

INSTRUCTION MANUAL

20" WOOD PLANER MODEL: CP220



WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.

Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.

The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement and other masonry products.
- Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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INTRODUCTION

Manual Accuracy

We are proud to offer this manual with your new machine! We've made every effort to be exact with the instructions, specifications, drawings, and photographs of the machine we used when writing this manual. However, sometimes errors do happen and we apologize for them.

Also, owing to our policy of continuous improvement, **your machine may not exactly match the manual**. If you find this to be the case, and the difference between the manual and machine leaves you in doubt, check our website for the latest manual update or call technical support for help.

Before calling, find the manufacture date of your machine by looking at the date stamped into the machine ID label (see below). This will help us determine if the manual version you received matches the manufacture date of your machine.

20" Industrial Planer
Model: CP220

SPECIFICATIONS

Rated voltage:	230v, single phase
Rated power:	3hp
Cutterhead speed:	5000rpm
Cutterhead diameter:	79mm
Max. cutting width:	508mm
Max. cutting height:	203mm
Min. stock thickness:	4.7mm
Max. cutting depth:	3mm per pass
Feed rate:	16FPM & 20FPM
Main table size:	508mm x 654mm
Extension wing size (2):	508mm x 378mm
Dust port:	100mm
Machine weight (Approx.):	400kgs

Serial Number:

Date:

Made In China

Contact Info

We stand behind our machines. If you have any service questions, parts requests or general questions about the machine, please contact us.

Machine Description

A planer is designed to remove material in precise increments from the surface of natural wood stock to make the workpiece flat.

Once the depth of cut is set, the workpiece is placed on the table and moved into the infeed roller, which pulls the workpiece under the rotating cutterhead where the material is removed. After the workpiece is completely free from the outfeed roller, the depth of cut is increased and the workpiece is passed through the planer again. This process continues until the workpiece is flat and of the correct thickness.

Identification

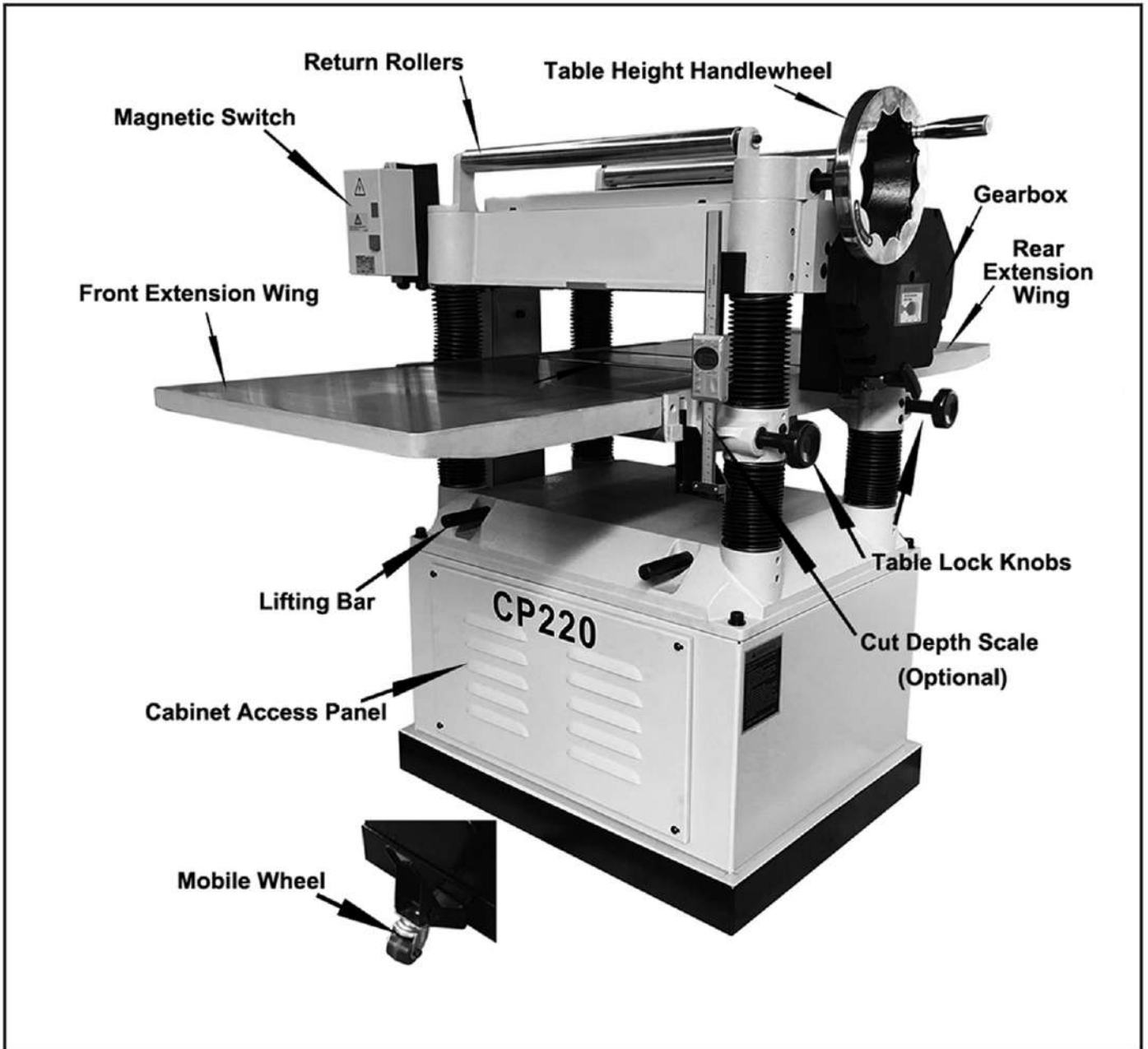


Figure 1. Identification.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, review industry trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, we will not be held liable for accidents caused by lack of training.

Internal Components

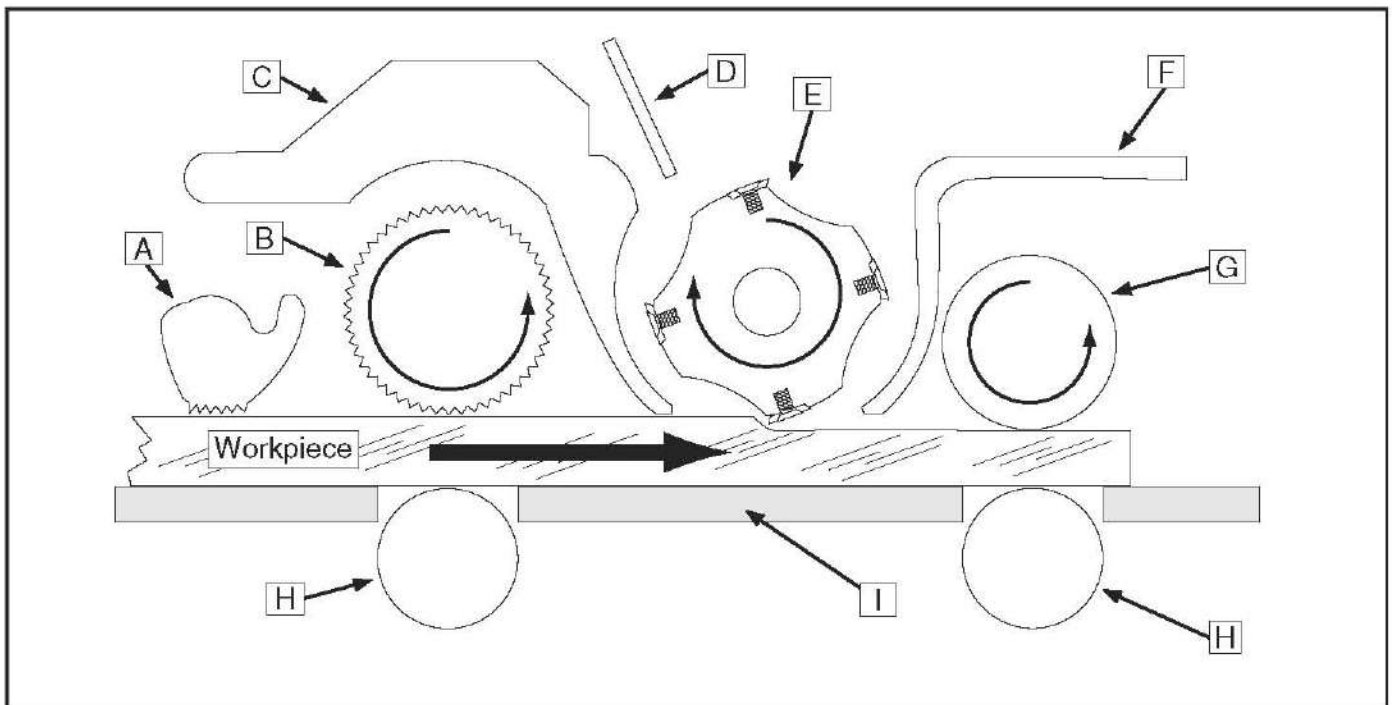


Figure 2. Workpiece path and major planing components (side cutaway view).

- A. **Anti-Kickback Fingers:** Provide additional safety for the operator.
- B. **Serrated Infeed Roller:** Pulls the workpiece toward the cutterhead.
- C. **Chip Breaker:** Breaks off chips created by the cutterhead to prevent tearout and diverts the chips to the dust port.
- D. **Chip Deflector:** Directs chips into the dust hood.
- E. **Cutterhead:** Holds the indexable carbide inserts that remove material from the workpiece.
- F. **Pressure Bar:** Stabilizes the workpiece as it leaves the cutterhead and assists in deflecting wood particles toward the dust hood.
- G. **Outfeed Roller:** Pulls the workpiece through the planer.
- H. **Table Rollers:** Provide a rolling surface to enable the feed rollers to pull the workpiece along.
- I. **Planer Table:** Provides a smooth and level path for the workpiece as it moves through the planer.

CP220 20" WOOD PLANER

MACHINE DATA SHEET

- * Voltage: 220v/50hz(60hz)1ph
- * Motor: 3hp or 5hp
- * Planer size: 508mm (20")
- * Max. cutting width: 508mm (20")
- * Maximum cutting height: 203mm (8")
- * Minimum stock thickness: 4.7mm (3/16")
- * Minimum stock length: 203mm (8")
- * Maximum cutting depth: 3mm (1/8")
- * Feed rate: 4.8MPM(16 FPM) & 6.1MPM(20 FPM)
- * Cutterhead diameter: 79mm (3-1/8")
- * Number of knives: 4 HSS or Helical cutterhead
- * Cutterhead speed: 5000 RPM
- * Switch type: Magnetic
- * Built-in mobile base: Yes
- * Table and extension wings: Precision ground cast iron
- * Dust port: 100mm (4")
- * Main table size: 508mm x 654mm (20" x25-3/4")
- * Extension wing size(2): 508mm x 378mm (20" x14-7/8")
- * Overall dimensions: 1410mm x1003mm x 1165mm
- * Machine weight: 342 kgs
- * Packing dimensions: 960mm x720mm x1110mm
- * Shipping weight: 372 kgs

SECTION 1: SAFETY

WARNING

For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE

This symbol is used to alert the user to useful information about proper operation of the machine.

WARNING

Safety Instructions for Machinery

OWNER'S MANUAL. Read and understand this owner's manual **BEFORE** using machine. Untrained users can be seriously hurt.

EYE PROTECTION. Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery. to reduce the risk of eye injury or blindness from flying particles Everyday eyeglasses are not approved safety glasses.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material, and always wear a NIOSH-approved respirator to reduce your risk.

WEARING PROPER APPAREL. Do not wear clothing, apparel, or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips which could cause a loss of workpiece control.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

MENTAL ALERTNESS. Be mentally alert when running machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

WARNING

Safety Instructions for Machinery

DISCONNECTING POWER SUPPLY. Always disconnect machine from power supply before servicing, adjusting, or changing cutting tools (bits, blades, cutters, etc.). Make sure switch is in OFF position before reconnecting to avoid an unexpected or unintentional start.

INTENDED USE. Only use the machine for its intended purpose and only use recommended accessories. Never stand on machine, modify it for an alternative use, or outfit it with non-approved accessories.

STABLE MACHINE. Unexpected movement during operations greatly increases the risk of injury and loss of control. Verify machines are stable/secure and mobile bases (if used) are locked before starting.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

GUARDS & COVERS. Guards and covers can protect you from accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly before using machine.

REMOVING TOOLS. Never leave adjustment tools, chuck keys, wrenches, etc. in or on machine—especially near moving parts. Verify removal before starting!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

DANGEROUS ENVIRONMENTS. Do not use machinery in wet locations, cluttered areas, around flammables, or in poorly-lit areas. Keep work area clean, dry, and well lighted to minimize risk of injury.

APPROVED OPERATION. Untrained operators can be seriously hurt by machinery. Only allow trained or properly supervised people to use machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make workshop kid proof!

CHILDREN & BYSTANDERS. Keep children and bystanders a safe distance away from work area. Stop using machine if children or bystanders become a distraction.

FEED DIRECTION. Unless otherwise noted, feed work against the rotation of blades or cutters. Feeding in the same direction of rotation may pull your hand into the cut.

SECURING WORKPIECE. When required, use clamps or vises to secure workpiece. A secured workpiece protects hands and frees both of them to operate the machine.

UNATTENDED OPERATION. Never leave machine running while unattended. Turn machine **OFF** and ensure all moving parts completely stop before walking away.

MAINTENANCE & INSPECTION. A machine that is not properly maintained may operate unpredictably. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. Regularly inspect machine for loose bolts, alignment of critical parts, binding, or any other conditions that may affect safe operation. Always repair or replace damaged or mis-adjusted parts before operating machine.

EXPERIENCING DIFFICULTIES. If at any time you are experiencing difficulties performing the intended operation, stop using the machine!

