tractor. Brakes operated directly from the tractor footbrake are very much safer on slopes than trailers with other types of braking system or no brakes at all. Remember trailer brakes can lock up if the trailer is unladen.

The push from a balanced trailer or machine can slew a tractor into a jack-knife. Danger points – heavy loading of trailer and inadequate load transfer to tractor, insufficient wheel grip, poor ground conditions and gradient of slope which may be limited to as little as 5° or 6°.

H) Driving across and turning on slopes

a) Surface irregularities such as animal tracks, rocky outcrops etc. are potential overturning hazards when driving diagonally across a slope.

b) Avoid turning down a slope – this is especially hazardous.

c) Plan work across slopes so that turns are made uphill rather than downhill.

d) Using the widest practicable wheel track setting, reduces the likelihood of the tractor overturning.

I) Turning with rear-mounted equipment on a slope

a) Add sufficient front ballast to counterbalance rear-mounted equipment, particularly when working on slopes. But remember, using such ballast may reduce safety when travelling downhill.
b) Remember the ballast provided by mounted spreaders reduces as the load is discharged.

c) The higher the mounted equipment on the tractor's rear linkage, the less stable the tractor becomes. Keep mounted equipment as low as possible (within the constraints of effective use).

d) Select the correct gear for ground conditions and turn slowly, so that the tractor is under complete control during the manoeuvre.

e) Use the widest practicable wheel track setting.

f) Do not turn downhill on a slope.

g) Use a three-point turn on sharp corners.

h) Take extra care with offset mounted machines. Turn slowly with the offset load on the up slope side whenever possible.

J) Braking system

a) Adequate braking is essential for safe driving of a tractor or a tractor and trailer/trailed machine combination.

b) Always ensure the brakes are coupled, except when you need to use independent brakes.

c) Always ensure brakes are adjusted correctly and balanced.

data) Many surfaces provide only limited grip therefore brakes on trailers and trailed machines should be used to help control the combination.

K) Parking

a) Before dismounting, stop the tractor engine and apply the parking brake fully.

b) Do not park with a heavy load on a steep slope.

c) Remember parking brakes may have a lower capability than service brakes, and some transmission systems provide no engine braking when the engine is stopped.

L) Driving near a ditch or bank

a) If you cannot avoid driving near to ditches or banks, take extreme care, particularly where the surface is loose or wet or where the edge is concealed by undergrowth.

b) Make headlands wide enough for safe turning.

M) To avoid risks from hidden obstacles

a) Drive slowly where the ground surface is not easily seen, e.g. in long grass, bracken etc.

b) Be on guard for hollows, hidden logs, tree stumps, rock outcrops, rabbit holes, etc.

c) If in doubt walk the ground before driving over it.

N) Hitching chains or tow ropes

a) Always hitch AS LOW AS POSSIBLE.

b) Never hitch above the axle.

c) A chain or towrope hitched too high could cause rearward overturn of the towing tractor, even on level ground.
O) Freeing a bogged-down tractor

a) If the tractor becomes bogged down, try to reverse out. If this fails you will need help.
b) Never chain the wheels or jam them with blocks of wood, they may be forced into the ground and the tractor may overturn rearwards.

P) Clutch use

a) Suddenly engaging the clutch can cause a rearward overturn.
b) Let the clutch in slowly and avoid snatching. This is particularly important when driving up slopes.
c) Keep the pedals, footwear and tractor floor/footplates as dry and free from mud as possible.
d) Be aware that electrohydraulically operated clutches may engage more suddenly than mechanically operated clutches.

Q) Winching with tractor-mounted winches

To avoid overturning the tractor during winching, always check that it is set straight in line with the pull.

R) Tractor with raised load on the front end

a) Ensure that sufficient ballast weights are fitted to the rear.
b) Make sure the loader is not overloaded (consult the manufacturer’s handbook)
c) Whenever possible lower the loader for travel.
d) Do not drive at speed, make abrupt turns, or suddenly stop with the loader raised.
e) Plan fore-end loader work to minimise travel with the loader raised.

