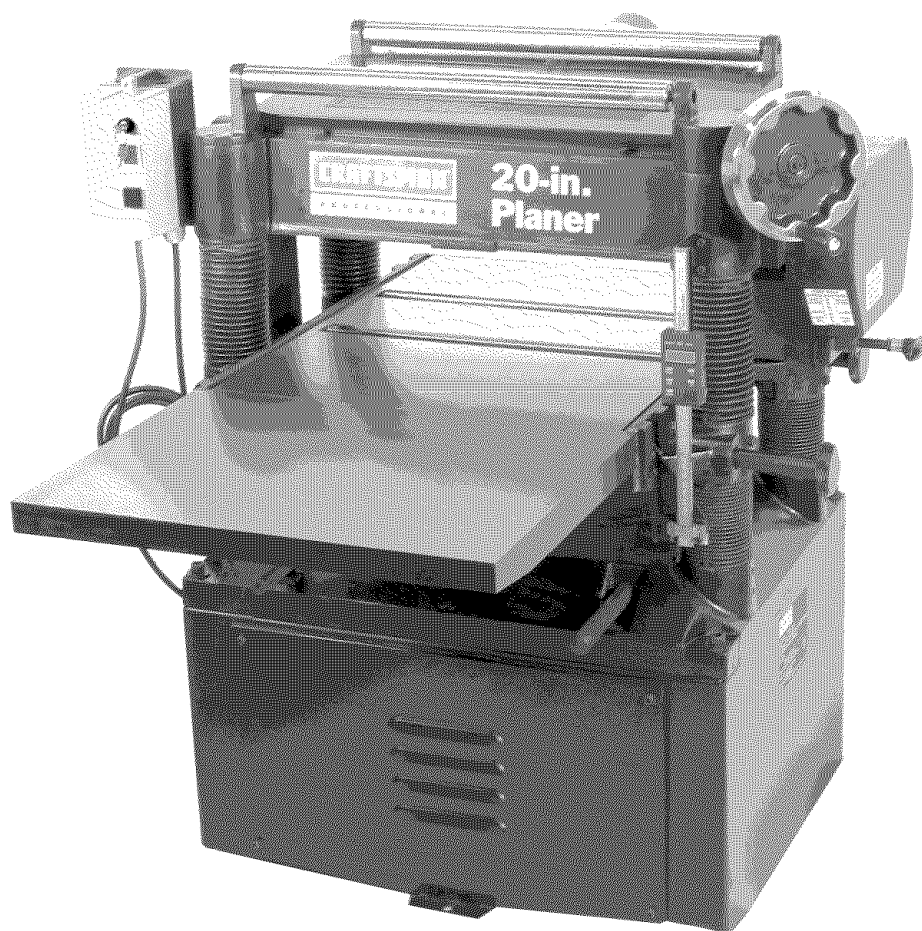


Operator's Manual



20"
PLANER
Model No.
351.217040



CAUTION: Read and follow all Safety Rules and Operating Instructions before First Use of this Product. Keep this manual with tool.

Sears, Roebuck and Co., Hoffman Estates, IL 60179 U.S.A.

www.sears.com/craftsman

22589.00 Draft (02/07/05)

SAFETY

ASSEMBLY

OPERATION

MAINTENANCE

PARTS LIST

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WARRANTY

FULL ONE YEAR WARRANTY

If this product fails due to a defect in material or workmanship within one year from the date of purchase, Sears will at its option repair or replace it free of charge. Contact your nearest Sears Service Center (1-800-4-MY-HOME) to arrange for product repair, or return this product to place of purchase for replacement.

If this product is used for commercial or rental purposes, this warranty will apply for 90 days from the date of purchase.

This warranty applies only while this product is used in the United States.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sears, Roebuck and Co., Dept. 817WA, Hoffman Estates, IL 60179

SAFETY RULES

WARNING: For your own safety, read all of the rules and precautions before operating tool.

CAUTION: Always follow proper operating procedures as defined in this manual even if you are familiar with use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

BE PREPARED FOR JOB

- Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts of machine.
- Wear protective hair covering to contain long hair.
- Wear safety shoes with non-slip soles.
- Wear safety glasses complying with United States ANSI Z87.1. Everyday glasses have only impact resistant lenses. They are **NOT** safety glasses.
- Wear face mask or dust mask if operation is dusty.

- Be alert and think clearly. Never operate power tools when tired, intoxicated or when taking medications that cause drowsiness.

PREPARE WORK AREA FOR JOB

- Keep work area clean. Cluttered work areas invite accidents.
- Do not use power tools in dangerous environments.
- Do not use power tools in damp or wet locations. Do not expose power tools to rain.
- Work area should be properly lighted.
- Proper electrical receptacle should be available for tool. Three prong plug should be plugged directly into properly grounded, three-prong receptacle.
- Extension cords should have a grounding prong and the three wires of the extension cord should be of the correct gauge.
- Keep visitors at a safe distance from work area.
- Keep children out of workplace. Make workshop child-proof. Use padlocks, master switches or remove switch keys to prevent any unintentional use of power tools.

TOOL SHOULD BE MAINTAINED

- Always unplug tool prior to inspection.
- Consult manual for specific maintaining and adjusting procedures.
- Keep tool lubricated and clean for safest operation.
- Remove adjusting tools. Form habit of checking to see that adjusting tools are removed before switching machine on.
- Keep all parts in working order. Check to determine that the guard or other parts will operate properly and perform their intended function.
- Check for damaged parts. Check for alignment of moving parts, binding, breakage, mounting and any other condition that may affect a tool's operation.
- A guard or other part that is damaged should be properly repaired or replaced. Do not perform makeshift repairs. (Use parts list provided to order replacement parts.)

KNOW HOW TO USE TOOL

- Use right tool for job. Do not force tool or attachment to do a job for which it was not designed.
- Disconnect tool when changing blades.
- Avoid accidental start-up. Make sure that the switch key is in the OFF position before plugging in.
- Do not force tool. It will work most efficiently at the rate for which it was designed.
- Keep hands away from moving parts and cutting surfaces.
- Never leave tool running unattended. Turn the power off and do not leave tool until it comes to a complete stop.
- Do not overreach. Keep proper footing and balance.

- Never stand on tool. Serious injury could occur if tool is tipped or if blade is unintentionally contacted.
- Know your tool. Learn the tool's operation, application and specific limitations.
- Use recommended accessories (refer to page 19). Use of improper accessories may cause risk of injury to persons.
- Handle workpiece correctly. Protect hands from possible injury.
- Turn machine off if it jams. Blade jams when it digs too deeply into workpiece. (Motor force keeps it stuck in the work.)
- Always keep drive, cutterhead and blade guards in place and in proper operating condition.
- Feed work into blade or cutter against direction of rotation.

CAUTION: Think safety! Safety is a combination of operator common sense and alertness at all times when tool is being used.

WARNING: Do not attempt to operate tool until it is completely assembled according to the instructions.

UNPACKING

Check for shipping damage. If damage has occurred, a claim must be filed with carrier. Check for completeness. Immediately report missing parts to dealer.

Additional parts which need to be fastened to the planer should be located and accounted for before assembling.

Planer is shipped assembled except for the following: two table extensions, handwheel handle, chip chute, two roller gauge blocks, blade height gauge and hardware bag.

Hardware bag (Part No. 23402.00) includes:

- 10-1.5 x 25mm Socket Head Bolt (8)
- 6-1.0 x 12mm Socket Head Bolt (8)
- 6mm Flat Washer (8)
- 10mm Flat Washer (8)
- 10mm Lock Washer (8)

IMPORTANT: Table, table rollers and cutterhead are coated with a protectant. To ensure proper fit and operation, remove coating. Coating is easily removed with mild solvents, such as mineral spirits, and a soft cloth. Use caution when cleaning the cutterhead, as the blades are very sharp. Avoid getting solution on paint or any of the rubber or plastic parts. Solvents may deteriorate these finishes. Use soap and water on paint, plastic or rubber components. After cleaning, cover all exposed surfaces with a light coating of oil. Paste wax is recommended for table top.

WARNING: Never use highly volatile solvents. Non-flammable solvents are recommended to avoid possible fire hazard.

ASSEMBLY

WARNING: Do not attempt assembly if parts are missing. Use this manual to order replacement parts.

PLANER INSTALLATION

Before planer is assembled, a suitable location should be chosen. The planer weighs approximately 800 lbs when completely assembled. Planer should be assembled on location.

- Planer needs to be set on a flat, level surface. This improves stability, accuracy and prevents warpage and failure of cast components and welds.
- Make sure there is ample room on both infeed and outfeed sides of planer for moving the workpiece through the entire cut. There must be enough room that neither the operators nor the bystanders will have to stand in line with the wood while using the tool.
- Good lighting and correct power supply (230 volts) are also required for a proper work area.
- Place planer in its designated spot. Covers for access to motor are on both front and rear sides of stand. The planer is supplied with four lifting handles that slide into the base on the infeed and outfeed sides. The planer must be lifted by these handles only and moved to the required location.
- With planer in position, check table surface lengthwise and crosswise with machinist level. Place metal shims under low corners. Check that all four corners are supported. Check table level in both directions and secure machine to floor with lag bolts (not supplied) through plates at front and rear of stand.

ATTACH SWITCH BOX

Refer to Figure 1.

- Attach switch box to roller case using two 6-1.0 x 12mm socket head bolts.

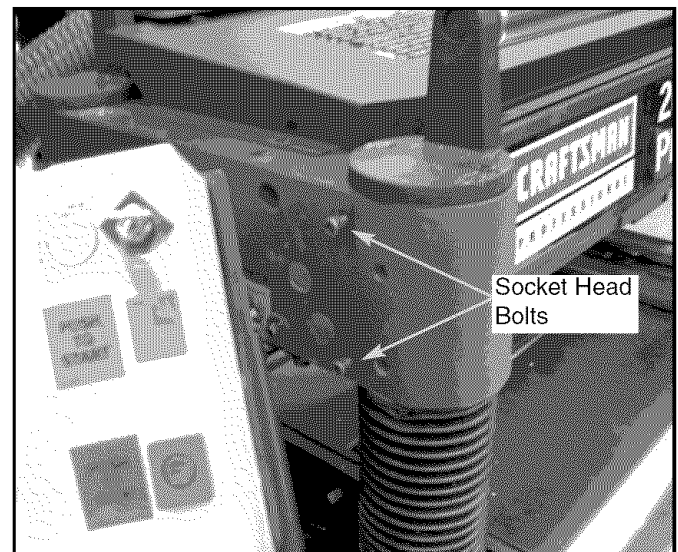


Figure 1 – Installing Switch Box

MOUNT HEIGHT ADJUSTMENT HANDWHEEL HANDLE

Refer to Figure 21, page 20.

- Required parts: Handle
- Thread handle into handwheel.
- Tighten hex nut (Key No. 16) to secure handle.

MOUNT CHIP CHUTE

Refer to Figure 21, page 20.

- Required parts and hardware:
Chip Chute
6-1.0 x 12mm Hex Head Bolt (6)
6mm Flat Washer (6)
- Position chip chute on chipbreaker cover (Key No. 54) so that the slots on chip chute and chipbreaker cover are aligned and slots on chip chute and holes on the roller case are aligned.
- Secure chip chute to chipbreaker cover using three hex head bolts and three flat washers.
- Secure chip chute to roller case (Key No. 1) using three socket head bolts and three flat washers.