WARNING

Additional Safety Instructions for Planers

- 1. OWNER'S MANUAL.** This machine presents significant safety hazards to untrained users. Read and understand this entire manual before starting the planer.
- 2. KICKBACK.** Be familiar with kickback. Kickback happens when the workpiece is thrown towards the operator at a high rate of speed. *Until you have a clear understanding of kickback and how it occurs, DO NOT operate this planer!*
- 3. REACHING INSIDE PLANER.** To avoid serious personal injury from the cutterhead, never remove guards or reach inside the planer while it is connected to power.
- 4. DULL/DAMAGED INSERTS.** Only use sharp, undamaged inserts. Kickback may occur and the cutting results will be poor if the planer is operated with dull or damaged inserts.
- 5. BODY PLACEMENT.** To avoid getting hit if a kickback occurs, always stand to one side of the planer during the entire operation.
- 6. PLANING CORRECT MATERIAL.** Only plane natural wood stock with this planer. DO NOT plane MDF, plywood, laminates or other synthetic materials that can break up inside the planer and cause injury hazards.
- 7. GRAIN DIRECTION.** Planing across the grain is hard on the planer and may cause kickback. Always plane in the same direction or at a slight angle with the wood grain.
- 8. LOOKING INSIDE PLANER.** Wood chips fly around inside the planer at a high rate of speed during operation. To avoid injury from flying material, DO NOT look inside the planer during operation.
- 9. CUTTING LIMITATIONS.** To reduce the risk of kickback hazards or damage to the machine, always operate within the published capacities found in the **Data Sheet**
- 10. CLEAN STOCK.** Planing stock with nails, staples, or loose knots may cause debris to be thrown at the operator at a high rate of speed and will damage the cutterhead. To avoid these hazards, always thoroughly inspect and prepare the workpieces.
- 11. CLEARING JAMS.** To avoid serious personal injury from the spinning cutterhead, always stop the planer and disconnect it from power before removing jammed workpieces.
- 12. INFEEED ROLLER CLEARANCE.** The infeed roller is designed to pull material into the spinning cutterhead. To avoid serious personal injury, always keep hands, clothing, jewelry, and long hair away from the infeed roller during operation.
- 13. DISCONNECT BEFORE ADJUSTMENTS.** To avoid unexpected start-up and serious personal injury, always disconnect the planer from power before performing adjustments, maintenance, or service.

WARNING

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to decrease the risk of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

SECTION 2: CIRCUIT REQUIREMENTS

220V Single-Phase Operation

!WARNING

Serious personal injury could occur if you connect the machine to power before completing the setup process. **DO NOT** connect the machine to the power until instructed later in this manual.



!WARNING

Electrocution or fire could result if machine is not grounded and installed in compliance with electrical codes. Compliance **MUST** be verified by a qualified electrician!

Full Load Amperage Draw

This machine draws the following amps under maximum load:

3HP Model Amp Draw 15 Amps
5HP Model Amp Draw 25 Amps

Power Supply Circuit Requirements

The power supply circuit for your machine **MUST** be grounded and rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

3HP Minimum Circuit Size 20 Amps
5HP Minimum Circuit Size 30 Amps

Power Connection Device

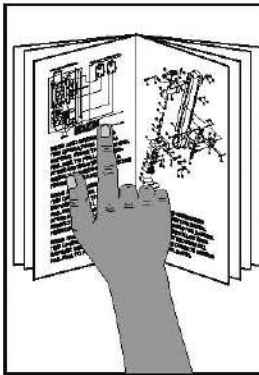
The type of plug required to connect your machine to power depends on the type of service you currently have or plan to install.

Extension Cords

Using extension cords may reduce the life of the motor. Instead, place the machine near a power source. If you must use an extension cord:

- 3HP Model : Use at least a 12 gauge cord that does not exceed 50 feet in length.
- 5HP Model : Use at least a 10 gauge cord that does not exceed 50 feet in length.
- Ensure that the extension cord contains a ground wire and plug pin.
- A qualified electrician **MUST** size cords over 50 feet long to prevent motor damage.

SECTION 3: SETUP



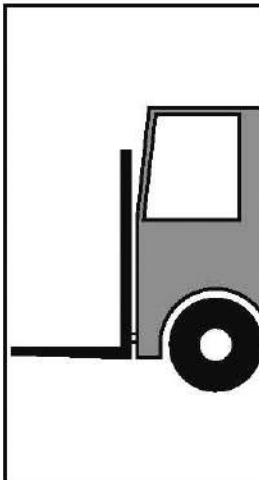
⚠️ WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!



⚠️ WARNING

Wear safety glasses during the entire setup process!



⚠️ WARNING

The model CP220 Wood Planer is a very heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment to move the shipping crate and remove the machine from the crate.

⚠️ CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

Needed for Setup

The following are needed to complete the setup process, but are not included with your machine:

Description	Qty
• Assistant.....	1
• Safety Glasses	1 Per Person
• Forklift (rated for at least 1000 lbs.).....	1
• Shop Rags & Cleaning Solvent..	As Needed
• Floor Mounting Hardware.....	As Needed
• Straightedge 4'	1
• Dust Collection System	1
• 4" or 5" Dust Hose w/Clamps	1

Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover the machine is damaged, *please immediately contact with us for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.

Inventory

The following is a description of the main components shipped with your machine. Lay the components out to inventory them.

Note: *If you can't find an item on this list, check the mounting location on the machine or examine the packaging materials carefully. Occasionally we pre-install certain components for shipping purposes.*

If any nonproprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

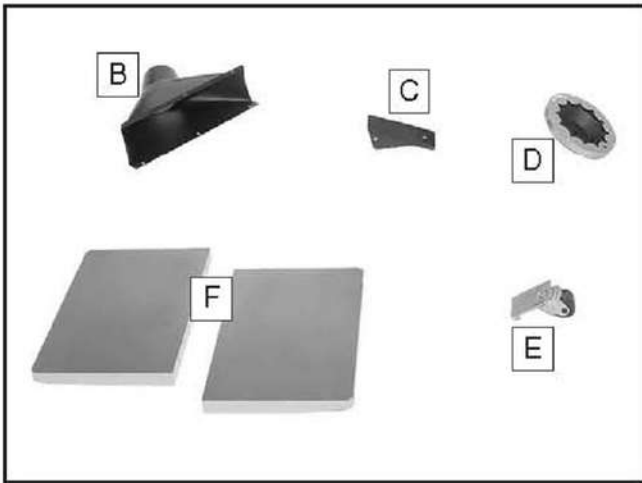


Figure 4. CP220 Inventory



Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or degreaser, such as shown in **Figure 5**. Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces. Always follow the manufacturer's instructions when using any type of cleaning product.

You MUST clean the cutterhead (remove the top cover), table, feed rollers, and the extension wings before assembly to ensure proper operation of your planer.

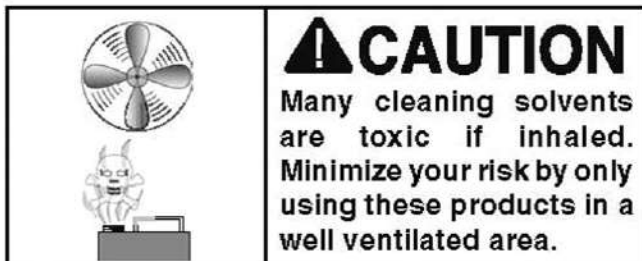


Figure 5. Cleaner

Site Considerations

Floor Load

Refer to the **Machine Data Sheets** for the weight and footprint specifications of your machine. Some residential floors may require additional reinforcement to support both the machine and operator.

Placement Location

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figure 6** for the minimum working clearances.

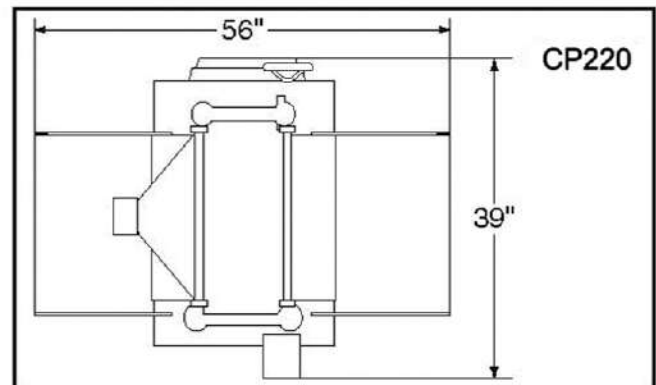
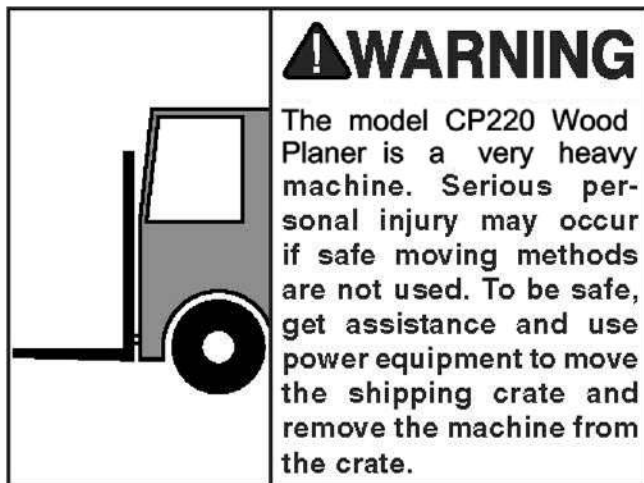


Figure 6. Minimum working clearances.



Lifting & Moving Planer



The cabinet stand on your planer is equipped with four lifting bars that pull out in order to lift and place the planer, as shown in **Figure 7**.

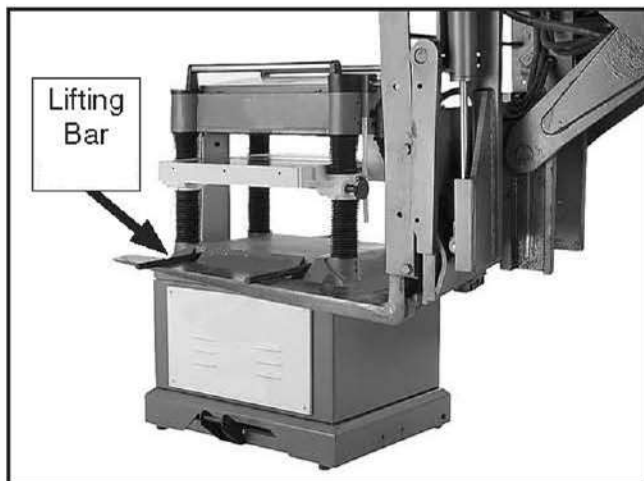


Figure 7. Lifting the planer with a forklift.

Tip: When positioning the lift forks, place shop rags or cardboard between the forks and the cabinet stand to avoid scratching the paint.

Assembly

To assemble your planer:

1. Install (3) M8-1.25 x 20 set screws in the holes in the bottom of the wings (see **Figure 8**).

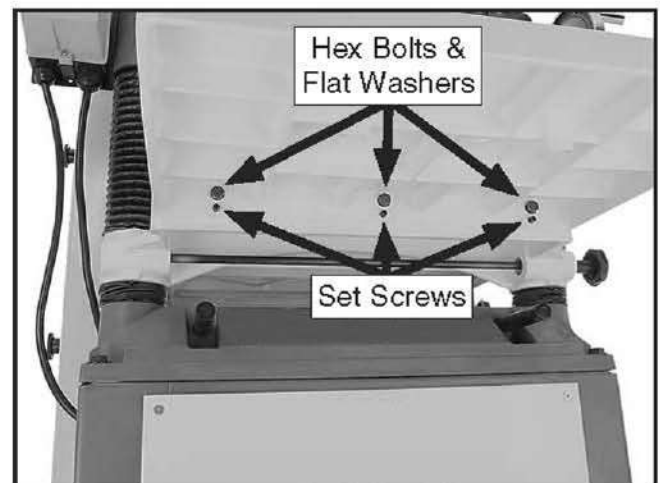


Figure 8. Front extension wing installed

2. Attach the table extension wings to the planer table with (3) M8-1.25 x 30 hex bolts, 8mm lock washers, and 8mm flat washers, as shown in **Figure 8**, but do not fully tighten the bolts at this time.
3. Using a straightedge as a guide and the set screws for leveling control, position the extension wings evenly with the table, then fully tighten the hex bolts.

Note: Do not rest the straightedge on the table rollers which would give you a false reading.

4. Place the bushing on the handwheel shaft.
5. Insert the key into the shaft keyway.
6. Screw the handle into the handwheel.
7. Place the handwheel on the shaft and secure it with the M12-1.75 hex nut and 12mm flat washer, as shown in **Figure 9**.



Figure 9. Installing the table height handwheel.

8. **Model CP220 :** Attach the dust hood to the top of the planer with (3) M6-1 x 10 hex bolts, 6mm flat washers, and M6-1 hex nuts as shown in **Figure 10**, then attach the bottom of the dust hood to the planer with the M8-1.25 x 20 cap screws.

Note: You will need to reach into the dust hood to hold the hex nuts while tightening the hex bolts.

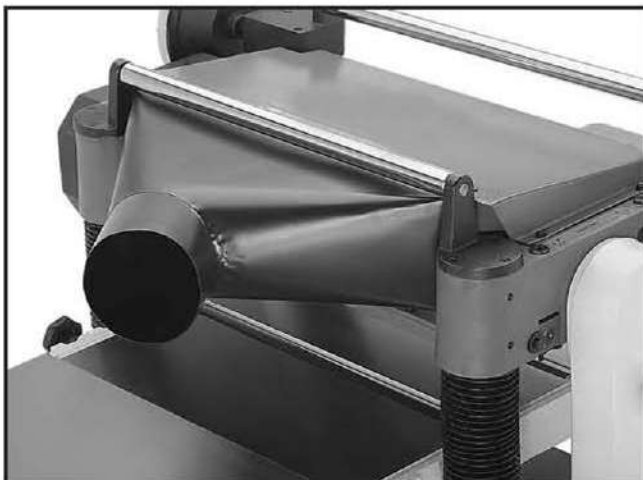


Figure 10. Dust hood attached.

