TROUBLESHOOTING GUIDE

TOP 10

BRUSH BANDIT CHIPPERS

6750 Millbrook Rd. • Remus, MI 49340 • **1-800-952-0178**

FIND US ONLINE WWW.BANDITCHIPPERS.COM

Bandit

EMPLOYEE-OWNED

CHIPPER START-UP

Review these basic points with equipment owner, check off each as done. This is only basic information and not to replace detailed instructions in manuals, decals, videos or ANSI/OSHA regulations.

Customer - _____ **Model** - _____

Date - _____ **S/N** - _____

AWARENESS EQUALS SAFETY!

Operator safety depends on the operator and how well he or she follows the machine's safety guidelines provided in the owner's manuals, safety decals, start-up / operator's videos and ANSI/OSHA standards.

EQUIPMENT INSPECTION

To ensure safety and optimum performance, always inspect the machine before and after each use. Before attempting any type of maintenance disengage the clutch, turn off the engine, wait for the disc/drum to come to a complete stop, install the disc/drum lock pin, disconnect the battery, and make sure the ignition key is in your possession.

Inspect the trailer itself:

____ Towing hitch and safety chains (make sure hitch matches coupling size, chains crossed and secure)

____ Tire pressure and lug nuts / axle (refer to manual or lug nut, torque and axle maintenance. See side walls on tires for pressure).

____ Walk around the unit looking for loose nuts and bolts or debris that may fall off during transportation or operation (refer to manual for torques).

____ Make sure the trailer plug / wiring matches the vehicle socket.

____ Check that all lights and turn signals are working properly

____ Check brakes and actuators for correct operation.

____ Check that all safety decals are clear and legible / review safety procedures.

____ Check and install discharge transport bolt.

____ Secure wooden pusher paddle and instruct on its use.

____ Secure the folding infeed tray in the closed position for transport.

Grease all required lubrication points:

____ Use an EP-2 Lithium type grease. Purge the chipper bearings (Model 990 chipper bearing: 8 pumps of grease per month).1 shot/pump for the feedwheel bearings. (Bearings have a relief in them, so they can not be over greased).

____ Clutch (per manual).

____ Oil the slide box routinely (show and explan how E-Z Climb works). 10W-30 motor oil.

____ Lubricate all chains: discharge and feed.

Check all liquid levels:

____ Fuel (explain diesel and gas) and shut off (if applicable) and filters location and use

____ Hydraulic oil (3/4 to 7/8 full), and shut-off (if applicable) and filter location and use.

____ Engine oil (see engine manual).

____ Coolant levels (if applicable, see engine manual).

____ Hydraulic fluid clutch (if applicable, see manual).

____ Bearing box / gear box (if applicable, see manual).

Check the following internal components:

____ Clutch for proper adjustment (refer to manual for adjustment).

____ Belts (refer to manual for adjustment) ***Tension must be checked after the first few hours of operation and until belts stop stretching.***

____ Knives and proper installation (refer to manual for correct size, sharpening, positioning and wear limits).

____ Proper knife nut and bolt replacement schedule, only use the hardware 4-5 knife rotations. Torque 1/2"-13NC Knife bolts to 70-80 ft.-lbs. Torque 5/8"-11NC Knife bolts to 180 ft.-lbs.

____ Anvil or knife bed for the proper gap and a square edge. (demonstrate adjustment / setting). Disc chipper models 65-250 with .060" clearance. Disc chipper model 255 with .080" clearance. Disc chipper models 75, 280, & 1850 and all drum chippers 990-2090 with .120" clearance

____ At the time of knife and anvil maintenance, inspect disc / drum housing area for foreign debris, wear or cracks.

If problems arise, contact dealer or manufacturers.

Sharp knives and correct anvil spacing will minimize the risk of clogging the discharge chute and maximize chipping performance!

Check the following external components:

____ Hydraulic components for leaks (tighten fittings as needed). ***Never use fingers or skin to check for leaks*** (cardboard works well).

____ Engine air filter (inspect, service and replace as needed).

____ Fuel filter / water separator.

____ Feed control bar for the proper operation and demonstrate tension adjustment.

____ Make sure all optional equipment is functional and running correctly (show and explain how it works, ie: winch, loaders, stabilizers, controls, etc.).

____ Make sure the hood bolts and safety lock pins are in place and secure (show chipper hood engine disable plug oper ation).

____ Inspect all safety components, for proper function (explain operation).

____ Explain feed wheel coupler system.

____ Set screws on bearings and Grip Tite system / how to check.

____ Make sure the radiator and radiator screen is clear of debris. Show how to clean debris screen and explain why.

____ Show lock pin locations and show proper operation.

OPERATOR PRECAUTIONS

The following are basic guidelines for operators for hand-fed units, no loader feeding.