MOUNT TABLE EXTENSIONS

Refer to Figure 2.

- Required hardware:
10-1.5 x 25mm Socket Head Bolt (8)
10mm Flat Washer (8)
10mm Lock Washer (8)
- Mount table extension to planer table on the infeed side using four 10-1.5 x 25mm socket head bolts, flat washers and lock washers. Do not tighten bolts completely.
- Place long straight edge across table and table extension.
- Use mallet to tap extension table flush with table.
- Adjust set screws and socket head bolts (located at outside edge of table extension) so that the table extension is at the same height and angle as the table.
- Tighten bolts to secure extension.
- Repeat above steps for the outfeed extension.

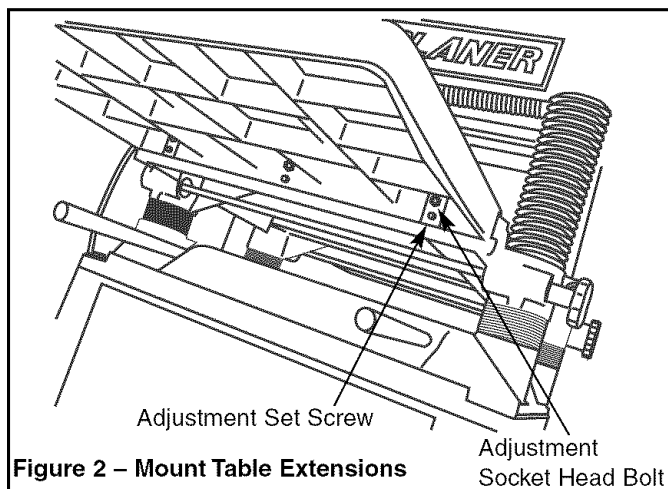


Figure 2 – Mount Table Extensions

INSTALLATION

POWER SOURCE

WARNING: Do not connect planer to the power source until all assembly steps have been completed.

The motor is designed for operation on the voltage and frequency specified. Normal loads will be handled safely on voltages not more than 10% above or below specified voltage. Running the unit on voltages which are not within range may cause overheating and motor burnout. Heavy loads require that voltage at motor terminals be no less than the voltage specified on nameplate.

GROUNDING INSTRUCTIONS

WARNING: Improper connection of equipment grounding conductor can result in the risk of electrical shock. Equipment should be grounded while in use to protect operator from electrical shock.

Check with a qualified electrician if grounding instructions are not understood or if in doubt as to whether the tool is properly grounded.

This tool is equipped with an approved 3-conductor cord rated up to 250V for your protection against shock hazards.

Do not remove or alter grounding conductor in any manner. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electrical shock.

Inspect tool cords periodically, and if damaged, have repaired by an authorized service facility.

Green (or green and yellow) conductor in cord is the grounding wire. If repair or replacement of the electric cord or plug is necessary, do not connect the green (or green and yellow) wire to a live terminal.

WARNING: This work should be performed by a qualified electrician.

EXTENSION CORDS

- The use of any extension cord will cause some drop in voltage and loss of power.
- Wires of the extension cord must be of sufficient size to carry the current and maintain adequate voltage.
- Use the table to determine the minimum wire size (A.W.G.) extension cord.
- Use only 3-wire extension cords having 3-prong grounding type plugs and 3-pole receptacles.
- If the extension cord is worn, cut, or damaged in any way, replace it immediately.

EXTENSION CORD LENGTH

Wire Size	A.W.G.
Up to 50 ft.	12

NOTE: Using extension cords over 50 ft. long is not recommended.

MOTOR

The planer is assembled with motor and wiring installed. The 230 Volt AC capacitor start motor has the following specifications:

Horsepower	3
Voltage	230
Amperes	16.5
Hertz	60
Phase	Single
RPM	3450

ELECTRICAL CONNECTIONS

Refer to Figure 3.

WARNING: All electrical connections must be performed by a qualified electrician. Make sure unit is off and disconnected from power source while motor is mounted, connected, reconnected or anytime wiring is inspected.

Planer has an approved 230 volt three-conductor line cord and a 230 volt magnetic contactor that is prewired in the factory (See Figure 3).

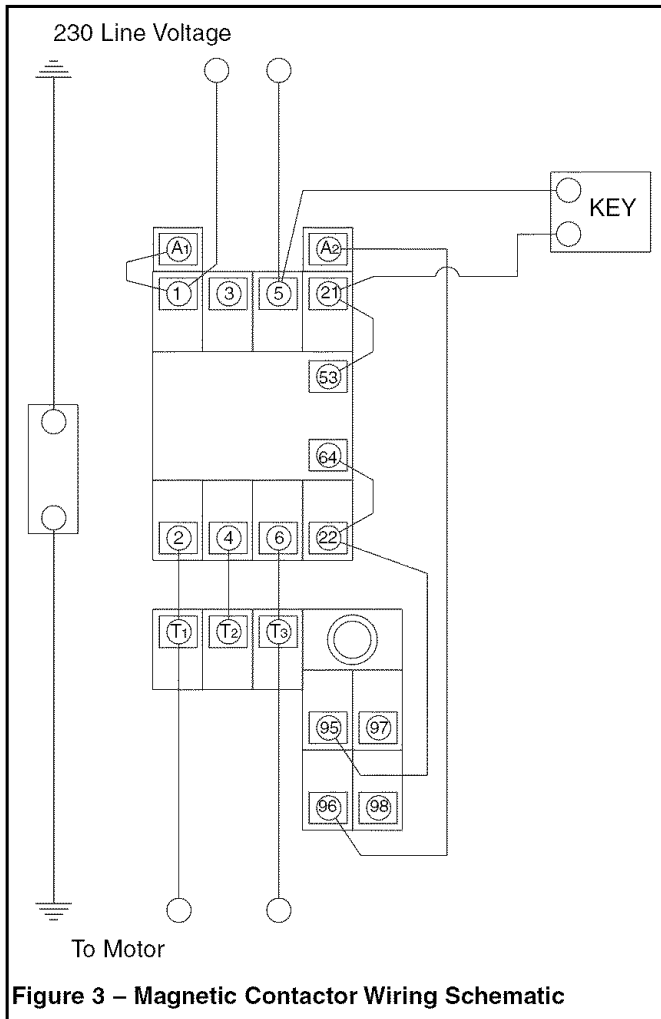


Figure 3 – Magnetic Contactor Wiring Schematic

Install an approved plug onto the line cord. Connect to a matching outlet that has been properly installed and grounded in accordance with all local codes and ordinances.

- The tool has a key lock switch to prevent unauthorized use. Turn key lock switch to OFF and remove key when tool is not in use.

NOTE: The motor will not start if the key is in the OFF position

- Connect planer to a supply circuit protected by a 30 AMP circuit breaker or time delay fuse.

OVERLOAD PROTECTION

The magnetic contactor has overload protection that helps to prevent damage to the motor. The overload protection will automatically turn off the magnetic contactor when an overload occurs. Set thermal overload to 22 Amps. Be sure to disconnect planer from power source when resetting overload protector. The protection is reset by opening the contactor box and pressing the reset button.

CHECK CONNECTIONS

Refer to Figure 4.

- Plug in the line cord to a 230 volt power source.
- Turn the key to ON.
- Depress the start button. The motor must rotate counterclockwise facing shaft end.
- Depress the stop button. The motor must stop.
- Depressing the start button with either the stop button pressed down or the key in OFF position must not start the motor.
- If any of the above steps do not work properly, disconnect planer from power source and recheck the connections.

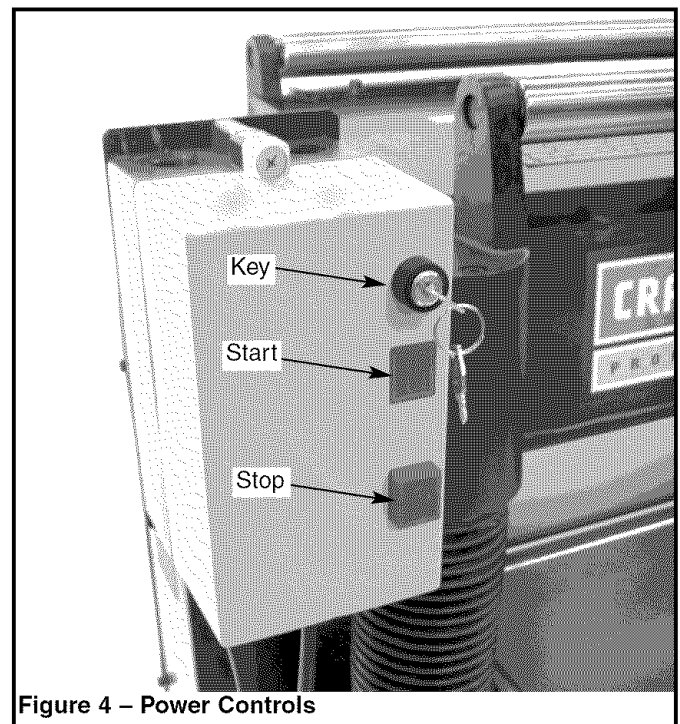
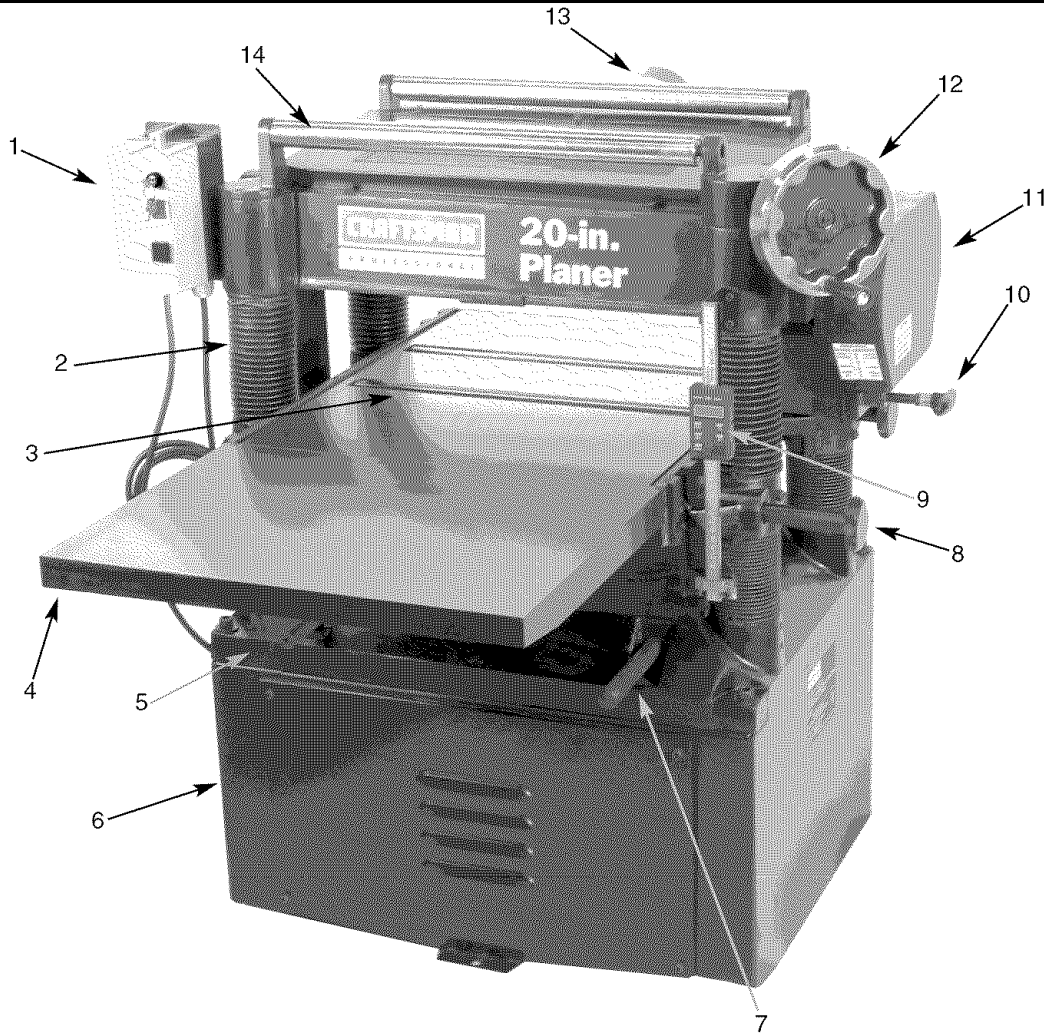


