HANSA™

chippers for a lifetime

Hansa C27

Operation, maintenance and safety manual

All operators must fully read and understand this operator's manual before using the chipper.

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What can my Hansa chipper process?

Intended uses of the chipper

The C27 Hansa chipper is built to process organic material including wooden branches not exceeding 160 mm diameter.
Do NOT use the chipper for any other purpose.

Organic wastes include:

- **Prunings, stalks, roots, vegetable matter, hay, grass, bark**
- **Branches**
- **Palm fronds**
- **Dead and hard timbers (Note: these will dull the knives faster)**
- **Paper or cardboard**

Do NOT process:

- **Flax, root balls**
- **Bones, soil, sand, grit, stones, metal**

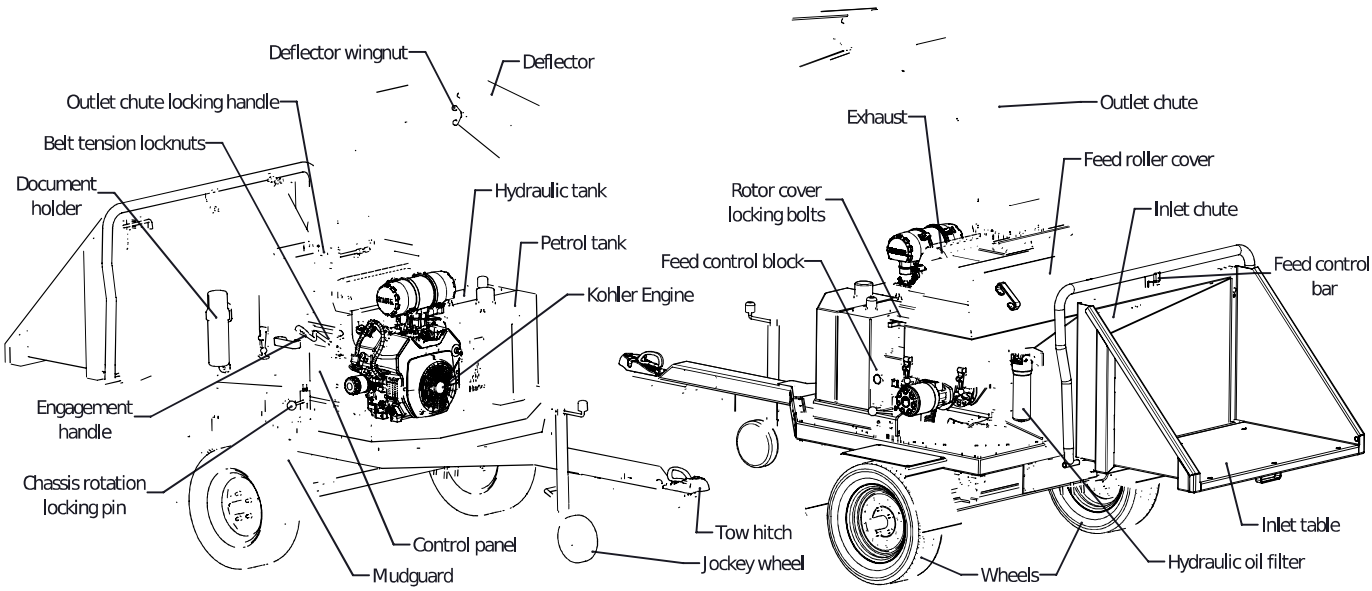
If you have any questions, contact your authorised dealer.

Do NOT exceed 160 mm branch diameter

Receiving your Hansa Brush Chipper

Congratulations on the purchase of a Hansa Model C27 Brush Chipper.

Chipper components



Safety

Preventing accidents is the responsibility of every equipment owner. Ensure every operator is familiar with this manual; especially with safe operation procedures of the machinery, how to identify hazards and the steps required to avoid injury while handling and operating the chipper. Relevant information is contained in this manual.

- **Do NOT** modify the design of the chipper.

Operator competency

Only people over the age of 16 are to operate the chipper. Ensure that every person operating the chipper understands and follows the safe operating procedures as specified in this manual.

- **Do NOT** allow persons to operate machinery without full and proper instruction in the use and safe operation of the chipper and maintenance as detailed in this manual.

