



Busy Bee Tools

Industrial 22" Planer BBPL22



User's Manual



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This manual serves as an indispensable source of critical safety instructions pertaining to the correct setup, operation, maintenance, and servicing of this machine/tool. It is of paramount importance that you not only retain this document but also reference it regularly. Furthermore, it can be used to educate and inform other individuals operating this equipment. Neglecting to thoroughly read, comprehend, and adhere to the directives contained within this manual could result in severe consequences, including fire hazards or life-threatening personal injuries such as amputations, electrocution, or even fatalities.

The owner of this machine/tool assumes complete responsibility for ensuring its safe utilization. This responsibility encompasses, but is not restricted to, the following:

1. Proper Installation: Ensure the machine/tool is installed in a secure and safe environment.
2. Personnel Training: Conduct comprehensive training for all personnel authorized to operate the equipment.
3. Usage Authorization: Authorize individuals to use the machine/tool only after ensuring their competence.
4. Inspection and Maintenance: Regularly inspect and maintain the equipment to guarantee its continued safe operation.
5. Manual Availability: Make this manual readily available and ensure that all relevant individuals understand its content.



6. Safety Devices: Implement and maintain all prescribed safety devices.
7. Tool Integrity: Ensure the integrity of cutting/sanding/grinding tools.
8. Personal Protective Equipment (PPE): Enforce the usage of appropriate personal protective equipment.

It is crucial to recognize that the manufacturer cannot be held responsible for any injuries or property damage resulting from negligence, inadequate training, unauthorized machine modifications, or improper use. It is incumbent upon the owner and operators to exercise utmost diligence and care in the safe operation of this equipment. Your commitment to safety is paramount, and it is essential to mitigate any risks associated with its usage.



It is crucial to be aware that certain dust generated during power sanding, sawing, grinding, drilling, and various construction activities may contain chemicals recognized by the State of California to have the potential to cause cancer, birth defects, or other reproductive harm.

Examples of these chemicals include:

- Lead, typically found in lead-based paints.
- Crystalline silica, which can be present in materials like bricks, cement, and other masonry products.
- Arsenic and chromium, originating from chemically treated lumber.

The level of risk associated with exposure to these chemicals can vary, depending on the frequency of engagement in such activities. To mitigate your exposure to these chemicals and safeguard your well-being, consider the following precautions:

1. **Work in a Well-Ventilated Area:** Perform your tasks in an environment that is adequately ventilated. Proper ventilation helps disperse harmful particles and reduces the concentration of airborne contaminants.
2. **Utilize Approved Safety Equipment:** Employ approved safety equipment specifically designed for the task at hand. Dust masks engineered to filter out microscopic particles are particularly effective in safeguarding your respiratory health.

By adhering to these safety measures, you can significantly reduce the potential risks associated with exposure to these chemicals and ensure a safer work environment for yourself and those around you. Prioritizing safety and responsible handling of materials is essential in all construction activities.

Introduction	4	Section 8: Service and Troubleshooting	22
General Machine Information	5	Trouble Shooting	22
Machine Data Sheet	6	More Trouble Shooting	23
Section 1: Safety	7	Section 9: Wiring and Electrical Diagram	24
General Shop Safety Instructions	7	Wiring Safety Instructions	24
General Machine Safety	7	Wiring Diagram	25
Planer Specific Safety Instructions	8		
Section 2: Power Supply Requirements	9	Section 10: Machine Diagrams and Parts	26
Circuit Requirements and Motor Information	9	Machine Diagrams	26
Grounding	9	Parts List	31
Extension Cords	9	Section 11: Warranty and Return Policy	39
Section 3: Set-up instructions	9		
Tools Needed	9		
Unboxing the Machine	9		
Hardware Packing List	10		
Initial Clean up	10		
Machine Placement and Floor Mounting.	10		
First Run	12		
Adjustments and Tuning	12		
Section 4: Operations	18		
Overview	18		
Inspecting the first workpiece	18		
Section 5: Safety Accessories	19		
Section 6: Accessories	20		
Section 7: Maintenance	20		
List of lubricants and grease required	20		
Scheduling	20		
Cleaning and Protecting	20		
Lubrication	20		



Introduction

It is with distinct honor and excitement that we present to you the BBPL22, a premier addition to our esteemed line of industrial, precision woodworking equipment. At Busy Bee Tools, we are committed to engineering excellence, and this machine exemplifies our dedication to providing craftsmen with superior tools for their trade.

This manual has been meticulously crafted to guide you through the setup, safe operation, and maintenance of your new BBPL22. By following the detailed instructions and recommendations contained within these pages, you can anticipate many years of dependable and satisfying performance. This commitment to quality underscores Busy Bee Tools' promise of enhancing customer satisfaction through innovation and reliability.

Included within this manual are precise specifications, illustrations, and photographs that represent the BBPL22 in its current configuration. Please note, in our pursuit of continual improvement and to exceed industry standards, Busy Bee Tools reserves the right to make enhancements to this model without prior notice.

For your convenience, we continuously update all our product manuals which are available on our website at www.busybeetools.com. We encourage you to visit this site regularly to download the latest updates and ensure that you are always informed about the best practices for operating and maintaining your machine. Busy Bee Tools prioritizes your safety and satisfaction above all; we are dedicated to ensuring your experience with the BBPL22 is exceptional.

Welcome to the Busy Bee Tools family, where craftsmanship meets innovation.

Contact Us

In case you require additional assistance or have any further questions, please do not hesitate to reach out to our dedicated Customer Service and Technical Support Department at:

Busy Bee Tools Head Office

130 Great Gulf Drive

Concord ON, L4K 5W1

Or at any of our stores across Canada.

Visit our website for the latest deals and for more information. Call us Toll Free: 1-800-461-2879.

Email us at: cs@busybeetools.com

Our team of experts is here to provide you with the guidance and support you need to ensure the safe and efficient operation of your machine. Your satisfaction and safety are our top priorities, and we are committed to assisting you in any way we can.



General Machine Information

Machine Identification

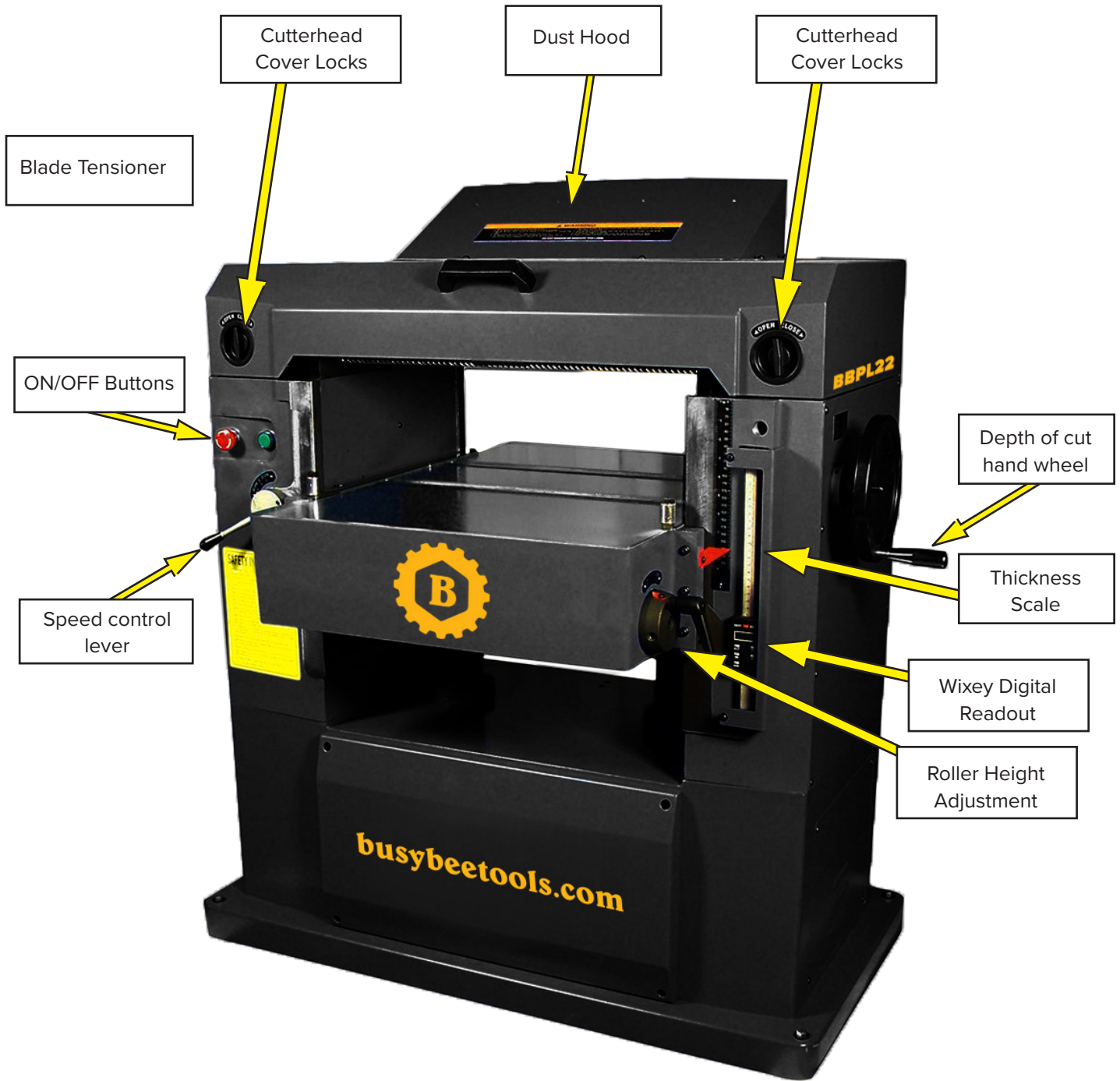


Figure 1: Machine Identification

Machine Data Sheet

Motor	7.5HP, 1-PH, 230V, 60Hz
Min. Circuit breaker requirements	60 AMP
Cutterhead Style.....	6 rows Helical
Number of Inserts.....	138 four-sided, Carbide Inserts
Cutterhead diameter.....	3”
Infeed Roller Diameter.....	3”
Outfeed roller diameter	3-5/16”
Maximum Stock Width.....	22”
Maximum Depth of Cut.....	3/16”
Minimum Stock Thickness	1/8”
Maximum Stock Thickness.....	9”
Minimum Length of workpiece	10”
Feed Speed	20 and 30 FPM
Cutterhead speed.....	5000 RPM
Manual table height	1 Turn 1/16”
Table Size.....	32-1/4” X 23-3/4”
Table Support.....	2 columns
Dust port size	5”
Dust Collection Requirement.....	900 CFM
Footprint	45”W x 32”D x50”H
Shipping Dimensions	48”W x 35”D x 61”H
Shipping G.W.....	703 KG
Net Weight.....	608 KG

Features:

- 7.5 HP powerful motor
- 22” Width capacity
- Durable Construction
- Helical cutterhead
- 3/16” maximum depth of cut
- 20and 30 FPM variable speed
- Wixey Digital thickness readout
- Integrated dust port



General and Specific Safety Instructions

General Shop Safety instructions



Your safety is of the utmost importance. Prior to starting the assembly of this machine, it is imperative that you thoroughly read the instruction manual. Safety symbols and signal words have been incorporated into this manual to draw your attention to potentially hazardous conditions and to convey the significance of the safety messages. It is essential to remember that these safety messages alone cannot eliminate danger and should not replace the implementation of proper accident prevention measures.

(Minor or Moderate Injury): This symbol indicates a potentially hazardous situation that, if not avoided, **MAY** result in minor or moderate injury. It may also serve as a warning against unsafe practices.



Warning Symbol (Death or Serious Injury): The warning symbol signifies a potentially hazardous situation that, if not avoided, **COULD** result in death or serious injury.



Danger Symbol (Imminent Death or Serious Injury): The danger symbol is used to indicate an imminently hazardous situation that, if not avoided, **WILL** result in death or serious injury.



In addition to these symbols, you will also come across a notice symbol, which is employed to alert the user to valuable information regarding the proper operation of the machine. By diligently adhering to these safety symbols and heeding the information in this manual, you can significantly enhance your safety while operating the equipment.

General Machine Safety

1. **Thoroughly Review the Entire Manual Before Operating Machinery:** It is crucial to read and understand the complete manual before commencing any machinery operations. Machinery can pose serious injury hazards to individuals who lack proper training and familiarity with its operation.
2. **Always utilize CSA Approved Safety Glasses During Machinery Operation:** For your safety, it is imperative to wear safety glasses that meet ANSI (American National Standards Institute) standards when using machinery.
3. **Always Wear a CSA Approved Respirator When Operating Dust-Producing Machinery:** When operating machinery that generates dust, it is essential to wear a respirator that has been approved by NIOSH (National Institute for Occupational Safety and Health). Wood dust is classified as a carcinogen and can lead to cancer and severe respiratory illnesses. Your respiratory protection is paramount to your health and safety.
4. **Utilize Hearing Protection When Operating Machinery:** Always wear hearing protection when operating machinery. Prolonged exposure to machinery noise can result in permanent hearing damage, and protecting your hearing is vital for your long-term well-being.
5. **Adhere to Proper Apparel Guidelines:** Avoid wearing loose clothing, gloves, neckties, rings, or jewelry that could potentially become entangled in moving parts of the machinery. Additionally, wear a protective hair covering to confine long hair and ensure you have non-slip footwear to prevent accidents.
6. **Do Not Operate Machinery When Fatigued, or Under the Influence of Substances:** Never operate machinery when you are tired, or if you are under the influence of drugs or alcohol. It is crucial to be always mentally alert when running machinery to maintain your safety and the safety of those around you.
7. **Authorize Trained and Supervised Personnel Only:** Permit only individuals who have received proper training and supervision to operate machinery. Ensure that operational instructions are not only safe but also clearly understood by those using the equipment.
8. **Keep Children and Visitors at a Safe Distance:** Maintain a safe distance between all children and visitors and the work area where machinery is in use.
9. **Secure Your Workshop for Child Safety:** Take measures to childproof your workshop, including the use of padlocks, master switches, and the removal of start switch keys to prevent unauthorized use by children.
10. **Never Leave Machinery Running Unattended:** It is essential never to leave machinery unattended while it is still running. Turn off the power and allow all moving parts to come to a complete stop before leaving the machine unattended.
11. **Avoid Dangerous Environments:** Refrain from using machinery in locations that are damp, wet, or where flammable or noxious fumes may be present. Always ensure a safe operating environment.
12. **Maintain a Clean and Well-Lit Work Area:** Keep your work area clean and well-lit to prevent accidents. Clutter and dark shadows can pose significant safety risks.



13. **Use Properly Rated Extension Cords:** When necessary, use a grounded extension cord rated for the amperage of the machine. Undersized cords can overheat and lose power. Replace damaged extension cords promptly. Do not use extension cords with 220V machinery.
14. **Disconnect from Power Source Before Servicing:** Always disconnect the machinery from the power source before servicing it. Ensure the switch is in the OFF position before reconnecting.
15. **Maintain Machinery with Care:** To ensure the best and safest performance, maintain your machinery with care. Keep blades sharp and clean and follow the manufacturer's instructions for lubrication and changing accessories.
16. **Verify Guards Are in Place and Functional:** Before using machinery, confirm that all safety guards are in place and functioning correctly. Never operate machinery if guards are missing or not working as intended. Your safety relies on the proper functioning of these guards.
17. **Remove Adjusting Keys and Wrenches:** Prior to turning on the machinery, it is essential to cultivate the habit of checking for adjusting keys and wrenches and ensuring they are removed. Leaving such tools in place can result in accidents.
18. **Inspect for Damaged Parts Before Use:** Before using the machinery, conduct a thorough inspection for damaged parts. Check for any issues such as binding or misalignment of parts, broken components, improperly mounted parts, loose bolts, or any other conditions that might impact the safe operation of the machine. Any damaged parts should be promptly repaired or replaced.
19. **Utilize Recommended Accessories:** Consult the instruction manual to identify the recommended accessories for your machinery. Using improper accessories can pose a risk of injury, so it's essential to adhere to the manufacturer's recommendations.
20. **Avoid Forcing Machinery:** Operate the machinery at the speed for which it was designed and avoid forcing it beyond its intended capabilities.
21. **Secure the Workpiece:** Whenever possible, use clamps or a vise to secure the workpiece. A properly secured workpiece not only protects your hands but also allows you to use both hands to operate the machine safely.
22. **Avoid Overreaching:** Always maintain proper footing and balance. Overreaching can compromise your stability and pose a risk of accidents.
23. **Beware of Workpiece Ejection:** Be aware that certain machines may eject the workpiece toward the operator. Take precautions and avoid conditions that could lead to workpiece "kickback."
24. **Lock Mobile Bases (If Used) Before Operation:** If your machinery is equipped with mobile bases, ensure they are locked securely before operating the equipment. This prevents unintended movement during use.
25. **Understand Dust Hazards:** Recognize that some dust types can be hazardous to respiratory systems, both for people and animals, particularly fine dust particles. Familiarize yourself with the hazards associated with the specific type of dust you will be exposed to and always wear a respirator approved for that specific type of dust to protect your respiratory health.