9. Remove the hex bolt, and hex nut that are pre-installed in the foot pedal bracket (see **Figure 11**).

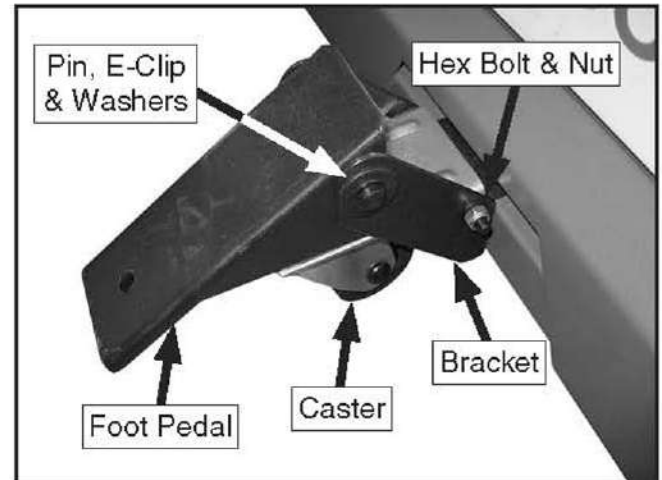


Figure 11. Foot pedal and caster installed.

10. Align the holes of the caster assembly and foot pedal bracket with those of the mounting flange, then insert the hex bolt through the holes and secure it with the hex nut.

Note: Tighten the hex bolt just enough for it to be snug without hampering the pivot action of the bracket.

11. Remove the pin, flat washers, and E-clip from the foot pedal bracket, align the foot pedal holes with the bracket, then re-install the pin, flat washers, and E-clip.

Dust Collection

CAUTION

DO NOT operate the Model CP220 3HP/ 5HP without an adequate dust collection system. This planer creates substantial amounts of wood dust while operating. Failure to use a dust collection system can result in short and long-term respiratory illness.

Recommended CFM at Dust Port

- 3HP400 CFM
- 5HP625 CFM

Do not confuse this CFM recommendation with the rating of the dust collector. To determine the CFM at the dust port, you must consider these variables: (1) CFM rating of the dust collector, (2) hose type and length between the dust collector and the machine, (3) number of branches or wyes, and (4) amount of other open lines throughout the system. Explaining how to calculate these variables is beyond the scope of this manual. Consult an expert or purchase a good dust collection "how-to" book.

Check Gearbox Oil

It is critical that you make sure there is oil in the gearbox before proceeding with the test run.

To check the gearbox oil reservoir:

1. Remove the gearbox fill plug (see **Figure 12**).

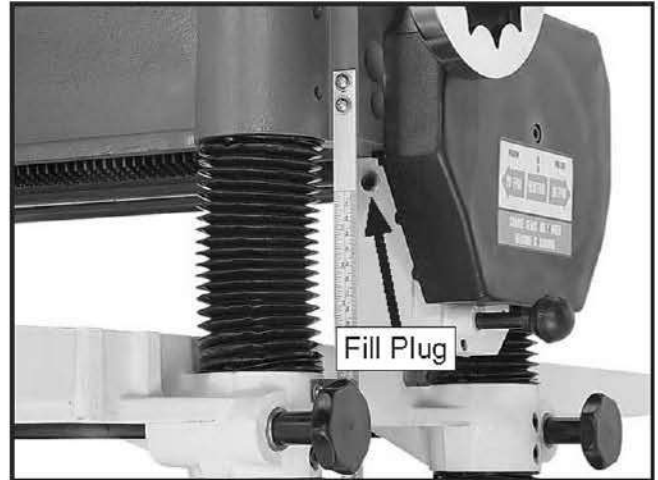


Figure 12. Gearbox fill plug.

2. Using the short end of a clean hex wrench, dip it inside the fill hole and remove it.
 - If the end of the hex wrench is coated with oil, then the gearbox oil level is okay. Replace the fill plug and skip to the next step.
 - If the end of the hex wrench is not coated with oil, then you need to add more oil.

NOTICE

Replace the gearbox oil after the first 20 hours of operation. This is a normal break-in procedure.

Test Run

Once the assembly is complete, test run your machine to make sure it runs properly and is ready for operation. The test run consists of verifying the following: 1) The motor powers up and runs correctly and 2) the stop button safety feature works correctly.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review **Troubleshooting**.

WARNING

Before starting the planer, make sure you have performed the preceding assembly and adjustment instructions, and you have read through the rest of the manual and are familiar with the various functions and safety features on this machine. Failure to follow this warning could result in serious personal injury or even death!

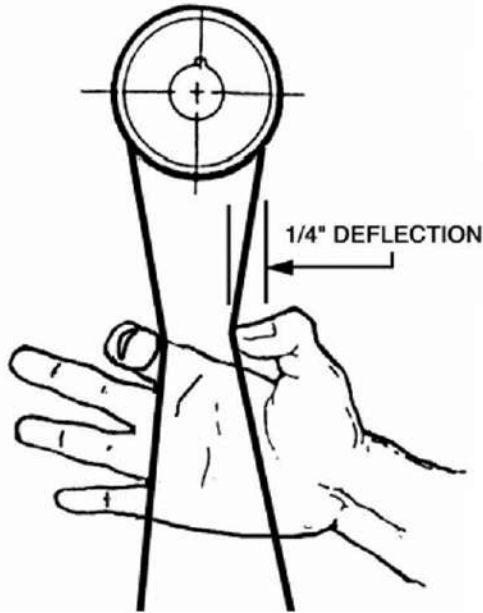
To test run the machine:

1. Make sure you understand the safety instructions at the beginning of the manual and that the machine is set up properly.
2. Make sure all tools and objects used during setup are cleared away from the machine.
3. Make sure the gearbox has the correct amount of oil.

4. Press the green button to start the machine, and press the red button to stop running.
5. Pull the feed rate control knob out to engage the feed rollers in the low speed
6. Verify that the machine is operating correctly by pushing the ON button.
 - When operating correctly, the machine runs smoothly with little or no vibration or rubbing noises.
 - Investigate and correct strange or unusual noises or vibrations before operating the machine further. Always disconnect the machine from power when investigating or correcting potential problems.
7. Press the OFF button to stop the machine.

Tension V-Belts

Check belt tension. Proper tension is obtained when there is approximately 1/4" deflection of the center span of the pulleys using light finger pressure



Recommended Adjustments

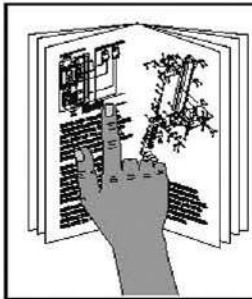
For your convenience, the adjustments listed below have been performed at the factory.

However, because of the many variables involved with shipping, we recommend that you at least verify the following adjustments to ensure the best possible results from your new machine.

Factory adjustments that should be verified:

- Table height chain tension
- Chip breaker height
- Pressure bar height
- Infeed/outfeed roller height
- Roller spring tension
- Chip deflector positioning

SECTION 4: OPERATIONS

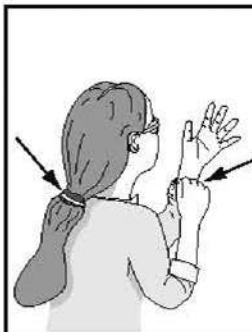
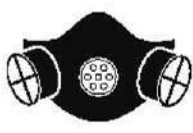


⚠️ WARNING

To reduce the risk of serious injury when using this machine, read and understand this entire manual before beginning any operations.

⚠️ WARNING

Damage to your eyes, lungs, and ears could result from using this machine without proper protective gear. Always wear safety glasses, a respirator, and hearing protection when operating this machine.



⚠️ WARNING

Loose hair, clothing, or jewelry could get caught in machinery and cause serious personal injury. Keep these items away from moving parts at all times to reduce this risk.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, review industry trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Basic Controls

Use **Figure 14** and the following descriptions to become familiar with the basic controls of your planer.

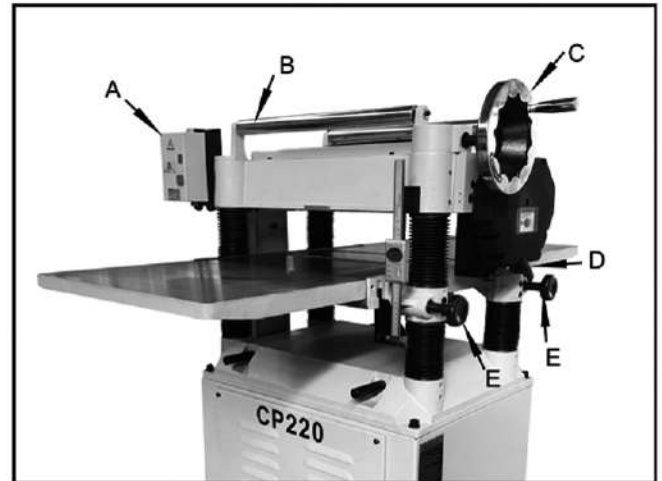


Figure 14. Basic controls.

- A. **Magnetic ON/OFF Switch:** Starts/stops the planer.
- B. **Return Rollers:** Provide a convenient method for returning workpieces to the infeed side of the planer.
- C. **Table Height Handwheel:** Controls the elevation of the table under the cutterhead.
- D. **Feed Rate Control Knob:** Switches the feed rollers between high and low feed rates or, in the center position, stops the feed rollers.
- E. **Table Locks:** Locks the table in position so it does not move during operations.

Operation Overview

This overview gives you the basic process that happens during an operation with this machine. Familiarize yourself with this process to better understand the remaining parts of the **Operation** section.

To complete a typical operation, the operator does the following:

1. Makes sure the workpiece is clean and free of any defects or foreign materials that might cause kickback or damage the sander.
2. Adjusts the height of the table for the correct depth of cut.
3. Starts the dust collection system.
4. Connects the planer to power and turns it **ON**.
5. While standing to the side of the machine, lays the workpiece on the infeed table and feeds it into the machine until the infeed roller engages it and moves it past the cutterhead.
6. When the workpiece exits the planer, returns it to the infeed table and makes as many passes as necessary, then turns the planer **OFF**.

Planing Tips

- Use the full width of the planer. Alternate the cutting path between the left, the right and the middle of the table to evenly distribute the wear across all inserts.
- Scrape all glue off of joined boards before planing.
- Plane **ONLY** natural wood. Do not plane wood composites or any other man-made material.
- Plane the workpiece with the grain. **NEVER** feed end-cut or end-grained lumber into your planer.
- Keep your work area clear.
- Always true any cupped or warped stock on a jointer before planing.
- When making multiple passes through the planer on long stock, use the stock return rollers on top of the machine to move the material back to the infeed side.
- When possible, plane both faces of the workpiece so that they will be parallel with one another.

Workpiece Inspection

Some workpieces are not safe to plane or may require modification before they are safe to pass through the planer. **Before cutting, inspect all workpieces for the following:**

- **Material Type:** This machine is only intended for planing workpieces of natural wood. Attempting to plane workpieces of any other material, including wood composites, could lead to serious personal injury and property damage.
- **Foreign Objects:** Inspect lumber for defects and foreign objects (nails, staples, imbedded gravel, etc.). If you have any question about the quality of your lumber, DO NOT use it. Remember, wood stacked on a concrete floor can have small pieces of stone or concrete pressed into the surface.
- **Large/Loose Knots:** Loose knots can become dislodged during the planing operation. Large knots can cause kickback and machine damage. Always choose workpieces that do not have large/loose knots when planing.
- **Wet or "Green" Stock:** Avoid planing wood with a high water content. Wood with more than 20% moisture content or wood exposed to excessive moisture (such as rain or snow), will plane poorly and cause excessive wear to the cutterhead and motor. Excess moisture can also hasten rust and corrosion of the planer and/or individual components.
- **Excessive Warping:** Workpieces with excessive cupping, bowing, or twisting are dangerous to cut because they are unstable and often unpredictable when being planed. DO NOT use workpieces with these characteristics!
- **Minor Cupping:** Workpieces with slight cupping can be safely supported if the cupped side is facing the planer table. On the contrary, a workpiece supported on the bowed side will rock during planing and could cause severe injury from kickback.

Wood Hardness

The species of wood, as well as its condition, greatly affects the depth of cut the planer can effectively take with each pass.

The chart in **Figure 15** shows the Janka Hardness Rating for a number of commonly used species. The larger the number, the harder the workpiece, and the less material to be removed in any one pass for good results.

Note: *The Janka Hardness Rating is expressed in pounds of force required to embed a 0.444" steel ball into the surface of the wood to a depth equal to half the ball's diameter.*

Species	Janka Hardness
Ebony	3220
Red Mahogany	2697
Rosewood	1780
Red Pine	1630
Sugar Maple	1450
White Oak	1360
White Ash	1320
American Beech	1300
Red Oak	1290
Black Walnut	1010
Teak	1000
Black Cherry	950
Cedar	900
Sycamore	770
Douglas Fir	660
Chestnut	540
Hemlock	500
White Pin	420
Basswood	410
Eastern White Pine	380
Balsa	100

Figure 15. Janka Hardness Rating for some common wood species.

Feed Rate

NOTICE

Only change the feed rate when the planer is running, but DO NOT attempt to change the feed rate during any cutting operations or damage to the gearbox will result.

The infeed and outfeed rollers move the workpiece through the planer while keeping it flat and providing a consistent rate of movement.

Use the two feed rates as stated below:

Low Feed Rate Dimension Pass
 High Feed Rate Finishing Pass

Figure 16 illustrates the three different positions of the feed rate control knob:

- Push the knob in to use the high feed rate
- Pull the knob out to use the low feed rate of 16 FPM.
- Move the knob to the center position to place the gearbox in neutral.

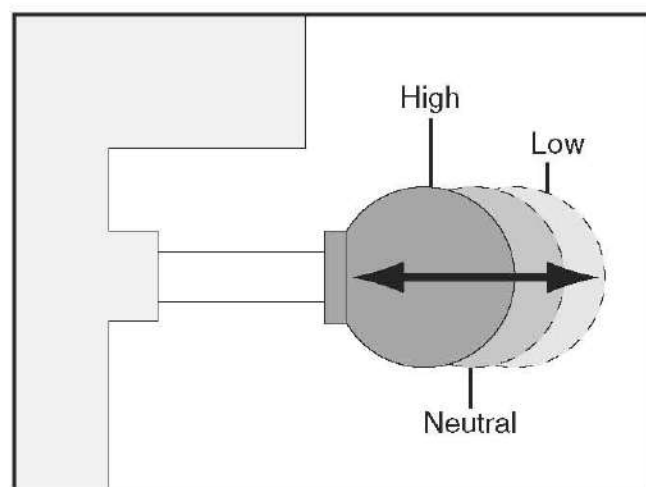


Figure 16. Feed rate control knob positions.

