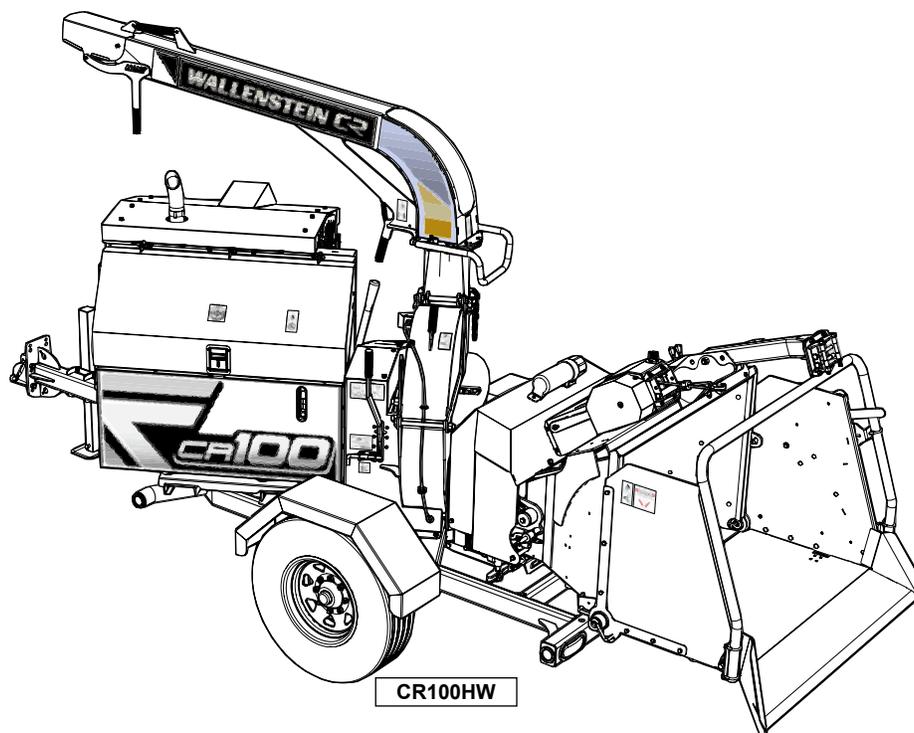


WALLENSTEIN



BY EMB MFG INC.

EMB Manufacturing Inc.
4144 Boomer Line · St. Clements, On · N0B 2M0 · Canada
Ph: 1-800-914-1842 · Fax: (519) 699-4146
www.wallensteinequipment.com



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CR100 SERIES COMMERCIAL TRAILER WOOD CHIPPER OPERATOR'S MANUAL



Do not attempt to start or operate the machine without receiving full safety training and instruction in its features, operation and maintenance.

**Keep this manual with the
machine at all times**

TABLE OF CONTENTS

WARRANTY	4	4.3.1	IGNITION SWITCH	25
PRE-DELIVERY PROCEDURE	5	4.3.2	HOUR METER.....	25
SERIAL NUMBER LOCATION	6	4.3.3	THROTTLE	26
LABEL INFORMATION	7	4.3.4	INDICATOR LIGHTS	26
MODEL FEATURE LIST	7	4.3.5	TACHOMETER	26
1 INTRODUCTION	8	4.3.6	INTELLIFEED CONTROLLER	26
2 SAFETY	9	4.4	INTELLIFEED FEATURES AND PROGRAMMING:.....	27
2.1 SAFETY DO'S & DON'TS'	10	4.4.1	INTELLIFEED FEATURES	27
2.2 EQUIPMENT SAFETY GUIDELINES.....	11	4.4.2	INTELLIFEED PROGRAMMING:	28
2.3 SAFETY TRAINING	12	4.5	DISCHARGE CHUTE:	29
2.4 PREPARATION.....	13	4.6	HOOD DEFLECTOR:	29
2.5 MAINTENANCE SAFETY	14	4.7	"EASY START"	29
2.6 OPERATING SAFETY	15	4.8	CLUTCH LEVER.....	30
2.7 TRANSPORT SAFETY	16	4.9	ROLLER FEED CONTROL BAR:	31
2.8 HYDRAULIC SAFETY	16	5. OPERATION & PROCEDURE	32	
2.9 DIESEL ENGINE SAFETY.....	17	5.1	PREPARE	32
2.10 REFUELLING SAFETY	18	5.2	MACHINE BREAK-IN	33
2.11 TIRE SAFETY.....	18	5.3	PREOPERATION CHECKLIST.....	33
2.12 STORAGE SAFETY.....	18	5.4	TRAILER / TOW VEHICLE	34
2.13 FEED ROLLER SAFETY	18	5.4.1	PINTLE HITCH	34
2.14 BATTERY SAFETY.....	18	5.4.2	BALL & COUPLER.....	35
2.15 SIGN-OFF FORM	19	5.5	MACHINE SET-UP	36
3 SAFETY SIGNS	20	5.6	STARTING PROCEDURE	37
3.1 HOW TO INSTALL SAFETY SIGNS:.....	20	5.6.1	STOPPING PROCEDURE:	37
3.2 SAFETY SIGN EXPLANATIONS:.....	20	5.6.2	EMERGENCY STOPPING	37
3.3 SAFETY SIGN LOCATIONS.....	21	5.7	ROTOR HOOD OPEN PROCEDURE	38
4 FEATURES	22	5.7.1	INTERLOCK PROCEDURE:	38
4.1 TO THE NEW OPERATOR OR OWNER.....	22	5.7.2	OPEN ROTOR HOOD:	39
4.1.1 IMPORTANT	22	5.8	CHIPPING OPERATION.....	40
4.2 MACHINE COMPONENTS.....	23	5.8.1	UNPLUGGING:.....	41
4.2.1 COMPONENT VIEW 1	23	5.8.2	SEVERE PLUG:.....	41
4.2.2 COMPONENT VIEW 2	24	5.9	REFUELLING:	42
4.3 ENGINE / CHIPPER CONTROL PANEL.....	25	5.10	OPERATING HINTS:	42

TABLE OF CONTENTS

6	HYDRAULIC OPTIONS.....	43	9.2.5	HYDRAULIC OIL DRAIN / STRAINER.....	53
6.1	HYDRAULIC FEED ROLLER LIFT	43	9.2.6	HYDRAULIC OIL FILTER	54
6.2	HYDRAULIC WINCH	44	9.2.7	SERVICING THE BATTERY	55
6.2.1.	HYDRAULIC WINCH CONTROL.....	44	9.2.8	DRIVE BELT REPLACEMENT:.....	56
6.2.2.	WINCH GEAR LEVER:.....	44	9.2.9	BELT TENSION	57
7	TRANSPORTING	45	9.2.10	SHEAVE ALIGNMENT	58
7.1	PREPARE FOR TRANSPORT:.....	45	9.2.11	ROTOR BLADES:.....	59
7.2	STOW THE FEED TABLE:	46	9.2.12	LEDGER BLADES:.....	60
8	STORAGE	47	9.2.13	TWIG BREAKER:	61
8.1	PLACING IN STORAGE	47	9.2.14	HYDRAULIC FEED ROLLER LIFT - OPTION	62
8.2	REMOVING FROM STORAGE	47	9.2.15	HYDRAULIC WINCH - OPTION	62
9	SERVICE AND MAINTENANCE	48	9.2.16	ROLLER MAINTENANCE	63
9.1	SERVICE	48	10	TROUBLE SHOOTING.....	64
9.1.1	FLUIDS AND LUBRICANTS	48	11	SPECIFICATIONS	67
9.1.2	GREASING	48	11.1	MECHANICAL.....	67
9.1.3	SERVICE ILLUSTRATION.....	49	11.2	BOLT TORQUE.....	68
9.1.4	SERVICE ILLUSTRATION.....	50	11.3	HYDRAULIC FITTING TORQUE	69
9.1.5	SERVICE RECORD.....	51	11.4	WHEEL LUG TORQUE.....	69
9.2	MAINTENANCE	52	12	ACCESSORIES	70
9.2.1	V3600 KUBOTA ENGINE	52	#1012L269	LEDGER CLEARANCE SETTING GAUGE.....	70
9.2.2	NACD 11.5" HE PTO CLUTCH.....	52			
9.2.3	DEXTER TORFLEX 7000 LB AXLE, BRAKE AND HUB ASS'Y	52			
9.2.4	HYDRAULIC OIL FILL	52			



LIMITED WARRANTY

Effective on products retailed on or after January 1, 2013.

Register your product online at www.wallensteinequipment.com within 30 days of purchase to activate warranty.

This product is warranted to be free of defects in materials and workmanship under normal use and service, for a period of

Three (3) Years or 2000 Hours for Commercial / Rental

from the date of purchase, when operated and maintained in accordance with the Operating and Maintenance Instructions supplied with this unit. Warranty is limited to the repair of the product and/or replacement of parts.

This warranty does not cover the following items:

- 1) Machines or parts lost or damaged during shipment,
- 2) Normal maintenance or adjustments after initial pre-service and set up is completed
- 3) Normal replacement of service or wear items including but not limited to bearings, belts, pulleys, filters and chipper knives.
- 4) Accessory items / parts not supplied by EMB MFG INC.
- 5) Damages resulting from:
 - misuse, negligence, accident, theft or fire
 - use of improper or insufficient fuel, fluids or lubricants
 - use of parts or after market accessories other than genuine EMB MFG INC. parts
 - modifications, alteration, tampering or improper repair performed by parties other than an authorized dealer
 - any device or accessories installed by parties other than an authorized EMB dealer or distributor

Engine is covered by the manufacturer of the engine and covered by the warranty period specified by that manufacturer. **Engine warranty must be registered at the engine manufactures website.** For service contact your local engine dealer.

Under no circumstances will the manufacturer be liable for any consequential damage or expense of any kind, including loss of profits. The manufacturer is under no circumstances liable for tow vehicle of any kind. The manufacturer is not liable for the maintenance of the product.

This warranty is extended only to the original purchaser and is not transferable. Warranty is void if repairs are attempted by anyone other than a Wallenstein Authorized Service Centre.

If a difficulty develops with the product, contact Wallenstein CR. Only Wallenstein CR may authorize repairs to the product or affect the replacement of defective parts, which will be done at no charge within a reasonable time after the receipt of the product. Damage in transit is not covered by warranty. Include the original purchase receipt with any claim (keep a copy of the receipt for your files).

Liability under the warranty is limited to the repair of the product and/or replacement of parts and is given to the purchaser in lieu of all other remedies including incidental and consequential charges. There are no warranties, expressed or implied, other than those specified herein.

EMB MFG Inc
4144 Boomer Line, St Clements, ON N0B 2M0 Canada
Phone: 1-800-914-1842 Fax: 519-699-4146 : attention to Warranty Dept
Email: warranty@embmfg.com

WARRANTY IS VOID IF NOT REGISTERED

WALLENSTEIN

MODELS CR100, CR100H, CR100HW

COMMERCIAL TRAILER WOOD CHIPPER

PRE-DELIVERY PROCEDURE

The PDI procedure must be performed and signed off by a qualified Wallenstein Representative, and Wallenstein trained Owner, or Maintenance Supervisor, or Operator at the time of delivery and before going into service.

Owner / Owner Representative.

Address

City, State/Province, Postal Code

()
Phone Number

Wallenstein Representative.

()
Phone Number

VIN Number

/ /
Delivery Date

The owner or the owner representative is thoroughly trained on the **CR100 Series Commercial Trailer Wood Chipper**. Pre-Delivery Inspection has been performed. Safe operation, care, adjustments, warranty policy and manuals for the **CR100 Commercial Trailer Wood Chipper** have been reviewed.

Owner / Owner Rep Signature

Date / /

Wallenstein Rep Signature

Date / /

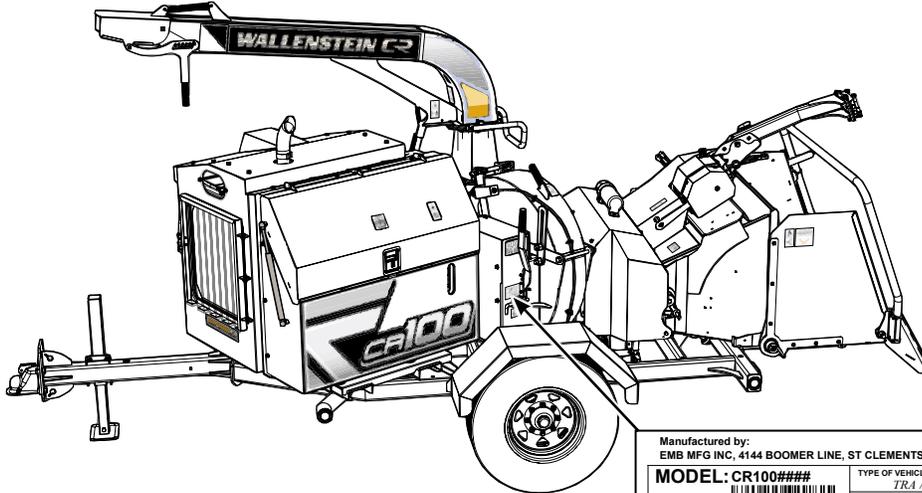
✓	Pre-Delivery Inspection
	Inspect for damage from shipping, immediately contact the shipping company if damage is found.
CR100 Commercial Trailer Wood Chipper	
	Check Blade Clearance & Rotor Turns Freely
	Feed Table & Control Handle Move Freely
	Belt Tension Checked
	Discharge & Deflector Moves Freely
	Lower Roller Clean Out Moves Freely
	Hydraulic Connections
	Pulleys Aligned
	Fasteners Tight
	Grease Zerks / Lubricate Pivot Points
	Check Engine Fluid Levels
	Review Operating and Safety Instructions
Intellifeed	
	Check Display Powers Up
	Check Battery / Wiring Connections
	Review Operating and Safety Instructions
Safety Checks	
	All Safety Decals Installed
	All Lock Pins Align & Move Freely
	Guards and Shields Installed and Secured
	Check Function of Brake and Signal Lighting
	Safety Chain on Hitch
	Retainer Installed Through Ball Hitch
	Tire Pressure / Wheel Lugs at Proper Torque
	Review Operating and Safety Instructions
Hydraulic Winch Option (CR100HW)	
	Check Gear Lock Lever
	Check Winch Rope / Hook / Fairlead
	Check Hydraulic Function
	Check Winch Boom
	Grease Zerks / Lubricate Pivot Points
	Review Operating and Safety Instructions
Hydraulic Feed Roller Lift Option (CR100H, CR100HW)	
	Check Hydraulic Function
	Lubricate Pivot Points
	Lock Pins Align & Move Freely
	Review Operating and Safety Instructions

To activate warranty, register your product online at
www.wallensteincr.com

SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Wallenstein Trailer Wood Chipper and Feed Hopper when ordering parts or requesting service or other information.

The serial number plate is located where indicated. Please mark the numbers in the spaces provided for easy reference.



SERIAL NUMBER LOCATION

CR100 Series Commercial Trailer Wood Chipper

VIN Number _____

Manufactured by: EMB MFG INC, 4144 BOOMER LINE, ST CLEMENTS, ON N0B2M0	
MODEL: CR100####	TYPE OF VEHICLE/TYPE DE VEHICULE: TRA / REM
	GAWR/PNBE (KG): ###
DIMENSION: RM/JANTE: ###	TRE/PNEU: ###
COLD INFL. PRESS/PRESS DE CONFLA A FROID (PSI/PO): ###	THIS VEHICLE CONFORMS TO ALL APPLICABLE STANDARDS PRESCRIBED UNDER THE CANADIAN MOTOR SAFETY REGULATIONS IN EFFECT ON THE DATE OF MANUFACTURE / CE VEHICULE EST CONFORME A TOUTES LES NORMES QUI LI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICLES AUTOMOBILES DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION
	VIN/ NLV: #####

MODEL FEATURE LIST

Model Feature List		Feature			
		Hydraulic Winch	Hydraulic Roller Lift	3.0" Eye Pintle	Revision Level
M o d e l	CR100			X	F
	CR100H		X	X	C
	CR100HW	X	X	X	C

LABEL INFORMATION

As you begin to get familiar with your Wallenstein product, you will notice that there are numerous labels located on the machine. Here is a brief explanation of what they are for and how to read them.

There are three different types of labelling: safety, informative and product labels.

Safety Labels are pictorial with a yellow background and generally 2 panel. The top panel shows the safety alert (the potential hazard) and the bottom panel shows the message (how to avoid the hazard).

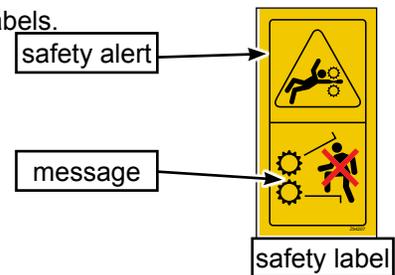
Safety Notice Labels are pictorial with a blue background and generally rectangular with single or multiple symbols. The label illustrates requirements for safe operation (safety equipment, housekeeping etc). These labels are accompanied by detailed instructions in the owners manual, with the label illustrated along side.

Informative Labels are generally pictorial with a white background and can vary to the number of panels. The label will illustrate the function of a feature and is accompanied by detailed instructions in the owners manual, with the label illustrated along side.

Product Labels are associated with the product and carry various messages (model, serial, etc).

Maintenance Labels are associated with the product and carry various messages. They are generally pictorial. They may be round or rectangular, have a green background and can vary to the number of panels. The label may illustrate the type maintenance and frequency in time between services. Labels are accompanied by detailed instructions in the owners manual, with the label illustrated along side.

See the section on safety signs for safety label definitions. For a complete illustration of labels and label locations, download the parts manual for your model product at www.embmfg.com.



1 INTRODUCTION

Congratulations on your choice of an Wallenstein **CR100 Series Commercial Trailer Wood Chipper** to compliment your operation. This equipment has been designed and manufactured to meet the needs of the timber or landscaping industry as well as township and municipal requirements.

Safe, efficient and trouble free operation of your Wallenstein Wood Chipper requires that you and anyone else who will be using or maintaining the chipper, receive Wallenstein Operator Training and read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within this Operator's Manual.

The Wallenstein Commercial Trailer Wood Chipper is designed for chipping wood in a fast and efficient manner.

A feed table folds down exposing the opening to the feed hopper. A "U" shaped tube handle located around the feed table controls the forward / stop / reverse of the feed rollers. The tube handle also acts as an safety stop lever for the feed rollers in case of emergency.

The feed table directs the wood material into the hydraulically driven feed rollers in the throat of the feed hopper. The feed rollers pull and direct the wood material into the rotor.

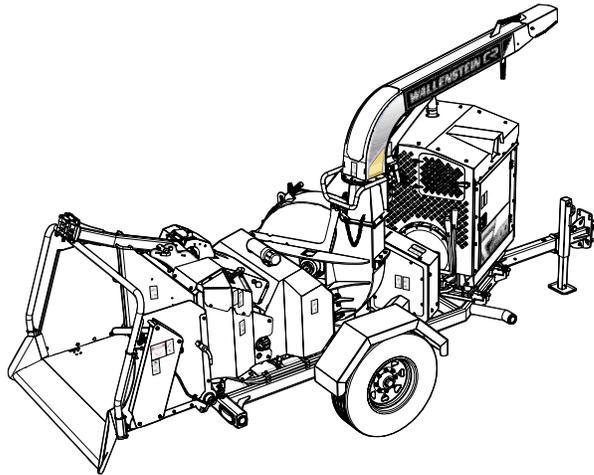
The rotor is designed with 2 pairs of chipper blades (one pair offset) and along with a stationary knife mounted to the rotor housing, shears, chips and chops the material. The blower paddles feature integrated twig breakers that are designed to break up twigs and make for more consistent sized chips exiting the machine. The rotor paddles move the processed material from the rotor housing, out to the adjustable discharge hood, where the material is directed to where you want it.

A powerful diesel engine is mounted on the frame to drive the rotor. Power is transmitted through a lever controlled clutch on the engine output shaft, to a V belt drive system on the rotor. An hydraulic pump is mounted on the engine provides hydraulic power to the feed rollers and various cylinders on the chipper.

The IntelliFeed controller is used to control and monitor the efficiency of the CR100. IntelliFeed monitors the rotor's rpm, slowing the rollers' speed as needed. If the rpm reaches its minimum setting, IntelliFeed takes over, automatically reversing the log away from the rotor, eliminating friction against the rotor, allowing the rotor to get back up to speed faster.

The result is the CR100 continues chipping at a volume that best matches its rpm, eliminating time consuming stall outs. The display on the controller displays engine oil life, machine hours or rotor RPM.

This manual covers models:
CR100,
CR100H,
CR100HW,



CR100 is used as a general description in this manual, but applies equally to all CR100 models Use the Table of Contents or Index as a guide to locate required information.

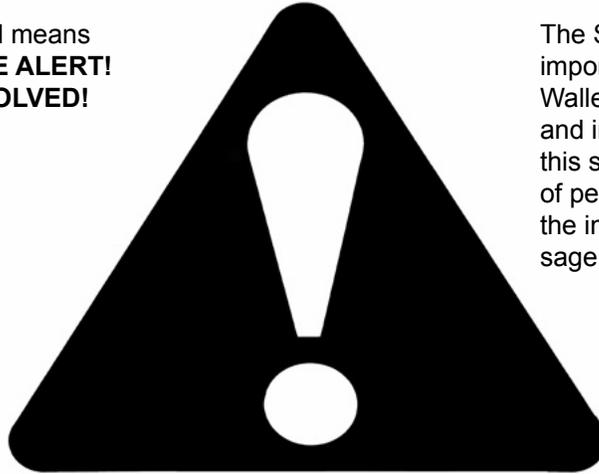
Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Wallenstein dealer or the Distributor if you need assistance, information or additional copies of the manuals.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout this manual, are determined when sitting in the tow vehicles driver's seat and facing in the direction of travel.

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means
ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the Wallenstein Trailer Wood Chipper and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note the use of the signal words **DANGER**, **WARNING** and **CAUTION** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING - Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or EMB Mfg, 4144 Boomer Line, St. Clements, ON, N0B 2M0. Phone 1-800-914-1842 or Fax (519) 699-4146.

SAFETY

YOU are responsible for the SAFE operation and maintenance of your Wallenstein Trailer Wood Chipper. **YOU** must ensure that you and anyone else who is going to use, maintain or work around the Trailer Wood Chipper be familiar with the use and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be used while using the Trailer Wood Chipper.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** using this equipment is familiar with the recommended use and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

2.1 SAFETY DO'S & DON'TS'

- **DO** give operating instructions to operators or employees before allowing them to operate the machine, and REVIEW annually thereafter.
- **DO** read and understand ALL Safety and Operating instructions in the manual and follow them. Most accidents can be avoided. The most important safety device on this equipment is a SAFE operator. 
- **DO NOT** expect a person who has not read and understood all use and safety instructions to operate the machine. An untrained operator is not qualified and exposes himself and bystanders to possible serious injury or death. It is the owners responsibility to the operator to ensure familiarity and understanding of the machine.
- **DO NOT** modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- **DO NOT** allow riders.
- **DO NOT** risk injury or death by ignoring good safety practices.
- **DO** review safety related items annually with all personnel who will operating or maintaining the Trailer Wood Chipper.

- **DO** have a first-aid kit available for use should the need arise and know how to use it. 
- **DO** read and understand all safety signs located on the machine before using, maintaining, adjusting or cleaning the Trailer Wood Chipper.

- **DO** have a fire extinguisher available for use should the need arise and know how to use it. 

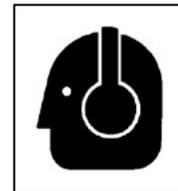
- **DO** inspect and secure all guards before starting.
- **DO** wear appropriate protective gear. This list includes but is not limited to:

- A hard hat
- Tight fitting-heavy gloves
- Wet weather gear
- Hearing Protection
- Respirator or filter mask
- Protective shoes with slip resistant soles
- Protective glasses, goggles or face shield



- **DO** wear suitable ear protection for prolonged exposure to excessive noise.
- **DO** prepare before servicing, adjusting, repairing or unplugging:

- stop the machine, disengage the clutch
- shut off the engine,
- remove ignition key and place in your pocket,
- wait for all moving parts to stop
- set the rotor interlock
- clear the area of people, especially small children.
- set tow vehicle brake



- **DO** check input and discharge chutes, air vents, intakes and exhausts, that they are clear of debris prior to starting the machine
- **DO NOT** touch hot engine parts, muffler, muffler cover, radiator, hoses, engine body, coolants, engine oil, etc. during operation and after the engine has been shut off. Contact may cause burns.
- **DO NOT** modify, disable or change in any way the roller feed safety / control bar
- **DO** think SAFETY! Work SAFELY!

2.2 EQUIPMENT SAFETY GUIDELINES

Safety of the operator and bystanders is one of the main concerns in designing and developing equipment. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.

1. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be used in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
2. Replace any safety sign or instruction sign that is not readable or is missing. Location of such safety signs is indicated in this manual.
3. Never use alcoholic beverages or drugs which can hinder alertness or coordination while using this equipment. Consult your doctor about using this machine while taking prescription medications.
4. **Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to use or assemble this chipper until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.** Review the safety instructions with all users annually.
5. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with machinery and trained in this equipment's operations. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
6. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **DON'T TRY IT.**
7. Do not modify the equipment in any way. Unauthorized modification may result in serious injury or death and may impair the function and life of the equipment.
8. In addition to the design and configuration of this implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the engine and machine manuals. Pay close attention to the Safety Signs affixed to the tow vehicle and the machine.
9. When operating this equipment always have at least 2 operators present and trained in safe operation of the machine. All operators must be completely familiar with all components of the machine and their function. **Never allow the machine to be operated by a lone operator!**
10. **Always wear the proper Personal Protective Equipment (PPE) when working around the machine:**
 - A hard hat
 - Tight fitting heavy gloves (to avoid entanglement, do not use gauntlet style gloves)
 - Wet weather gear
 - Hearing Protection
 - Protective shoes with slip resistant soles
 - Protective glasses, goggles or face shield
11. **Safe Condition** involves the following procedure:
 - disengage the clutch
 - shut off the engine
 - ensure all components have stopped moving.
 - remove and pocket the ignition key
 - disconnect the battery
 - block & chock the wheels

Safe Condition procedure should be performed before any service, maintenance work or storage preparation.

2.3 SAFETY TRAINING

1. Train all new personnel and review instructions frequently with existing workers. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Use instructions in the manual and to follow these. Accidents can be avoided.