S) Vertical jack-knifing of tractor and trailer combination

a) Ensure that trailers are not overloaded, and the load is evenly distributed.
b) When tipping take care to ensure that the load slides freely from the trailer.
c) Use the correct size of tractor for the trailer to be towed.
d) Adding rear ballast (e.g. wheel weights or water ballast) will increase the stability of the tractor.
e) Pick-up hitch hooks and trailer eyes should be free from wear that may result in unhitching, especially when tipping.

With the rear wheels only turning slowly, tractor rearing is rapid. At 2 mph with 12.4-36 tyres, the rear wheels make one revolution every 4 seconds – only 1 second is needed for the tractor to rear to the vertical. An inexperienced driver may need as much as 1.5 seconds to decide on and carry out some remedial action.

T) Other safety precautions

Drivers should:

a) Carry out safety checks in accordance with manufacturer’s instructions.
b) Avoid wearing clothing such as long flapping coats or loose belts that may become caught on moving parts or controls. Sound, slip-resistant footwear should also be worn.
c) Understand and be familiar with the tractor’s controls.

d) Keep the footplates and the cab floor clean and clear of obstacles.

e) Do not remove the doors or roof of safety cabs.

f) Keep doors closed to prevent ejection if the tractor overturns.

g) Hold the steering wheel tightly in an overturn.

h) Use the safety belt if one is fitted.

i) Not carry loose tools or anything that may interfere with the tractor controls or cause injury in an accident.

j) Not add any fitment or accessory inside the tractor cab that could cause injury in the event of an overturn (e.g. sharp levers, knobs, etc.).

k) Ensure when moving off that nobody is at risk of being run over. Always check nearby for playing children.

l) Not allow passengers to ride on tractors unless a seat is provided for them. Remember children under the age of 13 are not permitted to ride on tractors even if a passenger seat is fitted.

Reference: HSE Booklet – Prevention of tractors overturning (AS22)
Safe use of tractors and attachments

The following are examples of a written Permit to Use system covering:

a) Tractors.
b) Trailers.
c) Front loader (attached).
d) Aerators (mounted).
e) Gang unit (towed).
f) Chipper (PTO and three-point linkage).
MACHINERY GUIDELINE INSTRUCTION SHEET

Machinery group: TRACTORS

a) Operator’s manual

It is essential to study the relevant manuals as part of the preparation process.

b) Protective clothing and equipment

i. Safety boots must always be worn.
ii. Outer clothing must be snag free.
iii. Ear defenders must be worn unless the machine has an enclosed cab that complies with noise regulations, or site rule or risk assessment requires the use of hearing protection.

c) Maintenance

i. All maintenance must be carried out in accordance with the manufacturer’s instructions.
ii. Always chock the wheels before jacking the tractor. Ensure jacking is done on firm ground.
iii. If ever working under the tractor, always use blocks or axle stands, never rely on jacks.
iv. When checking the battery, never smoke and always ensure the ignition key has been removed.
v. When disconnecting the battery, always disconnect the earth first. When replacing the battery, always connect the earth lead last.
vi. Never add water to the radiator while the engine is hot.

d) Daily checks

While walking around the machine, check the following:

i. Check tyres are at the correct pressure and that they are not worn or damaged.
ii. Check for any fluid leaks.
iii. Check engine oil level.
iv. Check transmission fluid level.
v. Check fuel level.
vi. Check coolant level.
vii. Check and clean the radiator screen.
viii. Check for general damage and any loose nuts and bolts.
ix. Check safety devices work properly.

While sitting on the operators’ seat:

i. Check the brake, clutch and accelerator pedals.
ii. Check the parking brake.
iii. Check the steering wheel.

Turn the key partly on.

i. Check all lights and indicators.
   Start the engine. Use the Safe Start Procedure.
ii. Check the colour of the exhaust fumes.
Fill in the check sheet and report any specific problems that cannot be dealt with safely and easily at once.