Figure 4 – Power Controls

KNOW YOUR PLANER



- 1 Switch Box
- 2 Column
- 3 Table Rollers
- 4 Extension Table
- 5 Base
- 6 Stand
- 7 Lifting Handle

- 8 Table Locking Knobs
- 9 Thickness Scale
- 10 Feed Rate Shift Handle
- 11 Gearbox
- 12 Handwheel
- 13 Dust Collection Port
- 14 Return Rollers

OPERATION

DESCRIPTION

Refer to Figures 5-13, and 21.

Craftsman 20" Planer is a heavy duty cast iron unit that can plane lumber up to 20" wide and 8" thick. Planer has a 3.15" diameter, 4-blade cutterhead with jack screws for easy blade adjustment and replacement. Cutterhead and feed rollers travel on precision ground steel columns. Lumber can be fed at 16 or 25 feet per minute and can be cut up to 0.23" deep per pass.

Planer comes with totally enclosed welded plate steel cabinet, 4" port for dust collection and safety electrical control with magnetic contactor. Includes 3 HP motor.

SPECIFICATIONS

Table Size	20 x 26"
Table with Extensions	20 x 56"
Blade Width	20"
Cuts per Minute	20,000
Maximum Cut	0.23" Deep
Floor Space	40 x 56"
Dust collection port	4" Diameter
Motor	3 HP, 3450 RPM
Overall Dimensions (D x W x H)	51 x 40 x 39"
Weight	750 lbs

Planing refers to the sizing of lumber to a desired thickness while creating a level surface parallel to the opposite side of the board. Depth of cut is the term used to indicate how deep the blades will cut into the workpiece.

OPERATION SAFETY RULES

WARNING: Operation of any power tool can result in foreign objects being thrown into eyes which can result in severe eye damage. Always wear safety goggles complying with United States ANSI Z87.1 (shown on package) before commencing power tool operation.

CAUTION: Always observe the following safety precautions:

- Know general power tool safety. Make sure all precautions are understood (See pages 2, 3 and 7).
- Whenever adjusting or replacing any parts on planer, turn switch off and remove plug from power source.
- Make sure the cutterhead and chipbreaker covers are properly attached and securely fastened.
- Make sure all moving parts are free from interference.
- Always wear eye protection or face shield.
- Make sure blades are aligned and properly attached to cutterhead.
- Do not plug in planer unless switch is in OFF position. After turning switch on, allow planer to come to full speed before operating.
- Keep hands clear of all moving parts.
- Do not force cut. Slowing or stalling will overheat motor. Allow automatic feed to function properly.
- Use quality lumber. Blades last longer and cuts are smoother with good quality wood.
- Do not perform planing operations on material shorter than 23", narrower than 3/4", or less than 1/2" thick.
- Never make planing operation on material wider than 20" or cut deeper than 1/8"
- Always keep cutterhead and blade guards in proper working condition.
- Maintain the proper relationships of infeed and out-feed table surfaces and cutterhead blade path.
- Do not back the work toward the infeed table.
- Support the workpiece adequately at all times during operation; maintain control of the workpiece.
- Take precautions against kickback. Do not permit anyone to stand or cross in line of cutterhead's rotation. Kickback or thrown debris will travel in this direction.
- Turn switch off and disconnect power whenever planer is not in use.
- Replace or sharpen blades as they become damaged or dull.
- Keep planer maintained. Follow maintenance instructions (See pages 11-14).

DEPTH OF CUT

Refer to Figures 5 and 21, page 20.

The depth of cut is adjusted by the relative positioning of the table with respect to the blades in the cutterhead. Table can be raised or lowered using the handwheel. To adjust depth of cut:

- Loosen table lock knobs.
- Turn handwheel to raise or lower the handwheel.
- Position the table at the desired position.
- Turn the planer key to ON position and press the start button.
- Feed the lumber from the infeed side.
- Use the scale on the column to measure the depth of cut.
- To increase depth of cut raise the table: to decrease depth of cut lower the table.
- Tighten the table lock knobs.
- When planing several pieces of wood, plane all the lumber with the same set-up to have uniform thickness removed.
- A depth of cut limiter (Key No. 52) is provided to limit depth of cut to maximum of 0.125" for boards larger than 8" wide.

Recommended Maximum Depth of Cut:

Hard/Softwood up to 8" wide 0.230"
 Hard/Softwood 8" to 20" wide 0.125"

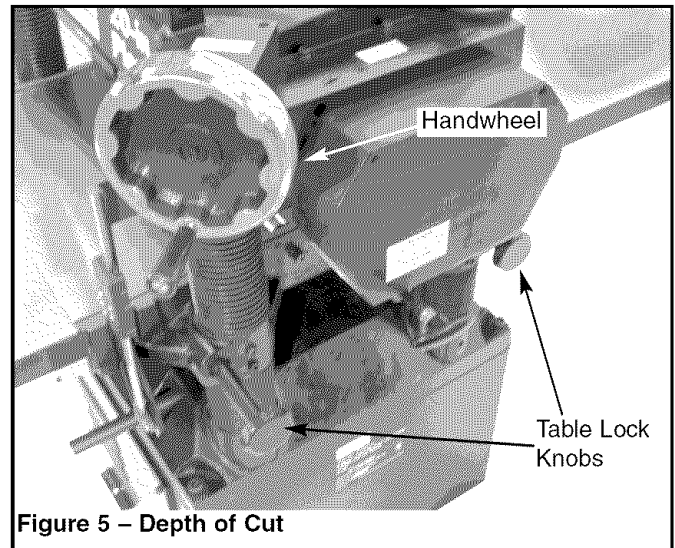


Figure 5 – Depth of Cut

USING DIGITAL SCALE

Refer to Figure 6, page 8.

- Before using scale, wipe down the vertical scale with a dry, soft cloth. Do not use cleaning solutions. Do not allow any liquids (such as machine oil) to contact the body of the digital display. Keep the device clean.
- Data from the digital scale can be input into a computer via the port at the side of the device. Simply slide off the small port cover (see Figure 6, page 8).

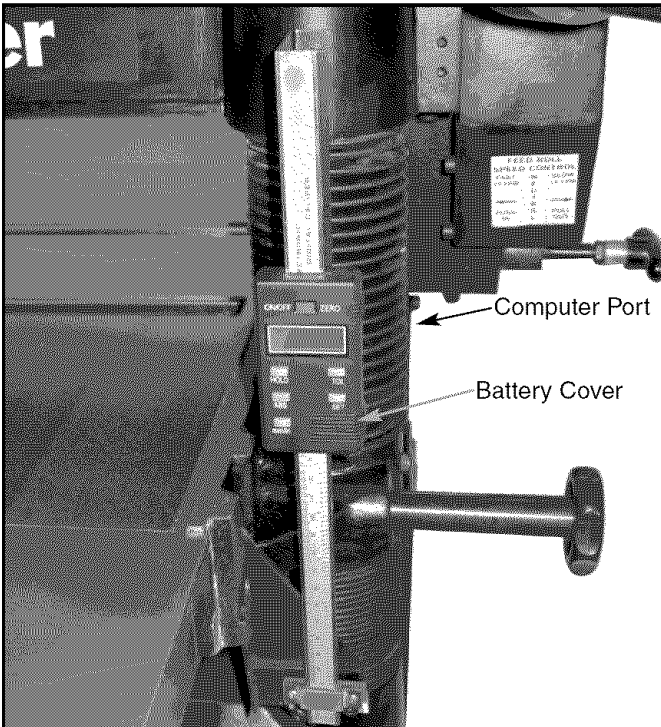


Figure 6 – Functions of the Digital Scale

- This scale uses a 1.55 volt battery cell (SR44). If it needs replacing, slide off the battery cover and insert the battery, with the positive pole of the battery facing out.

NOTE: After replacing a battery, the digital display settings should be recalibrated.

BUTTON FUNCTIONS

ON/OFF/ZERO – Power and Zero Setting

- Press ON/OFF/ZERO button no longer than three (3) seconds to power on.
- Press ON/OFF/ZERO button at least three (3) seconds to shut off the digital display.
- While in relative mode, press ON/OFF/ZERO (no longer than three (3) seconds to set current position as relative zero point.
- While in absolute mode, press ON/OFF/ZERO (no longer than three (3) seconds to set current position as absolute zero point.

ABS – Relative/Absolute Modes

- The scale is in absolute mode as soon as power is turned on, and displays absolute zero. Moving the planer table up and down begins absolute measurement. Absolute measurement is usually set based upon the distance from cutterhead to table.
- Press ABS button (no longer than three {3} seconds) to switch to relative mode. “INC” will appear on the display. The value shown is in relative mode. Moving the table up and down will now display relative measurement.

MM/INCH – Millimeters/Inches

- Pressing this button toggles back and forth between standard and metric, and can be done at any time without affecting saved settings.

HOLD – Maintains Data On The Display

- Press this button to “freeze” a measurement on the display; it will remain even if the table is moved. Press HOLD again and it returns to normal measurements.

SET – Preset a Value

- Press SET; the indicator will flash “SET”. Press and hold the SET button and each digit flashes in turn. When the digit you want flashes, release the SET button.
- Press SET button once (no longer than one {1} second) and that digit will increase by one each time SET is pressed. When finished, press and hold SET button until indicator “SET” flashes, then press SET again (no longer than one {1} second). The indicator “SET” disappears and the value you just input is displayed on the screen.
- From this point on, any table movement will be based off this setting. The setting will be kept in the device’s memory, even when the digital display is turned off.

TOL – Tolerance Setting

- Press TOL and an up-arrow indicator will appear, as well as a flashing “SET” indicator. You can now change the upper tolerance limit.
- Hold down the TOL button and each digit flashes in turn. When the digit you want flashes, release the TOL button.
- Press TOL button once (no longer than one {1} second) and that digit will increase each time TOL is pressed.
- When finished, press and hold TOL button until indicator “SET” flashes. While indicator “SET” is flashing, press SET button to change the arrow to the down-arrow indicator. You can now change the lower tolerance limit in the same manner as you changed the upper tolerance limit.
- When finished setting the lower tolerance limit, while indicator “SET” is flashing, press SET button (no longer than one {1} second). The device is now in tolerance measuring mode. When the up-arrow indicator is displayed, it means the measured value is beyond the upper limit. When the down-arrow indicator is displayed, the measured value is below the lower limit. When the display shows an “OK” indicator, the measured value is within tolerance.