Depth of Cut

The planing depth of cut is controlled by using the table height handwheel on the right side of the machine. Rotating the handwheel clockwise raises the table.

The depth of cut is read directly from the inch/millimeter scale on the front of the planer, as shown in **Figure 17**.

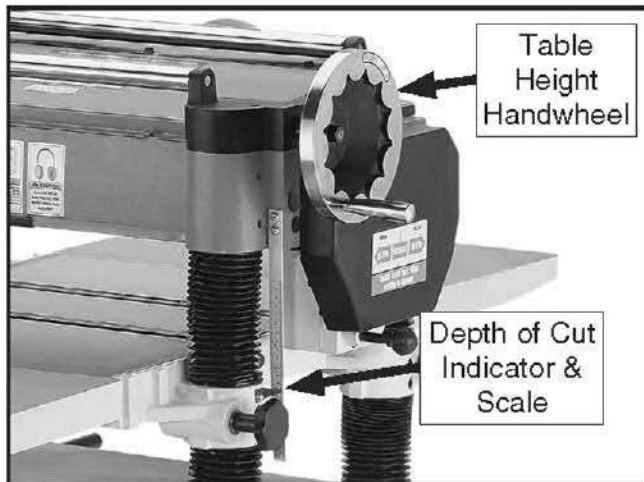


Figure 17. Depth of cut indicator and scale.

Although the correct depth of cut varies according to wood hardness and workpiece width, we recommend a maximum depth of cut no more than $\frac{1}{16}$ ". A series of light cuts will give a better end result and put less stress on the planer than trying to take off too much material in a single pass.

CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

Bed Roller Height

Bed Roller Height Range0.002"—0.020"

The correct height of the bed rollers will vary, depending on the type of material you intend to plane. However, as a general rule, keep the bed roller height within 0.002"—0.020" above the table surface, as illustrated in **Figure 18**.

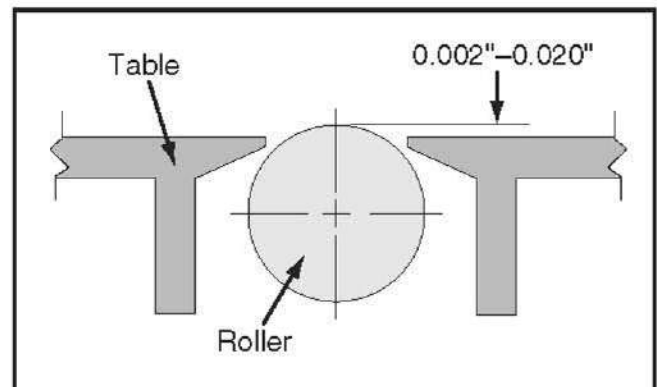


Figure 18. Recommended bed roller height above the table surface.

When planing rough stock, set the rollers high to keep the lumber from dragging along the bed. When planing milled lumber, set the rollers low to help minimize snipe.

NOTICE

Bed rollers that are not adjusted to the correct height or out of alignment with each other can cause poor finishes, inconsistent planing thickness, and other undesirable results.

Tools Needed	Qty
Hex Wrench 3mm.....	1
Wrench 14mm	1
Rotacator.....	1

To adjust the bed rollers:

1. DISCONNECT PLANER FROM POWER!
2. Lower the table all the way to give yourself room to work.
3. Loosen the set screws above each of the four roller adjustment hex bolts—two on each side (see **Figure 19**).

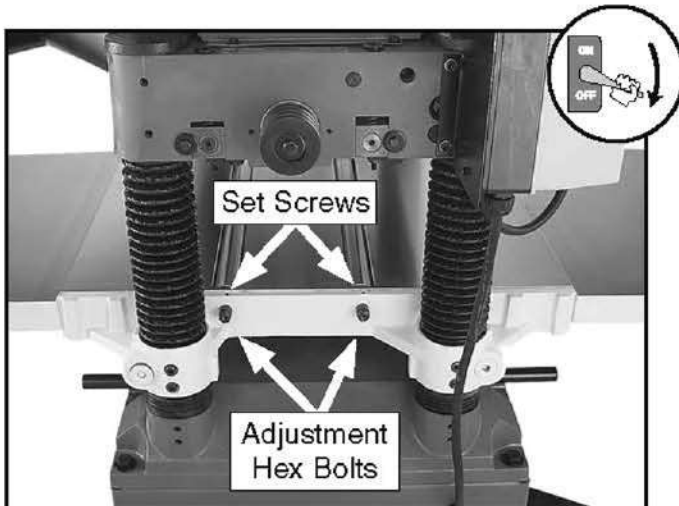
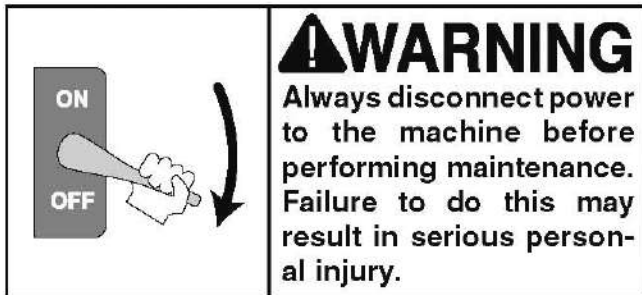


Figure 19. Bed roller height controls.

4. Rotate the eccentric adjustment hex bolts to raise or lower the bed rollers until they are the desired height above the table surface.
5. Verify that both sides of each roller are at the same height, then re-tighten the four set screws to secure the setting.
6. Re-check the roller heights to make sure they did not change when you secured them.

—If the roller heights are not correct, repeat this procedure until they are.

SECTION 5: MAINTENANCE



Schedule

For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

Note: *This maintenance schedule is based on average daily usage. Adjust the maintenance schedule to match your usage to keep your planer running smoothly and to protect your investment.*

Every 8 Hours of Operation:

- Clean the machine and protect unpainted cast iron.
- Lubricate the feed rollers bushings
- Tighten loose mounting bolts.
- Check/rotate/replace damaged or worn inserts
- Check/repair/replace worn or damaged wires.
- Resolve any other unsafe condition.

Every 40 Hours of Operation:

- Lubricate the table columns and leadscrews
- Clean/vacuum the dust buildup from inside the cabinet and off motor.

Every 160 Hours of Operation:

- Check/tension/replace the V-belts
- Lubricate the table height worm gear
- Lubricate the table height chain and sprockets
- Lubricate the drive chain and sprockets

Yearly:

- Change the gearbox oil

Cleaning & Protecting

Vacuum excess wood chips and sawdust from the outside of the machine, inside the cabinet, and off the motor. Protect the unpainted cast iron surfaces on the table by wiping the table clean after every use—this ensures moisture from wood dust does not remain on bare metal surfaces.

Lubrication

NOTICE

Failure to followed reasonable lubrication practices as instructed in this manual for your planer could lead to premature failure of your planer and will void the warranty.

Your planer features bearings that are lubricated and sealed at the factory. These bearing do not require any further attention unless they need to be replaced. If a bearing fails, your planer will probably develop a noticeable rumble or vibration, which will increase when the machine is under a load.

Follow the maintenance schedule on **Page 26** and the procedures listed below to properly lubricate the other planer components, which are essential for long life and trouble-free operation of your planer.

Feed Roller Bushings

The infeed and outfeed rollers rotate inside bushing blocks on both ends of the rollers. Add 2–3 drops of lubrication oil to the center hole of the four feed roller tension adjustment bolts on top of the head casting, as shown in **Figure 24**.

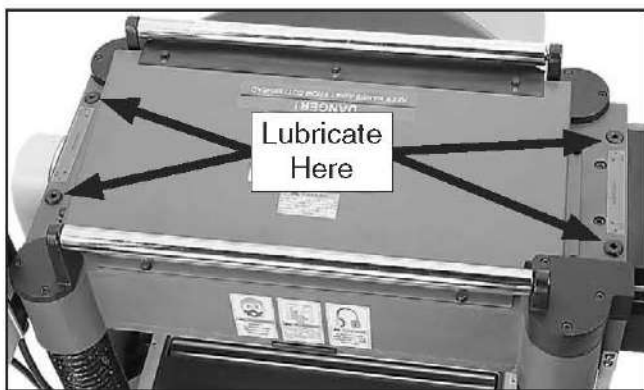


Figure 24. Lubrication locations for the feed roller bushings.

Columns and Leadscrews

The table rides on the columns and is moved by the rotation of the leadscrews inside the columns. For the Model CP220, loosen the dust sleeve (see **Figure 25**) to access the columns and leadscrews. Apply a thin coat of lubrication oil to the outside surface of the columns and brush on a light application of multi-purpose grease to the leadscrew threads. Move the table up and down to distribute the lubricant.

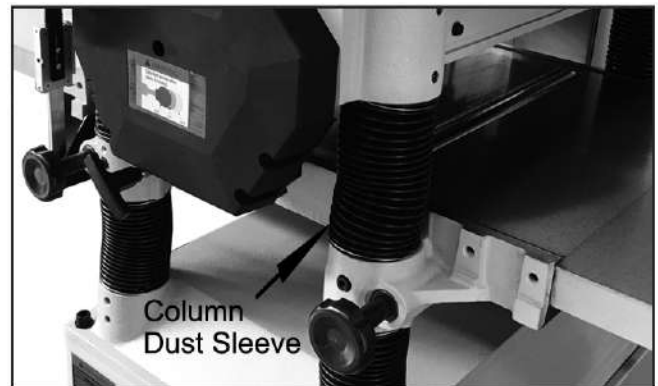


Figure 25. column dust sleeve.

Table Height Worm Gear

Remove the three cap screws that secure the worm gear housing (see **Figure 26**), then lift the housing and handwheel assembly off the machine. Clean away any debris from the housing and gears, then brush on a moderate amount of multi-purpose grease to the gear teeth.



Figure 26. Location of the table height worm gear housing.

Table Height Chain & Sprockets

The table leadscrews are synchronized by the table height chain and sprockets located underneath the base of the planer. Remove the front and rear cabinet panels to access these parts (see **Figure 27**). Use shop rags to clean away debris and grime, then brush on a light coat of oil to the chain and sprockets.

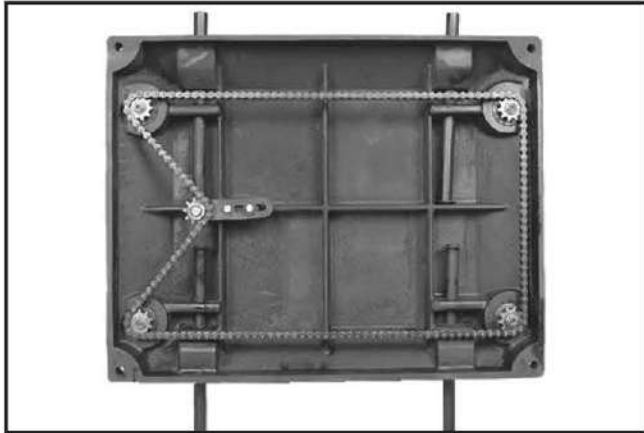


Figure 27. Table height chain and sprockets as viewed from underneath the base.

Drive Chain & Sprockets

The infeed and outfeed rollers receive transferred power from the cutterhead through the drive chain system on the right side of the machine, as shown in **Figure 28**.

Remove the table height handwheel and the safety covers attached to the inside of the drive chain cover, then remove the cover to access these parts.

Use shop rags to clean away any debris and grime, then brush on a light coat of lubrication oil to the chain and sprockets.

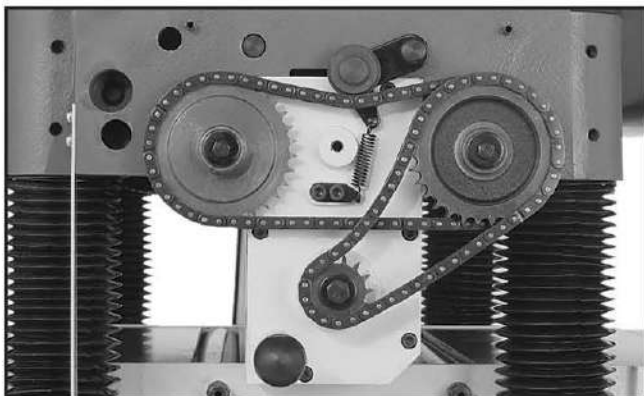


Figure 28. Drive chain and sprockets.

Gearbox Oil

The gearbox oil should be changed after the first 20 hours of operation to clear away any debris inside the gearbox, then changed annually thereafter.

SECTION 6: SERVICE

Troubleshooting

Problem	Possible Cause	Solution
Snipe. (Snipe can not be eliminated, but can be minimized so as to become negligible.)	Table rollers not set properly. Inadequate support of long boards. Uneven feed roller pressure front to back. Dull Knives Lumber not butter properly.	Adjust rollers to proper height. Support long boards with extension rollers. Adjust feed roller tension. Sharpen knives. Butt end to end each piece of stock as they pass through.
Fuzzy Grain	Planing wood with a high moisture content. Dull knives.	Remove high moisture content from wood by drying. Sharpen or replace.
Torn Grain	Too heavy a cut. Knives cutting against grain. Dull knives.	Adjust proper depth of cut. Cut along the grain. Sharpen knives.
Rough/Raised Grain	Dull knives. Too heavy a cut. Moisture content too high.	Sharpen knives. Adjust proper depth. Remove high moisture content from wood by drying.
Rounded, glossy surface	Dull knives. Feed speed too slow. Cutting depth too shallow.	Sharpen or replace knives. Increase speed. Increase depth.
Poor feeding of lumber	Inadequate feed roller pressure. Planer bed rough or dry. Transmission v-belt slipping. Surface of feed rollers too smooth.	Adjust feed roller tension. If proper tension cannot be achieved, replace feed rollers. Clean pitch and residue, and wax planer table. Tighten transmission v-belt. Lightly roughen the feed roller surface with sandpaper.

Mechanical and Electrical Problems

Problem	Possible Cause	Solution
Uneven depth of cut side to side.	Knife projection. Cutterhead not level with bed.	Adjust knife projection. Level bed.
Board thickness does not match depth of cut scale.	Depth of cut scale incorrect.	Adjust depth of cut scale.