**e) Fuelling**

i. It should be standard practice to fuel the vehicle each night after use. This procedure reduces condensation in the fuel tank and so prevents problems with water build up in the fuel system.

ii. No smoking or naked flames are allowed within 10 metres of the fuelling point.

iii. Always wear rubber gloves when fuelling.

iv. If containers are used their contents must be clearly labelled.

v. Always replace fuel caps securely and clean up any spillage.

vi. When fuelling always use a filler cone or direct insertion method.

vii. Never fuel when the engine is running.

**f) Starting procedures**

i. When entering or leaving the cab, always face it.

ii. Never store loose objects in the cab.

iii. Check there is nobody in the vicinity of the vehicle who could be hurt.

iv. Ensure the parking brake is on and the gear level is in neutral.

v. Close the cab doors securely (if fitted).

vi. Only start the tractor while sitting on the driving seat.

vii. If starting the vehicle in the shed, always ensure that you maximise ventilation by keeping the front and rear doors open.

**g) Driving**

i. Only drive tractors fitted with safety cabs or roll over protection.

ii. Do not permit anyone to ride on the tractor unless legally permitted and provided with a seat.

iii. Always drive with your thumbs outside the rim of the steering wheel.

iv. Ensure your brakes are locked together, especially when driving on roads. Only disconnect them when independent braking is required.

v. Only engage the differential lock when wheelspin is anticipated.

vi. Never jump off a moving tractor or leave it with the engine running or the keys in it.

vii. In the event of overturning, never jump clear. Sit tight and stop the engine.

viii. Do not use the machine after overturning until it is checked by a mechanic.

ix. Avoid slopes if possible.

x. When driving down slopes use low gear and throttle. The hand brake can be used gently to assist braking.

xi. Check the work area in advance. Special care should be taken with long grass. Identify any hazards and remove or avoid.

xii. Never use an unshielded PTO shaft. Always ensure you use one of the correct lengths.

xiii. Always keep your hitches as low as possible and on the drawbar.

**h) Site limitations**

These should be specific to the site on which you are working and should include such things as slopes, water margins, confined areas and any other risks causing limitations on safe use.
MACHINERY GUIDELINE INSTRUCTION SHEET

Machinery group: TRAILERS

a) Operator’s manual

It is essential to study the relevant manuals as part of the preparation process.

b) Protective clothing and equipment

i. Safety boots must always be worn.
ii. Outer clothing must be snag free.
iii. Ear defenders must be worn unless the tractor used has an enclosed cab that complies with noise regulations.

c) Maintenance

i. All maintenance must be carried out in accordance with the manufacturer’s instructions.
ii. Before use always check the trailer for damage, loose nuts, tyre condition and pressure, electrics and hydraulics (if provided), tow bar and connectors.
iii. Report any defects promptly and do not use the trailer if safety is in doubt.

d) Preparation

i. Check tractor operator’s manual to establish maximum load capacity.
ii. Ensure the tractor wheels are set as wide as possible to ensure stability.
iii. Always disengage the PTO and switch off the tractor engine when installing or removing an attachment.
iv. Check and adjust front ballast to prevent front wheels lifting.
v. Hitch the trailer on to the drawbar. On no account hitch the trailer on to any other part of the tractor.
vi. Ensure there are no loose chains or other items left hanging.
vii. Brake pedals should be locked together, unless off road conditions merit splitting.

e) Riders

i. Riders are permitted on the trailer, they must be seated within the trailer and the complete trailer sides (capes) must be secured in the up position and so be able to contain the passengers.
ii. Riders must at no time sit on top of the capes or be allowed to dangle any limbs outside the trailer.
iii. Riders are not allowed to ride in a trailer on top of a load.
iv. No riders are ever allowed to stand on any part of the trailer at any time while in motion.
v. Mounting and dismounting must only be carried out while the trailer is motionless.