ESTABLISH ABSOLUTE ZERO

- Turn on the digital display. It turns on in absolute mode.
- Plane one side of a scrap board at an appropriate and safe cutting depth ($\frac{1}{16}$ " for example).
- Raise the table by the same amount ($\frac{1}{16}$ "), then turn the board over and plane the other side. Do not move the table from the current position.
- Measure the planed board carefully with calipers. This measurement of the finished board is the equivalent of the distance from table to blade.
- Input the measurement on the calipers into the digital display. Refer to the instructions above involving the SET button function to input this number into your digital display.

USING RELATIVE MEASUREMENT MODE

- The absolute setting, for which you should have already established the zero point, give the thickness of your finished board after cutting (distance from table to cutterhead).
- The relative measurement mode is useful for measuring only the amount of stock that you wish to remove (i.e., depth of cut), and eliminates having to add or subtract to find the proper setting. It is especially helpful when planing many boards to the same thickness.

Here is an example using relative measurement:

- You have planed a board at a setting of 1" at absolute measurement. Do not move the table from this position. You wish to increase the depth of cut on the next run by 0.032".
- Press ABS button to start relative measurement mode ("INC" will appear on the display).
- Follow the previous instructions on using the SET button function. You would input zeros for all digits, thus establishing zero setting for relative measurement mode.
- After setting relative zero, bring the table up until the digital display reads "0.32" inches in relative measurement mode. You can now plane your board with exact results. Of course, you can now toggle back and forth between relative and absolute mode (by pressing ABS button) and get both stock thickness and depth of cut readings at the same time.

ADJUSTING BLADE HEIGHT

Refer to Figures 7, 8 and 21, pages 8 and 20.

CAUTION: Planer blades are very sharp. Use leather gloves to protect hands from injury and exercise caution when adjusting blades.

WARNING: Disconnect planer from power source before adjusting planer.

To produce even surface on a workpiece, the blade edges must be the same distance from axis of cutterhead. The blade height comes adjusted from the factory and should not require any adjustment. However, if adjustments are required:

- Loosen and remove hex head bolts and washers (Key Nos. 38 and 39) and remove chip chute (Key No. 56).
- Loosen and remove socket head bolts and washers (Key Nos. 38 and 39) and remove chipbreaker cover (Key No. 54).
- Loosen six gib screws (Key No. 7) on the cutterhead to loosen the cutterhead gib (Key No. 6).

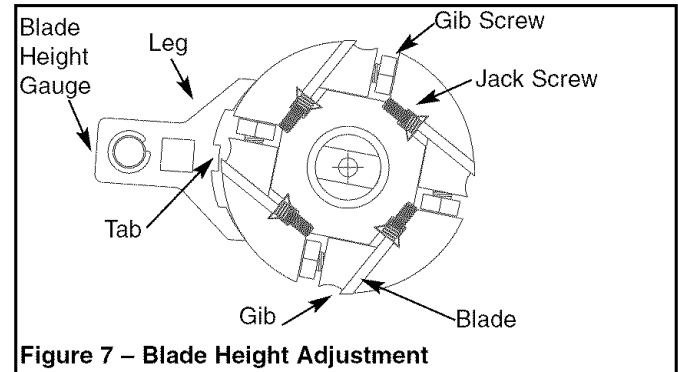


Figure 7 – Blade Height Adjustment

- Position the blade height gauge assembly (Key No. 8) on the cutterhead so that both the legs of the gauge rest firmly on the cutterhead. Remove chip deflector plate (Key No. 47) if required.
- The blade edge must just make contact with the tab on the blade height gauge. Adjust blade height by turning the jack screw (Key No. 4).

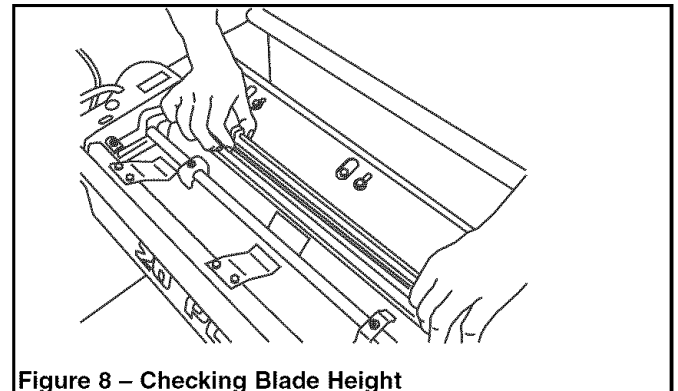


Figure 8 – Checking Blade Height

- Repeat the previous two steps to adjust the blade height on the other end of the blade.
- Secure blade and gib by tightening gib screws. Tighten outside gib screws first, and then, working towards center, tighten the remaining gib screws.
- Repeat the above steps for remaining blades. Securely tighten all gib screws.
- Replace chip deflector plate.
- Replace cutterhead cover.
- Replace chip chute.

PREPARING THE WORK

- Do not plane dirty boards. Dirt and small stones are abrasive and will wear the blade.
- Remove nails and staples to avoid damaging the blades.
- Avoid knots. Heavy crossgrain makes knots hard. Also knots can come loose and jam the blade.
- The planer works best when the lumber has at least one flat surface. Use a surface planer or jointer to define a flat surface.
- Twisted or severely warped boards can jam the planer. Rip lumber in half to reduce the magnitude of the warp.

FEEDING WORK

- Feed work along the grain direction. Wood fed against the grain will result in chipped and splintered edges. Sometimes grain will switch direction in the middle of a length of board. If possible, cut board before planing (See Figure 9).

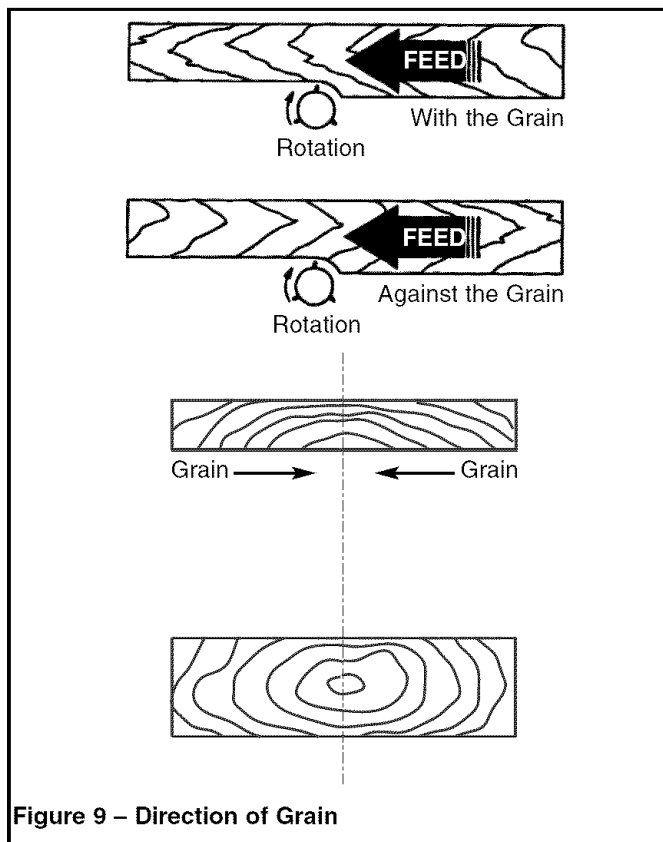


Figure 9 – Direction of Grain

CAUTION: Do not plane a board which is less than 23" long. The force of the cut could split the board and cause a kickback.

- Turn the planer on.
- Stand on the side of the planer to which the height adjustment handwheel is attached.
- Lift the work to infeed table by grasping edges at approximately the middle of the length.
- Boards longer than 36" should have additional support from free standing material stands (See Recommended Accessories, page 19).

- Rest the board end on infeed table and direct the board into the planer.
- Push slightly on board and allow automatic feed to take the board. Release board and allow automatic feed to function properly. Do not push or pull on workpiece.

CAUTION: Do not stand directly in line with front or rear of planer. When an object is projected from planer it will travel in this direction.

- Move to the side and receive the planed lumber by grasping it in the same manner in which it was fed.
- Do not grasp any portion of the board which has not gone past the outfeed roller.
- Repeat this operation on all boards which need to be the same thickness or adjust the height.
- The planer has return rollers on the top so an assistant can pass work back to the operator.

NOTE: An assistant must follow the same precautions as the operator.

CUTTING DEPTH

Refer to Figure 10.

The surface finish the planer provides will be smoother if a shallower depth of cut is used. Deep cuts require more power and cause greater wear on all machine parts.

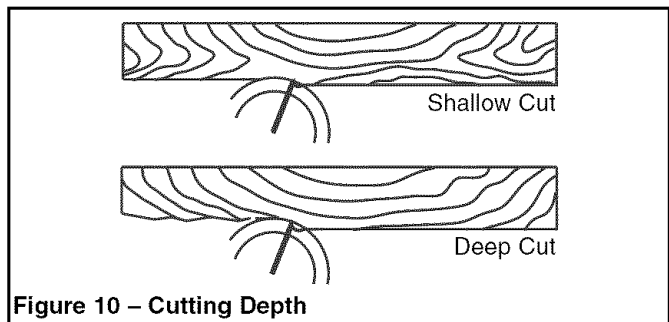


Figure 10 – Cutting Depth

SNIFE

Snipe is a depression at either end of the board, caused by an uneven force on the cutterhead when work is entering or leaving the planer.

Snipe will occur when boards are not supported properly. A slight snipe may still be noticed when the board is supported.

An uneven force is created when only one feed roller is in contact with work at the beginning or end of cut.

The snipe is more apparent when deeper cuts are being taken.

To reduce snipe:

- Gently, lift the board slightly when the board is fed until the outfeed roller comes in contact with the board.
- Release the board when both infeed and outfeed rollers are in contact with the board, and the board is being fed.
- Move to the outfeed side.

- Gently lift and support the board when all of the board has left the infeed roller.
- When planing more than one board, butt the boards together to reduce snipe.

POWER FEED RATE ADJUSTMENT

Refer to Figures 11 and 12.

Feed rate refers to rate at which wood is passed over blades. The Craftsman 20" Planer is supplied with a power feed system that automatically feeds the wood into the planer under the cutterhead.

The power feed system uses a 2 speed gearbox for planing both hard and soft woods.

Low speed – 16 FPM (feet per minute) is for hard wood, and high speed – 25 FPM is for soft wood.

- Adjust power feed rate while planer is running.
- To engage power feed at low speed (16 FPM), pull engagement knob out away from planer (See Figure 12).
- To engage high speed (25 FPM), push engagement knob in all the way, towards planer (See Figure 12).
- The power feed system can be disengaged by placing the engagement knob in the middle or neutral position (See Figure 12).

NOTE: Only change feed rate while the machine is running.