4. **Working with unfamiliar equipment can lead to careless injuries. Read this manual before assembly or using, to acquaint yourself with the machine. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to using:**
 - **Reads and understands the operator's manuals.**
 - **Is instructed in safe and proper use of the equipment.**
 - **Understands and knows how to perform the Safe Condition procedure:**
 - disengage the clutch
 - shut off the engine
 - ensure all components have stopped moving.
 - remove and pocket the ignition key
 - disconnect the battery
 - block & chock the wheels
5. Know your controls and how to stop the engine and machine quickly in an emergency. Read this manual and the one provided with your engine.
6. Be certain only a properly trained and physically able person will use the machinery. A person who has not read and understood all using and safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.
7. When operating this equipment always have at least 2 operators present and trained in safe operation of the machine. All operators must be completely familiar with all components of the machine and their function. **Never allow the machine to be operated by a lone operator!**

2.4 PREPARATION

1. Never use the engine and machine until the operators have been adequately trained in the safe operation of the machine and have read and completely understand:

- Safety, Operation and Feature sections of this manual,
- Engine Operator's Manual
- Each of the Safety Messages found on the safety signs on the engine and machine.

2. Personal protection equipment including:

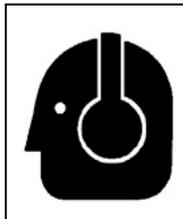
- hard hat,
- safety glasses,
- safety shoes,
- tight fitting gloves,
- hearing protection
- safety vest



are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, cleaning, or moving the chipper. Do not allow long hair, loose fitting clothing or jewellery to be around equipment.

3. **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**

Power equipment with or without equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis. Noise level around the chipper could reach 121 dB. Noise over 85dB on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss.



NOTE: Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.

4. Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
5. Determine where the chips will be piled and ensure it does not interfere with safe loading of material into the machine
6. Precut material so that it is ready to load into the machine. Do not run a chainsaw and the machine at the same time.
7. Use only in daylight or good artificial light.
8. Be sure machine is properly mounted, adjusted and in good operating condition.
9. Ensure that all safety shielding and safety signs are properly installed and in good condition.
10. If fuel is on site, store it well away from the chip pile and feed material.
11. Perform the "PreOperation Checklist" procedure before starting work.

2.5 MAINTENANCE SAFETY

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
2. Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.



3. Make sure there is plenty of ventilation. Never operate the machine or the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
4. Put the machine in **Safe Condition** before working on this machine:
 - disengage the clutch
 - shut off the engine
 - ensure all components have stopped moving.
 - remove and pocket the ignition key
 - disconnect the battery
 - block & chock the wheels
5. Allow the engine to cool before performing maintenance, engine components and oil may be hot enough to cause injury.
6. Never work under equipment unless it is blocked securely.
7. When performing any service or maintenance work always use personal protection devices such as
 - safety glasses,
 - hand protection - gloves (tight fitting, non gauntlet style)
 - hearing protectors
 - safety shoes

Use heavy or leather gloves when handling blades.

8. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
9. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.  
10. Inspect and tighten all bolts, nuts and screws and check that all electrical and fuel connections are properly secured to ensure chipper is in a Safe Condition .
11. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing chipper in service.
12. When performing maintenance on this equipment always have at least 2 workers present. Do not work alone in case an emergency should arise.
13. A When cleaning any parts, do not use gasoline but use regular cleanser.
14. Always use proper tools, that are in good condition. Make sure you understand how to use them, before performing any service work.

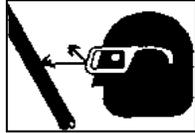
2.6 OPERATING SAFETY

1. When operating this equipment always have at least 2 operators present and trained in safe operation of the machine. All operators must be completely familiar with all components of the machine and their function. **Never allow the machine to be operated by a lone operator!**
2. Please remember it is important that you read and heed the safety signs on the Trailer Wood Chipper. Clean or replace all safety signs if they cannot be clearly read and understood. They are there for your safety, as well as the safety of others. The safe use of this machine is strictly up to you, the operator.
3. All things with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes potential hazards and follows reasonable safety practices. The manufacturer has designed this Trailer Wood Chipper to be used with all its safety equipment properly attached, to minimize the chance of accidents. Read and understand operator's manual before starting, to make sure you have all safety equipment attached and operational.
4. Close and secure all covers, guards, deflectors and shields before starting and operating.
5. Personal protection equipment including hearing protection, hard hat, safety glasses, safety shoes, and non gauntlet tight fitting gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, or moving. Do not allow long hair, loose-fitting clothing, or jewellery to be around moving parts.
6. Keep hydraulic lines and fittings tight, in good condition and free of leaks.
7. Inspect electrical harness, sensors and controller to ensure they are in good condition before operating to maintain control.
8. Never place any part of your body where it would be in danger if movement should occur during assembly, installation, operation, maintenance, repairing, unplugging or moving.
9. Do not run machine inside a closed building to prevent asphyxiation from engine exhaust.
10. Use care when feeding material into chipper. Do not send metal, bottles, cans, rocks, glass or other foreign material into wood chipper. If foreign material enters chipper, stop machine, turn engine off and place ignition key in your pocket and wait for all moving parts to stop before removing material and/or unplugging. Inspect machine for damaged or loose parts before resuming work.
11. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
12. Do not climb or sit on machine when operating. Keep proper balance and footing at all times.
13. Never allow children or unauthorized people to operate or be around this machine.
14. Do not reach into rollers or feed hopper openings when the engine is running. Inspect and secure access covers before starting engine.
15. Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
16. Do not point discharge at people, animals or buildings. Rotor can expel wood chips fast enough to cause injury.

2.7 TRANSPORT SAFETY

1. Comply with Provincial / state and local laws governing safety and transporting of machinery on public roads.
2. Do not exceed a safe travel speed. Slow down for rough terrain and cornering.
3. Fold up and secure the feed table before moving or transporting.
4. Do not move or transport chipper when the rotor is turning.
5. Do not transport or move the chipper with the engine running.
6. Turn the discharge hood and point toward the rotor to reduce the width of the machine. Ensure the latch handle is in locked position.
7. Be sure the trailer is hitched positively to the towing vehicle and a retainer is used through the hitch mechanism.
8. Always attach safety chain and breakaway cable between the hitch and the towing vehicle.
9. Inspect rims for dents or damage, check wheel lugs and tighten if required.
10. Inspect tires for cuts or damage, check tire pressure and top up if required,
11. Ensure the side wind jack is in the up position and the extension is secured with the latch pin.
12. Ensure your tow vehicle has the correct sized towing ball - 2 5/16"
13. Inspect all access panels and guards to ensure they are secured.
14. Inspect fuel and hydraulic tank caps are on tight to prevent spills while transporting.
15. Clean off all debris from the chipper.
16. Check that all the lights, reflectors and other lighting requirements are installed and in good working condition.
17. Check that trailer brakes are functioning properly.
18. Never allow riders on the machine.
19. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc.
20. Watch for traffic when near or crossing roadways.
21. Do not drink and drive.
22. Just before transport, perform a circle check to ensure everything is safe.

2.8 HYDRAULIC SAFETY

1. Make sure that all the components in the hydraulic system are kept in good condition and are clean.
2. Before applying pressure to the system, make sure all components are tight, and that lines, hoses and couplings are not damaged.
3. Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tapes, clamps or cements. The hydraulic system operates under extremely high pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition .
4. Wear proper hand and eye protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak. 
5. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface. 
6. Relieve pressure on hydraulic system before maintaining or working on system.

2.9 DIESEL ENGINE SAFETY

BEFORE STARTING ENGINE, READ AND UNDERSTAND THE OPERATING AND MAINTENANCE INSTRUCTIONS THAT CAME WITH YOUR ENGINE.

WARNING: DO NOT

1. DO NOT start the engine with out checking fluid levels
2. DO NOT run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odourless and deadly poison.
3. DO NOT place hands or feet near moving or rotating parts.
4. DO NOT store, spill, or use fuel near an open flame, or devices such as a stove, furnace, or water heater which use a pilot light or devices which can create a spark.
5. DO NOT refuel indoors where area is not well ventilated. Outdoor refuelling is preferred.
6. DO NOT refuel while the engine is running. Allow engine to cool for 5 minutes before refuelling. Store fuel in approved safety containers.
7. DO NOT remove fuel tank cap while engine is running.
8. DO NOT operate engine if fuel is spilled. Move machine away from the spill and avoid creating any ignition until the spill is cleaned up.
9. DO NOT smoke while filling fuel tank.
10. DO NOT stop engine while under load. Whenever possible, gradually reduce engine speed before stopping. Allow the engine to idle for approximately 5 min to cool before shutting down.
11. DO NOT tamper with governor springs, governor links or other parts which may increase the governed speed selected by the original equipment manufacturer.
12. DO NOT remove the radiator cap while the engine is running or immediately after stopping. Otherwise hot water will spout out from the radiator. Wait until the radiator is completely cool to the touch before removing the cap. Wear safety goggles.
13. DO NOT operate engine without a muffler. Inspect periodically and replace, if necessary. If engine is equipped with a muffler deflector, inspect periodically and replace, if necessary with correct deflector.

14. DO NOT run engine above rated speeds. This may result in injury.
15. DO NOT operate engine with an accumulation of grass, leaves, dirt or other combustible materials in the muffler area.
16. DO NOT use this engine on any forest covered, brush covered, or grass covered unimproved land unless a spark arrester is installed on the muffler. The arrester must be maintained in effective working order by the operator. **Canada:** check with local, provincial or federal authorities. **USA:** In the state of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.
17. DO NOT touch hot engine parts, muffler, muffler cover, radiator, hoses, engine body, coolants, engine oil, etc. during operation and after the engine has been shut off. Contact may cause burns.
18. DO NOT run engine with air cleaner or air cleaner cover removed.

WARNING: DO

1. DO remove the key from the ignition, disconnect the negative wire from the battery terminal and lock the rotor when servicing the machine.
2. DO keep hot muffler, engine area and machine free of debris.
3. DO examine muffler periodically to be sure it is functioning effectively. A worn or leaking muffler should be repaired or replaced as necessary.
4. DO Treat your fuel and maintain fuel filters and check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.
5. DO follow maintenance recommendations as outlined in the service interval chart in your engine operators manual
6. DO review the engine operators manual.

2.10 REFUELLING SAFETY

1. Handle fuel with care. It is highly flammable.
2. Allow engine to cool for 5 minutes before refuelling. Clean up spilled fuel before restarting engine.
3. Do not refuel the machine while smoking or when near open flame or sparks.
4. Fill fuel tank outdoors.
5. Prevent fires by keeping machine clean of accumulated trash, grease and debris.



2.11 TIRE SAFETY

1. Have a qualified tire dealer or repair service perform required tire maintenance, never attempt to mount a tire on your own.
2. Inflate tires to manufacturer's specifications as stated on the tire sidewall.
3. Do not exceed the maximum towing speed indicated on tire sidewall.
4. When replacing worn tires, make sure they meet the original tire specifications. Never undersize.

2.12 STORAGE SAFETY

1. Store the chipper in an area away from human activity.
2. Do not allow children to play on or around the stored machine.
3. Store the chipper in a dry, level area. Support the frame with planks if required.
4. If storing for long periods consult your engine owners manual for safe storage.

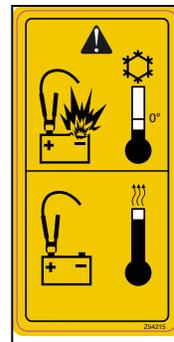
2.13 FEED ROLLER SAFETY

1. Do not overreach into the hopper. Keep proper balance and footing at all times.
2. Feed rollers can cause serious injury or death. Keep hands, feet and clothing away from the feed roller.
3. Never climb onto the feed table or hopper when the chipper is operating or running.
4. Never allow anyone to sit on the feed table.
5. When feeding material into the feed roller wear eye face and hearing protection.

2.14 BATTERY SAFETY

Caution: Poison / Danger - Causes Severe Burns. The battery contains sulphuric acid. Avoid contact with skin, eyes or clothing. Keep out of reach of children.

1. Wear gloves and safety glasses or face shield when working on or near batteries.
2. Use a battery carrier to lift the battery or place hands at opposite corners to avoid spilling acid through the vents.
3. Avoid contact with battery electrolyte:
External Contact: Flush immediately with water.
Eye Contact: Flush with water for 15 minutes. Get prompt medical attention. Clean up any spilled electrolyte immediately.
4. Avoid contact with battery posts, terminals and related accessories, they contain lead and lead compounds, chemicals known to cause harm. Wash hands immediately after handling battery.
5. Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive.
6. To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of the electrical system.
7. FROZEN BATTERIES CAN EXPLODE and result in death or serious injury. DO NOT jump start / charge a frozen battery. Let battery thaw before charging.
8. DO NOT use or charge the battery if its fluid level is below the LOWER mark.



3 SAFETY SIGNS

1. Keep safety signs clean and legible at all times,
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs in Section 3 each have a part number displayed with it. Use this part number when ordering replacement parts.
5. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

3.1 HOW TO INSTALL SAFETY SIGNS:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper

3.2 SAFETY SIGN EXPLANATIONS:



Caution: keep hands and feet out of inlet and discharge openings while machine is operating to avoid serious personal injury. Wait for all moving parts to come to a complete stop before clearing obstructions .



Caution: Do not operate machine without shields in place . failure to do so may cause serious injury or death .



Caution: flying objects, be aware of and Stay clear of material discharge chute, machine can expel wood chips fast enough to cause injury. Do not point discharge at people, animals or buildings.



Caution: Do not step into or place any part of your body inside the feed hopper, failure to do so may cause serious injury or death.



Caution: pulley and belt entanglement danger present, keep hands, loose clothing, and long hair away from moving parts.



Caution: Hydraulic fluid under pressure, do not check for leaks with you hand or fingers when the system is pressurized. Serious injury will result.



Caution: do not refuel the machine while smoking or when near open flame or sparks. Fuel is highly flammable, handle with care.



Caution: Pinch Hazard, do not reach into the machine while it is running, some components may move unexpectedly and cause pinching , crushing injury.



Caution: read and understand ALL safety and operating instructions in the manual, read and understand ALL safety labels located on the machine. The most important safety device on this equipment is an informed SAFE operator.



Caution: winch line, entanglement danger present, keep hands, loose clothing, and long hair away from winch line while it is operating.

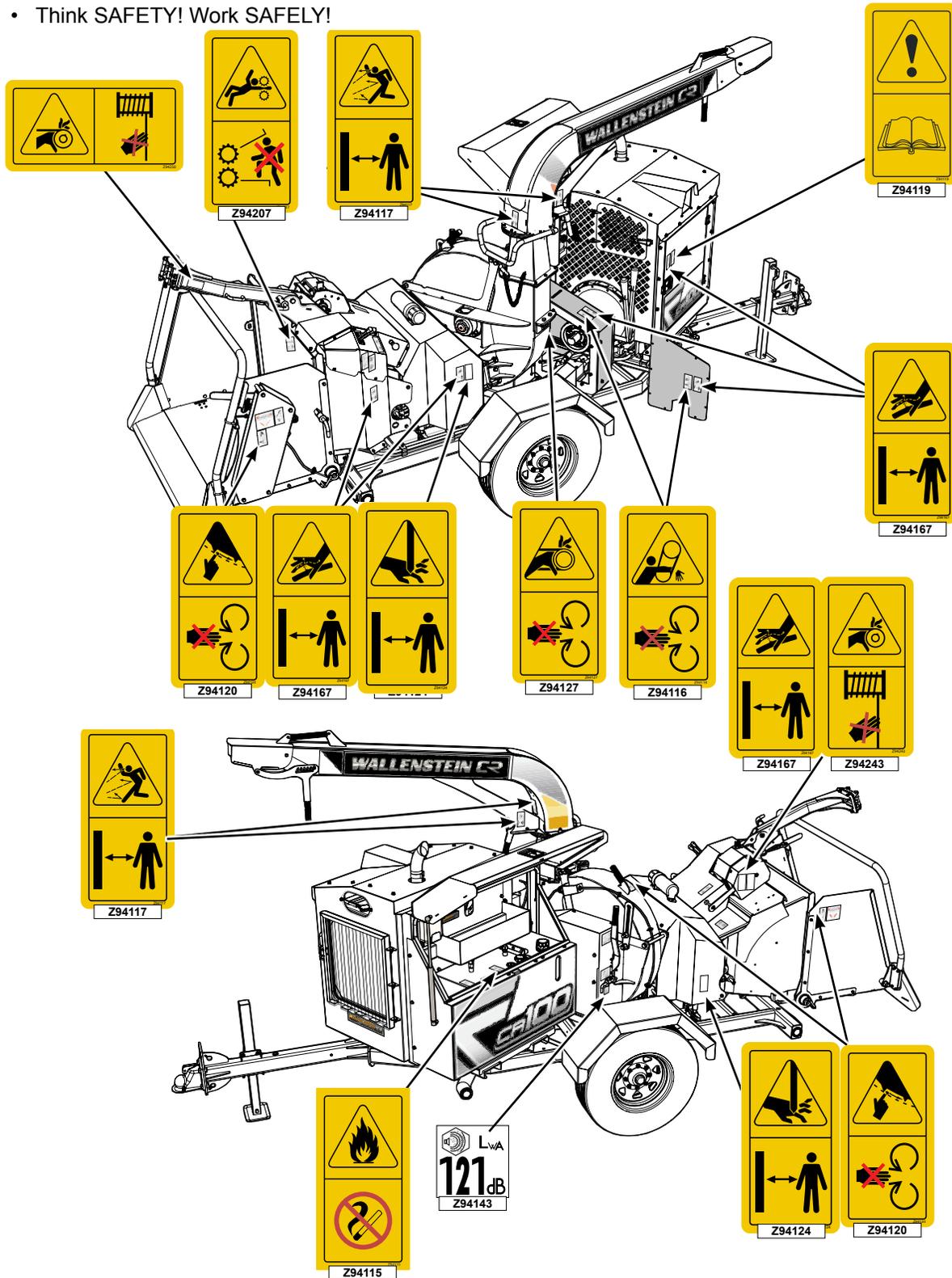


Caution: When the chipper is running, noise levels around the machine could reach 121 dB, hearing protection is required at all times.

3.3 SAFETY SIGN LOCATIONS

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!



REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

4 FEATURES



OPERATORS SAFETY

- Please remember it is important that you read the operator's manual and heed the safety signs on the Trailer Wood Chipper. They are there for your safety, as well as the safety of others. The safe use of this machine is strictly up to you, the operator.
- Personal protection equipment including hearing protection, hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, or repairing. Do not allow long hair, loose-fitting clothing, or jewellery to be around moving parts.
- Turn machine off, stop and disable engine, remove ignition key and place in your pocket, set park brake and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Do not run machine inside a closed building to prevent asphyxiation from engine exhaust.
- Use care when feeding material into chipper. Do not send metal, bottles, cans, rocks, glass or other foreign material into wood chipper. If foreign material enters chipper, stop machine, turn engine off and place ignition key in your pocket and wait for all moving parts to stop before removing material and/or unplugging. Inspect machine for damaged or loose parts before resuming work.
- Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
- Do not allow riders on this machine at any time. There is no safe place for any riders.
- Never allow children or unauthorized people to operate or be around this machine.
- Do not reach into feed rollers or feed hopper when the engine is running. Inspect and secure all access covers before starting engine.
- When operating this equipment always have at least 2 operators present and trained in safe operation of the machine. All operators must be completely familiar with all components of the machine and their function. **Never allow the machine to be operated by a lone operator!**
- Keep hydraulic lines and fittings tight, in good condition and free of leaks.
- Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
- Do not point discharge at people, animals or buildings. Rotor can expel wood chips fast enough to cause injury.

4.1 TO THE NEW OPERATOR OR OWNER

The Wallenstein Trailer Wood Chippers are designed to chip and chop scrap lumber, small trees, brush, limbs and other wood debris. The chipped material is fine enough to be composted or used in a variety of ways.

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the work site. Untrained operators are not qualified to use the machine.

Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to

use the chipper safely and how to set it to provide maximum field efficiency. By following these instructions in conjunction with a good maintenance program, your Trailer Wood Chipper will provide many years of trouble-free service.

4.1.1 IMPORTANT

Ensure all operators understand how to put the machine in Safe Condition before working with this machine,

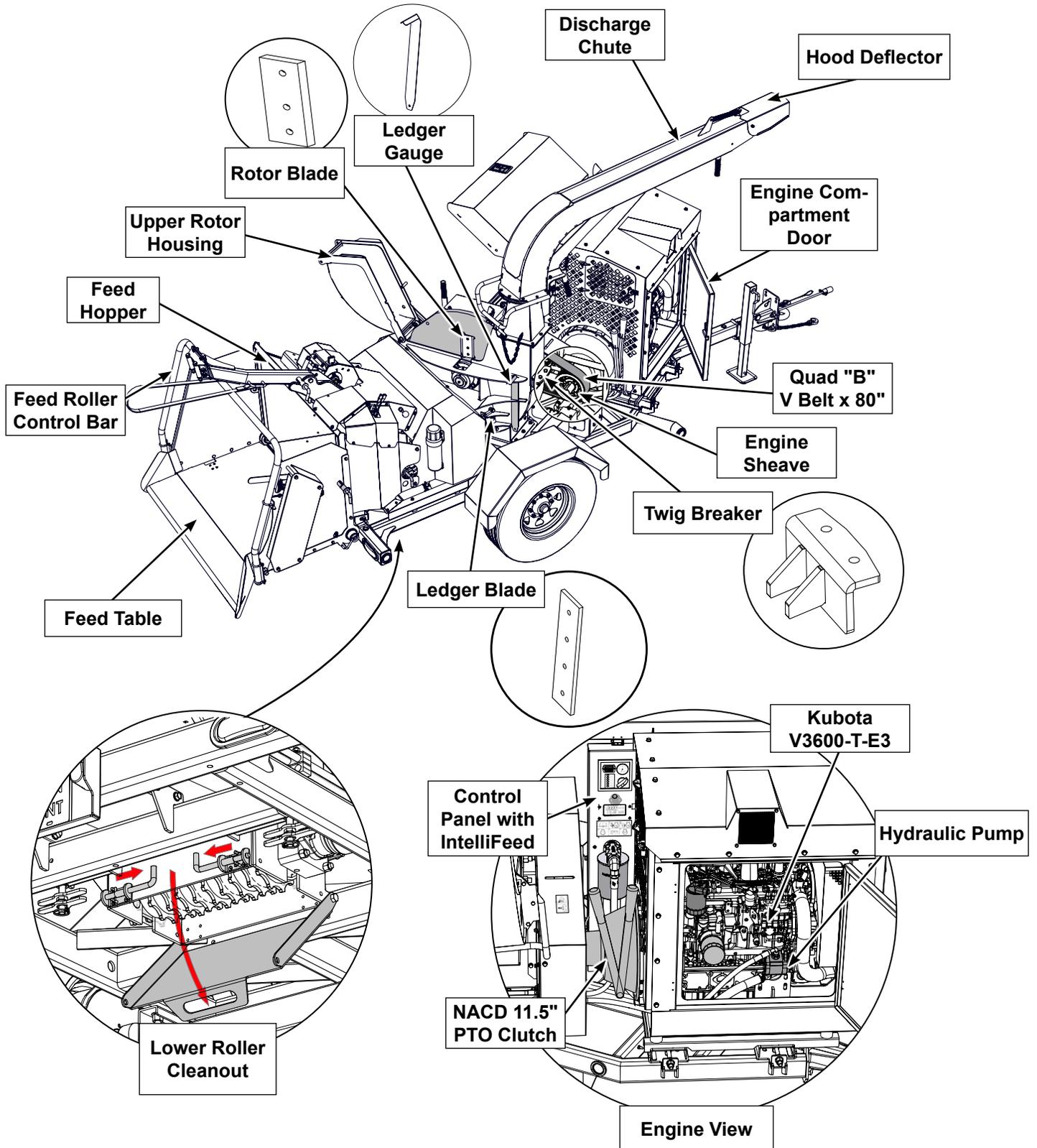
- disengage the clutch
- shut off the engine
- ensure all components have stopped moving.
- remove and pocket the ignition key
- disconnect the battery
- block & chock the wheels

4.2 MACHINE COMPONENTS

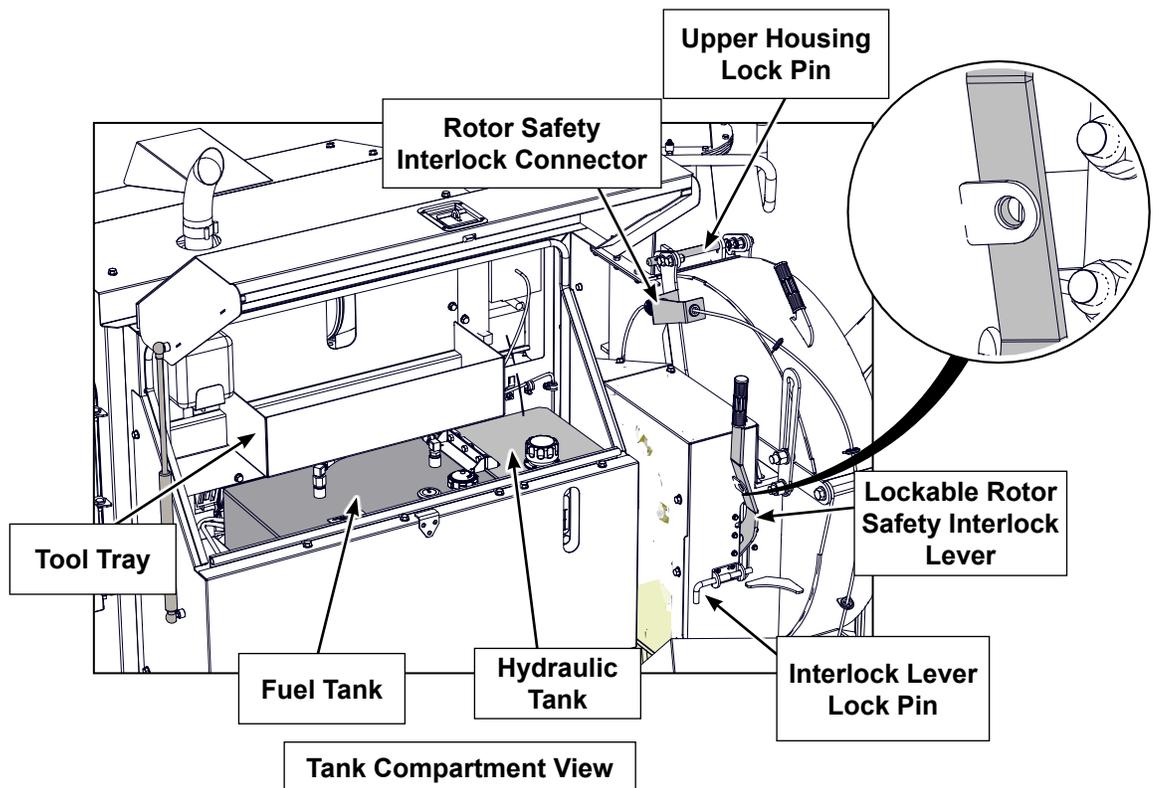
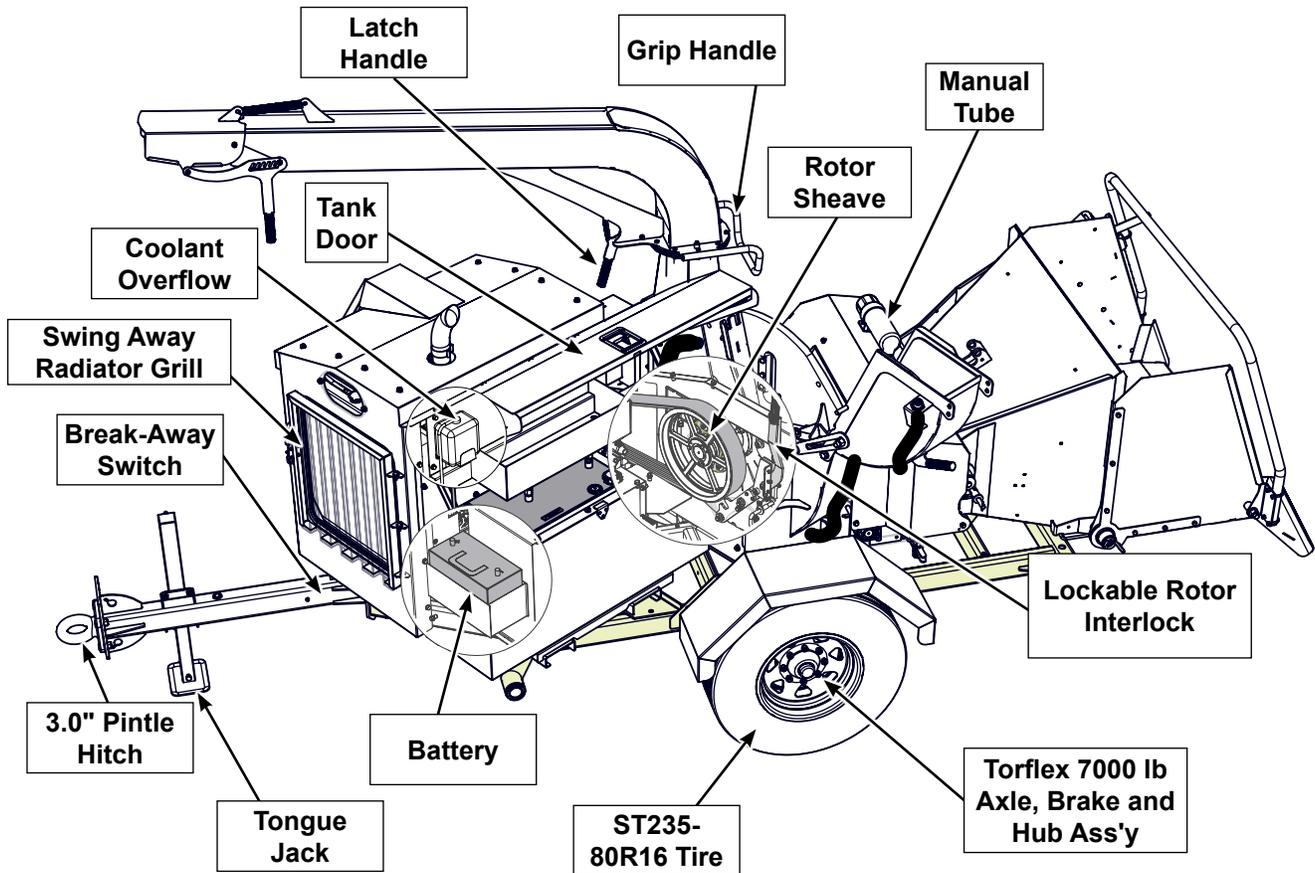
The Wallenstein Commercial Trailer Wood Chipper is designed for chipping wood in a fast and efficient manner. Major components of the CR100 are illustrated here. Please review this section, many of the component descriptions here are used throughout the manual to explain function and safety.

