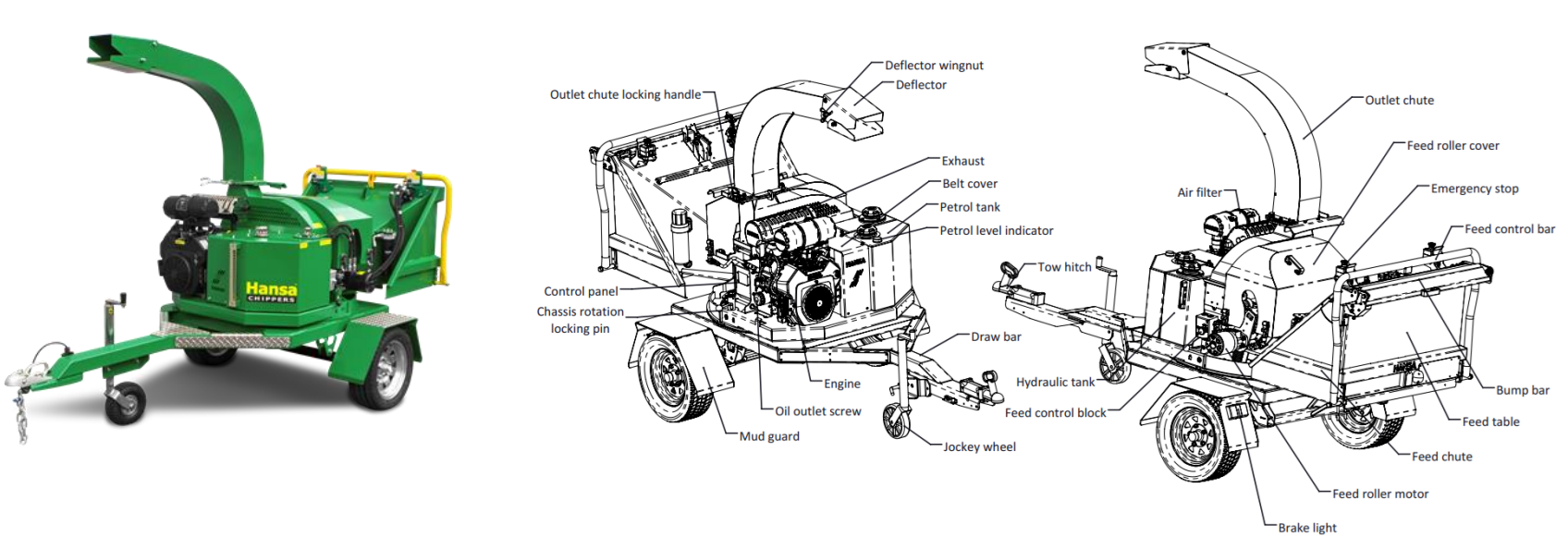


Risk Assessment: C27 wood chipper

Document information			
Risk assessment creation date:		11/09/18	
Created by:		RDM	
Revision:	Revision date:	Revision notes:	Revised by:
A	10/07/19	Updated images and risk assessment with safety switches	RDM
B	20/12/19	Reviewed risk assessment at customers request – No changes made	MS
C	24/02/21	Updated control measures for “Transport/Towing” related to outlet chute direction and turntable direction. Updated weight.	MS

Equipment information	
Model:	C27
Max power:	27 HP
Weight:	950 kg
Intended use:	The C27 chipper is intended to process organic material including wooden branches not exceeding 160 mm in diameter. Organic material includes: pruning's, stalks, roots, vegetable matter, hay, grass, bark, dry manure, branches, palm fronds, paper and cardboard. Materials that should not be processed include, but are not limited to: bones, soil, root balls, sand, stones and metal. The organic material is fed into the machine through the inlet chute. The material is drawn in through the inlet chute into the cutting mechanism which cuts the material into smaller pieces and discharges this processed material out of the outlet chute.
Images:	 <p>The technical drawing labels the following components:</p> <ul style="list-style-type: none"> Deflector wingnut Deflector Outlet chute locking handle Exhaust Belt cover Petrol tank Petrol level indicator Control panel Chassis rotation locking pin Engine Mud guard Oil outlet screw Draw bar Jockey wheel Hydraulic tank Feed control block Deflector Outlet chute Feed roller cover Emergency stop Feed control bar Tow hitch Air filter Feed roller motor Brake light Bump bar Feed table Feed chute