Problem	Possible Cause	Solution
Chain jumping.	<p>Inadequate tension.</p> <p>Sprockets misaligned.</p> <p>Sprockets worn.</p>	<p>Adjust chain tension.</p> <p>Align sprockets.</p> <p>Replace sprockets.</p>
Machine will not start/restart or repeatedly trips circuit breaker or blows fuses.	<p>No incoming power.</p> <p>Overload automatic reset has not reset.</p> <p>Planer frequently trips.</p> <p>Building circuit breaker trips of fuse blows.</p> <p>Loose electrical connections.</p> <p>Motor starter failure.</p> <p>Motor starter failure.</p> <p>Motor failure.</p>	<p>Verify unit is connected to power.</p> <p>When planer overloads on the circuit breaker built into the motor starter, it takes time for the machine to cool down before restart. Allow unit to adequately cool before attempting restart. If problem persists, check amp setting on the motor starter inside the electrical box.</p> <p>One cause of overloading trips which are not electrical in nature is too heavy a cut. If too deep a cut is not the problem, then check the amp setting on the overload relays. Match the full load amps on the motor as noted on the motor plate. If amp setting is correct then there is probably a loose electrical lead. Check amp setting on motor starter.</p> <p>Verify that planer is on a circuit of correct size. If circuit size is correct, there is probably a loose electrical lead. Check amp setting on motor starter.</p> <p>Go through all the electrical connections on the planer including motor connections, verifying the tightness of each. Look for any signs of electrical arcing which is a sure indicator of loose connections or circuit overload.</p> <p>Examine motor starter for burned or failed components. If damage is found, replace motor starter. If motor starter looks okay but is still suspect, you have two options: have a qualified electrician test the motor starter for function, or purchase a new starter and establish if that was the problem on changeout.</p> <p>If you have access to a voltmeter, you can separate a starter failure from a motor failure by first, verifying incoming voltage at 220 +/- 20 and second, checking the voltage between starter and motor at 220 +/- 20.</p> <p>If incoming voltage is incorrect, you have a power supply problem.</p> <p>If voltage between starter and motor is correct, you have a motor problem.</p> <p>If electrical motor is suspect, you have two options: Have a qualified electrician test the motor for function or remove the motor and take it to a qualified electric motor repair shop and have it tested.</p>

Rotating/Replacing Cutterhead Inserts

The spiral cutterhead is equipped with indexable carbide inserts that can be rotated to reveal any one of their four cutting edges. If one edge of the insert becomes dull or damaged, simply rotate it 90° to reveal a fresh cutting edge, as shown in **Figure 31**.

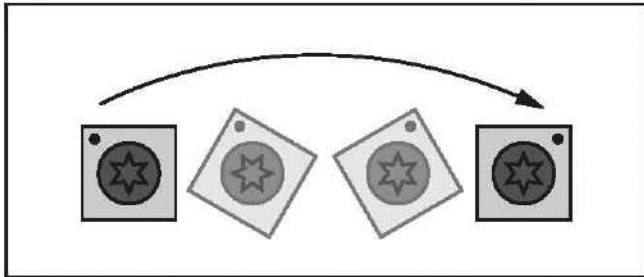


Figure 31. Insert rotating sequence.

To rotate or replace a spiral cutterhead insert:

1. DISCONNECT PLANER FROM POWER!
2. Remove the dust hood, top cover, and the belt cover.
3. Put on heavy leather gloves to protect your fingers and hands.
4. Remove any sawdust or debris from the head of the insert, Torx screw, and the surrounding area.

⚠ CAUTION

The carbide inserts are very sharp and can quickly cut your hands. **ALWAYS** use caution and heavy leather gloves when handling these parts to reduce the risk of personal injury.

5. Remove the Torx screw and the insert, then clean all dust and debris from both parts and the pocket they were removed from.

Note: *Proper cleaning of the insert, Torx screw, and the cutterhead pocket is critical to achieving a smooth finish. Dirt or dust trapped between the insert and cutterhead will slightly raise the insert, and make noticeable marks on your workpiece the next time you cut.*

Tip: *Use low-pressure compressed air or a vacuum nozzle to clean out the cutterhead pocket.*

6. Replace the insert so that a fresh cutting edge faces outward.

—If all four insert cutting edges have been used, replace the insert with a new one. Always position the reference dot in the same position when installing a new insert to aid in the rotational sequencing.

7. Lubricate the Torx screw threads with a very small amount of light machine oil, wipe the excess off, and torque the screw to 50–55 inch/pounds.

Note: *If too much oil is applied to the threads, the excess will attempt to squeeze out of the threaded hole as you install the insert and force it to raise slightly, which will make it out of height alignment.*

V-Belt Tensioning/ Replacement

NOTICE

After the first 16 hours of use, the V-belts will stretch and seat into the pulley grooves. The V-belts must be properly re-tensioned after this period to avoid severely reducing their useful life.

Three cogged V-belts transfer power from the motor to the cutterhead, and then to the infeed and outfeed rollers through the gearbox and drive chains. To ensure efficient transfer of power to these systems, make sure the V-belts are always properly tensioned and in good condition.

If a V-belt is worn, cracked, or damaged, replace all three V-belts at the same time to ensure belt tension is even among the belts, reducing the risk of premature wear on any one belt.

To tension/replace the V-belts:

1. DISCONNECT PLANER FROM POWER!

CAUTION

V-belts and pulleys will be hot after operation. Allow them to cool before handling them.

2. Remove the V-belt cover from the left side of the machine to expose the belts.

Note: A collection of black belt dust at the bottom of the belt cover is normal during the life of the belts.

3. Remove the front cabinet panel to access the motor, as shown in **Figure 32**.

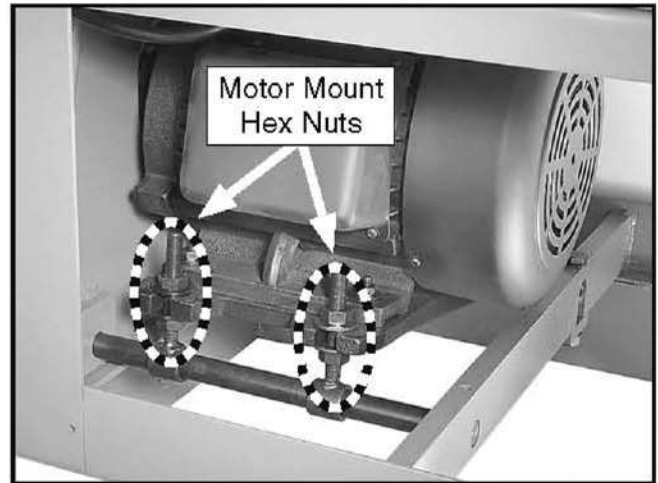


Figure 32. Front cabinet cover removed to expose the motor.

4. If the V-belts need to be replaced, raise the motor to release the belt tension (refer to the next step for instructions), roll them off the pulleys, then replace them as a matched set of three.
5. To adjust the V-belt tension, loosen the top motor mount hex nuts (see **Figure 32**), then adjust the bottom hex nuts to raise or lower the motor.

Note: The V-belts are correctly tensioned when there is approximately $\frac{1}{4}$ " deflection when moderate pressure is applied to them midway between the pulleys, as illustrated in **Figure 33**.

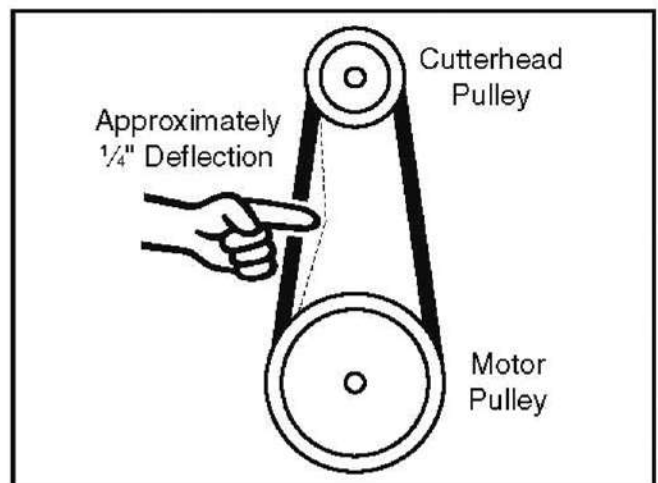


Figure 33. Correct amount of belt deflection.

6. When the V-belts are correctly tensioned, make sure the motor mount hex nuts are tight, then replace the cabinet cover and the belt cover.

Pulley Alignment

Proper pulley alignment prevents premature V-belt wear and unnecessary load on the motor. The pulleys are properly aligned when they are coplanar (in the same plane and parallel to each other).

Tools Needed	Qty
Straightedge 3'	1

To check/re-align pulleys:

1. DISCONNECT PLANER FROM POWER!
2. Remove both cabinet covers and the belt cover, then use the straightedge to check pulley alignment, as shown in **Figure 34**.

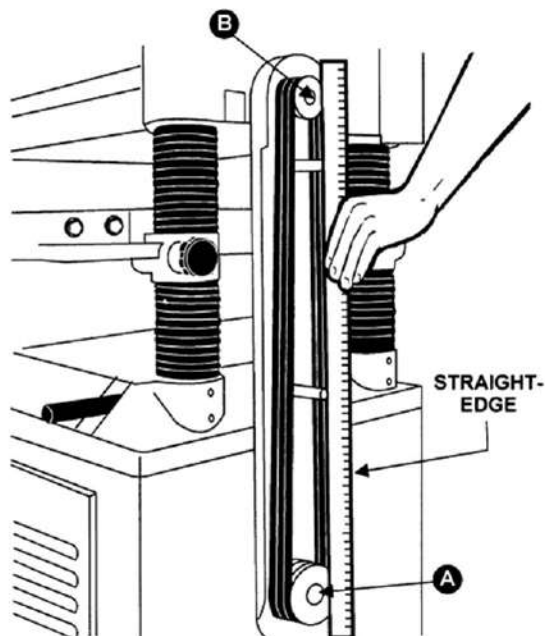


Figure 34. Checking pulley alignment.

—If the pulleys are not in the same plane, loosen the cap screw or hex bolt securing the pulley to the shaft, then adjust the pulleys in or out until they are even with each other.

—If the pulleys are not parallel, loosen the four motor mount hex nuts, then rotate the motor on its mount until they are parallel.

3. Re-check the pulleys and repeat **Step 2** if necessary.
4. When you are satisfied with the pulley alignment, re-tighten all fasteners, then replace the belt cover and cabinet covers.

Table Height Chain Tension

The table height chain transfers movement from the handwheel to elevate the table. This chain can be adjusted to remove slack if it stretches over time or is loosened during table leveling procedures.

To adjust the table height chain tension:

1. DISCONNECT PLANER FROM POWER!
2. Remove the front and rear cabinet panels to gain access to the table height chain system underneath the table, as shown in **Figure 35**.

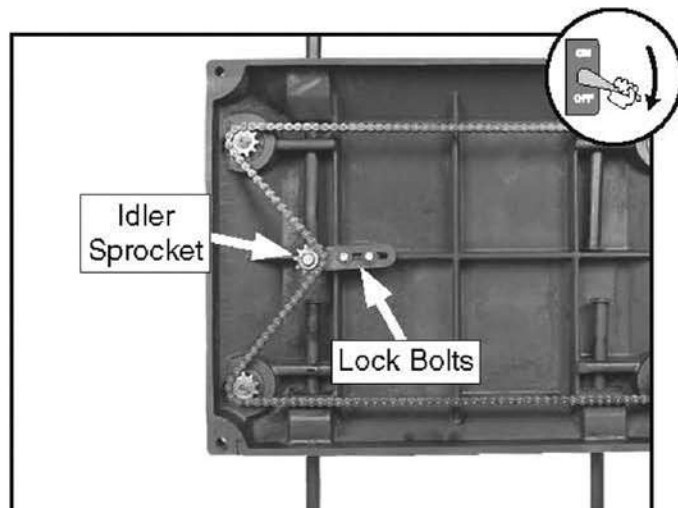


Figure 35. Table height idler sprocket and lock bolts (viewed from underneath the planer base).

NOTICE

During the next step, **DO NOT** let the chain fall off the sprockets. It can be very difficult to return the chain to its proper location on the sprockets without changing the table adjustments.

Note: *The goal in the next step is to remove looseness in the chain without putting tension on it or the sprockets.*

3. Loosen the lock bolts shown in **Figure 35**, and push the idler sprocket against the chain with moderate hand pressure, then while maintaining the pressure on the idler sprocket, re-tighten both lock bolts.
4. Clean and lubricate the chain and sprockets

Feed Rollers, Chip Breaker & Pressure Bar Heights

It is essential that the feed rollers, chip breaker, and pressure bar are set at the correct distance below the cutterhead to ensure that the workpiece moves through the planer evenly and the correct distance from the cutterhead.

To ensure accurate results and make the adjustment process quicker and easier, we recommend using a Rotacator for these adjustments

If a Rotacator is not available, a 6' 2x4 cut into two even sized pieces and a feeler gauge set can be used, but care must be taken when jointing the wood to achieve accurate results.

Dist. Below Cutterhead at BDC (Figure 36)

- A. Infeed Roller 0.040"
- B. Chip Breaker..... 0.040"
- C. Outfeed Roller 0.020"

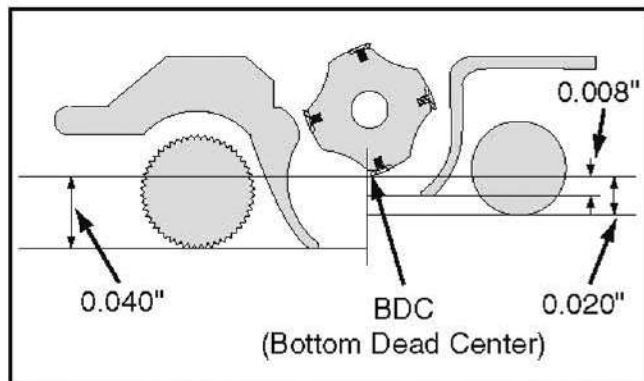


Figure 36. Planer component recommended clearances (illustration is not to scale).

Using a Rotacator

Tools Needed	Qty
Hex Wrenches 3, 5mm	1 Each
Wrench or Socket 10mm	1
Rotacator	1

1. DISCONNECT PLANER FROM POWER!
2. Lower the table at least 4" below the head casting, then lock it in place.
3. Remove the dust hood, top cover, and belt cover.
4. Using a Rotacator as shown in **Figure 37**, find the BDC of any insert edge by slowly rocking the cutterhead pulley back and forth until the Rotacator indicates the lowest point, then set the Rotacator dial to zero.