For a detailed parts breakdown, see your dealer or visit the Wallenstein website to download the **CR100 Parts Manual**.

4.2.1 COMPONENT VIEW 1



4.2.2 COMPONENT VIEW 2



4.3 ENGINE / CHIPPER CONTROL PANEL

Please review this section to familiarize yourself with the location and function of each control before starting. The CR100 control panel is laid out so that the controls are easy to see and use. Familiarizing yourself with the controls will enable you to take advantage of all the features available on the CR100 and apply them as conditions demand.

Always read the engine operator's manual supplied with the machine to familiarize yourself with its operating and procedure details.

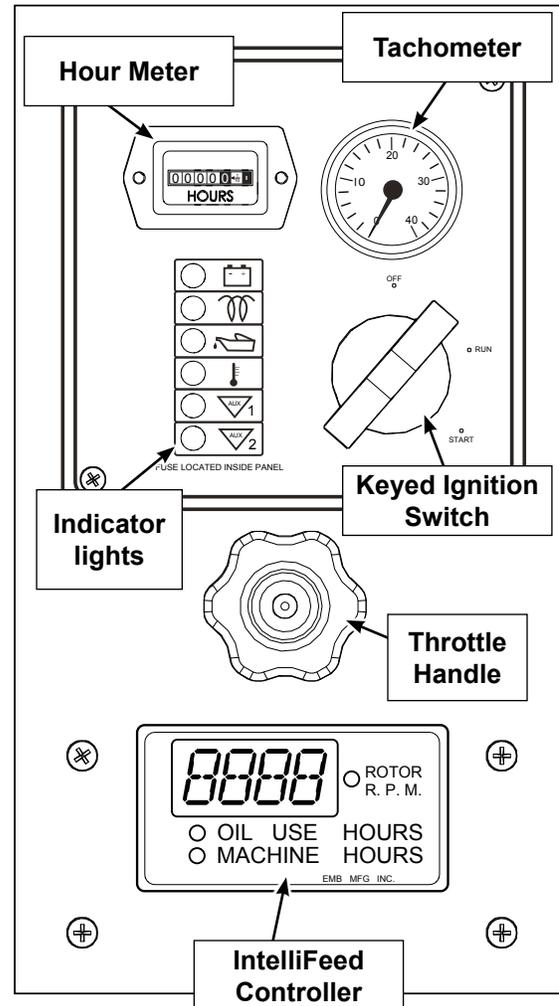
4.3.1 IGNITION SWITCH

This key operated switch controls the electric power to the Kubota 3600 engine.

- OFF** Turn key fully counterclockwise to stop the electrical system power and turn the engine off.
- RUN** Turn clockwise to the centre detent for the run position. This is the position where the engine will continue to run.
- START** Turn fully clockwise to the last spring-loaded detent position to engage the starter solenoid and start the engine. Release the key when the engine starts and it will return to the RUN position.

4.3.2 HOUR METER

Tracks and displays total machine run time. The meter is active only when the engine is running.

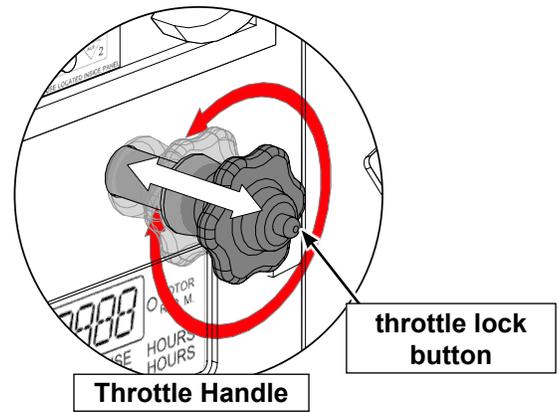


CR100 Control Panel

4.3.3 THROTTLE

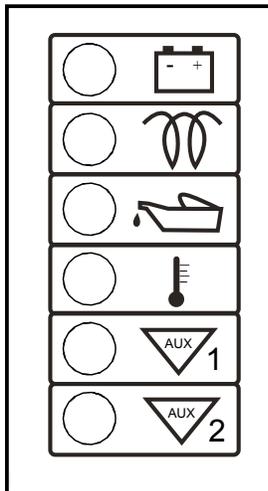
This Handle controls the engine RPM.

- Depress the centre of the handle to disengage the throttle lock.
- pull the handle out to increase RPM, push it back in to decrease RPM.
- Pulling the handle all the way out sets the throttle to maximum.
- When the throttle is set, release the centre of the handle and the throttle will lock in place.
- the throttle can be "fine tuned" by turning the handle: clockwise to decrease RPM, and counter clockwise to increase RPM.
- Always run at maximum throttle while operating.



4.3.4 INDICATOR LIGHTS

The indicator light display shows the status of the engine and its components.



Battery: lights up when the ignition is set to "run", the indicator shuts off after the engine starts.

Glow Plug: lights up when the ignition is set to "run", this indicates operation of the glow plug and will shut off when the engine is ready to start.

Oil Level: lights up when the ignition is set to "run", the indicator shuts off after the engine starts.

Temperature: lights up when the ignition is set to "run", the indicator shuts off after the engine starts.

Aux 1 & Aux 2 are not used

4.3.5 TACHOMETER

Indicates the engine RPM of the Kubota Diesel

4.3.6 INTELLIFEED CONTROLLER

Intellifeed used to control and monitor the efficiency of the CR100, and is user adjustable. The readout displays the status of the machine (see section 4.4 for more information). IntelliFeed readout controls are accessed through the tank hood opening.

Oil Use Hours: indicator lights and display shows the number of hours the oil has been in use.

Machine Hours: indicator lights and display shows the total machine run time.

Rotor RPM: automatically shows the RPM of the rotor when the rotor begins to turn.

4.4 INTELLIFEED FEATURES AND PROGRAMMING:

The **IntelliFeed Controller** is used to manage and oversee the efficiency of the CR100 by controlling the roller feed speed based on the rotor RPM. The readout is capable of displaying: the status of the machine, and the upper and lower settings of the Rapid Recovery Auto Feed and flow control (roller speed)

As material is fed into the chipper, Intellifeed monitors the RPM of the rotor by a sensor on the rotor sheave. As rotor RPM drops, IntelliFeed slows the rollers (governed by the upper and lower flow rate) so as not to overload the rotor and still maintain a good feed rate. IntelliFeed continually monitors and adjusts to find the best balance between feed and speed.

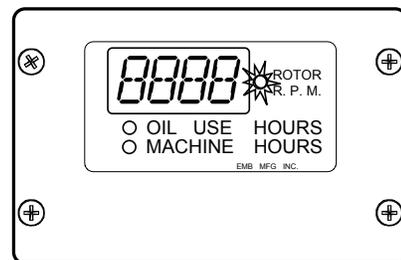
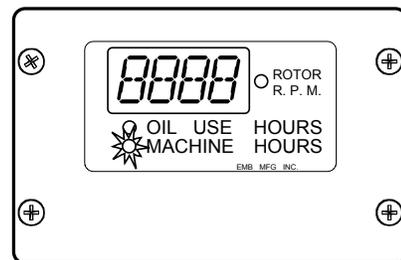
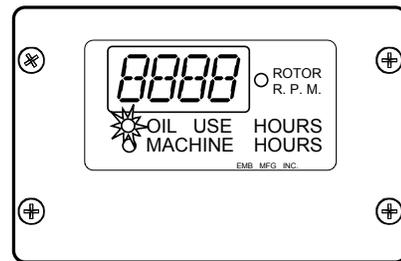
If at some point the rotor is overcome and reaches its lower RPM limit setting, IntelliFeed initiates Rapid Recovery Auto Reverse: reverse then suspend the feed rollers until the rotor gets back up to speed (upper limit setting) then starts feeding again.

The combination of these two features keep your CR100 running at maximum efficiency.

4.4.1 INTELLIFEED FEATURES

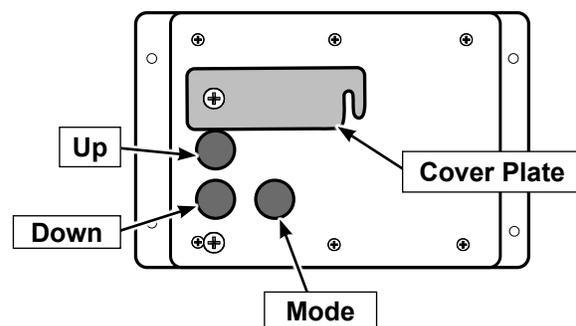
1. The front of the controller displays:

- **Oil Use Hours:** this is the default display when the rotor is not turning. When the ignition switch is turned to "run":
 - ◆ the oil use indicator lights up.
 - ◆ the display indicates the number of hours the oil has been in use.
 - ◆ oil use hours can be reset by depressing the function control for 10 seconds.
- **Machine Hours:** with the rotor at rest, depressing the mode button once:
 - ◆ activates the machine hours indicator.
 - ◆ the display shows total machine run time.
 - ◆ the meter is active only when the engine is running **and is not resettable**.
- **Rotor RPM:** when the rotor begins to rotate:
 - ◆ the rotor RPM indicator activates.
 - ◆ the display automatically indicates the RPM of the rotor as long as it is in motion.
 - ◆ when the rotor has fully stopped the display returns to the default oil life.



2. The back of the controller shows the programming button cover plate and 3 control buttons. The Cover plate slides over the up/down buttons to prevent accidental changes. When the rotor is at rest, their functions are:

- Mode button: pages through the 5 readout displays.
- Up Button - programming: increases value.
- Down Button - programming: decreases value.



4.4.2 INTELLIFEED PROGRAMMING:

The factory settings provide good overall performance for the CR100, however you may under certain circumstances, choose to customize performance. Programmable features of Intellifeed include: the upper and lower RPM limits (rotor speed) and the upper and lower flow percentage (roller speed).

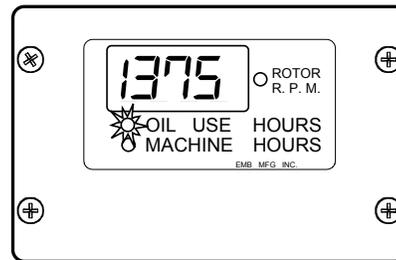
How best to adjust the programming will come from experience and common sense, if in doubt set to factory setting for optimum performance.

Here are some helpful hints:

- For heavier brush, decrease the upper flow percentage for slower feed speed.
- For lighter brush, increase the upper flow percentage for faster feed speed.
- If the chipper is stalling before the feed rolls stop, increase the rotor floor setting.
- If you prefer more aggressive feeding with faster feed and more stops, increase the lower flow percentage.

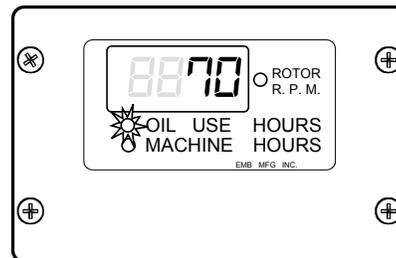
1. Programming Upper RPM Limit (Ceiling):

- Press mode button twice. Digital readout will display current upper limit setting. This represents the RPM at which the Rapid Recovery Auto Reverse will re-start the feed rolls after a suspension.
- Oil Use indicator will flash. Increase or decrease setting using program buttons (factory setting is 1375 RPM)



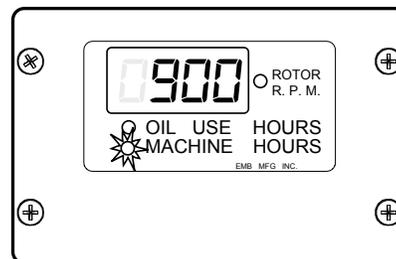
2. Programming Upper Flow Percentage:

- Press mode button once more. Digital readout will display current upper flow setting. This represents the percent of hydraulic flow that will be sent to the feed rolls (Feed speed.).
- Oil Use indicator will flash. Increase or decrease setting using program buttons, do not set above 80 % (factory setting is 70%)



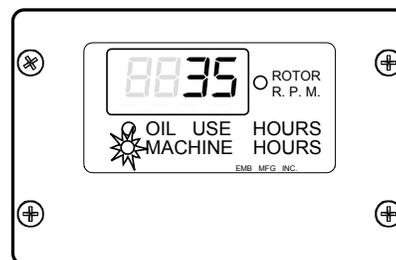
3. Programming Lower RPM Limit (Floor) :

- Press mode button once more. Digital readout will display current lower limit setting. This represents the rotor RPM at which the Rapid Recovery Auto Reverse will reverse and suspend the feed rolls.
- Machine hours indicator will flash. Increase or decrease setting using program buttons. (factory setting is 900 RPM)



4. Programming Lower Flow Percentage:

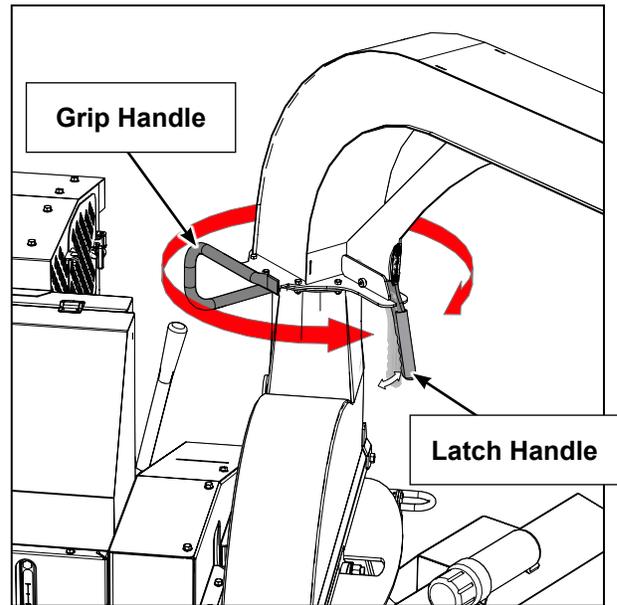
- Press mode button once more. Digital readout will display current lower flow setting. This represents the percent of hydraulic flow that will be sent to the feed rolls (Feed speed.).
- Machine hours indicator will flash. Increase or decrease setting using program buttons, do not set below 25% (factory setting is 35%)



4.5 DISCHARGE CHUTE:

The discharge chute is designed with a spring-loaded latch handle that allows the chute to be positioned 360° then locked into position with the latch.

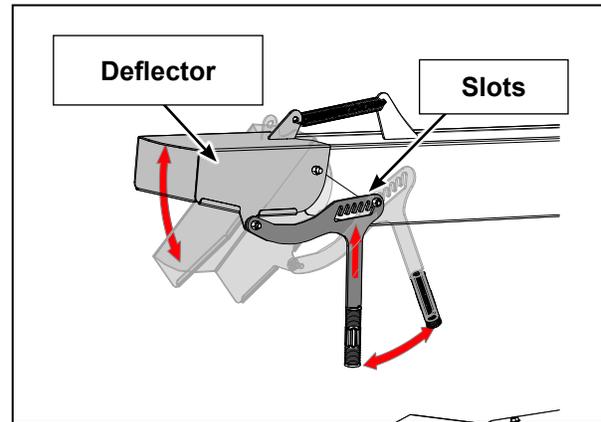
1. Depress the latch handle till the chute lock pin disengages.
2. Use the grip handle to position the chute as required.
3. Release the latch handle and lock the chute into position at the next nearest lock point.



4.6 HOOD DEFLECTOR:

The discharge chute is equipped with a hood deflector on the end of the chute to direct the chips exactly where desired. The deflector is held in position by a slotted position handle.

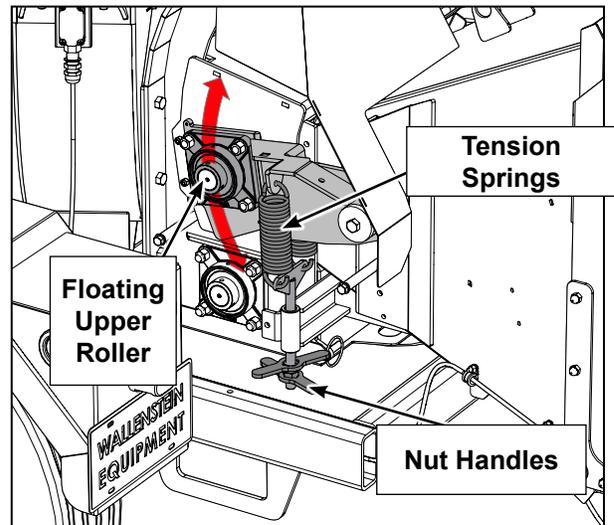
1. Grasp the handle and lift slightly to clear the handle cogs
2. Move the deflector with the handle as required
3. Lock the deflector into position by lowering the handle into one of the slots.



4.7 "EASY START"

Floating Roller Tension: the upper roller "floats" to accommodate different sizes of material. Adjustable spring tension keeps pressure on the material, while the "Easy Start" feature allows larger end cut material to be fed in. "Easy Start" means that there is 1/2" -1" play at the springs allowing the roller wheel to easily climb up on the material before spring tension activates. Two nut handles on each side of the feed roller control the spring tension adjustment:

1. Turn the bottom nut handle counter clockwise to unjam the nut handles
2. Turn the top nut handle
 - clockwise to increase tension or
 - counter clockwise to decrease tension
 - adjust each side of feed rollers evenly
3. Jam the nut handles to lock them in place.



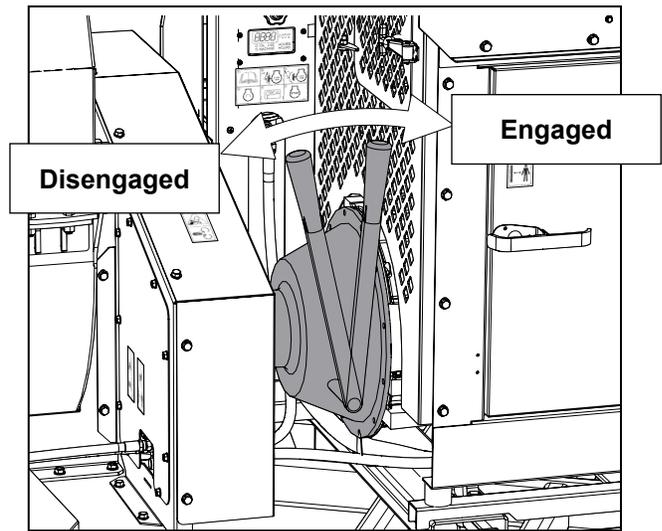
4.8 CLUTCH LEVER

The machine is designed with a V belt to transmit power from the engine to the rotor. When the clutch is engaged the rotor begins to turn. Do not disengage the clutch while under load or with the throttle at maximum.

1. **To Start the Rotor:** move the lever fully toward the clutch housing to engage the clutch and drive the rotor. You will feel it snap into position indicating it is fully engaged.
2. **To Stop the Rotor:** move the lever fully away from the clutch housing to disengage the clutch and stop driving the rotor. You will feel it snap out of position indicating it is disengaged.

IMPORTANT

Be aware that the rotor will continue to turn for a few minutes after the clutch has been disengaged. Wait for all parts to stop moving before attempting to access the machine in any way.



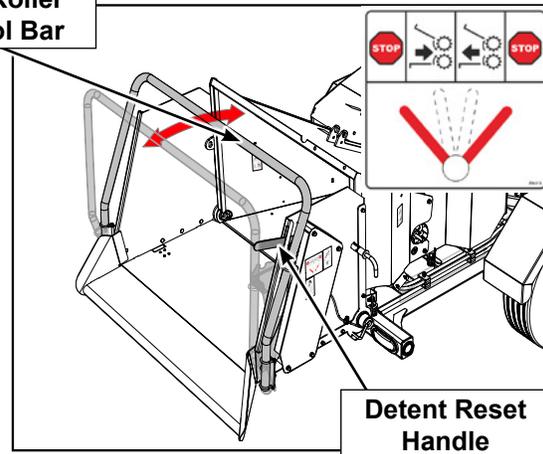
4.9 ROLLER FEED CONTROL BAR:

The feed roller control bar controls the forward, reverse and stop action of the feed rollers.

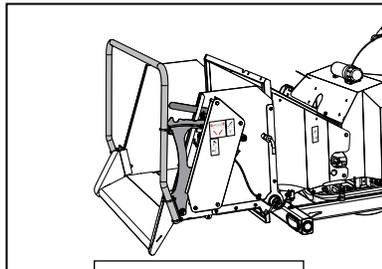
IMPORTANT

To quickly stop the feed rollers in an emergency situation, the bar can be rapidly pulled or pushed to its maximum position and will lock in the stop position till it is released by the detent reset handle.

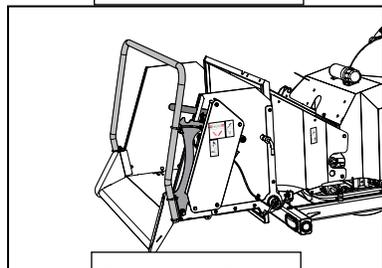
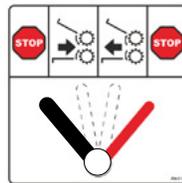
Feed Roller Control Bar



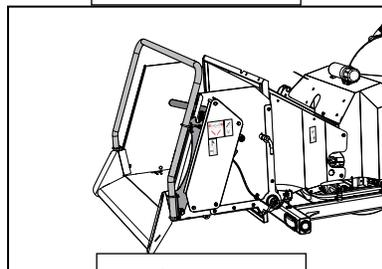
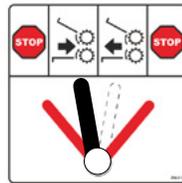
Detent Reset Handle



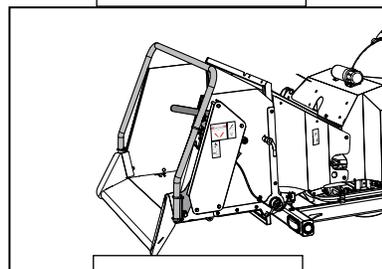
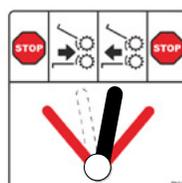
Stop (locked)



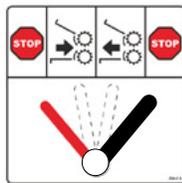
Forward (Feed)



Reverse

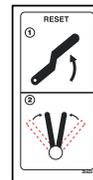


Stop (locked)



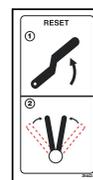
Note: Left side view is shown, both left & right side are labeled.

1. Pull the bar to its maximum detent position away from the feed table, locks it into a stop position, and feed rollers stop turning.



To unlock the bar from the stop position: raise the **detent reset handle** and pull the bar out of detent.

2. Push the bar to the next detent position and the feed rollers begin to turn forward (feed). This is the normal operating position for the control bar and will stay in position until moved.
3. Push the bar to its next position and the feed rollers will reverse. When the control bar is released it will automatically return to the forward (feed) position. The control bar can be moved freely between forward and reverse without locking.
4. Push the bar to its maximum detent position, towards the feed table, locks it into a stop position, and feed rollers stop turning.



To unlock the bar from the stop position: raise the **detent reset handle** and pull the bar out of detent.

