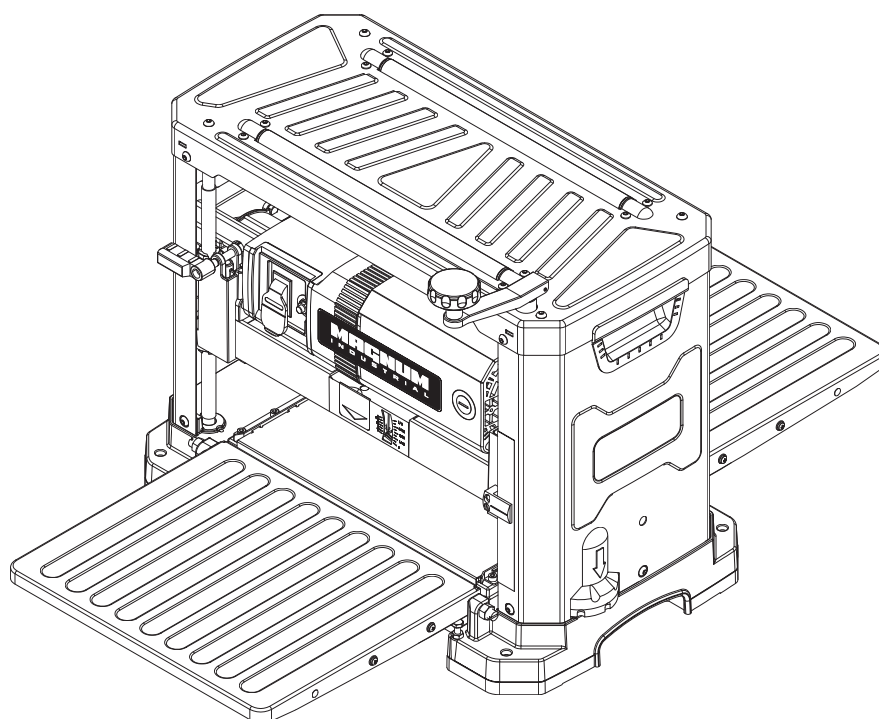


MAGNUM

INDUSTRIAL

MODEL NO.: MI-31170

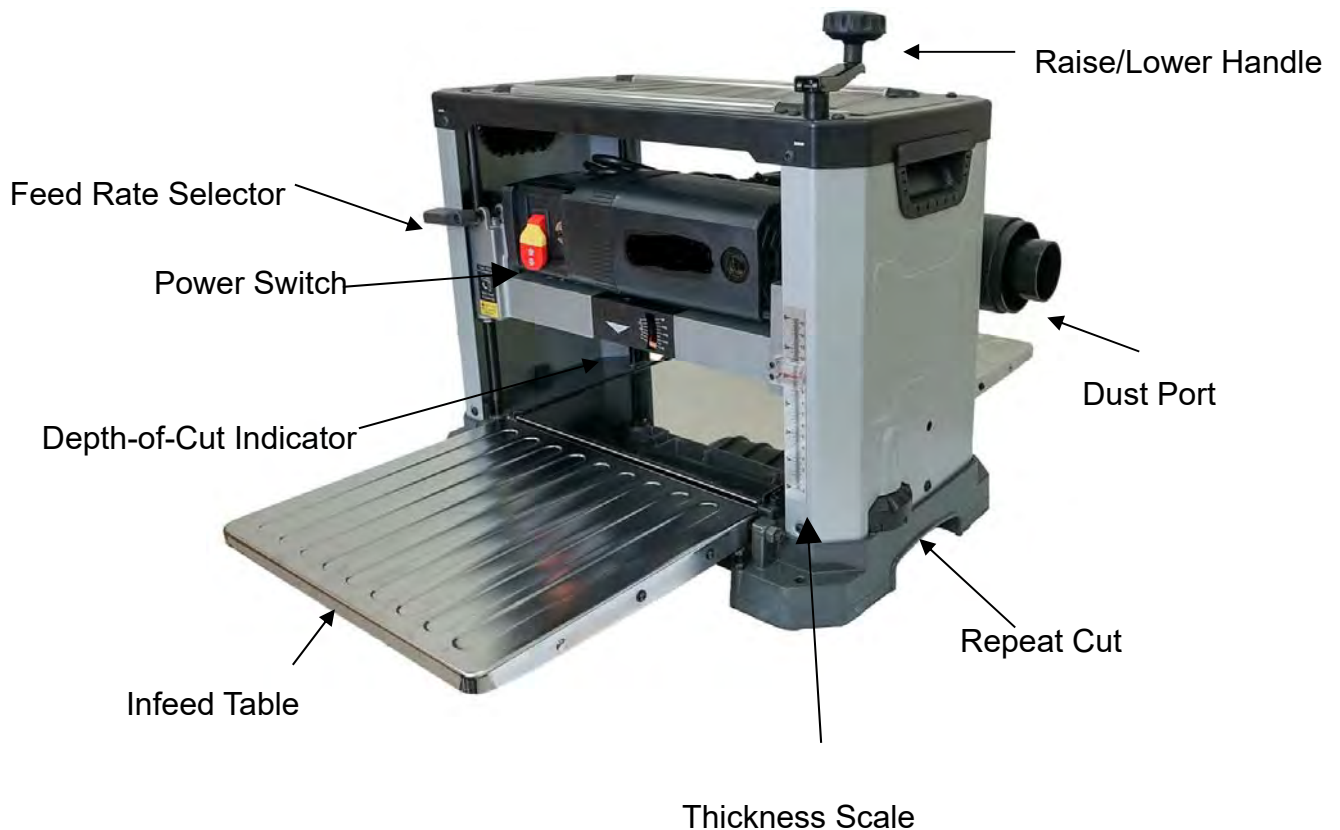


OPERATING MANUAL

PRODUCT SPECIFICATIONS

Feed speed F/min	16 or 26 FPM
Cutterhead speed RPM	10,000
Motor RPM	23000+/-10% (No Load)
Cutterhead diameter	2"
Max planer capacity	6" x 13"
Max depth of cut @ 6"	1/8"
Max depth of cut @ 13"	1/16"
Minimum Length of Stock	7"
Minimum Thickness of Stock	1/8"
Cutter inserts qty	26 (2 sided)
Motor power input	120 V, 60 Hz, AC Only, 15 Amp
Shipping Weight	77 lbs.
Shipping Dimensions	25" W x 16" D x 21" H
Dust Port Opening	2 1/2" or 4"

FEATURE IDENTIFICATION



UNPACKING & INVENTORY

Check shipping carton and machine for damage before unpacking. Carefully remove packaging materials, parts and machine from shipping carton. Always check for and remove protective shipping materials around motors and moving parts. Lay out all parts on a clean work surface.

Remove any protective materials and coatings from all of the parts and the planer. The protective coatings can be removed by spraying WD-40 on them and wiping it off with a soft cloth. This may need to be redone several times before all of the protective coatings are removed completely.

After cleaning, apply a good quality paste wax to any unpainted surfaces including the infeed, outfeed, and center tables. Make sure to buff out the wax before assembly.

Compare the items to inventory figures and verify that all items are accounted for. If at all possible, retain shipping carton for warranty service if ever needed.

If any parts are missing, do not attempt to plug in the power cord and run the machine. The machine should only be turned "ON" after all the parts have been obtained and installed correctly.

