



# Parks and Open Space Management

*Saskatchewan Parks and  
Recreation Association Inc.*

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## Chipper Handbook





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## Introduction and Disclaimer of Liability for Use of the Document

This Parks and Open Space Management Handbook, provides a description of procedures associated with maintenance activities performed within park settings.

The concept of maintenance standards requires the application of best practices within the local operation system. To assist with the establishment of such standards, this resource provides guidelines to aid staff in addressing their daily management operations. There are, however, situations where the standards outlined may require revision by those staff implementing the procedure, to best meet their needs. Specific site conditions, operating budgets, available human resources, and capacity to offer training associated with the practices outlined in this document may warrant alterations to the procedures.

Anyone making use of this document is advised that the Saskatchewan Parks and Recreation Association and those contributing to its development disclaim liability for any claims, actions, demands or suits which may arise by reason of any reason of any person relying on the information contained in this document.

## Acknowledgments

This resource was produced and developed by AHZ Learning Technologies Inc. in consultation with the City of Regina. These organizations have generously provided Saskatchewan Parks and Recreation Association the rights to modify and distribute this material to its members.

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## Introduction to the Chipper

Today was your first shift on the “chipper” crew and although you had a general idea of what your day was going to be like, you stood behind the chipper machine and couldn’t help but be impressed with it. You had walked around the machine at the beginning of your shift to do the circle check and you noticed all the warning decals on the equipment. After seeing the chipper machine in action, you understood the need for all the warnings! There would be no second chances with this piece of equipment.



first branches fed into the chipper and the wood chips shooting into the back of the truck. Now, for the first time you were seeing exactly how it’s done. Your thoughts were interrupted because Kirk was laughing at the expression on your face. “Quite the machine isn’t it?” Kirk said as he continued to chuckle. “Wow”, was the most intelligent thing you could come up with. You were speechless.





## *Introduction to the Chipper Continued....*

Kirk continued to feed the branches into the chipper as you began gathering branches from another pile. You said that you have seen mulch around before in different landscaping and stuff but you had never seen anything like this machine. Your mom used to buy bags and bags of these chips for her beds at home every spring.



“She can get it for free you know” Kirk said. He went on to tell you about the Christmas Tree Mulch Program that some communities now have and how in the spring they offer the mulch to residents for free. “That’s pretty cool”, you said as you made a mental note to let mom know about the free mulch in the spring.





## Chipper Overview

The chipper is an amazing machine that is used by the crews to mulch the limbs and branches of the trees that are pruned or cut down by the pruning and removal crews. Basically, your duties will consist of feeding the limbs and branches into the chipper. Sometimes there might be a limb that is too large to go through the chipper and in instances like that you will have to cut the limb into smaller pieces using a power pruner or a chainsaw. You will find that you follow the pruning and removal crews around and run what they have removed from the trees through the chipper machine – turning it into mulch.



Once the truck is full of wood chips (mulch) from your day of chipping, you will have to make a trip out to the nursery to dump the mulch into designated pits. This mulch is then recycled at the nursery – they use it for their plantings.

It is important that any elm wood is kept separate from the other types of wood because of the risk of Dutch Elm Disease. The wood from the elms is run through the chipper machine, taken to the nursery and burned immediately. You won't have to worry about elm wood between April 1 and August 31 because of the Provincial Ban that is in place that doesn't allow the pruning of elms between those dates. However, it is possible for a dead elm to be removed between those dates in which case the wood from the dead tree would need to be run through the chipper and burned at the nursery.

Safety cannot be stressed enough throughout this module. Not only your crew's but the public as well. This particular piece of equipment always seems to draw onlookers and it's your responsibility to ensure that your work area remains safe for everyone at all times.







# Your Day Begins...



## Safety Equipment Overview

From your past experience you know the importance of wearing the correct clothing and safety equipment. You recall the standard safety gear used by Parks and Open Space Management workers.

**Safety Gear**

	Hard Hat - Required <i>(never worn backwards or over another hat)</i>
	Safety Vest - Required <i>(wear on all roadways)</i>
	CSA Approved Safety Boots - Required
	Safety Glasses - Required
	Work Gloves - Required
	Ear Plugs or Muffs - Required
	Overalls - Required
	Chainsaw Chaps - Required <i>(when operating the chainsaw)</i>
	Chainsaw Gloves Required <i>(when operating the chainsaw)</i>



## Overview of Equipment Used



While the bulk of your job will be running the chipper machine, on occasion you may have a need to operate a power pruner or a chainsaw as well.

