

D series

Road towable wood chipper

16

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Introduction

Thank you for choosing JONCO series brush chipper. JONCO is a brand specialized in designing and manufacturing equipment to deal with green waste.

D series chipper, designed for commercial use, with its solid quality and perfect performance. This machine can help you with cleaning up all green waste off trees for a long period. It is grateful for your selection on this model.

If there are any questions, kindly contact our dealer around.

Please take the serial number and all necessary documents you have with you.

You are gratefully welcome to write us comments and advice, which will definitely help us with product improvement.

This manual contains all information which will be helpful for you to understand this machine and know how to use it.

Contents includes feature and function of this model, and maintenance, safety issue and problem solutions.

If you need to change part of this chipper, easily show us what you need. you will get full service from our dealer.

All people who will operate this machine, shall be well trained and fully understand all content of this manual.

MEASUREMENTS

Engine: 35 HP (22 kW)

Fuel Tank: 24 L

Hydraulic Tank: 25 L

DIMENSIONS

Capacity: 16 cm

Opening: 16.5 cm x 30 cm wide

Disc: 67 cm dia. x 1.9 cm thick

RPM: Approximately 1,850 RPM

Hitch: 2" ball hitch (5.08 cm) with options

Discharge:

manual swivel with 12" (30.5 cm) adjustable chip deflector

Feed System:

Hinged yoke assembly with a single, pivoting 24.5cm diameter x 30cm wide feed wheel

Labels

Safety is always the first thing you should bear in mind. Please carefully read the content of the following labels, in order to avoid damage or injuries caused by accident.

Danger in white with red background, means ignoring this point could cause serious injuries or death to operations or bystanders

Warning in black with orange background, means ignoring this point could cause serious injuries to operations or bystanders

Caution in black with yellow background, means ignoring this point could cause injuries to operations or bystanders, or damages to machine.

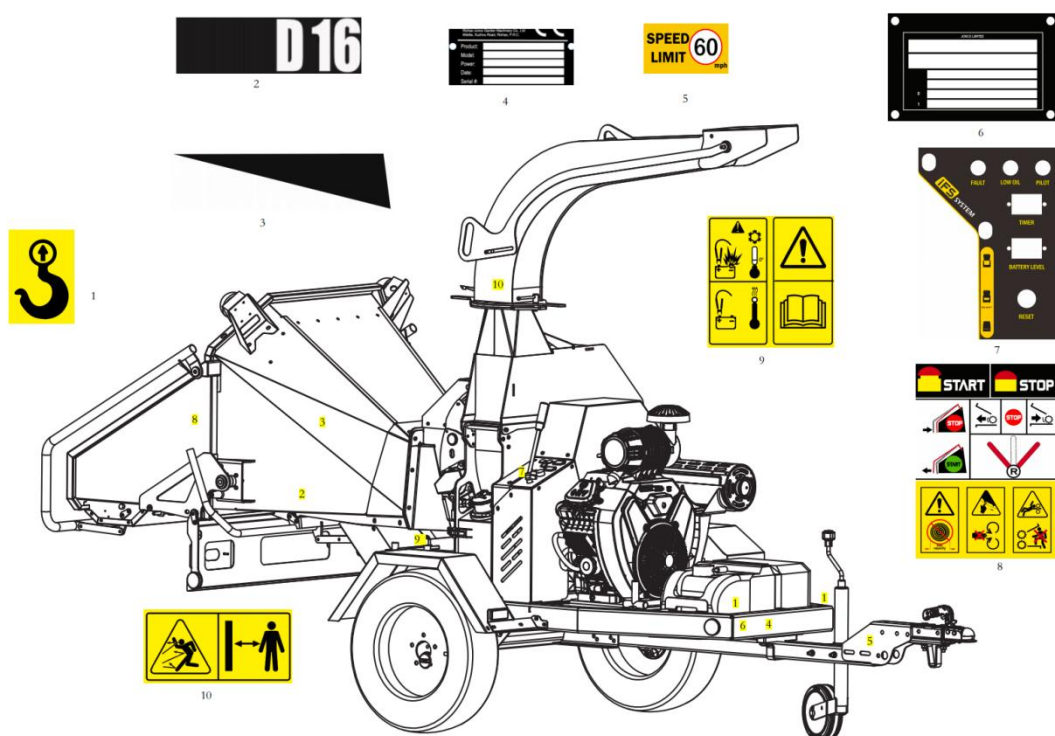
Label and symbols

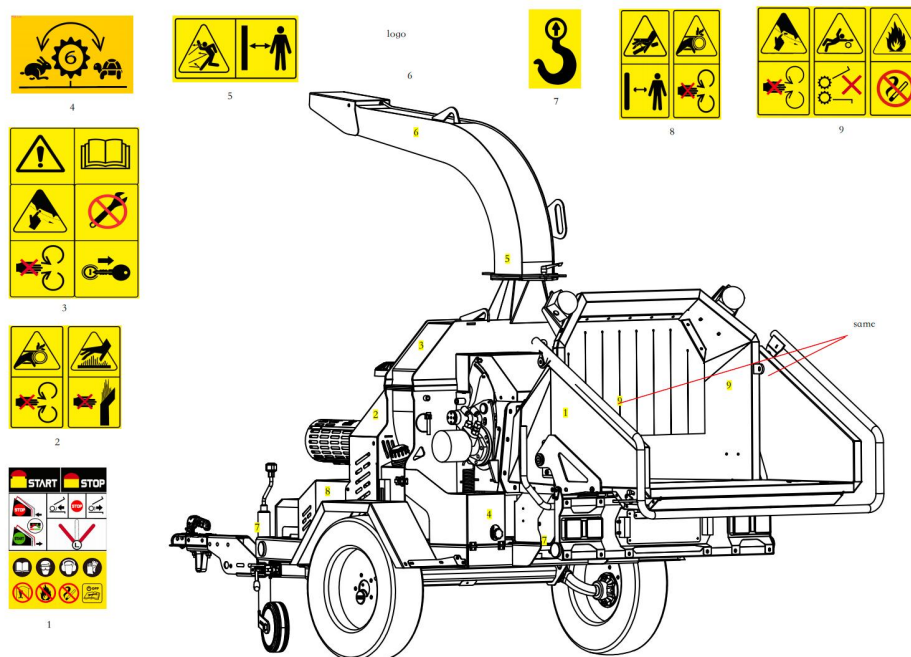
You will find all different types of labels all over your machine. You need to read and understand contents or symbols, which stands for the safety rules or the right way you need follow.

Safety Sign Locations

Safety sign 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!





Safety Sign Explanations

IMPORTANT!

If parts are replaced that have safety signs on them, new signs must be applied. Safety signs must always be replaced if they become damaged, are removed, or become illegible.

Safety signs are included in the product decal kit available from your authorized dealer. Decals are not available separately.

How to Install Safety Signs

Installation area must be clean and dry. Make sure the surface is free of grease or oil. Ambient temperature must be above 50°F (10°C).

1. Caution



Risk of injury from flying objects.
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.

2. Warning



Rotating parts are exposed or under guard.
Do not attempt to reach in while parts are rotating.
Keep hands, loose clothing, and long hair away.
Serious injury can result.

3. Warning



Risk of burns
to exposed skin from hot surfaces.
Stay clear of hot exhaust system.

4. Warning



Risk of explosion.
Do not jump start/ charge a frozen battery.
Frozen batteries can explode and result in serious injury.
Let battery thaw before charging.

5. Warning



Risk of high pressure hydraulic fluid piercing exposed skin.
Do not check for leaks with hand or fingers. Serious injury can result.

6. Warning



Risk of explosion.
Do not refuel the machine while smoking or near open flame or sparks.
Serious injury can result.

7. Warning



Risk of serious injury or death if hands or limbs are caught in rotating parts.
Do not attempt to reach in while parts are turning. Keep hands, loose clothing, and long hair away.

8. Warning



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

9. Caution



Risk of personal injury or equipment damage.
Do not put material larger than 160 mm diameter into the chipper.
Attempting to chip anything larger could stall the engine, damage the machine or cause personal injury.

10. Warning



Read the operator's manual.
Understand ALL operating instructions in the manual and understand ALL safety signs located on the machine.
The most important safety device on this equipment is an informed operator.

11. Warning



Risk of serious injury or death if the engine is not shut off during maintenance procedures.

Shut off the engine and remove the key.

General Safety

Accidents are usually caused by mistake, no training and ignoring to follow instructions.

It is a must that All users shall be well protected with right personal protection equipment, and well trained.

It is a must that all users should fully understand content of this manual and instructions they should follow to operate this machine.

All safety designs have been done and it can protect users from all potential injuries while working and reduce the risk of accident.

General safety instructions listed in this term, shall be followed. Ignoring could cause serious injuries, fire, explosion, or even deaths.

Operator safety. take a well training, and know how to operate in right way. keep memorizing all instructions and repeating reading labels are very helpful.

Preparation for emergency

Fire extinguisher/Mobile phone/First aid kit

Worksite Safety

- Wood chipping by this model should be done by two adults. This is a must.
- Take away all Irrelevant debris from work site.
- Machine should located in safe open area, with good ventilation.
- All bystanders should be away from work site, marked with warning ribbon.

Operator safety

- Helmet, Muffles, goggles and glasses

- Hair shall be collected and fully covered by helmet
- Shirt can not be loose
- Gloves should be with loose openings
Pants with cuffed edge
- Anti slip boots with stiff head

Bystanders, Kids and the untrained safety

- Children, bystanders is not allowed in work site
- Bystanders should be protected by PPE.
All untrained persons are not allowed to use the machine.
- Warning before starting machine.

Operation safety

Preparation before starting

- Check if users are dressed up in right way as instructed.
- Chipping work should be done by at two person, who are able to take care of each other in case of emergency.
- Do not work with machine after drinking or under affecting of medicine.
- Regular checking before starting
- Check if there is damaged, worn or missing parts.
- Confirm the collecting site of chips
- Check and set up the machine in right status.
- Machine should be located away from water, gas, electric cable or power station.
- Machine should be kept in flat in horizontal level.
- Parking machine with wheels stopped by blocker
- Chipping work should be done in open bright area.
- No climbing on machine during working.
- Keep machine and operators in balance while working.
- Keep away from all working parts. Touching working part could cause serious injuries.
- Do not get close before working is fully stopped.
- Stop machine and switch off all safety switch before maintenance.