Identifying hazards and risks

Identify hazards and risks, and take preventative steps to avoid accidents and minimise risk. Possible hazards include, but are not limited to, moving parts, thrown objects, weight of chipper and components, and the operating environment.

Below is a list of hazards and actions required to prevent injury.

Hazard	Risk	Corrective action
Dust	Injury or irritation of the eyes Respiratory irritation	Wear safety glasses Process freshly cut materials and / or wear a dust mask
Exhaust Fumes	Respiratory irritation	Place the chipper in a manner that the operator or onlookers are not exposed to direct exhaust fumes
Hot Exhaust	Heat burns	Keep bare hands and other body parts a safe distance away from hot exhaust
Fire	Heat burns	Clear any build-up of chipping debris around the engine and exhaust regularly
Belt Drive	Skin pinching and/or abrasions	Ensure that the belt guard is in place, and keep away from the belt
Cutting rotor and knives	Pinching, crushing, cutting, severing	Keep hands and other body parts out of the inlet chute ✓ Use a stick to push materials into the inlet chute feed roller ✗ **Do NOT** push material into the feed roller with your hands
Feed swing arm	Crushing, severing	Do not touch or approach the feed roller motor and swing arm while the machine is operating
Feeding roller and feeding material	Being pulled into chipper resulting in possible crushing, cutting, severing	Do not stand directly in front of the inlet table while feeding material into the chipper; stand to either side. Do not climb onto the inlet table or enter the infeed chute unless the machine is off, and the cutting rotor is stationary
Sound	Damage to hearing	Always wear hearing protection when operating the machinery
Discharge material	Eye injury, minor cuts	Always wear safety glasses when operating the machinery ✗ **Do NOT** stand in front of the outlet chute ✗ **Do NOT** face the machinery in a place where the outlet chute is directed on a hard surface

⚠ Feeding material	Cuts and scrapes	Wear tight fitting safety gloves Wear tight fitting long sleeves and pants to cover bare skin when operating the machinery
⚠ Weight of the chipper	Straining, crushing	Place the machinery on firm level ground ✖ **Do NOT** attempt to move the machinery up/down slopes unless is attached to a towing vehicle
⚠ Pinch points	Pinching, crushing	When opening/closing the inlet table, bonnet, or other guard, it is recommended to use the handles provided
⚠ Petrol, oil, grease	Poisoning, skin irritation, harmful vapours	Take care when handling petrol, oil and grease Wash skin if contaminated with petrol, oil or grease ✖ **Do NOT** refuel the chipper in enclosed areas

Towing safety

- ✔ Rotate the discharge chute to face the opposite direction of the towing vehicle before towing and lock into position
- ✔ Lock the feed table in the up position
- ✔ Connect the tow coupling to the towing vehicle (check the ball dimensions are the same as the coupling)
- ✔ Connect safety chain with shackle
- ✔ If the machine is fitted with brakes, check handbrake is off and road brakes are on by removing the reversing lever
- ✔ Plug in lights and check they are operational
- ✔ Check wheel nuts and axle U-bolts periodically to make sure they are secure
- ✔ Ensure the jockey wheel is in the up position and locked away during transport
- ✔ Ensure the rotating assembly is positioned facing forwards (with the engine at the front, feed chute at the rear) and the chassis rotation locking pins are down in the locked position
- ✔ Ensure the machine is towed in accordance with local trailer transport regulations

Operation

The chipper is self-feeding and has a large inlet opening. It can process:

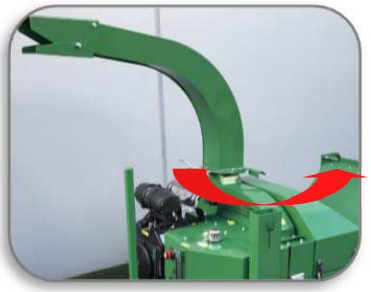
- Prunings, stalks, vines, leaves, roots and vegetable matter, paper and cardboard
- Freshly cut material is better to process than dry material
- Maximum capacity is 160 mm diameter branches

It is recommended to keep a wooden stick handy, approx. 60 mm diameter x 1000 mm long for:

- Pushing in short, brushy and very leafy materials
- Keeping the inlet table clear

Outlet chute adjustment

The C27 is fitted with a freely rotating outlet chute, allowing the operator to precisely control the direction of material discharge from the machine. The chute can easily be adjusted by undoing the clamping bolt, adjusting the outlet chute direction as needed, then doing the clamping bolt back up.