The chipper machines that are used now use rollers to feed the branches and limbs into discs that chop them into small chips. The new chippers will have the same roller system but instead it's a drum that cuts up the branches and limbs.

Regardless of the particular chipper used, you will feed the branches or limbs into the rollers and they will be chopped into small wood chips that will shoot out into the back of the chipper truck. When the chipper truck is full, it is taken out to the nursery and dumped. You are able to reuse the chips to protect our plantings.

You learn that the chipper truck is difficult to drive when the chipper machine is hooked up. The chipper machine has a short wheelbase and is quite a bit narrower than the chipper truck so your view of the chipper is limited. You will notice that a yellow PVC may have been attached above the wheels of the chipper. These are for when you are driving and you are wondering just where the chipper machine is.





## Chipper Circle Check

Before leaving the depot for your day of chipping, you perform a circle check on all your equipment. The department may use a daily log book for any vehicle that you “ride in” or “ride on”. Before leaving the depot at the beginning of your shift you may be required to complete the circle check provided in the Operator’s Daily Log Book.

Remember to check your vehicle for any safety items that you will require throughout the day like barricades and/or pylons, safety vests, safety chaps and chainsaw gloves – again, anything that you may require throughout the day.





## Chipper Maintenance Check

From your experience you understand the importance of maintaining the equipment used by the department. You will recall from your equipment training what you will look for when performing your maintenance checks on specific pieces of equipment. If you find that a piece of equipment is damaged or in need of regular maintenance, let your supervisor know so it can be booked in for maintenance.



### Daily Maintenance

- ☑ Check oil levels.
- ☑ Check antifreeze level.
- ☑ Check that the hookups to the chipper truck are working properly.
- ☑ Check that all the lights are working properly.

**The blades on the chipper machine may need to be sharpened weekly.**







## Safety

### Site Safety

For some reason the general public is fascinated with the chipper. Always be aware of your surroundings. You are bound to have onlookers - just make sure that they stay a safe distance away. If you are working on busy roadways remember to put out pylons or barricades. On the older, narrower streets it may be necessary to block the street off.



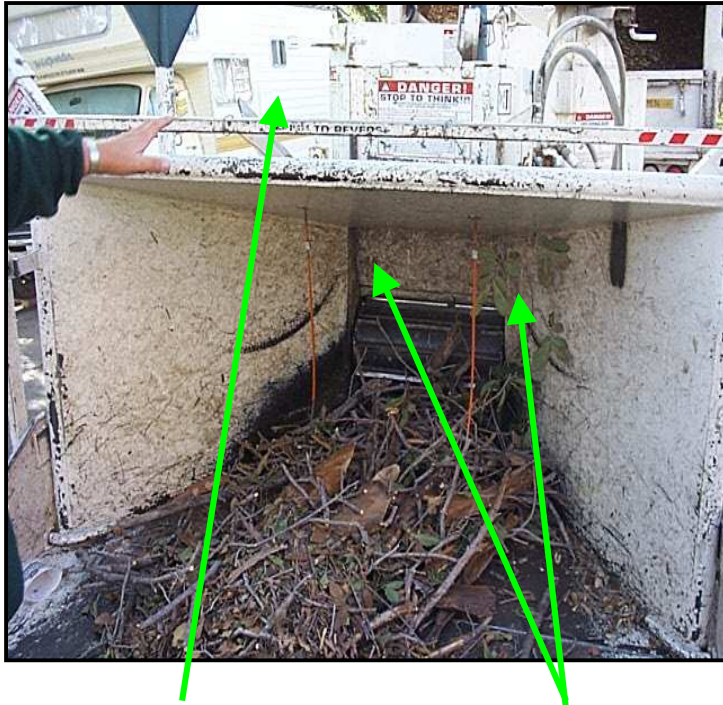
### Chipper Safety

- NEVER leave the keys in the chipper when it is unattended.
- NEVER leave the chipper unattended while it is running.
- You should feed the branches and limbs into the chipper from the corners of the tailgate.
- NEVER use your feet or hands to push the branches into the chipper.
- Shut the chipper down before trying to manually remove any jammed branches or limbs.