Feed Roller Safety

- Do not overreach into the hopper. Keep proper balance and footing at all times.
- Feed rollers can cause serious injury or death. Keep hands, feet and clothing away.
- Never climb onto the feed table or hopper when the chipper is operating or running.
- Never allow anyone to sit on the feed table.

Storage safety

- Switch off engine, and take key away.
- Some parts of machine are still hot just after shutting down. Keep machine fully cool down before maintenance.
- Tow coupler should be firmly connected with safety chain connected too.
- Parking should be with wheel blocked.
- Cleaning should be done before storage.

Fuel safety

- Make sure engine is completely cool down before refilling fuel.
- Fuel are flammable, explosive, Do not fill fuel near fire or while smoking.
- Fuel should be stocked in regulated container.
- No flammable liquid on machine.

Battery safety

CAUTION!

Risk of burns! it's extremely corrosive and poisonous. Contact with the eyes, skin, or clothing can result in severe burns or other serious personal injury. If contact occurs seek medical attention immediately. Handle batteries carefully.

- Wear gloves and safety glasses or face shield when working on or near batteries.
- Use a battery carrier to lift the battery or place hands at opposite corners to avoid spilling acid through the vents.
- 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.
- Avoid contact with battery posts, terminals and related accessories, they contain lead and lead compound chemicals known to cause harm if ingested. Wash hands immediately after handling battery.
- Keep all sparks and flames away from batteries. Electrolyte fumes are explosive.
- To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of the electrical system.
- Do not jump start or charge a frozen battery. Frozen batteries can explode and result in death or serious injury. Let battery thaw before charging.

CAUTION!

Risk of explosion or fire! Do not let metal objects come in contact with the battery terminals. Arcing can cause a fire or explosion. Cover terminals if working near batteries.

Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications.

Parking and transport safety

- Parking on a level and stable ground, and the machine site is parallel to the ground.
- If the chipper is towed, make sure that the towing point is firmly connected and the safety chain is also properly connected. The trailer's brakes are on and no one is in the trailer
- If the shredder is not towed, make sure to secure the wheels with wheel chocks.

Coupler specification

Technically permissible maximum mass: 75kg

Maximum permissible rear overhang: 750kg

Hydraulic Safety

- Make sure that all the components in the hydraulic system are kept in good condition and are clean.
- Before applying pressure to the system, make sure all components are tight, and that lines, hoses and couplings are not damaged.
- 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 can fail suddenly and create a hazardous and unsafe condition.
- 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.
- 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.
- Relieve pressure in the hydraulic system before working on it.

Engine safety

CAUTION

Before starting engine, review the operating and maintenance instructions in the engine manual.

- DO NOT operate engine in an enclosed area. Exhaust gases contain odorless and deadly carbon

monoxide that can cause death by asphyxiation.

- DO NOT place hands or feet near moving or rotating parts.
- DO NOT store, spill, or use gasoline 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.
- DO NOT refuel indoors where area is not well ventilated.
- DO NOT refuel while engine is running. Allow engine to cool for five minutes before refueling. Store fuel in approved safety containers.
- DO NOT remove fuel tank cap while engine is running.
- DO NOT operate engine if gasoline is spilled. Move machine away from the spill and avoid engine ignition until gasoline has evaporated.
- DO NOT smoke while filling fuel tank.
- DO NOT choke carburetor to stop engine. Whenever possible, gradually reduce engine speed before stopping.
- DO NOT run engine above rated speeds. This may result in injury.
- DO NOT tamper with governor springs, governor links or other parts which may increase the governed speed.
- DO NOT tamper with the engine as set by the original equipment manufacturer.
- DO NOT check for spark with spark plug or spark plug wire removed.
- DO NOT crank engine with spark plug removed. If engine is flooded, crank until engine starts.
- DO NOT strike flywheel with a hard object or metal tool as this may cause flywheel to shatter in operation. use proper tools to service engine.
- DO NOT operate engine without a muffler. Inspect periodically and replace, if necessary.
- DO NOT operate engine with an accumulation of grass, leaves, dirt or other combustible materials in the muffler area.
- 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. 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 law apply on federal land.
- DO NOT touch hot muffler, engine body or cooling fins. Contact may cause burns.
- DO NOT run engine with air cleaner or air cleaner cover removed.

Be sure to:

- Remove the wire from the spark plug when servicing the engine or equipment to prevent accidental starting.
- Disconnect the ground (-) wire from the battery terminal.
- Keep engine cooling fins and governor parts free of grass and other debris that can affect engine speed.
- Examine muffler periodically to be sure it is functioning effectively. A worn or leaking muffler should be repaired or replaced as necessary.
- Use fresh gasoline. Old fuel can clog carburetor and cause leakage.
- Check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

Maintenance Safety

- 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.
- Never operate the machine or the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
- Before servicing or repairing, place the machine in a Safe Condition.
- Allow the engine to cool before performing maintenance. Engine components and oil may be hot enough to cause injury.
- Never work under equipment unless it is properly supported.
- When performing any service or maintenance work always use personal protective equipment.
- Where replacement parts are necessary, use only OEM parts to restore your equipment to original specifications. The manufacturer is not responsible for injuries or damages caused by use of unapproved parts or accessories.
- Inspect and tighten all bolts, nuts and screws. Check that all electrical and fuel connections are properly secured.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing chipper in service.
- When cleaning any parts, do not use gasoline. Use a cleanser designed for that purpose.
- Always use proper tools in good condition. Make sure you understand how to use them, before performing any service work.

Transportation safety

When towing the machine the maximum legal speed limit is 60mph(96kmh). On very rough and uneven road surfaces, reduce speed to protect the machine from undue vibration. When off road, avoid objects that may collide with the machine underside.

Avoid steep gradients when off road. Avoid excessively pot holed ground.

Exercise caution when reversing the machine as the short wheel base will react quickly to steering.

Clear machine of loose woodchip material before departing. Ensure the chute is securely fixed at the inboard position before departing.

Ensure that the hopper tray is closed in the up position and the locking latch is fully engaged before departing.

Attaching to the vehicle tow hitch

- Check that the vehicle ball hitch is well greased.
- Raise the machine hitch by turning the jockey wheel handle anticlockwise until the hitch socket is

above the vehicle hitch ball.

- Reverse the vehicle until the ball is directly below the machine hitch socket.
- Grasp handle on tow head and push back catch with thumb.
- Wind the jockey wheel handle clockwise to lower the hitch socket onto the ball hitch.
- Release tow head handle and continue to wind the jockey wheel handle clockwise.
- The tow head should snap into place on the ball hitch. If it doesn't, repeat previous two steps.
- Wind jockey wheel up until fully retracted and the jockey wheel frame is seated in its notch on the stem. The machine's weight should be fully on the vehicle.
- Release the jockey wheel clamp and slide the jockey wheel assembly fully up then tighten clamp.
- Connect the vehicle trailer socket to the machine socket with the connection lead.
- Check all machine lights and tow vehicle lights are working correctly.
- The machine is now properly attached to the tow vehicle.

Machine checking points before transporting

- Keep Disc, exhauster, housing, roller and output chute clean with no debris.
- All safety switch and control parts are in good condition and work well.
- Flap and protection apparatus are good
- Battery, cable and connect are in good condition.
- No fuel, oil leaking. Hydraulic tube and coupler are in good condition.
- Fuel tank lid and Bolt to drain oil are firmly fixed on.
- All pin and lock site are firmly fixed
- Components, parts and hinge are in good condition.
- Bolts and nuts are all firmly fixed.
- Pressure of tire are right
- All decals are perfect for reading
- All manuals are in manual box.

Regular checking chart for follow

Fire distinguisher	
Emergency communication	
First aid kit	
Safety helmet	
Goggle	
Mufflers	
Anti-slip boots	

Gloves with loose opening, NO gloves with sleeve	
No loose coats	
No cuffed pants	
Long hair should be covered by helmet.	

Preparation before chipping

Content of this manual should fully be read and well understood by all people who are related to this machine. Training before use is very necessary offered by dealer who should also understand manual and know how to use, maintain this machine, and all points related to functions and safety.

- Careful preparation can ensure safe and efficient performance.
- Operator should follow all safety instructions, be well protected, and get all set up right and ready, and be familiar with the whole process of this chipper.

There are **3** aspects which are very important and should be checked and confirmed before starting the machine.

They are, Work site, Material and Chipper

Work site preparation:

- Clean up all rocks, metal things which could damage machine away from material and machine.
- Clean up all obstacles which could block walk area.
- Make sure work site is not under high voltage power cable.
- Make sure work site is bright and well ventilated.
- Make sure work site should in open area with enough space.
- Confirm where branches and twig is and where the chips should be collected.
- Keep enough space to deliver materials.
- Make sure the first aid kit are good and ready for use.
- Two adult operators should be on site to keep machine running and ensure the security of surroundings.