____ No foreign material is to run through this wood chipper.

____ Block tires before operating.

____ Make sure infeed tray is secured in the open position.

____ Make sure the area around the machine is free of all objects that can obstruct your movement when working with the machine. Check for loose tools or foreign objects, especially in the infeed hopper area. All tools not in use should be secured in a tool box.

____ Disengage the clutch before starting the engine.

____ Point the discharge in a safe direction, away from people and buildings / lock into position before chipper is started.

____ Never operate or service the chipper alone. Two people must be on site.

____ Keep hands and feet out of the infeed hopper while the chipper is running / use wooden pusher paddle to assist in feeding.

____ Material that has been raked up should be placed in the chip truck or chip pile directly, **DO NOT RUN THROUGH THE CHIPPER!**

____ Smaller material should be placed on top of larger material.

____ Feed brush into the chipper, butt-end / large end first.

____ Never use any type of open flame near the chipper.

____ Know the capabilities and limitations of the chipper.

START UP

After following all of the above safety checks, you are ready to operate the machine.

____ Feed control bar in “off” position.

____ Make sure the chipper hood engine disable plug is installed and the hood pin is padlocked in place.

____ Push and hold the “Murphy Switch” button (if applicable).

____ Show and explain auto-feed operations (if applicable).

____ At low engine idle, engage the clutch as detailed in the owners manual.

____ Keep an eye on the engine RPM to keep from stalling the engine.

____ If you hear any foreign or odd sounds from the machine, shut it down. Determine the cause and repair as needed before restarting.

____ Once the clutch is engaged, allow adequate time for warm-up before going to full RPM. Now it is safe to run full throttle. (Always chip at full throttle).

SAFETY GEAR

Wearing the appropriate safety gear is crucial to operator safety. Recommended gear includes, but is not limited to: hard hat, eye protection (shield or safety glasses), close-fitting gloves and clothing, as well as hearing protection.

KNOW YOUR MACHINERY

Always make sure the operator's manual is accessible to the unit. Do not operate the machine until each operator has read and understood the operator's manual, watched the provided operations video, and understands the decals and instructions printed on the chipper and follows all ANSI/OSHA standards.

READY FOR CHIPPING!

Once the engine is at full throttle, you are ready to begin chipping! Remember, this information is in no way replacing the information received in the manufacturer's manual!

Printed Name - _____

Signature - _____

Date - _____

TOP 10 TROUBLESHOOTING GUIDE

All information presented here is covered in the manuals. The manuals must be read and understood by both the customer and dealer personnel. Above all, use safety-conscious and properly trained people to operate and service the equipment. They must at all times follow the instructions in the manuals, on the videos, on equipment decals, and the standards published by ANSI and OSHA.

ALWAYS INSPECT EQUIPMENT!

To ensure safety and optimum performance, always inspect the machine before and after each use. Before attempting any type of maintenance disengage the clutch, turn off the engine, wait for the disc/drum to come to a complete stop, install the disc/drum lock pin, disconnect the battery, and make sure the ignition key is in your possession.

START-UP AND OPERATING PROCEDURES

All personnel operating the equipment must read and understand the start-up and operating guidelines.

It is the responsibility of the person delivering the equipment to go over the start-up procedure.
Copies of our chipper start-up procedures can be found on pages 2-3.

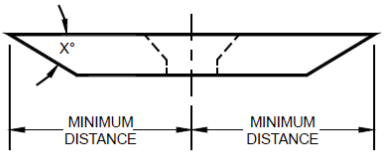
Maintenance, along with proper operation, is the most important thing you can do to get the optimum production and life out of your chipper. **Failure to follow proper maintenance procedures will affect chipper life and possibly void the warranty!**

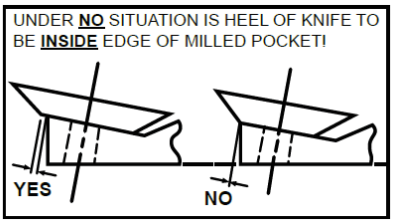
#1 KNIVES AND ANVIL.

The knives and anvil are the heart of the machine; if they are not in top condition, it will affect the chipper. The knives can last 15 minutes or 20+ hours; depending on the material being fed into the chipper.
DO NOT OVERLOOK THIS! The anvil must be checked and adjusted with each knife service.