NOTE: Some parts may have been installed at the factory. Please check before calling. For missing parts, contact xxx.



- | | |
|-------------------------|-------|
| 1. DUST PORT | 1 pc |
| 2. HEX WRENCH 4mm x 100 | 1 pc |
| 3. TORX WRENCH | 1 pc |
| 4. RAISE / LOWER HANDLE | 1 pc |
| 5. HEX SCREW M5*P0.8*20 | 1 pc |
| 6. DUST PORT KNOB | 2 pcs |

ASSEMBLY

WARNING! MAKE CERTAIN THAT THE MACHINE IS DISCONNECTED FROM THE POWER SOURCE.

ATTACHING DEPTH ADJUSTMENT HANDLE

Attach the raise/lower adjustment handle to the shaft located on top of the planer and fasten in place with 1 Hex Socket Head screw. Tighten screw using supplied hex wrench. SEE FIG 1.

FIG 1



ATTACHING DUST PORT

1. Facing the rear of the machine, locate the dust port on the cutterhead assembly by turning 2 dust port knobs. SEE FIG 2.



FIG 2

ASSEMBLY (cont.)

2. To minimize sawdust accumulation on your work piece, attach either a 2-1/2 in. or a 4 in. vacuum hose to the dust port.
3. The dust port must be snapped shut completely or chips may fly out of the front of the planer.
4. The dust port can be opened to allow chips to flow out the back of the planer when a vacuum system is not used. SEE FIG 3.



FIG 3

SECURING PLANER TO A TABLE OR WORKBENCH

During operation, if there is any tendency for the planer to tip over, slide or walk, the planer **MUST** be secured to a supporting surface such as a workbench or table. Four holes are provided (2 are shown at A below) to securely mount the planer. The surface you are mounting the planer to should be perfectly flat. SEE FIG 4.



FIG 4

ADJUSTMENTS

WARNING! MAKE CERTAIN THAT THE MACHINE IS DISCONNECTED FROM THE POWER SOURCE BEFORE ANY ADJUSTMENTS ARE MADE.