## ***Emergency Bars and Grab Ropes***



Emergency Bar

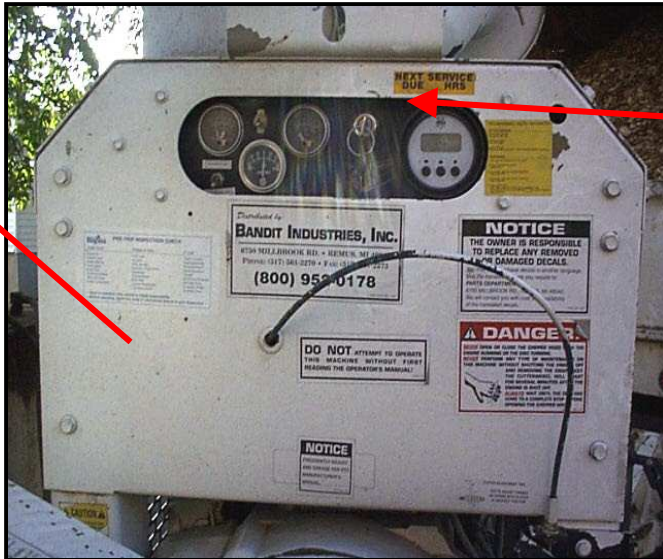
Grab Ropes

You will notice at the back of the chipper machine there are emergency bar and grab ropes for your protection. Accidents happen and don't think that they can't happen to you. If there is ever a need to stop the chipper machine you can either push the emergency bar forward or pull the grab cord on either side. This will reverse the chipper machine.



## Procedure for Chipping

### Starting Procedure



Now that you understand the importance of safety, it's time to start the chipper.

1. The first thing that you will do is hold in the glow plug for at least 3 seconds.

2. Now turn the start key to the ON position. If the chipper doesn't start, wait 15 seconds and repeat this step. Once you have started the chipper, let it run for 2 minutes to warm up properly.

3. Now engage the clutch and throttle up. As you throttle up the rpm's will go to 1,000 on the tac. Now the chipper is ready to run and you can begin to feed in the branches.

### Shutting the Chipper Off

- Throttle down and wait until the rpm's come down.
- Now you will disengage the clutch.
- Now turn the key to the OFF position.
- Make sure that you put the key in the truck right away so that it doesn't get lost.



Throttle

Clutch





## Feeding the Branches into the Chipper



The pruning crew should pile the branches in a nice neat pile for you so they are easier to handle. One crew member will grab the branches at the cut end and begin to feed them into the chipper. Be careful not to feed the branches in too quickly or you can cause the chipper to jam and never stand directly behind the chipper when it is mulching branches or logs. Other crew member can be watching out for onlookers and ensure they stay a safe distance away.

Occasionally you may run across a limb that is too large to go through the chipper so you will have to cut it up using the power pruner or the chainsaw depending on its size. From your previous training you already know how to run both those pieces of equipment as well as the importance of safety when operating them.

If the chipper jams, press on the reverse bar or grab cords and see if you can back the branches out. If you are able to back the branches out you can try adjusting them and feeding them back into the chipper. If you are not able to get them to back out you will have to SHUT THE MACHINE DOWN before you try to remove the jammed branches.





## ***Feeding the Branches into the Chipper Continued....***

NEVER stick your hands or feet into the chipper in effort to remove the jam. Instead use another branch to help force the material loose.

Sometimes the jam is in the shoot at the front of the chipper machine. This shoot can be removed in order to remove the jammed piece. Again, the chipper machines **MUST BE SHUT DOWN** before you manually remove any jams.







## Cleaning Up the Site



Once you have finished running all the branches and limbs through the chipper and loading the logs on the back of the truck you can begin your clean up. If the tree was very large, and there are lots of larger logs you should let your supervisor know. In situations like this a front-end loader may need to be sent out to pick up the logs and get them loaded into the back of the truck.