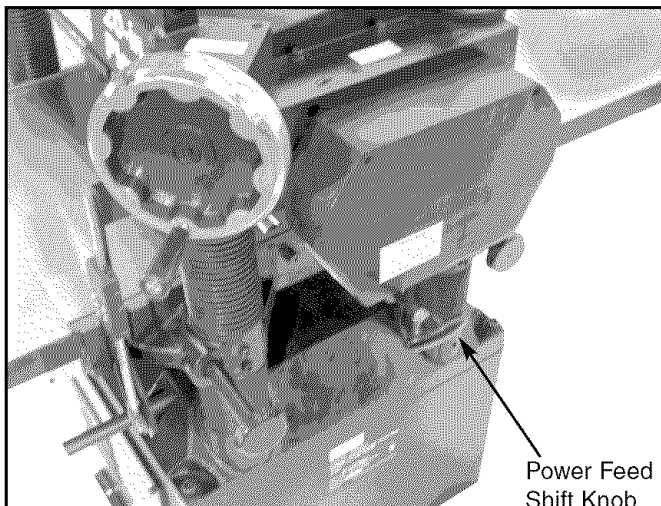


Figure 11 – Power Feed Shift Knob

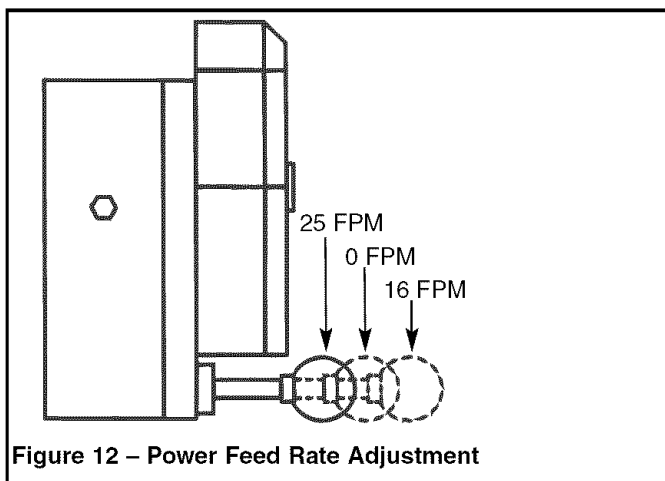


Figure 12 – Power Feed Rate Adjustment

FEED ROLLER SPRING TENSION ADJUSTMENT

Refer to Figures 13 and 21, page 20.

Infeed and outfeed rollers (Key Nos. 18 and 30) feed the workpiece under the cutterhead.

Spring-loaded feed rollers press against workpiece to prevent rollers from slipping.

The spring tension on feed rollers must be sufficient enough to prevent rollers from slipping on workpiece, but tension must not be so great that rollers cause damage to the workpiece.

- If feed rollers slip on workpiece, spring tension must be increased (clockwise).
- If workpiece is damaged by the feed rollers, the spring tension must be decreased (counterclockwise).
- Adjust the spring tension on the feed rollers by rotating the adjustment screws (Key No. 21) at each end of the rollers.
- Be sure to adjust screws so that the spring tension is equal on each side of the roller.
- Holes in the center of the adjustment screws are used to lubricate the infeed and outfeed rollers.

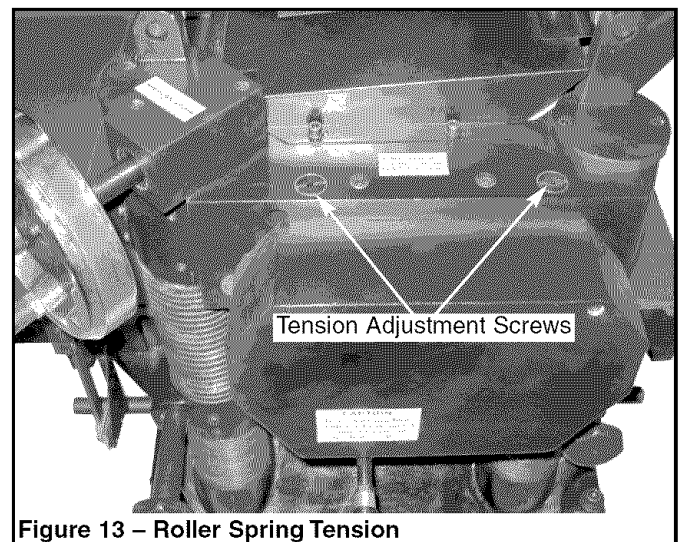


Figure 13 – Roller Spring Tension

MAINTENANCE

WARNING: Make certain that the unit is disconnected from power source before servicing blades.

CHECKING FOR WORN BLADES

- The condition of the blades will affect the precision of the cut. To check the condition of the blades, observe the quality of cut which planer produces.
- Dull blades will tear, rather than sever wood fibers, and produce a fuzzy appearance.
- A raised grain will occur when dull blades pound on wood that has a varying density.
- A raised edge will be produced where the blades have been nicked.

REMOVING AND REPLACING BLADES

Refer to Figure 21, page 20.

CAUTION: Planer blades are extremely sharp. Use leather gloves and exercise caution when replacing blades.

WARNING: Disconnect planer from power source.

If the blades have been chipped or damaged, they must be replaced. To replace blades:

- Remove chip chute (Key No 56).
- Remove chipbreaker cover (Key No. 54)
- Remove chip deflector plate (Key No. 47).
- Loosen gib screws (Key No. 7).
- Carefully remove blade.
- Thoroughly clean cutterhead slots, gibs, and gib screws.
- Insert new or sharpened blades in cutterhead.
- Replace gib.
- Secure blade by tightening gib screws. See “Adjusting Blade Height” page 9.
- Repeat the previous steps for the other blades.

SHARPENING BLADES

The blades can be honed individually by whetting them with fine sharpening stone. Make sure oilstone is flat and is not worn. To sharpen blades:

- Remove blades as described above.
- Partially cover stone with paper to protect the table top.
- Position infeed table so stone will contact blade along its beveled surface.
- Stroke the stone across blade from one side to other while stone is also moving slightly in the direction of feed.
- Make sure to do the same amount of strokes on each blade.

If the blades are nicked they must be replaced or reground. Never install unbalanced blades. Always sharpen blades in sets of four.

NOTE: Many shops do not have capabilities to resurface blades. Yellow pages should list “Sharpening Services” or “Tool Grinding”.

ADJUSTING BELT TENSION

Refer to Figures 21 and 22, pages 20 and 22.

WARNING: Disconnect planer from power source.

- Belt tension must be checked periodically. To check: Remove pulley cover (Figure 21, Key No. 74).
- Adjust belt tension by pivoting motor mounting plate (Figure 22, Key No. 54). Pivot plate by loosening hex nuts on tension bolt (Figure 21, Key Nos. 33 and 57) as required.
- Belt is properly tensioned when slight pressure between thumb and index finger causes $\frac{1}{2}$ " deflection of belt.
- Be sure to replace pulley cover.

LUBRICATION

Refer to Figure 20, page 18.

The planer gearbox has been filled with lubricating oil at the factory. The gearbox oil should be changed each 2500 hours of operation. To change oil:

WARNING: Disconnect planer from power source.

- Remove chain cover and guards (Key Nos. 44, 46 and 48).
- Drain old gearbox oil by removing plug (Key No. 27) at bottom of gearbox.
- Replace drain plug.
- Remove fill plug (Key No. 16) at top of gearbox.
- Fill gearbox with 50 or 60 weight gear oil (approximately 12 oz.).
- Fill until oil level is up to center of sight glass.
- Replace fill plug.
- Frequently lubricate all chains, leadscrews and handwheel gears with industrial grease.
- Frequently lubricate all table and return rollers, columns and bushings using SAE-30.

ANTI-KICKBACK PAWLS

Refer to Figure 21, page 20.

The anti-kickback pawls (Key No. 48) prevent the workpiece from kicking back against the direction of feed. The pawls must rotate freely to ensure safe operation of the planer.

- Inspect the anti-kickback pawls daily for proper operation checking that the pawls rotate freely.
- Clean the pawls of all gum and chips as required to ensure safe operation.

TABLE ROLLER ADJUSTMENT

Refer to Figures 14, 15 and 22, pages 13 and 22.

The table rollers (Key No. 2) are free-spinning rollers that help reduce friction, making the planing operation smoother.

The proper height of the table rollers is dependent upon the hardness and surface finish of the workpiece:

- The roller height should be adjusted so that the workpiece feeds smoothly through the planer but is not damaged by the table rollers or by the feed rollers.
- Rough cut wood requires the rollers to be adjusted a little higher, while smooth finish wood requires the rollers to be a little lower.
- For all workpiece materials and finishes the table rollers should be positioned slightly above the table.

WARNING: Disconnect planer from power source.

- Table roller height is adjusted by loosening set screws (Key No. 5) and rotating eccentric adjusters (Key No. 4).
- Use roller gauge blocks provided to check roller adjustment.

- Roller gauge blades are marked with three height settings - 0.15mm (0.005"), 0.30mm (0.010") and 0.45mm (0.015").
- Place a gauge block at each end of the roller with the height setting desired facing upward.
- Turn the adjuster until roller just touches gauge block.

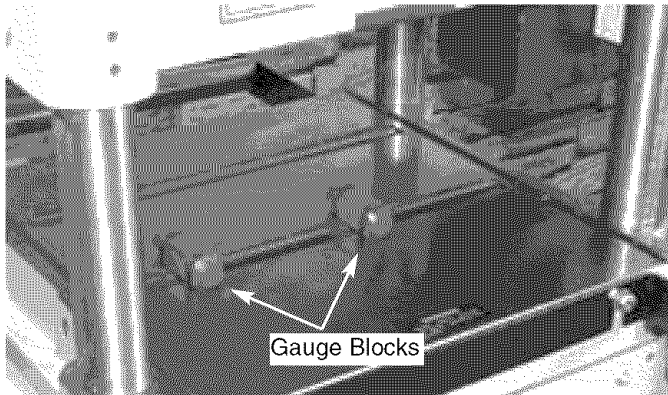


Figure 14 – Using Gauge Blocks to Set Roller Height

- Be sure that both ends of the table rollers are at the same height so that the rollers are parallel with the table and secure eccentric adjusters with set screws.
- Always adjust front and rear rollers to the same height.

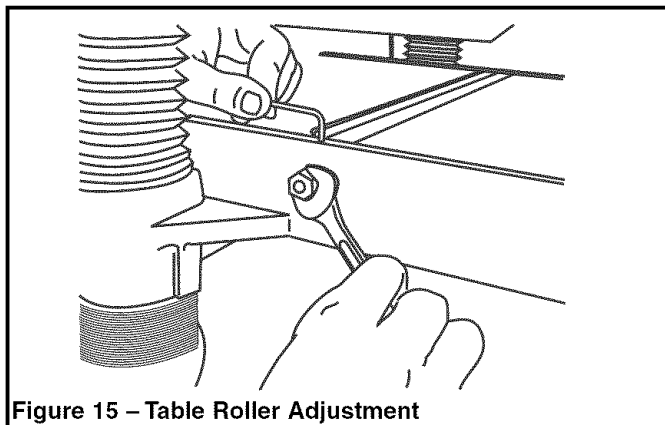


Figure 15 – Table Roller Adjustment

ADJUSTMENT BLOCK

Refer to Figure 16.

Some of the maintenance adjustments require the use of a handmade adjustment block (See Figure 16).

Make this block out of hard wood scrap with the dimensions shown. Exact dimensions are not critical but a very smooth, level finish across the top is required.