LEVELING EXTENSION TABLES

The extension tables must be level with the planer table. To check the extension tables and adjust if necessary:

1. Lay a straight edge (A) on the planer table (C) with one end of the straight edge over the infeed table (B). SEE FIG 5.
2. Check to make sure that the infeed table is level with the planer table.
3. If an adjustment is necessary, raise table, loosen lock nuts (D) and adjust Hex Head Screws (E) on each side of the table until the infeed table is level with the planer table. This will adjust the outer edge of the table.
4. Recheck for level and repeat adjustment if necessary.
5. Repeat this process for leveling the outfeed table.

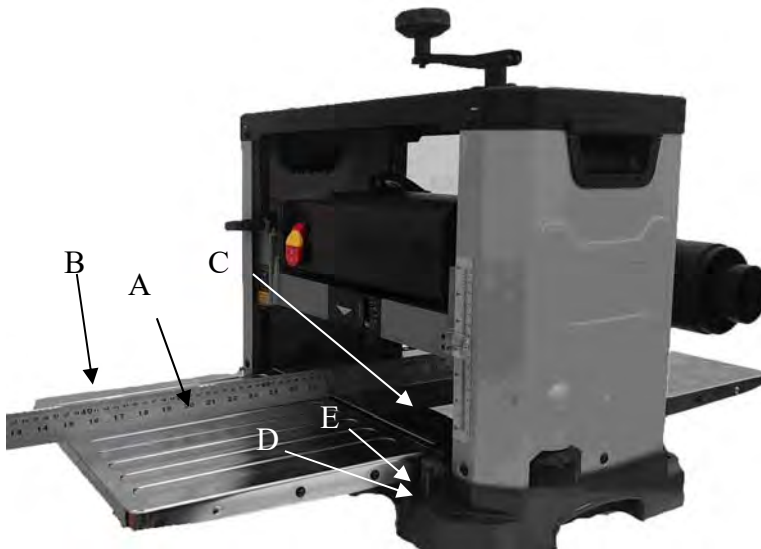


FIG 5

ADJUSTMENTS (cont.)

RAISING AND LOWERING HEAD ASSEMBLY

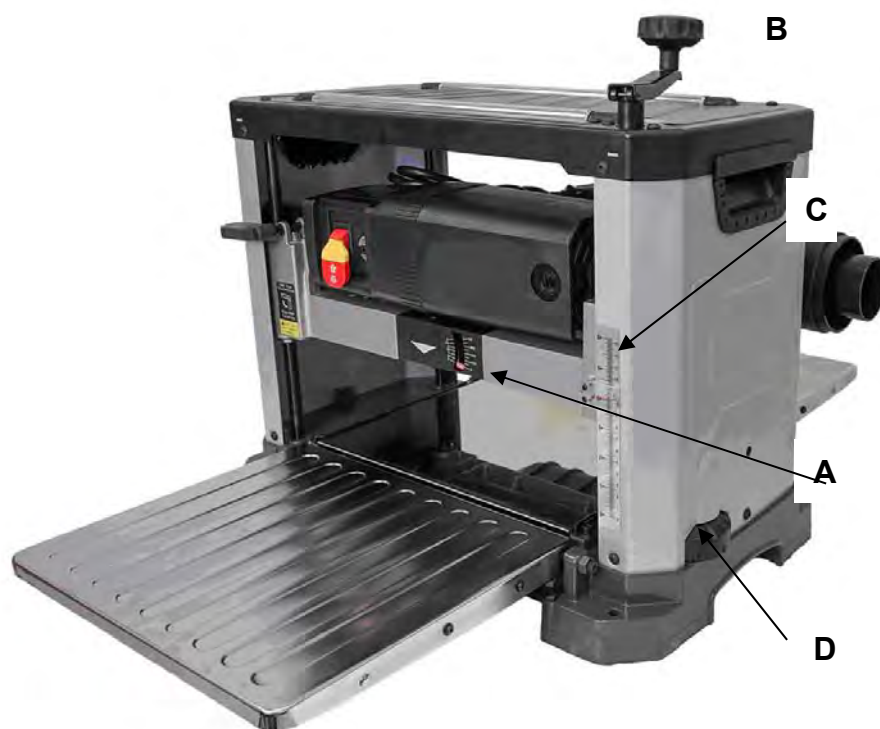
The head assembly consists of the cutterhead, knives, feed rollers, cutterhead guard, and the motor. Raising and lowering of the head assembly controls the depth of cut on the planer.

To adjust:

1. To raise the head assembly (A), turn the adjusting handle (B) clockwise. SEE FIG 6.
2. To lower the head assembly, turn the adjusting handle counterclockwise.