Using your rakes you will gather the miscellaneous bits and pieces of leaves and twigs left over from the removal and you will sweep them with the rake into the shovel. This material is thrown directly into the back of the truck – it is NOT run through the chipper machine. Often you end up sweeping up stones and glass along with the leaves and twigs that may have been on the street. The stones and glass can cause unnecessary wear on the blades.





## Emptying the Chipper Truck

When the box of the chipper truck is full you will have to make a trip out to the nursery and empty the box. Sometimes the community can use the wood chips when they are doing their planting but if through the course of the season there are just too many, they may have to be burned.

On your way out to the nursery you will stop and drop off the chipper machine. There is no reason to take it to the nursery. It's cumbersome to drive with and you would have to unhook it at the nursery anyways because you can't unload the chipper truck with the chipper machine on. You have to watch where you park the chipper machine, so you want to park it so that the nose or hitch of the chipper machine is at the opening of an alleyway. That way no one can park in front of the chipper machine while you are at the nursery. On your way back from the nursery you will stop and pick up the chipper machine.



When you arrive at the nursery you will have to dump the wood chips into one of the pits that are there. You will have to find out from your supervisor which pit you should empty your load into. The use of the individual pits is rotated. You see, when a pit of wood chips has been burned, the pit is not dumped into for a week because the wood chips can stay hot and sometimes smolder.





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## ***Emptying the Chipper Truck Continued....***

From your training you have already learned the proper procedure for emptying the box of the chipper truck. Let's take a moment to quickly review it one more time:

- Power Take Off Operation.
- Stop vehicle and put it in Neutral. Don't forget to apply the park brake.
- Now you will engage P.T.O. (electric switch), and monitor operation lights.
- Use the hydraulic control lever to lift and lower hoist.
- Disengage hoist after dump body is completely down.
- Make sure the end gate is open prior to lifting hoist.
- Once you have emptied the box you can head back and pick up the chipper machine.



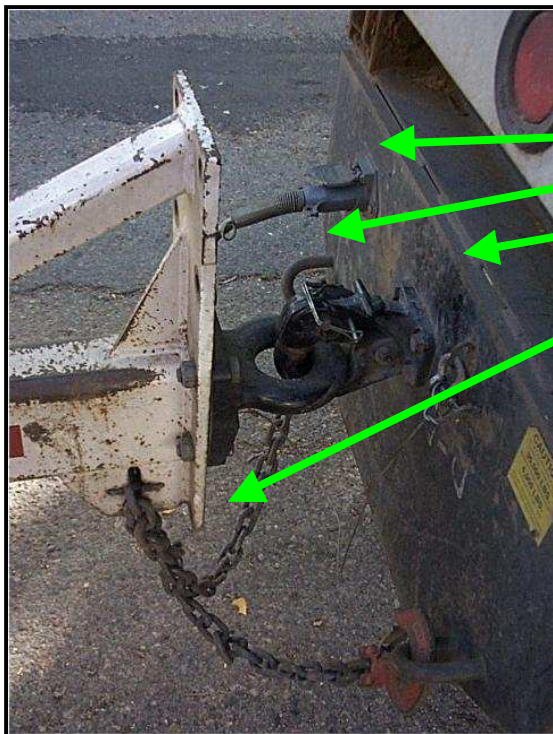
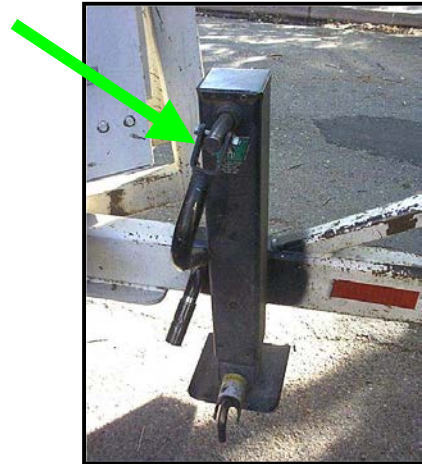




## Unhooking and Hooking Up The Chipper Machine

From your previous training you have already learned the proper procedure for unhooking and hooking up the chipper machine.

- When you are unhooking the chipper machine remember to crank the footplate down so that the chipper doesn't fall forward.
- When you are hooking up the chipper machine make sure that you have everything hooked up. The safety chains, light hook up, brake safety cable for chipper brakes and the cotter pin.