Risk assessment

Each hazard is rated from 1 (low) to 5 (high) on severity and probability. The ratings are then multiplied to calculate the overall risk rating from 1 (low) to 25 (high).

Overall risk rating matrix				Severity				
				Major	Serious	Medium	Minor	Property
The overall risk rating = severity rating multiplied by probability rating				5	4	3	2	1
				Death or permanent disability	Extensive injuries, but with recovery over time, or serious long term effects to health	Medical treatment from a doctor or serious short-term effects to health	First aid treatment, or nil/minor effects to health	Property damage only
Probability	Certain	5	Event may be expected to occur at any time	25	20	15	10	5
	Likely	4	Event will probably occur in most circumstances	20	16	12	8	4
	Moderate	3	Event may occur occasionally	15	12	9	6	3
	Unlikely	2	Small possibility event may occur at some time	10	8	6	4	2
	Rare	1	Event may only occur in exceptional circumstances	5	4	3	2	1

Hazard:	Risk:	Probability rating:	Severity rating:	Risk rating:	Control measures:
Feed swing arm	Crushing or severing	2	5	10	Do not touch or approach the feed roller motor and swing arm while the machine is operating.

					Emergency stops and/or bump bar can be engaged to immediately stop the feed roller in response to a hazard or incident. If there is a blockage, or during maintenance of the feed roller, ensure the locking pin is correctly placed to safely hold up the swing arm.
Sound	Damage to hearing	4	2	8	Hearing protection must always be worn. Always keep bystanders at a safe distance away from the machine.
Dust	Injury or irritation of the eyes Respiratory irritation	3	2	6	Wear safety glasses. Avoid directing the discharging air towards dusty ground. Only process freshly cut material and avoid processing material that contains dry dirt. Wear a dust mask if the hazard cannot be eliminated.
Feeding material	Minor cuts and scrapes	3	2	6	Wear safety gloves. Wear tight fitting long sleeves and pants to cover bare skin when operating the machine. Take care when handling material that has thorns and/or sharp edges. Take care when feeding large/awkwardly shaped material into the chipper.
Petrol, oil, grease	Poisoning, skin irritation, inhaling harmful vapours	3	2	6	Avoid contact with petrol, oil and grease. Wear safety glasses and take care when refuelling, changing the oil and greasing. Wash skin immediately if contaminated with petrol, oil or grease. Do not refuel the chipper in enclosed areas. Avoid inhaling fuel vapours.
Feed roller	Being pulled into the chipper, resulting in possible crushing, cutting, severing	1	5	5	Do not stand directly in front of the inlet table whilst feeding material into the chipper; stand to either side. Wear tight-fitting gloves and clothing. This reduces the chances that a piece of clothing can snag on a branch and draw the operator into the feed roller. Do not climb onto the inlet table or enter the infeed chute unless the machine is off, and the cutting rotor is stationary. Use a stick to push loose material on the inlet table into the feed roller. Emergency stops and/or bump bar can be engaged to immediately stop the feed roller in response to a hazard or incident.
Cutting rotor and knives	Pinching, crushing, cutting, severing	1	5	5	Operators must read and familiarise themselves with the safe operation information in the operator's manual. Only operate the machine with all parts fastened in their correct place.