NOTE: One revolution of the handle will move the cutterhead up or down approximately 1/16". You can confirm this by referencing the scale (C) on the front right side of the planer.

FIG 6



NOTE: The Repeat Cut Thickness Indicator (D), located on the bottom right side of the planer, provides a simple way to preset the finished thickness of a work piece. Rotate the indicator to the desired finished thickness. Use this feature when thickness planing multiple work pieces to ensure a uniform thickness of all work pieces. See page 20 for more information. Do not attempt to lower the cutterhead assembly below the preset level as damage will occur.

ADJUSTMENTS (cont.)

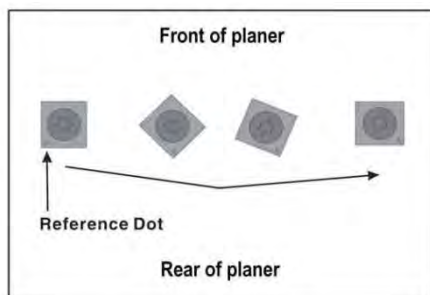
ADJUSTING / REPLACING KNIVES FOR THE SPIRAL CUTTERHEAD

WARNING! MAKE CERTAIN THAT THE MACHINE IS DISCONNECTED FROM THE POWER SOURCE BEFORE ANY ADJUSTMENTS ARE MADE.

WARNING! *** Be VERY CAREFUL when handling the knives or cutter tips as they are EXTREMELY SHARP and can cause serious injury!!! ***

This 13" cutterhead is equipped with 26 indexable cutter inserts. Each cutter insert can be rotated to reveal one of its two cutting edges. Therefore, if one cutting edge becomes dull or damaged, simply rotate it 90° to reveal a fresh cutting edge.

In addition, each cutter insert has a reference dot on one corner. As the cutter insert is rotated, the reference dot location can be used as an indicator of which edges are used and which are new. When the reference dot revolves back around to its starting position, the cutter should be replaced.



WARNING! NEVER GRASP CUTTERHEAD BY HAND AS THIS WILL RESULT IN SERIOUS INJURY!

To rotate or change cutter tip inserts:

1. Face the rear of the machine. Remove the Dust Port. Refer back to the section labeled ATTACHING DUST PORT in the ASSEMBLY section page 13 for information on removal.
2. Use the handle to lower the cutterhead assembly down to about 1" on the scale.
3. Insert the supplied Hex wrench through the hole located on the side of the machine beside the Repeat Cut indicator. Rotate the cutterhead to a position where a cutter tip is visible. SEE FIG. 7. next page. (You may have to raise or lower cutterhead to be able to insert the Hex wrench into the cutterhead)
4. While holding the hex wrench to prevent cutterhead rotation, remove the cutter tip screw using the provided Torx T-wrench allowing the tip to be removed.
5. Carefully clean all dust and dirt off the cutter tip and the cutterhead seat. Replace or rotate the cutter insert so a fresh sharp edge is facing outward. If available, use pitch remover to be sure all wood residue is off the cutterhead, cutter insert, and screws, before attempting to rotate or replace them. Using a shot of compressed air is also helpful. Be sure to wear safety glasses when using compressed air.
6. Lubricate the Torx screw threads with light machine oil and wipe the excess oil off the threads. Install cutter tip insert and torque the Torx screw to 48-50 lb-ft.

ADJUSTMENTS (cont.)



FIG 7

Note: Proper cleaning of tips and cutterhead is critical to achieving a smooth finish. Dirt or dust trapped between the cutter insert and cutterhead will slightly raise the cutter insert, and make noticeable marks on your work piece the next time you plane.

THICKNESS SCALE ADJUSTMENT

The thickness scale, located on the right of the planer, shows the thickness of the finished work piece. To make sure the scale is set properly, run a piece of wood through the planer and measure the thickness of the wood. If the scale is out of alignment, loosen the two round head screws (A) holding the scale indicator (B) and adjust the thickness indicator to the correct setting. Make sure to re-tighten the two screws once the adjustment is complete. SEE FIG 8.

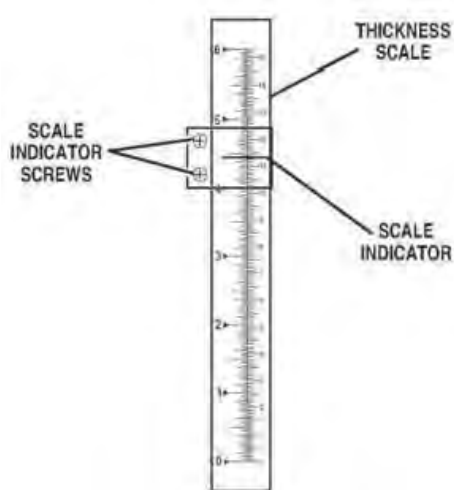


FIG 8

OPERATIONS

NOTE: This operations section was designed to give instructions on the basic operations of this planer. However, it is in no way comprehensive of every planer operation. It is strongly recommended that you read books, trade magazines, or get formal training to maximize the potential of your planer while minimizing the risks.