Material preparation

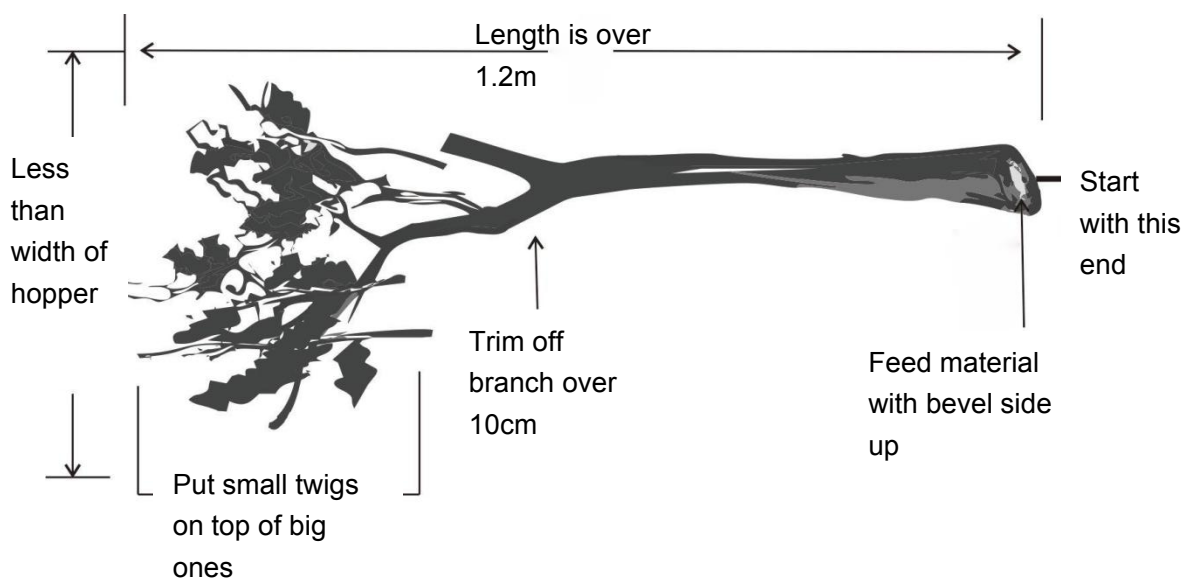
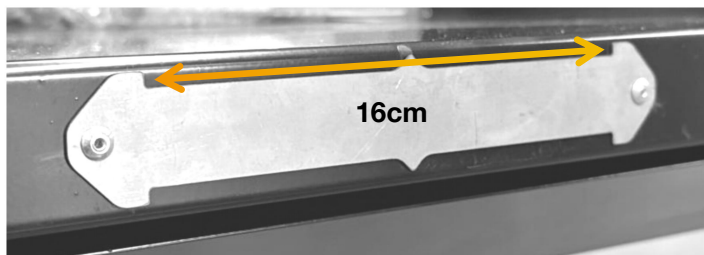
Good preparation of material could raise the efficiency, improve working condition and reduce risk on possible expense on extra maintenance.

Metal, rock or glass etc. could damage machine seriously, caused loss of your property or injuries even deaths.

Vine around twigs, could entangle operator, cause damage to machine. so all vine among your material should be taken away.

Chipping capacity: 16cm, which you can refer to the diameter gauge riveted on the bottom edge of tray.

- Inclined head is easier for feeding.
- Make sure material is long enough, over 1.2m in order to keep hands away from roller. Short material can be pushed into roller by long material.
- Necessary adjustment of weight and length of material, by cutting into piece, could reduce risk on injury to operator.
- This chipper is designed to chip branches with no foreign objects such as rock, metal, mud and anything could damage machine.



Chipper preparation

While the chipper is not towed, be sure it is firmly steady with wheel blocked.

Location should be flat in horizontal level and steady.

Machine can be fixed on site, either being towed, or supported by jacky wheel with wheel blocked.

Notice while towing:

- Truck should be powerful enough to pull the weight of chipper.
- Parking should be on flat ground.
- Truck should be fully stopped with braking on.
- No running machine while transporting.
- Tow coupler should be firmly fixed onto truck tow ball.

- Connect the safety chain and cable. make sure chain is hooked evenly with no touching on ground.
- Be sure the cable is connected right and light works fine.

Notice while parking untowed:

- Each model is equipped with a jacky wheel as support while parking without towed by truck. Never forget to put jacky wheel away during transportation.
- Keep chipper chassis parallel with ground
- Wheel blocker should be placed in position

Output chute adjustment

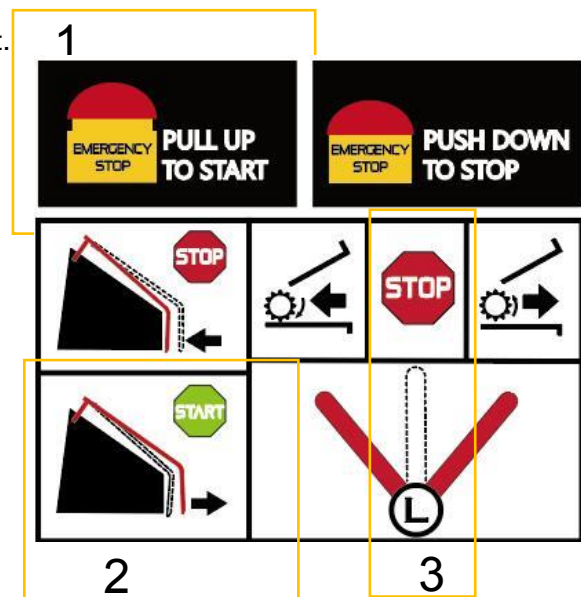
- Be sure there is no debris left in hopper and output.
- Point the site for chips collecting. this chute can swirled.
- Change the throwing angle by adjustment of deflector. and notice all bystanders out of work site.

Disc hood confirmation

Be sure all covers are closed and fixed. or the machine can not be start due to safety system.

Control parts confirmation

- Hydraulic stop bar released (ref fig 2)
- Put control rod at 'stop' position. (ref fig 3)
- Be sure the emergency switch popup. (ref fig 1)
- Fault light is off.



All types oil level checking

Before start engine, the most importance is to check level of all oil, fuel, hydraulic oil...

Refilling can be processed while machine is completely cool down. Slowly turning lid to release pressure in the tank in order to avoid injecting.

Feeding speed adjustment

The feed speed can be adjusted to suit the material being chipped.

Total travel is 6 turns, starts from '0' and ends at '0'.

Default speed is in middle (3 turns clockwise to close, 3 turns anti-clockwise to the highest speed)



When feeding Leylandii or leafy material, set feed roller speed BY 0.5-1 turn clockwise from the middle.

Start

IMPORTANT!

Before starting work with the chipper, become familiar with the location and function of all controls.

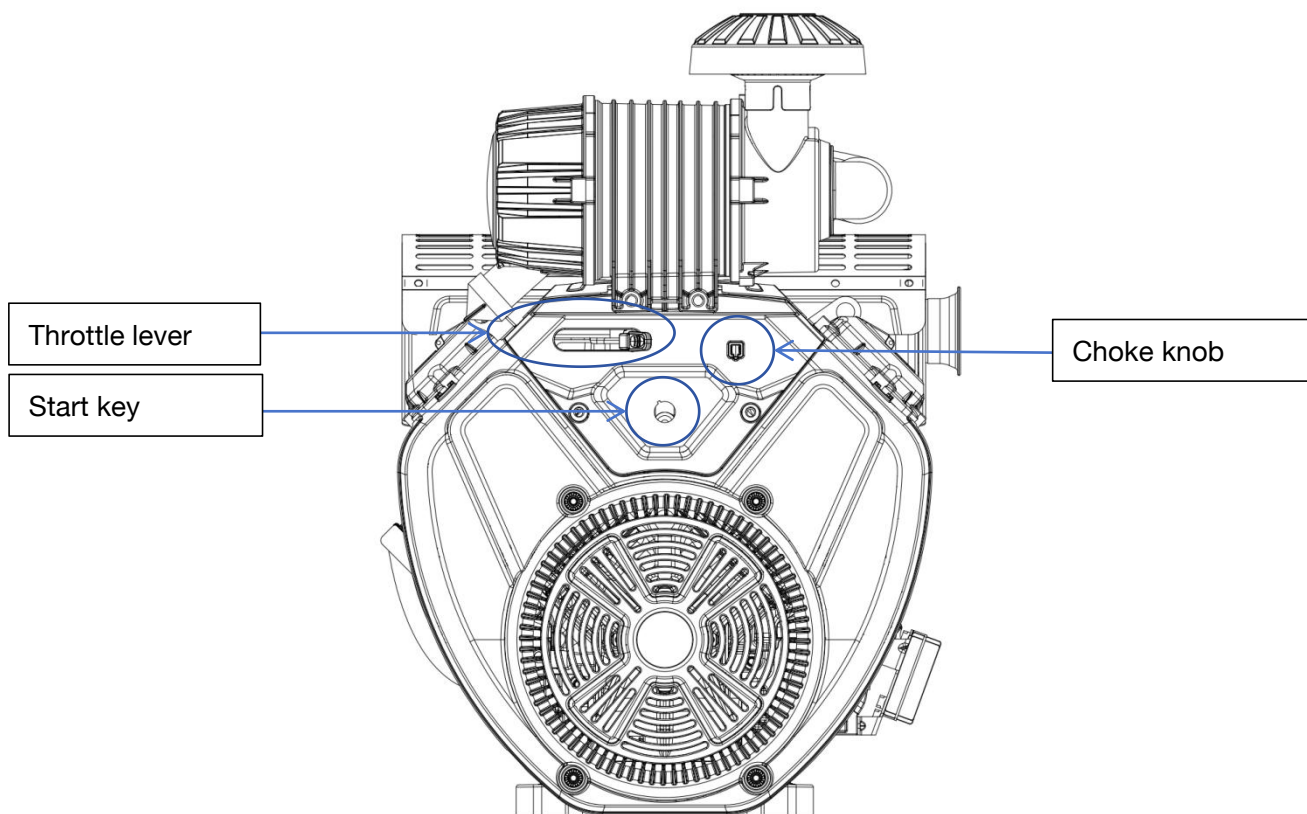
- Do not let the engine idling with the clutch separated for over 2-3 minutes, this will cause excessive wear of the belt.
- If you hear a suspicious noise when the engine is turned off indicating a loose or broken part, have engine inspected by dealer.
- In cold weather, it takes about 15 minutes to heat up the hydraulic oil.
- Cold hydraulic oil will cause noise, pressure loss, cavitation and other damage to the hydraulic pump and motor.

Start engine

- Please start engine with reference to engine manual.
- Turn the battery switch to 'ON' position.
- Fire up the engine and keep engine idle running for 1-3 minutes, Then pull handle to semi-coupling position and hold for 3-5 seconds till the disc starts running, then pull handle to lock position.
- Warming up is very necessary for all oil filling, recycling. 5-10 minutes warming up is highly recommended for each time working, especially the first using.

Engine Controls

Refer to the engine manual for further explanation on engine controls.



Throttle Lever

The Throttle Lever controls engine speed.

Warm up the engine before putting the chipper to work.

The throttle lever should be at the MAX position during chipper operation.

- Push the lever to 'rabbit' to increase engine speed.
- Pull the lever to 'turtle' to decrease engine speed.

Choke Knob

The Choke Knob is used as a starting aid when the engine is cold. Pulling the knob out supplies a richer fuel mixture to aid the engine in starting.