- **Correct knife angle and grinding procedures.**
- **Proper knife width** – do not let heel of knife set inside knife pocket.
- Only use new **Bandit-approved knives** and professionally-sharpened knives.
- **Proper hardware:**
  - » Factory-approved Bolts and Lock Nuts
- **Properly torqued knife bolts and nuts.**
- **Replace knife bolts and nuts after 4-5 knife changes/rotations.**

Shown here: Damaged chipper knives





PROPER KNIFE GRINDING BENEFITS:

- **Proper sharpening procedures will pay dividends!** Maintaining the proper angle on your chipper knives will not only reduce your fuel consumption, but also increase chipper life.
- Operating your chipper with dull knives increases the amount of power required to chip, increases machine vibration and causes feeding problems. The extra vibration will cause cracks to develop throughout the machine.
- **It's up to you** to ensure your knives are sharpened to the original OEM specified angle. Purchasing an angle protractor will allow you to verify the knives were sharpened to the proper angle. (See owner's manual for proper angle.)

Knife Saver:

- The use of a Knife Saver will greatly improve the life of the knives.
- Use the Knife Saver and you will get a back grind on

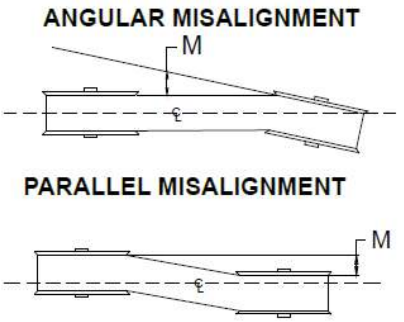
Anvil Clearance Gauge:

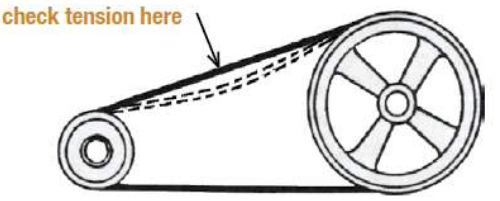
- Always check for proper knife-to-anvil clearance (check manual for specifications).

#2 BELT MAINTENANCE.

- New belts stretch very soon and must be adjusted several times in the first few hours of operation.
- The alignment must also be maintained. Slipping belts will affect the performance of feeding.

- **THE BELTS MUST BE ADJUSTED!**





Side view of Chipper and Engine Sheave

#3 CLUTCH ADJUSTMENT.

Along with belt adjustment, the clutch cannot be overlooked. Adjust the clutch per manufacturer's manual. If not adjusted correctly, the clutch will slip under a load, causing feed problems. **A BURNT-UP CLUTCH IS NOT COVERED UNDER WARRANTY!**

- **A new clutch requires several adjustments during the break-in period.**
- **Do not engage/disengage the clutch at high RPM!**
- **Do not use the clutch to dislodge items!**

Over Center Clutch

Auto Clutch

#4 LUBRICATION.

All bearings, pivot points, hinges and chains need to be lubricated per owner's manual.
The slide box on the feed system must be oiled to help ensure proper operation. Use 10W/30 motor oil to lubricate the metal-to-metal surfaces and the slide-to-angle iron surfaces.

- **The slide box must operate freely without binding. If not, the feed system will not operate correctly.**
- **DO NOT GREASE YOKE SLIDE BOX!**




#5 ENGINE MAINTENANCE.

All filters, radiator screens, radiator, coolant level, water separators, oil and filters must be checked, serviced and changed per engine manufacturer's manual.

- Chippers produce dirt, sediment, chips and dust; **the engine cannot run if it cannot breathe.**
- Not following these maintenance items could cause overheating, poor performance, and could cause possible engine damage that will not be covered under warranty.
- **These items must be addressed daily, and sometimes numerous times throughout the day.**

#6 ENGINE RADIATORS & SCREENS.

The radiator must be serviced daily and sometimes multiple times throughout the day, depending on conditions.

- Clean the radiator. (see manual)
  Clean the radiator with compressed air and/or pressurized water (soap may also be needed) to clean the radiator, depending on the level and type of debris. If pressurized water is to be used, be careful not to turn the debris hard and pack solid between the radiator fins.

- Most chippers are equipped with a “sucker” fan which pulls the air from the front of the shroud. This works best for the chipper application, and keeps most of the material on the outside of the screen for easy cleaning.

#7 CHIPPER HOOD ENGINE DISABLE PLUG.