f) Parking

i. Park on level ground if at all possible and always apply the hand brake and remove the key.
ii. If you must park on a slope, chock the wheels.
iii. If parked pointing uphill, apply the hand brake and put gear in reverse.
iv. If parked pointing downhill, apply hand brake and put in low gear.

g) Loading

i. The load must never exceed the manufacturer's stated capacity.
ii. Loads should always be spread equally and weight kept as far down on the trailer as possible to maintain stability.
iii. Always ensure that the load does not obscure the driver's view.
iv. Where there is any possibility of loads shifting or moving, they must be secured.

h) Driving

i. Move off slowly especially with a full load.
ii. Use extreme caution on slopes and uneven ground, avoid them if at all possible. To increase traction switch to 4-wheel drive and reduce speed so you are in control at all times. If possible avoid this type of ground.
iii. Do not depress the clutch or change gears on a slope. Get into the correct settings before reaching the slope.
iv. Slow down on turns and curves.

i) Site limitations

These should be specific to the site on which you are working and should include such things as slopes, water margins, confined areas and any other risks causing limitations on safe use. Plan ahead and minimise travel over areas with slopes and traverses.
MACHINERY GUIDELINE INSTRUCTION SHEET

Machinery group: FRONT LOADER

a) Operator’s manual

It is essential to study the relevant manuals as part of the preparation process (tractor and loader).

b) Protective clothing and equipment

i. Safety boots must always be worn.
ii. Outer clothing must be snag free.
iii. Safety goggles or a face shield must be worn when working or inspecting the hydraulic system.

c) Maintenance

i. All maintenance must be carried out in accordance with the manufacturer’s instructions.

d) Hitching and unhitching

Most accidents tend to happen at these points:

i. Always follow the operating manual.
ii. Only use the controls from the operator’s seat.
iii. Never stand between the tractor and bucket.
iv. Ensure that jacks, skids or stabilisers are always used to prevent the bucket slipping or falling over when not attached.
v. Remember to add or adjust wheel ballast or rear weights to provide stability.
vi. Move the wheels to their widest setting to improve stability.
vii. Visually check for hydraulic leaks using a safety card, at the same time check for broken missing or loose parts.
viii. Before disconnecting hydraulic lines always relieve the fluid pressure.
ix. When replacing pins on the bucket or on the cylinder ends always use a brass drift and a hammer to prevent injury from flying metal fragments.

e) Starting the tractor moving off

i. You must be fully aware of the tractor and machine controls before use.
ii. Follow the particulars listed in the tractor permit to use sheet.
iii. Only start the engine or use the machine from the driver’s seat.
iv. Before starting the engine ensure that all the controls are in neutral.
v. Before transporting, check all controls on the tractor. If defective do not use.
vi. Only the operator should be on the machine.
vii. Only use tractors with ROPS (Roll Over Protection Systems).
viii. Always wear a seat belt in conjunction with ROPS.
ix. Always raise the bucket from the ground (but keep it low before moving off).
x. Always check for clearance at bridges, doorways and especially in regard to electric or telephone lines.
xi. Securely attach any loose equipment carried during transport.

xii. When on rough uneven sites, drive in low gear slowly to improve stability.

xiii. Always keep in gear when driving up or down a hill. Never go into neutral or depress the clutch.

f) Working the loader

i. Be fully aware of the controls before using the machine.

ii. Never exceed the lift capacity of the loader.

iii. Before dismounting from the machine, always lower the front loader to the ground and apply the SAFE STOP procedure.

iv. Always mount or leave the tractor using the steps, never jump.

v. Use extreme caution when the loader is raised and especially when loaded.

vi. If in difficult conditions or inexperienced, slow down and use a lower operating speed.

vii. Before using the loader, always ensure there are no obstructions, people or animals in the way.

viii. When parking the machine, try to select firm level ground. Always put the loader down, put machine in neutral, apply the handbrake and remove the key.

ix. If you have to park up on a slope, do not leave the machine pointing up or down slope but ensure it is parked across the slope.