NOTE: This planer is designed to process wood ONLY.

POWER SWITCH

The planer is turned on by flipping the switch into the up position and it is turned off by flipping the switch in the down position. This planer is also equipped with a special lockout toggle switch that prevents unauthorized use. To prevent unauthorized use of the planer, simply pull out the yellow key (A) located on the face of the switch. SEE FIG 9.



FIG 9

DEPTH-OF-CUT INDICATOR

The Depth-Of-Cut Indicator, located on the front of the machine, is a convenient way to quickly determine how much material is being planed off in one pass.

1. With the machine OFF, insert your work piece just under the cut scale (A). SEE FIG 10.
2. Crank the raising / lowering handle until the button (B) comes in contact with the work piece. As you rotate the raise / lower handle, the needle on the depth of cut scale will move showing how much material will be removed in that pass.

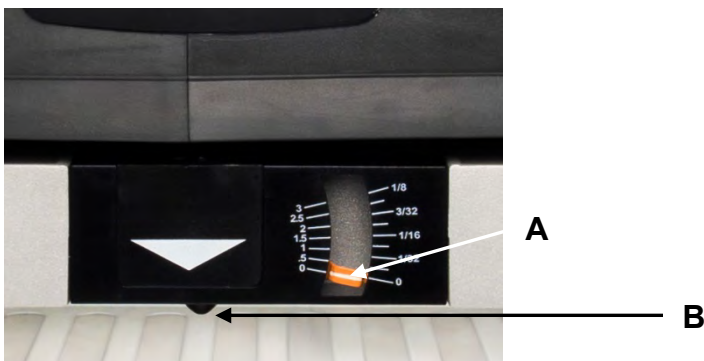


FIG 10

OPERATIONS (cont.)

REPEAT CUT PRESET

The REPEAT CUT preset, located on the right side of the planer, provides a simple way to preset the finished thickness of a work piece. The indicator can be set to various thicknesses. Rotate the indicator to the desired finished thickness. Use this feature when thickness planing multiple work pieces to ensure a uniform thickness of all work pieces. SEE FIG 11.



FIG 11

NOTE: When lowering the head assembly, ensure the REPEAT CUT preset is in the lowest desired thickness position. Failure to do so may result in excess downward pressure by the cutterhead assembly onto the mechanism and cause damage to the adjustment rod and upper frame.

FEED RATE

CAUTION! ONLY SWITCH FEED RATE SELECTOR WHILE PLANER IS RUNNING..

Switch feed rate selector (A) to slow feed (16FPM) for finishing or fast feed (26FPM) for thicknessing. SEE FIG 11-1.



FIG 11-1

OPERATIONS (cont.)

GETTING PREPARED

It is always a good idea to use a piece of scrap wood for your first planing attempt. Also, before each use of the planer, make it a habit of checking for loose fasteners, fittings or hardware. Turn the planer ON and allow it to reach full speed. Pay close attention to any excessively loud noises that may be coming from the planer or any excessive vibration. If either occurs, shut down the planer immediately checking again for loose hardware. Go through the ASSEMBLY and ADJUSTMENTS sections again if necessary.

BASIC OPERATION

WARNING! To avoid serious personal injury, NEVER stand directly in line with the front or rear of the planer. If an object is thrown from the planer, it will travel in this direction.

1. Stand to either the left or right side of the planer.
2. Flip the switch to the ON position.
3. Lift the work piece onto the infeed table by grabbing the edges of the board at the middle of the length. NOTE: For longer pieces, be sure to use additional supports or stands.
4. Push slightly on the board to start feed and allow the feed rollers to pull the board through the planer. Once the feed rollers start to pull the work piece through, let go of the board and allow the rollers to do their job. DO NOT push or pull on the work piece once the rollers have engaged.
5. Move to one side of the rear of the planer and receive the planed work piece by grabbing the edges of the wood like you did when feeding the work piece in.
6. It normally takes several passes of varying depths to achieve a smooth finish, so repeat this process as many times as necessary. Remember the less you take off in a pass, the smoother the finish will be, but you may still need to finish the surface by sanding.

THICKNESS PLANING

Thickness planing sizes the work piece to a desired thickness, while at the same time creating a smooth and level surface. The thickness of each cut will depend on the type of wood, width of the work piece, and condition of the lumber (i.e. dryness, grain composition, straightness, etc). Always make thin test cuts on a scrap piece of wood prior to performing final cuts.