5. OPERATION & PROCEDURE



OPERATING SAFETY

- Please remember it is important that you read the operator's manual and heed the safety signs on the Trailer Wood Chipper. They are there for your safety, as well as the safety of others. The safe use of this machine is strictly up to you, the operator.
- Personal protection equipment is recommended. Do not allow long hair, loose-fitting clothing, or jewellery to be around moving parts.
- Turn machine off, stop and disable engine, remove ignition key and place in your pocket, and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
- Do not run machine inside a closed building to prevent asphyxiation from engine exhaust.
- Use care when feeding material into chipper. Do not send metal, bottles, cans, rocks, glass or other foreign material into wood chipper. If foreign material enters chipper, inspect machine for damaged or loose parts before resuming work.
- Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
- Never allow children or unauthorized people to operate or be around this machine.
- Do not reach into rotor or feed hopper openings when the engine is running. Install and secure access covers before starting engine.
- Do not move or transport chipper when the rotor is turning.
- Keep hydraulic lines and fittings tight, in good condition and free of leaks.
- Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
- Do not point discharge at people, animals or buildings. Rotor can expel wood chips fast enough to cause injury.
- Be aware of the size and shape of the material, crotchety branches and logs can move in unpredictable ways as they pass through the feed rollers and could cause injuries. Large curved pieces should be cut to smaller straighter sections.
- Do not work alone, it is safer to work in pairs in case an emergency arises.
- Never stand, sit or climb onto any part of the chipper while it is running.
- Use the safety interlock to immobilize the rotor when attempting to clear a clog or changing chipper blades.
- Shut down the chipper and remove the ignition key when it is unattended.

The operator has the responsibility of being familiar with all operating and safety procedures and following them.

Although the Trailer Wood Chipper is easy to use, each operator should review this section to familiarize himself with the detailed safety and operating procedures. When preparing this machine for use, follow this procedure:

5.1 PREPARE

- Clear the area of bystanders, especially small children.
- Each operator must be trained and familiar with the set up and operation of the Wood Chipper and its components.
- Review the machine components (see Section 4.2)
- Review and follow the PreOperation Checklist (see Section 5.3).
- Review operation and function of the controls (see section 4)
- Survey the work site, move to a clear, level work area and position at the work site. Do not start the chipper until it is in position.
- Set up the machine (see section 5.4).
- Each person must wear appropriate **Personal Protective Equipment (PPE)** whenever operating the chipper or working in the vicinity. This equipment is designed to prevent injury to any personnel in the area. This list includes but is not limited to:
 - Safety shoes with slip resistant soles.
 - Safety goggles or face shield.
 - Hearing protection.
 - Heavy or leather gloves

5.2 MACHINE BREAK-IN

Although there are no operational restrictions on the Wood Chipper when used for the first time, it is recommended that the following mechanical items be checked:

A. After operating for 1 hour:

1. Ensure the machine is in **Safe Condition** before checking any components (see 2.2 pg 10)
2. Review the engine operators manual for break-in.
3. Review the PTO clutch operators manual for maintenance
4. Review the axle operators manual for tires, wheels, brakes and hub maintenance.
5. Check alignment of pulleys. Align as required.
6. Check belt tension. Adjust as required.
7. Torque all fasteners and hardware.
8. Check condition of rotor bearings.
9. Check the condition and clearance of the twig-breaker, rotor and ledger blades. Adjust as required.
10. Check for entangled material. Remove all entangled material before resuming work.
11. Check wheels: tire pressure, torque wheel lugs.
12. Check condition of electrical and hydraulic components. Keep all components in good condition.
13. Check all fluid levels. Top up as required.

B. After operating for 8 hours:

1. Repeat steps 1 through 13 listed above. (Section A)
2. Go to the normal servicing and maintenance schedule as defined in the Maintenance Section.

5.3 PREOPERATION CHECKLIST

Efficient and safe operation of the Wallenstein Trailer Wood Chipper requires that each operator reads and understands the use procedures and all related safety precautions outlined in this section. A PreOperation checklist is provided for the operator. It is important for both the personal safety and maintaining good mechanical condition that this checklist is followed.

Before operating the Wood Chipper and each time thereafter, the following areas should be checked off:

Pre-Operation Checklist	✓
Check and lubricate the machine per the schedule outline in the Maintenance Section.	
Check the tension and alignment of the belts. Adjust tension and align as required.	
Check the rotor housing and discharge chute,. Remove any blockages, twine, wire or other material that has become entangled .	
Check the condition and clearance of the twig-breaker, rotor and stationary blades. Adjust or replace as required.	
Check condition of the battery and other electrical components. Keep all components in good condition.	
Check condition of all hydraulic components. Keep all components in good condition.	
Check engine fluid levels. Top up as required. Refer to the engine operators manual.	
Check that all bearings turn freely. Replace any that are rough or seized.	
Check and ensure that all covers, guards and shields are in place, secured and functioning as designed	
Check and inspect tires, wheels, brakes and hubs as per axle owners manual.	
Check all fasteners and tighten, and ensure your equipment is working and in good repair.	
Check that personal protection equipment including hard hat, safety glasses, safety shoes, safety vest, hearing protection and gloves are used and in good repair.	
Check that all loose fitting clothing or jewellery is not worn and loose long hair is tied back.	

5.4 TRAILER / TOW VEHICLE

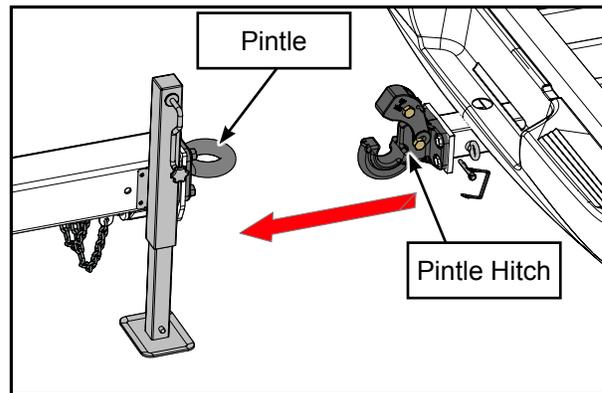
Review the transport safety section (2.7) before proceeding.

When coupling or uncoupling the trailer to a tow vehicle, the trailer should always be located on a level, dry area that is free of debris and other foreign objects.

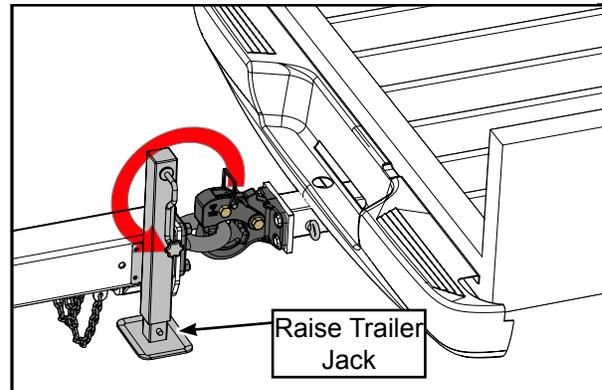
5.4.1 PINTLE HITCH

Follow this procedure:

1. Make sure that all bystanders, especially small children, are clear of the working area.
2. Make sure there is enough room and clearance to safely back up to the machine.
3. Use the trailer jack to raise the pintle to the height of the pintle hook
4. Slowly back the tow vehicle until the pintle hook and pintle ring are aligned.
6. Close the latch on the pintle hook and install latch pin
7. Pull the jack pin, crank the jack up,
8. Attach the safety chain securely to the tow vehicle to prevent unexpected separation. Cross the chains when attaching to the tow vehicle
9. Ensure light harness cable is firmly connected to the tow vehicle, and the signal lights are working.
10. Attach the break away switch cable to the tow vehicle.
11. Route the harness and cables across the hitch to prevent snagging. Be sure to provide slack for turning.
12. Reverse the above procedure when uncoupling.



ALIGNED



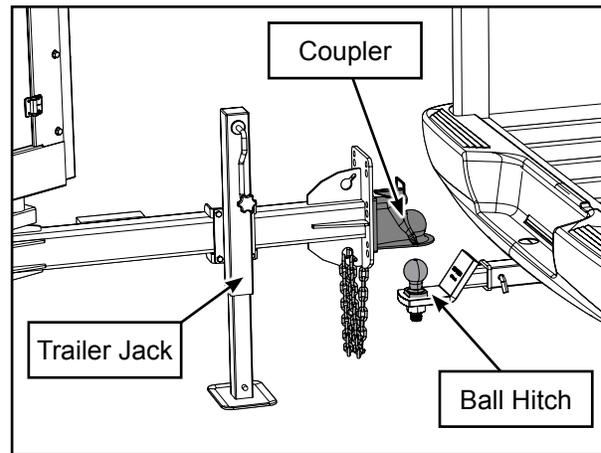
ATTACHED

5.4.2 BALL & COUPLER

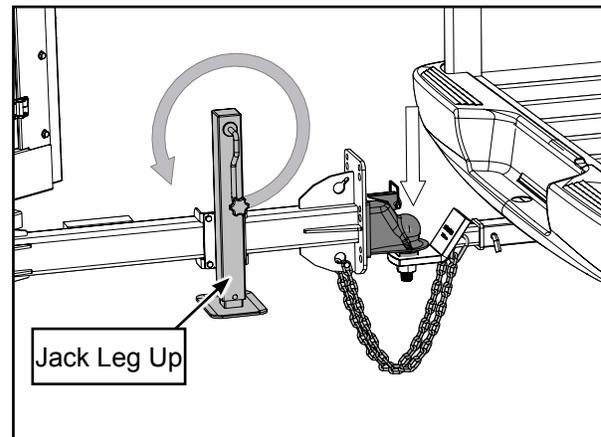
Review the transport safety section (2.7) before proceeding.

The Wood Chipper should always be located on a level, dry area that is free of debris and other foreign objects. When attaching the machine to a tow vehicle, follow this procedure:

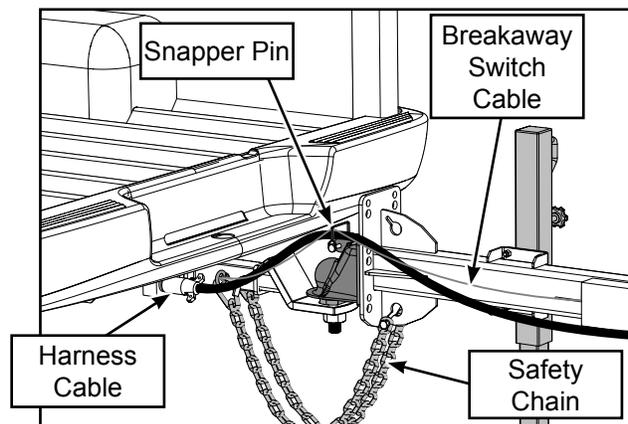
1. Make sure that all bystanders, especially small children, are clear of the working area.
2. Make sure there is enough room and clearance to safely back up to the machine.
3. Use the trailer jack to raise the tongue above the height of the tow vehicle ball hitch.
4. Slowly back the tow vehicle until the coupler on the hitch and ball are aligned.
5. Attach the ball hitch:
 - a. Place the coupler over the ball on the hitch.
 - b. Flip the latch to lock the coupler around the ball and install .
 - c. Install the snapper pin to secure the latch
 - d. Crank the jack up, to its stowed position.
5. Attach the safety chain securely to the tow vehicle to prevent unexpected separation. Cross the chains when attaching to the tow vehicle
6. Ensure light harness cable is firmly connected to the tow vehicle, and the signal lights are working.
7. Attach the break away switch cable to the tow vehicle.
8. Route the harness and cables across the hitch to prevent snagging. Be sure to provide slack for turning.
9. Reverse the above procedure when uncoupling.



ALIGNED



ATTACHED



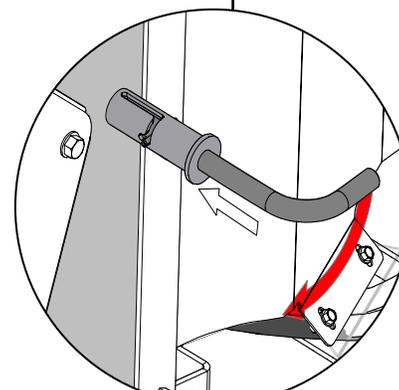
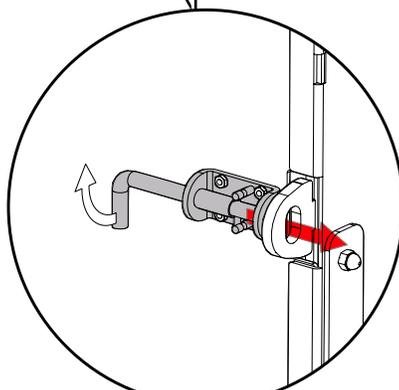
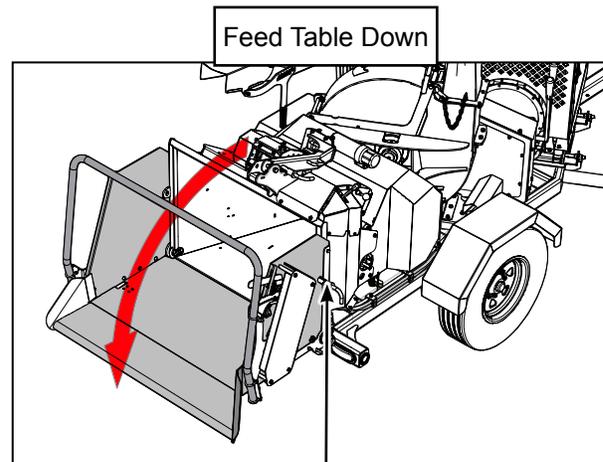
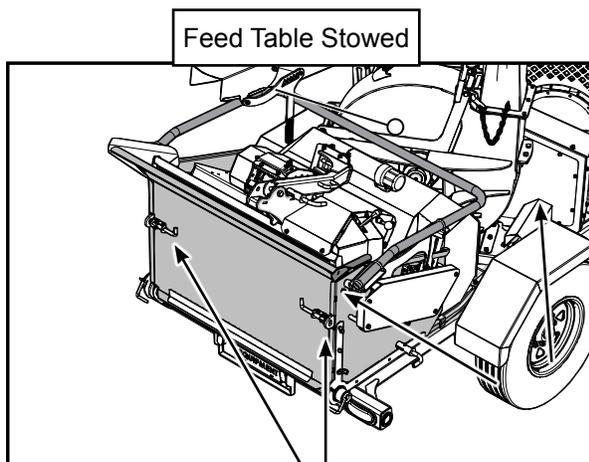
5.5 MACHINE SET-UP

Follow this procedure to prepare and set-up the machine at the work site:

1. Use the tow vehicle to position the Wood Chipper at the work site.
2. For greater stability we recommend leaving your chipper attached to the tow vehicle. The chipper can be used as a stand alone, but be sure to chock the wheels.
3. Lower the crank jack, so that the machine is stable.
4. Release the two spring loaded latch pins from the feed table pin tabs, and carefully lower the feed table.
5. With the feed table in position, engage the spring loaded table lock pin to secure the table.
6. Turn the discharge chute to the desired position and adjust the deflector as required.
7. Check the battery cable and if required, connect the cable and tighten fastener securely to ensure a good connection.

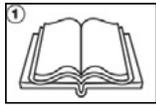
IMPORTANT

Position the machine so the prevailing wind/breeze blows the exhaust gases/fumes away from the operator's station.



5.6 STARTING PROCEDURE

The symbols to the left follow the starting procedure label attached at the control panel.



a. Wood Chipper should be set up and ready to run. Components and controls should be reviewed. (see section 4) Engine manual should also be reviewed

b. Set park brake if connected to tow vehicle.

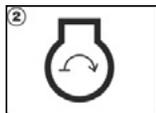
c. Ensure the jack leg is lowered.

d. Use the ignition key and turn it to the "start" indicator, ,

e. All the indicator lights should come on briefly, and the top 3 will stay on.

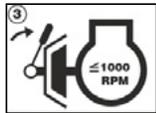
f. After a few more seconds the 2nd indicator light (glow plug) will turn off indicating that the engine is ready to start.

g. Turn over the engine. Release the key when the engine has started and the key will return to the centre run position.



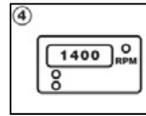
h. Run the engine for a few minutes to allow it to warm.

i. Use the throttle to bring the engine up to 1000 RPM.



j. Carefully move the clutch lever to engage the clutch.

k. Once the clutch is engaged the IntelliFeed readout will switch from oil hours to display the rotor RPM.



l. Bring the rotor up to speed: a maximum of 1400 RPM on the IntelliFeed readout.

m. Turn the discharge head to its desired position.

n. Check that the rotor is up to speed, start feeding material into hopper.

5.6.1 STOPPING PROCEDURE:

a. Stop feeding material into the hopper.



b. Slow engine down to 1000 RPM

c. Carefully disengage the clutch.



d. Shut off the engine using the ignition switch.

e. The rotor will continue to spin a few minutes after the engine has stopped. **The rotor has come to a full stop when the readout once again displays oil hours .**

IMPORTANT

Be aware that the rotor will continue to turn for a few minutes after the clutch has been disengaged. Wait for all parts to stop moving before attempting to access the machine in any way.

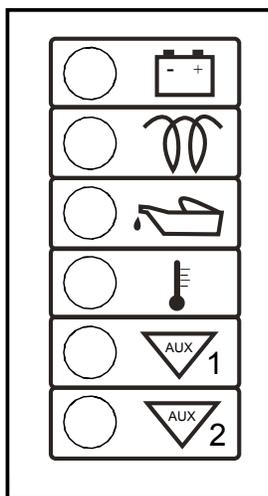
5.6.2 EMERGENCY STOPPING

If an emergency occurs:

Disengage the clutch.

Set feed roller control bar to neutral
Shut off the engine.

Correct emergency situation before restarting engine and resuming work.



IMPORTANT

Once the engine has started all indicator lights should be off. If any lights remain lit or come on after starting the engine, make note of which indicator is on, then shut down the engine to prevent potential damage. Call your dealer or mechanic for service.

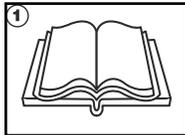
5.7 ROTOR HOOD OPEN PROCEDURE

To prevent potential accidents and harm to the operator from a spinning rotor, a safety interlock system is incorporated into the rotor upper housing. The safety interlock ensures that the rotor has completely stopped rotating before the rotor housing is able to be opened.

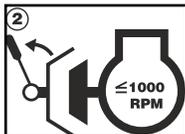
5.7.1 INTERLOCK PROCEDURE:

As a warning the interlock lever will chatter if attempting to engage the interlock while the rotor is still spinning. The interlock is protected with shear pins. If the lever is forced while the rotor is spinning, the shear pins will break and the interlock will fail to engage.

The symbols to the left follow the lockout procedure label attached at the rotor interlock lever.



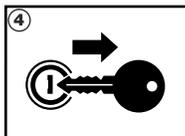
1. Prepare to set the rotor lock. Components and controls should be reviewed. (see section 4) Engine manual should also be reviewed. Set park brake if connected to tow vehicle, block and chock the wheels. Ensure the jack leg is lowered and is secured.



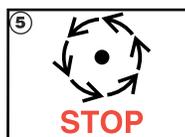
2. Disengage the clutch: bring the engine down to idle, (less than 1000 RPM) and disengage the clutch (interlock may not activate with clutch engaged)



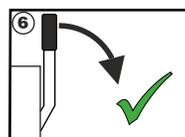
3. Turn the engine off: turn the ignition key to the "off" indicator.



4. Remove and pocket the ignition key (to prevent accidental engine starts.) For an added measure of safety, disconnect the battery.



5. Wait for all parts to stop moving. The rotor will continue to spin a few minutes after the engine has stopped. **The rotor must come to a full stop.**



6. The rotor safety interlock lever is ready to be engaged.

Proceed to step 5.7.2 to complete the rotor hood open procedure.

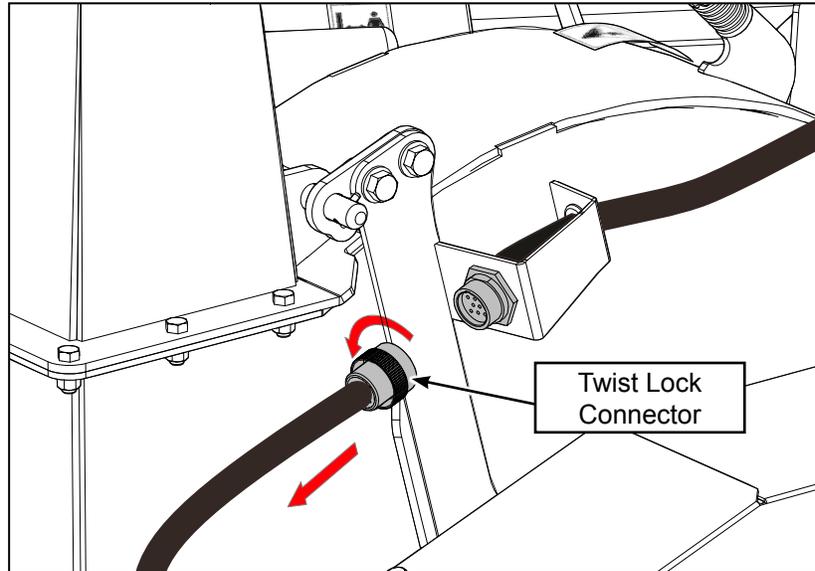


The rotor must come to a full stop. The interlock will not engage if the rotor is moving. Potential injury and damage to the machine will occur if the interlock is forced while the rotor is turning.

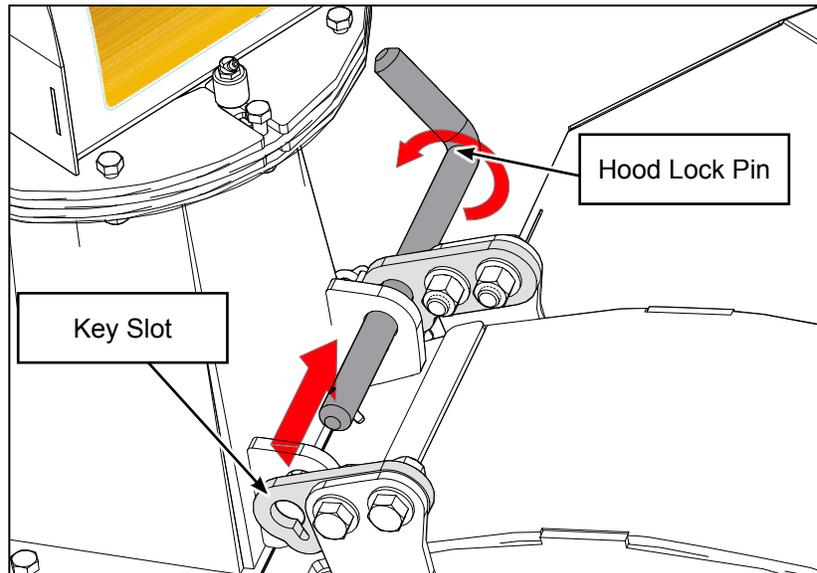
5.7.2 OPEN ROTOR HOOD:

After the interlock procedure is complete, follow these steps to open up the rotor hood.

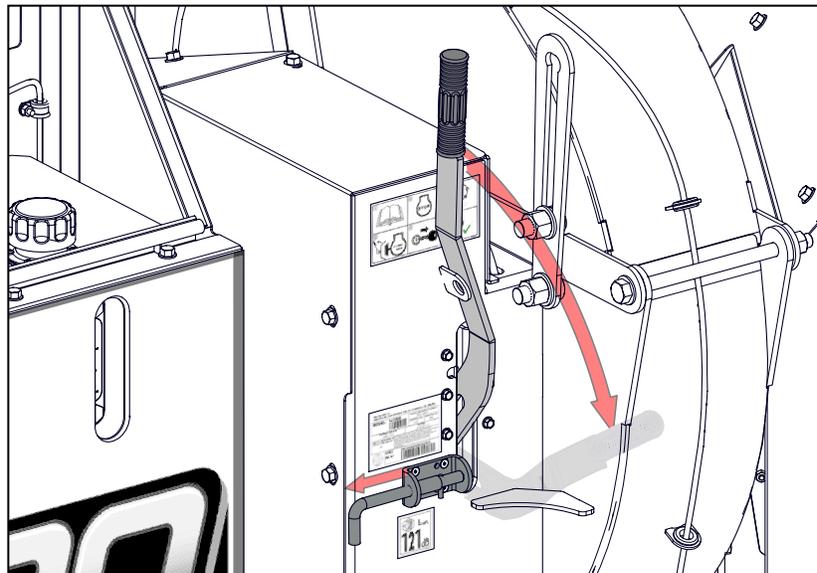
- a. Disconnect the in rotor safety twist lock connector: standing in front of the connector twist counterclockwise and pull to disconnect.



- b. Remove the keyed hood lock pin: turn the pin so that the key aligns with the keyslot and fully pull out the pin. The pin is secured with a security chain, leave the pin hang beside the hood.



- c. Pull the lever lock pin: pull the lever lock pin back so the interlock lever can be pulled down.
- d. Pull the interlock lever down to engage the interlock, then re-insert the lever lock pin to fix the lever in position.
- e. The safety interlock is fully engaged and the rotor hood may be opened.



5.8 CHIPPING OPERATION

The CR100 Commercial Wood Chipper is a strong, rugged machine that is built to a straight-forward design which provides consistent chipping of logs up to **10" (254mm)** in diameter.

Always wear personal protective equipment (PPE) whenever operating the machine. This includes but is not limited to a hard hat, protective shoes with slip resistant soles, protective goggles or face shield, heavy gloves, hearing protection and protective clothing.

Do not place metal, bottles, cans, rocks, glass or other solid material into the wood chipper. If something like this gets into the machine, stop the machine immediately for a detailed inspection.

Put the machine in **Safe Condition** :

- disengage the clutch
- shut off the engine
- ensure all components have stopped moving.
- remove and pocket the ignition key
- disconnect the battery
- block & chock the wheels

Inspect machine for damaged or loosened parts, repair or replace parts as required before resuming work.

Caution and care should be exercised when feeding material into the feeder. Do not reach or step into the feed hopper at any time.

- a. De-limb large branches and trees, the limbs on the branches may catch the roller feed control bar as they pass by them and shut the rollers off.
- b. Be aware of the size and shape of the material, crotchety, curved branches and logs can move in unpredictable ways as they pass through the feed rollers. Large curved pieces should be cut to smaller straighter sections.
- c. Hold small diameter branches / limbs together in a bundle and feed in simultaneously.
- d. Place short branches on top of longer ones, to avoid reaching into the hopper.
- e. Before beginning to feed, ensure the motor is warmed up and the rotor is up to speed.
- f. Move the feed control bar into the feed position to start the feed rollers turning
- g. Stand to the side of the feed table, slowly slide material into the feed table and move it into the feed rollers.
- h. Do not force the material into the rollers, as the material engages the roller, the roller will draw the material in.
- i. Ensure your wood chip pile is contained and doesn't affect the immediate work area.