Planer Specific Safety Instructions

1. Do Not use the planer if you are too tired, hungry, sad, mad, or dehydrated. Never work while under the influence of drugs, alcohol, or any medication that creates drowsiness or impaired thinking.
2. Prior to starting the machine, make sure that there are no tools, or loose items on and around the machine, also clear the path around the machine.
3. Verify that all the guards are secure and in place before turning the machine on. Inspect the planer before turning it on to ensure no parts are loose or broken.
4. Hands must be at least 100mm away from the cutterhead.
5. Inspect the workpiece before planing.
6. Never reach under the cutterhead while the machine is running.
7. Never plane a workpiece that is shorter than the distance between the infeed and the outfeed rollers.
8. Never force a workpiece under the cutterhead, allow the machine to dictate the feed speed.
9. Never stand in front of the workpiece while it is exiting the planer.
10. Always have a push stick ready in case you need to push the workpiece into the machine.
11. Never leave the machine unattended while it is running.
12. Always plane with the grain.
13. Place warped boards side against the table.
14. When planing long boards use the help of a second person.



Power Supply Requirements

Circuit Requirements and Motor Information

A 7.5 HP single phase motor Draws 34 Amps at 220 Volts and a frequency of 60Hz.

For optimal safety and performance, we strongly recommend the use of a dedicated circuit and breaker for this machine. It is imperative that you connect your machine to a grounded circuit that is rated for the specified amperage as outlined below. It is essential to note that you should never replace a circuit breaker on an existing circuit with one of higher amperage without seeking guidance from a qualified electrician to ensure compliance with local wiring codes.

If you have any doubts regarding the wiring codes applicable in your area or if you intend to connect your machine to a shared circuit, it is highly advisable to consult a qualified electrician for professional guidance and assistance.

Circuit Braker Requirement.....60 Amps

By adhering to these electrical requirements and consulting with a qualified electrician when needed, you can ensure both the safety and efficient operation of your machine.

The recommended plug and receptacle are NEMA 18-60 plug and NEMA 18-60R receptacle.

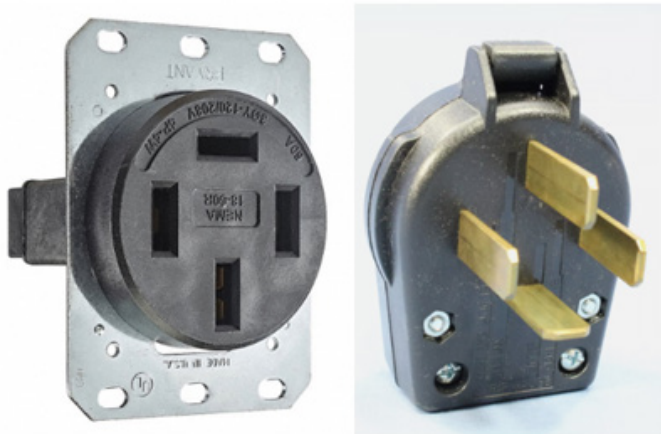



Figure 1: NEMA18-60R NEMA18-60P receptacle and plug.

Grounding

Grounding plays a critical role in minimizing the risk of electric shock in the event of an electrical short. It is essential to ensure that the grounding wire within the power cord is correctly and securely connected to the grounding prong on the plug. Additionally, the electrical outlet used must be properly installed and grounded to effectively provide this safety feature.

All electrical connections must be established in strict accordance with the local electrical codes and ordinances



WARNING

Electrocution or fire could result if this machine is NOT properly grounded correctly. Or if the electrical configuration does not comply with your local codes.

governing your area. By adhering to these grounding guidelines and local regulations, you can significantly enhance the safety of your electrical system and reduce the risk of electric shock hazards.

Extension Cords

The use of extension cords is prohibited. It is advisable to plan the placement of your equipment and the installation of wiring in a manner that eliminates the necessity for extension cords. This is a powerful machine, and it draws high current therefore, the use of an extension cord will create a major safety issue.

By adhering to these guidelines and seeking professional assistance, when necessary, you can maintain the safety and effectiveness of your equipment while using extension cords as a temporary solution.

Set-up Instructions

Tools Needed

To successfully complete the setup process for your machine, please note that the following items are required but not included with your purchase:

- Forklift rated for the weight of this machine or higher (780KG minimum).
- Wrenches 11/13, 17/19, 22/24 mm (included with the machine).
- Torx screwdriver (included with the machine).
- Allen key set (included with the machine).
- Flat screwdriver (included with the machine).

These essential items will contribute to a safe and efficient setup of your machine. Please ensure you have these on hand before proceeding with the installation. Your safety, and the effectiveness of your setup are our top priorities.

Uncrating the Machine

We take great care to ensure that the Model BBPL22 is securely packed before it leaves our warehouse. In the rare event that you notice any damage to the machine after signing for delivery, we urge you to take immediate action.



Please call our Customer Service team at 1-800-461-2879 for guidance on how to proceed.

Warning: The equipment used to lift this machine must be rated at a capacity equal to or above the weight of this planer. Failure to comply may cause serious injury.

Note: Do not throw the crate or the packing material unless you are satisfied that the machine is in good functioning condition.

It's crucial to retain both the crate and all the packing materials in case they need to be inspected by the carrier or their representative. This precaution will greatly facilitate the process of filing a freight claim, should that become necessary. Once you have thoroughly assessed the condition of your shipment and are entirely satisfied, we recommend conducting an inventory of the contents. Your satisfaction and confidence in the received product are of paramount importance to us.

Hardware Packing List

Within the crate you'll find 2 boxes; here are the contents:

Box 1:

- (A) 4 leveling pads.
- (B) 4 Allen keys.
- (C) 4 open end wrenches.
- (D) 4 leveling bolts and nuts.
- (E) 2 lifting eye bolts and nuts,
- (F) 1 knob for handwheel.
- (G) 1 Handwheel.
- (H) 1 Handle.

Box 2:

- (I) 1 dust chute.
- (J) 8 hex head screws M6-1.00X10mm.

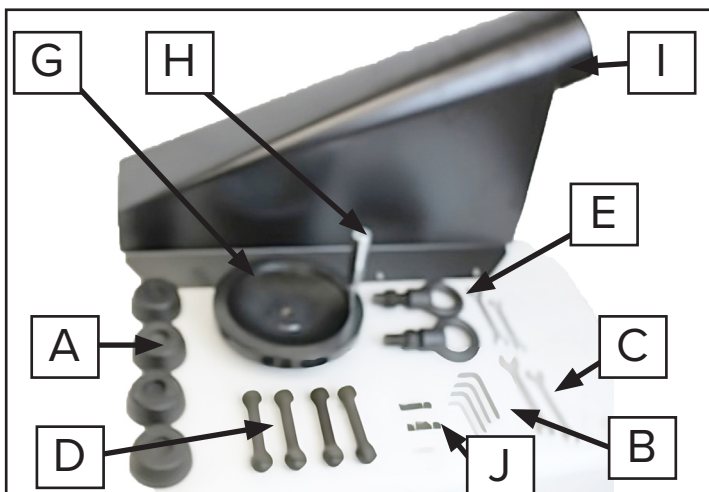


Figure 3: Accessories

Unpacking and Initial Clean up

Uncover the machine by carefully and slowly removing all the fasteners from the crate; then remove all protective plastic wrapping. The crate contains 2 boxes; please open these boxes and take inventory of their contents against the above packing list. If all the parts are present, you can proceed with the initial clean up of the machine.

Thoroughly clean all rust-protected surfaces using a commercial solvent. Avoid using acetone, gasoline, lacquer thinner, or any flammable or paint-damaging solvents. After cleaning, apply WD-40 or a 20W machine oil to the cleaned surfaces.

Machine Placement and Floor Mounting.

Prepare the site where you are planning on placing the

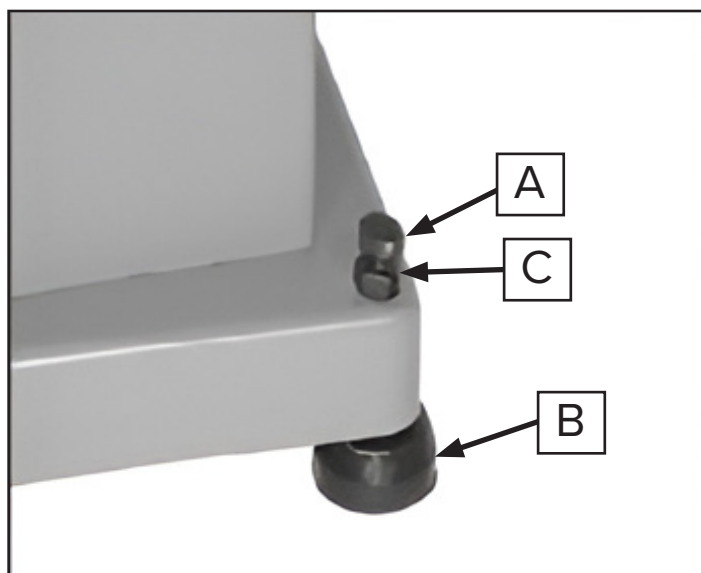


Figure 4: Machine leveling nuts and bolts machine. Make sure the site is cleaned, and the floor is level. Use a forklift or any other lifting device rated to handle the weight of this machine. This planer is heavy, therefore use caution when handling it at all times. Before you move the machine into position make sure that:

1. The lifting eyelets are installed and tightened properly.
2. The leveling bolts and nuts are installed in place.
3. Install the leveling pads under the four corners of the planer.

Thread the leveling bolts (A, Figure 4) into the pre-drilled holes located at the four corners of the planer base. Ensure that the planer is placed on a smooth, level surface. Position the leveling pads (B, Figure 4) beneath each corner of the planer.



Now you are ready to move the machine into position. Lift the planer using a forklift and bring it into position. Once the machine is in its proper location, place a level on the infeed/outfeed table and manipulate the bolts until the table is perfectly leveled; then tighten the hex nuts against the base to prevent the bolts from changing position.

Machine Assembly

With the exception of the dust chute, the table roller handle, and the handwheel, this planer comes fully assembled. Install the dust chute using the 8 screws provided in the same box, see figure 5.

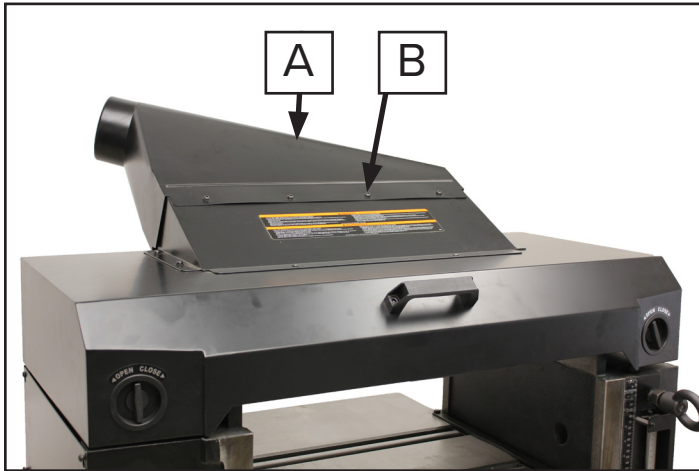


Figure 5: Installing Dust Hood

As for the handwheel D just insert it on its shaft and screw the knob E in until tight. Thread and tighten the table roller handle C on the table roller hub tightly, see figure 6 (D,E and C).

Engage the services of a certified electrician to connect this planer to the electric power. This is a 240Volt 60Amps therefore proper wire gauge, plug and receptacle must be used.

To ensure the safety of the operator it is very important to follow proper procedures and adhere to all safety measures. Follow the steps below:

Electrical Connections for a 1-Phase Unit

This planer operates on a single-phase, 220V power supply. Ensure that your power supply voltage matches the specifications on the motor plate of the machine.

1. Disconnect the power source prior to wiring the machine.
2. Use the help of a professional electrician to wire this machine.
3. Remove the screws securing the cover of the connection box.

4. Insert the power cable through the strain relief and connect the wires to the appropriate terminals.
5. Reinstall the connection box cover.
6. After wiring is complete, tape all power box joints to prevent dust intrusion.

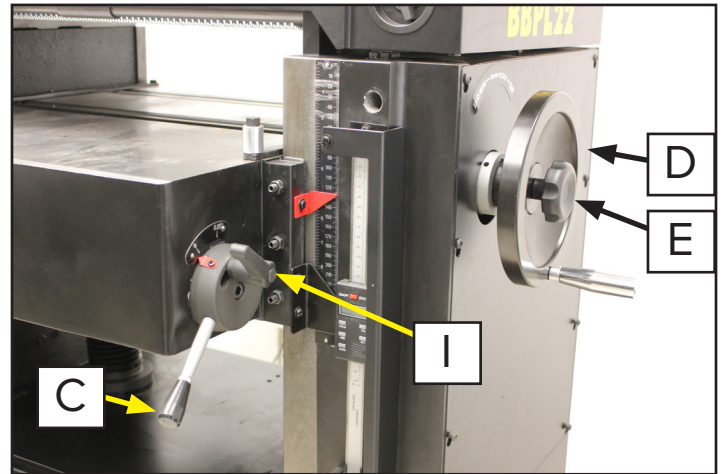


Figure 6: Installing the Handwheel.

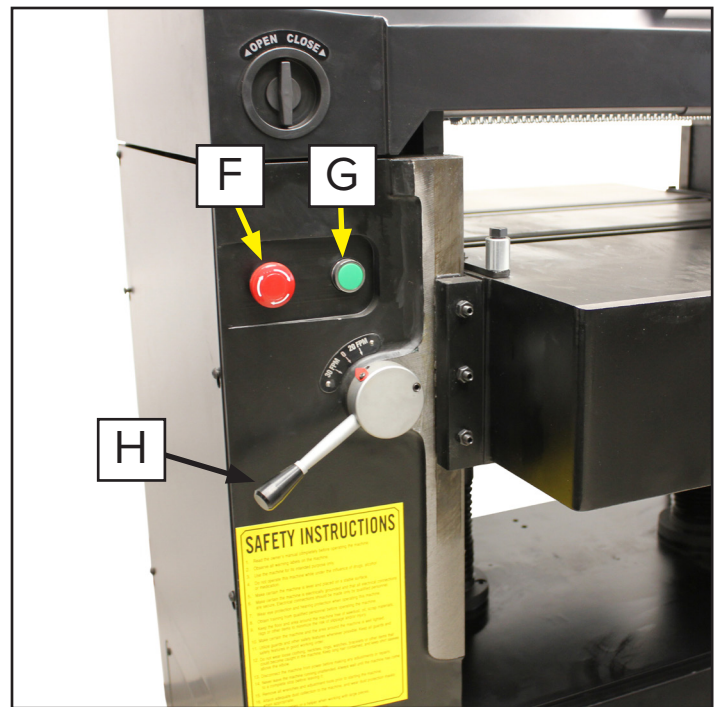


Figure 7: Feed Rate Adjustment Knob.

First Run

Now that the machine is fully assembled and connected to the power source it is time to start it for the first time. Here are some steps to follow while running the planer for the first time:

- Remove all loose tools and materials from the machine and make sure it is completely clear.
- Press the ON button and listen to the machine's noise, is it normal? Notice any unusual noises such as grinding rattling etc.
- Turn the feed speed control lever and see if the speed changes accordingly.
- Turn the table level handwheel and notice how smooth it is to operate.
- Let it run for two minutes then turn it OFF.

If everything is acceptable your new planer is ready to be used.

Adjustments and Tuning

Changing Feed Rate

The planer offers two selectable feed speeds: 20 and 30 feet per minute. To adjust the speed, move the lever (H, Figure 7) until it clicks into place.

Note: Change the feed speed only while the feed system is running, and no workpiece is running through the machine.