GENERAL TIPS AND GUIDELINES

1. Thickness planing always works best when at least one side of the work piece has a flat surface. If both sides of the work piece are rough, feed one face of the board through the planer until the entire surface is flat.
2. ALWAYS plane both sides of the work piece to reach the desired thickness.
3. DO NOT plane work pieces less than 1/8" thick, less than 3/4-in wide, or shorter than 7-in.
4. It is not recommended to continuously use the planer at its maximum depth of cut (1/16") and at its full width (13") as this will shorten the life of the motor.
5. Light cuts create a smoother finish than heavier cuts.
6. If a smooth cut is not obtained, see TROUBLESHOOTING GUIDE on page 24.

OPERATIONS (cont.)

AVOIDING SNIPE

Snipe, gouging or depression of the board at the ends, can occur when the board is not properly supported. For work pieces longer than 4 ft, greater care must be taken to reduce the problem because the additional length of the work piece translates into more unsupported weight pulling down on the end of the board. This unsupported weight will work against keeping the stock flat. Make sure to use supports or stands whenever long pieces are being planed to avoid this problem. Since snipe occurs at the end of the boards, it is good practice to start with a work piece that is slightly longer than what you need so that you can simply cut off the ends if necessary. Also see TROUBLESHOOTING for further information.

MAINTENANCE

WARNING! MAKE CERTAIN THAT THE MACHINE IS DISCONNECTED FROM THE POWER SOURCE BEFORE PERFORMING ANY MAINTENANCE PROCEDURES

Your planer should provide you with a long time of service provided you take the time to perform the following maintenance operations.

CLEANING

Sawdust buildup and other debris can cause the tool to plane incorrectly. Periodic cleaning and waxing is needed for accurate, precision planing. Any moving parts should be cleaned regularly with a penetrating oil and lubricated with a light coating of medium weight machine oil

CAUTION! With the machine unplugged, blow off motor with low pressure air to remove dust or dirt. Air pressure above 50 P.S.I. should not be used as high-pressured air may damage insulation. The operator should always wear a respirator and eye protection when using compressed air. Do not allow chips and dust to accumulate under the machine. Keep area clean and in safe order.

Having clean feed rollers is essential for optimal results. Check feed rollers after each use for buildup of pitch, gum, or resin, and be sure to clean off with a non-flammable tar and pitch remover that is not harmful to rubberized surfaces.

Periodically clean, wax, and buff the tables. This will aid in the prevention of improper feeding of the work piece.

HARDWARE TIGHTNESS

Periodically check all clamps, nuts, bolts, and screws, for tightness and condition. Stop the machine and recheck the cutterhead screw and knives, or tips, for tightness after about 50 hours of operation. Recheck periodically.

MAINTENANCE (cont.)

BRUSH REPLACEMENT

Brush life will vary depending on the load placed on the motor. The brushes should be inspected every 10-15 hours of use. To inspect or replace:

1. Remove the brush holders, one of which is shown at (A). The other is located in the same position on the rear of the motor assembly. The Brush Holder can be removed using a flat blade screwdriver. SEE FIG 12