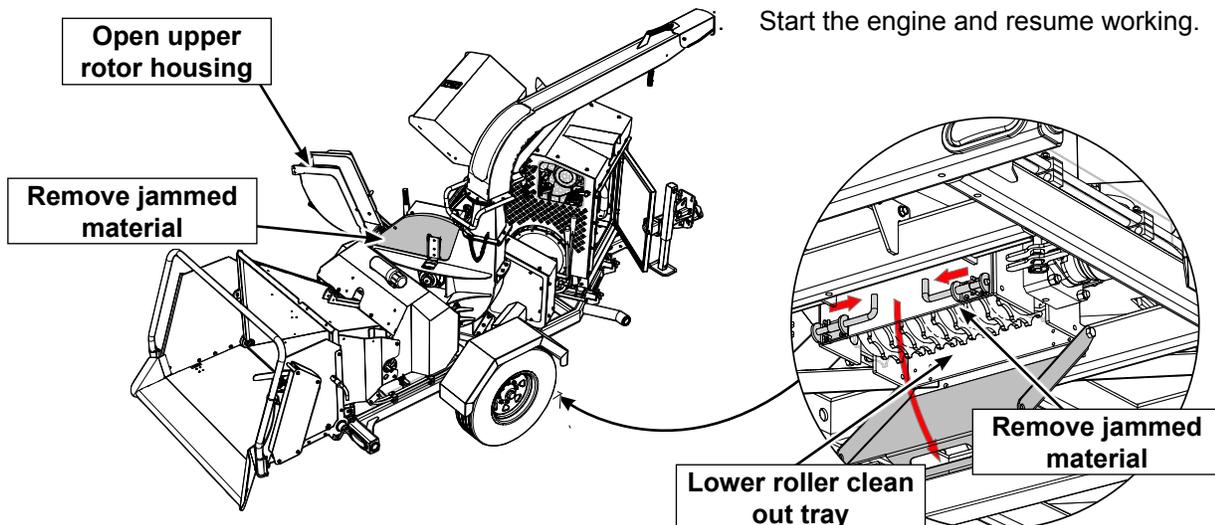
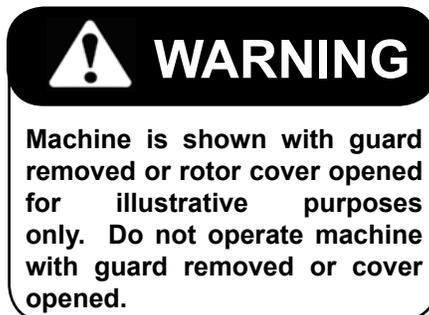


Caution: Do not reach or step into the feed hopper at any time, use a stick or branch to push any piece of material into the rollers that does not move on its own. If the jam persists then stop the engine and wait for the rotor to stop and then clear the jam. **Do not chance getting your hand or foot caught in the rollers.**

5.8.1 UNPLUGGING:

Although the machine is designed to handle a wide variety of material without any problem, occasionally it plugs. If the machine plugs, follow this procedure to unplug:

- a. Ensure the machine is in **Safe Condition** before beginning to unplug (see 2.2 pg 10)
- b. Clear the area of bystanders, especially small children.
- c. Reverse the feed rollers to remove the material from the feed hopper. Visually inspect and ensure all the material is out and nothing is jammed or wedged between the rollers and the rotor. If this does not unplug the chipper or the engine is stopped, the plug must be removed by hand.
- d. Pull any remaining material out of the feed hopper and discharge hood.
- e. Use a stick to poke loose any material jammed into the discharge hood. Be sure all the material is out and nothing is jammed or wedged between the input opening and the rotor.
- f. Check that everyone is clear of machine before restarting engine.
- g. Start the engine and resume working.



5.8.2 SEVERE PLUG:

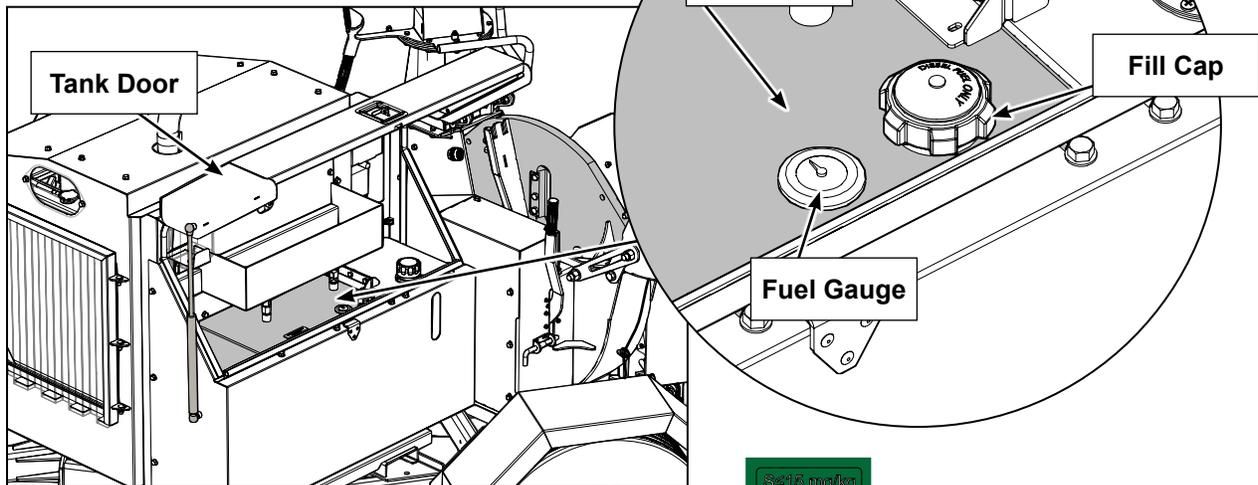
- a. Clear the area of bystanders, especially small children.
- a. Follow the **Rotor Open Hood Procedure** in section 5.7, and open the upper rotor housing.
- b. Carefully remove jammed material from inside the rotor compartment.

IMPORTANT
Be aware that the rotor has 4 chipper blades, reaching into the rotor compartment to clear a plug must be done with great care.

- c. Clean out the discharge chute
 - d. Inspect the lower rotor housing and careful clean out any debris.
 - e. If required, rotate the rotor: move the safety interlock lever in (to free the rotor) then **very carefully** and slowly turn the rotor by hand to be sure there is nothing jammed between the rotor and stationary blades. **Do not reach into the rotor housing while the rotor is moving or unlocked.**
 - f. Open the lower roller clean out tray located under the feed rollers and carefully remove any debris. Close and secure the tray
 - g. Move the interlock lever to the down position, close the upper rotor housing then move the interlock lever back to the up position.
 - h. Check that all lock pins and electrical connections are in place.
 - i. Check that everyone is clear of machine before restarting engine.
- Start the engine and resume working.

5.9 REFUELLING:

CR100 fuel tank holds 23 US gallons (87 L) of fuel, and is located opposite the engine compartment. Avoid running the tank dry. Use the appropriate grade of fuel, and use caution to prevent spilling. Do not smoke while refuelling.



To add fuel:

1. Ensure the machine is in **Safe Condition** before beginning to fuel (see 2.2 pg 10)
2. Allow the engine and muffler to cool.
3. Clean area around fuel fill cap and remove cap.
4. Using a clean funnel, fill fuel tank to 1/2" (1.25cm) below bottom of filler neck to provide space for any fuel expansion. Do not overfill.
5. Install fuel fill cap securely and wipe up any spilled fuel.



Only use Ultra Low Sulphur Diesel (ULSD)



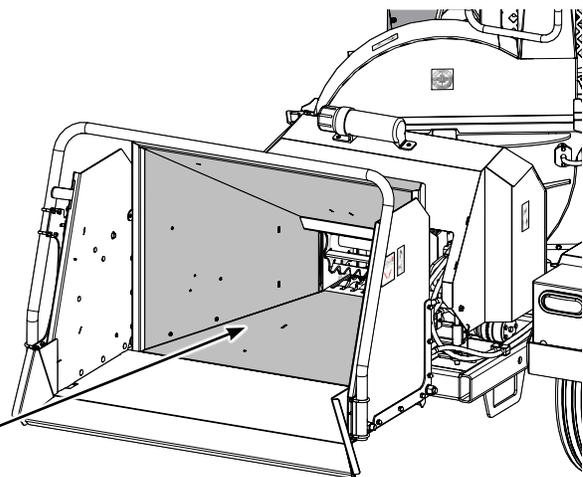
Caution: do not refuel the machine while smoking or when near open flame or sparks. Fuel is highly flammable, handle with care.

5.10 OPERATING HINTS:

1. Delimb branches that are greater than 1" (2.5cm) before you feed them into the hopper. This will prevent the tree from jamming in the feed hopper and prevent feeding.
2. When feeding large bushy branched material, have someone positioned at the roller control bar to keep branches from hitting the roller control bar and deactivating the rollers.
3. Line up the chipper to the material to feed straight in to the feed table, loading will be easier and limit the amount of material handling time.



Avoid placing hands or body parts into feed hopper area.



6 HYDRAULIC OPTIONS

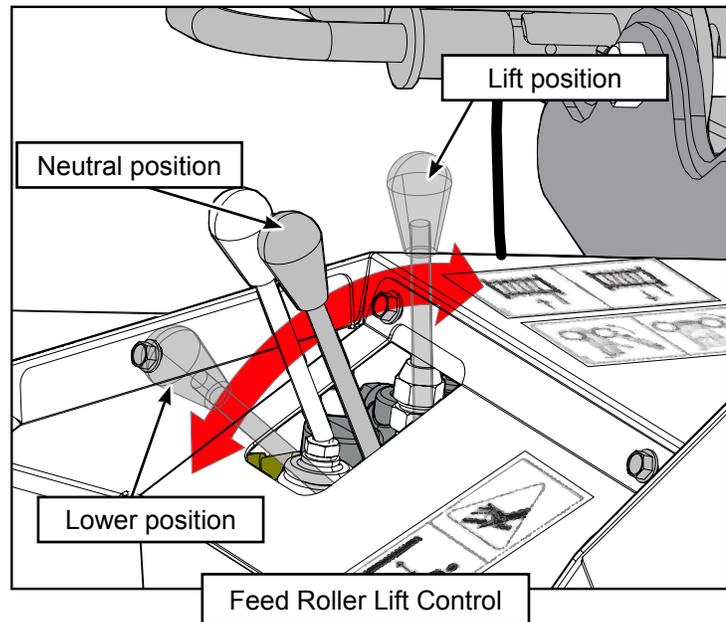
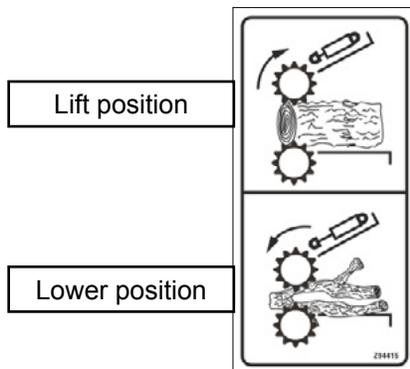
This section applies to the factory installed options for the Hydraulic Feed Roller Lift (CR100H, CR100HW) and Hydraulic Winch (CR100HW.).

The winch is used to pull in material that is too large to carry, and to assist in lifting heavy material onto the feed tray.

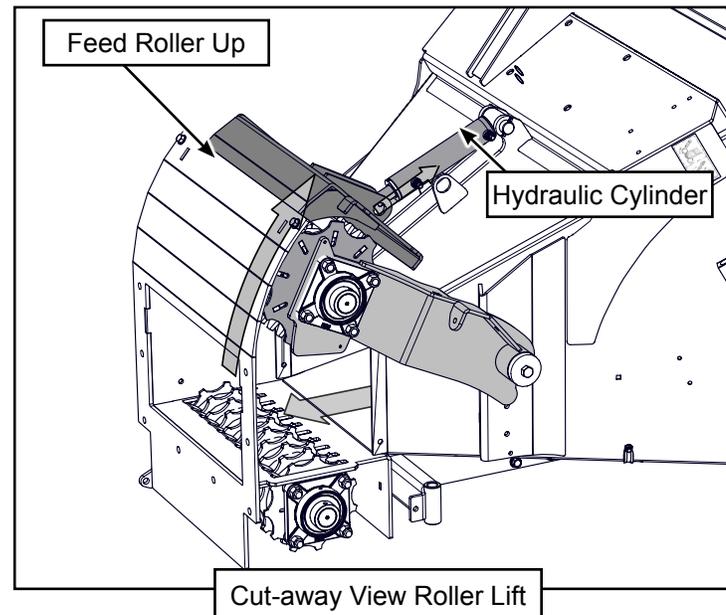
The feed roller lift uses a hydraulic cylinder to lift or lower the top feed roller. The lift feature can be useful when feeding large end cut material that the roller has difficulty climbing over: lift the roller, start the material then release the roller to begin feeding. The lower feature is useful to apply crushing force when feeding extremely curved, gnarly or bushy material which the feed roller has difficulty gripping.

6.1 HYDRAULIC FEED ROLLER LIFT

The feed roller lift features a 3-position control valve, spring-loaded-to-center neutral with lift position detent. The lift position detent holds the roller in the lift position while you feed in large material.



1. Pull the hydraulic control lever back and hold to lower and apply downward crushing force to the top roller.
2. Release the lever and it will return to its neutral position and stop applying pressure to the roller.
3. Push the lever forward to raise the roller, push it all the way into detent to keep the roller raised while you feed large material into the feed hopper.
4. Pull the lever out of detent, the lever will return to neutral, and stop applying upward force to the roller.



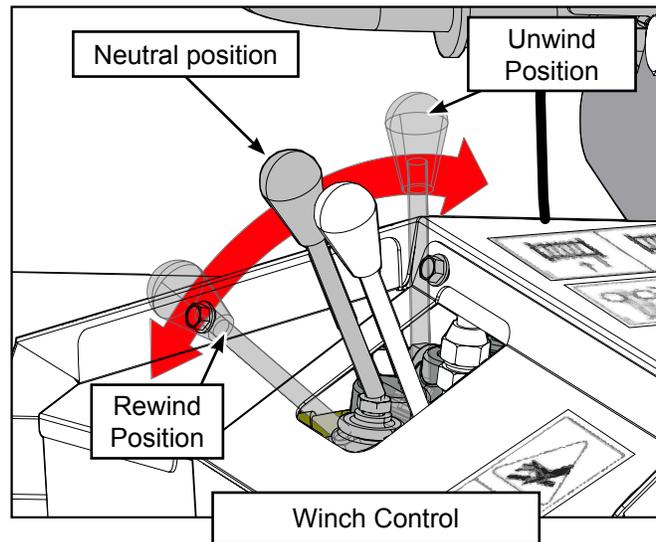
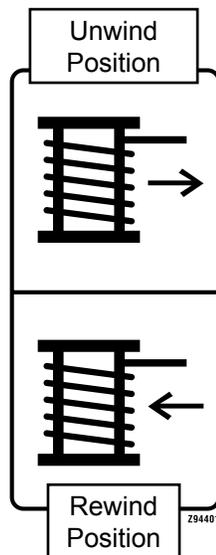
Caution: For maintenance, the roller lock pin **must be set** to lock the roller in the up position. This will provide a positive lock to keep the roller in the up position while the engine/hydraulics are off.

6.2 HYDRAULIC WINCH

6.2.1. HYDRAULIC WINCH CONTROL

This 3-position "spring-loaded-to-center neutral" valve controls the flow of oil to the hydraulic motor powering the rope winch.

1. Pull the hydraulic control lever back and hold to start the winch and rewind the rope.
2. Release the lever and it will return to neutral and stop rewinding the rope.
3. Push the lever forward to allow the rope to unwind under power.
4. Release the lever and it will return to neutral and stop unwinding the rope.



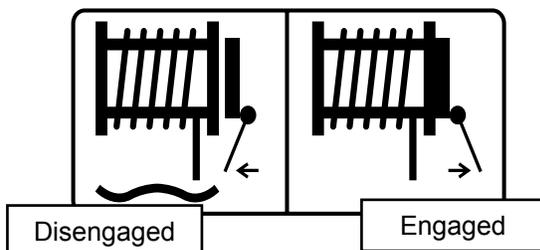
Caution: Always ensure the area is clear of bystanders when operating the winch, and never use the winch to hold or secure loads

6.2.2. WINCH GEAR LEVER:

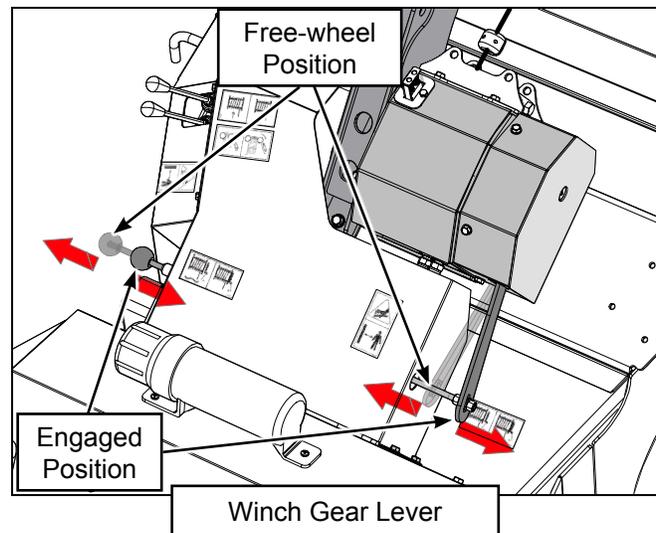
This two-position lever controls the gears on the winch drive system. The lever may be controlled from either side of the hopper.

The following instructions are from the valve side of the main hopper. Follow the label instructions.

1. Pull the lever back to **disengage** the winch gear from the hydraulic motor, allowing the gear to free-wheel. The rope can then be easily pulled out to attach to a log.
2. Push it forward to **engage** the winch gear to the hydraulic motor, and begin winching.



Caution: Stay clear of the winch rope while winching, injury from entanglement or rope burn could occur!



Caution: winch line, entanglement danger present, keep hands, loose clothing, and long hair away from winch line while it is operating.

7 TRANSPORTING



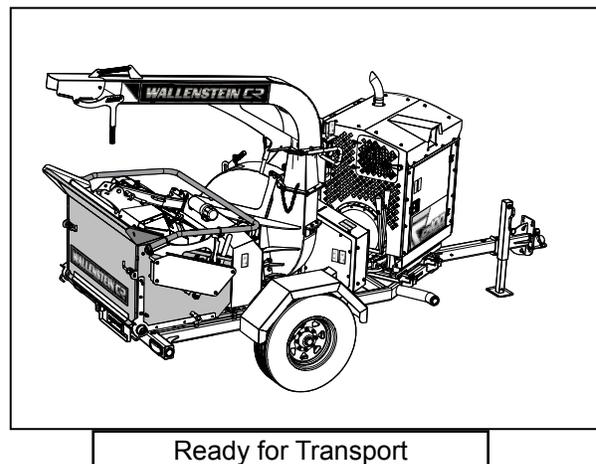
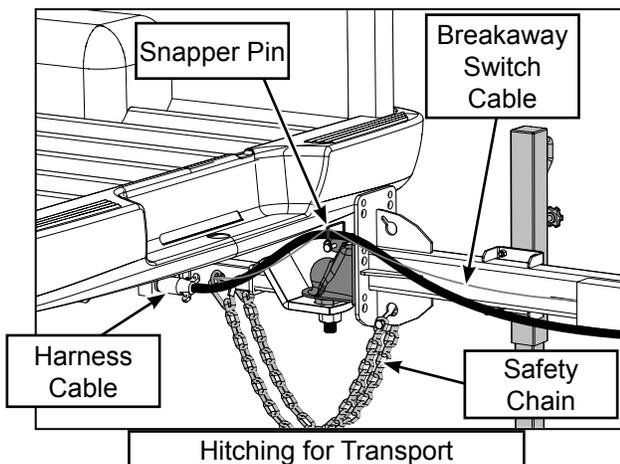
TRANSPORT SAFETY

- Do not exceed a safe travel speed.
- Always follow and obey applicable highway rules and regulations.
- Be sure all lights and markers required by the traffic regulations are in place, clean and working.
- Always attach the safety chains between the machine and the pick-up. Cross the chains under the hitch when connecting.
- Always use a mechanical retainer through the ball hitch mechanism when attaching to tow vehicle.
- Do not drink and drive.
- Plan your route to avoid rough terrain. Slow down when encountering rough conditions or cornering.
- Stow and secure feed table before moving or transporting.

7.1 PREPARE FOR TRANSPORT:

When transporting the machine, review and follow these instructions:

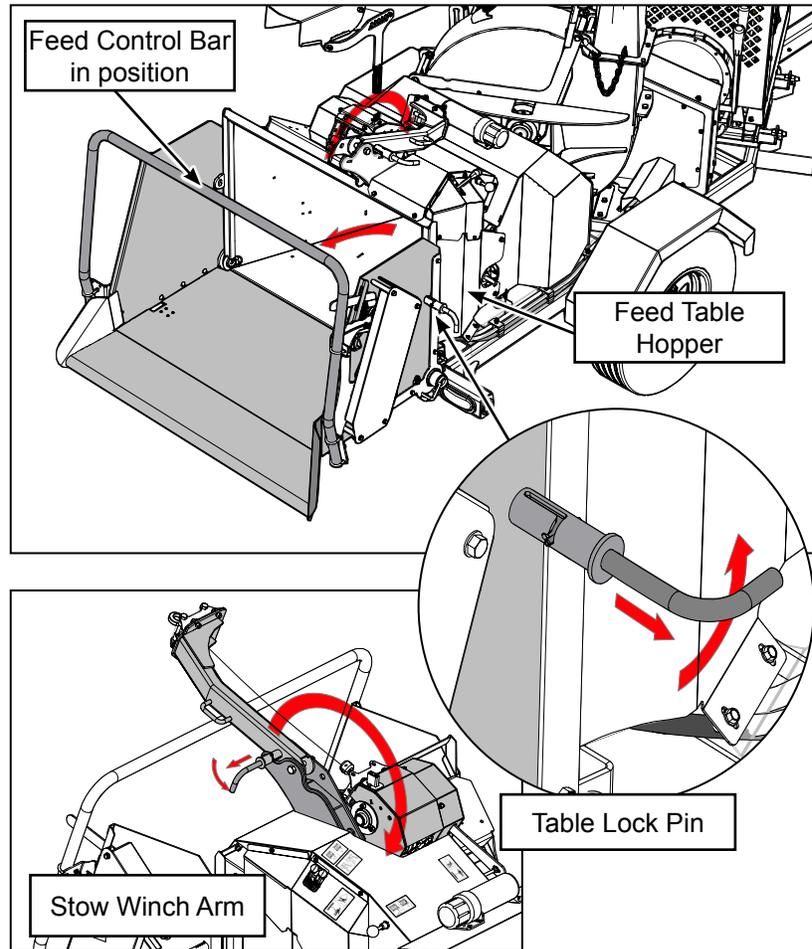
1. Clear the area of bystanders, especially small children.
2. Insure that the machine is securely attached to the tow vehicle with a mechanical retainer through the hitch mechanism, and the jack stand is raised. Always use safety chains crossed between the tow vehicle and machine. (see section 5.4)
3. Connect the break away switch cable and light harness cable. Check that all the lights and reflectors required by the highway authorities are in place, clean and working.
4. Check that electric brakes are functioning properly and brake controller is functioning and properly adjusted.
5. Check tires for correct pressure, cuts or damaged rims.
6. Check lug nuts and torque if necessary. New chippers: before operation check after 20-25 miles (32-40 Kim) and regularly check at least weekly.
7. Inspect and replace any axle dust caps that are damaged or leaking.
8. Do not allow riders. Do not drink and drive.
9. Never exceed a safe travel speed. Slow down when encountering rough road conditions and cornering.
10. Turn the discharge hood and point toward the back to reduce the width of the machine.
11. Secure chipper components including:
 - engine and tank doors: latched
 - belt access covers, and shields: bolted
 - rotor housing: latched
 - stow the feed table (see 7.2 Feed Table).



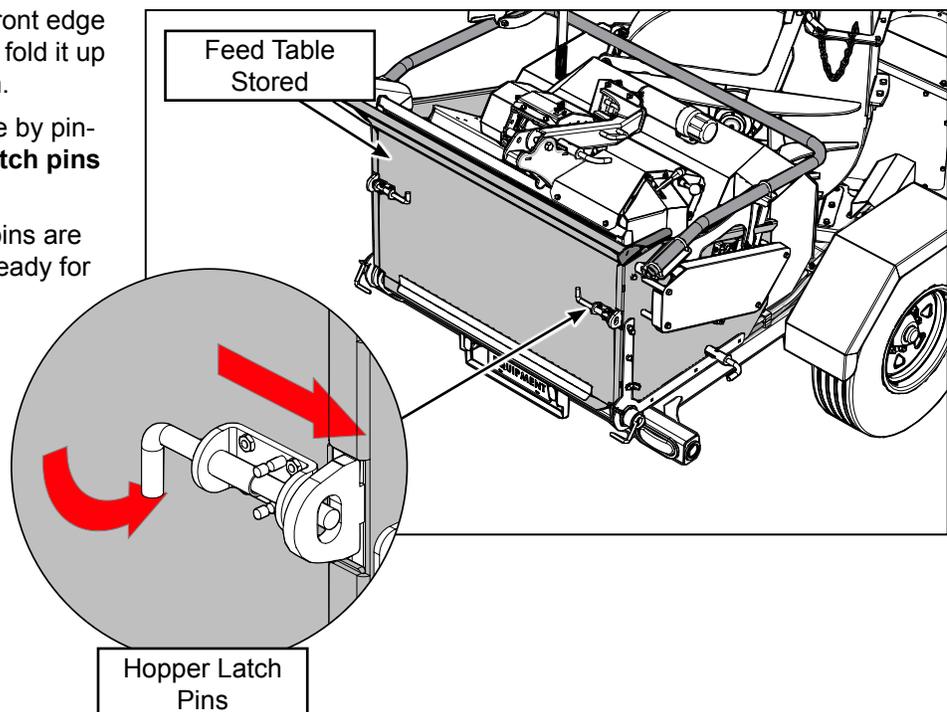
7.2 STOW THE FEED TABLE:

The feed table folds up when not in use for transportation and storage.

1. move the roller **feed control bar** out to its "stop" position, so that it will clear the cowling when the feed table is folded up.
2. If your chipper is equipped with a winch, stow the winch arm: unpin the winch arm latch, carefully fold the arm back. Reset the pin to lock the arm in stow position
3. Unpin the **table lock pin** from on the side of the feeder hopper.



4. Carefully grasp the front edge of the feed table and fold it up to its vertical position.
5. Secure the feed table by pinning the 2 **hopper latch pins** in the pin tabs.
6. Check that all latch pins are secure, the table is ready for transport.