Table Roller Adjustment

1. Loosen the handle (I, Figure 6).
2. Adjust the table rollers by raising or lowering the handle (C, Figure 6) to the desired position.
3. Tighten the handle to secure the rollers into place.

Note:

- Set the rollers higher when planing rough stock.
- For smooth stock, the table rollers should be slightly above or flush with the table.

To raise the table, turn the handwheel (A, Figure 8) clockwise. One full revolution of the handwheel raises the table by 1/16 inch.

Table Stop

The socket head cap screw (B, Figure 8) serves as a stop, preventing the table from moving into the cutting and feeding assembly.

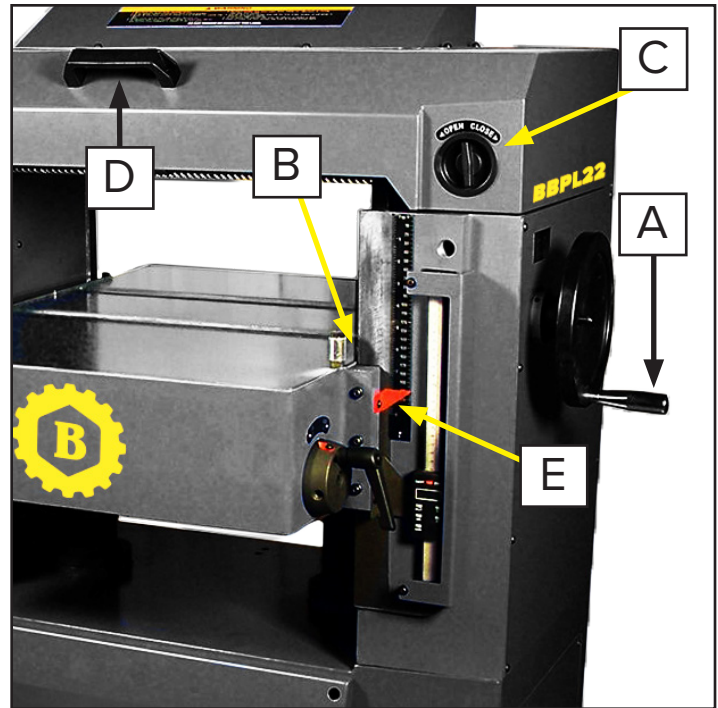


Figure 8: Opening the hood and the table

Opening the Hood

To open the hood, turn the locks (C, Figure 8) clockwise. The hood will open automatically. Use the handle (D, Figure 8) to close the hood.

Calibrating the Thickness Scale

The following steps describe how to use a calibrating board for thickness scale calibration. The calibrating board should be made of hard wood with one side jointed flat.

1. With the planer turned off and the cutterhead not spinning, place the jointed surface of your calibrating board face down on the table and slide it into the machine.
2. Use the handwheel (A, Figure 8) to raise the table until the in-feed roller is approximately 1/16 inch above the calibrating board.
3. Remove the calibrating board from the planer and turn the planer on.
4. Turn the handwheel clockwise one full revolution to raise the table, then run the calibrating board through the planer.
5. Repeat Step 4 until the planer removes the entire top surface of the calibrating board.
6. Measure the thickness of the board using calipers.
7. Adjust the pointer (E, Figure 8) to match the measured thickness by loosening the screw that holds it in place and reposition the pointer.





Figure 9: Digital Readout

Digital Readout

The digital scale on the BBPL22 planer is designed for various applications, however, only the ON/OFF, SET, and mm/in buttons are relevant for wood planing. When properly calibrated, the digital readout will display the thickness of the finished product, see figure 9.

Calibration

To calibrate the unit:

1. Run a board through the planer and measure the finished thickness using vernier calipers.
2. Turn on the digital readout by pressing the ON/OFF button.

3. Select the measurement system (metric or imperial) by pressing the mm/in button.
4. Press and hold the SET button until the '+' sign starts flashing, then release it.
5. Cycle through the options by pressing the SET button until the '+' sign remains on.
6. Press and hold the SET button until the second zero to the right of the '+' sign starts flashing, then release it.
7. Press the SET button repeatedly to adjust the number to match the whole number measured with the vernier calipers, then release the button.
8. Press and hold the SET button until the digit to the right of the decimal point starts flashing.
9. Continue adjusting the digits by repeating steps 7 and 8 until the final digit (0.001 place) is entered.
10. Press and hold the SET button until "SET" flashes on the display, then release it.
11. Press and release the SET button one final time to complete the calibration.

Note: Do not turn off the device after calibration, as this will require re-calibration.

Battery Replacement

If the display begins to flash, the battery needs to be replaced. Use an SR144 (or equivalent) battery, which are widely available. When replacing the battery, ensure the positive side of the button cell faces outward.

Carbide Cutterhead Insert Maintenance

The carbide cutterhead inserts are extremely sharp. Exercise extreme caution when inspecting, removing, or replacing the cutterhead inserts.

Insert Rotation and Replacement

Warning: Disconnect machine from power source.

The knife inserts on the 22" planer are four-sided. When an edge becomes dull, remove the insert, rotate it to expose a fresh edge, and reinstall it. No further adjustment is required.

1. Use the two provided Torx wrenches to remove the inserts' screws. One wrench should be used to hold the cutterhead in position, while the other is used to remove the screw.
2. It is recommended to rotate all inserts simultaneously to ensure consistent cutting performance. However, if a nick develops on one or more inserts, only rotate those affected.
3. Each knife insert has an etched reference mark to help track its rotations.

IMPORTANT:

- Before removing or rotating inserts, clean sawdust from the screw, insert, and cutterhead platform. Dust accumulation can prevent the insert from seating properly, affecting the quality of the cut.

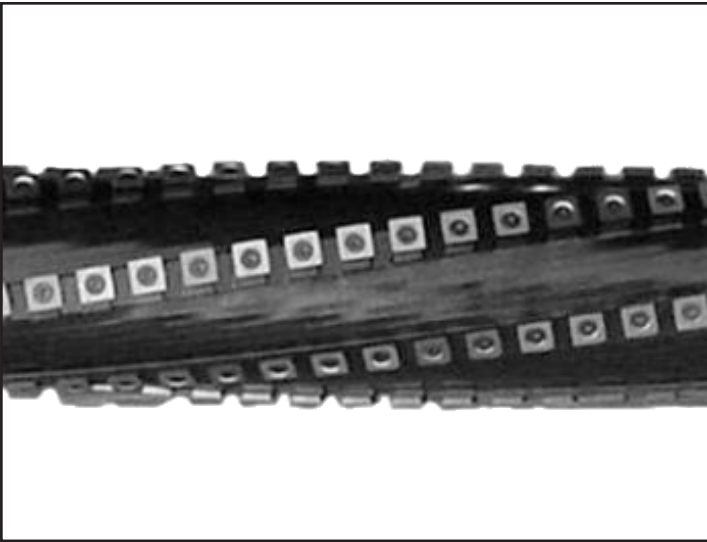


Figure 10: Cutterhead

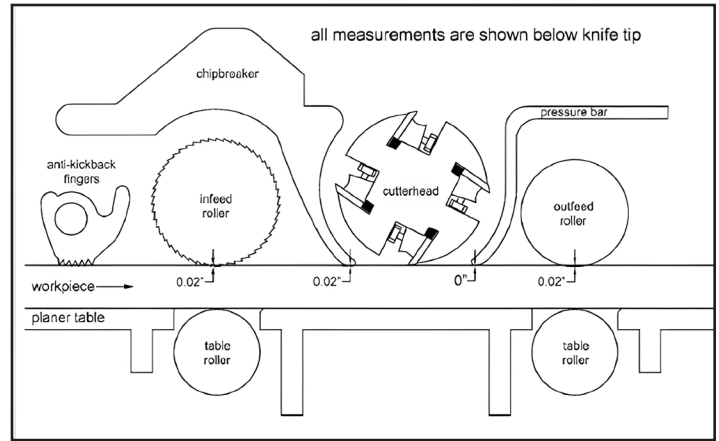


Figure 11: Proper measurements and clearances.

Setup of Feed Rollers, Chip Breaker, and Pressure Bar

The planer is pre-set at the factory and should not require adjustment. However, if adjustment becomes necessary, follow the instructions below for setting the in-feed roller, chip breaker, pressure bar, and outfeed roller.

1. Prepare a Hardwood Block: Make a hardwood block according to the specifications in Figure 12. This block, in conjunction with a 0.02" feeler gauge, will be used to set up the planer as shown in Figure 11.
2. Use the Wood Gauge and Feeler Gauge: Use the wood gauge and feeler gauge to adjust the planer components according to the setup illustrated in Figure 11. This setup is designed for general planing applications.
3. Custom Setup: Depending on the type of stock and cutterhead being used, you may find that a different setup works better for your specific planing needs.

Always refer to Figures 11 through 21 for precise setup details.

Anti-Kickback Fingers

The anti-kickback fingers are designed to prevent stock from being ejected towards the user. To ensure proper function, keep the fingers clean and free from sawdust, pitch, and gum. Regular maintenance will allow them to operate smoothly.

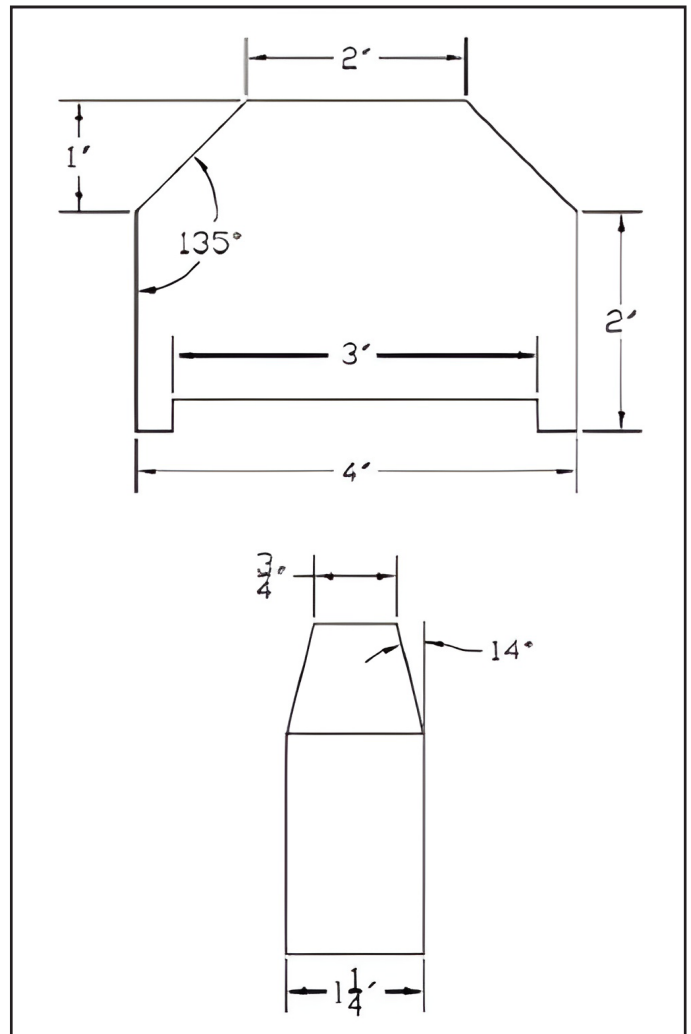


Figure 12: Hardwood block for calibration

Adjustment of In-Feed Roller

The in-feed roller should be set 0.02" below the lowest point of the knife. Ensure the knives are properly set by referring to the "Setting/Changing Knives" section before making any adjustments.

1. Disconnect the machine from the power source.
2. Place a hardwood gauge (A, Figure 13) under a knife in the cutterhead.
3. Place a 0.02" feeler gauge (B, Figure 13) on top of the wood block and raise the table until the feeler gauge contacts the knife at its lowest position.
4. Remove the feeler gauge and place the wood block under the left side of the in-feed roller. The top of the wood gauge should just contact the in-feed roller. If it does not, loosen the jam nut (C, Figure 14) and adjust the screw (D, Figure 14) to raise or lower the in-feed roller until it contacts the wood gauge. Repeat this process for the opposite side of the in-feed roller.

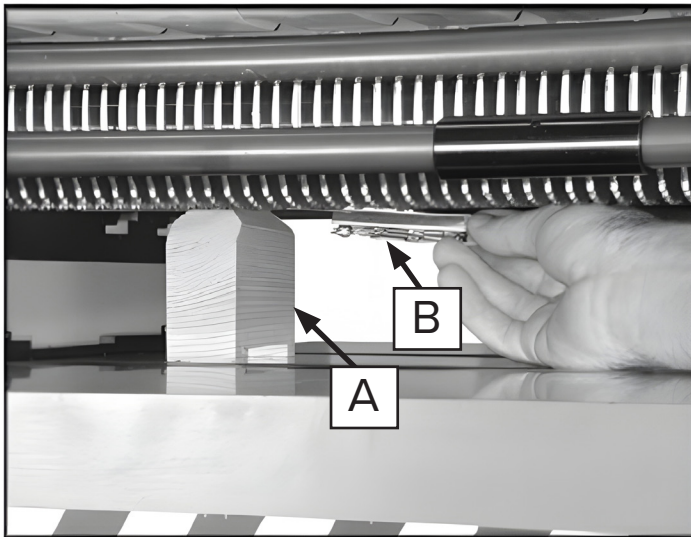


Figure 13: Anti-Kickback fingers set up

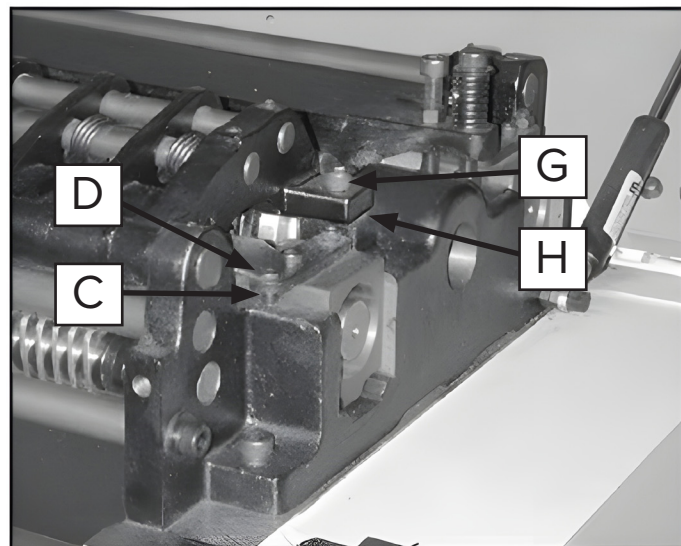


Figure 14: Infeed/outfeed Roller Adjustment

Adjustment of Chip Breaker

The chip breaker should also be set 0.02" below the lowest point of the knife. Again, ensure the knives are properly set by referring to the "Setting/Changing Knives" section before proceeding.

1. Disconnect the machine from the power source.
2. Place a hardwood gauge (A, Figure 13) under a knife in the cutterhead.
3. Place a 0.02" feeler gauge (B, Figure 13) on top of the wood block and raise the table until the gauge contacts the knife at its lowest position.
4. Remove the feeler gauge and place the wood gauge (E, Figure 15) under the left side of the chip breaker (F, Figure 15). The top of the wood gauge should just contact the chip breaker. If it does not, remove the socket head cap screw (G, Figure 14) and insert a shim (H, Figure 14) of appropriate thickness between the castings until the chip breaker contacts the wood gauge. Repeat this procedure for the opposite side of

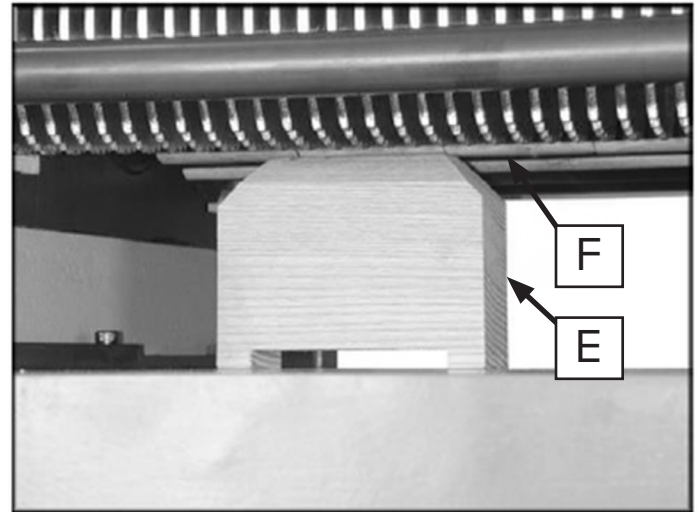


Figure 15: Chip breaker Adjustment

Adjustment of Pressure Bar

The pressure bar should be set level with the lowest point of the knife. Ensure that the knives are properly set by referring to the "Setting/Changing Knives" section before proceeding with the adjustment.