Additionally, the end of the outlet chute is fitted with two deflector plates that you can adjust to control the angle and distance that material is discharged. A wingnut is located on the side of the upper deflector to lock it in place.

360-degree turntable adjustment

The chipping components of the C27 are coupled to the chassis via a freely rotating turntable. This allows the operator to feed material into the chipper from any direction, eliminating the time and effort spent repositioning the machine, and allowing you to use the chipper while still being coupled to the tow vehicle. To reposition the turntable, lift the locking pins on each side of the chipper, rotate the chipper, then resecure the pins. Check the table is locked properly by ensuring each pin locks into one of the 24 positions on the base of the turntable.

Note: The body of the chipper is rather heavy and it may take significant force to rotate.

Locking pin in the 'locked' position

Feed roller control

The C27 is equipped with a feed roller which facilitates the process of feeding material into the machine. The feed roller is controlled via the yellow control bar which surrounds the inlet table. The control bar has three settings:

1) Reverse
2) Neutral
3) Feed

When the bar is fully pushed in, the feed roller will be set to reverse. When the bar is fully pulled out, the feed roller will feed material. The neutral position lies between the reverse and feed positions.

Feed – Neutral – Reverse

Automatic Feed Controller (AFC)

The feed roller is fitted with an electronic automatic feed control system which is designed to limit the feed rate of material into the machine in order to prevent the engine from stalling.

This system eliminates the need to control the speed at which the branches are fed into the chipper manually. A sensor detects the RPM of the rotor; once this speed drops to a pre-set level the feed roller stops and the branch stops feeding into the machine. The engine then picks up in RPM and once it reaches a pre-set speed the feed-roller will start feeding again. The feed roller will also reverse back slightly after stopping (reducing the friction between the wood and knives), resulting in a quicker engine recovery.

The feed roller will only work once the engine is turned on and the engine has reached full throttle after engaging the rotor. If the green LED light on the AFC controller is flashing this indicates the feed roller isn't turning. When this changes to a solid green light (when the engine reaches maximum RPM) the feed roller will be operational.

Hour meter / tachometer

The LCD display will toggle between the current engine RPM and machine hours every 5 seconds. Alternatively, the operator can toggle between the two by pushing the 'set' button.

Emergency stops

The C27 has two emergency stops on the top of the inlet chute. The emergency stops act as an immediate kill switch to the engine. It does not immediately stop the rotor from spinning. The rotor will continue to spin for some time due to its rotational inertia. The feed roller, however, will stop almost immediately. To engage the emergency stop, push the red button. To disengage the emergency stop, twist the red button clockwise until it releases outwards.

- Use it when foreign matter such as sand, stones or metal enter the inlet chute
- Use it in response to an immediate hazard/danger to an operator or onlooker
- After the rotor comes to a halt, follow the normal shutdown procedure in addition to using the emergency stop
- Inspect the machine before resetting the emergency stop
- Under normal conditions, **do NOT** use the emergency stop in place of the regular shutdown procedure

Bottom bump bar (optional)

The C27 may be fitted with a bottom bump bar which acts as an extra safety feature in addition to the emergency stops. Pushing the bump bar in immediately stops the movement of the feed roller. After activating the bump bar, the movement of the feed roller may be reset by setting the feed roller to neutral using the feed control bar. The bump bar is designed to be activated by pushing against it with your hand, knee, foot or other body part in the event in which an operator is caught by in-feeding branches.