8 STORAGE



STORAGE SAFETY

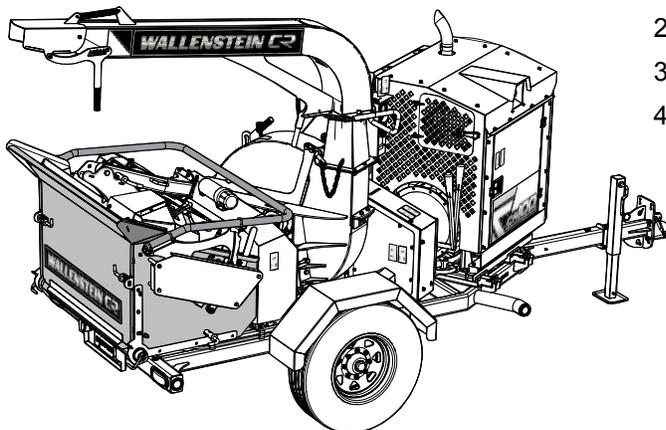
- Store the chipper in an area away from human activity.
- Do not permit children to play on or around the stored machine.
- Replace any missing or unreadable safety decals.
- Allow machine to cool before covering or storing in an enclosure.

8.1 PLACING IN STORAGE

After the season's use or when the machine will not be used for a period of time, completely inspect all major systems of the CR100 Commercial Trailer Wood Chipper. Replace or repair any worn or damaged components to prevent any unnecessary down time at the beginning of the next season.

Follow this procedure before storing:

1. Review the engine owners manual concerning storage and prepare the engine for storage.
2. Remove ignition key and store in a secure place.
3. Remove the battery and store it in a cool, dry area on wooden blocks or a wooden pallet. Charge it monthly to maintain an adequate charge.
4. Inspect all rotating parts for entangled material. Remove all entangled material.



Ready for
Storage

5. Remove all remaining material and debris from the machine.
6. Thoroughly wash the machine with a pressure washer or water hose to remove all dirt, mud or debris.
7. Check the condition of the belts and pulleys. Replace or adjust as required.
8. Move the feed table up and secure, and rotate the discharge chute towards the engine.
9. Secure chipper components including:
 - engine and tank doors - latched,
 - belt access covers, and shields - bolted,
 - rotor housing - bolted,
 - raise the feed table - snapper pins.
10. Touch up all paint nicks and scratches to prevent rusting.
11. Do not allow children to play around the stored chipper.
12. Store in an area away from human activity.
13. It is best to store the machine inside. If that is not possible, cover with a waterproof tarpaulin and tie down securely.
14. To reduce the chance of condensation and contamination, store the chipper with a full tank and treat the fuel. Run the engine for a few minutes to make sure the treatment gets throughout the fuel system.

8.2 REMOVING FROM STORAGE

When removing this machine from storage, follow this procedure:

1. Review and follow the pre-operation checklist.
2. Review safety and operation procedures.
3. Remove the tarpaulin if covered.
4. Install and connect the battery.

IMPORTANT

Review the

- Engine owners manual
 - Axle service manual
- concerning storage when preparing the chipper for storage or retrieving from storage.

9 SERVICE AND MAINTENANCE



MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
- Make sure there is plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
- Before working on this machine, ensure the machine is in **Safe Condition** :
 - disengage the clutch
 - shut off the engine
 - ensure all components have stopped moving.
 - remove and pocket the ignition key
 - disconnect the battery
 - block & chock the wheels
- Never work under equipment unless it is blocked securely.
- Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work. Use heavy gloves when handling sharp components.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Periodically tighten all bolts, nuts and screws and check that all electrical and fuel connections are properly secured to ensure chipper is in a Safe Condition .
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing chipper in service.

9.1 SERVICE

9.1.1 FLUIDS AND LUBRICANTS

1. **Grease:** Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium base grease.
2. **Engine Oil:** Refer to the engine manufacturer's manual for maintenance and service information
3. **Engine Fuel:** Refer to the engine manufacturer's manual for fuel type information
Fuel Tank Capacity: 87 L (23 US Gal.)
4. **Hydraulic Oil:** Use Dexron III hydraulic oil for all operating conditions.
Reservoir Capacity 34 L (9 US Gal.)
5. **Storing Lubricants:** Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

9.1.2 GREASING

Refer to section 9.1.1 for recommended grease.

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fittings if necessary.



Look for this label on your machine, it indicates a grease point and the number of hours between greasing.

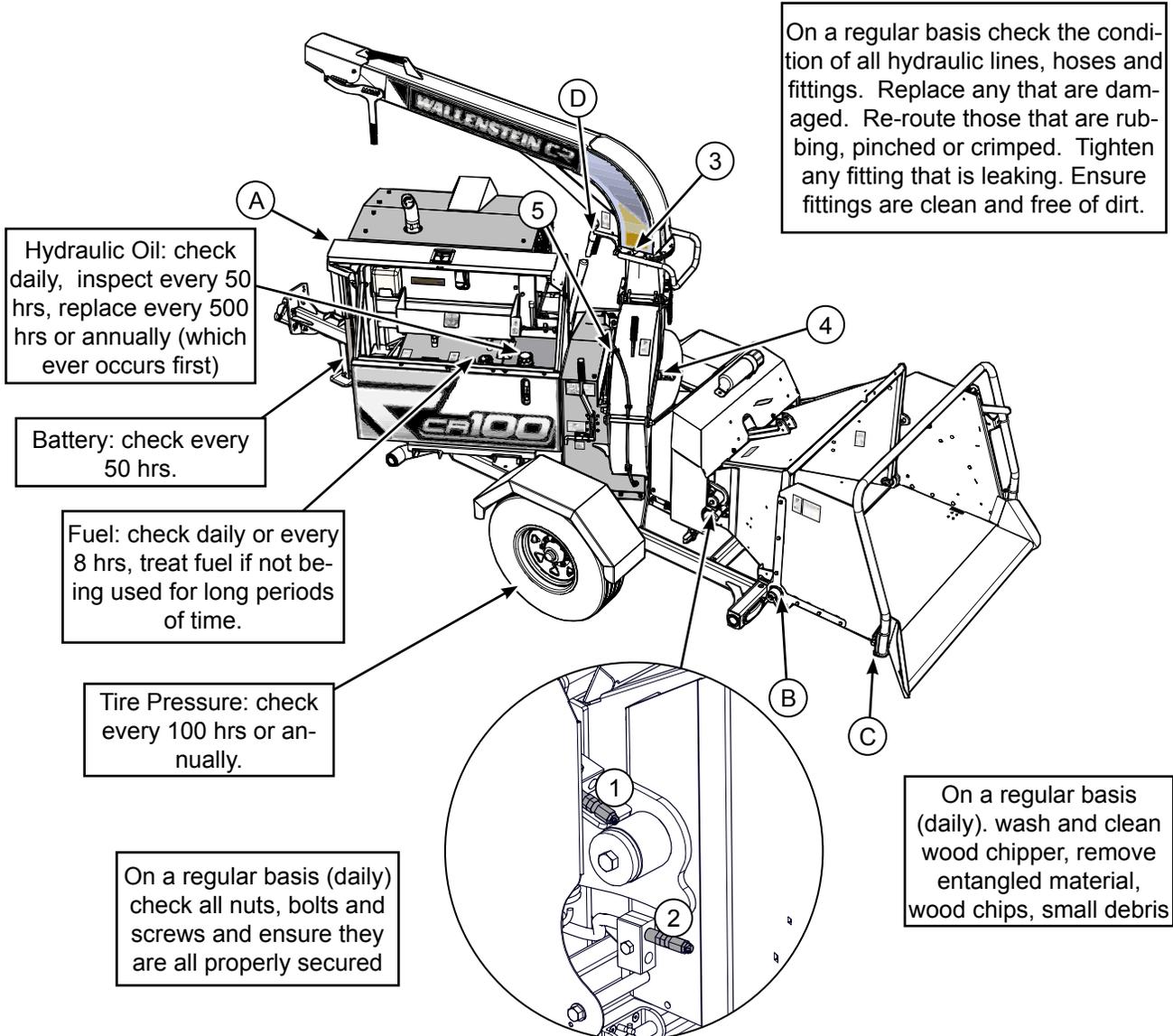
9.1.3 SERVICE ILLUSTRATION

See Service Record Chart

This illustration shows the general location of service points for all models in this manual.

Refer to the manufacturers instruction manual for specific maintenance instructions / requirements regarding:

- Engine
- Axle, hub, wheel bearings
- PTO clutch



Location	Grease Points - 50 hrs or Annually
①	Upper Left Roller Bearing
②	Lower Left Roller Bearing
③	Discharge Chute Swivel
④	Rotor Main Shaft Front Roller Flange
⑤	Rotor Main Shaft Rear Roller Flange
grease with one shot of grease	

Location	Lubricate Hinges & Pivot Points
Ⓐ	Tank Door (3 hinges)
Ⓑ	Feed Table (2 sides)
Ⓒ	Feeder Control Bar (2 sides)
Ⓓ	Discharge Rotation Latch
inspect daily, lubricate every 40 hours or weekly	

9.1.4 SERVICE ILLUSTRATION

See Service Record Chart
This illustration shows the general location of service points for all models in this manual.

⚠ WARNING

Machine is shown with guard removed for illustrative purposes only. Do not operate machine with guard removed.

Hydraulic Filter:
replace every 100
hrs or annually

Engine Service: refer
to engine owners
manual for service:

- Air Cleaner
- Fuel filter
- Oil & Oil Filter
- Fan Belt
- Radiator

PTO Clutch Service:
refer to clutch owners
manual for service

Rotor blades: check daily,
test sharpness every 50 hrs

Belt drive: Check tension daily, adjust every 50 hrs
Check sheave alignment every 50 hrs

Twig Breaker: check every 8 hrs.

Ledger blade: check daily, test sharpness every 50 hrs

Axle, Hub and Wheel service:
see axle owners manual for
service instructions

Cleanout Tray
located under
lower roller

Refer to the manufacturers instruction manual for specific maintenance instructions / requirements regarding:

- Engine
- Axle, hub, wheel bearings
- PTO clutch

Location	Grease Points - 50 hrs or Annually
⑥	Upper Right Roller Bearing Housing
⑦	Lower Right Roller Bearing Housing
grease with one shot of grease	

Location	Lubricate Hinges & Pivot Points
⑤	Engine Door
⑥	Drive Belt Tension Bolt
⑦	Clean Out Tray
inspect daily, lubricate every 50 hours or weekly	

9.1.5 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

8 Hours or Daily			50 Hours or Annually						100 Hours or Annually					
Check	Secure Fasteners / Clean Machine		Check	Twig Breaker, Rotor Blades, Ledger Blade		Check	Hydraulic Oil Change: Annually or 500 Hrs		Change	Hydraulic Oil Change: Annually or 500 Hrs		Adjust	Hydraulic Oil Change: Annually or 500 Hrs	
Check / Clean / Lube	Lubricate Hinges & Pivot Points		Check	Tires, Wheel & Wheel Bearings (check axle manual)		Check	Frame & Running Gear		Change	Frame & Running Gear		Change	Frame & Running Gear	
Adjust	Clutch Maintenance (check clutch owners manual)		Check	Fuel Level		Check	Hydraulic Oil Filter		Grease	Hydraulic Oil Filter		Check	Hydraulic Oil Filter	
Adjust	Engine Oil Level		Check	Belt Drive Tension		Check	Rotor & Ledger Blades		Grease	Rotor & Ledger Blades		Check	Rotor & Ledger Blades	
Check	Clutch Maintenance (check clutch owners manual)		Check	Engine Oil Level		Check	Grease Points (see illustration)		Check	Grease Points (see illustration)		Check	Grease Points (see illustration)	
Check	Tires, Wheel & Wheel Bearings (check axle manual)		Check	Fuel Level		Check	Pulley Alignment		Check	Pulley Alignment		Check	Pulley Alignment	
Check	Lubricate Hinges & Pivot Points		Check	Belt Drive Tension		Check	Check Hydraulic Oil Level		Check	Check Hydraulic Oil Level		Check	Check Hydraulic Oil Level	
Check / Clean / Lube	Lubricate Hinges & Pivot Points		Check	Engine Oil Level		Check	Engine Maintenance (check engine owners manual)		Check	Engine Maintenance (check engine owners manual)		Check	Engine Maintenance (check engine owners manual)	
Adjust	Clutch Maintenance (check clutch owners manual)		Check	Clutch Maintenance (check clutch owners manual)		Check	Check Hydraulic Oil Level		Check	Check Hydraulic Oil Level		Check	Check Hydraulic Oil Level	
Adjust	Engine Oil Level		Check	Clutch Maintenance (check clutch owners manual)		Check	Pulley Alignment		Check	Pulley Alignment		Check	Pulley Alignment	
Check	Clutch Maintenance (check clutch owners manual)		Check	Tires, Wheel & Wheel Bearings (check axle manual)		Check	Grease Points (see illustration)		Check	Grease Points (see illustration)		Check	Grease Points (see illustration)	
Check	Tires, Wheel & Wheel Bearings (check axle manual)		Check	Fuel Level		Check	Rotor & Ledger Blades		Check	Rotor & Ledger Blades		Check	Rotor & Ledger Blades	
Check	Lubricate Hinges & Pivot Points		Check	Belt Drive Tension		Check	Hydraulic Oil Filter		Check	Hydraulic Oil Filter		Check	Hydraulic Oil Filter	
Check / Clean / Lube	Lubricate Hinges & Pivot Points		Check	Engine Oil Level		Check	Frame & Running Gear		Check	Frame & Running Gear		Check	Frame & Running Gear	
Adjust	Clutch Maintenance (check clutch owners manual)		Check	Clutch Maintenance (check clutch owners manual)		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	
Adjust	Engine Oil Level		Check	Engine Oil Level		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	
Check	Clutch Maintenance (check clutch owners manual)		Check	Clutch Maintenance (check clutch owners manual)		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	
Check	Tires, Wheel & Wheel Bearings (check axle manual)		Check	Tires, Wheel & Wheel Bearings (check axle manual)		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	
Check	Lubricate Hinges & Pivot Points		Check	Lubricate Hinges & Pivot Points		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	
Check	Secure Fasteners / Clean Machine		Check	Secure Fasteners / Clean Machine		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	
Check	Twig Breaker, Rotor Blades, Ledger Blade		Check	Twig Breaker, Rotor Blades, Ledger Blade		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs		Check	Hydraulic Oil Change: Annually or 500 Hrs	

9.2 MAINTENANCE

By following a careful service and maintenance program for your machine, you will enjoy many years of trouble-free operation.

Put the machine in **Safe Condition** before working on this machine,

- disengage the clutch
- shut off the engine
- ensure all components have stopped moving.
- remove and pocket the ignition key
- disconnect the battery
- block & chock the wheels

9.2.1 V3600 KUBOTA ENGINE

For periodic service, review your engines instruction manual for specific instructions / requirements for:

- Oil
- Oil filter
- Water separator
- Air cleaner
- Fuel filter
- Fuel lines / injectors
- Fan belt
- Cooling components:
 - Radiator
 - Fluid / anti-freeze
 - Hoses
- Turbo Charger

9.2.2 NACD 11.5" HE PTO CLUTCH

For periodic service, review your clutches service manual for specific instructions / requirements for:

- Lubrication
- Clutch inspection / adjustment

9.2.3 DEXTER TORFLEX 7000 LB AXLE, BRAKE AND HUB ASS'Y

For periodic service, review the Dexter Axle operation manual for specific instructions / requirements for:

- Seals
- Bearings / Cups
- Hub / Drum
- Brake:
 - Lining / Shoes
 - Adjustment
 - Replacement
 - Magnets
 - Lubrication

9.2.4 HYDRAULIC OIL FILL

The CR100 hydraulic tank is located next to the fuel tank and is equipped with a gauge that shows the level and temperature of oil in the tank.

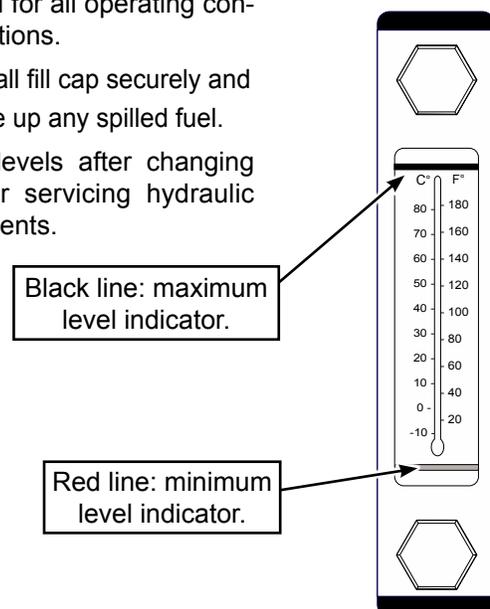
Hydraulic oil level should be checked daily, and the quality of the oil should be inspected every 50 hrs. If the oil is dirty or smells burnt, it should be replaced immediately.

For optimum performance, the filter should be changed every 100 hrs, and the hydraulic oil should be changed every 500 hrs or once a year.

When changing the hydraulic oil be sure to remove and clean the hydraulic oil strainer located at the oil return inlet at the bottom of the hydraulic tank.

1. Ensure the machine is in **Safe Condition** (see **9.2 pg 52**)
2. Allow the engine and muffler to cool.
3. Clean area around fill cap and remove cap.
4. Using a clean funnel, fill the tank according to the oil level gauge:
 - When filling the tank with oil, the window of the gauge will also fill with oil as the level gets higher in the tank.
 - Never fill the oil tank above the **BLACK** (maximum) line at the top of the gauge.
 - Do not run the machine with the oil level below the **RED** (minimum) line at the bottom of the gauge.
 - Reservoir Capacity 34 L (9 US Gal.)
 - Use Dexron III hydraulic oil for all operating conditions.
5. Install fill cap securely and wipe up any spilled fuel.

Check levels after changing filters or servicing hydraulic components.



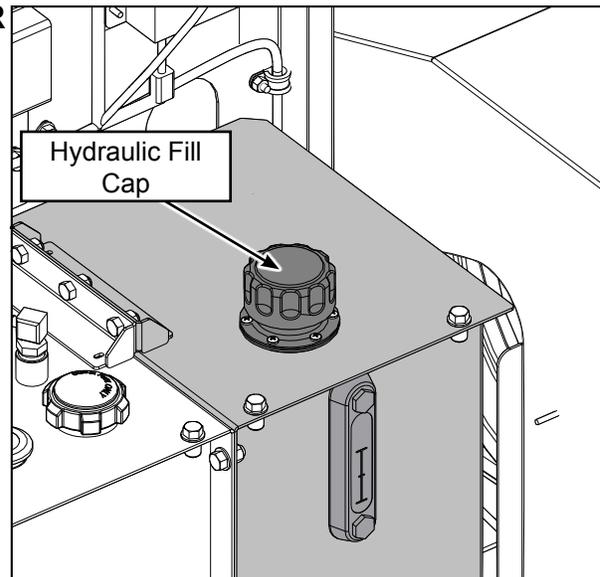
9.2.5 HYDRAULIC OIL DRAIN / STRAINER

The hydraulic tank may occasionally need to be drained. The drain plug is located at the bottom of the hydraulic tank.

When changing the hydraulic oil be sure to remove and clean the hydraulic oil strainer located at the oil return inlet at the bottom of the hydraulic tank.

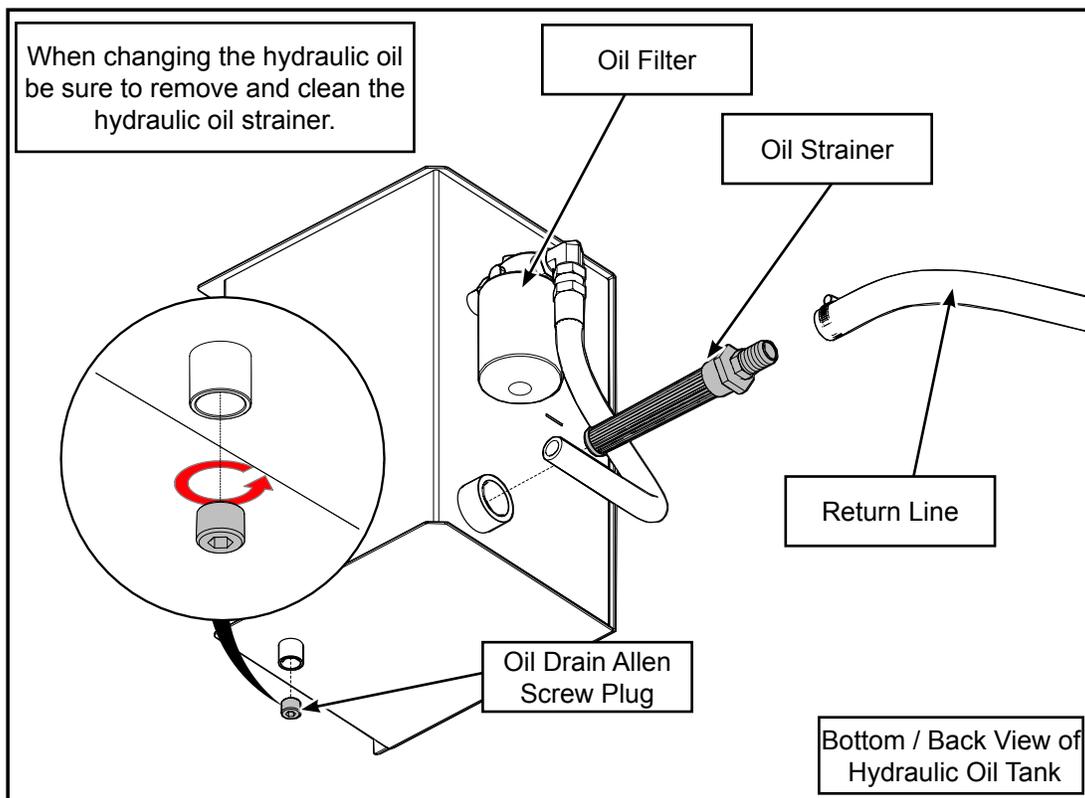
Follow this procedure to drain the tank:

1. Ensure the machine is in **Safe Condition** (see 9.2 pg 52)
2. Allow the machine to cool before changing the oil. Hot oil can cause burns if it contacts exposed skin. It is best to change oil while the machine is warm to keep the contaminants in suspension.
3. Have a drain pan ready than can hold 34 L (9 US Gal.)
4. Clean area around drain and remove the allen screw.
5. Allow the oil to drain,
6. Remove the oil return hose from the strainer, remove the strainer then clean the stainer
7. Flush the tank.
8. Replace the allen screw, and refill the tank with 34 L (9 US Gal.) of Dexron III hydraulic oil.
9. Dispose of used oil in a environmentally acceptable fashion.



IMPORTANT

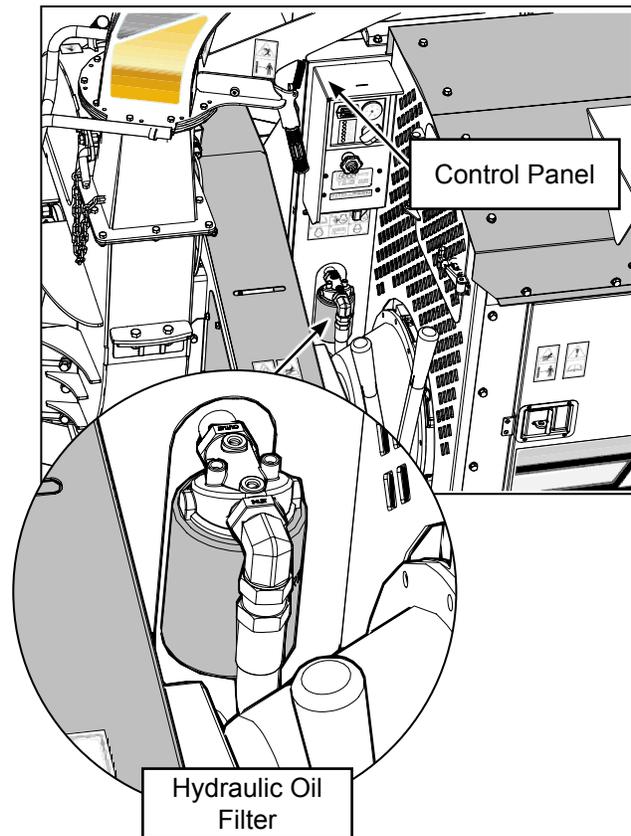
Be aware of high temperature readings, optimum temperatures are 50°C - 60°C (120°F-140°F). Temperatures higher than 82°C (180°F) could cause seal damage and degrade the hydraulic oil. High oil temperatures are often a symptom of another problem.



9.2.6 HYDRAULIC OIL FILTER

The hydraulic filter needs to be changed at least every 100 hours or annually. The filter is located below the control panel. Follow this procedure to change out the filter:

1. Ensure the machine is in **Safe Condition** (see **9.2 pg 52**)
2. Allow the machine to cool before changing the oil filter. Hot oil can cause burns if it contacts exposed skin.
3. Have a drain pan ready to catch any dripping.
4. Clean area around filter, then remove the filter.
5. Apply a light coat of oil to the O ring and install the replacement filter (AE-25). Snug up by hand and then tighten 1/2 turn.
6. Run the machine for 1-2 minutes while operating hydraulics and check filter head for oil leaks.
7. If leaks are found around the filter, tighten slightly.
8. Check hydraulic reservoir oil level. Top up as required.
9. Dispose of used oil filter in an environmentally acceptable fashion.



9.2.7 SERVICING THE BATTERY

Read Section 2.14 on battery safety for safe handling of the battery

Caution: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to cause cancer and reproductive harm. Wash hands immediately after handling battery.

Remove

1. Disconnect negative (–) cable first, then positive (+) cable.
2. Remove battery hold-down bracket and battery from unit.

Install

1. Install battery on unit with battery hold-down bracket.
2. Connect positive (+) cable first, then negative (–) cable.
3. Coat terminals with dielectric grease or petroleum jelly.

Cleaning the Battery

1. Disconnect negative (–) cable first, then positive (+) cable.
2. Clean battery cable ends and terminals with wire brush. Rinse with a weak baking soda solution.
3. Connect positive (+) cable first, then negative (–) cable.
4. Coat terminals with dielectric grease or petroleum jelly.

Charging the Battery

DO NOT fast charge. Charging at a higher rate will reduce battery life.

ALWAYS follow information provided on battery and battery charger. Contact battery manufacturer and battery charger manufacturer for detailed instructions.

1. Remove battery from unit.
2. Use a battery carrier to lift the battery or place hands at opposite corners to avoid spilling acid through the vents
3. Place battery on bench or other well-ventilated area.
4. Connect positive (+) lead of charger to positive (+) terminal, and negative (–) lead to negative (–) terminal.
5. Charge battery according to the instructions from battery charger manufacturer and battery manufacturer.

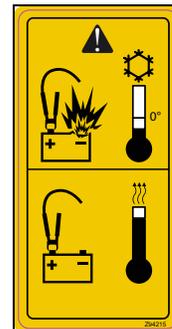
Jump Starting Battery

Read Section 2.14 on battery safety for safe handling of the battery.