1. Disconnect the machine from the power source.
2. Place a hardwood gauge under a knife in the cutterhead and raise the table until the gauge contacts the knife at its lowest position.
3. Place the wood block (A, Figure 16) under the left side of the pressure bar (B, Figure 14). The top of the wood block should just contact the pressure bar. If it does not, loosen the jam nut (C, Figure 17) and adjust the screw (D, Figure 17) to raise or lower the pressure bar until it contacts the wood gauge. Repeat this process for the opposite side of the pressure bar.

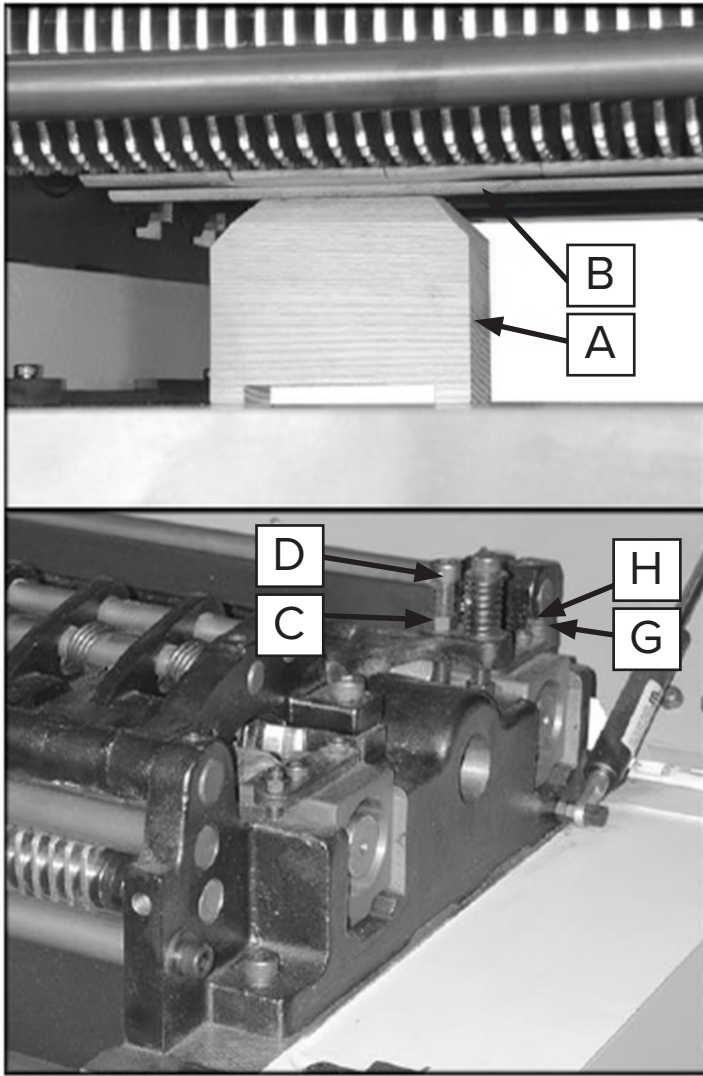


Figure 16: Adjusting the pressure bar.

Adjustment of Out-Feed Roller

The out-feed roller should be set 0.02" below the lowest point of the knife. Again, ensure that the knives are properly set by referring to the "Setting/Changing Knives" section before making any adjustments.

1. **Disconnect the machine from the power source.**
2. Place a hardwood gauge (A, Figure 15) under the outfeed roller. Place a 0.02" feeler gauge (B, Figure 11) on top of the wood block and raise the table until the feeler gauge contacts the knife at its lowest position.
3. Remove the feeler gauge and place the wood block (E, Figure 15) under the left side of the out-feed roller (F, Figure 15). The top of the wood gauge should just contact the out-feed roller. If it does not, loosen the jam nut (G, Figure 14) and adjust the screw (H, Figure 14) to raise or lower the out-feed roller until it contacts the wood gauge.

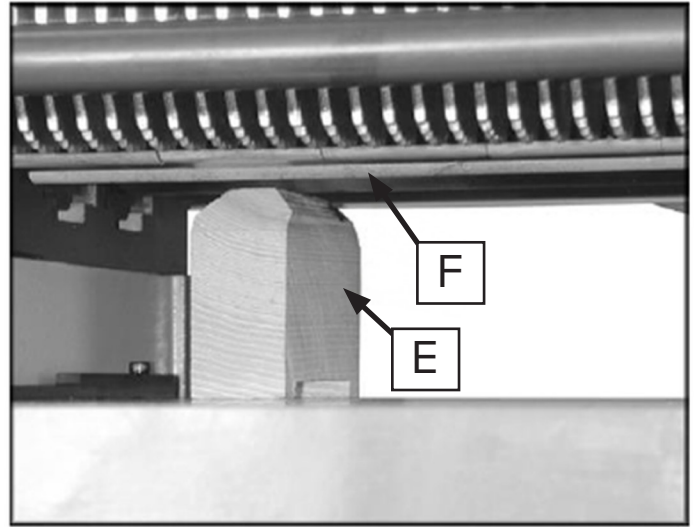


Figure 17: Adjusting the outfeed roller.

Helical Cutterhead

The helical cutterhead should be set up with the same relationship to the in-feed roller, chip breaker, pressure bar, and outfeed roller as described in this section. The planer is factory-set and typically does not require adjustment.

If adjustments are necessary:

1. Follow the procedures in the section prior to this one, for aligning the in-feed roller, chip breaker, pressure bar, and outfeed roller with the helical cutterhead.
2. When rotating or replacing carbide knives, ensure that all inserts are rotated or replaced simultaneously. Use a marker to track which inserts have been rotated.
3. Rotate each insert only three times (these are 4-sided inserts) before replacement. Use the provided Torx wrench for this procedure.

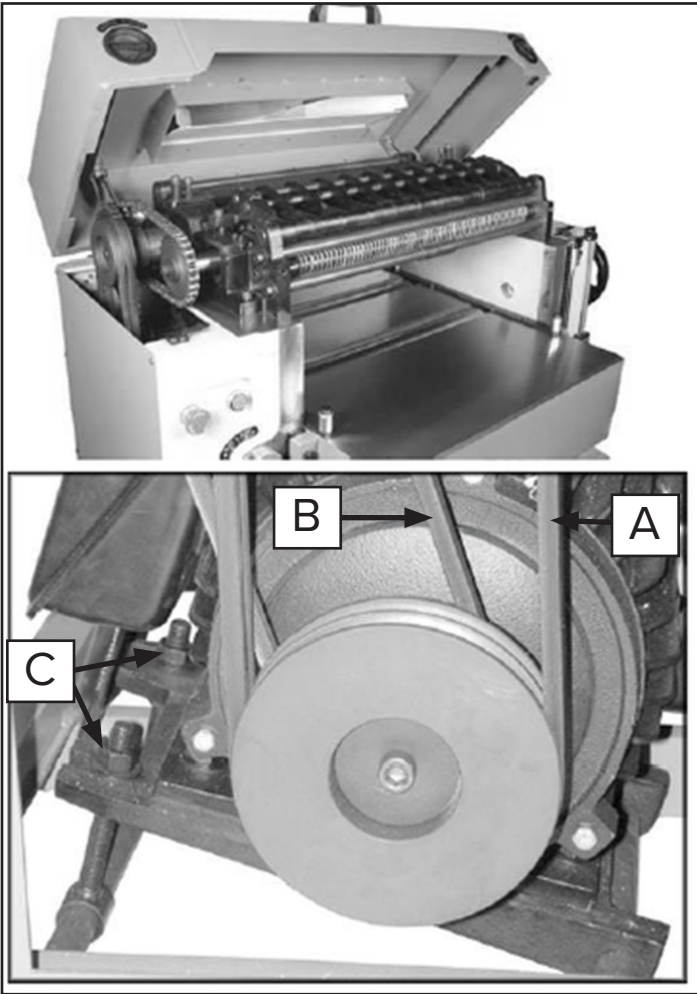


Figure 18: Adjusting the V-Belt.

V-Belt Adjustment

The cutterhead is driven by two V-belts (A, Figure 18), while a single V-belt (B, Figure 18) drives the in-feed and out-feed rollers. The factory sets the belt tension, but if an adjustment is needed due to belt stretching:

1. **Disconnect the machine from the power source.**
2. Open the lower rear and lower left-hand side panels.
3. Loosen or tighten the four adjustment nuts (C, Figure 18) to move the motor plate up or down and adjust the belt tension. Secure the nuts against the motor plate after adjustment.
4. Proper tension is achieved when moderate finger pressure can deflect the V-belts by approximately 3/16" to 44" midway between the pulleys.

Adjusting Table Gibs

To adjust the table gibs:

1. Loosen the hex nuts (E, Figure 19.)
2. Turn the gib screws (F, Figure 19) until the gibs (D, Figure 19) lightly contact the ways (G, Figure 19).
3. A 0.005" feeler gauge should fit between the gib and the way. Adjust as necessary to achieve this gap.

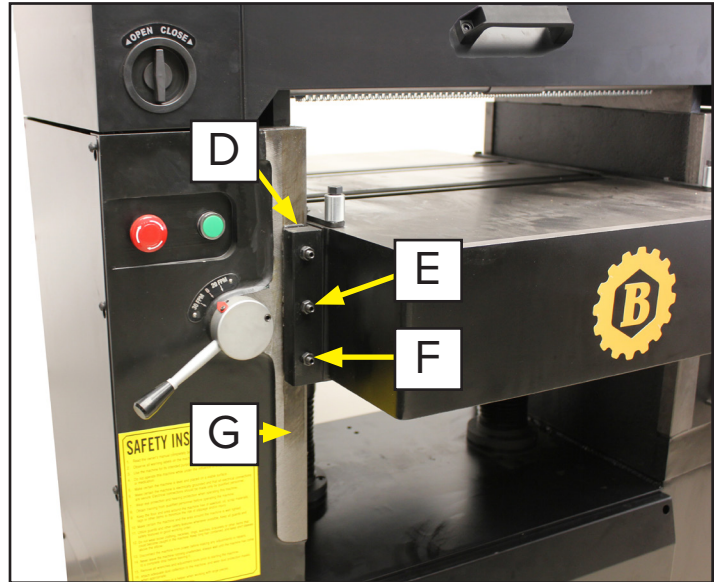


Figure 19: Adjusting the table gibs.

Adjusting Table Rollers

The table rollers are factory-set and typically do not require adjustment. If adjustment is needed, follow these steps:

1. **Place a Straight Edge:** Lay a straight edge (A, Figure 20) across the roller (B, Figure 20) on the table.
2. **Raise the Roller:** Adjust the roller height until it just contacts the straight edge. Lock the handle and ensure the pointer is set to "0." If necessary, adjust the pointer to read zero. Note: Rotate the roller by hand to determine when it makes contact with the straight edge.
3. **Check and Adjust:** Move the straight edge to the opposite side of the bed roller. Ensure the roller just contacts the straight edge. If it does not, loosen the hex nut (C, Figure 21) and adjust the hex cap bolt (D, Figure 21) to raise or lower the bed roller until it just contacts the straight edge.

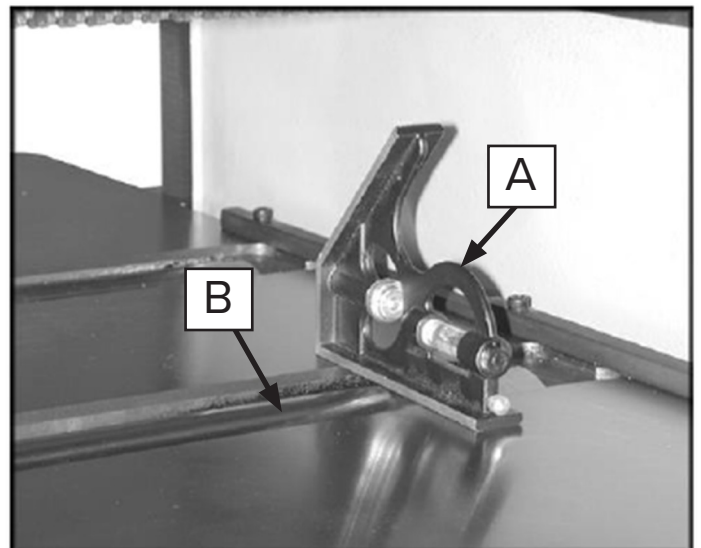


Figure 20: Adjusting the table rollers.

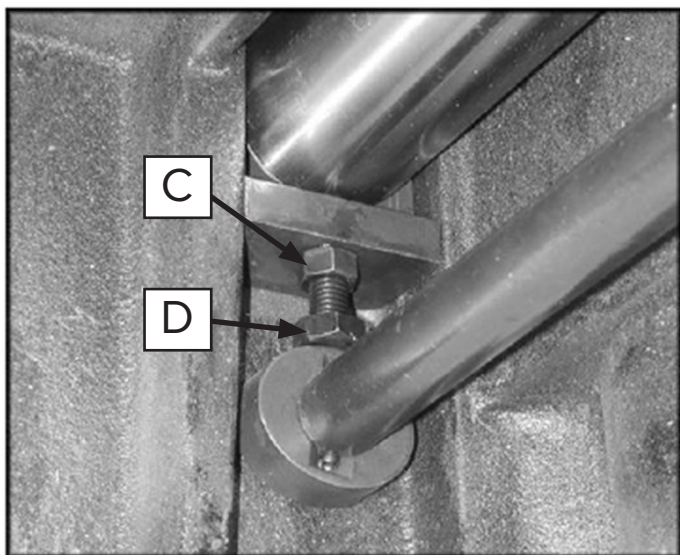


Figure 21: Adjusting Table Rollers.

Section 4: Operations

Overview

Planing is a simple two step operation, feed the wood into the machine, and remove it from the opposite end. Please mind the maximum depth of cut while planing, this may have a large impact on the outcome as well as it may have an important role in the longevity of the machine. Always follow the recommended measurements provided in this manual. In this section we'll go over inspecting the work piece, the features of this machine, and how to operate it properly. To operate this machine correctly it is crucial to follow the following guidelines

Planer Operation Guidelines

1. Inspect Lumber:

- Check for twisting, foreign objects (e.g., nails, staples), or embedded material. Do not use lumber with such defects.
- Be aware that wood stacked on concrete may have small stone or concrete particles embedded in its surface.

2. Feeding Lumber:

- Use the full width of the planer. Alternate between the left, right, and center positions when feeding lumber to prolong the inserts' sharpness.

3. Preparation:

- Remove all glue from joined boards before planing.
- Plan only natural wood fibers. Do not plane wood composites.

4. Feeding Direction:

- Always plane with the grain. Do not feed end-cut or end-grain lumber into the planer.

5. Defective Lumber:

- Avoid using boards with knots, splits, cross-grain, or other visible defects as they can damage the machine

and pose safety risks.

6. Work Area:

- Maintain a clear work area to ensure safe and efficient operation.

7. Moisture Content:

- Do not plane wood with more than 20% moisture content or wood exposed to rain or snow. High moisture content can lead to poor planing results, excessive wear on knives and motor, and increased risk of rust and corrosion.

8. Table Height:

- Use the table height lock knob during operation to ensure consistent and accurate results.

9. Stock Preparation:

- Rectify any cupped or warped stock on a jointer before planing.

For any issues with the end result please read the troubleshooting section for further instructions and information regarding the quality of the planed workpiece.