					<p>Take care and keep your hands away from the blades when inspecting and/or servicing the machine.</p> <p>Always wait for the cutting rotor to stop moving before opening the machine for servicing or clearing a blockage.</p> <p>Cut-off switch cuts power to the cutting rotor if the rotor cover is opened while the machine is operating</p>
Cutting blades and/or other moving components coming loose	Cutting, severing, crushing	1	5	5	<p>Servicing and maintenance should only be carried out by competent and authorised personnel in accordance with the correct procedures.</p> <p>Torque the knife and anvil bolts to the required torque specifications.</p> <p>Set the correct knife to anvil distance (during servicing).</p> <p>Do not process non-organic materials that can damage the machine, especially stones and metal.</p> <p>Keep the knives/anvil sharp and do not operate the machine with blunt or damaged knives/anvil.</p>
Moving components	Entanglement	1	5	5	<p>Tie up long hair, wear tight gloves and tight-fitting clothing to avoid getting entangled in moving components.</p>
Debris fire	Heat burns, respiratory irritation	1	5	5	<p>Clear any build-up of chipping debris around the engine and exhaust regularly to reduce the risk of debris catching fire.</p>
Fuel fire	Heat burns, respiratory irritation	1	5	5	<p>Visually check the machine for fuel leaks before operating.</p> <p>Take extra care when handling fuel - they are flammable and vapours are explosive.</p> <p>Use only approved fuel container/s.</p> <p>Always replace and securely tighten fuel cap after refuelling.</p> <p>Allow engine to cool down before refuelling.</p> <p>Do not smoke when using or refuelling the chipper.</p> <p>Never remove fuel cap or add fuel with the engine running.</p> <p>Never refuel the chipper indoors.</p> <p>Never store the chipper or fuel container inside where there is an open flame, such as a water heater.</p> <p>If fuel is spilled, do not attempt to start the engine, first wipe up the spilt fuel on the chipper and move the chipper away from the area of spillage before starting.</p>
Transport/towing	Detachment from tow vehicle, loss of control of tow vehicle	1	5	5	<p>During towing, ensure that the turntable is oriented facing forwards only and the turntable rotation locking pins are down in the locked position.</p> <p>Ensure the feed table is in the up position and is securely locked in place.</p>

					<p>Ensure the outlet chute is positioned facing either forwards or backwards, parallel with the direction of road travel, and securely locked in position.</p> <p>Ensure the machine is correctly coupled to the tow ball of the tow vehicle, and that the safety chain and trailer wiring are connected to the tow vehicle.</p> <p>Ensure the jockey wheel is locked in its up position.</p> <p>Adjust driving behaviour, factoring in the additional weight and length that the chipper adds to the tow vehicle.</p>
Hot exhaust	Heat burns	2	2	4	Keep bare hands and other body parts a safe distance away from the exhaust.
Discharge material	Eye injury, minor cuts and/or scrapes	2	2	4	<p>Always wear safety glasses when operating the machine.</p> <p>Keep body parts away from the outlet chute discharge area.</p> <p>Do not put the machinery in a place where the outlet chute is directed on a hard surface which may cause material to ricochet.</p> <p>Always keep bystanders at a safe distance away from the machine.</p> <p>Ensure the swivel outlet chute is oriented in the correct direction before chipping and ensure that it is locked in this position.</p>
Weight of the chipper	Straining, crushing	2	2	4	<p>Place the machinery on firm level ground when operating.</p> <p>If the machine is not on level ground, ensure it is always attached to a tow vehicle to prevent unintended movement.</p>
Exhaust fumes	Respiratory irritation Carbon monoxide poisoning	2	2	4	<p>Place the machine in a location where the operator is not exposed to direct exhaust fumes.</p> <p>Do not operate the machine in an enclosed area as exhaust fumes contain carbon monoxide which is poisonous, colourless, odourless, and tasteless.</p> <p>Only operate the machine in a location that is well ventilated.</p>
Turntable	Impacts, crushing, pinching	1	3	3	After adjusting the position of the turntable, ensure that both locking pins are fully engaged.
Belt drive and engagement system	Skin pinching and/or abrasions	1	2	2	<p>Ensure all guarding is in place and properly secured.</p> <p>Turn off the machine before inspecting and/or servicing the belt drive and engagement system.</p>