WARNING: frozen batteries can explode and result in death or serious injury. DO NOT charge a frozen battery. Let battery thaw before charging.

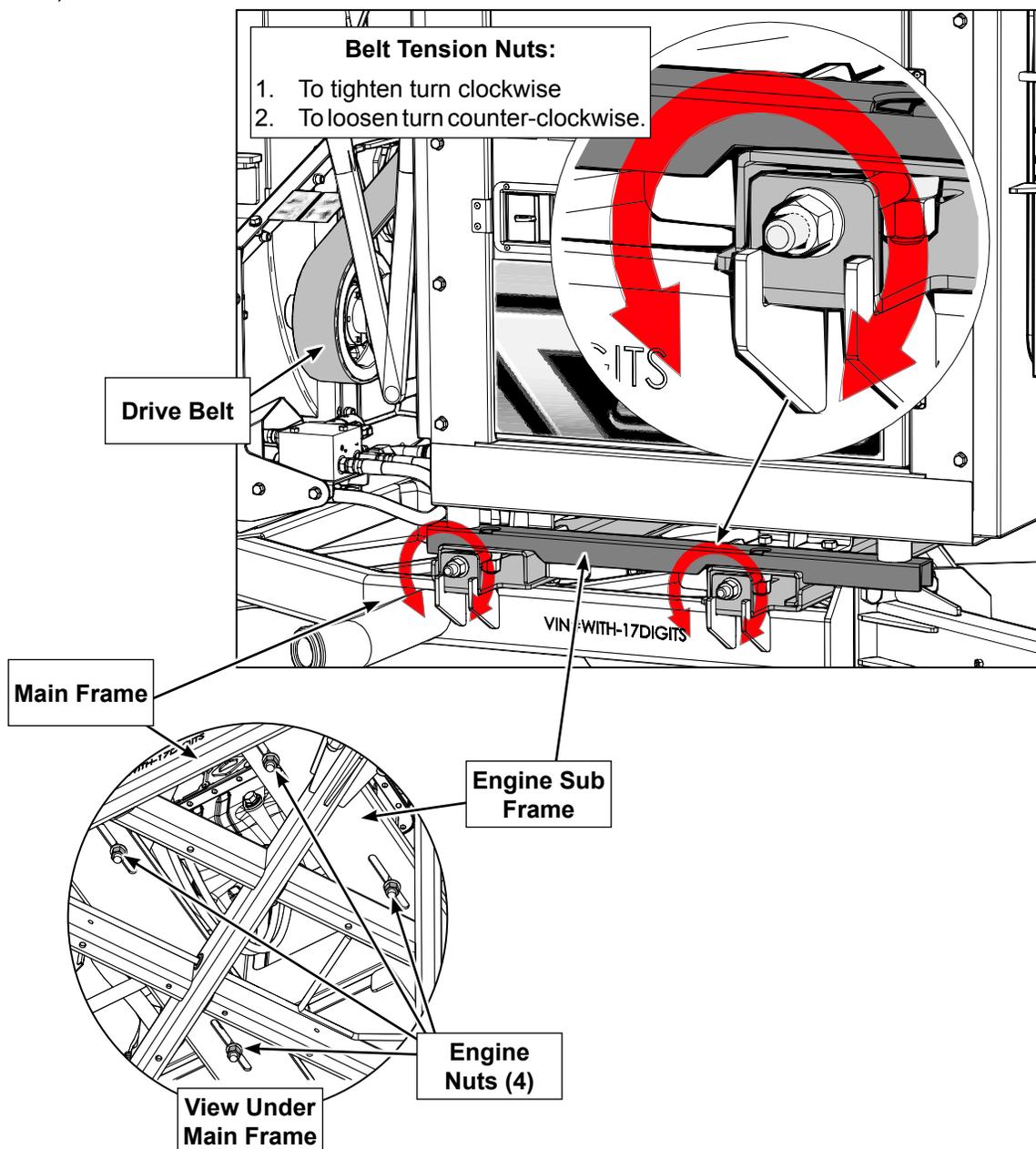
Unit used for jump-starting should have a 12-volt battery and a negatively grounded system.

1. Connect positive (+) jumper cable to positive terminal of discharged battery.
2. Connect the other end of the same jumper cable to positive (+) terminal of booster battery.
3. Connect one end of the second jumper cable to negative (–) terminal of booster battery.
4. Make the final jumper cable connection to engine block or the furthest ground point away from the discharged battery.
5. Start engine.
6. After engine starts leave cables connected for one to two minutes.
7. Disconnect jumper cables in reverse order of installation.
8. Operate unit as normal to charge battery.



9.2.8 DRIVE BELT REPLACEMENT:

1. Ensure the machine is set in **Safe Condition** (see 9.2 pg 52)
2. Remove the 6 bolts that secure the belt shield, and the 9 bolts that secure the belt access cover to the chipper, and remove the shield and cover.
3. Loosen (do not remove) the 4 x engine nuts that hold the engine sub frame to the main frame (located under the main frame)
4. Turn the belt tensioning nuts counter clockwise (loosen both bolts an equal amount), until the drive belt is loose enough to remove, then remove the belts (see below)
5. Replace with the new dual band belts (2B-82)
6. Turn the belt tensioning nuts clockwise, to tighten the belt (ensure you tighten both nuts equally)
7. Check the tension by pushing on the belt with your fore finger and measure its deflection. Drive belt should deflect no more than 3/8 to 7/16" (10 mm to 12 mm).
8. When tension is correct, check pulley alignment then tighten up all four engine sub frame bolts, and replace the belt shield, cover and reinstall the bolts.
9. Recheck tension after 10 hrs of use.



9.2.9 BELT TENSION

The machine is designed with a sheave on the engine shaft, and when engaged with the clutch, is used to drive the rotor plate sheave through a pair of drive belts.

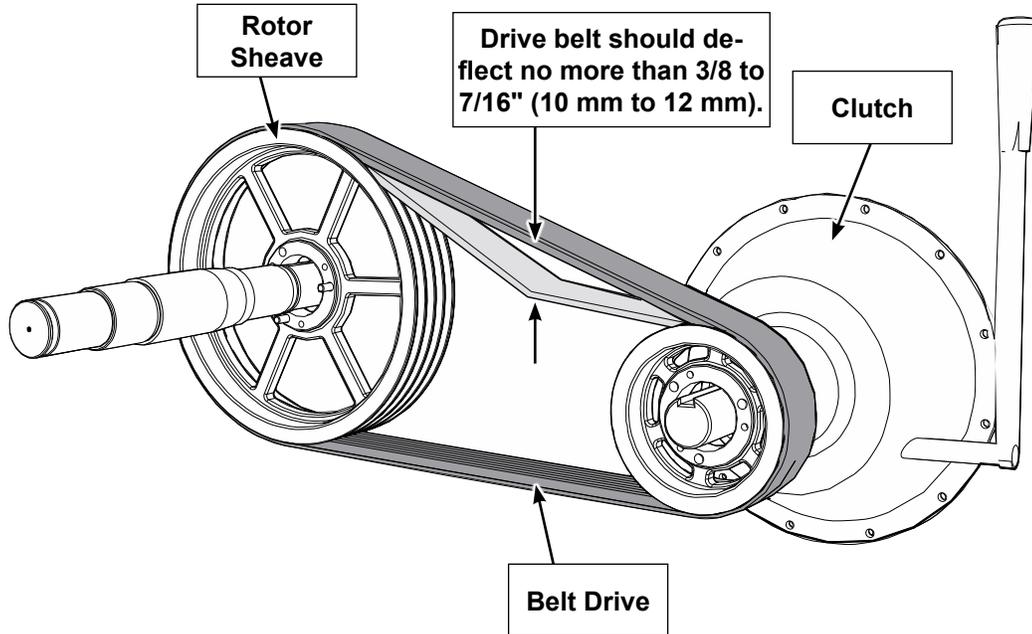
When the belt is in disrepair or loose, the ability to efficiently drive rotor may be affected.

Therefore it is important to periodically check the condition as well as the tension of the belt.

Frayed, cracked or worn drive belts should be replaced. Drive belt should deflect no more than $3/8$ to $7/16$ " (10 mm to 12 mm). For accurate measurement use a drive belt tension gauge. Contact your dealer for more information on belt tension.

Drive Belt Tension Check and Adjustment:

1. Ensure the machine is set in **Safe Condition** (see 9.2 pg 52)
2. Remove the 6 bolts that secure the belt shield, and the 9 bolts that secure the belt access cover to the chipper, and remove the shield and cover.
3. Check the tension by pushing on the belt with your fore finger and measure its deflection. Drive belt should deflect no more than $3/8$ to $7/16$ " (10 mm to 12 mm).
4. If the belt requires adjustment, loosen (do not remove) the 4 x nuts that hold the engine sub frame to the main frame, (located under the main frame: see 8.2.7).
5. Turn the belt tensioning nuts clockwise, to pull the engine mount outwards to tighten the belt or turn the nuts clockwise, to loosen the belt.
6. Snug 1 nut on each side of the engine mount.
7. Check the tension by pushing on the belt with your fore finger and measure its deflection. Drive belt should deflect no more than $3/8$ to $7/16$ " (10 mm to 12 mm).
8. If the tension is incorrect, loosen the engine mount bolts and adjust the belt tension nuts as required.
9. Check tension again, and when tension is correct, tighten up all four engine mount nuts and replace the belt shield and cover, secure with bolts.



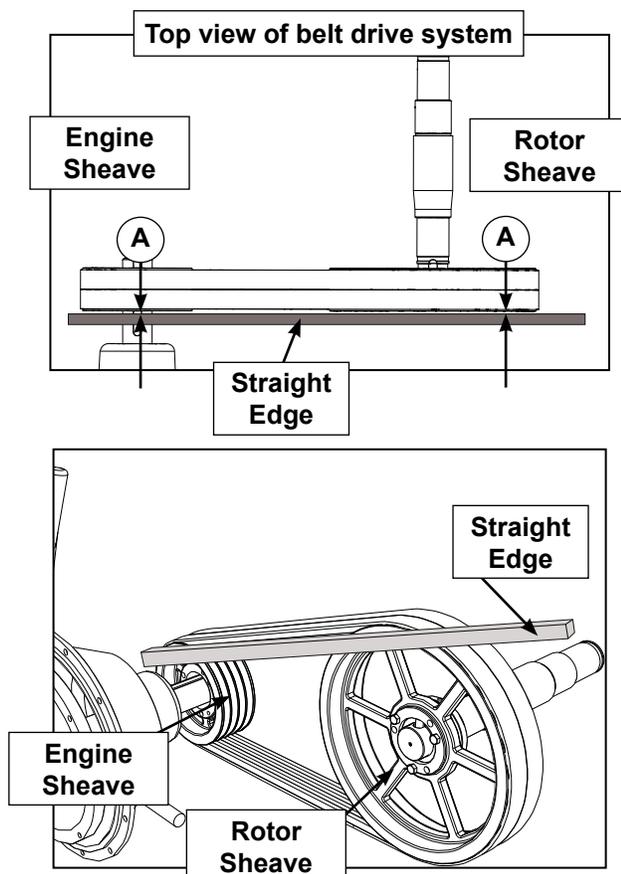
9.2.10 SHEAVE ALIGNMENT

A quad V belts transmits rotational power to the rotor. They must be kept properly tensioned and the sheaves aligned to obtain the expected performance and life.

For maximum accuracy, have your sheaves aligned with a laser alignment tool. Contact your dealer for information on laser alignment.

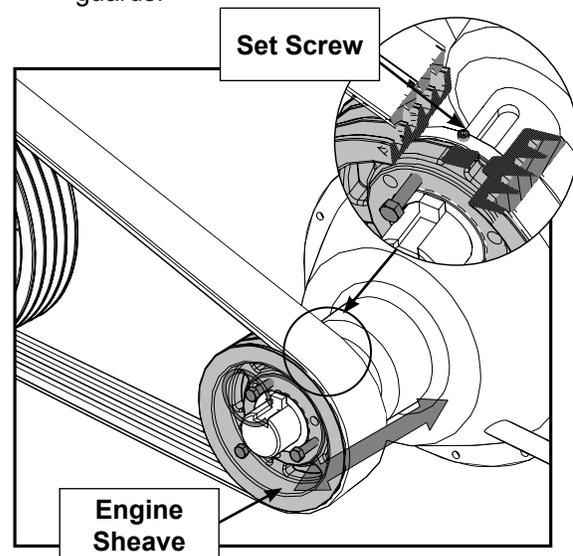
Alignment may be carried out using a straight edge, to check the alignment, follow this procedure:

1. Clear the area of bystanders, especially small children.
1. Ensure the machine is set in **Safe Condition** (see 9.2 pg 52)
2. Remove the 6 bolts that secure the belt shield, and the 9 bolts that secure the belt access cover to the chipper, and remove the shield and cover.
3. Have a straight edge at least 50" (127cm) in length.
4. Place the straight edge square along the face of the rotor sheave and place the opposite end along the back face of the engine sheave.
5. Check to see if there is a gap between the straight edge and the engine or rotor sheave, measure the gap (A).
6. If there is more than 1/32" (.8mm) offset then adjustment is required.



7. To adjust alignment:

- a. Loosen the set screw on the bushing attached to inside of the engine sheave.
- b. Remove the 3 hex bolts from the sheave, and thread them into the tapped holes on the sheave.
- c. Tighten the hex bolts progressively with 1/4 turns until sheave is free from the bushing taper.
- d. Move the bushing and sheave to the required position to align the belt.
- e. If the offset is 1/32 (.8mm) or less then no more adjustment is necessary.
- f. Align drilled holes on the sheave with tapped holes on the bushing, replace and hand tighten the 3 hex bolts.
- g. Tighten the set screw and recheck alignment.
- h. Carefully tighten hex bolts progressively (1/4 turns) and uniformly until firmly seated.
- i. Recheck belt tension and assemble belt guards.



Note: movement of the sheave may occur when tightening the bushing, some allowance for movement may be required.

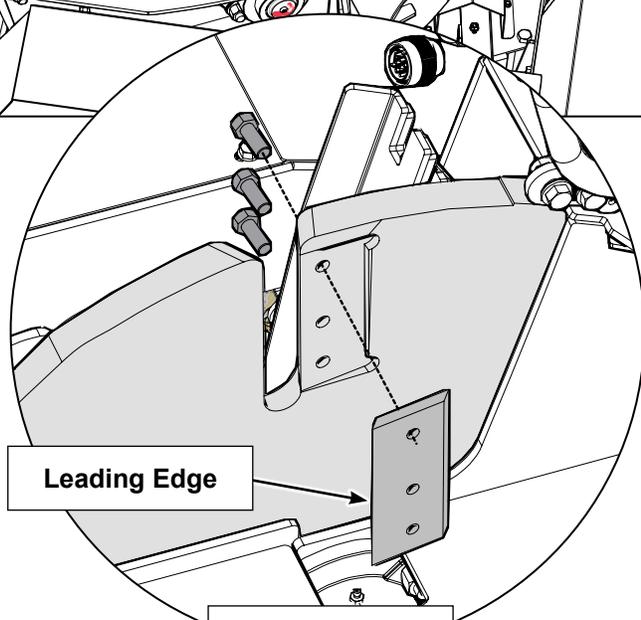
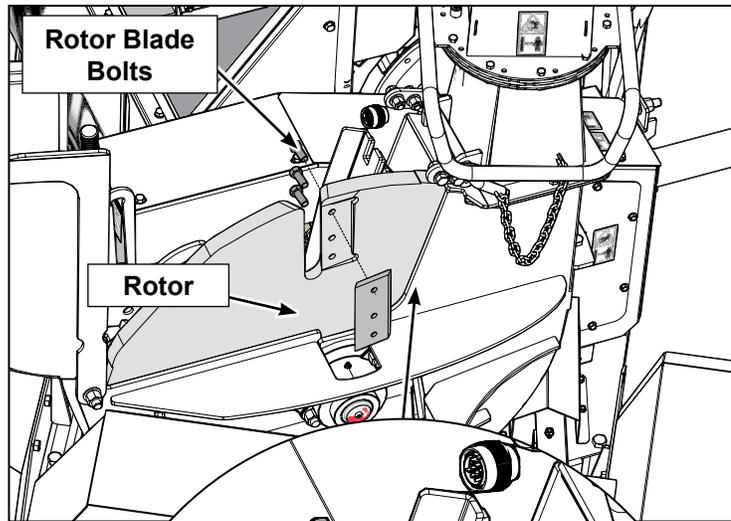
9.2.11 ROTOR BLADES:

The rotor and ledger blades need to be sharp for the Chipper to perform as expected. Periodic inspection is recommended. Keep the blades sharp to reduce the amount of power required during operation. Watch the sharpness of the blades when processing material with a lot of sand, soil or dirt mixed with it. Reverse or sharpen the blades if the cutting edge becomes dull.

The rotor is equipped with 4 blades spaced evenly to keep the rotor in balance. If one needs to be changed, the one opposite should also be changed.

It is recommended that the rotor blades be removed from the rotor when sharpening. Always sharpen the blades at a 45° angle to provide the best cutting effect as it meets the stationary blade. Be sure to tighten the blade mounting bolts to their specified torque when re-installing the blades to the rotor.

1. Ensure the machine is set in **Safe Condition** , see 9.2 (pg 50)
2. Open the rotor hood as per the procedure in section 5.7 (pg 37)
3. **With the interlock engaged the rotor is locked and is safe to proceed.**
4. Remove the bolts that hold the rotor blade to the rotor, remove the blade.
5. Rotate the blade and reinstall or replace with new or re-sharpened blade.
6. Ensure the blade is properly oriented, with the leading edge out. The blade is designed to fit into the rotor one way only. See diagram for proper installation.
7. Tighten down bolts as specified in the torque chart.



IMPORTANT
Avoid Serious Injury
The rotor is very heavy, turn rotor slowly and be aware of hand positioning: avoid getting pinched or wedged between the lower rotor housing and rotor.

8. To rotate the rotor to the next blade:
 - disengage the safety interlock lever
 - carefully rotate the rotor to expose the next blade.
 - Engage the interlock before proceeding with blade replacement
9. Repeat steps 4-8 for remaining blades.

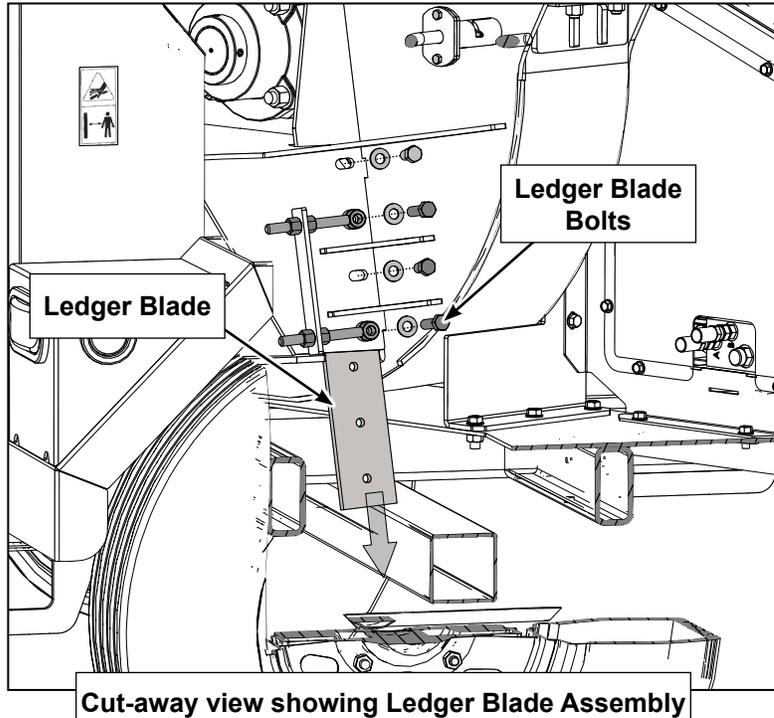


9.2.12 LEDGER BLADES:

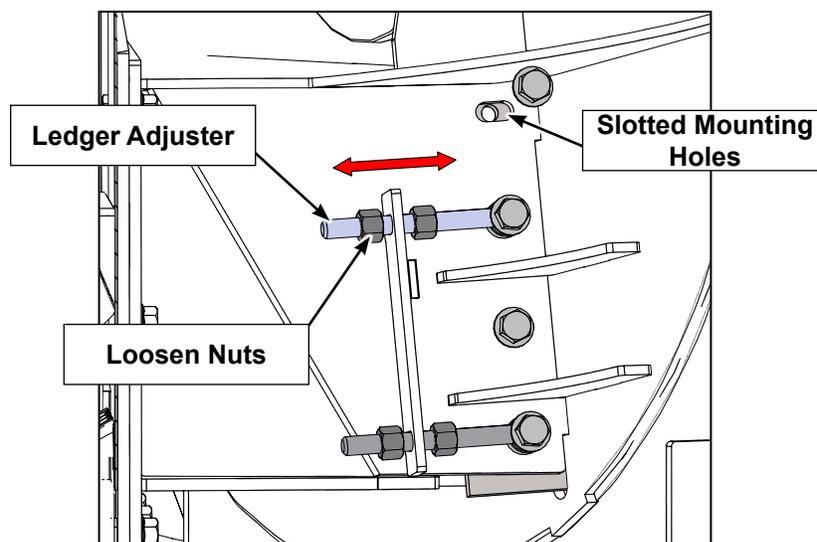
Each machine is equipped with a ledger (stationary) blade that acts as a shear for the moving rotor blades.

The ledger blade is located on the lower rotor housing, mounted on slotted holes for adjustment. There are 4 usable corners on the blade, when the corner facing the rotor blade rounds over, remove the blade and re-install with a different corner facing the rotor blade. It is recommended that the clearance between the rotor and stationary blades be set and maintained at 1/32 to 1/16" (.76 - 1.52 mm) to obtain the best performance.

1. Ensure the machine is set in **Safe Condition** (see 9.2 pg 52)
2. Remove the 4 bolts that hold the ledger blade to the ledger mount.
3. Carefully remove the blade, pull it down and slightly to the side to clear the axle.
4. Rotate the blade and replace or replace with new or re-sharpened blade.
5. Hand tighten the bolts.
6. Set the clearance between the ledger and rotor blades using the ledger adjuster: loosen the nuts on the adjuster and move the ledger to the correct clearance.
7. Clearance settings should be set at 1/32 - 1/16" (.76 - 1.52 mm).
8. Ensure you move both adjusters evenly.
9. Tighten adjuster nuts, then tighten ledger blade bolts. Tighten as specified in the torque chart.



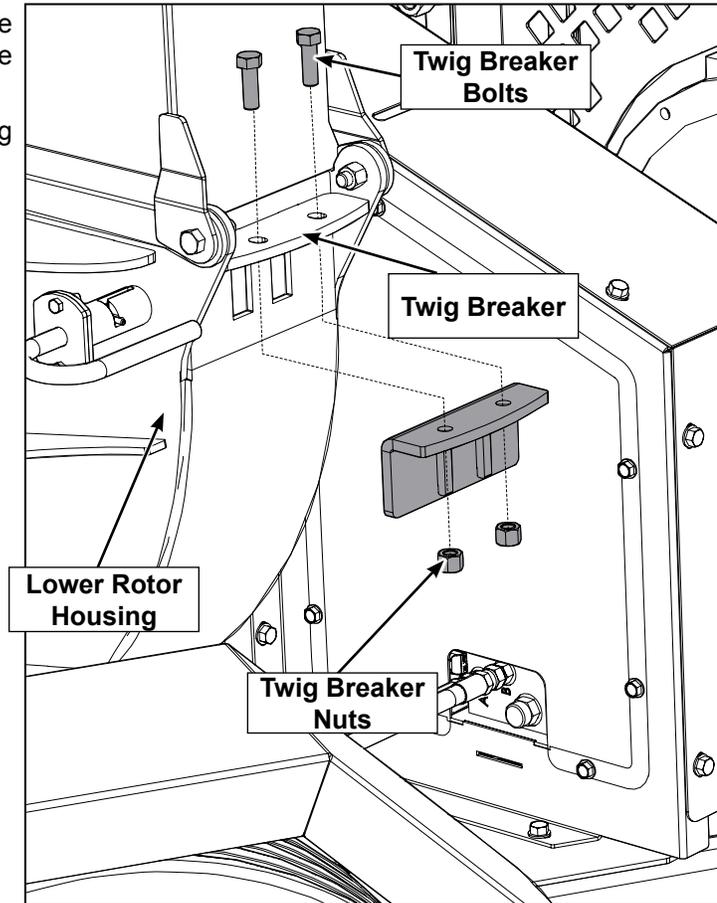
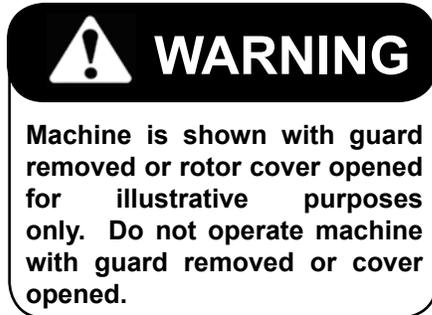
For fast and easy setting, use our chipper clearance setting gauge, available from your dealer (see accessories).



9.2.13 TWIG BREAKER:

The Twig Breaker is a breaker tab located on side of the lower rotor housing. The discharge paddle passes around the twig breaker and helps to break the material into smaller pieces and turn it into mulch. Inspect the twig breaker for damage such as gouges, a bent, or missing tooth. A damaged twig breaker should be replaced. If the tooth is showing wear, remove and replace the twig breaker.

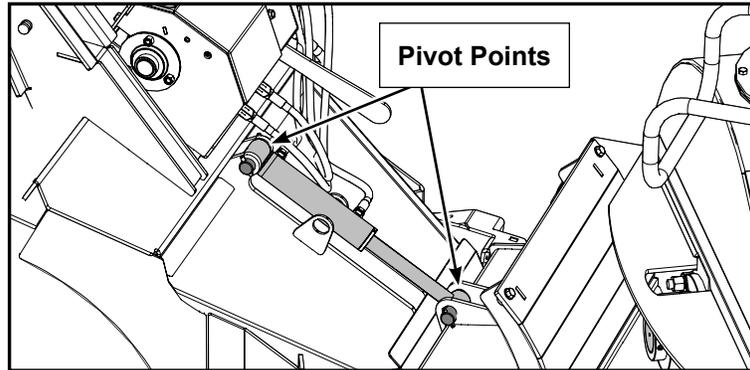
1. Ensure the machine is set in **Safe Condition** (see 9.2 pg 52)
2. Remove the 2 bolts and nuts that hold the twig breaker to the housing, remove the twig breaker.
3. Reverse the steps to install the new twig breaker.



9.2.14 HYDRAULIC FEED ROLLER LIFT - OPTION

The feed roller lift option consists of an hydraulic cylinder to lift or lower the top feed roller, and is located on top of the feed roller chute. The cylinder has 2 pivot points at each end of the cylinder that should be inspected daily and lubricated if required.