Inspecting the first workpiece

When selecting stock for jointing or planing, adhere to the following guidelines:

- **Avoid Large or Loose Knots:** Do not process stock containing large or loose knots, as these could dislodge during cutting operations, resulting in operator injury or damage to the workpiece.
- **Grain Direction:** Do not joint or surface-plane against the grain direction, as this increases the risk of kickback and tear-out.
- **Cutting with the Grain:** Joint and surface-plane with the grain for a better finish and increased safety.
- **Wood Selection:** **Only cut natural wood with the machine**, avoiding materials such as MDF, particle board, plywood, laminates, metals, glass, stone, tile, products with lead-based paint, or those containing asbestos, as using the machine on these materials may lead to injury or machine damage.
- **Glue Removal:** Scrape off all glue deposits from the workpiece before jointing or planing, as glue residues can impair cutterhead performance.
- **Foreign Objects:** Ensure the workpiece is free of foreign objects such as dirt, nails, staples, rocks, or other debris, which could damage the cutterhead or pose a fire hazard.
- **Wood Moisture Content:** Verify that all stock has an appropriate moisture content, as wood with moisture levels exceeding 20% can accelerate wear on the cutters, resulting in subpar cutting.
- To ensure safe and effective machine operation, it is imperative that your workpiece meets or exceeds the minimum dimensions outlined below before proceeding

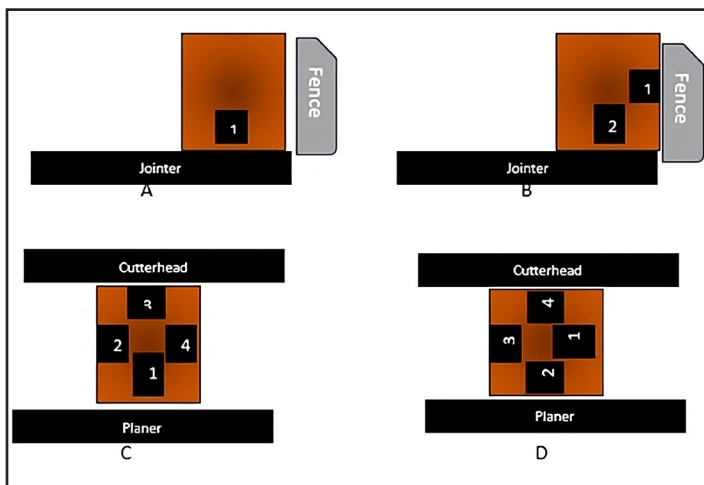
with any machining operation. Failure to adhere to these specifications may lead to workpiece breakage or kickback during operation, posing a risk of injury to the operator and potential damage to the machine.

Planing Operation

Thickness planing is employed to reduce a workpiece with one surface already planed to a desired thickness. Here's how to use the planer effectively:

Squaring a Workpiece Procedure Example:

1. This step involves utilizing the jointer to flatten the surface of the first side of the workpiece.
2. Subsequently, after surfacing side 1, the workpiece is rotated 90° to align side 1 against the fence. Side 2 is then jointed flat. This operation results in two sides of the workpiece being perpendicular to each other.
3. Moving on to step 3, the planer is employed to run the workpiece with side 1 placed flat against the planer bed (down). This positioning facilitates the cutting of side 3, ensuring its parallelism to side 1.
4. In step 4, side 2 is positioned flat against the planer bed (down), resulting in, side 4 being planed flat and parallel to side 2.



Upon completion of these steps, the workpiece achieves squareness, providing four flattened parallel surfaces.

NOTE: Workpiece dimensions for planing:

- Length: minimum 18"; for lumber over 60", utilize roller supports.
- Width: maximum 22".
- Maximum thickness: 9-1/2"
- Thickness: minimum 1/4".
- Depth of Cut: maximum 1/8" only with soft types of wood, although multiple cuts of 1/16" or less produce better finish results. **Keep in mind that the wood's hardness plays a significant role in determining the depth of cut i.e., for softer woods you can go up to 1/8" depth while for harder woods you must stay under 1/16"**

deep.

1. To feed the workpiece into the machine, assume a proper operating position stand offset to one side of the feed opening to avoid being hit in case of kickback occurs should it occur. Do not push the lumber once the infeed roller has been engaged. Let the infeed roller move the workpiece into the planer at its own pace.
2. To remove the workpiece from the machine, position yourself offset to one side of the outfeed opening. Do not pull the lumber as it exits the machine. Let the outfeed roller move the workpiece out of the planer at its own rate but support the lumber it extends past the extension rollers, if needed.
3. Set the planing thickness by measuring your board's thickness and adjusting the planer accordingly, either to this measurement or 1/16" under this measurement. It's crucial to avoid removing an excessive amount of stock (over 1/16") during the initial pass to prevent damage to the planer. Repeated passes through the planer will gradually achieve the final desired board thickness. Please note that one revolution of the thickness handwheel is equivalent to 1/16" in depth of cut.
4. Feed boards slowly and directly into the planer (**DO NOT FORCE OR PUSH the Workpiece**). The infeed and outfeed rollers will automatically guide the boards through the planer.
 - Ensure that workpieces are guided straight into and through the planer. The cutting action of the cutterhead may attempt to turn a board being surfaced, thus slight control of the board may be necessary. Do not push the board forward; let the planer's rollers automatically move the board through the machine.
5. Remove the board from the planer. Refer to Step 2; **DO NOT PULL** the lumber as it exits the machine. Allow the outfeed roller to move the workpiece out of the planer at its own rate but support the lumber as it extends past the extension rollers, if needed.
 - Ensure there are no loose knots, nails, staples, dirt, or foreign objects in the wood to be planed.
 - Plane wood in the same direction as the grain, avoiding planing across the grain or end grain.
 - Avoid planing boards shorter than 14"; shorter boards should be planed end to end with other boards to prevent kick-back and snipe.
 - Provide additional support for boards longer than 60" to prevent tipping, which can cause snipe on the workpiece.

Section 5: PPE and Safety Accessories

At Busy Bee Tools we carry a wide range of PPE and personal safety gear, ranging from basic eye, ear and breathing protective gear all the way to the most advanced Bluetooth earmuffs and earbuds that you can connect your mobile device to while protecting your ears from loud noises. Visit our website for a wide range of PPE and safety gear.

Section 6: Accessories

Blade cleaners: we carry a selection of blade and bit cleaners and rust protectors, such as Boeshield Rust free spray item number B3708, Boeshield T9 Protectant and lubricant item number B3707, Trend Tool and Bit Cleaner item number B3229.

Carbide Inserts for cutterhead: These inserts are made of carbide and extremely hard metal sharpened to a mirror finish sharp edge, they come in package of 10. Item number CXHCINS.

Please visit: www.busybeetools.com for further information and a wide selection of products.

Section 7: Maintenance

Regular maintenance, cleanup, and lubrication are crucial for ensuring the optimal performance and longevity of woodworking industrial planer machines. Routine maintenance, including cleaning and lubrication, helps prevent the accumulation of dust, debris, and resin, which can lead to operational issues and reduced efficiency. Proper lubrication of moving parts minimizes friction and wear, thereby extending the machine's lifespan and maintaining precision in wood planing. Regularly inspecting and cleaning the machine also helps identify and address potential issues before they escalate into costly repairs or downtime. By adhering to a consistent maintenance schedule, operators can ensure reliable machine performance, enhance safety, and achieve high-quality results in woodworking projects. Investing time in these practices not only improves operational efficiency but also contributes to the overall durability and reliability of the planer, making it a vital aspect of industrial woodworking operations.

List of lubricants and grease required & Scheduling

- Super Lube Synthetic gear oil.
- Enduratex gear oil.
- Super Lube synthetic grease.
- Multi purpose grease.
- Any other light gear oil.

Regular Inspections

- Perform periodic inspections to ensure the machine is properly adjusted and all hardware is securely tightened.
- Clean the out-feed rollers and table with a non-flammable solvent to remove pitch, gum, and any other build-up.
- Regularly clean the inside of the machine to control dust accumulation.
- Keep pulleys and belts free from dirt, dust, oil, and grease. Replace worn V-belts as needed.
- Rotate or replace worn inserts. If an insert is nicked, Dull or broken; the insert seats are preset for the correct and accurate angle DO NOT alter them.
- Maintain the limit switch that activates when the hood is opened by keeping it clean and using an air hose to blow out debris.

Cleaning and Protecting Lubrication

Bearings: The bearings on the cutterhead, infeed, and outfeed rollers are factory-lubricated and sealed; no additional lubrication is required.

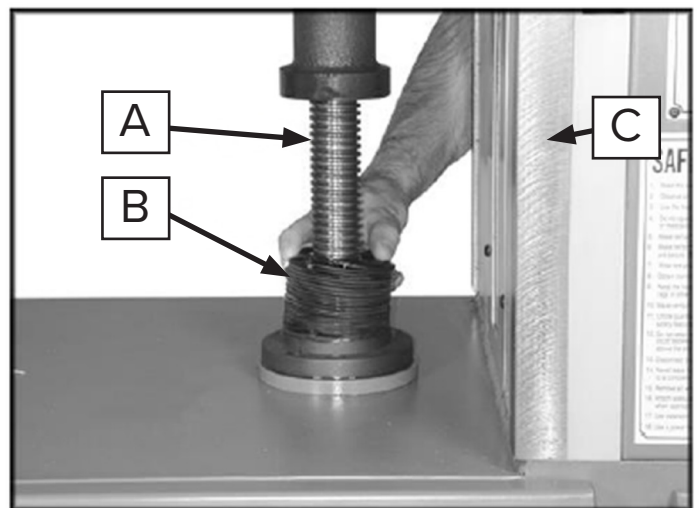


Figure 22: Table elevation Screws.

Table Elevation Screws:

1. Raise the table and remove the two screws holding the top of the accordion cover (B, Figure 22).
 2. Pull down the cover and lightly grease the elevation screws (A, Figure 22).
- Ways: Use an oiled cloth to wipe the ways (C, Figure 22)

on a weekly basis.

- Chain System: Lubricate the chain system with an oiled cloth as needed.

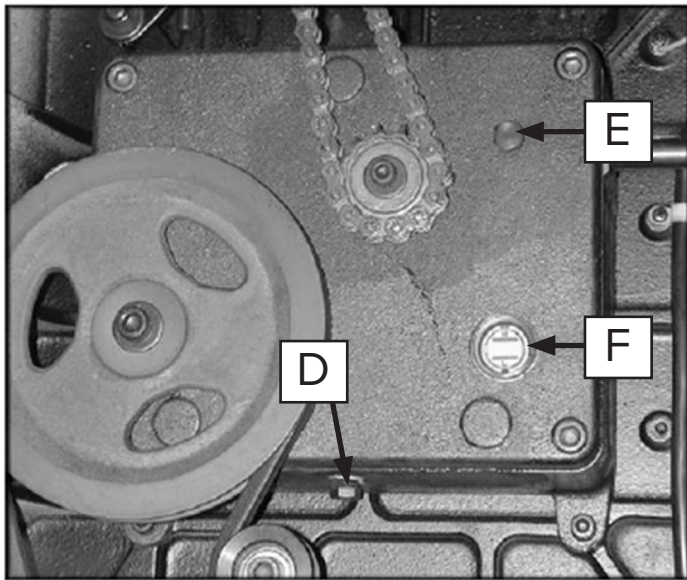


Figure 23: Gearbox Oil Change.

Gear Box:

1. Change the gear box oil annually. Remove the drain plug (D, Figure 23) to drain the old oil.
2. Refill the gear box with 60-90 weight gear oil through the fill hole (E, Figure 23) halfway up the sight glass (F, Figure 23) shows full DO NOT OVER FILL.
3. Check the sight glass periodically and add oil as necessary. This machine comes with the gearbox already filled with oil.

Halted Feeding

If the in-feed roller takes stock away from you while feeding, then feeding stops before contacting the knives, the chip breaker is probably too low; the in-feed roller is not set low enough or does not have enough pressure. Similarly, the in-feed roller takes the stock, the chip breaker lift, and stops as you hear the cutters contact the material. In this case the pressure bar is too low. Follow the step-up instructions section for setting the in-feed roller, chip breaker, pressure bar and outfeed roller in relation to the cutterhead.

Section 8: Service & Troubleshooting

Issue	Possible Cause	Solution
Machine will not start	<ol style="list-style-type: none"> 1. Fuse blown or circuit breaker tripped 2. Cord Damaged 3. Not connected to power source 4. Connected to wrong voltage 5. Top cover is open 6. Emergency stop button pressed 7. Overload tripped 	<ol style="list-style-type: none"> 1. Replace fuse or reset circuit breaker 2. Have cord replaced 3. Check connection 4. Check voltage 5. Close the top cover 6. Rotate emergency stop button clockwise until it pops out 7. Remove lower rear cover on the base and press reset switch found inside.
Cutterhead does not come up to speed	<ol style="list-style-type: none"> 1. Low current 2. Motor not wired for correct voltage 	<ol style="list-style-type: none"> 1. Contact local electric company 2. Refer to motor nameplate for correct voltage
Workpiece stops when feeding	<ol style="list-style-type: none"> 1. Too much material being removed in one pass 2. Chip breaker or pressure bar set too low 3. Insufficient pressure on in-feed or out-feed rollers 	<ol style="list-style-type: none"> 1. Reduce the amount of material being removed 2. Raise the Chip breaker or pressure bar as per Figure 11, 3. Increase pressure on in-feed or out-feed rollers per Figure 11
Snipe	<ol style="list-style-type: none"> 1. Incorrect setting for in-feed, out-feed rollers, pressure bar or chip breaker 2. Inadequate support of long boards 3. Table rollers not set properly 	<ol style="list-style-type: none"> 1. Adjust feed system per Figure 11 2. Support long boards with extension rollers 3. Adjust table rollers until desired results are achieved
Fuzzy Grain	<ol style="list-style-type: none"> 1. Planing wood with a high moisture content 2. Dull inserts. 	<ol style="list-style-type: none"> 1. Allow wood to dry properly 2. Rotate or replace cutterhead inserts.
Poor feeding of lumber	<ol style="list-style-type: none"> 1. Inadequate feed roll pressure 2. Planer bed dirty 3. V-belts slipping 4. Dirty feed rollers 5. Incorrect setting for in-feed, out-feed rollers, pressure bar or chip breaker 	<ol style="list-style-type: none"> 1. Adjust feed roll tension or lower feed rollers 2. Clean pitch and residue off table with a non-flammable solvent 3. Increase v-belt tension 4. Clean feed rollers with a non-flammable solvent 5. Adjust feed system per Figure 11.



More Troubleshooting

Troubleshooting Common Planing Issues

Listed below are common wood characteristics and associated problems that may arise during planing operations. Subsequent to each problem description, viable solutions are presented:

Chipped Grain:

Problem: Occurs typically when planing against the grain, processing lumber with knots, excessive cross grain, or using dull inserts.

Solution: Decrease the depth of cut, reduce the feed rate, inspect lumber for grain patterns, and examine the condition of the inserts.

Fuzzy Grain:

Problem: Often a result of surfacing lumber with excessive moisture content or inherent to certain wood types like basswood. Dull inserts may also contribute.

Solution: Check lumber moisture content, allow proper drying if moisture exceeds 20%, and assess the condition of the inserts.

Clip:

Problem: If “clip” marks appear 6” (152mm) from each end of the board, it indicates that the pressure bar is set too high. Refer to the figure provided for visual reference.

Solution: To correct this, turn both the right-hand and left-hand adjusting screws (see figure) clockwise by 1/4 turn or less. After the adjustment, make a 1/16” (1.59mm) deep cut and re-examine the board for improvement.

Chatter:

Problem: Chatter marks typically appear on thin material, as illustrated in the figure. This issue arises when the table rollers, even at their lowest setting, are too high for thin stock.

Solution: To address this, use a slave board or construct an auxiliary table from Formica countertop material, securing it with cleats at each end to keep it stable over the planer table.

Taper:

Problem: If the machine planes a taper across the full width of the board it indicates that the table is not parallel with the cutterhead.

Solution: Begin by verifying that all inserts are correctly installed with equal protrusion from the cutterhead. If the inserts are properly installed, then the issue lies with the table alignment. Refer to the “Table Adjustments” section for detailed instructions on how to correct the table’s alignment.

Twisting:

Problem: If material twists while feeding through the planer.

Solution: it may be due to the pressure bar, outfeed roller, or table rollers being out of level. To resolve this issue, refer to the adjustment settings section. Adjust all the rollers according to the instructions provided.

Snipe:

Problem: Some degree of snipe may be unavoidable in planer operations, but with proper adjustments, snipe can be minimized to a negligible level. If noticeable snipe appears at each end of the material, it typically indicates that a table roller is set too high, causing the material to lift slightly as it passes through the machine. This issue is more pronounced on the trailing end of the board and is most common when planing rough lumber. When running rough or resawn lumber, the table rollers need to be elevated. However, if you forget to lower the table rollers when flipping the material for a finishing cut, distinct snipe will likely appear at the ends of the material.

Solution: Properly adjusting the table rollers before making the finish cut is crucial to avoid this issue.