Light Hook Up  
Cotter Pin  
Chipper Brake Safety Cable  
Safety Chain





## Christmas Tree Recycling Program

As a side note, you should be aware of a great program that is being offered in some communities.

Christmas trees can be recycled each year through a “Tinsel Mulch” program. The program reduces the amount of organic material destined for the landfill and produces useful mulch for residential yards and gardens. The tree mulch is also composed to reduce the production of greenhouse gases such as methane, which contribute to global warming. It is a beautiful soil conditioner for flowerbeds and gardens.

The tree collection begins in mid-January. The community may choose to distribute the organic "tinsel mulch" to residents in the spring for free.



Pick-up crews begin in the northwest and move counter-clockwise to the east and then the south of the community. The “Tinsel Mulch” program should be separate from your normal solid waste collection. There is no fixed schedule - so collect the trees as fast as you can. Sometimes cold weather and mechanical breakdowns can affect timing.

If residents wish or if they miss the special collection, they may also take their tree to a Mulch Drop-Off Site and leave it in the designated area any time after mid January.







## At the End of the Day

It's at the end of your shift and you are thinking about your first day on the job. The chipper is a really neat machine. Today you chipped so many branches and limbs that you had to make two trips to the nursery.





## Chipper - Job Aid Safety Equipment Overview

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From your past experience you know the importance of wearing the correct clothing and safety equipment. You recall the standard safety gear used by Parks and Open Space Management workers.

### Safety Gear

-  Hard Hat - Required *(never worn backwards or over another hat)*
-  Safety Vest - Required *(wear on all roadways)*
-  CSA Approved Safety Boots - Required
-  Safety Glasses - Required
-  Work Gloves - Required
-  Ear Plugs or Muffs - Required
-  Overalls - Required
-  Chainsaw Chaps - Required  
*(when operating the chainsaw)*
-  Chainsaw Gloves Required  
*(when operating the chainsaw)*





### Site Safety

For some reason the general public is fascinated with the chipper. Always be aware of your surroundings. You are bound to have onlookers - just make sure that they stay a safe distance away.

If you are working on busy roadways remember to put out pylons or barricades. On the older, narrower streets it may be necessary to block the street off.

### Chipper Safety

- NEVER leave the keys in the chipper when it is unattended.
- NEVER leave the chipper unattended while it is running.
- You should feed the branches and limbs into the chipper from the corners of the tailgate.
- NEVER use your feet or hands to push the branches into the chipper.
- Shut the chipper down before trying to manually remove any jammed branches or limbs.

### Emergency Bars and Grab Ropes

You will notice at the back of the chipper machine there are emergency bar and grab ropes for your protection. Accidents happen - don't think that they can't happen to you. If there is ever a need to stop the chipper machine you can either push the emergency bar forward or pull the grab cord on either side. This will reverse the chipper machine.





## Chipper – Job Aid Circle Check

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Before leaving the depot for your day of chipping, you perform a circle check on all your equipment. Your department may use a daily log book for any vehicle that you “ride in” or “ride on”. Before leaving the depot at the beginning of your shift you are required to complete the circle check provided in the Operator’s Daily Log book.

Remember to check your vehicle for any safety items that you will require throughout the day like barricades and/or pylons, safety vests, safety chaps and chainsaw gloves – anything that you may require throughout the day.

A clipboard with a silver clip at the top, holding a white sheet of paper. The paper has the title 'Circle Check List' in green, underlined text. Below the title is a list of four items, each preceded by a red checkmark in a square box.

**Circle Check List**

- ☒ Check your components to make sure they are running properly.
- ☒ Check all your fluid levels.
- ☒ Check to make sure that the chipper machine is properly hooked up to the chipper truck.
- ☒ Check that you have any additional safety equipment that you might need throughout the day.





## Chipper – Job Aid Maintenance Check

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From your experience you understand the importance of maintaining the equipment used in the management of parks and open spaces. You will recall from your equipment training what you will look for when performing your maintenance checks on specific pieces of equipment. If you find that a piece of equipment is damaged or in need of regular maintenance, let your supervisor know so it can be booked in for maintenance.



### Daily Maintenance

- ☒ Check oil levels.
- ☒ Check antifreeze level.
- ☒ Check that the hookups to the chipper truck are working properly.
- ☒ Check that all the lights are working properly.