x. When using the loader, try to avoid working across a slope as it is far more likely to roll over.

xi. Try to work with the machine pointing straight up or down the slope.

xii. If you must work across slopes, always keep the loader as low as possible.

xiii. Always try to site trailers or trucks that are being loaded on flat level ground.

xiv. Make sure the driver is out of the cab of the truck being loaded.

xv. Never pass the loader bucket over the cab of a truck being loaded.

xvi. If stacking soil, never do it close to the trench edge or it could cause cave-ins.

xvii. Avoid jerky movements with the loader as these can be very dangerous.

xviii. Before starting, always ensure you have checked for underground services and especially overhead cables.

xix. Try to avoid working in areas with holes, rocks or loose fills.

xx. Always allow for the length of the loader when making turns.

xxi. Do not handle large heavy objects with the loader unless extreme caution is taken, keep the load low, move slowly and secure the load.

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i. Never carry anyone on the loader or in the bucket.

ii. Never allow anyone to get under or to reach through the lift arms when the bucket is raised.

iii. Never walk or work under a raised loader, bucket or other attachment unless it is securely blocked up and held.
MACHINERY GUIDELINE INSTRUCTION SHEET

Machinery group: AERATORS (mounted)

a) Operator’s manual

It is essential to study the relevant manuals as part of the preparation process.

b) Protective clothing and equipment

i. Safety boots must always be worn.
ii. Outer clothing must be snag free.
iii. Ear defenders must be worn unless the tractor has an enclosed cab that complies with noise regulations.

c) Maintenance

i. All maintenance must be carried out in accordance with the manufacturer’s instructions.
ii. When carrying out maintenance, always switch off the tractor engine and remove the key and then disengage the PTO shaft.
iii. Check gearbox oil daily and top up as needed.
iv. Grease all bearings and the drive shaft weekly.
v. Nuts and bolts should be checked daily and tightened as required.
vi. If tines are bent they must be replaced as a pair. After 30 minutes use, new tines should be checked and clamp bolts tightened.

d) Hitching and unhitching

Most accidents tend to happen at these points:

i. Always follow the operating manual.
ii. Ensure the tractor and machines are on firm level ground and are in alignment before attempting to hitch or unhitch them.
iii. Never stand between or behind the tractor and the machine.
iv. Never stand with your feet under the machine or tractor lift arms.
v. Always ensure that jacks, skids, stabilisers or blocks are used to prevent machines slipping or falling.
vi. Adjust check chains or anti swing bars to prevent undue sideways movement.
vii. Always ensure that the 3-point linkage is fully and properly connected before using hydraulics to lift the machine.
viii. The machine must always be mounted so that the drive shaft and gearbox are horizontal.
ix. The machine should be mounted and levelled and then the top link adjusted to bring the machine slightly forward of the level.

e) Connecting the PTO

i. Before attaching the PTO, ensure the tractor is switched off, the key is removed and the handbrake is on.
ii. Ensure the PTO is the correct length to operate safely in the raised and lowered position.
iii. Check the PTO is properly guarded, undamaged and properly lubricated.
iv. If the PTO shaft or guard is damaged or unsafe, do not use.

f) Starting the tractor and transporting the machine:

i. Always be fully aware of the tractor and machine controls and operation before use.
ii. Only start the engine from the driver’s seat.
iii. Before starting the machine ensure all controls are in neutral.
iv. Before moving off ensure the machine is raised on the hydraulics and that the lift control lever is locked and the skids are set in the down position to protect tines.
v. Only the operator is allowed in the tractor.
vi. Always keep in gear when going up or down a hill, never go into neutral or depress the clutch.

g) Working the machine (this information is machine specific and gives an example of the type of information found in instruction books). You should always check the instruction book for your machine.