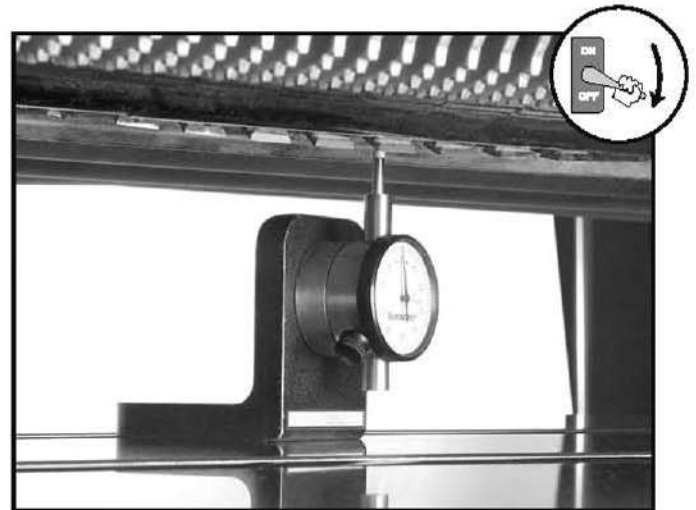


Figure 37. Using a Rotacator to find BDC.

5. Move the feed speed knob to the neutral position to allow the infeed roller to freely rotate.

6. Keeping the Rotacator dial at zero, position it under the right-hand side of the infeed roller and find the BDC of a serrated edge by rocking the infeed roller back and forth.
7. Loosen the jam nut and use the set screw shown in **Figure 38** to adjust the height of the infeed roller bushing block until the Rotacator dial shows 0.040", which is the recommended distance for the infeed roller below the cutterhead.

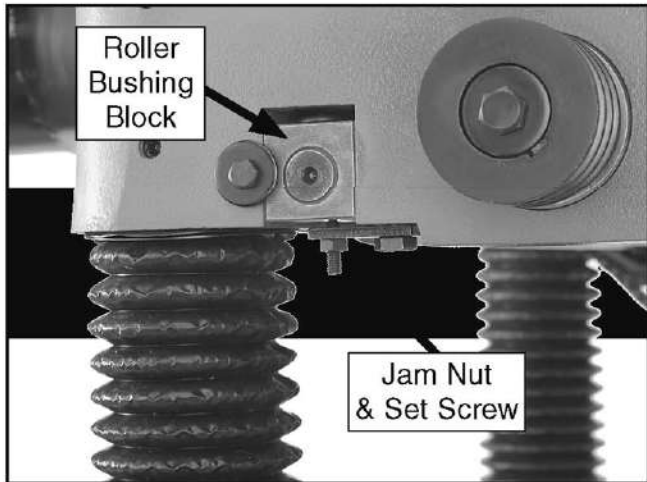


Figure 38. Infeed roller bushing block and height adjustment controls.

8. Repeat **Steps 6–7** on the left-hand side of the infeed roller.
9. Re-check both sides of the infeed roller and, if necessary, make further adjustments until the infeed roller height from side-to-side is 0.040" below the BDC of the cutterhead insert, then re-tighten both jam nuts.
10. Keeping the same zero reference on the Rotacator dial from **Step 5**, repeat **Steps 7–10** for the outfeed roller, but adjust it until it is 0.020" below the BDC of the cutterhead insert.

11. Use the same zero reference on the Rotacator dial from **Step 5**, perform similar steps as described above to adjust the height of the chip breaker to its recommended specification given at the beginning of this subsection. The adjustment controls are shown in **Figure 39**.

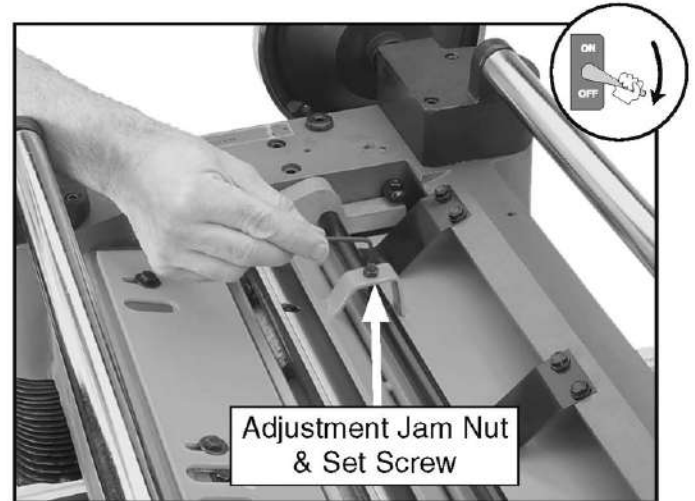


Figure 39. Example of adjusting the chip breaker height.

13. Re-install the belt cover, top cover, and the dust hood.

Using Wood Blocks

Tools Needed	Qty
Hex Wrenches 3, 5mm.....	1 Each
Wrench or Socket 10mm.....	1
2x4 6' Long.....	1
Feeler Gauge Set.....	1

1. Build the wood blocks by cutting a *straight* 6' foot long 2x4 in half.

Note: *Having the wood blocks at an even height is critical to the accuracy of your overall adjustments. For best results, make the 2x4 square with a jointer and table saw before cutting it in half.*

2. DISCONNECT PLANER FROM POWER!
3. Lower the bed rollers below the table surface (refer to **Bed Roller Height** on **Page 25** for detailed instructions).
4. Place the wood blocks along the sides of the table, as illustrated in **Figure 41**.

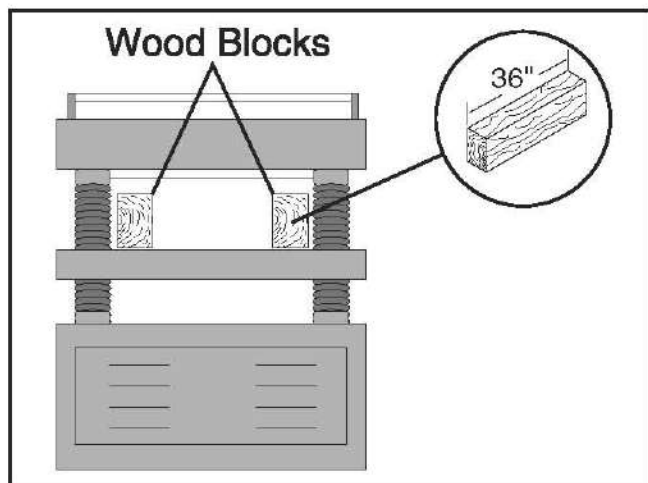


Figure 41. Wood blocks properly positioned on the planer table.

5. Remove the dust hood, top cover, and belt cover.
6. Use a feeler gauge to adjust the table until there is a 0.040" gap between the wood blocks and a cutterhead insert at BDC, which is the recommended distance for the infeed roller below the cutterhead.
7. Lock the table in place, as the wood blocks will now be your reference point.
8. Using the feeler gauges and the wood blocks instead of the Rotacator, perform **Steps 7–13** in the previous **Using a Rotacator** procedure on **Page 38** to set the feed rollers, chip breaker, and the pressure bar to the correct distance below the cutterhead.

Note: *Keep in mind that you will have to repeat **Steps 6–8** above for each change in distance as specified on **Page 38**.*

Roller Spring Tension

Properly adjusting the roller spring tension is crucial to keep the workpiece moving through the planer during operation.

Roller spring tension will vary depending upon the type of wood you are planing. Generally, if you are planing milled lumber with a relatively consistent surface, use less spring tension. If you are planing rough lumber with inconsistent surfaces, use greater spring tension to keep the stock moving through the planer.

If the workpiece consistently stops feeding during operation, the roller spring tension may need to be increased. If the roller is leaving indents in the wood as it leaves the planer, then decrease the tension.

To adjust the roller spring tension to factory recommendations:

1. DISCONNECT PLANER FROM POWER!
2. Adjust tension the #1–#3 cap screws shown in **Figure 42** so that they protrude $\frac{1}{8}$ " above the head casting, and adjust the #4 cap screw so that it protrudes $\frac{5}{16}$ " above the head casting.

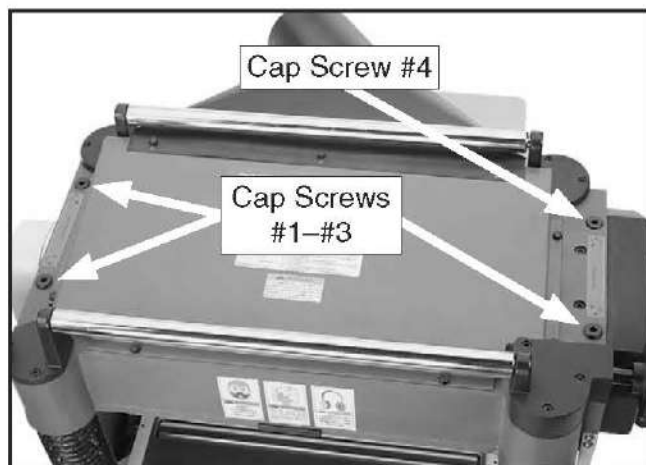


Figure 42. Roller spring tension adjustment cap screws.

Positioning Chip Deflector

Chip Deflector Gap Setting $\frac{1}{4}$ "

When properly distanced from the cutterhead, the chip deflector keeps chips from falling onto the outfeed roller and being pressed into the workpiece.

To adjust the chip deflector gap:

1. DISCONNECT PLANER FROM POWER!
2. Remove the dust port, top cover, and belt cover.
3. Rotate the cutterhead pulley until an insert on one end of the cutterhead is nearest the chip deflector, then measure that distance between the chip deflector and the insert (see **Figure 43**).

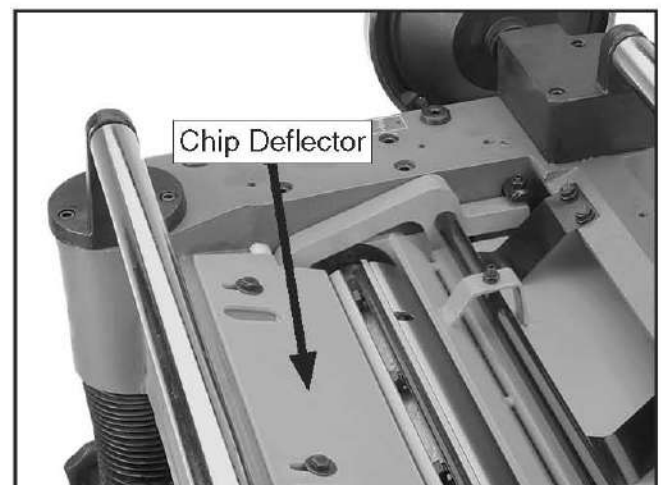


Figure 43. Example of the chip deflector and securing hex bolts.

—If the distance measured in **Step 3** is not equal to $\frac{1}{4}$ ", then loosen the four hex bolts that secure the chip deflector and adjust the gap to $\frac{1}{4}$ ".

4. Repeat **Step 3** for the other end of the cutterhead.
5. Re-tighten the hex bolts, then replace the belt cover, top cover, and dust hood.

Scale Calibration

Although correctly set at the factory, the scale can be adjusted for accuracy if it becomes necessary.

Tools Needed	Qty
Phillips Screwdriver #2.....	1
Scrap Piece of Stock.....	1
Calipers	1

To re-position the scale:

1. Plane the scrap piece of stock until it is flat and of even thickness along its length.

Note: Turn the board over between each pass to make the surfaces parallel.

2. Use calipers to measure the board thickness.
3. If there is a discrepancy between the board thickness and the reading on the table height scale, loosen the two screws shown in **Figure 44**, adjust the scale in relation to the pointer, then re-tighten the screws.

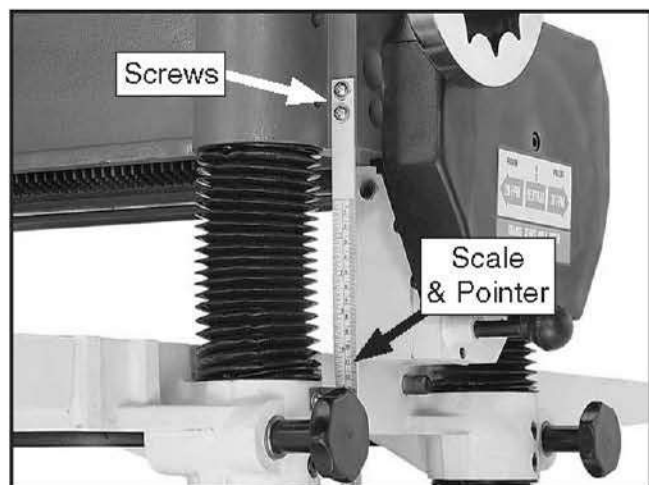


Figure 44. Table height scale.

Anti-Kickback Fingers

The anti-kickback fingers are an important safety feature of your planer. The fingers hang from a rod suspended across the head casting and in front of the infeed roller, as shown in **Figure 45**. This design allows the workpiece to easily enter the planer but reduces the risk of kickback by digging into the workpiece if it moves backward.

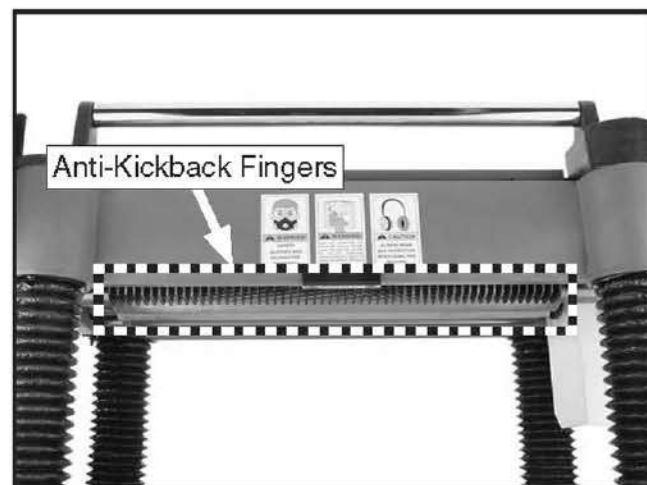


Figure 45. Anti-kickback fingers.