- Pull the knob out to apply (close) the choke when starting a cold engine.
- Push the knob in gradually to turn off (open) the choke as the engine warms.

Engine Start Switch

The Engine Start Switch has three positions—OFF, ON, and START.

- OFF – In the OFF position, there is no power to the engine and fuel supply is turned off. Turn the

switch fully counter-clockwise to shut the engine off.

- ON – In the ON (run) position, the fuel supply solenoid supplies fuel to the engine. The machine operates in this position.
- START – In the START position, the engine electric starter is activated. When released, the switch spring-returns to ON.

Operation steps in general

- Fold down hopper tray (check all points according to check-list)
- Turn on battery switch. Start engine.
- Turn key to start engine and let go once engine has fired
- Engage the clutch for start the chip wheel running
- Allow engine to run for 30 seconds then open throttle to full
- Push the feeding bar to forward position
- Feed material
- To stop, push the feeding bar to stop position
- To reverse, push the feeding bar to reverse position
- To stop machine
- Push the feeding bar to stop position
- Close throttle to minimum
- Switch off ignition and remove key
- Release the clutch to disconnect the transmission
- Sweep out debris from hopper
- Close hopper tray by lifting fully up against stops and engage latch

Chipping

Before feeding, pull up engine to full speed. Push control handle to feeding position

Note

Two adults are supposed to operate together, in case of any emergency.

Feeding

- Pick up branches, make you can stand straight and walk freely, put the cut side into roller. For the first 4-8 hours with new machine, recommend that you start with 8-10cm fresh branches, you can evenly increase diameter as time goes by.
- Put the branch on tray and make sure hands out of hopper. Hand off the branch when you feel the roller starts feeding. For a short twig, you can stop roller and put the short ahead of the long. then start feeding, push the short by the long.
- Refer to the pathway, Feeding and turn.
- Always pay attention to working status, noise.

- Confirm the throw direction, No bystanders, No power cable, No animals, No flammable material, No growing plants.

Chipping Operation

The wood chipper is a strong, rugged machine that is built to provide consistent chipping of logs up to 160mm in diameter.

WARNING!

Risk of serious injury or death. Keep hands, feet and clothing away from feed rollers when the chipper is operating. Do not climb onto the feed table or hopper.

Never reach into the feed hopper. Doing so risks hands getting caught. Use a stick or branch to push in any material that does not move on its own. If jammed, stop the engine, wait for the Disc to stop, then clear the jam.

IMPORTANT!

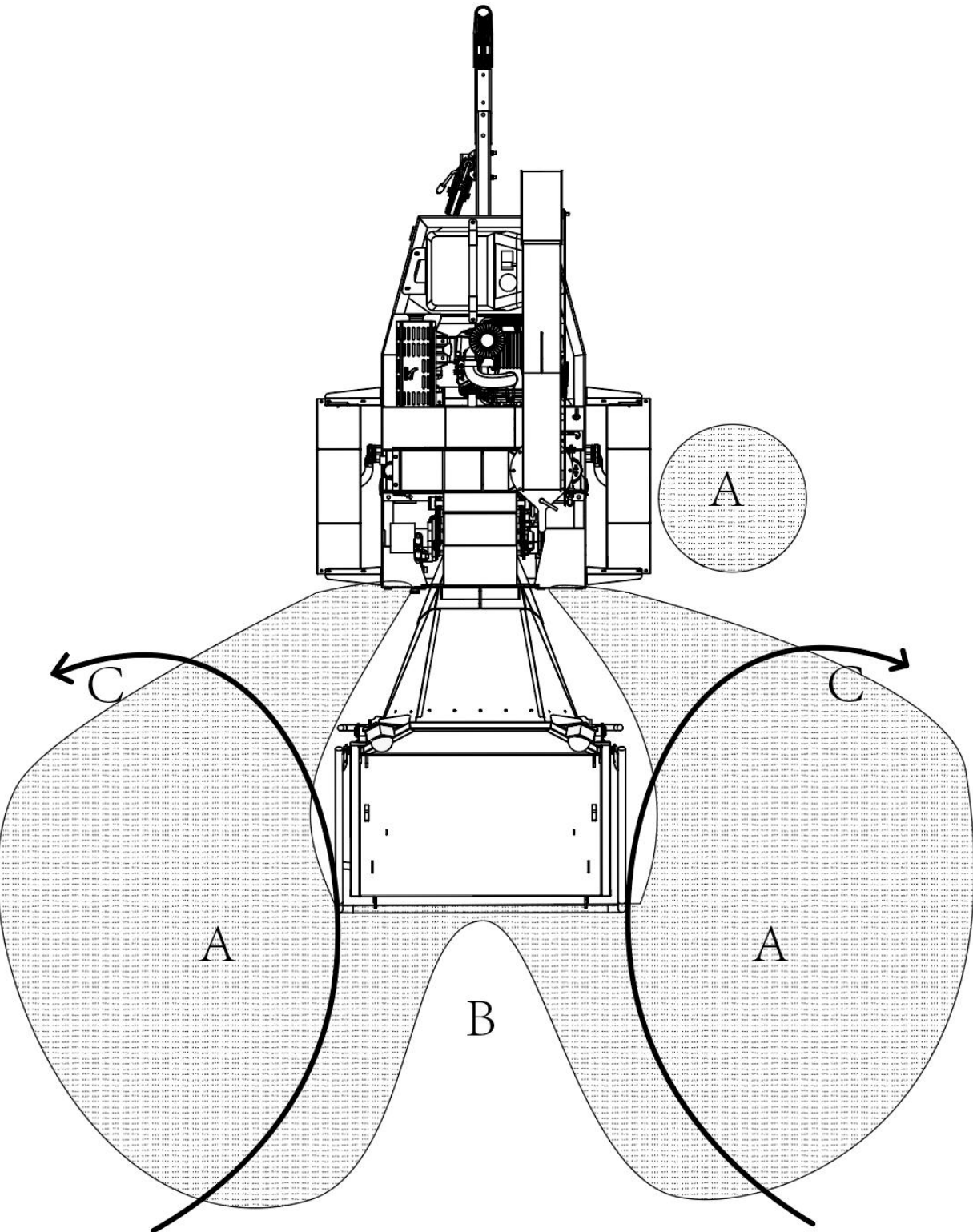
Do not put metal objects, bottles, cans, rocks, glass or other foreign material into wood chipper. If such items happen to get into the chipper, stop machine and turn engine off. Wait for all moving parts to stop before removing material. Inspect machine for damaged or loose parts before resuming work.

- De-limb large branches and trees. The limbs on large branches sticking out of the feed hopper may catch the roller feed control bar, and shut the rollers off.
- Be aware of the size and shape of the material. Complicated, 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.
- Hold small diameter branches together in a bundle and feed in together.
- Place short branches on top of longer ones to avoid reaching into the hopper.

A area for operating

B area for material

C is feeding routine



Stop

Disc is still running after engine shut down and clutch released, No open the cover of housing.

Follow all regulated procedure to shut down engine and stop the machine, lock all security parts.

Note

Before shutting down, make sure no twigs left in hopper and roller, no debris and chips left in housing.

Never put those debris and twigs you clean up from worksite into hopper, as you can not feed them into roller in proper way. what is worse, these debris could contains sands or small rocks which could damage machine seriously.

How to Stop

- Stop roller with control rod on position of stop
- Pull down speed to idle status till all debris in hopper and housing are blowed out.
- Shut down engine
- Release clutch while the machine is fully stopped.

Lock security

Regarding to safety, it is very important to check and lock all security parts.

- Be sure start key is taken away.
- Battery is firmly locked and switch is off.
- Tool box or manual container is closed
- If you use towing coupler, make sure it can coupled well and rear lights works fine.
- If you try to store this machine, better to take off battery and all electric components, such as computer.

While transporting, nothing is allowed in hopper or on the machine.

Checking list before start & after stop

Now you know well on the whole chip process, Please check the following items before starting and after shutting down.

Items checked before start

- Preparation for emergency is ready.
- Two adults are must for chipping work with this machine.
- All person should be dressed up in proper way and protected by related equipments.
- Check the work site marked with warning ribbon thoroughly.
- Work site preparation, material, work pathway, chips collecting site
- Check if there are parts worn, cracked or missed, untightened.
- Machine preparation, oil, fuel, hydraulic oil...
- No objects, such as debris, rocks or tools in hopper.
- All covers are firmly fixed
- Tire is with right pressure.
- Recheck regular daily maintenance chart.