i. An appropriate driving speed should be used.
ii. PTO should be set at 540 rpm.
iii. Raise skids to the upper position.
iv. Depth of work can be set at up to 125mm. Adjustment is made by loosening the four bolts on the roller slides. You then screw clockwise to increase depth anti-clockwise to reduce depth. When set, re-tighten bolts and lower the machine so the roller rests on the ground.
v. Set the rear windrow boards (to gather cores), by adjusting the chains so that the blades rest lightly on the ground.
vii. Check that the turf holders are parallel to the turf with a 1-2 mm clearance.
viii. Raise the machine 100 mm clear of the surface.
ix. Select forward speed and set PTO (as in parts i and iii).
x. Drive forward, engage PTO and lower the machine down onto the roller.
xi. Adjust hole spacing as required by increasing or decreasing ground speed.
xii. At the row end lift hydraulics and disengage PTO while still moving.
MACHINERY GUIDELINE INSTRUCTION SHEET

Machinery group: GANG MOWER UNITS (towed)

a) Operator’s manual

It is essential to study the relevant manuals as part of the preparation process.

b) Protective clothing and equipment

i. Safety boots must always be worn.
ii. Outer clothing must be snag free.
iii. Ear defenders must be worn unless the tractor has an enclosed cab complying with the 'Q' regulations.

c) Maintenance

i. All maintenance must be carried out in accordance with the manufacturer’s instructions.

d) Daily checks

i. Check for wear and tear, loose nuts, bolts or couplings and other parts.
ii. Check cylinder alignment and height of cut.

e) Starting procedures

i. When towing to the work area; disengage the cutting cylinder by turning the gear selectors to the horizontal position and ensuring the cross pin is located in the horizontal groove. There are two gear selectors either side of the cylinder on each unit. The next step is to raise the rear rolls by lifting and locking the lifting lever in the top hole.
ii. Ensure the tractor is in neutral and the brakes are on and start it. Engage gear and pull away gently.
iii. When on site, check for stones, wire and other debris before work commences.
iv. When ready to start, re-engage all gear selectors to the vertical position and lower the rear rolls by adjusting the lifting lever down.
v. Towing speed, this will vary depending on ground conditions.

<table>
<thead>
<tr>
<th>Ground Conditions</th>
<th>Speed (mph / kph)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average conditions</td>
<td>4-5 mph (6 – 8 kph)</td>
</tr>
<tr>
<td>Smooth conditions</td>
<td>6-7 mph (9 – 11 kph)</td>
</tr>
<tr>
<td>Very smooth conditions</td>
<td>10 mph (26 kph)</td>
</tr>
</tbody>
</table>

As a guide, if the rear rolls bounce you are going too fast and should slow down. If grass cuttings do not fly clear, you are going too slowly and should increase speed or cease operations until conditions improve.
f) Driving

i. Only specifically trained operatives are allowed to operate these machines.

ii. Machinery must never be used when the operative is under the influence of drink or drugs.

iii. Only mow in good light.

iv. Check the site for debris and hazards before cutting.

v. Exercise caution with blockages, stored energy can be released when clearance occurs. Try to keep your body away from the cylinder and use a stick to clear the problem if possible.

vi. Never drive close to bunker edges, ditches, waterways or other potential hazards.

vii. Always reduce speed when turning.

viii. Avoid sudden stops and starts.

ix. Always look to the rear before reversing.

x. Always raise the rear roller and disengage gear selectors when moving from one work area to another.

xi. Always park on level ground.

xii. Before leaving the machine:

- Put the gear selector to neutral.
- Wait until the blade or reels stop turning.
- Put the parking brake on.
- Switch the engine off and remove the key.

xiii. In the event of the units striking anything, turn the engine off. When all motion has stopped, inspect for damage. Repair or replace parts before continuing to use the machine.

xiv. When mowing, if any animal or person gets too near, stop mowing. Do not resume mowing until the area is cleared.

xv. Always yield the right of way.

xvi. After use, clean grass cuttings from the machine, wipe oil onto the cutters and turn them in reverse to cover the sole plate edge with oil. If pressure washed only do so with low pressure. High pressure forces water into the bearings which gives rise to corrosion and increased damage and wear.