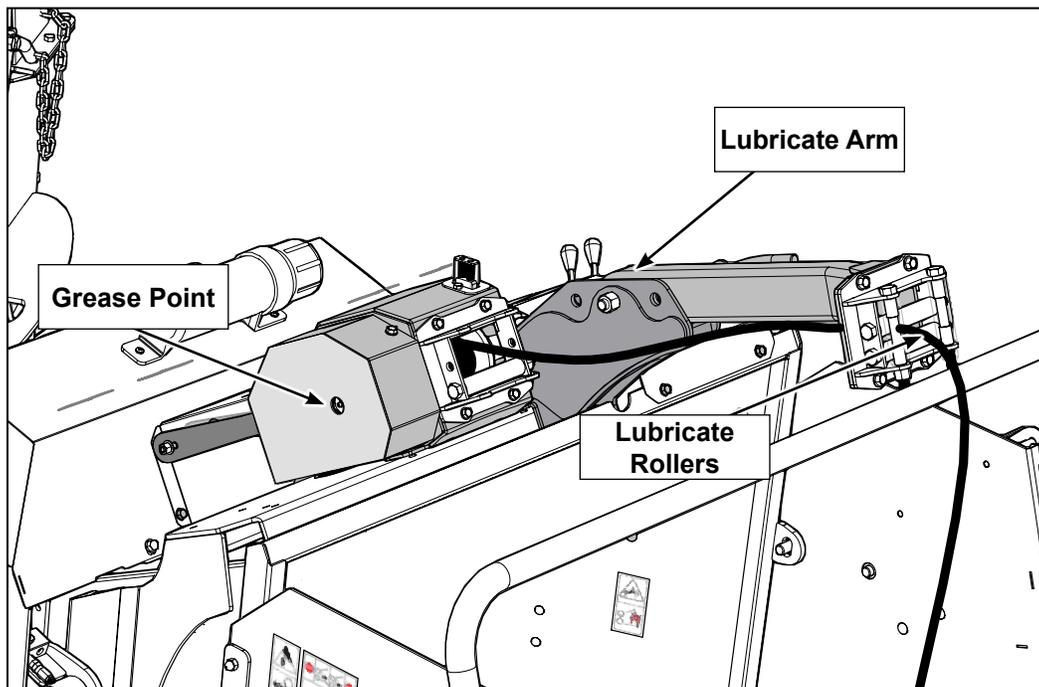
1. Ensure the machine is set in **Safe Condition** (see 9.2 pg 52)
2. Find the cylinder on top of the roller feed chute
3. Inspect both ends of the cylinder where it attaches to the machine and lubricate if required. The bridge guard may have to be removed in order to access the bottom end of the cylinder.



9.2.15 HYDRAULIC WINCH - OPTION

The winch option consists of the winch, the winch arm and fairlead. The winch has a grease point that needs to be greased every 50 hrs (per service record chart) The winch arm and fairlead rollers should be inspected daily and lubricated as required.

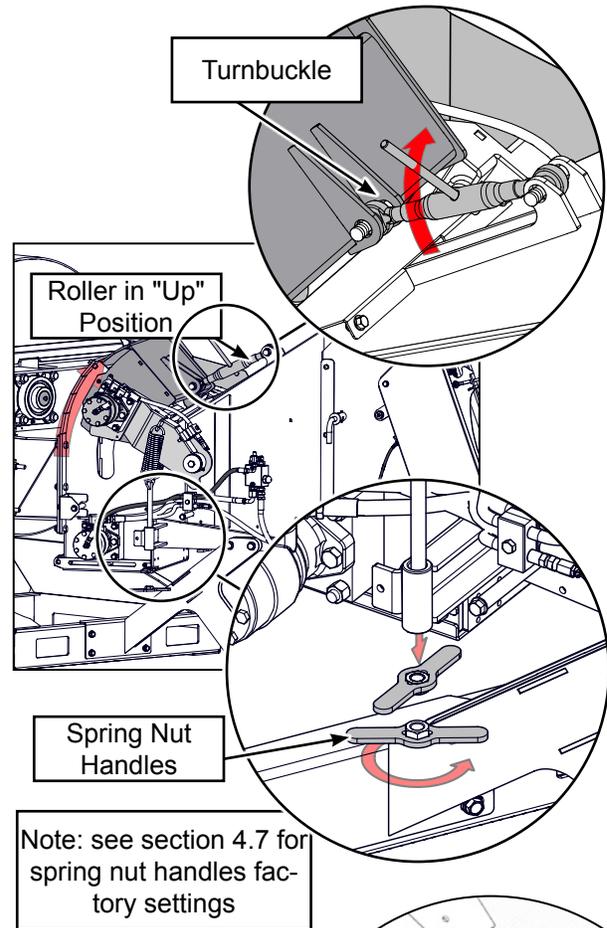
Ensure the machine is set in **Safe Condition** (see 9.2 pg 52) before performing maintenance. See illustration below:



9.2.16 ROLLER MAINTENANCE

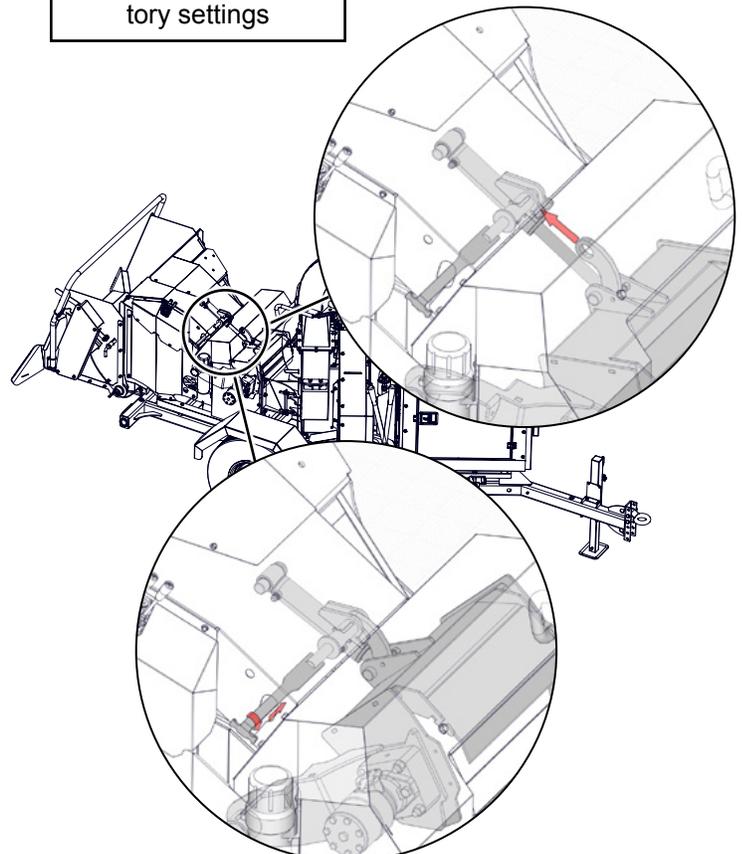
The top and bottom rollers may occasionally require some maintenance (unjamming, cleaning, inspection, repair). In order to safely raise and gain access to the rollers, a turnbuckle has been included with the chipper. (CR100 series: turnbuckle is stored under the feed table with 2 link pins.)

1. Ensure the machine is set in **Safe Condition** (see Section 8.2).
2. Remove the bolts that hold the bridge guard to the chipper.
3. Remove the bridge guard.
4. Next remove the 4 feed roller tension spring nut handles (2 from each side).
5. Loosen, then remove the turnbuckle and the 2 link pins from under the hopper.
6. Attach the turnbuckle to the attachment points on the hopper and roller bridge using the two link pins.
7. Begin turning the turnbuckle in a clockwise motion to start raising the upper roller.
8. Continue raising the upper roller to the desired height
9. The top roller is secured by the turnbuckle and is safe to begin maintenance.
10. Reverse the process to lower the upper roller into place.



CR100H & CR100HW

1. Start the engine energize the hydraulics.
2. Lift the roller using the hydraulics until the locking plate pin hole lines up with the locking pin on the clevis.
3. Pull back, rotate and release the locking pin, ensure the pin is through the locking plate for a positive lock.
4. Shut off the Engine
5. Ensure the chipper rotor is locked with the rotor safety interlock.
6. The top roller is now secured and is safe to begin maintenance.
7. Reverse the process to lower the upper roller into place.



Caution: Avoid Serious Injury.

Always ensure the roller arm locking pin is in place before beginning any work, **do not** rely on the hydraulics to hold up the roller!

10 TROUBLE SHOOTING

The Wallenstein Trailer Wood Chipper is designed with blades on a rotor to cut, shear and shred wooden material. It is a simple and reliable system that requires minimal maintenance.

In the following 3 pages, we have listed many of the problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local distributor or dealer. Before you call, please have this Operator's Manual from your chipper and serial number ready.

Engine related issues.	<i>Refer to the Kubota V3600-T-E3 engine operators manual for specific trouble shooting instructions / requirements.</i>			
Clutch related issues.	<i>Refer to the NACD 11.5" PTO Clutch instruction / service manual for specific trouble shooting instructions / requirements.</i>			
Brakes / wheel bearing related issues.	<i>Refer to the Dexter Axle Torflex 7000 lb Axle, Brake and Hub Ass'y operation, maintenance, service manual for specific trouble shooting instructions / requirements.</i>			
PROBLEM	CAUSE	SOLUTION	CAUTION	
Rotor does not turn	Obstructed discharge.	Clear debris from discharge chute.	 Ensure machine is off	
	Clutch not engaged	Check that clutch is adjusted properly, engage clutch.		
	Rotor plugged.	Inspect and clear chipper hopper lower rotor housing and rotor.	 Ensure machine is off	
Slow feeding.	Low engine / rotor speed.	Set throttle to increase rotor RPM. (1400 RPM)		
	Blades and/or knives are dull.	Check rotor and ledger blades, rotate, sharpen or replace.	 Ensure machine is off	
	Rotor blade angle wrong, improper angle.	Re-sharpen rotor knives to specified 45° angle and check that blade is installed properly.	 Ensure machine is off	
	IntelliFeed programing incorrect,	Adjust programming or return to factory settings.		
	Slow hydraulic flow	Filter is dirty, change filter		
		Hydraulic oil is contaminated, inspect oil condition (dirt, foaming). Replace oil.		 Ensure machine is off
Obstructed discharge.	Clear debris from discharge chute .		 Ensure machine is off	
Unusual vibration while running.	Broken or missing blade .	Replace broken/missing blade.	 Ensure machine is off.	
	Rotor may be bent	Check for rotor wobble. Replace rotor.	 Ensure machine is off, call technician for repair	
Engine won't start	Upper rotor housing open	Inspect upper rotor housing that it is closed and secured.		
	Interlock switch defective	Check interlock switch, replace if not working	 Ensure machine is off	
	Interlock wiring harness damaged	Inspect wiring harness, repair or replace.	 Ensure machine is off	

PROBLEM	CAUSE	SOLUTION		CAUTION	
Machine requires excessive power or stalls.	Obstructed discharge.	Clear debris from discharge chute .		Ensure machine is off	
	Feeding in too much material	IntelliFeed programing incorrect, adjust programming			
	Feeding material too quickly	IntelliFeed programing incorrect, adjust programming			
	Rotor plugged.	Inspect and clear chipper hopper lower rotor housing and rotor.		Ensure machine is off	
	Green material will not discharge.	Allow material to dry or alternate dry/wet material.			
	Chipper blade clearance too large.	Set clearance to 1/32 to 1/16 " (.76 - 1.52 mm). Use chipper clearance tool. (see accessories)		Ensure machine is off	
	Dull blades.	Check rotor and ledger blades, rotate, sharpen or replace.		Ensure machine is off	
Feed rollers intermittent or not turning	Damaged wiring harness	Inspect IntelliFeed wiring harness for damage, repair or replace if damaged.		Ensure machine is off	
	Rotor sensor damaged	Inspect rotor sensor for damage.		Ensure machine is off	
	Sensor signal mounts misaligned	Inspect rotor sensor mount or sheave mounted indicator plate for damage or misalignment, repair or replace.		Ensure machine is off	
	Intellifeed control unit malfunction	Check IntelliFeed unit for output signal, replace unit if required.		Ensure machine is off, call technician for repair	
	IntelliFeed hydraulic block malfunction	Inspect hydraulic control unit for damage, check functionality.		Ensure machine is off, call technician for repair	
	Control harness not grounded	Check harness for bad ground connection.			
	Feed control bar malfunction	Check feed control bar switches, replace.		Ensure machine is off	
	Slow hydraulic flow	Filter is dirty, change filter.	Hydraulic oil is contaminated, inspect oil condition (dirt, foaming). Replace oil.		Ensure machine is off
	No electrical power	Check battery, engine charging system for power.			
Hydraulic motor slow	Check hydraulics.		Ensure machine is off, call technician for repair		

PROBLEM	CAUSE	SOLUTION	CAUTION	
Squeeling Belt / premature belt wear.	Drive belts loose or worn.	Inspect drive belts, adjust tension or replace if needed.		Ensure machine is off.
	Wrong replacement belt	Inspect drive belts, replace with (2B-82) dual rib 'B' 82" dia belts.		Ensure machine is off.
	Sheaves misaligned	Check sheave alignment and adjust.		
	Rotor plugged.	Inspect and clear chipper hopper, lower rotor housing and rotor.		Ensure machine is off
	Belt tension too high	Check belt tension and adjust		
	Sheaves worn	Inspect sheaves and bearings, replace if required.		Ensure machine is off, call technician for repair
	Oil or grease on drive system	Check for source of oil / grease and correct. Clean sheaves and belts, belts may require replacment.		Ensure machine is off
Poor Quality Chips	Dull blades.	Check rotor and ledger blades, rotate, sharpen or replace.		Ensure machine is off
	Drive belts loose or worn.	Inspect drive belts, adjust or replace if needed.		Ensure machine is off
	Poor quality material	Material is small or rotting, mix with higher quality material.		
Hydraulic oil overheating / Hydraulic pump makes noise	Tank level is too low,	Inspect and fill tank.		
	Filter is dirty	Change filter.		
	Hydraulic oil is contaminated,	Inspect oil condition (dirt, foaming). Replace oil		
	Feed rollers binding	Inspect bearings, lubricate or replace		Ensure machine is off, call technician for repair
	Lines is crimped or pinched	Inspect, repair or replace lines		Ensure machine is off, call technician for repair
	Pump is worn	Check and replace		Ensure machine is off, call technician for repair
	Line leak	Inspect hydraulic lines / fittings for leaks, repair or replace.		Ensure machine is off, call technician for repair
	Pump leak	Pump seals are worn, inspect seals, replace.		Ensure machine is off, call technician for repair
Pump noisy at startup	Oil temperature too, low allow machine to warm up.			

11 SPECIFICATIONS

11.1 MECHANICAL

	CR100 Series Specifications		
	CR100	CR100H	CR100HW
Engine	Kubota V3600-T-E3 85hp Turbo Deisel		
Drive System	Rotor: Quad Belt, Manual Clutch Feed Rollers: Hydraulic		
Chipper Housing Opening	10" x 17" 25cm x 43cm		
Capacity	10" Dia. (Max. 17" Slab) 25cm Dia. (Max. 43cm Slab)		
Chipper Hopper Opening	30" x 42" 76cm x 107cm		
Chipper Rotor Dimensions / Weight	36" Dia x 1.25" Thick @ 425 lbs 92cm x 3.12cm @ 193 kg		
Rotor RPM @ Max Engine RPM	1400 RPM (Rotor) @ 2600 RPM (Engine)		
Distance of Feed Roller to the Ground (Safety Standard)	91.5" 232.5cm		
Feed System	IntelliFeed - electronic monitoring and feed control		
Feed Rate	0-118 fpm 0-36 mpm		
Knife Type	Hardened tool steel (Rockwell - HRC: 56-58)		
Number of Rotor Knives	4 segmented knives		
Rollers	Dual Horizontal Hydraulic motors Top 24.1 ci - Bottom 19.3 ci		
Discharge Hood Rotation	360 degrees		
Discharge Hood Height	100" 252 cm		
Hydraulic Tank	9 gallons (US) 34 litres		
Fuel Tank	23 gallons (US) 87 Litres		
Mounting System	Trailer:2-1/2" pintle Trailer:6.35cm pintle	Trailer:2-1/2" pintle Trailer:6.35cm pintle	Trailer:2-1/2" pintle Trailer:6.35cm pintle
Dry Weight	5000 lbs Approx. (TBD) 2268 kg Approx. (TBD)		
Dimensions (LxWxH)	196 x72 x 100" (Open) 170 x 72 x 100" (Closed) 498cm x 178cm x 254cm" (Open) 432cm x 178cm x 254cm" (Closed)		
Tire Size	ST235-80R16		
Options		Feed Roller Hydraulic Lift Cylinder - 1800 lbs crush force (816 kg)	Hydraulic Winch: -1200lb (545kg) pull force -13" inches per second @ 8gpm- - (33 cm per second @ 31 lpm) -50' x 1/4" dia winch rope -(15m x 6.3mm dia winch rope) Feed Roller Hydraulic Lift Cylinder - 1800 lbs crush force (816 kg)
Features	IntelliFeed - Electronic Feed Control & Display w/ Rapid Recovery Auto Reverse Easy Start - no fuss large diameter feed start Engine control panel incl. tach & hr meter Hydraulic Fluid Level / Temp Gauge Fuel Level Gauge Four Position Feed Roller Safety/Control Bar 360° Rotating Discharge chute Lockable Utilities Box (Tools / Fuel / Hydraulic) Lockable Engine Compartment Gas Shock Utility Lid Support Highway Trailer Lights Electric Brakes Heavy Duty 7000 Lb Torsion Axle Electric Start, Heavy Duty Battery - 31-950 Swing Away Easy Clean Rad Grill Spring Assist Feed Table Manual Lift for Feed Roller (for maintenance) Rotor Safety Interlock Meets "2013 WorkSafe BC" safety standards		

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

11.2 BOLT TORQUE

CHECKING BOLT TORQUE

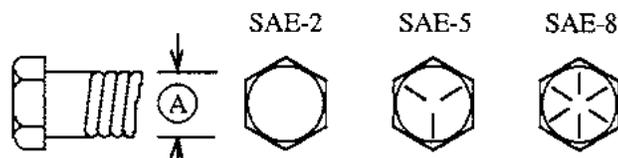
The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

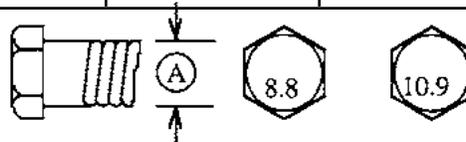
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2 (N.m) (lb-ft)		SAE 5 (N.m) (lb-ft)		SAE 8 (N.m) (lb-ft)	
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8 (N.m) (lb-ft)		10.9 (N.m) (lb-ft)	
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



11.3 HYDRAULIC FITTING TORQUE

Tightening Flare Type Tube Fittings *

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

HYDRAULIC FITTING TORQUE					
Tube Size OD	Nut Size Across Flats	Torque Value*		Recommended Turns To Tighten (After Finger Tightening)	
		(N.m)	(lb-ft)	(Flats)	(Turn)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	11/16	24	18	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

- The torque values shown are based on lubricated connections as in reassembly.

11.4 WHEEL LUG TORQUE

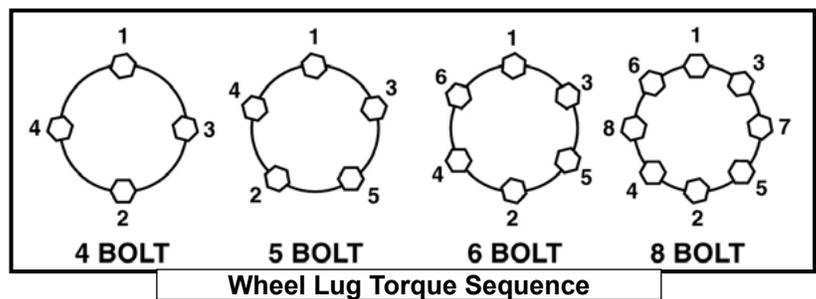
It is extremely important safety procedure to apply and maintain proper wheel mounting torque on your trailer axle. Torque wrenches are the best method to assure the proper amount of torque is being applied to a fastener.

Wheel lugs should be torqued before first road use and after each wheel removal. Check and re torque after the first 16Km (10 miles), 40Km (25 miles), and again at 80Km (50 miles). Check periodically thereafter.

Note: Wheel lugs must be applied and maintained at the proper torque levels to prevent loose wheels, broken studs, and possible dangerous separation of wheels from your axle.

Wheel Torque Requirements				
Wheel Size	Torque Unit	1st Stage	2nd Stage	3rd Stage
8"	ft-lbs	12 - 20	30 - 35	45 - 55
	Nm	16 - 26	39 - 45.5	58.5 - 71.5
12"	ft-lbs	20 - 25	35 - 40	50 - 60
	Nm	26 - 32.5	45.5 - 52	65 - 78
13"	ft-lbs	20 - 25	35 - 40	50 - 60
	Nm	26 - 32.5	45.5 - 52	65 - 78
14"	ft-lbs	20 - 25	50 - 60	90 - 120
	Nm	26 - 32.5	65 - 78	117 - 156
15"	ft-lbs	20 - 25	50 - 60	90 - 120
	Nm	26 - 32.5	65 - 78	117 - 156
16"	ft-lbs	20 - 25	50 - 60	90 - 120
	Nm	26 - 32.5	65 - 78	117 - 156

- Start all lugs by hand to prevent cross threading.
- Tighten lugs in sequence, per wheel lug torque sequence chart.
- The tightening of the fasteners should be done in stages. Following the recommended sequence, tighten fasteners per wheel torque requirements chart.



12 ACCESSORIES

Call your dealer for pricing and availability

For replacement parts, go to www.embmfg.com and click on "Parts and Manuals" to download the latest parts manual for your model splitter, then call your dealer to order.

 <p>#1012L269</p>	<p>#1012L269 LEDGER CLEARANCE SETTING GAUGE</p> <p>For CR100 Commercial Trailer Woodchipper An easy and accurate way of setting the critical clearances between the ledger blade and the rotor chipper blade.</p>
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INDEX

A		
AIR CLEANER	50	
ALIGNMENT	58	
AXLE	52	
B		
BATTERY	26	
BATTERY	18, 55	
BELT DRIVE	50	
BELT TENSION	57	
BRAKE	52	
BRAKES	45	
BREAKAWAY	45	
C		
CAUTION	9	
CHARGING THE BATTERY	55	
CLEANING THE BATTERY	55	
CLEANOUT	23, 50	
CLEARANCE SETTING GAUGE	60	
COMPONENT	24	
COMPONENTS	23	
CONTROL BAR	31	
COUPLER	35	
D		
DANGER	9	
DEFECTION	57	
DEFLECTOR	29	
DE-LIMB	40	
DETENT	31	
DEXRON	48	
DISENGAGED	30, 44	
DOWN BUTTON	27	
DRIVE BELT	56	
E		
EFFICIENCY	26	
ELECTROLYTE	18	
EMERGENCY STOPPING	37	
ENGAGED	30, 44	
ENGINE NUTS	56	
ENGINE SHEAVE	58	
F		
FAN BELT	50	
FEED ROLLER	18	
FEED ROLLER LIFT	62	
FILTER	50	
FIRE EXTINGUISHER	14	
FIRST AID KIT	14	
FLOATING ROLLER	29	
FORWARD	31	
FREE-WHEEL	44	
FROZEN BATTERIES	55	
FUEL	18	
FUEL	42, 48	
G		
GLOW PLUG	26	
GREASE	48	
GRIP HANDLE	29	
H		
HARNES CABLE	35	
HOOD LOCK	39	
HOPPER LATCH	46	
HUB ASS'Y	52	
HYDRAULIC	16	
HYDRAULIC FITTING	69	
I		
INDICATOR	37	
INTELLIFEED	26	
J		
JAMMED MATERIAL	41	
JUMP STARTING BATTERY	55	
L		
LABELING	7	
LABELLING	7	
LEADING EDGE	59	
LEDGER	50	
LEDGER ADJUSTER	60	
LEVER LOCK	39	

INDEX

LIFT CONTROL	43	Q	
LIFT POSITION.....	43	QUAD "B"	23
LONE OPERATOR	12	QUAD V BELTS	58
LOUD NOISE	13	R	
LOWER FLOW PERCENTAGE.....	28	RADIATOR.....	50
LOWER POSITION	43	RADIATOR GRILL	24
LOWER RPM LIMIT.....	28	RECORD	51
LUG	69	RESET HANDLE.....	31
LUG NUTS	45	REVERSE	31
LUG TORQUE.....	69	REWIND	44
M		ROLLER LIFT	43
MACHINE HOURS.....	26, 27	ROLLER MAINTENANCE	63
MAINTENANCE	14	ROTOR LOCK	38
MANUFACTURERS INSTRUCTION	49	ROTOR RPM.....	26, 27
METRIC.....	68	ROTOR	
MODE.....	27	SHEAVE	57
MODE BUTTON.....	27	ROTOR SHEAVE	58
N		RPM.....	37
NEW OPERATOR	22	RUN.....	25
O		S	
OFF	25	SAFE CONDITION... 11, 12, 14, 22, 33, 40, 41,	
OIL.....	48	42, 48, 52, 53, 54, 56, 57, 58, 59, 60, 61,	
OIL DRAIN	53	62, 63	
OIL FILTER	54	SAFETY	10
OIL LEVEL	26	SAFETY ALERT SYMBOL	9
OIL LEVEL GAUGE.....	52	SAFETY CHAIN	45
OIL USE HOURS	26, 27	SAFETY CHAINS.....	45
ORIENTATION	8	SAFETY SIGN.....	20
P		SHEAVE	58
PERSONAL PROTECTION	15	SIGNAL WORDS	9
PINTLE.....	34	SIGN-OFF	19
PPE	32	SMALL DIAMETER	40
PREPARE	32	SPECIFICATIONS.....	67
PROGRAMMING	27	SPRING NUT HANDLES	63
PROGRAMMING	28	START	25
PTO	50	STOP	31
PTO CLUTCH	52	STOPPING	37

INDEX

STORAGE.....	47
STORAGE.....	18
STOW WINCH.....	46
T	
TABLE DOWN	36
TABLE LOCK.....	46
TABLE STOWED	36
TEMPERATURE	26
TENSION NUTS.....	56
TENSION SPRINGS	29
TORQUE	68
TOWING BALL	16
TOWING SPEED.....	18
TRAIN.....	12
TRANSPORTING.....	45
TWIG BREAKER	50, 61
TWIST LOCK	39
U	
UNPLUG	41
UNWIND.....	44
UP BUTTON.....	27
UPPER FLOW PERCENTAGE.....	28
UPPER RPM LIMIT	28
V	
V3600	52
W	
WARNING	9
WINCH	43
WINCH	44, 46
WINCH	62
Y	
YOU.....	10