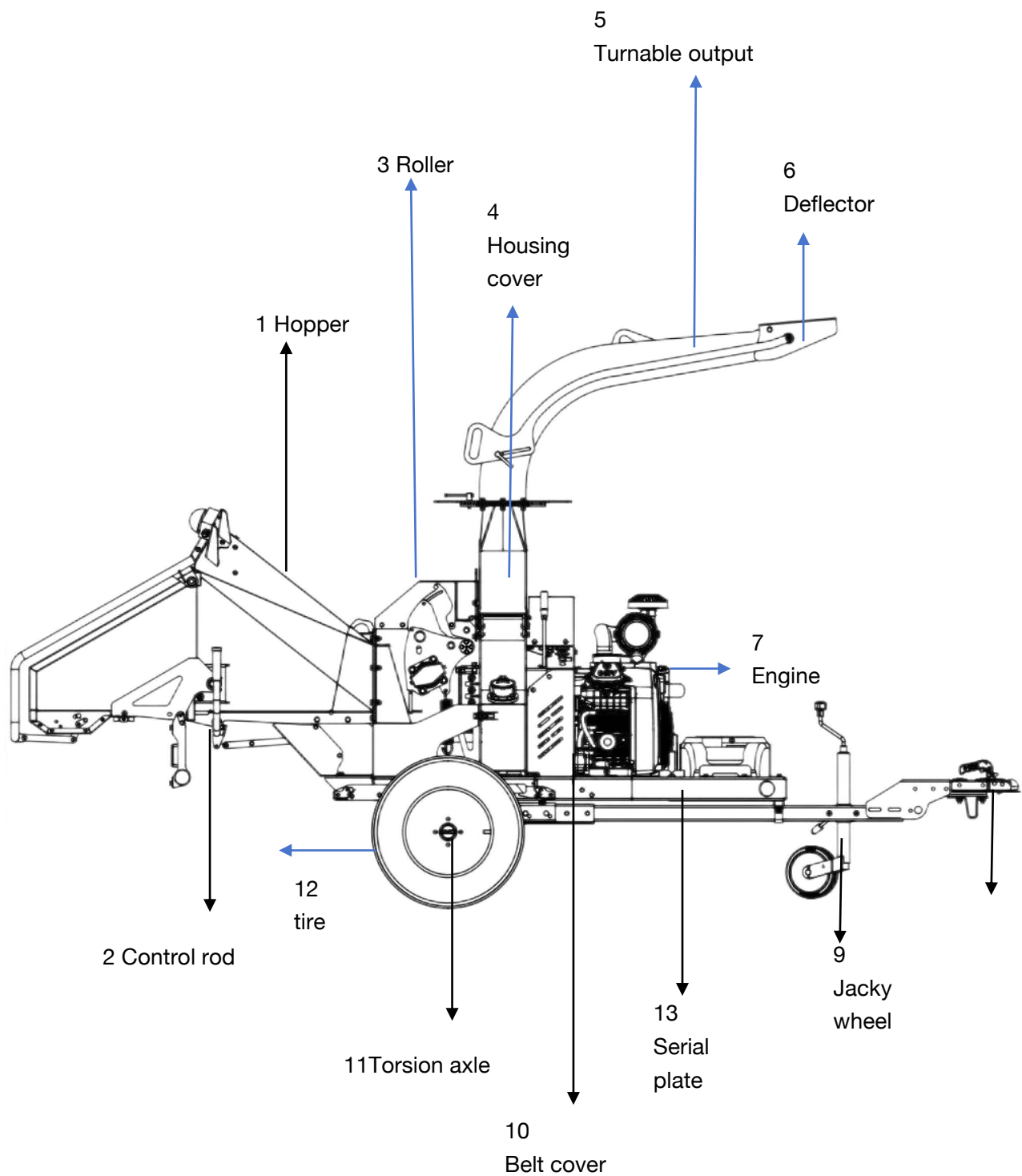
Items checked after stop

- Control rod is on position of stop.
- Take off starting key. Switch off power supply.
- Disc stop completely.
- Completely cool down for 15-20 minutes
- All cover are firmly fixed and locked
- Work site cleaning work finished
- It is clean inside hopper
- Make sure tow coupling is connected properly and firmly

Following the steps below, can ensure efficient chipping work

- Original blades supplied
- Keep blade sharp at right angle.
- Change blunt blade in time
- Keep right gap between blade and anvil
- Keep anvil right and sharp edge
- Tighten blade bolts at right torque
- Make sure blade and blade holder clean
- Clean blades and anvil, keep them rusty proof
- Grease the bearing regularly
- Keep inside of housing clean and dry

Components description



1. Hopper, where you feed material into roller
2. Control rod, by which you control feeding, stopping, rejecting material
3. Roller, which is rolling by hydraulic to pull material in to Disc housing
4. Housing cover, where you can open and check or change blade
5. Output chute, which can be turned 360 degrees for chips collecting
6. Deflector, which you can adjust throwing angle
7. Engine, which supplies power to Disc and hydraulic system
8. Tow coupler, which use for connection for towing
9. Jacky wheel, which is used for support while machine is not connected to truck.
10. Belt cover, which is used to cover belt and pulleys
11. Torsion axle, which is used to reduce bumping while transporting
12. Tire, This tubeless tire which is wear-resistant and explosion proof.
13. Serial plate, which contains product info and serial number

Hopper

No entry of the feeding space, even for hands, head. Improper operating will cause injuries or deaths.
Make sure no debris left in hopper before starting engine.

Function

Hopper keeps safe distance between roller and operator.

Fold-able in-feed pan, which should be folded during transport.

How to use

No entry of the feeding space, even for hands, head. Material should be over 1.2m long and 1.32m wide.

Control rod, First position is forward for feeding, Second position or middle, is stop for feeding, Third position is reverse for push back material

Maintenance

Make sure no debris left in hopper. Objects like rock, glasses and metal will damage the blade and machine.

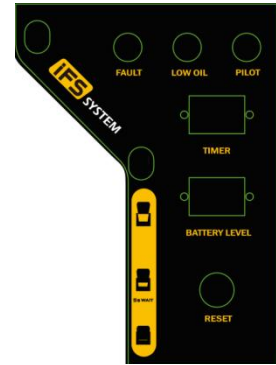
Cleaning can only be done, while engine shut down, all cover firmly locked.

Hopper should be cleaned before transportation.

Control panel

1. Timer
2. Battery level
3. Reset button
4. Clutch handle

Light: Fault / Low oil / Pilot



Indicator light

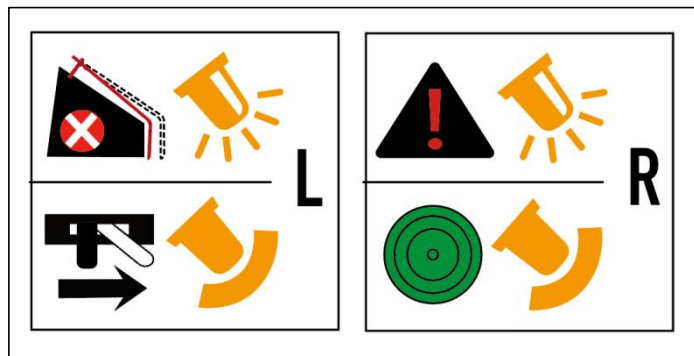
You will find indicator light on bracket of emergency stop.

Function

Both indicator light will be on after switching on the engine (make sure you have battery switch on)

Left one: flashing while the panic bar is engaged, you have to release it to stop flashing

Right one: flashing while there is fault happening, such as emergency stop involved, disk hood opened, self protection mode starts.



Self-protection mode starts after 8 seconds at idle speed while machine is in feeding status.

Feeding control

1. Emergency stop
2. Stop bar
3. Reset handle
4. Tool bracket (optional)
5. Control bar

Knowing the function of feeding control, will ensure the proper operation of this machine, and avoid the potential risks.

Function

- Emergency switch, can only be used to stop the whole machine, while there is emergency.
- Panic bar, is used to stop feeding roller under urgent situation.
- Control handle , is to control feeding roller, with 3 positions, forward, reverse and stop.

- Reset lever, is to used to reset the stop bar while it is in function.

How to use

Follow the instructions from label or manual to use emergency stop and control handle.

Emergency switch is only used for emergency.

Control handle should always be in position of stop while starting or stopping.

Maintenance

Regular checking and ensure no loose of all bolts and nuts of feeding control parts. Cables are good no cracking and all latch locking system are working properly.

iFS system

iFS system prevents the engine from getting bogged down if material is put into the chipper too quickly.

Feed roller speed is regulated by monitoring the Disc rpm.

Procedure:

Check the engine is warmed, at MAX throttle setting, and the Disc is up to speed. Once the Disc is up to speed, iFS starts the feed rollers when the feed control handle is placed in the Forward (feed) position.

NOTE:

Engine throttle must be at MAX and Disc at full speed for feed rollers to function in Forward.

Feed rollers function in Reverse even at engine idle so material can be backed out.

Feeding roller

Make sure you have gloves on and well protected from cutting.

WARNING!

Risk of serious injury or death. Keep hands, feet and clothing away from feed rollers when the chipper is operating. Do not climb onto the feed table or hopper.

The Feed Roller Control bar on both side of the hopper controls the material feed into the chipper. The control bar has 3 positions—Forward, Stop, Reverse. Decals on the side of the feed table indicate feed control bar operation.

Maintenance:

While teeth is worn, the roller should be changed.

Clean up the twigs may wind around roller shafts in time.

Grease the roller bearing regularly according the maintenance

- Control bar

it can be moved freely between Forward (1) and Reverse (2). Once moved into Stop position (3), Roller will be stopped.

- Panic bar

Stop the feed rollers at any time by pushing the panic bar down to fully stop the feed rollers.

To move the control bar to stop position, pull right the Reset Lever to release panic bar.

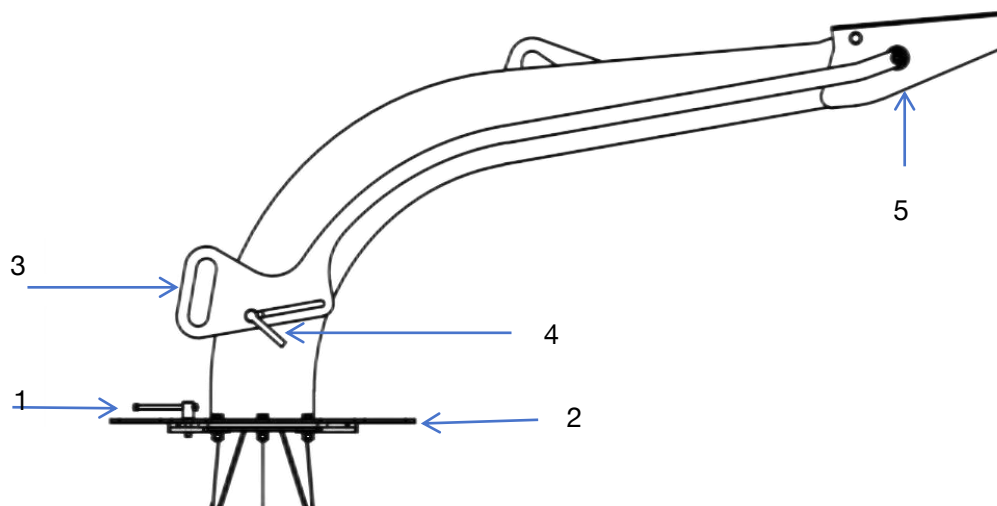
Panic bar must be released before start.

Feeding process

1. Material fed into roller
2. Roller hooks material and pull it into disc housing
3. Material pulled into anvil and disc
4. Blades on disc starts cutting material sides by sides
5. Impeller on disc supplies air blowing chips out of housing through output chute.

Discharge chute

Make sure the output chute is hooked by crane or supported beneath before disassembling chute.



How to rotate the chute

The discharge chute can be rotated. It has a spring-loaded latch that locks it in position.