Checklist before operation

Engine:

- ✓ Check oil level in engine
- ✓ Check condition of air cleaner
- ✓ Refer to engine manual for more details

Check Hydraulics:

- ✓ Check level of hydraulic fluid
- ✓ Check all hydraulic components for leaks

General:

- ✓ Check drive belt and pump belt for proper tension
- ✓ Check machine for proper lubrication
- ✓ Check nuts and bolts to ensure they are tight
- ✓ Check tires for proper air pressure as stated on the tire
- ✓ Check diesel level
- ✓ Check that the fuel cap is secured and there is no fuel leaking from the tank
- ✓ Check direction of the discharge chute
- ✓ Check guards are all in place and in good condition
- ✓ Check all labels are legible. Replace if necessary (contact Hansa for replacements)
- ✓ Refer to maintenance section for more details

Safe setup procedures

- Ensure all pre-operation checks have been done
- Setup the work site so there is no danger to traffic or public and provide adequate warnings
- Ensure the chipper is positioned on firm level ground
- Ensure the feed control bar is in the neutral position when starting the chipper
- Ensure the inlet table is clear of material when starting the chipper
- Ensure the throttle control lever is the initially in the idle position when starting the chipper
- Ensure the outlet chute is discharged onto soft ground (e.g. grass)
  - **Do NOT** allow the outlet chute to discharge chip onto hard surfaces (such as a paved or gravel surface)
    - ⇨ Ejected material can rebound and cause injury

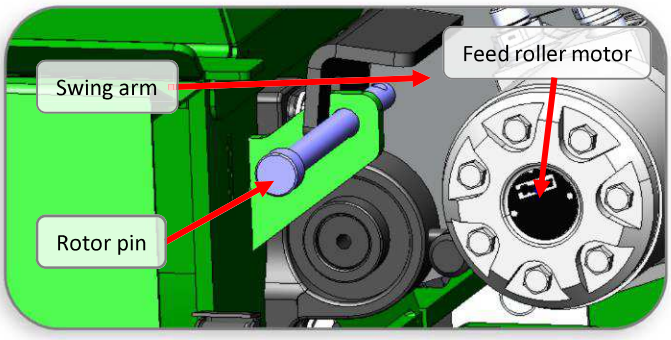
- Keep children and spectators clear of the work area at all times
  - **Do NOT** operate the chipper where there is a hazard to onlookers
  - **Do NOT** allow any person under the age of 16 to operate the chipper
- Refuelling:
  - Take extra care in handling fuels
    - ⇨ They are flammable and vapors are explosive
  - Use only an approved fuel container
  - Always replace and securely tighten fuel cap after refuelling
  - Allow engine to cool down before refuelling
  - **Do NOT** smoke when using or refuelling the chipper
  - Never remove fuel cap or add fuel with the engine running
  - Never refuel the chipper indoors
  - Never store the chipper or fuel container inside where there is an open flame, such as a water heater
  - If fuel is spilled, do not attempt to start the engine. Wipe up the spilled fuel, and move the chipper away from the area of spillage before starting

Safe operating procedures

DO:

- **Wear safety equipment:** Safety glasses and hearing protection must be worn at all times
- **Wear work gloves:** The wearing of work gloves is optional but highly recommended - ensure that the gloves fit tightly
  - **Do NOT** wear loose fitting gloves or gloves with long cuffs
  - ⇨ Loose gloves may get snagged by branches, which could result in the operator being pulled into the chipper
- Tie long hair up
  - ⇨ Long hair could be snagged by a branch and may be pulled into chipper
- Wear clothes that sit tightly
  - ⇨ Avoid scarves and any items that can get caught in the chipper or snagged on branches
- Place the chipper on even ground and direct outlet chute onto soft ground
- Ensure the chipper is positioned so that there is a minimum inlet table height of 600 mm off the ground
- Ensure exhaust is pointing away from the working area and downwind from the operator and onlookers
- Keep proper balance and footing at all times and stand at the same level as the chipper
  - **Do NOT** climb onto the inlet table to push material into the feed roller
- Keep your face and body away from the inlet chute. Stand to the side of the inlet table while feeding material into the chipper
  - ⇨ Standing to the side gives better access to the control bar and helps in keeping clear from flying debris
- Feed only freshly cut material into the chipper
  - **Do NOT** feed in materials covered in gravel, stones and dirt as this can rebound, injure the operator and damage the machinery
- Prune to a size that suits the chipper's capabilities
- Pre-cut side branches
  - ⇨ The branch will 'self-feed' more efficiently
- Keep the engine clean of debris and other accumulations
  - ⇨ This prevents damage to the engine or possible fire
- Feed limbs and branches through butt end first, leaving the bushy head on
  - ⇨ This helps guide the limb down the inlet chute
  - ⇨ It reduces spinning and the occurrence of ejection of small pieces back up the inlet chute
- Feed soft materials intermittently with branches
  - ⇨ The wood chips tend to clean out any soft residue left in the chipper
  - ⇨ The chipper can clog up with soft, wet or fibrous materials
- Keep well clear of the outlet chute discharge area, even when the chipper is not currently processing material
  - ⇨ High velocity, sharp discharge can cause serious injury
- Keep the outlet free of blockage
  - ⇨ If blockage occurs, turn the engine off and wait for rotor to stop spinning. Open the outlet chute and remove material until the outlet chute is clear
- Keep the feed roller free of blockage