FIG 12



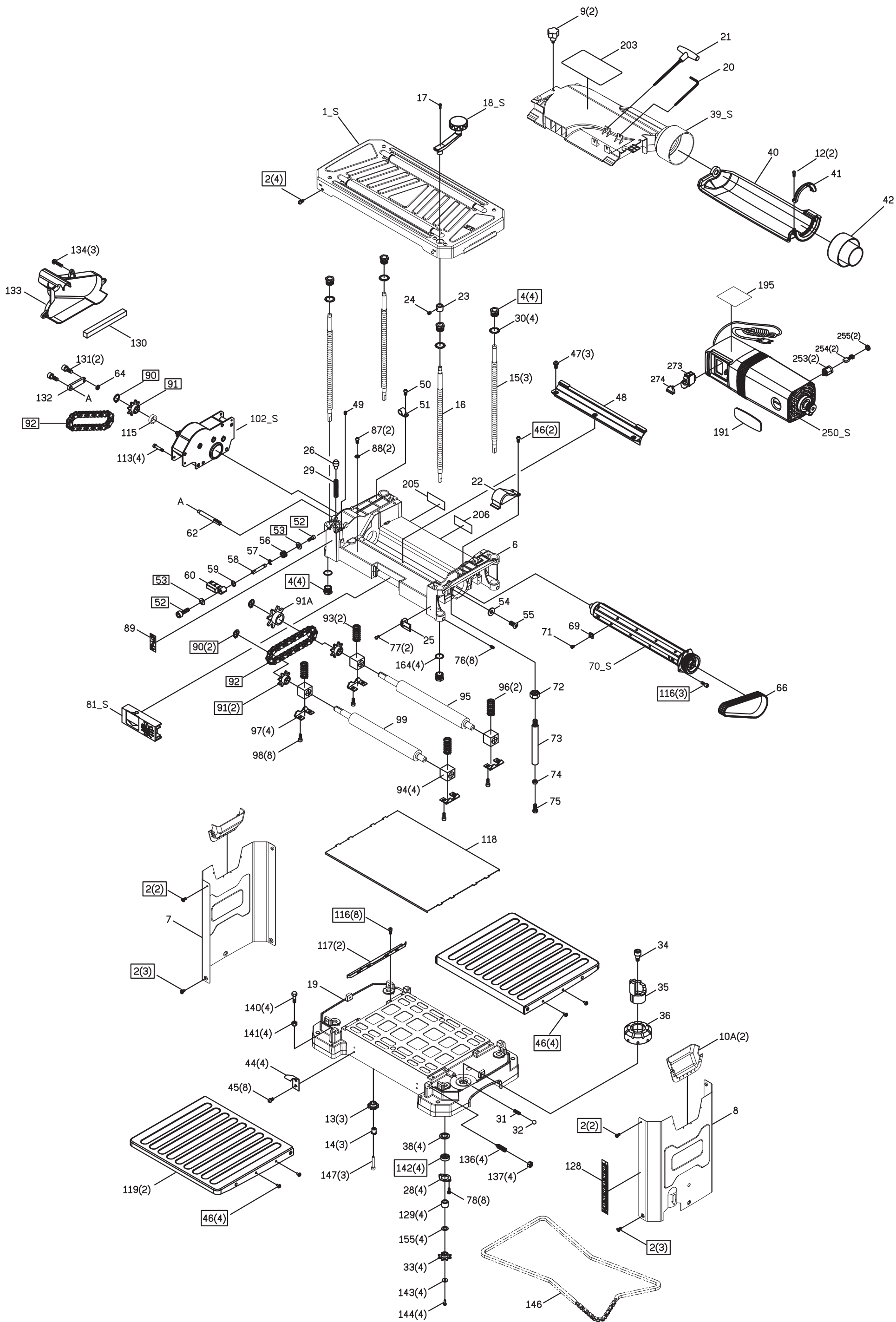
FIG 13

2. Once the brush has been removed, inspect the carbon (B), the spring (C), and the wire (D). SEE FIG 13.
3. If the carbon of either brush is worn down to 3/16" or less, both brushes should be replaced. Also if the spring or wire are burned or damaged in any way, both brushes should be replaced.

TROUBLESHOOTING GUIDE

Motor and Machine Operation

PROBLEM	LIKELY CAUSE	SOLUTION
Snipe (depressions at end of work piece)	Dull Blades Infeed or outfeed tables out of adjustment. Residue on rollers.	Replace or rotate tips. Readjust tables. Feed scrap of same thickness before and after work piece. Clean rollers.
Torn grain.	Too deep or shallow blade setting. Work piece being fed against grain. Dull cutter blades	Reduce or increase the depth of cut. Feed other end of board first. Replace or turn blades. Try skewing board when feeding. VERY slightly dampen work piece.
Fuzzy/rough grain.	High wood moisture content. Dull blades Too deep a blade setting.	Dry wood before planing. Replace or turn blades Reduce depth of cut
Board thickness does not match depth scale indicator.	Depth scale incorrectly set.	Adjust depth scale.
Will not start.	Not plugged in. Blown circuit. Lockout key removed.	Check the power source. Replace fuse, reset breaker, or call electrician. Replace lockout key.
Interrupted operation	Unit overloaded. Circuit overloaded.	Reduce load. Operate on circuit separate from other appliances or motors or connect to circuit with adequate amp rating.
Planer not feeding properly	Too much material being removed. Knives or tips dull. Build up on tables. Build up on rollers.	Reduce cut depth. Replace knives or tips. Clean tables and apply paste wax. Clean rollers with a cleaner safe for rubber surfaces.