1. Release the two lock bolts(1) to turn the discharge chute.
2. Use grip handles(2) and rotate the chute.
3. Tighten the bolts(1) and lock the chute into position.

How to clean up chute

1. Mark with warning sign after completely stop
2. Be sure that Disc has be completely stopped
3. Open the disc housing hood and clean from the bottom
4. As the chute is disassembled, material jammed will be dismissed.
5. Fix all part back in return and start with small parts.

TIPS: The blockage is mainly caused by a low engine rpm or a fast drop down of engine speed. The chipper runs at less than full speed, or the blade becomes blunt and cannot cut effectively, or materials are too soft and moisture, which may cause the drop down of rpm, or material cannot be cut into pieces. If the feed is automatically controlled, the starting speed must be set high enough to prevent the occurrence of low speed.

Deflector

The Hood Deflector(5) is on the end of the discharge chute to direct the chip output. The deflector is held in position by a slotted position handle.

How to adjust deflector

Release the lock bolt(4)

Grasp the handle(3) and push slightly to adjust the angle.

Lock the deflector into position by tightening the handle into position you need

Hydraulic valve

Pressure of hydraulic must be released due to high temperature and pressure, before any maintenance

Function

Hydraulic valve is change flow direction of hydraulic oil, or flow volume to change speed of flow. Model with iFS control, Flow reverses automatically while RPM of Disc drops to certain level.

How to use

To use control rod to operate hydraulic valve.

Note that Control rod should be in position of stop while machine is unused.

Maintenance

- Check coupler and tube, ensure no leaking.

- All connections are firmly tightened
- No cracking on power cables

Hydraulic oil tank and fuel tank

Fuel, and hydraulic oil is flammable, explosive, should be away from Smoking, and any fire sources Hydraulic system crates pressure during working, and this pressure is high and cause scalding and injuries to operator. so you have to release pressure and cool oil down.

Location

Hydraulic oil tank, integrated with disc housing of chipper, Fuel tank is in front of chassis

How to use

- On top of fuel tank, A gauge to show volume of fuel. In side of hydraulic oil tank, a gauge to show volume and temperature of hydraulic oil.
- Do not fully fill the tank, and keep space for steam expansion.
- Seal the cap to avoid spilling.
- There are filters, in fuel tank and hydraulic tank. Filter for oil return in hydraulic tank should be replaced in a certain period.
- Due to characteristic of hydraulic oil, it should be replaced for a certain period. Regular check and clean oily sediment through side window.

Recommended Volume of Hydraulic oil

refer to the gauge. volume to reach 3/4 level of gauge is sufficient. fig4.14

4.14



Level 3/4
of tank

Maintenance

Refer to engine manual, change fuel filter, oil filter.
Please use original parts offered by manufacturer.

Transmission

Rotating belt can hurt people seriously. Do not check, clean or adjust belts while running.
Do not use flammable detergent to clean belts, which cause fire possibly.

Function

Transmission system is to trans power from engine to chip and hydraulic system, which is consist of belts, pulleys and cover.

How to use

Belt cover is to protect users from hurting by rotating belts. Do not work with running belts with no cover on. Fix all covers back in return after maintenance of belt.

Right tension, can ensure efficient power transmission. Stop machine completely and take off belt cover to check and test the tension of belts.

Maintenance

Oil can seep and damage belts, make sure clean them away in time.

Use non flammable detergent to clean belts, such as soap...

Check pulley while change belts.

In order to ensure perfect performance, Tension clutch might need to be adjusted according to belt tension

New belt should check every 8 hours working.

Maintenance

Regular chart

Item	How	Before start	8 hrs	40 hrs	120 hrs	400 hrs
Entire machine	Visual inspection	√	√			
	Clean machine		√			
Tighten parts(excl . blade bolts)	Use thread fasten glue			√		
Blades	Grinding or replacing blades while chips are not good		√			
Blade bolts	Check bolts while checking blades, change if necessary		√			
Gap between blade and anvil	Do adjustment to get right gap (1-1.5mm) between blade and anvil			√		
Anvil	Check anvil while change blade, change if necessary			√		

Belt	Check tension of belt and make it right. change if necessary.		√	√		
Roller	Roller worn or cracked should be changed immediately.	√				
Oil return filter in Hydraulic oil tank	Change accordingly.					√
Hydraulic oil	Check, replace, fill to 3/4 position if necessary.	√				

Lubricant

Lubricating is very important to keep machine running well. such as axle, roller bearing, roller holder spin bush, clutch, spin flange, Disc bearing, control rod spin points...

Note

The following time chart is based on normal work condition. like 8 hours a days, 5 days a week. if you are taking heavier chipping work, the following chart should be adjusted accordingly.

Agenda

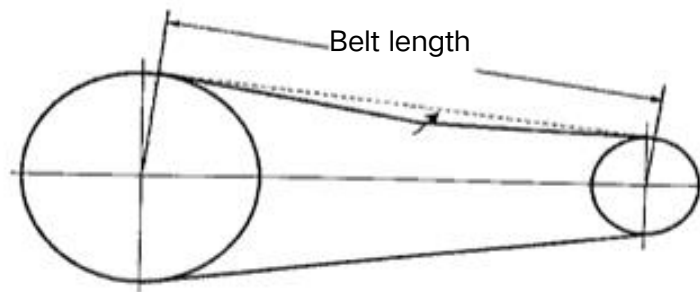
No.	Item	Position	Every 8 hours	Every 40 hours
1	Hub bearing	2	n/a for maintenance free model	
2	Roller bearing	1		√
4	Output flange	1	Every year with oil drop	
5	Disc bearing	2	√	

Note: use lubricant gun for greasing. (EP lubricants recommended)

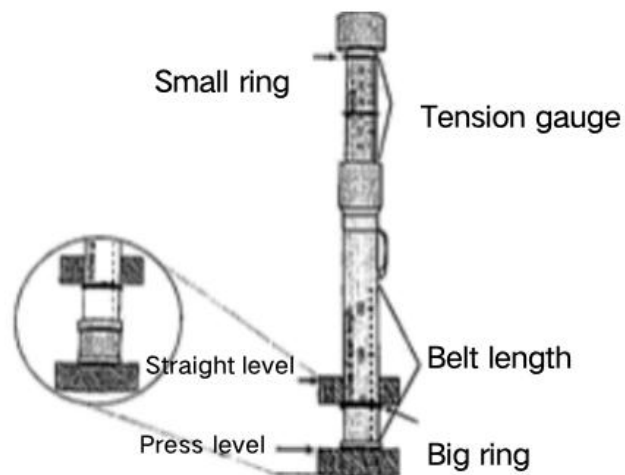
Belt

1. Measure the length of belt line(fig 4.3).
2. Fix gauge mark of big ring at length of belt(fig 4.4).
3. Small ring set at default position '0'(fig 4.4)
4. Press gauge in middle of belt length, till big ring moved to original level, release pressure and read the scale line of small ring reaches, which is the tension number(fig 4.4)
5. Match the scale number with number in chart. Right tension can avoid belt slipping at the peak of power transmission during max work load.
6. After adjustment of belt, tighten engine fixing bolts, and belt cover back.

4.3



4.4



Belt tension

Very important notice: make sure pulleys are in line.

New belt will get loose after first use. Check tension of new belt after 24 hours using. Right belt tension should in between max and min scale.

Belt type	Active pulley		Transmission ratio, Pressure scale			
	RPM	Dia. in	1.0	1.5	2.0	4.0 +
SPB	1200-3600	4.4	6.5	7.5	8.0	9.0
	1200-3600	5.2	8.0	9.0	9.5	10.0
	1200-3600	6.3	9.5	10.0	11.0	12.0

	1200-3600	7.1	10.0	11.0	12.0	13.0
	900-1800	9.0	12.0	13.0	14.0	15.0
	900-1800	14.0	14.0	15.0	16.0	17.0

Tire

Keep Tyre pressures inflated to 65 psi.

Check wheel nuts are tightened to between 90Nm and 100Nm.

Never install undersized tires.

Tire type

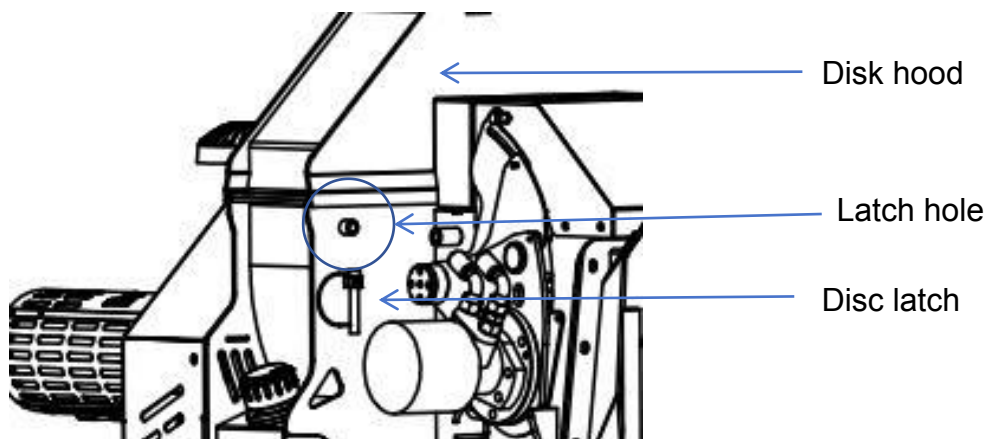
Size designation (s)	Rolling radii (mm)	Load capacity	Speed category	Wheel rim	Pressure (kPa)	Offset (mm)
165R13LT	298	94/93	R	4.5B	450	30 for rim

Disk lock latch

Danger, open disk hood only if Disc stopped completely

Danger, loose clothes, jewelry and long hair should be away from spinning parts.

- Put control rod in position of stop
- Slowdown engine to idle speed
- Switch off engine
- Wait till Disc completely stopped
- Release clutch.
- Slide off lock rod and open the hood. Use latch to stop Disc from turning.
- Manually spin Disc till you see blade for maintenance
- Slide in the Disc latch to lock Disc from turning. see picture



Blade

The Disc can squeeze or cut a person's limb; Wearing loose clothing, jewelry, and long hair can lead to serious personal injury or death, such as winding and cutting. Before maintenance, make sure to turn off the engine and wait for the Disc to stop turning completely and secure the Disc with a latch.