g) Site limitations

i. Slopes are always an area of potential risk, avoid them if at all possible.

ii. Never cut slopes especially when wet.

iii. Never cut across the slope if possible.

iv. When going downhill, apply the service brakes to keep forward speed slow and the machine under control. On no account try to turn the machine if forward speed is increasing.

v. Traverse slopes slowly and avoid starting or stopping suddenly.

vi. When climbing a slope, if the engine slows or stalls and cannot make the crest, never turn the machine. Always back the machine slowly straight down the slope.
MACHINERY GUIDELINE INSTRUCTION SHEET

Machinery group: CHIPPER/PTO

a) Operator’s manual

It is essential to study the relevant manuals as part of the preparation process.

b) Protective clothing and other equipment

i. Safety boots must always be worn.
ii. Outer clothing must be snag free. Preferably one piece overall.
iii. Ear defenders should be worn.
iv. Safety helmet.
v. Safety goggles/glasses or face visor.
vi. Suitable gloves for fuelling and handling materials.
vii. High visibility clothing when working at roadsides.
viii. First aid kit including large wound dressing.
ix. Chocks for parking the chipper.

c) Maintenance

i. All maintenance must be carried out in accordance with the manufacturer’s instructions.
ii. Check drum/disc and knives each day for damage and wear. Always wear gloves when handling knives.
iii. Before working on the knives confirm that the engine stop mechanism is applied and the disc/drum is stationary, also that any keys are removed and a ‘Do not operate’ sign is posted.
iv. Never carry out maintenance or make adjustments on the unit while it is in operation.

d) Daily checks

While walking around the machine, check the following:

i. Check the unit is securely attached to the tractor.
ii. Check for loose nuts, bolts or other parts and tighten as required.
iii. Ensure the drum/disc rotates without fouling the lock bolt or anvil.
iv. Check that no partially chipped produce is lodged in the feed area.
v. Ensure that the units stopping device is clearly marked and working and is readily accessible to the operator from the normal working position.
vi. Place all gears in neutral and disengage PTO when starting tractor.

e) Machine use

i. Always follow the operating manual instructions.
ii. Select a firm surface free from obstruction.
iii. Don’t stand on embankments, so that your waist is significantly higher than the feed tube.
iv. Ensure that the discharge chute is positioned to prevent chips being blown on to roads or paths during roadside operations.
v. Check that material to be chipped is free from stones and metal.
vi. Feed material in the thick end first to avoid being caught and dragged in.
vii. Let material go as soon as it is engaged in the rollers.
viii. If a continuous feed system is not in use, use a push stick at least 1 metre long for the last piece of produce.
ix. Never place any part of your body inside the feed chute.
x. Keep the area in front of the infeed chute free from debris.
xii. If material becomes lodged either, reverse the feed rollers and relocate the material OR switch off, secure the drum/disc lock, lift the infeed chute and extract the material.
xiii. Stand to one side of the unit out of line with the feed rollers.
xiv. Remove the tractor start key when the unit is left unattended.

MACHINERY PERMIT TO USE REGISTER

Machinery group: CHIPPER/PTO

All operatives listed below have undergone instruction in the safe and proper use of machines contained in the machinery group listed above. These operatives agree to follow and abide by the relevant instruction guidelines listed here and in the relevant operating manuals.
After use

A. When finished always use ‘Safe Stop’ on level ground.
B. Ground the attachment.
C. Clean the tractor and attachment.
D. Fuel the tractor.
E. Check for any damage or loose nuts and bolts.
F. Demount and store the attachment safely.
G. Leave the tractor and attachment in a condition for safe use next time.

Thanks to the Health and Safety Executive website where a lot of extremely useful information is found. It is recommended that time be taken to browse the content, which is changed and updated regularly.

Health and Safety Executive home page can be found at:

http://www.open.gov.uk/hse/hsehomee

or

by telephone at HSE infoline 08701 545500