## Chipper - Job Aid Procedure for Chipping

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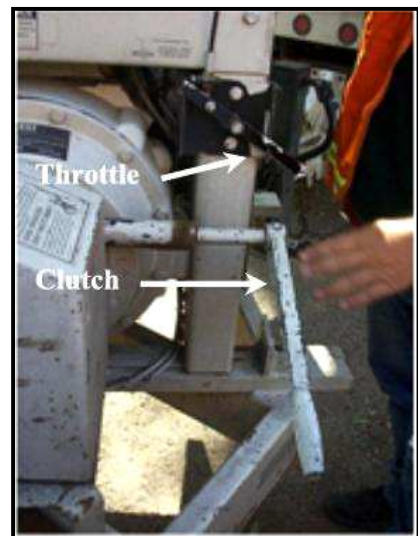
### Starting the Chipper

- Hold the glow plug for at least 3 seconds.
- Turn the start key to the ON position. If the Chipper doesn't start, wait 15 seconds and repeat this step.
- Let the Chipper run for at least 2 minutes to properly warm up.
- Now engage the clutch and throttle up. When the rpm's reach 1,000 on the tac, the Chipper machine is ready to go.



### Shutting the Chipper Off

- Throttle down and wait until the rpm's come down.
- Disengage the clutch.
- Turn the start key to the OFF position.
- Make sure that you put the key in the truck right away so that it doesn't get lost.





## Chipper – Job Aid Procedure for Chipping

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### Feeding the Branches into the Chipper

The pruning crew should pile the branches in a nice neat pile for you so they are easier to handle. One crew member will grab the branches at the cut end and begin to feed them into the chipper. **Be careful not to feed the branches in too quickly or you can cause the chipper to jam and never stand directly behind the chipper when it is mulching branches or logs.** The other crew member can be watching out for onlookers and ensure they stay a safe distance away.

Occasionally you may run across a limb that is too large to go through the chipper so you will have to cut it up using the power pruner or the chainsaw depending on its size. From your previous training you already know how to run both those pieces of equipment as well as the importance of safety when operating them.

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If you are not able to get them to back out you will have to **SHUT THE MACHINE DOWN** before you try to remove the jammed branches.

**NEVER stick your hands or feet into the chipper in effort to remove the jam. Instead use another branch to help force the material loose.**






## Chipper - Job Aid Procedure for Emptying the Chipper Truck

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### Emptying the Chipper Truck

When you arrive at the nursery you will have to dump the wood chips into one of the three pits that are there. You will have to find out from your supervisor which pit you should empty your load into. The use of the individual pits is rotated. When a pit of wood chips has been burned, the pit is not dumped into for a week because the wood chips can stay hot and sometimes smolder.

- Stop vehicle and put it in Neutral. Don't forget to apply the park brake.
  - Now you will engage P.T.O. (electric switch), and monitor operation lights.
  - Use the hydraulic control lever to lift and lower hoist.
  - Disengage hoist after dump body is completely down.
- 
- A photograph of the rear of a white chipper truck. The dump body is raised, and a large pile of wood chips is visible inside. The truck has a license plate that reads 'RLF 668'. There are several warning labels on the side of the truck, including one that says 'NOTICE'.
- Make sure the end gate is open prior to lifting hoist.
  - Once you have emptied the box you can head back and pick up the chipper machine.





## Chipper - Job Aid

### Procedure for Unhooking and Hooking Up the Chipper Truck

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#### Unhooking and Hooking Up the Chipper Truck

On your way out to the nursery you should drop off the chipper machine. There is no reason to take it to the nursery. It's cumbersome to drive with and you would have to unhook it at the nursery anyways because you can't unload the chipper truck with the chipper machine on. You have to watch where you park the chipper machine though. You want to park it so that the nose or hitch of the chipper machine is at the opening of an alleyway. That way no one can park in front of the chipper machine while you are at the nursery. On your way back from the nursery you will stop and pick up the chipper machine.

- When you are unhooking the chipper machine remember to crank the footplate down so that the chipper doesn't fall forward.
- When you are hooking up the chipper machine make sure that you have everything hooked up. The safety chains, light hook up, brake safety cable for chipper brakes and the cotter pin.