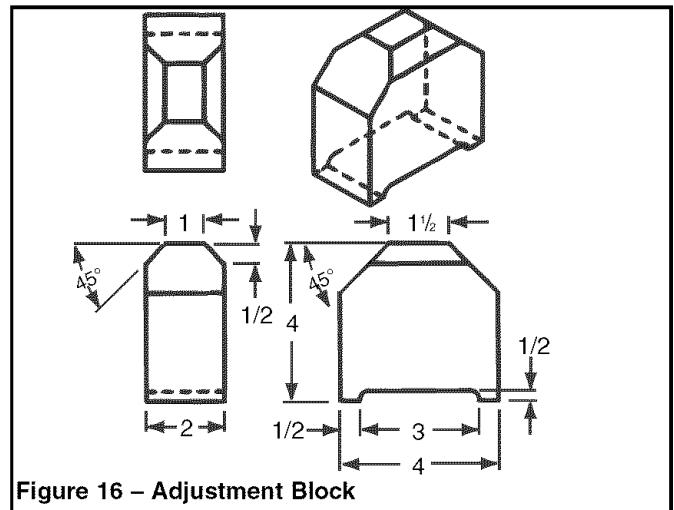


Figure 16 – Adjustment Block

OUTFEED ROLLER HEIGHT ADJUSTMENT

Refer to Figures 16, 17, 21 and 22, pages 11, 12, 20 and 22.

The outfeed roller (Figure 21, Key No. 30) is set at the factory so that the outfeed roller is positioned 0.020" below the blade. The outfeed roller should need no further adjustment but can be checked and adjusted using the following procedures:

WARNING: Disconnect planer from power source.

- Adjust blade height properly (See "Adjusting Blade Height", page 9).
- Place adjustment block (Figure 16) under cutterhead at one end as shown in Figure 17. Place 0.020" feeler gauge between block and blade. Raise or lower table so that blade just contacts feeler gauge when blade is at lowest position. Put gearbox in neutral and rotate cutterhead slowly to determine lowest position of blade. Lock table in position by tightening lock knobs (Figure 22, Key Nos. 9 and 18). Do not unlock table position until both sides of outfeed roller have been adjusted.

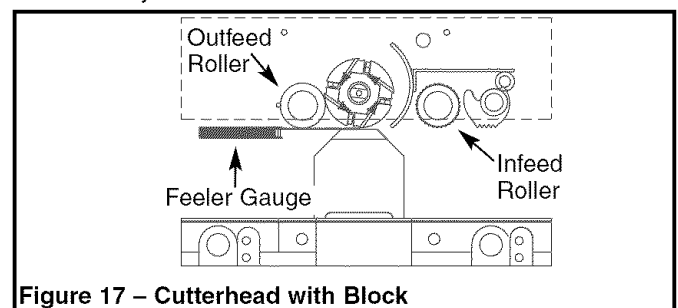


Figure 17 – Cutterhead with Block

- Remove feeler gauge and slide adjustment block under outfeed roller. Outfeed roller should just contact adjustment block. If outfeed roller is too high or low loosen hex nut on set screw (Figure 21, Key Nos. 24 and 25) under outfeed roller. Rotate set screw to position outfeed roller properly. Secure position by tightening hex nut on set screw.
- Place adjustment block on other end of outfeed roller and repeat step above. Be sure that outfeed roller is at the same height on both ends so that the roller is parallel with the table.

CHIPBREAKER ADJUSTMENT

Refer to Figures 16, 17, 18, 21 and 22, pages 13, 14, 20 and 22.

The chipbreaker breaks the chips of wood that are created by the blades during the planing operation. The chipbreaker then directs the chips around cutterhead and out of the chip chute. The chipbreaker must be positioned 0.004" below cutterhead to operate properly. The chipbreaker position is checked and adjusted by using the following procedure:

WARNING: Disconnect planer from power source.

- Adjust blade height properly (See "Adjusting Blade Height", page 9).
- Place adjustment block (See Figure 16) under cutterhead at one end as shown in Figure 17. Place 0.004" feeler gauge between block and blade. Raise or lower table so that blade just contacts feeler gauge when blade is at lowest position. Put gearbox in neutral and rotate cutterhead slowly to determine lowest position of blade. Lock table in position by tightening lock knobs (Figure 22, Key Nos. 9 and 18). Do not unlock table position until both sides of chipbreaker have been adjusted.
- Remove feeler gauge and slide adjustment block under chipbreaker (See Figure 18). Chipbreaker should just contact adjustment block. If chipbreaker is too high or too low, loosen hex nut on set screw (Figure 21, Key Nos. 25 and 44) above chipbreaker. Rotate set screw to position chipbreaker properly. Secure position by tightening hex nut on set screw.

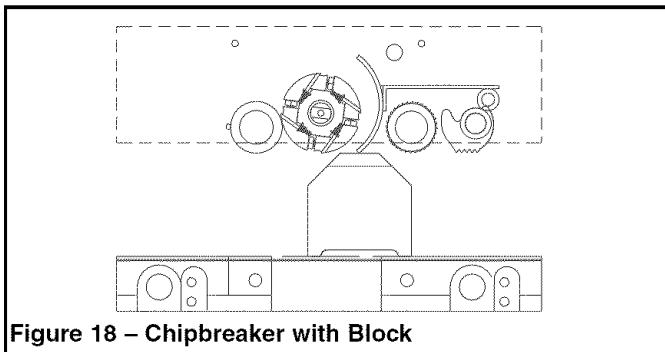


Figure 18 – Chipbreaker with Block

- Place adjustment block on other end of chipbreaker and repeat previous step. Be sure that chipbreaker is at the same height on both ends so that the chipbreaker is parallel with the table.

INFEED ROLLER AND PRESSURE BAR HEIGHT ADJUSTMENT

- The infeed roller is set 0.004" below the cutterhead. The pressure bar is set 0.008" below the cutterhead.
- If an adjustment to the infeed roller or pressure bar is necessary, adjust in the same manner as described above for outfeed roller and chipbreaker.

ADJUSTING TABLE POSITION

Refer to Figures 16, 19 and 22, pages 13, 14 and 22.

The table is positioned parallel to the cutterhead at the factory and should need no further adjustment. If the planer is cutting one side of the workpiece deeper than the other producing a tapered cut, then the table may need to be adjusted. Check to see that the blades are adjusted properly, see "Adjusting Blade Height" page 9.

WARNING: Disconnect planer from power source.

- Place adjustment block (See Figure 16) on table at outside edge of roller case and on infeed side of planer. Slide block to one corner of roller case. Raise or lower table until block just contacts roller case. Lock table in position by tightening lock knobs (Key Nos. 9 and 18). Do not unlock table position until all four corners of the roller case have been checked.
- Slide block to other side of roller case on infeed side of table. Check to see that the block just contacts the roller case.
- Move adjustment block to outfeed side of table and check height of both sides of roller case. Adjustment block should just contact roller case. If all four corners of roller case are at the same height, then roller case and cutterhead are parallel to the table.
- If roller case is not parallel to the table, then the table must be adjusted. Loosen the two bolts holding the chain tension sprocket (See Figure 19). It may be necessary to remove bolt "A" to release the tension in the chain.

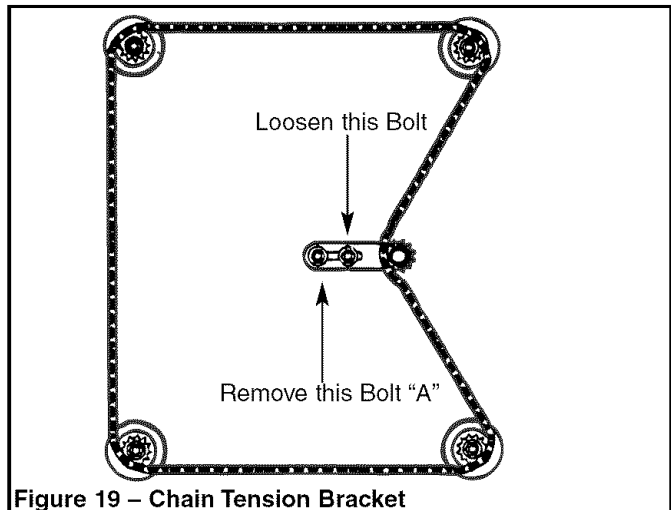


Figure 19 – Chain Tension Bracket

The table height is adjusted by removing the chain from the corner sprockets and rotating the sprockets. Determine which corner or corners, need adjustment and remove the chain from the sprocket in that corner. Rotate the sprocket by hand to adjust the table height (be sure to leave other sprockets untouched).

NOTE: Be careful not to rotate each sprocket more than 1 or 2 teeth.

Rotate sprocket (or sprockets) until table is parallel to roller case. Assemble chain tension sprocket carefully and tension chain properly.