The Disc must be rotating for several minutes after the engine is switched off to stop, and do not open the housing cover until the Disc has completely stopped turning, as this may cause serious injury.

Protectives such as goggles and gloves may always be worn when maintaining chipper, where debris may fly out causing eye injuries, skin scratches and cuts.

Overheating of the blade can change the characteristic of the blade edge, and overheating of the blade can result in small cracks that, if chipping work continues, it may cause the blade cracking. Overheats when grinding the blade is strictly prohibited.

In order to ensure efficient performance, blade should remain sharp all the time. Time to grind or for replacement, is depending on work condition or material chipped.

While blade gets blunt, chips quality will get smaller and worse, feeding speed goes down. Keeping blades sharp, is a must to ensure efficiency of chipper.

- Choose original blades for replacement
- Keep blades sharp and right angle of anvil
- Keep right gap between blade and anvil
- Fix blade by original bolts, and tighten by right torque.
- Clean blade and holder up completely

Blades – Changing

Check disc blade sharpness daily.

Check blade sharpness more often if processing material with a lot of sand, soil or dirt in it. If the chipper is not pulling the material or material has to be pushed into the chipper, the disc blades are probably dull.

Keeping the blades sharp reduces the amount of power required during operation. Reverse or sharpen the blades if the cutting edge becomes dull.

Procedure

1. Remove the blades from the disc to sharpen. Sharpen at a 30° angle to provide the best cutting effect.

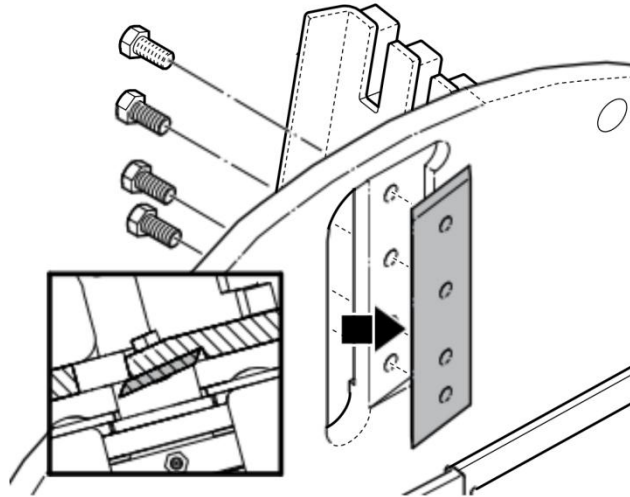
IMPORTANT!

Make sure equal amount of material is removed from each blade when sharpening to maintain proper disc balance.

CAUTION!

Risk of getting hands pinched or wedged between lower disc hood and disc. Turn discs slowly and be aware of hand positioning.

2. Install disc blades with leading edge out, towards the anvil. Tighten the blade mounting bolts to 148 lb•ft (200 N•m).



IMPORTANT!

If replacing or sharpening a blade, do the opposite one on the disc as well to maintain disc balance. Anvil clearance must be equal.

Side anvil

There are two anvils on this model, side anvil and bottom anvil.

Observe Anvil performance daily. Check the Anvil sharpness every 50 hours.

The Anvil is bolted inside the lower disc hood assembly. As the disc turns, material fed into the chipper is sheared off at the Anvil by the disc blades.

When the corner of the Anvil facing the disc blade rounds over, the blade can be removed and re-installed with a different corner facing the disc blade. Once all four corners have been rounded, remove the knife to sharpen or replace it.

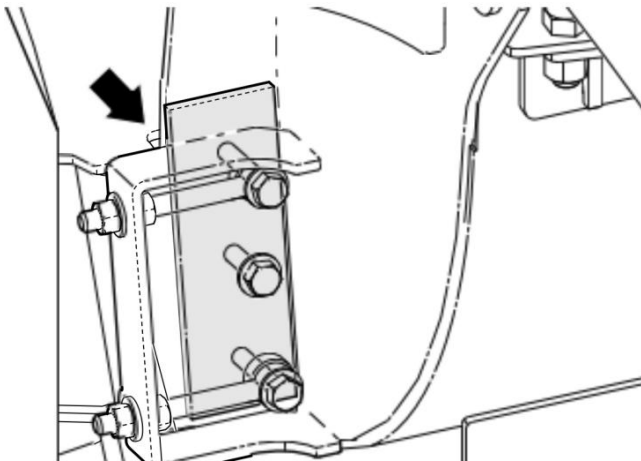


Fig 1 Anvil inside lower disc hood

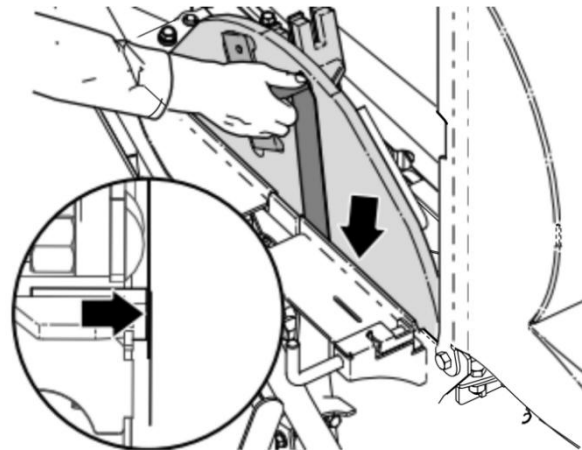
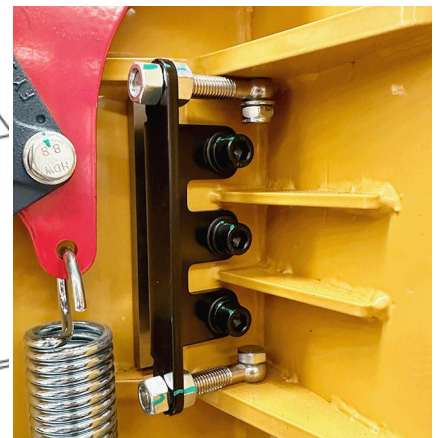
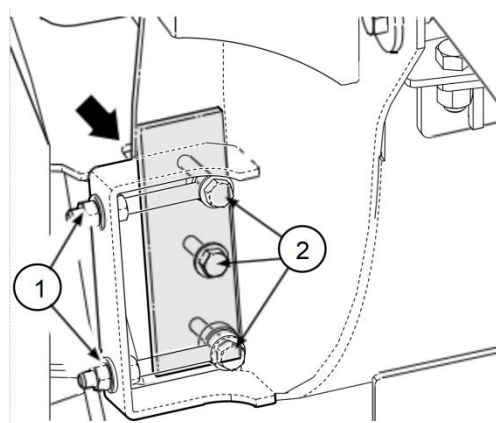


Fig2 Checking Anvil clearance

Side anvil – Changing

The Anvil is removed through the bottom of the chipper. Procedure

1. Loosen the outside jam nuts (1) and the inside adjuster nuts.
2. Remove the three bolts (2) holding the Anvil in place to allow the blade to fall through the bottom of the chipper.
3. Rotate the Anvil or replace it.
4. Reverse the above steps to reinstall the knife.
5. Verify clearance before tightening.



Check video attached

Risk of getting hands pinched or wedged between lower disc hood and disc. Turn disc slowly and be aware of hand positioning.

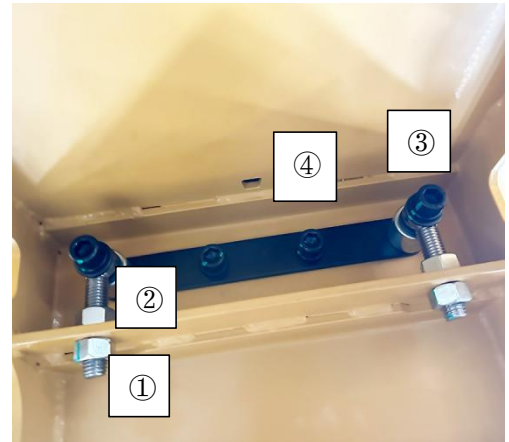
Bottom anvil

1. Loosen the jam nuts (1) on the outside of the Anvil support.
2. Loosen lock bolts (3) slightly.
3. Turn the adjuster nuts (2) clockwise so the Anvil slides firmly up against the gauge inside the disc hood. Remove the Anvil gauge.
4. Tighten the jam nuts (1).

Bottom anvil – Changing

The Anvil is removed through the bottom of the chipper.

1. Remove the three bolts (3/4) holding the Anvil in place to allow the blade to fall through the bottom of the chipper.
2. Rotate the Anvil or replace it.
3. Reverse the above steps to reinstall the knife.
4. Verify clearance before tightening.



Feed Roller Tension Adjustment

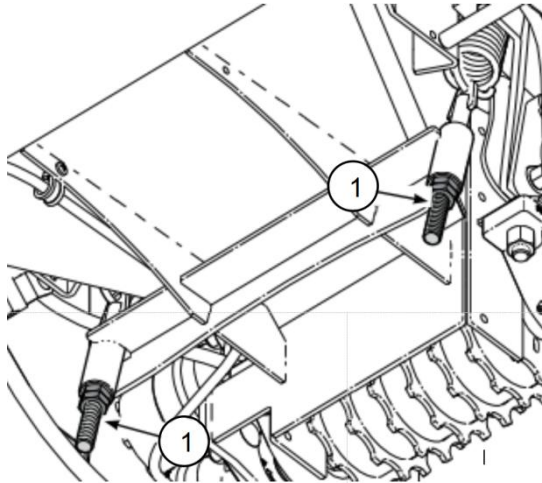
The feed rollers pull material from the hopper into the chipper. The lower roller is fixed. The upper roller is mounted on hinged pivot arms so it can move up and down with different sizes of material. Spring tension on the upper pivot arms hold the roller down on the material as it is fed into the chipper.

Adjust spring tension tighter for smaller material, and looser for larger material.

If spring tension needs to be adjusted, follow these steps:

Procedure

1. On the underside of the machine, loosen the jam nuts (1) on the spring tensioners. Hold the upper nut with a wrench while loosening the jam nut.
2. Turn the adjuster nut to set spring tension as required. The upper roller should grip material and move up and down with different material sizes.
3. Hold the adjuster nut with a wrench and tighten the jam nut.