Pitch & Glue-up:

Problem: Accumulated glue and resin on rollers and the cutterhead can lead to overheating, reduced cutting efficiency, scorched lumber, uneven insert marks, and machine chatter.

Solution: Thoroughly clean the rollers and cutterhead to remove glue and resin buildup. Use a Pitch and resin cleaning solution regularly.

Chip Marks or Indentations:

Problem: Wood chips are not efficiently expelled from the cutterhead, leading to chip indentation, or bruising on the wood surface.

Solution: Implement a proper dust collection system, ensure dry lumber, maintain sharp knives/inserts, and reduce the depth of cut to mitigate chip marks.

Wood Species Impact

The species of wood, in conjunction with its condition, significantly influences the depth of cut that the jointer/planer can effectively achieve per pass. Refer to the Janka Hardness Rating chart below, where higher Janka numbers indicate harder wood. For optimal results, limit the material removal per pass, particularly with harder wood species, to preserve the quality of your machining operations.

Note: The Janka Hardness Rating quantifies the force (in pounds) required to embed a 0.444” steel ball into the wood’s surface to a depth equivalent to half the ball’s diameter.



Section 9: Wiring and Electrical Diagram

Wiring Safety Instructions

At Busy Bee Tools, we strive constantly to improve our machines and their performance. It's essential to take note of Busy Bee Tools advice regarding potential changes or updates to the electrical systems of your machine. Here are some key steps to follow if you suspect differences between your machine and the information provided in the manual:

1. **Check the Manufacture Date:** As mentioned in the manual, verify the manufacture date of your machine, which can be found on the main machine label.
2. **Compare the Manual and Your Machine:** Carefully compare the information and wiring diagrams provided in the manual with the actual components and wiring of your machine.
3. **Contact Technical Support:** If you identify any differences or have concerns about the electrical systems of your machine, reach out to the manufacturer's Technical Support team. They can provide guidance and updated wiring diagrams if necessary.
4. **Provide Serial Number:** Be prepared to provide the serial number of your machine when contacting Technical Support. This information helps them identify the specific model and configuration of your machine until you have received guidance from Technical Support.
5. **Prioritize Safety:** Always prioritize safety when dealing with electrical systems. Ensure that the machine is disconnected from the power source before inspecting or making any changes.

By following these steps and seeking assistance from Busy Bee Tools Technical Support when needed, you can ensure that your machine operates safely and effectively, even if there have been updates or changes to its electrical systems since the manual was printed.

The warnings and guidelines provided in the manual are crucial for ensuring your safety and the proper functioning of your machine's electrical systems. Here's a summary of the key points to keep in mind:

1. **Shock Hazard:** Working on wiring connected to a power source can be extremely dangerous and may result in severe burns, electrocution, or even death. Always disconnect the power from the machine before servicing electrical components to prevent any electrical accidents.
2. **Modifications:** Avoid making unauthorized modifications to the wiring of your machine. Modifying the wiring

beyond what is shown in the manufacturer's diagrams can lead to unpredictable and potentially hazardous results, including serious injury or fire. Additionally, the installation of unapproved aftermarket parts is discouraged.

3. **Wire Connections:** Ensure that all wire connections are tight and secure. Loose connections can pose a safety risk and may lead to electrical problems during machine operation. After any wiring task, double-check all connections to confirm they are properly tightened.
4. **Circuit Requirements:** Adhere to the circuit requirements outlined at the beginning of the manual when connecting your machine to a power source. This includes using the appropriate voltage, phase, and circuit amperage to ensure safe and reliable operation.
5. **Wire/Component Damage:** Damaged wires or components can increase the risk of personal injury, fire, or machine damage. If you identify any wires or components that are damaged while performing a wiring task, it is crucial to replace them promptly to ensure safety and prevent further issues.
6. **Motor Wiring:** The motor wiring diagrams provided in the manual may not exactly match your machine's configuration. If you find discrepancies, consult the wiring diagram inside the motor junction box for accurate information.
7. **Capacitors/Inverters:** Some capacitors and power inverters can store an electrical charge for a significant duration (up to 10 minutes) after being disconnected from the power source. To reduce the risk of electrical shock, wait for at least 10 minutes before working on capacitors.
8. **Experiencing Difficulties:** If you encounter difficulties understanding the information presented in this section or require assistance with your machine's wiring, don't hesitate to contact Technical Support for guidance and clarification.

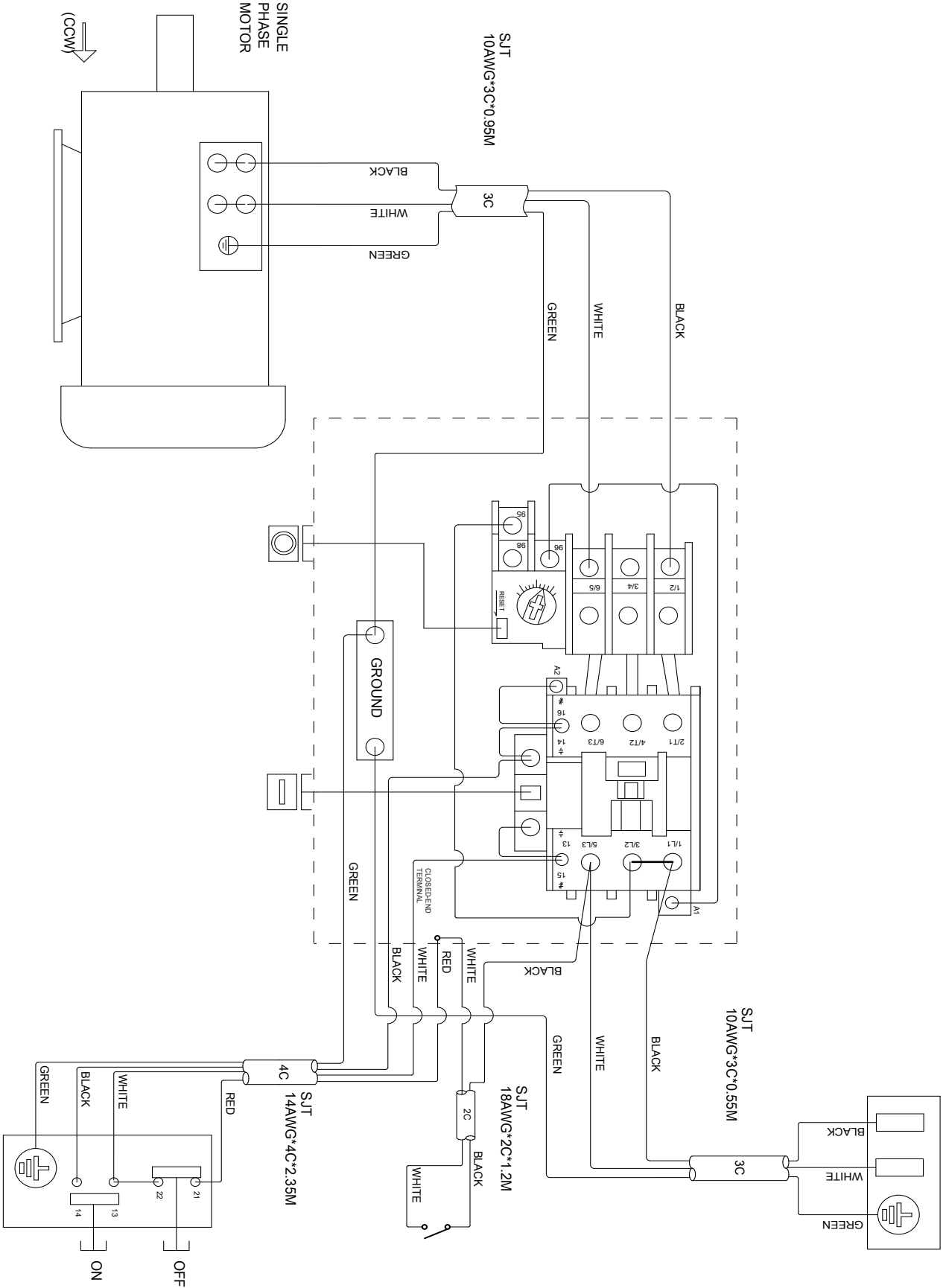
Following these additional warnings and guidelines will help ensure that you work safely with your machine's electrical components and effectively address any wiring-related issues that may arise. Prioritize safety when handling electrical systems and components.

Do Not Make Unauthorized Changes: As a precaution, avoid making any unauthorized changes or modifications to the wiring.