TROUBLESHOOTING

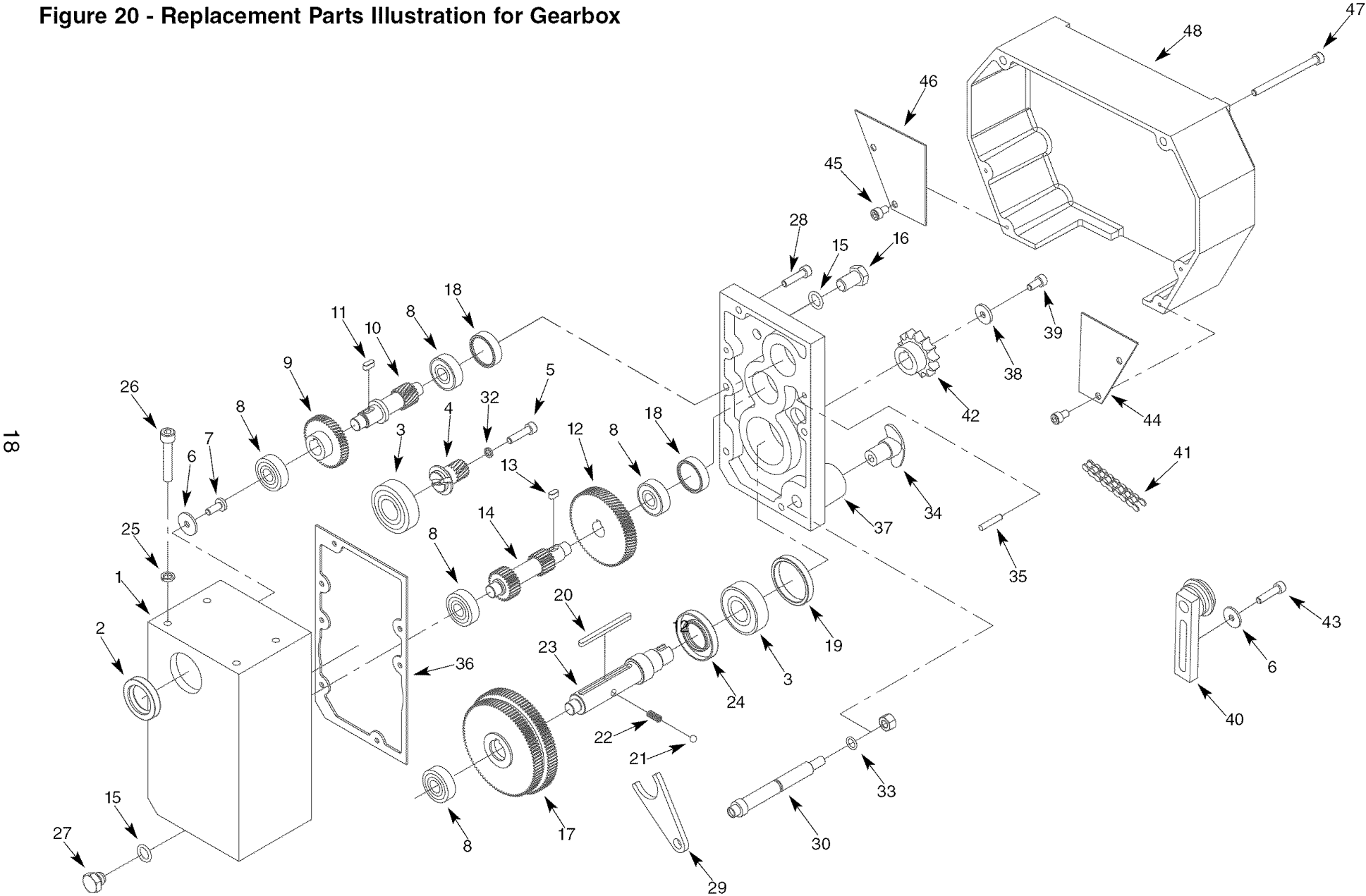
SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Planer does not start	<ol style="list-style-type: none"> 1.Key is in the OFF position 2.No power to planer 3.Motor overload protection tripped 4.Defective or loose switch or wiring 	<ol style="list-style-type: none"> 1. Turn key to ON position 2. Have a qualified electrician check power source 3. Reset motor overload protection, see “Overload Protection”, page 5 4. Have a qualified electrician check the switches and wiring
Frequent opening of fuses or circuit breakers	<ol style="list-style-type: none"> 1. Motor overloaded 2. Fuses or circuit breakers do not have sufficient capacity 3. Circuit overloaded 4. Motor wired incorrectly 	<ol style="list-style-type: none"> 1. Reduce load on motor 2. Have correct fuses or circuit breakers installed 3. Reduce circuit load (turn off other appliances) 4. Rewire motor using the schematic on the motor for high voltage
Cutterhead turns in the opposite direction	Motor wired incorrectly	Rewire motor using the schematic on the motor for motor rotation
Excessive snipe (gouging at end of board)	<ol style="list-style-type: none"> 1. Dull blades 2. Inadequate support of long boards 3. Uneven feed roller pressure 4. Cutter casting not aligned 5. Lumber not butted properly 6. Support rollers misaligned 	<ol style="list-style-type: none"> 1. Replace or sharpen blades per instructions, see “Maintenance”, page 11 2. Support long boards 3. Check feed roller operation 4. Check position of elevation screws 5. Butt end to end each piece of stock as boards pass through planer 6. Adjust support rollers
Fuzzy grain	Planing wood with high moisture content	Remove high moisture content from wood by drying
Torn grain	<ol style="list-style-type: none"> 1. Too heavy of a cut 2. Blades cutting against grain 3. Dull blades 	<ol style="list-style-type: none"> 1. Review “Depth of Cut”, page 7 2. Review “Feeding Work”, page 10 3. Replace or sharpen blades per instructions, see “Maintenance”, page 11
Rough raised grain	<ol style="list-style-type: none"> 1. Dull blades 2. Too heavy of a cut 3. Moisture content too high 	<ol style="list-style-type: none"> 1. Replace or sharpen blades per instructions, see “Maintenance”, page 11 2. Review “Depth of Cut”, page 7 3. Dry the wood or use dried wood
Uneven depth of cut (tapered cut)	Cutterhead not parallel with table	Adjust table, see “Adjusting Table Position”, page 14
Belts slipping	Loose belts	Tension belts, see “Adjusting Belt Tension”, page 12
Flashing digits on scale	Low voltage	Replace battery
Locked digits on scale	Haphazard memory	Take battery out, wait thirty seconds, then re-insert it
No display	<ol style="list-style-type: none"> 1. Poor contact of battery 2. Low voltage 	<ol style="list-style-type: none"> 1. Improve battery contact 2. Replace battery
Displays only ‘0000’	Short-circuit of zero setting spring and slider signal source	Remove frame and adjust spring
Function buttons won’t work	Distortion of springs from over-pressing	Remove frame and adjust springs

NOTES

NOTES

Model 351.217040

Figure 20 - Replacement Parts Illustration for Gearbox



REPLACEMENT PARTS LIST FOR GEARBOX

KEY NO.	PART NO.	DESCRIPTION	QTY.	KEY NO.	PART NO.	DESCRIPTION	QTY.
1	23320.00	Gearbox	1	26	STD835045	8-1.25 x 45mm Hex Head Bolt*	4
2	23321.00	25 x 40 x 7mm Oil Seal	1	27	23509.00	Drain Plug	1
3	STD315245	6204LL Ball Bearing*	2	28	STD833025	6-1.0 x 25mm Hex Head Bolt*	5
4	23322.00	Helical Gear	1	29	23336.00	Clutch	1
5	23323.00	6-1.0 x 25mm Socket Head Bolt (LH)	1	30	23337.00	Clutch Handle	1
6	00652.00	6mm Flat Washer (W)	3	31	STD840812	8-1.25mm Hex Nut*	1
7	05790.00	6-1.0 x 15mm Pan Head Screw	1	32	STD851006	6mm Lock Washer*	1
8	STD315215	6201LL Ball Bearing*	5	33	23338.00	9x1.8mm O-Ring	1
9	23324.00	Spur Gear	1	34	23339.00	Knob	1
10	23325.00	Gear and Shaft	1	35	04565.00	5 x 25mm Spring Pin	2
11	07322.00	5 x 5 x 12mm Key	1	36	23340.00	Gasket	1
12	23326.00	Spur Gear	1	37	23341.00	Gear Case	1
13	03839.00	5 x 5 x 10mm Key	1	38	23342.00	Spacer	1
14	23327.00	Double Geared Shaft	1	39	STD870612	6-1.0 x 12mm Socket Head Bolt*	1
15	23328.00	11. x 2.65 Oil Seal	2	40	23343.00	Chain Tension Assembly	1
16	16476.00	Fill Plug	1	41	23344.00	Chain	1
17	23329.00	Double Spur Gear	1	42	23345.00	Sprocket	1
18	23330.00	Dust Cap	2	43	STD833020	6-1.0 x 20mm Hex Head Bolt*	2
19	23331.00	Dust Cap	1	44	23346.00	Left Chain Guard	1
20	23332.00	5 x 5 x 64mm Key	1	45	STD870610	6-1.0 x 10mm Socket Head Bolt*	4
21	07339.00	6mm Steel Ball	1	46	23347.00	Right Chain Guard	1
22	23333.00	Spring	1	47	18075.00	6-1.0 x 75mm Socket Head Bolt	2
23	23334.00	Gear Shaft	1	48	23348.00	Chain Cover with Labels	1
24	23335.00	25 x 47 x 7mm Oil Seal	1	Δ	22589.00	Operator's manual	1
25	STD851008	8mm Lock Washer*	4				

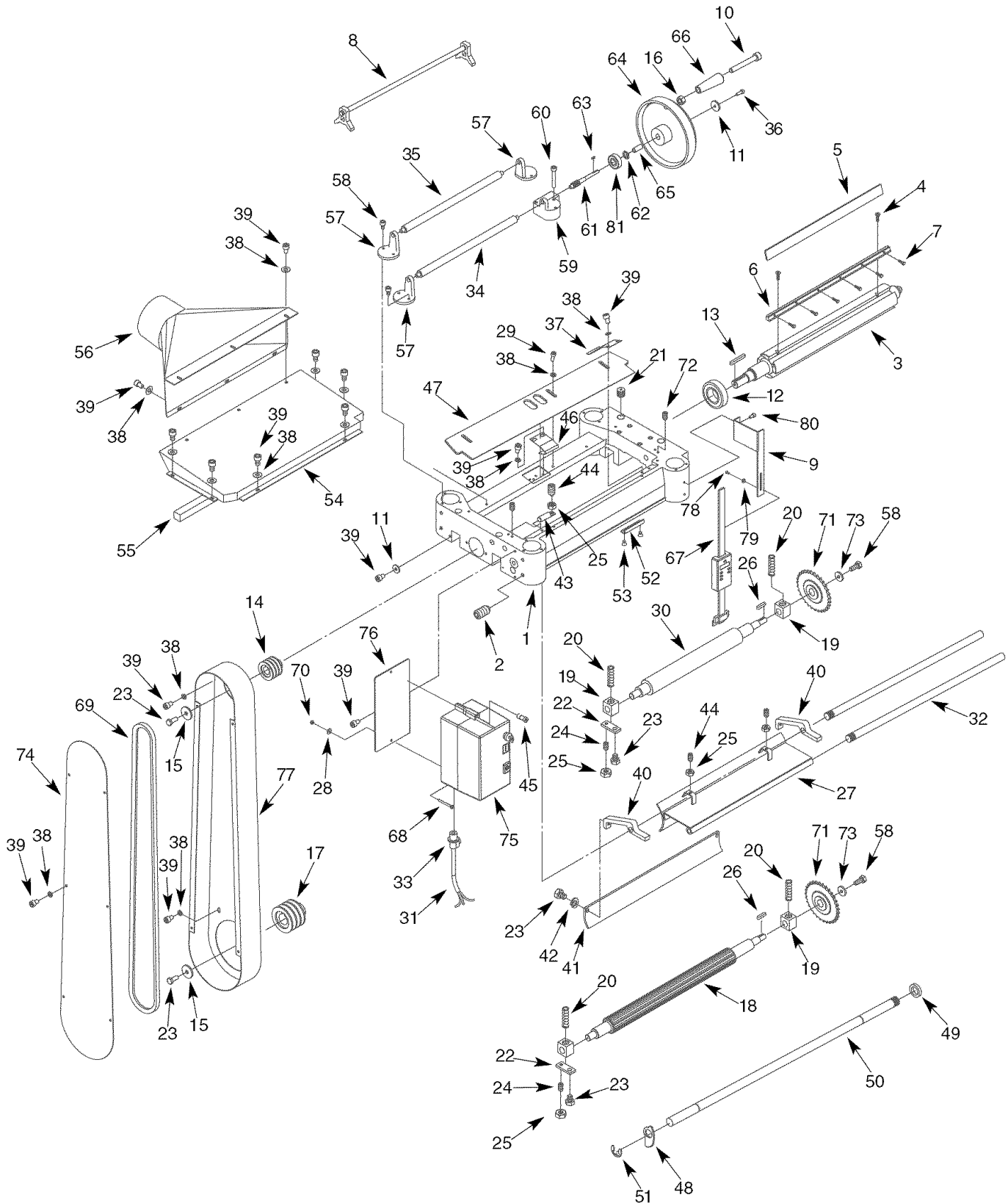
* Standard hardware item available locally