IMPORTANT!

Set tension on both sides equally. Measure the length of adjustment threads as a check.

Disc bearing

Disc flange bearing is an important part to support the rotation of the Disc shaft, the bearing must be regularly maintained in accordance with the maintenance and maintenance table.

Before carrying out maintenance on the bearings:

1. Shut down the machine in the order of the contents of the safety section.
2. Check the Disc to make sure it is smooth, free of scratches, wear or bends, and clean.
3. Check the dirt on the flange bearings.
4. Protect flange bearings from dirt or moisture.

Serious injuries and deaths may occur if the power machine is not switched off during maintenance operations. The power supply must be turned off and locked before maintenance work can be carried out.

Trailer lamp

If the lights on your utility trailer are no longer functional, use this guide to replace the lights so that your trailer is street legal!

The lights on a utility trailer consist of a running light, brake light, and turn signal that are controlled by two wires that run from the tongue of the trailer to the back and connect to the lights.

Also, prior to making the fix, check to make sure the male adaptor for the lights is not plugged into the female adaptor on your vehicle. If not unplugged, there is risk of electrical shock.

Find the wires running from the trailer to the light.

Inspect all the wiring on both sides of the trailer itself and closely look at points of contact where the

wires could potentially rub and get damaged.

Use a ratchet wrench to remove both hex nuts on the bolts mounting the light to the bracket.

Disconnect the socket and take off the lamp

Replace with new one, connect the cable.

After finishing the fix, be sure to plug into your vehicle to ensure proper function of your new trailer lights.

Hydraulic system

Hydraulic oil will evaporate and may ignite serious injuries such as explosions, fires, etc. To keep hydraulic oil away from the source of the fire (e.g. open flames or smoking, etc.).

Leaks of hydraulic oil can cause fluid build-up and slippery conditions on the ground, which can result in serious injury. Clean the leaking hydraulic oil frequently and repair the leak immediately.

Decompress the hydraulic system and lock the machine before maintenance, even if there may be pressure storage in the power-off hydraulic system.

Hydraulic oil in the hydraulic tringe is highly pressured and can be ejected from the leaking area to burn or penetrate the skin, causing serious damage. If the hydraulic oil penetrates the skin, seek medical attention immediately!

Hydraulic components (pumps, motors) and hydraulic oil are very hot and can cause severe burns during operation. Always wear protective masks, protective clothing, etc. during operation and maintenance.

Do not add additional hydraulics or accessories, resulting in the failure of the factory quality guarantee (warranty).

When maintaining the hydraulic system, pay special attention to the leakage and heat of the hydraulic system (pumps, motors, valve , etc.). Always follow the safety warnings and safety operating procedures to maintain the hydraulic system.

Before maintenance

- Wait for the machine to cool down completely.
- Release the remaining pressure in the hydraulic system. The parts that may have energy storage included: feed rollers, suspended loads, fully charged batteries, etc.
- Leak inspection. Use a piece of cardboard to check for leaks. Do not check by hand.

The hydraulic system can provide hydraulic power for certain components of the machine. The main components that require maintenance include hydraulic oil, filters, and hydraulic pumps.

Hydraulic Oil

The hydraulic oil should be tested every 250 hours for signs of aging. The signs of aging include:

- The color of the hydraulic oil changes.
- The smell of hydraulic oil has changed.
- It feels that there is dirt or sand in the hydraulic oil.

- Hydraulic components fail regularly.
- The operating noise is larger than normal.

The quality of hydraulic oil can be tested using a commercially available test kit or a simple absorbent paper. Blotting paper point test is to drop oil on a piece of absorbent paper. If the absorbent paper remains colorless or has only a light yellow ring, it indicates that the degree of oxidation of the hydraulic oil is within a controllable range. Even if the color is darker but the whole is uniform, the hydraulic oil can continue to be used. If the sample has a color circle with obvious color difference, it indicates that the hydraulic oil should be replaced. When there is a black mark in the middle of the sample and the light-colored hydraulic oil spreads out of the absorbent paper, it indicates that sludge or other dirt has entered the hydraulic system. This indicates that the hydraulic oil needs to be replaced.

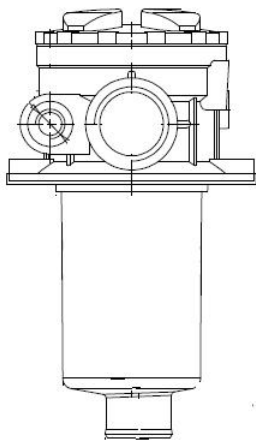
Under normal working conditions, the hydraulic oil should be replaced every 2000 hours of work or every year, whichever comes first. Under more severe working conditions, it should be replaced every 1000 hours or six months of work. Always use anti-wear hydraulic oil. Always keep the oil level at three quarters of the fuel tank. Failure to do so may cause air to enter the hydraulic pump, reduce the pressure of the hydraulic oil, and make the machine move slowly.

Oil return filter

The hydraulic oil filter is replaced every 500 hours of work or when the hydraulic oil is changed. Use a filter level of 10 microns.

Use protective plastic gloves to keep oil off skin, dispose of oil and filter in an environmentally responsible manner.

1. The filter housing is accessed in side of disc hood, in the top of the hydraulic tank.
2. Unscrew filter housing top, remove filter element and replace.
3. Screw on and tighten filter body with new filter element into filter housing.



Hydraulic pump

The hydraulic pump is an important part of the operation of the shredder. The operator should always pay attention to the possible problems of the hydraulic pump during the operation. The symptoms of the hydraulic pump include:

- Too noisy
- Overheating
- Pressure increasing of output
- No oil pumping out
- Low pressure
- Running slowly

VERY Important tip

The troubleshooting of the hydraulic system, communicating with the operator, helps with understanding the circuit diagram and checking the mechanical parts to determine the basic cause of the problem.

There may be more than one fault. First, establish a list of possible causes of the failure, eliminate the items that are the easiest to eliminate, do not need to be disassembled or save time, and conduct tests step by step to eliminate or repair the possible causes.

Take preventive and corrective measures to avoid excessive downtime due to maintenance failures in the future

Hydraulic system maintenance schedule

item	Maintenance	Schedule
Hydraulic oil	The liquid level is kept at 3/4 of the tank	Check each use
	Oil test	Every 250 hours of working, or sign of aging
	Replacement (under normal working conditions)	Every 2000 hours of working, or every year
	Replacement (under severe working conditions)	Replace if needed
Filter	Replacement	Every 400 hours or damaged
Hydraulic	If necessary	Refer to schedule

pump		
Tube and Accessories	Replacement	Damaged or worn

Hydraulic pressure

Model	Main pressure	Branch pressure	Feeding roller RPM
16	2000psi/14MPa	500psi/3. 5MPa	34~47* Actual RPM is depending on engine rpm

Trouble shooting table

Chipper

Problem	Possible reason	Adjustment and maintenance
Feeding is not good.	blunt blade	Reverse or replace
	Belt is too loose	Adjust belt tension
	Wrong blade edge angle	Angle is 31 degree
	Hopper blocked	Stop engine, lift up roller, clean material jammed
Disc bearing overheated Max 210°F/99°C	Lack of lubricant	Cool down, lubricant
	RPM is too high	Less than 2400rpm
Jammed in output chute	Disc rpm is too low Blunt blade	Clean up material jammed, and run machine at max speed.
Disc shaking	Shaft sleeve gets loose Bearing holder gets loose Bearing gets worn Too much debris jammed behind bearing holder	Tighten torque is 108nm Tighten torque is 108nm Replace bearing Clean up bearing holder
Disc stuck	Material jammed in housing Bearing stuck during worn parts	Stop machine and clean up Check and replace bearing if needed

Pump

Problem	Reason	Solution
Abnormal noise	Air in system	Check and replace tube or coupler worn or cracked. Keep the oil level in the tank at 3/4

Problem	Reason	Solution
Abnormal noise	Vacuum (pump has air resistance)	Eliminate blockage, tighten the oil inlet pipe or tighten the exhaust valve
	Loose or worn parts	Replace worn gaskets to ensure that the hydraulic oil meets standards and is clean
	The valve or plunger of the hydraulic pump is stuck.	Remove the hydraulic pump and clean it with detergent. It must be fully dried before assembly. Please do not use hard tools to clean the processing surface, such as files or sandpaper, and replace the corroded parts.
	Incorrect hydraulic pump/drive	Maintain a constant oil temperature
The hydraulic pump is overheated	The ambient temperature makes the oil thicker	The hydraulic oil viscosity index is too high, use the hydraulic oil recommended by the manufacturer
	Low hydraulic oil level	Keep the oil level in the tank at 3/4
Increased outlet oil pressure	Misaligned parts (installation misalignment)	Check the parts that produce excessive resistance and replace if necessary to ensure that all parts are installed correctly
The hydraulic pump does not supply oil	The direction of rotation of the shaft is wrong	Turn off the machine immediately and replace the oil pump with the correct shaft rotation direction
	Inlet blocked	Clean the hydraulic oil tank and keep the oil level at 3/4
	Leak in oil inlet line	Check the oil tube or joint for looseness or damage, replace or tighten them
	Sticky oil	Drain all oil and replace with new oil

Low system pressure	The relief valve is set too low	If the pressure of the high-pressure pipeline exceeds the set pressure of the relief valve, use a pressure gauge to detect and adjust the pressure of the relief valve to the specified pressure value
	The relief valve stuck	Clean the relief valve if it is dirty and check damage, replace if necessary
	Parts are aging, cracked, worn or perforated	To limit the pressure of the high-pressure pipeline to exceed the set pressure, use a pressure gauge to detect. After troubleshooting the relief valve and manual mechanical valve, there is still no pressure built up. Check whether hydraulic pump is worn or damaged, and replace it if necessary.
	Valve sticking or seizure	Check whether the hydraulic oil has deteriorated (e.g. dust, sludge, solvent or paint, etc.), replace if necessary
		Check whether the pump parts are worn or damaged, and replace if necessary
Slow start	Hydraulic oil is too sticky when starting	Run the machine for a period of time and check whether the hydraulic oil is thinning. If it is not thinning, replace the hydraulic oil with a lower viscosity. Refer to the manufacturer's recommended oil



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