Check the anti-kickback fingers regularly to ensure that they swing freely and easily. If not, first clean them with a wood resin solvent, then inspect them for damage. If any of the fingers are damaged, the device must be replaced before using the machine.

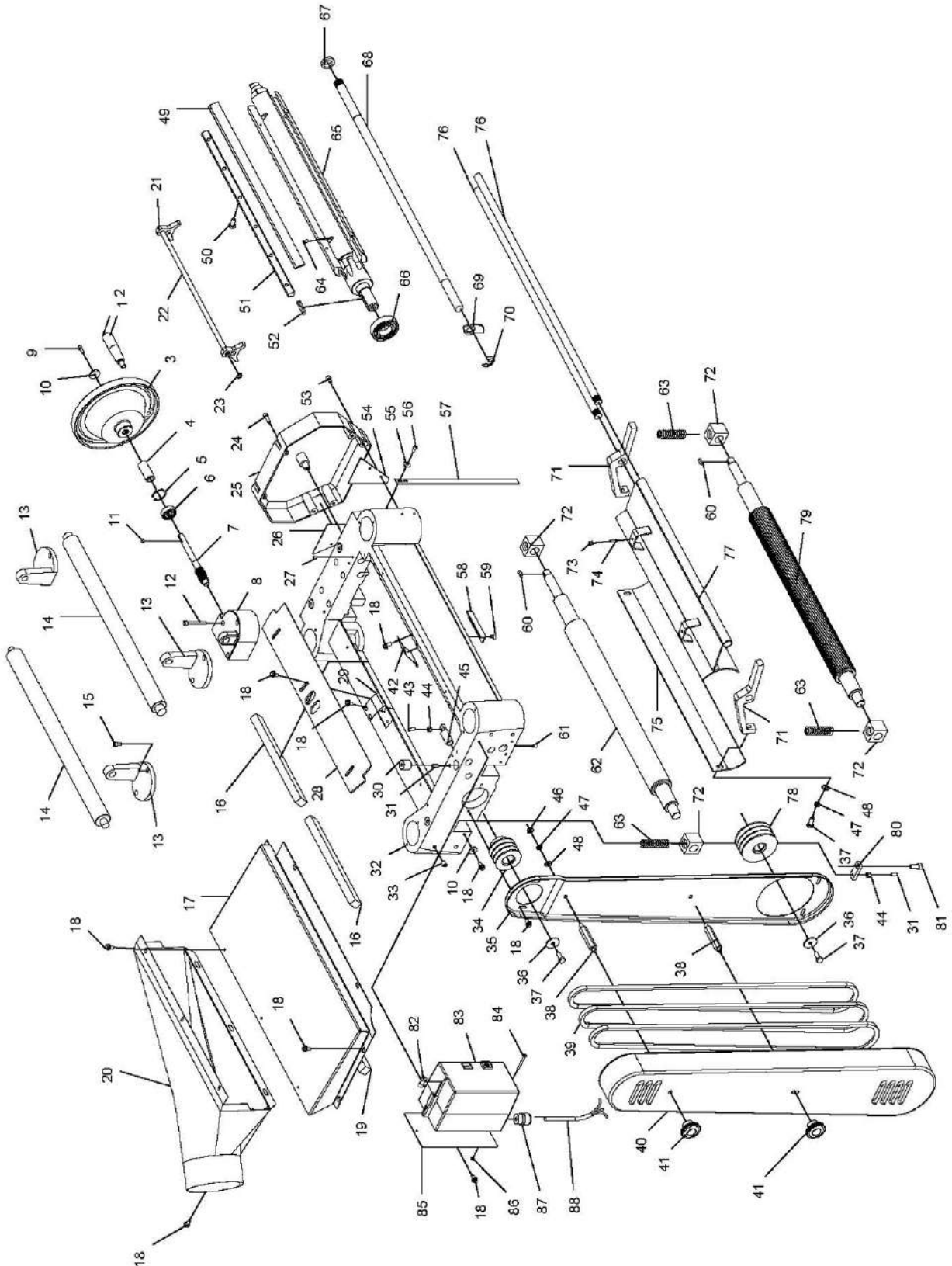
Do not apply oil or other lubricants to the anti-kickback fingers that will attract dust and restrict the free movement of the fingers.

⚠️WARNING

Proper operation of the anti-kickback fingers is critical for the safe operation of this planer. **DO NOT** operate the planer if the anti-kickback fingers are not operating correctly. Failure to heed this warning could result in serious personal injury.

SECTION 7: PARTS

Headstock Breakdown

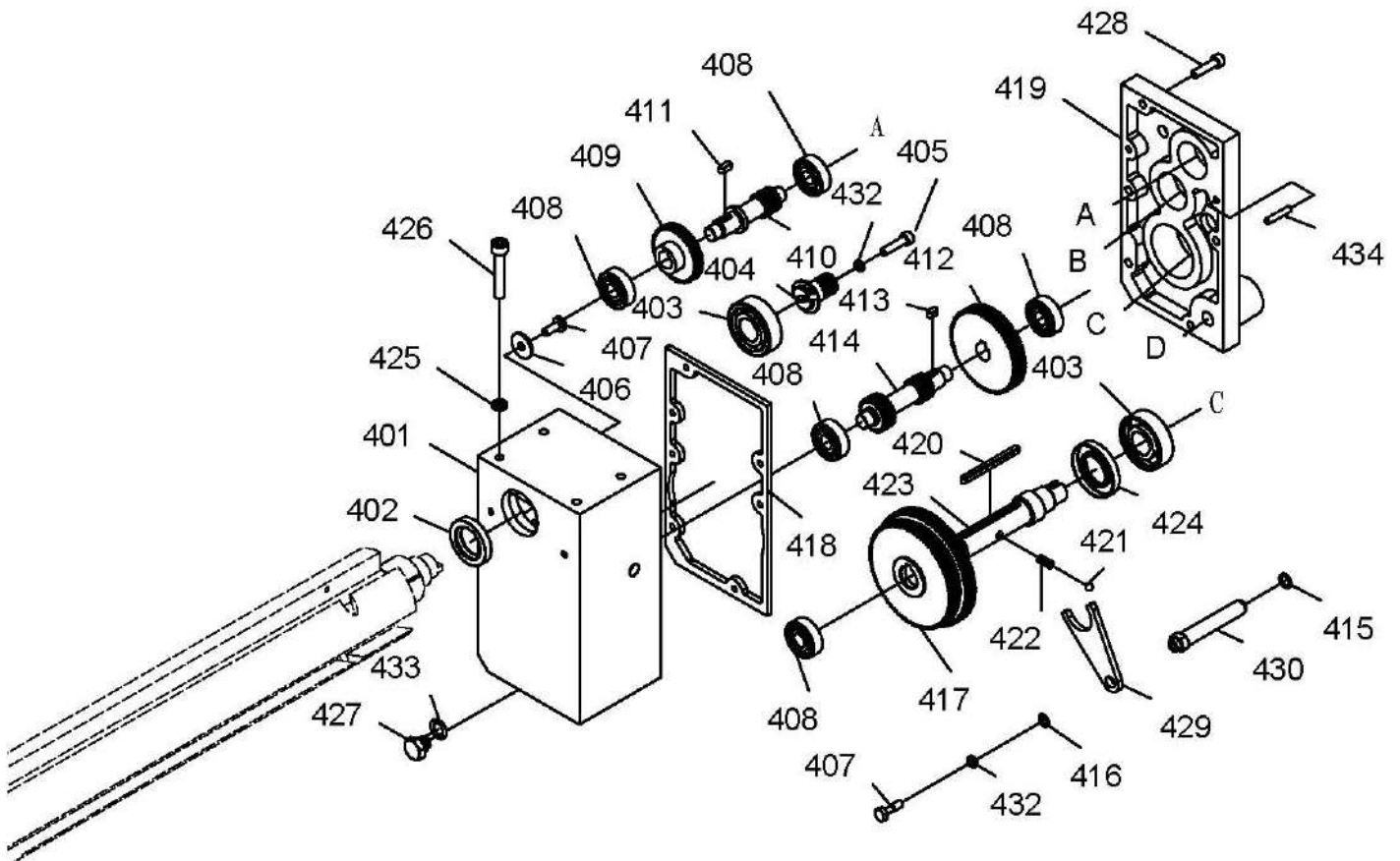


Headstock Parts List

PART	DESCRIPTION	QTY	PART	DESCRIPTION	QTY
1	HANDLE	1	46	HEX NUT M8	2
3	HAND WHEEL	1	47	LOCK WASHER 8	2
4	COLLAR	1	48	FLAT WASHER 8	2
5	INT RET RING ϕ 32	1	49	KNIFE	4
6	BEARING 6201	1	50	GIB SCREW M8*10	24
7	WORM GEAR	1	51	GIB	4
8	WORM HOUSING	1	52	KEY 8*45	1
9	CAP SCREW M5*16	1	53	CAP SCREW M6*10	4
10	FLAT WASHER	5	54	SAFETY HATCH-1	1
11	KEY 4*16	1	55	FENDER WASHER 5	2
12	CAP SCREW M6*55	3	56	CAP SCREW M5*10	2
13	ROLLER STAND	3	57	SCALE	1
14	ROLLER	2	58	CUT LIMITER PLATE	1
15	CAP SCREW M6*16	6	59	FLAT HEAD SCREW M5*10	2
16	GASKET-1	2	60	KEY 5*15	2
17	UPPER COVER	1	61	SET SCREW M8*8	1
18	FLANGE BOLT M6*12	33	62	OUTFEED ROLLER	1
19	GASKET	1	63	SPRING	4
20	DUST HOOD	1	64	FLAT CAP SCREW M5*12	8
21	KNIFE GAUGE	2	65	CUTTER HEAD	1
22	KNIFE GAUGE SHAFT	1	66	BEARING 6206	1
23	EXT RET RING ϕ 10	4	67	SPACER	57
24	CAP SCREW M6*20	3	68	SHAFT	1
25	GEAR BOX COVER	1	69	ANTI-KICKBACK FINGER	56
26	SAFETY HATCH	1	70	E-CLIP 15	2
27	SET SCREW M6*8	2	71	BRACKET	2
28	CHIP DEFLECTOR PLATE	1	72	BUSHING	4
29	SPRING PLATE	1	73	HEX NUT M5	2
30	SPECIAL SET SCREW	4	74	SET SCREW M5*16	2
31	SET SCREW M6*16	5	75	PRESSURE PLATE	1
32	MACHINE HEAD	1	76	LOCKING ROD	2
33	SET SCREW M10*12	8	77	CHIP BREAKER	1
34	CUTTER HEAD PULLEY	1	78	MOTOR PULLEY	1
35	BELT GUARD	1	79	INFEED ROLLER	1
36	FLAT WASHER ϕ 8*30	2	80	PLATE	4
37	HEX BOLT M8*20	4	81	CAP SCREW M8*20	4
38	SPECIAL BOLT	2	82	BOLT	2
39	V-BELT O 1450	3	83	SWITCH	1
40	BELT COVER	1	84	PHI HEAD SCREW M4*40	2
41	STAR KNOB M8	2	85	SWITCH BRACKET	1
42	PLATE SPRING	3	86	HEX NUT M4	2
43	SET SCREW M6*20	2	87	STRAIN RELIEF M22*1.5	2
44	HEX NUT M6	6	88	POWER CORD	1
45	ADJUSTING SHAFT	2			