Δ Not Shown

Recommended Accessories		
Δ	Support Stand	9-21417
Δ	Roller Table	9-22242

Model 351.217040

Figure 21 - Replacement Parts Illustration for Rollercase



REPLACEMENT PARTS LIST FOR ROLLERCASE

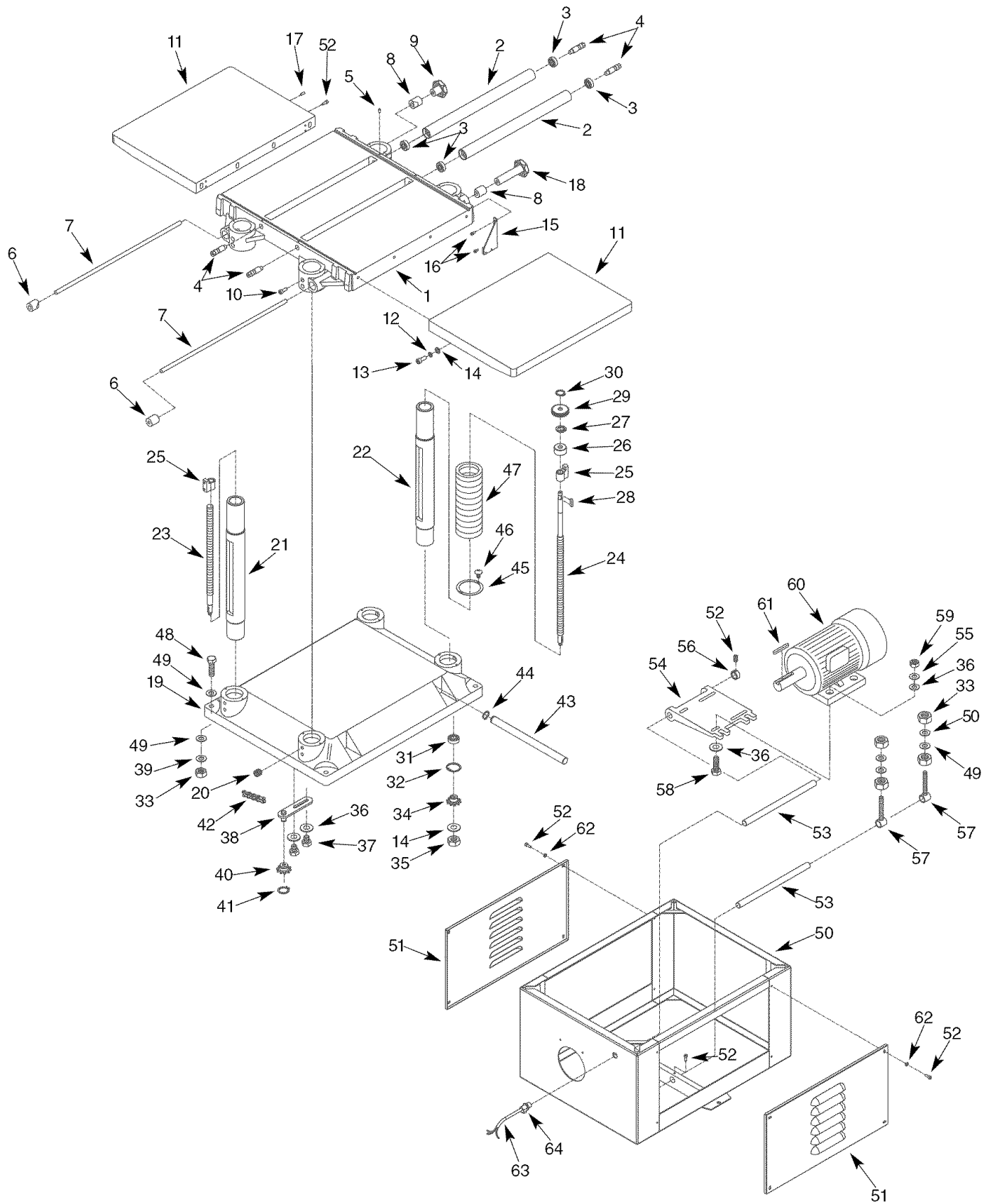
KEY NO.	PART NO.	DESCRIPTION	QTY.
1	N/A	Rollercase with Label	1
2	00394.00	10-1.5 x 12mm Set Screw	8
3	23350.00	Cutterhead	1
4	02614.00	Jack Screw	8
5	23351.00	Blade (Set of 4)	1
6	23352.00	Gib	4
7	23353.00	Gib Screw	24
8	23354.00	Blade Gauge Assembly	1
9	23355.00	Bracket	1
10	23356.00	Screw	1
11	23357.00	Spacer	5
12	STD315265	6206LL Ball Bearing*	1
13	23358.00	8 x 8 x 35mm Key	1
14	23359.00	Pulley	1
15	00997.01	8mm Flat Washer	2
16	STD841015	10-1.5mm Hex Nut*	1
17	23360.00	Motor Pulley	1
18	23361.00	Infeed Roller	1
19	23362.00	Bushing	4
20	23363.00	Spring	4
21	23364.00	Adjustment Screw	4
22	23365.00	Bracket	4
23	STD835020	8-1.25 x 20mm Hex Head Bolt*	6
24	01640.00	6-1.0 x 16mm Set Screw	4
25	STD840610	6-1.0mm Hex Nut*	8
26	16992.00	5 x 5 x 16mm Key	2
27	23366.00	Chip Breaker	1
28	STD851004	4mm Flat Washer*	2
29	STD833016	6-1.0 x 16mm Hex Head Bolt*	3
30	23367.00	Outfeed Roller	1
31	23368.00	Switch Cord	1
32	23369.00	Chipbreaker Shaft	2
33	23370.00	Strain Relief	2
34	23371.00	Roller Assembly	1
35	23372.00	Roller Assembly	1
36	05383.00	5-0.8 x 16mm Hex Head Bolt	1
37	23373.00	Plate	2
38	STD851006	6mm Flat Washer*	30
39	STD833012	6-1.0 x 12mm Hex Head Bolt*	33
40	23374.00	Bracket	2
41	23375.00	Chipbreaker Plate	1

KEY NO.	PART NO.	DESCRIPTION	QTY.
42	STD851008	8mm Flat Washer*	2
43	23376.00	Support	2
44	05110.00	6-1.0 x 20mm Set Screw	4
45	23377.00	Bolt	2
46	23378.00	Spring Plate	1
47	23379.00	Chip Deflector Plate	1
48	23380.00	Anti-Kickback Pawl	56
49	23381.00	Spacer	57
50	23382.00	Anti-Kickback Pawl Shaft	1
51	23383.00	E-Clip	2
52	23384.00	Depth Limiter	1
53	07289.00	6-1.0 x 10mm Flat Head Screw	2
54	23385.00	Chipbreaker Cover with Label	1
55	23386.00	Seal	1
56	23387.00	Chip Chute with Label	1
57	23388.00	Roller Bracket	3
58	STD870612	6-1.0 x 12mm Socket Head Bolt*	8
59	23389.00	Crank Case with Label	1
60	06101.00	6-1.0 x 50mm Socket Head Bolt	3
61	23390.00	Worm Shaft	1
62	18365.00	3BMI-32 Retaining Ring	1
63	01531.00	4 x 4 x 10mm Key	1
64	23391.00	Handwheel	1
65	23392.00	Bushing	1
66	23393.00	Handle	1
67	23394.00	Digital Scale	1
68	STD863440	4-0.7 x 40mm Pan Head Screw*	2
69	23395.00	V-Belt	3
70	STD840407	4-0.7mm Hex Nut*	2
71	23396.00	Sprocket	2
72	01043.00	6-1.0 x 8mm Set Screw	2
73	23397.00	Spacer	2
74	23398.00	Belt Guard Cover with Label	1
75	23399.00	Control Box	1
76	23400.00	Plate	1
77	23401.00	Belt Pulley Guard	1
78	STD863206	3-0.5 x 6mm Pan Head Screw*	2
79	STD851003	3mm Flat Washer*	4
80	STD870510	5-0.8 x 10mm Socket Head Bolt*	2
81	STD315215	6201LL Ball Bearing*	1

* Standard hardware item available locally
 N/A Not available as replacement part

Model 351.217040

Figure 22 - Replacement Parts Illustration for Base



REPLACEMENT PARTS LIST FOR BASE

KEY			
NO.	PART NO.	DESCRIPTION	QTY.
1	N/A	Table	1
2	23286.00	Table Roller	2
3	STD315215	6201LL Ball Bearing*	4
4	23287.00	Eccentric Adjuster	4
5	02803.00	6-1.0 x 12mm Set Screw	4
6	23288.00	Quick Lock Nut	2
7	23289.00	Threaded Shaft	2
8	23290.00	Lock Bushing	2
9	23291.00	Knob	1
10	06635.00	8-1.25 x 20mm Set Screw	8
11	23292.00	Table Extension	2
12	STD852010	10mm Lock Washer*	8
13	01002.00	10-1.5 x 25mm Socket Head Bolt*	8
14	STD851010	10mm Flat Washer*	12
15	23293.00	Bracket	1
16	STD870510	5-0.8 x 10mm Socket Head Bolt*	4
17	01640.00	6-1.0 x 16mm Set Screw	4
18	23294.00	Knob	1
19	N/A	Base	1
20	00394.00	10-1.5 x 12mm Set Screw	8
21	23296.00	Column	3
22	23297.00	Crank Case Column	1
23	23298.00	Lead Screw	3
24	23299.00	Crank Lead Screw	1
25	23300.00	Lead Screw Nut	4
26	23301.00	Bushing	1
27	07380.00	3BMI-38 Retaining Ring	1
28	07322.00	5 x 5 x 12mm Key	1
29	23302.00	Gear	1
30	00519.00	3AMI-12 Retaining Ring	1
31	STD315225	6202LL Ball Bearing*	4
32	07370.00	3BMI-35 Retaining Ring	4

KEY			
NO.	PART NO.	DESCRIPTION	QTY.
33	STD841217	12-1.75mm Hex Nut*	8
34	23303.00	Sprocket	4
35	STD841015	10-1.5mm Hex Nut*	4
36	STD851008	8mm Flat Washer*	10
37	STD835025	8-1.25 x 25mm Hex Head Bolt*	2
38	23304.00	Chain Tension Bracket	1
39	STD852012	12mm Lock Washer*	4
40	23305.00	Chain Tension Sprocket	1
41	00533.00	3AMI-15 Retaining Ring	1
42	23306.00	Chain	1
43	23307.00	Lifting Bar	4
44	01861.00	3AMI-22 Retaining Ring	4
45	23308.00	Collar	16
46	STD863412	4-0.7 x 12mm Pan Head Screw*	32
47	23309.00	Dust Cover	8
48	15711.00	12-1.75 x 50mm Hex Head Bolt*	4
49	STD851012	12mm Flat Washer*	12
50	N/A	Cabinet	1
51	23311.00	Cover	2
52	00850.00	6-1.0 x 16mm Hex Head Bolt*	16
53	23312.00	Pivot Bar	2
54	23313.00	Motor Mounting Plate	1
55	STD852008	8mm Lock Washer*	4
56	23314.00	Collar	2
57	23315.00	Tension Bolt	2
58	STD835040	8-1.25 x 40mm Hex Head Bolt*	4
59	STD840812	8-1.25mm Hex Nut*	4
60	23316.00	Motor	1
61	23317.00	8 x 8 x 45mm Key	1
62	STD851006	6mm Flat Washer*	8
63	23318.00	Line Cord	1
64	23319.00	Strain Relief	1

* Standard hardware item available locally

N/A Not available as replacement part

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