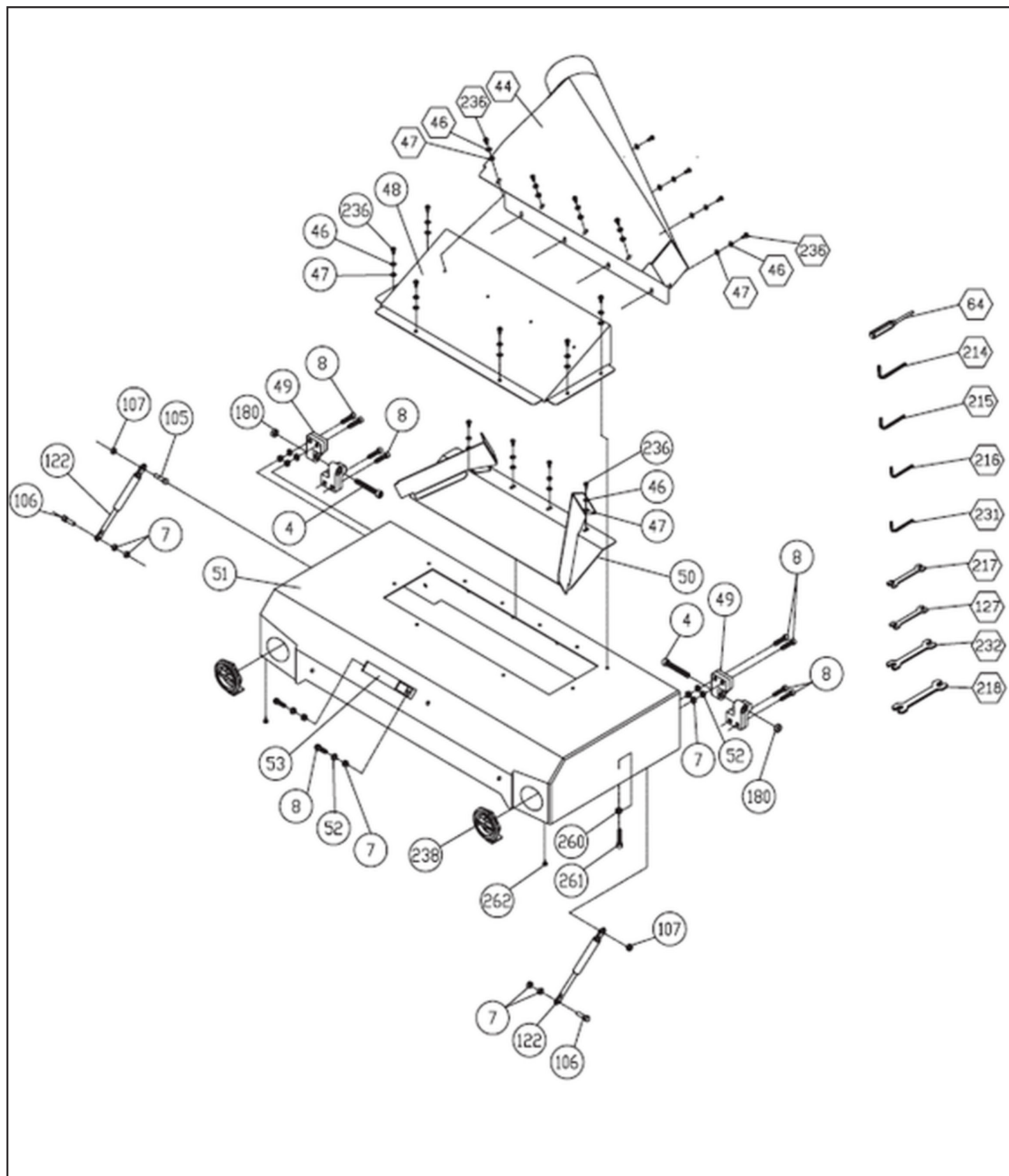
Wiring Diagram

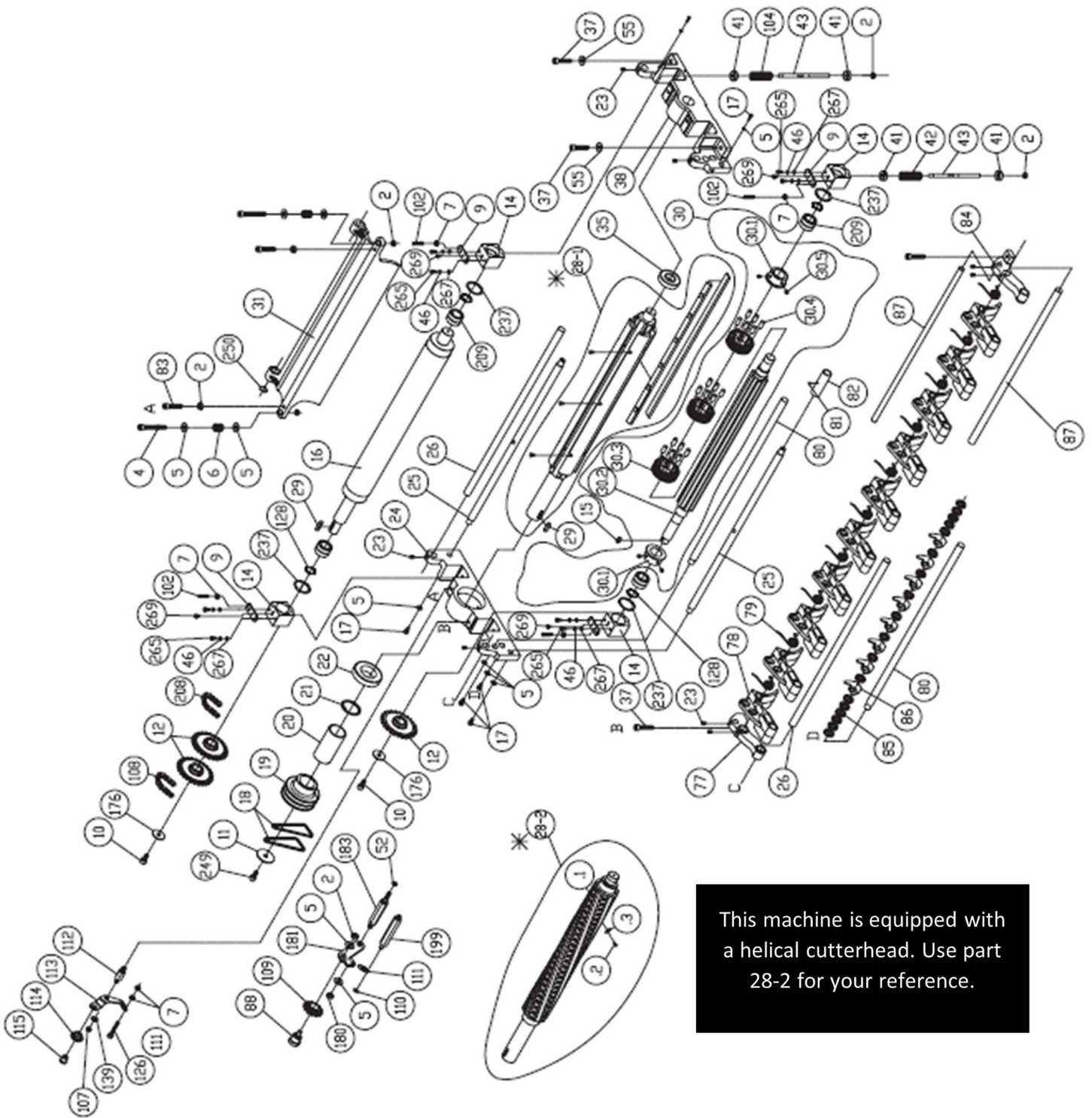
7.5HP*230V*60HZ*1PH*



Section 10: Machine Diagrams and Parts

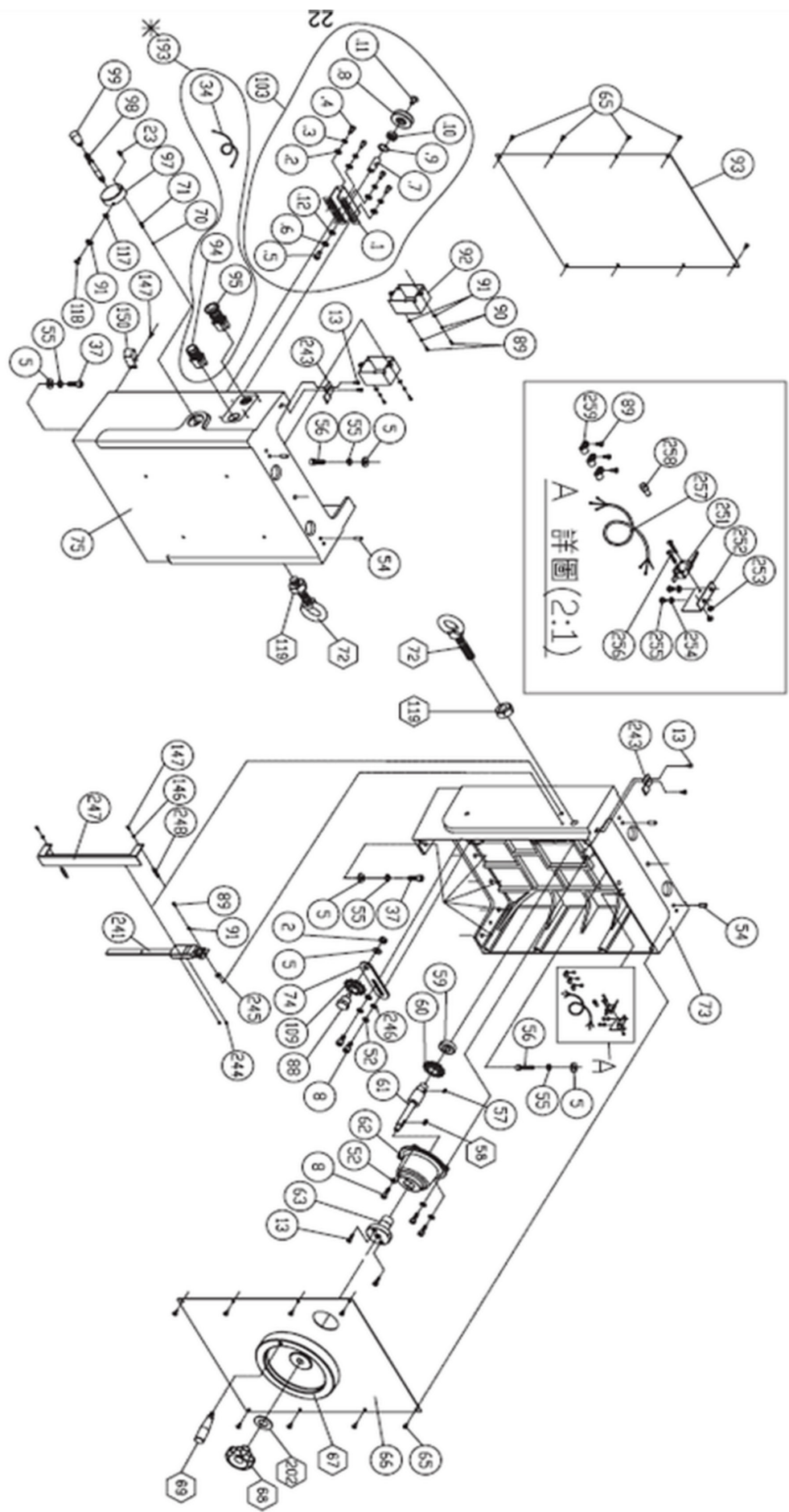
Machine Diagrams

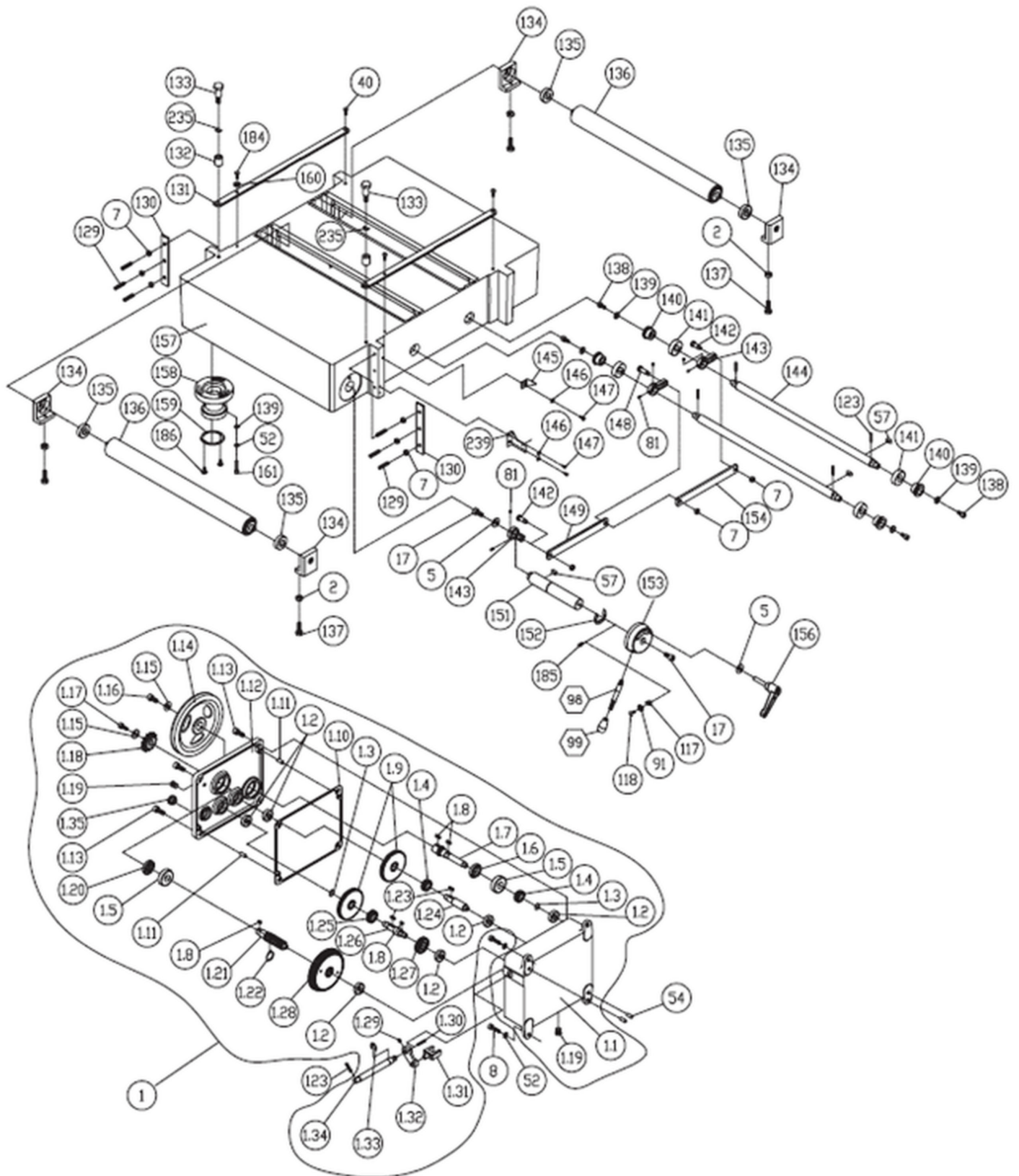


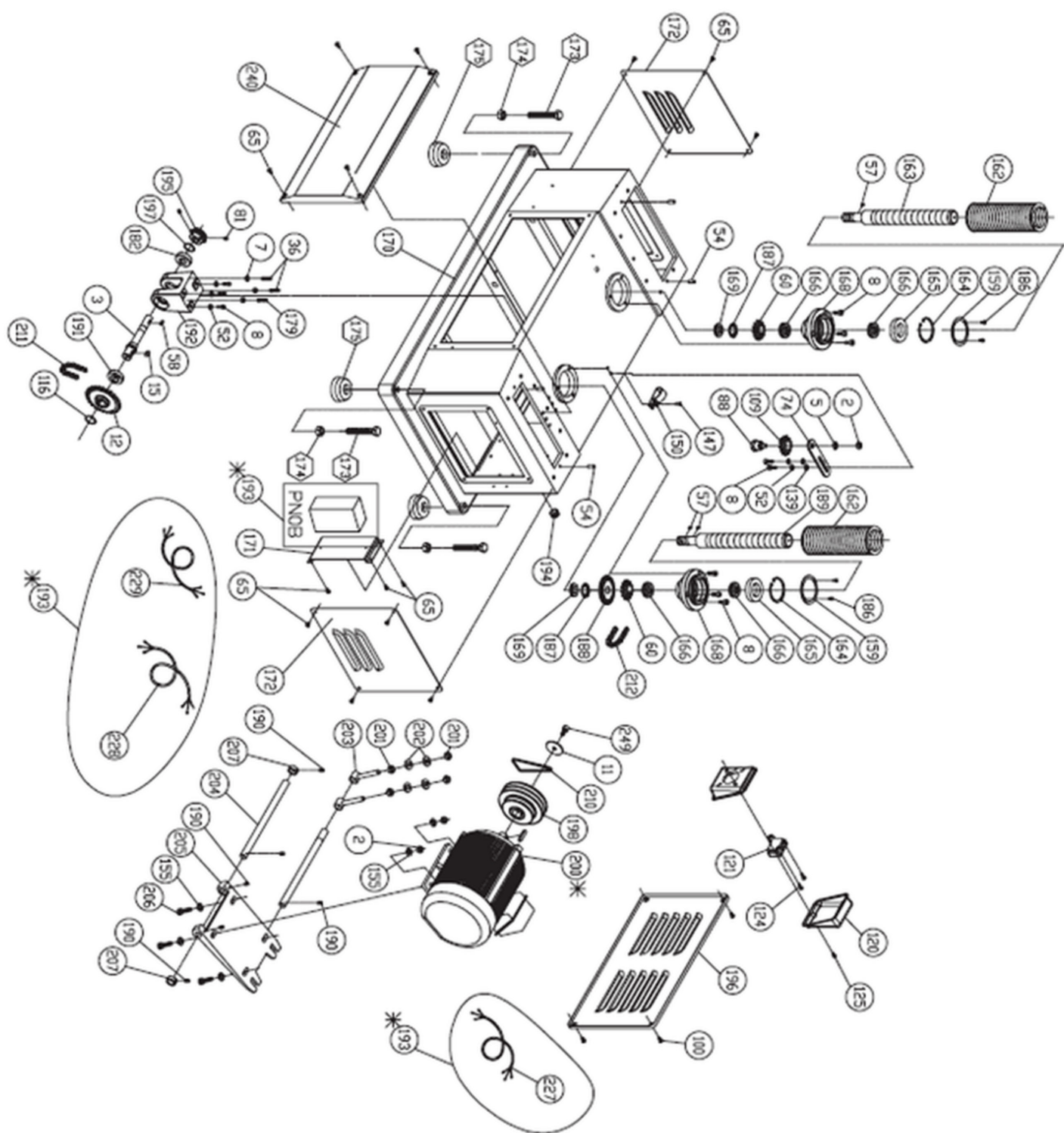


This machine is equipped with a helical cutterhead. Use part 28-2 for your reference.









Parts List

Key	Model	Description	Qty
1	PBBPL2201	GEAR BOX ASSY	1
1.01	PBBPL2201.01	GEAR BOX	1
1.02	ZBRG6201ZZ00	BALL BEARING 6201	6
1.03	PBBPL2201.03	RETAINING RING	2
1.04	PBBPL2201.04	GEAR	2
1.05	ZBRG6204ZZ00	BALL BEARING 6204	2
1.06	PBBPL2201.06	OIL SEAL TC24*40*7	1
1.07	PBBPL2201.07	SHAFT	1
1.08	ZKEY05051000	KEY 5*5*10	4
1.09	PBBPL2201.09	GEAR	2
1.10	PBBPL2201.10	GEARBOX GASKET 235*216*2t	1
1.11	PBBPL2201.11	FIXING PIN	2
1.12	PBBPL2201.12	GEAR BOX COVER	1
1.13	ZCHSM1015025	SOC HD CAP SCREW M10*1.5P*25	4
1.14	PBBPL2201.14	PULLEY	1
1.15	ZFWM1025300	FLAT WASHER 10*25*3.0t	2
1.16	XCHSM1015020	SOC HD CAP SCREW M10*1.5P*20	1
1.17	ZCHSM812520	CAP SCREW M8*1.25P*20	1
1.18	PBBPL2201.18	SPROCKET	1
1.19	PBBPL2201.19	OIL PLUG PT1/4"-19	2
1.20	PBBPL2201.20	OIL SEAL TC20*40*7	1
1.21	PBBPL2201.21	SHAFT	1
1.22	ZCRGSTW-25	RETAINING RING STW-25	1
1.23	ZKEY050516	KEY 5*5*16	2
1.24	PBBPL2201.24	GEAR SHAFT	1
1.25	PBBPL2201.25	GEAR	1
1.26	PBBPL2201.26	GEAR SHAFT	1
1.27	PBBPL2201.27	GEAR	1
1.28	PBBPL2201.28	GEAR	1
1.29	ZSTSM50805	SET SCREW M5*0.8P*5	1
1.30	PBBPL2201.30	SPRING PIN 4*25	1
1.31	PBBPL2201.31	BLOCK	1
1.32	PBBPL2201.32	STAND ARM	1
1.33	ZCRGETW-12	RETAINING RING ETW-12	1
1.34	PBBPL2201.34	SHAFT	1
1.35	PBBPL2201.35	OIL LENS 29	1
2	ZHXNM10150H8	HEX NUT M10*1.5P(17B*8H)	23
3	PBBPL2203	FIXING SHAFT	1



Key	Model	Description	Qty
4	ZCHSM1015075	SOC HD CAP SCREW M10*1.5P*75	4
5	ZFWM10250300	FLAT WASHER 10*25*3.0t	32
6	PBBPL2206	COMPRESSED SPRING	2
7	ZHXNM8125h65	HEX NUT M8*1.25P(13B*6.5H)	28
8	ZCHSM812525	SOC HD CAP SCREW M8*1.25P*25	30
9	PBBPL2209	ADJUST BOLCK	4
10	ZCHSM1015020	CAP SCREW M10*1.5P*20	2
11	ZFWM115303	FLAT WASHER 11*53*3.0t	2
12	PBBPL2212	SPROCKET	4
13	ZCHSM610016	SOC HD CAP SCREW M6*1.0P*16	12
14	PBBPL2214	BUSHING	4
15	ZKEY0807018	KEY 8*7*18	2
16	PBBPL2216	OUTFEED ROLLER	1
17	ZCHSM1015020	SOC HD CAP SCREW M10*1.5P*20	8
18	ZV-BLT0A080	V-BELT A80	2
19	PBBPL2219	CUTTERHEAD PULLEY	1
20	PBBPL2220	BUSHING	1
21	ZCRGRTW-85	RETAINING RING RTW-85	1
22	ZBRG6209ZZ00	BALL BEARING 6209	1
23	ZSTSM812510	SET SCREW M8*1.25P*10	9
24	PBBPL2224	CUTTHERHEAD BASE - LEFT	1
25	PBBPL2225	CUTTERHEAD BASE FIXING SHFAT	2
26	PBBPL2226	FIXING SHAFT	2
28-2	PBBPL2228-2	HELICAL CUTTERHEAD ASSY 6 SLOT	1
	PBBPL22ACSS1	TORX SCREWDRIVER	2
	PBBPL22ACSS2	TORX SCREW #10-32UNF*12.5	10
	PBBPL22ACSS3	INSERT 10PCS/BOX	1
29	ZKEY0807030	KEY 8*7*30	2
30	PBBPL2230	INFEED ROLLER ASSY	1
30.1	PBBPL2230.1	COLLER	2
30.2	PBBPL2230.2	FIXING SHAFT	1
30.3	PBBPL2230.3	INFEED ROLLER	22
30.4	PBBPL2230.4	RUBBER PIN	132
30.5	ZSTSM812510	SET SCREW M8*1.25P*10	4
31	PBBPL2231	PRESSURE PLATE-REAR	1
32	PBBPL2232	PLASTIC PAPER 720*570*0.05t	2
33	PBBPL2233	PLASTIC PAPER 1800*1300*0.1 t	1
35	PBBPL2235	BALL BEARING 6007	1
36	ZSTSM812520	SET LOCK SCREW M8*1.25P*20	2
37	ZCHSM1015035	CAP SCREW M10*1.5P*35	20
38	PBBPL2238	CUTTHERHEAD BASE - RIGHT	1