- ⇨ If blockage occurs, turn the engine off and wait for rotor to stop spinning. Remove the feed roller guard by unhooking the four rubber latches. Unhook the springs from the base of the chassis. Lift the swing arm up and insert the rotor pin (located underneath the control panel) into the tab on the housing to lock the swing arm in place (as per the diagram below). You may now safely clear the blockage. Remove the rotor pin, lower the feed roller, reposition the springs, then replace the guard



- Turn off the engine whenever you leave the work area

DO NOT:

- Run the chipper in an enclosed area
  - ⚠ Exhaust fumes contain carbon monoxide which is poisonous, colourless, odourless, and tasteless
- Operate the chipper wearing loose clothing and untied long hair
- Stand at a higher level than the base of the chipper when feeding material into it
- Feed flax and cabbage tree leaves into the machine
  - ⇨ These stringy materials can wrap around the rotor shaft and work their way into the bearing.
  - If any stringy material becomes wrapped around the rotor shaft, remove it before it works itself into the bearing
- Process old materials such as dried wooden branches
  - ⇨ They get very hard and springy when dried out
  - ⇨ They are more awkward to handle
  - ⇨ The knives dull much quicker
- Feed short, stubby pieces of wood into the chipper
  - ⇨ They bounce and spin in the inlet chute
  - Feed short stubby pieces together with longer pieces
- Feed branches that are too large (max 160 mm branch diameter)
  - ⇨ The chipper engine will stall, which could result in damage to the engine or drive belts
- Put soil, sand, grit, stones or pieces of metal into the chipper
  - ⇨ This will damage the sharp edge of the cutting knives and can rebound and injure the operator
- Put root balls and dead wood into the chipper
  - ⇨ This dulls the knives quickly
- Overload the chipper
  - ⇨ If the cutting rotor is slowing down, feed the material in slower
- Transport the chipper while the engine is running
- Tamper with the engine governor settings on the chipper
  - ⇨ The governor controls the maximum safe operating speed and protects the engine and all moving parts from damage caused by overspeed
- Operate the chipper with blunt knives
  - ⇨ This causes excessive vibration which may result in damage to the chipper
- Remove any guards on the chipper unless the engine is turned off and the cutting rotor has come to a complete standstill
- Enter the inlet chute
- Get on, or lean over the feed table
- Put hands or any other part of the body or clothing:
  - ⇨ Inside the inlet chute
  - ⇨ Inside or near the opening of the discharge chute
  - ⇨ Near any moving part
- Use the feed control bar as a handle to manoeuvre the machine

Starting procedure

Before proceeding, ensure the ‘safe setup procedure’ has been followed on page 5 of this manual.

1

Ensure the rotor is disengaged by winding the engagement handle in the counter clock-wise direction until the handle comes to a stop (located next to the control panel).

2

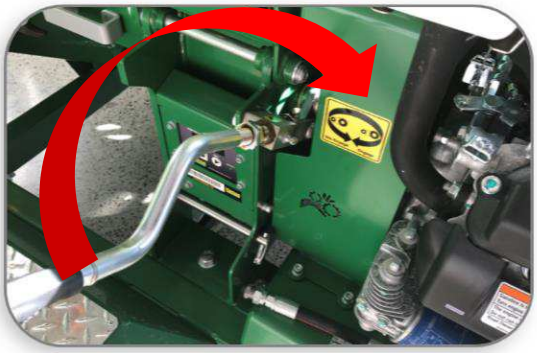
Move the engine throttle control to approximately half throttle.

3

Insert the key and turn it to the start position and hold until the engine has started. Allow the engine to warm up for 1-2 minutes before engaging the rotor.