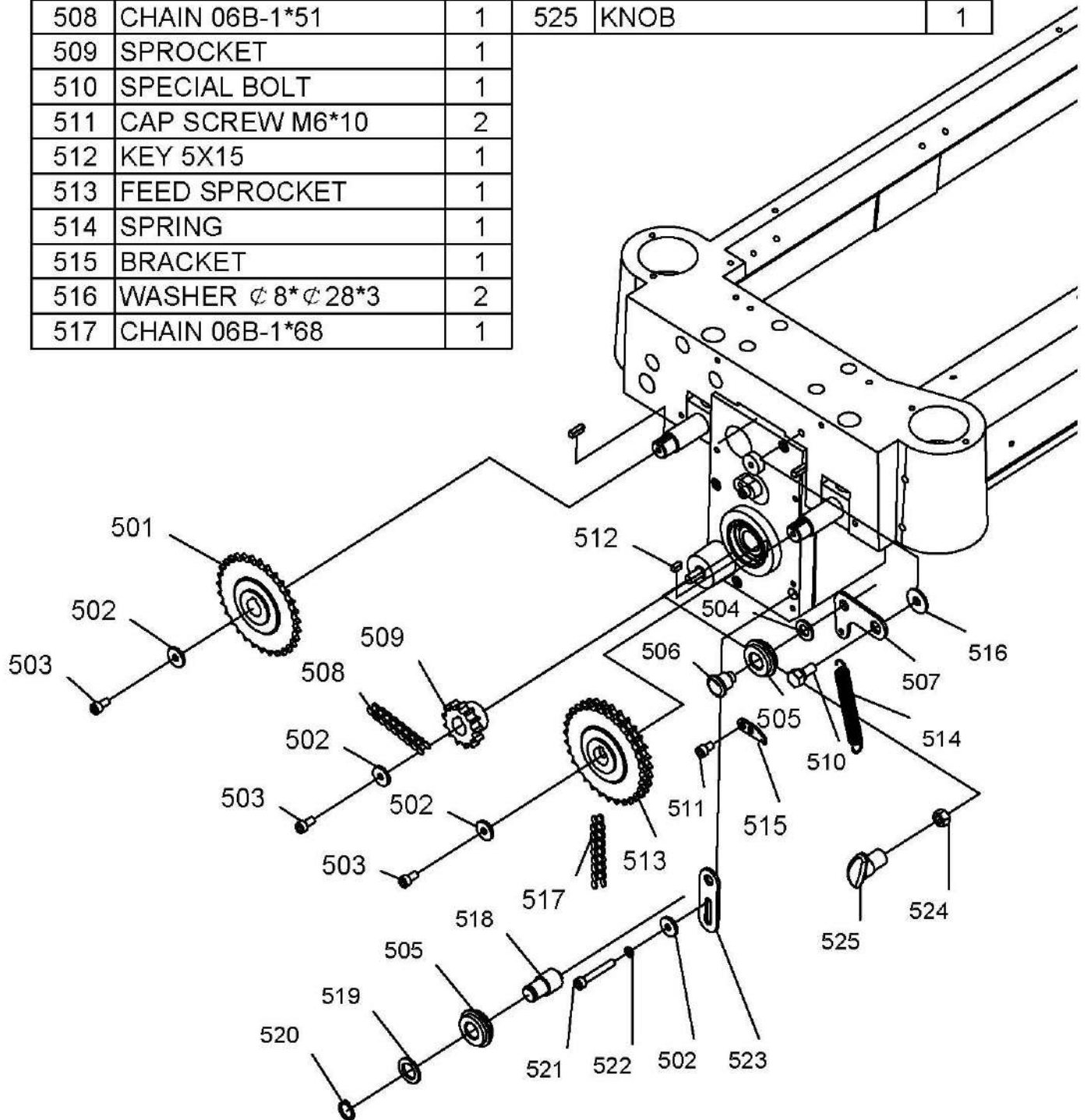
Gearbox

PART	DESCRIPTION	QTY	PART	DESCRIPTION	QTY
401	GEAR BOX	1	418	GASKET	1
402	OIL SEAL 25*40*7	1	419	GEAR CASE	1
403	BALL BEARING 6204	2	420	KEY A5*40	1
404	GEAR	1	421	STEEL BALL ϕ 6	1
405	CAP SCREW M6*25(LEFT)	1	422	TENSION SPRING	1
406	FLAT WASHER 6	1	423	SHAFT	1
407	FLANGE BOLT M6*12	2	424	OIL SEAL 25*47*7	1
408	BEARING 6201	5	425	LOCK WASHER ϕ 8	4
409	GEAR	1	426	CAP SCREW M8*45	4
410	GEAR AND SHAFT	1	427	HEX BOLT M12*1.25*16	2
411	KEY A5*12	1	428	CAP SCREW M6*25	4
412	GEAR	1	429	SHIFTER	1
413	KEY A5*10	1	430	SHIFTING SHAFT HADNLE	1
414	GEAR 2-SPEED	1	432	LOCK WASHER ϕ 6	2
415	OIL SEAL 11.8*2.65	1	433	OIL SEAL 9*1.8	2
416	FLAT WASHER 6	1	434	ROLL PIN 5*25	2
417	DOUBLE GEAR	1			



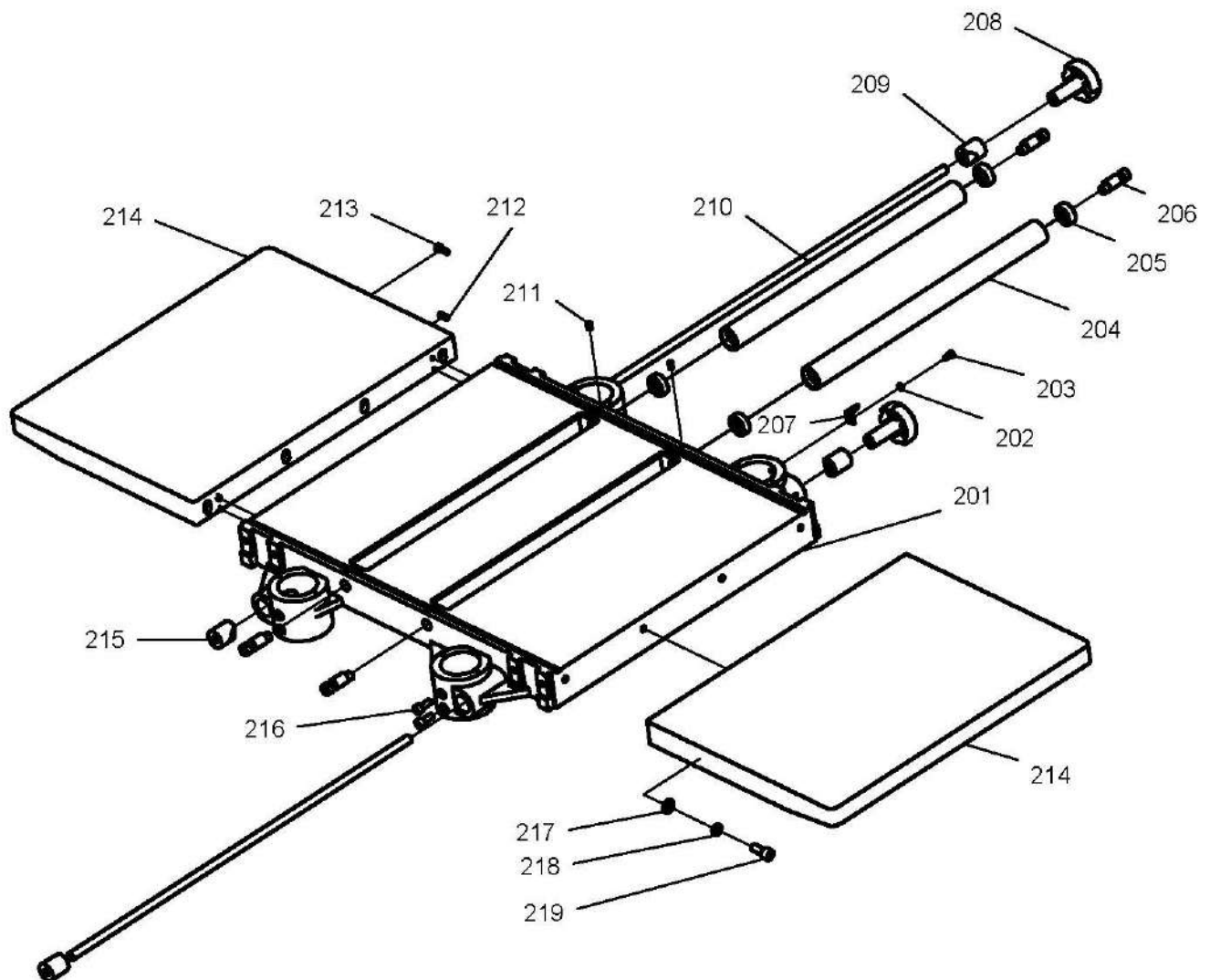
Feed Gearing

PART	DESCRIPTION	QTY	PART	DESCRIPTION	QTY
501	SPROCKET	1	518	SHAFT	1
502	WASHER	4	519	WASHER	1
503	CAP SCREW M6X16	3	520	EXT RET RING 15	1
504	FLAT WASHER ϕ 10	1	521	CAP SCREW M6*40	1
505	CHAIN TENSIONER	2	522	LOCK WASHER 6	1
506	SHAFT	1	523	BRACHET	1
507	BRACKET	1	524	NUT M8	1
508	CHAIN 06B-1*51	1	525	KNOB	1
509	SPROCKET	1			
510	SPECIAL BOLT	1			
511	CAP SCREW M6*10	2			
512	KEY 5X15	1			
513	FEED SPROCKET	1			
514	SPRING	1			
515	BRACKET	1			
516	WASHER ϕ 8* ϕ 28*3	2			
517	CHAIN 06B-1*68	1			



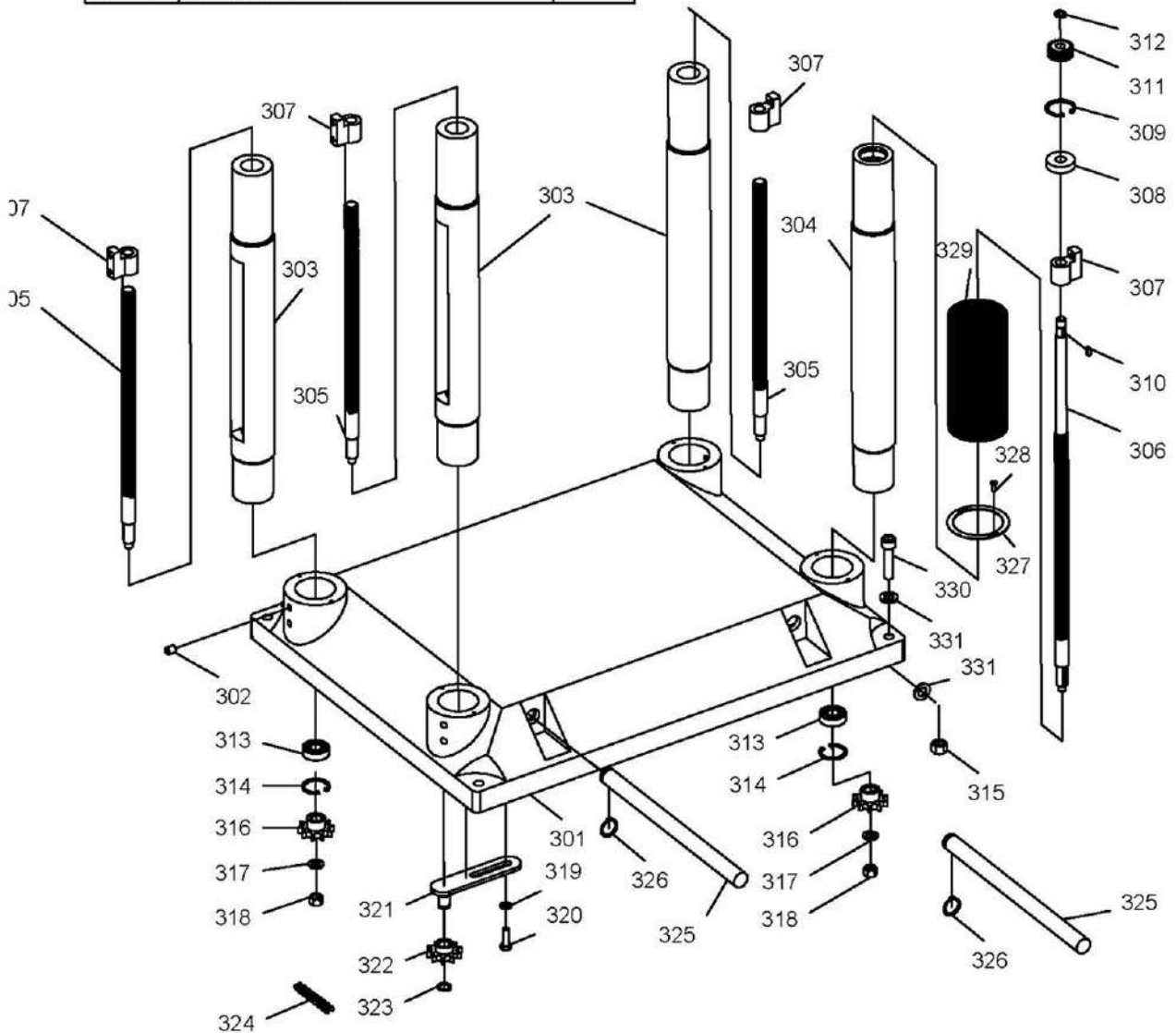
Table(With Cast-iron Extension Tables)

PART	DESCRIPTION	QTY	PART	DESCRIPTION	QTY
201	MAIN TABLE	1	211	SET SCREW M6*12	4
202	FLAT WASHER 5	1	212	SET SCREW M6*16	4
203	CAP SCREW M5*10	1	213	CAP SCREW M6*16	4
204	BED ROLLER	2	214	TABLE EXTENSION WING	2
205	BEARING 6201	4			
206	ECCENTRIC SHAFT	4	215	LOCK BLEEVE	2
207	POINTER	1	216	CAP SCREW M8*20	8
208	STAR KNOB M12	2	217	FLAT WASHER 10	8
209	GIB	2	218	LOCK WASHWER 10	8
210	LOCKING ROD	2	219	CAP SCREW M10*25	8



Base

PART	DESCRIPTION	QTY	PART	DESCRIPTION	QTY
301	BASE	1	317	FLAT WASHER 10	4
302	SET SCREW M10*12	8	318	HEX NUT M10	4
303	COLUMN	3	319	FLAT WASHER 8	2
304	COLUMN	1	HEX BOLT M8X25	2	
305	LEAD SCREW	3	321	BRACKET	1
306	LEAD SCREW	1	322	SPROCKET	1
307	LEAD SCREW NUT	4	323	EXT RET RING 15	1
308	BUSHING	1	324	CHAIN	1
309	INT RET RING 38	1	325	CRANE POST	4
310	KEY 4X12	1	326	EXT RET RING 22	4
311	GEAR	1	327	PIPE BAND	16
312	EXT RET RING 12	1	328	CAP SCREW M4*10	32
313	BALL BEARING 6202	4	329	EXPANSION BAND	8
314	INT RET RING 35	4	330	HEX BOLT M12*40	4
315	HEX NUT M12	4	331	FLAT WASHER 12	8
316	SPROCKET	4			



STAND (MOBILITY KIT)

PART	DESCRIPTION	QTY	PART	DESCRIPTION	QTY
601	STAND	1	621	PEDAL BRACKET	1
602	BACK COVER	2	622	LOCK NUT M8	1
603	PHI HEAD SCREW M6*16	8	623	CAP SCREW M8*50	3
604	MOTOR	1	624	PEDAL	1
605	KEY 8*40	1	625	LOCK NUT M10	1
606	CAP SCREW M6*16	4	626	TROLLEY UNIVERSAL KIT BRACKET	1
607	MOTOR MOUNT PLATE	1	627	INT RET RING 35	4
608	LOCK COLLAR	2	638	BEARING 6202	2
609	LOCK WASHER 8	9	629	TROLLEY WHEEL SLEEVE	1
610	HEX NUT M8	7	630	CAP SCREW M10*70	1
611	FLAT WASHER 8	10	631	TROLLEY UNIVERSAL KIT	1
612	PLATE CONNECTING ROD	2	632	CAP SCREW M8*100	1
613	FLAT WASHER12	6	633	RUBBER FOOT M10*35	2
614	HEX NUT M12	4	634	HEX NUT M10	2
615	ADJUST BOLT	2	635	UNIVERSAL WHEEL	2
616	FENDER WASHER 8	4	636	UNIVERSAL WHEEL SLEEVE	2
617	HEX BOLT M8*40	4	637	CAP SCREW M8*60	2
619	E-CLIP 9MM	2	638	STRAIN RELIEF M20*1.5	1
620	SHAFT	1	639	POWER CORD	1