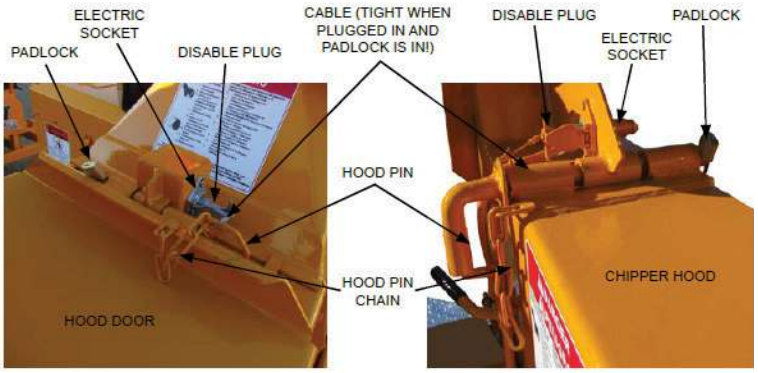
Chippers are built with an Engine Disable Plug on the chipper hood that disables the engine if the hood pin is not properly in place, holding the chipper hood in the closed position.

- Correctly installed and maintained, the engine will not start (or it will shut off) **if the plug is disconnected.**

- The chipper hood must **NEVER** be opened or closed if the chipper disc/drum is turning.

- **Always check that the engine disable plug is installed correctly.** If the engine does not start, this is the first thing that needs to be checked.

- The terminals on the Chipper Hood Engine Disable Plug socket may need to be spread to get a good connection and/or also check for corrosion on the terminals.



#8 HYDRAULIC SYSTEM MAINTENANCE.

The hydraulic system must be maintained by checking pressures and doing regular filter and oil changes per owner's manual. A relief set wrong (or pressure going over relief caused by contamination of a valve) is a problem that will cause many issues with feeding.

- **Start with a couple of simple checks if the feed system is acting up:** look at any dump cartridges or solenoids in the system (often tapping of the block or removing the cartridge and cleaning it will take care of the problems). If it is contamination, the debris will move through and be caught in the filter.

- **The filters must be changed per the owner's manual in order to work properly.** The pressure settings for each function must be maintained. See operator's manual.

- **The locations for setting the hydrauilc pressure will vary**, depending on the model, year and options of your chipper.

Pressure Check Kit

#9 FEED SYSTEM SLIDE BOX.

- **Bottom Feed Wheel Clean Out Door:** Make sure that this is cleaned regularly, so no binding occurs (machine must be shut down).

- **Yoke Spring Adjustment:** Wood will not feed properly if there is too much down pressure. Too little pressure will allow the feedwheels to spin on the wood.

#10 AUTOFEED.

The autofeed settings must be maintained or problems will arise. The autofeed manuals have a troubleshooting guide and information on settings.

- One of the first things to look at when checking the autofeed system is the engine RPM. (If the engine does not go back to original RPM, the autofeed will not allow the feedwheels to continue to run.)
- The next thing to check to see if the system is functioning correctly are the cartridges and valves in the system. See if these are stuck or full of debris. Even if the electrical part of the autofeed is working correctly, the oil will bypass and not allow the feedwheels to function properly.
- Refer to the autofeed manual for troubleshooting and the owners manual for additional troubleshooting and information on settings.

NOTES:

TYPICAL CHIPPER SERIAL / WORK ORDER NUMBER LOCATIONS:

1. Beltshield
2. Hinged chipper hood under handle
3. Top of throat
4. Tongue and a-frame side
5. Top of frame
6. On the side of the frame under the radiator. (Drum chippers)
7. W/O # on top of tongue
8. The rope/line shear clearance needs to be checked every 50 hours of operation and every time the knives are changed or sharpened.
9. Make sure the shear counter knives are sharp and have not lost their edge every 50 hours of operation.
10. File, machine sharpen, or replace as needed. A maximum of 1/8" (3.1 mm) can be machined off the shear counter knives. Make sure to keep the 35° angle.
11. Make sure the adjustment hex bolts on the mount bar are tight and Loctited in place.

NOTE: The engine information is located on the engine block. The clutch information is located on the clutch plate.

The line shear clearance needs to be checked every 50 hours of operation and every time the knives are changed or sharpened. Make sure the shear counter knives are sharp and have not lost their edge every 50 hours of operation. File, machine sharpen, or replace as needed. A maximum of 3.1 mm (1/8") can be machined off the shear counter knives. Make sure to keep the 35° angle. Make sure the adjustment hex bolts on the mount bar are tight and Loctited in place. Make sure the counter knife bolts are tight and Loctited in place.

VISIT US ONLINE TO FIND YOUR LOCAL AUTHORIZED BANDIT DEALER FOR YOUR PARTS AND SERVICE NEEDS.

6750 Millbrook Rd. • Remus, MI 49340 • **1-800-952-0178**

FIND US ONLINE **WWW.BANDITCHIPPERS.COM**

Bandit

EMPLOYEE-OWNED