Key	Model	Description	Qty
40	ZHXB812516	HEX. SCREW M8*1.25P*16	2
41	PBBPL2241	PACKING	8
42	PBBPL2242	SPRING	2
43	PBBPL2243	FIXING SHAFT	4
44	PBBPL2244	DUST CHUTE	1
46	ZSWM601203	SPRING WASHER 6.1*12.3	26
47	ZFWM701301	FLAT WASHER 6.6*13*1.0t	18
48	PBBPL2248	DUST HOOD	1
49	PBBPL2249	BRACKET	4
50	PBBPL2250	CHIP PLATE	1
51	PBBPL2251	TOP COVER	1
52	ZSWM8.2015.4	SPRING WASHER 8.2*15.4	27
53	PBBPL2253	HANDLE	1
54	PBBPL2254	FIXING PIN	10
55	ZSWM10.218.5	SPRING WASHER 10.2*18.5	20
56	ZCHSM1015040	SOC HD CAP SCREW M10*1.5P*40	2
57	ZKEY050510	KEY 5*5*10	7
58	ZKEY050516	KEY 5*5*16	2
59	ZBRG6004ZZ	BALL BEARING 6004	1
60	PBBPL2260	SPROCKET	3
61	PBBPL2261	HANDWHEEL SHAFT	1
62	PBBPL2262	HANDWHEEL BUSHING	1
63	PBBPL2263	HANDWHEEL BASE	1
64	PBBPL2264	SCREWDRIVER	1
65	ZRHSM610010	ROUNDHEAD HEX SCREW M6*1.0P*10	28
66	PBBPL2266	SIDE COVER - RIGHT	1
67	PBBPL2267	HAND WHEEL	1
68	PBBPL2268	KNOB	1
69	PBBPL2269	HANDLE	1
70	PBBPL2270	STEEL BALL 6	1
71	PBBPL2271	SPRING	1
72	ZEYBM2015050	EYE BOLT M20*2.5P*50	2
73	PBBPL2273	RIGHT SUPPORT PLATE	1
74	PBBPL2274	CHAIN TENSIONER BRACKET	2
75	PBBPL2275	LEFT SUPPORT PLATE	1
77	PBBPL2277	PRESSURE PLATE BASE - LEFT	1
78	PBBPL2278	PRESSURE PLATE - FRONT	10
79	PBBPL2279	SPRING	10
80	PBBPL2280	FIXING SHAFT	2
81	ZSTSM50805	SET SCREW M5*0.8P*5	9
82	PBBPL2282	SHAFT	1



Key	Model	Description	Qty
83	ZCHSM1015050	SOC HD CAP SCREW M10*1.5P*50	2
84	PBBPL2284	PRESSURE PLATE BASE - RIGHT	1
85	PBBPL2285	SPACER	72
86	PBBPL2286	ANTI-KICK BACK	62
87	PBBPL2287	FIXING SHAFT	2
88	PBBPL2288	IDLE FIXING SHAFT	3
89	ZRHSM407010	ROUND HD SCREW M4*0.7P*10	4
90	ZSWM04077	SPRING WASHER 4.1*7.7	4
91	ZFWM04101	FLAT WASHER 4.3*10*1.0t	6
92	PBBPL2292	SWITCH BOX	2
93	PBBPL2293	SIDE COVER - LEFT	1
97	PBBPL2297	SHAFT BASE	1
98	PBBPL2298	HANDEL SHAFT	2
99	PBBPL2299	KNOB	2
100	ZFHSM610020	FLAT HEAD SCREW M6*1.0P*20	4
102	ZSTSM812525	SET SCREW M8*1.25P*25	4
103	PBBPL22103	BELT IDLER ASSY	1
103.1	PBBPL22103.1	SHAFT	1
103.2	ZFWM081902	FLAT WASHER 8.5*19*2.0t	4
103.3	ZSWM0815.4	SPRING WASHER 8.2*15.4	4
103.4	ZCHSM812516	SOC HD CAP SCREW M8*1.25P*16	4
103.5	ZCHSM1015020	SOC HD CAP SCREW M10*1.5P*20	1
103.6	ZSWM1018.5	SPRING WASHER 10.2*18.5	1
103.7	PBBPL22103.7	FIXING SHAFT	1
103.8	PBBPL22103.8	BELT IDLER	1
103.9	ZCRGRTW-30	RETAINING RING RTW-30	1
103.10	ZBRG6200ZZ	BALL BEARING 6200	1
103.11	ZRHSM1015020	ROUNDHEAD HEX SCREW M10*1.5P*20	1
103.12	SFWM1019150	FLAT WASHER 10.5*19*1.5t	1
104	PBBPL22104	SPRING	2
105	PBBPL22105	SHOULDER SCREW	2
106	PBBPL22106	SHOULDER SCREW	2
107	ZLKNM812509	HEX LOCK NUT M8*1.25P(13B*9H)	3
108	PBBPL22108	CHAIN #40*72P	1
109	PBBPL22109	IDLE	3
110	ZCRGSTW-700	RETAINING RING ETW-7	1
111	PBBPL22111	SPRING	2
112	PBBPL22112	IDLER BRACKET SHAFT	1
113	PBBPL22113	IDEL BRACKET	1
114	PBBPL22114	CHAIN TENSIONER	1
115	PBBPL22115	CHAIN TENSIONER SHAFT	1



Key	Model	Description	Qty
116	ZCRGSTW-250	RETAINING RING STW-25	1
117	PBBPL22117	POINTER	2
118	ZRHSM40708	ROUND HD SCREW M4*0.7P*8	2
119	ZHXNM2025016	HEX NUT M20*2.5P(30B*16H)	2
120	PBBPL22120	OUTLET BOX ASSY	1
121	PBBPL22121	TERMINAL PLATE	1
122	PBBPL22122	BUFFER	2
123	ZPINOD05L25	SPRING PIN 5*25	5
124	ZRHSM508020	ROUND HD SCREW M5*0.8P*20	2
125	ZRHS3162414	ROUND HD SCREW 3/16"-24NC*1/4"	1
126	ZCHSM812550	SOC HD CAP SCREW M8*1.25P*50	1
127	PBBPL22127	WRENCH BOX 12*14	1
128	ZCRGSISTW-30	RETAINING RING ISTW-30	4
129	ZSTSM812535	SET SCREW M8*1.25P*35	6
130	PBBPL22130	PLATE	2
131	PBBPL22131	LEAD PLATE	2
132	PBBPL22132	FIXING POINT	2
133	PBBPL22133	SHOULDER SCREW	2
134	PBBPL22134	ROLLER FIXING BASE	4
135	ZBRG6203ZZ00	BALL BEARING 6203	4
136	PBBPL22136	ROLLER W/BEARING	2
137	ZHXB M1015030	HEX. SCREW M10*1.5P*30	4
138	ZCHSM812516	SOC HD CAP SCREW M8*1.25P*16	4
139	ZFWM801902	FLAT WASHER 8.5*19*2.0t	13
140	PBBPL22140	CAM LOCK SHAFT	4
141	PBBPL22141	CAM LOCK	4
142	PBBPL22142	SHOULDER SCREW	2
143	PBBPL22143	CONNECT PLATE	3
145	PBBPL22145	POINTER	1
146	ZFWM501201	FLAT WASHER 5.3*12*1.0t	1
147	ZRHSM508010	ROUND HD SCREW M5*0.8P*10	8
148	PBBPL22148	SHOULDER SCREW	1
149	PBBPL22149	FIXING PLATE	1
150	PBBPL22150	CABLE FASTENER ACC-3	8
151	PBBPL22151	FIXING SHAFT	1
152	ZCRGETW0240	RETAINING RING ETW-24	1
153	PBBPL22153	BRACKET	1
154	PBBPL22154	FIXING PLATE	1
155	ZFWM1002202	FLAT WASHER 10.3*22*2.0t	8
156	PBBPL22156	UNIVERSAL HANDLE	1
157	PBBPL22157	TABLE	1



Key	Model	Description	Qty
158	PBBPL22158	FIXING SHAFT	2
159	PBBPL22159	FIXING BUSH	4
160	ZFWM6016080	FLAT WASHER 6.5*16*0.8t	2
161	ZCHSM812540	SOC HD CAP SCREW M8*1.25P*40	6
162	PBBPL22162	EXPANSION BEND	2
163	PBBPL22163	SHAFT	1
164	ZCRGRTW0680	RETAINING RING RTW-68	2
165	ZBRG6008ZZ00	BALL BEARING 6008	2
166	ZBRG51105ZZ0	BEARING 51105	4
168	PBBPL22168	BUSHING	2
169	ZHXNM25150	NUT M25*1.5P	2
170	PBBPL22170	BASE CASTING	1
172	PBBPL22172	BASE SIDE COVER	2
173	ZHXB1620100	HEX. SCREW M16*2.0P*100	4
174	ZHXNM1620013	HEX NUT M16*2.0P(24B*13H)	4
175	PBBPL22175	FOOT	4
176	ZFWM1103703	FLAT WASHER 11*37*3.0t	2
179	ZSTSM812430	SET SCREW M8*1.25P*30	1
180	ZLKNM1015012	HEX LOCK NUT M10*1.5P(17B*12H)	3
181	PBBPL22181	JOEL BRACKET	1
182	PBBPL22182	BALL BEARING 6204	1
183	PBBPL22183	IDLE FIXING SHAFT	1
184	ZHXB610016	HEX. SCREW M6*1.0P*16	2
185	PBBPL22185	SET SCREW M6*1.0P*12	1
186	ZRSWM407008	ROUND HEAD SCREW W/FLAT WASHER M4*0.7P*8/4*10*0.8t	8
187	ZFWM60D25	WASHER 25	2
188	PBBPL22188	BEVEL GEAR	1
189	PBBPL22189	SHAFT	1
190	ZSTSM812512	SET SCREW M8*1.25P*12	7
191	ZBRG6005ZZ00	BALL BEARING 6005	1
192	PBBPL22192	FIXING BLOCK	1
*193	PBBPL22193	SWITCH ASSEMBLY	
194	PBBPL22194	WIRE PROTECTIVE RING 15.5*19*5.5	1
195	PBBPL22195	BEVEL GEAR	1
196	PBBPL22196	STAND ACCESS PANEL	1
197	ZCRGSTW020	RETAINING RING STW-20	1
198	PBBPL22198	MOTOR PULLEY	1
199	PBBPL22199	FIXING SHAFT	1
*200	PBBPL22200	MOTOR ASSEMBLY	
201	ZHXNM1217510	HEX NUT M12*1.75P(19B*10H)	4
202	ZFWM13.28030	FLAT WASHER 13*28*3.0t	8



Key	Model	Description	Qty
203	PBBPL22203	ADJUST RAOD ASSY	2
204	PBBPL22204	MOTOR MOUNTING SHAFT	2
205	PBBPL22205	MOTOR PLATE	1
206	ZHXB1015040	HEX. SCREW M10*1.5P*40	4
207	PBBPL22207	SPACER	2
208	PBBPL22208	CHAIN #40*60P	1
209	PBBPL22209	NEEDLE BEARING NA-6906	4
210	PBBPL22210	V-BELT A56	1
211	PBBPL22211	CHAIN #40*107P	1
212	PBBPL22212	CHAIN #40*80P	1
214	PBBPL22214	HEX. WRENCH 8mm	1
215	PBBPL22215	HEX. WRENCH 6mm	1
216	PBBPL22216	HEX. WRENCH 4mm	1
217	PBBPL22217	WRENCH BOX 8*10	1
218	PBBPL22218	WRENCH BOX 22*24	1
231	PBBPL22231	HEX. WRENCH 3mm	1
232	PBBPL22232	WRENCH BOX 17*19	1
234	PBBPL22234	WOOD SCREW 3/8-16NC*4"	4
235	ZCRGETW008	RETAINING RING ETW-8	2
236	ZRHSM610010	ROUND HEAD TAPPING SCREW M6*1.0P*10L	18
237	ZCRGRTW047	RETAINING RING RTW-47	4
238	PBBPL22238	KNOB ASSY	2
239	PBBPL22239	BRACKET	1
240	PBBPL22240	COVER - FRONT	1
241	PBBPL22241	DIGITAL READ OUT 9 inch	1
243	PBBPL22243	SPRING PLATE	2
244	ZFHSM305006	FLAT HEAD SCREW M3*0.5P*6	2
245	ZFWM4.301201	FLAT WASHER 4.3*12*1.0t	1
246	ZFEM8.501602	FLAT WASHER 8.5*16*2.0t	2
247	PBBPL22247	DIGITAL READ OUT BRACKET	1
248	PBBPL22248	HEX BOLT	2
249	ZCHSM1015020	CAP LOCKING SCREW M10*1.5P*20	2
250	ZWWBWW6001	WAVE WASHER BWW-6001	1
251	PBBPL22251	LIMIT SWITCH 125V*20.5AMP	1
252	PBBPL22252	SWITCH BRACKET	1
253	ZHXNM30502.5	HEX NUT M3*0.5P(5.5B*2.5H)	2
254	ZSWM5.109.3	SPRING WASHER 5.1*9.3	2
255	ZRHSM507008	ROUND HD SCREW M5*0.8P*8	2
256	ZRHSM305015	ROUND HD SCREW M3*0.5P*15	2
258	PBBPL22258	TERMINAL TM-3	1
259	PBBPL22259	CABLE FASTENER ACC-2.5	3



Key	Model	Description	Qty
260	ZHXNM508004	HEX NUT M5*0.8P(8B*4H)	1
261	ZCHSM508025	SOC HD CAP SCREW M5*0.8P*25	1
262	PBBPL22262	BLOCK	2
264	ZWOSM62.624	WOOD SCREW M6*2.6P*24	24
265	ZCHSM610020	CAP LOCKING SCREW M6*1.0P*20	8
267	ZFWM6.301302	FLAT WASHER 6.3*13*2.0t	8
269	PBBPL22269	OIL CUP 3/16"	4





Busy Bee Tools

BUSY BEE TOOLS 2 YEARS LIMITED WARRANTY

Busy Bee Tools warrants every product to be free from defects in materials and agrees to correct such defects where applicable. This warranty covers **two years** for parts and 90 days for labor (unless specified otherwise), to the original purchaser from the date of purchase but does not apply to malfunctions arising directly or indirectly from misuse, abuse, improper installation or assembly, negligence, accidents, repairs or alterations or lack of maintenance.

Proof of purchase is necessary.

All warranty claims are subject to inspection of such products or part thereof and Busy Bee Tools reserves the right to inspect any returned item before a refund or replacement may be issued.

This warranty shall not apply to consumable products such as blades, bits, belts, cutters, chisels, punches etc.

Busy Bee Tools shall in no event be liable for injuries, accidental or otherwise, death to persons or damage to property or for incidental contingent, special or consequential damages arising from the use of our products.

RETURNS, REPAIRS AND REPLACEMENTS

To return, repair, or replace a Busy Bee Tools product, you must visit the appropriate Busy Bee Tools showroom or call 1-800-461-BUSY.

For replacement parts directly from Busy Bee Tools, for this machine, please call 1-800-461-BUSY (2879), and have your model number and part number & payment option ready.

- All returned merchandise will be subject to a minimum charge of 15% for re-stocking and handling with the following qualifications.
- Returns must be pre-authorized by us in writing.
- We do not accept collect shipments.
- Items returned for warranty purposes must be insured and shipped pre-paid to the nearest warehouse
- Returns must be accompanied with a copy of your original invoice as proof of purchase. Returns must be in an un-used condition and shipped in their original packaging a letter explaining your reason for the return. Incurred shipping and handling charges are not refundable.
- Busy Bee will repair or replace the item at our discretion and subject to our inspection.
- Repaired or replaced items will be returned to you pre-paid by our choice of carriers.
- Busy Bee reserves the right to refuse reimbursement or repairs or replacement if a third party without our prior authorization has carried out repairs to the item.
- Repairs made by Busy Bee Tools are warranted for 30 days on parts and labour.
- Any unforeseen repair charges will be reported to you for acceptance prior to making the repairs.
- The Busy Bee Parts & Service Departments are fully equipped to do repairs on all products purchased from us with the exception of some products that require the return to their authorized repair depots. A Busy Bee representative will provide you with the necessary information to have this done.
- For faster service it is advisable to contact the nearest Busy Bee location for parts availability prior to bringing your product in for repairs.