⚠ **WARNING:** Never run the starter motor for more than 10 seconds at a time. Allow to cool for 1 minute before attempting another start.

4



Gradually and slowly engage the rotor by winding the engagement handle in the clock-wise direction until it comes to a stop. This should be done slowly to allow enough time for the cutting rotor to pick up speed without stalling the engine.

5

Increase throttle to full for chipping (move the throttle lever to the left-most position).

Note: Engine must run at full throttle for the automatic feed and feed roller to operate. Refer to the ‘Automatic Feed Control’ section on page 4 to set the automatic feed control to the desired setting.

Shutdown procedure

1

To shut the machine down, move the throttle control lever to the idle position (far-right position).

2

Once the engine has been given enough time to slow down to idle speed (about 10-15 seconds), disengage the rotor by winding the engagement handle in the counter clock-wise direction until the handle comes to a stop.

⚠ **WARNING!** Only engage and disengage the rotor at idle speed otherwise excessive vibration and belt friction may cause damage.

3

Allow the engine to cool down by running at idle for at least 1 – 2 minutes before shutting down. Turn the ignition key anti-clockwise into the off position to shut the chipper down.

⚠ **WARNING!** The heavy rotor will continue to turn for some time after the engine has been shut down. Do not open the rotor housing cover until the engine and cutting disk have completely stopped and the rotor is disengaged.

Troubleshooting

- The chipper won't start
  - The engine oil level might be too low
    - ⇨ The chipper is fitted with oil alert and will not start if the oil level is too low
    - ✓ Check the oil level and top up if required
  - The chipper is placed on a slope
    - ⇨ The chipper is fitted with oil alert and will not start if the oil is not level
    - ✓ Move the chipper to level ground
- Belt drive engagement will not work
  - The housing might be blocked
    - ✓ Turn engine off, disconnect the spark plug wire, ensure rotor has completely stopped, remove debris, restart engine, then attempt to re-engage the belt drive
- Drive belts squealing/smoking
  - Drive belts are loose/damaged
    - ✓ Turn the engine off, disconnect the spark plug wire, ensure rotor has completely stopped. Follow the belt tensioning procedure on page 13
- Discharge slows down

- The chipper is clogged up
  - Turn the engine off, disconnect the spark plug wire, ensure rotor has completely stopped, remove debris, then close and lock the outlet chute

- Outlet chute is blocked
  - ⇨ Outlet is pasted with wet/leafy material
    - Feed hard, dry material in with softer material
    - Turn the engine off, disconnect the spark plug wire and ensure rotor has completely stopped. Open up the outlet chute and clear blockage
- The material is ejected in long strips
  - The knives and/or anvil might be blunt
    - Turn the engine off, disconnect the spark plug wire and ensure rotor has completely stopped. Inspect and sharpen or replace knives and/or anvil as required. Ensure correct clearances between knives and anvil
- The chipper starts making unusual noise, the cutting rotor strikes a foreign object or the chipper starts to vibrate
  - Turn the engine off, disconnect the spark plug wire, ensure rotor has completely stopped, then inspect for damage
  - Replace or repair any damaged parts
  - Check for and tighten any loose parts
  - **Do NOT** attempt to repair the chipper unless you are competent to do so
- The chipper stalls when material is being fed
  - ⇨ Auto Feed Control is not working
    - Check that AFC is on
    - Check the Autotrip setting is not at setting 0 or 20 (manual mode)
    - If AFC is not working, contact Hansa
- The feed roller is not turning
  - ⇨ Engine is not running at full throttle
    - Increase the engine throttle to max RPM
- The feed roller is running too fast/slow
  - ⇨ Hydraulic pump belt loose/broken
    - Tension/replace belt

WARNING! Do NOT open the housing unless the engine and cutting rotor have completely stopped.

Maintenance & service

Knife re-sharpening and knife replacement

How do I know that the knives need re-sharpening?

- ⇨ Chipper is vibrating excessively when processing material
- ⇨ Chipper is making more noise than usual when processing material
- ⇨ Rotor RPM is dropping more quickly than usual
- ⇨ Material comes out in long strips

WARNING! Do NOT operate your chipper with blunt knives.

- ⇨ Blunt knives will cause excessive vibration
- ⇨ Blunt knives result in damage to the chipper

[redacted]