PARTS LIST FOR MI-31170

ITEM NO.	DESCRIPTION	SIZE	Q'ty
MI-31170-01S	TOP COVER ASSY.	INCLDING ROLLER TUBE	1
MI-31170-01S	TOP COVER ASSY.		1
MI-31170-01AS	ROLLER ASSY.		2
MI-31170-01	TOP COVER		1
MI-31170-01A	ROLLER TUBE		2
MI-31170-01B	SUPPORT		4
MI-31170-01C	ROLLER		4
MI-31170-01D	SPECIAL WASHER		4
MI-31170-01E	PH TRUSS HD SCREW	M4xP0.7x8L	4
MI-31170-02	HEX BUT HD SOC SCR	M6xP1.0x8L	14
MI-31170-03	SPINDLE RETAINER	SPECIAL PART	3
MI-31170-04	ELEVATION NUT	SPECIAL PART	8
MI-31170-05	BEARING RETAINER for top cover	SPECIAL PART	1
MI-31170-06	UPPER FRAME		1
MI-31170-07	LEFT SIDE PANEL		1
MI-31170-08	RIGHT SIDE PANEL		1
MI-31170-09	KNOB		2
MI-31170-10	HANDLE BAR		2
MI-31170-10A	HANDLE BAR		2
MI-31170-11	HEX BUT HD SOC SCR	M6xP1.0x10L	13
MI-31170-12	PH PAN SELF-TAPPING SCR	M3xP1.0x16L	2
MI-31170-13	IDLER		3
MI-31170-14	IDLER SHAFT		3
MI-31170-15	SPINDLE		3
MI-31170-16	HEIGHT ADJ SPINDLE		1
MI-31170-17	HEX SOC HD SCR	M5xP0.8x20L	1
MI-31170-18S	HAND KNOB ASSY.		1
MI-31170-19	BASE		1
MI-31170-20	Hex Wrench		1
MI-31170-21	Torx Wrench		1
MI-31170-22	BELT GUARD		1
MI-31170-23	SPACER		1
MI-31170-24	NYLOCK SET SCR	M5xP0.8x5L	1
MI-31170-25	CURSOR		1
MI-31170-26	PLUNGER PIN		1
MI-31170-27	CUTTERHEAD PULLEY		1
MI-31170-28	PLATE		4
MI-31170-29	SPRING COIL		1
MI-31170-30	SPECIAL WASHER	Ø19.95xØ28x0.5T	4
MI-31170-31	SPRING		1
MI-31170-32	STEEL BALL	Ø 8	1
MI-31170-33	SPROCKET		4
MI-31170-34	SEMS SCR	M8XP1.25	1
MI-31170-35	STEP BLOCK		1
MI-31170-36	STEP BLOCK BASE		1

PARTS LIST FOR MI-31170

ITEM NO.	DESCRIPTION	SIZE	Q'ty
MI-31170-38	SPECIAL WASHER	§ 12.5x § 25.8x2T	4
MI-31170-39S	DUST HOOD ASSY.		1
MI-31170-39	DUST HOOD		1
MI-31170-39A	DEFLECTOR PLATE		1
MI-31170-40	HOOD DOOR		1
MI-31170-41	DIRECTIONAL HALF RING		1
MI-31170-42	VAC ADAPTOR		1
MI-31170-44	SPRING FLAT		4
MI-31170-45	PH BUT HD SEMS SCR	M5xP0.8x10L	8
MI-31170-46	PH ROUND HD SEMS SCR	M4xP0.7x10L	10
MI-31170-47	PH TRUSS HD SCR	M5xP0.8x8L	3
MI-31170-48	DUST CHUTE PLATE		1
MI-31170-49	NYLOCK SET SCR	M5xP0.8x8L	1
MI-31170-50	PH BUT HD SCR	M5xP0.8x8L	1
MI-31170-51	CORD CLAMP		2
MI-31170-52	HEX HD SOC SCR	M4xP0.7x10L	2
MI-31170-53	WASHER	§ 4.1 x § 8 x 0.8T	2
MI-31170-54	WASHER	Ø8x Ø18x 2T	1
MI-31170-55	HEX BUT HD SOC SCR	M8xP1.25x20L	1
MI-31170-56	GEAR (INTERMEDIATE)		1
MI-31170-57	RING RETAINING EXT	E7	1
MI-31170-58	GEAR SPINDLE		1
MI-31170-59	RING RETAINING EXT	STW8	1
MI-31170-60	FEED RATE SELECTOR		1
MI-31170-61	KEY	5x12L	1
MI-31170-62	SPLINED SPINDLE		1
MI-31170-63	BEARING RETAINER		1
MI-31170-64	WASHER	§ 6.5X § 13X1T	1
MI-31170-65	MOTOR PULLEY		1
MI-31170-66	V-BELT	135J6	1
MI-31170-67	HEX NUT	M16xP2.0x8T	1
MI-31170-68	BALL BEARING	6203-2RS	2
MI-31170-69	CUTTER INSERT	14*14*2 mm	26
MI-31170-70S	SPIRAL CUTTERHEAD ASSY.		1
MI-31170-71	TORX SCREW	M5xP0.8x15.6L	26
MI-31170-72	HEX SPECIAL NUT	M8xP1.25x13	1
MI-31170-73	ROD STOP		1
MI-31170-74	HEX NUT	M5xP0.8	1
MI-31170-75	SPECIAL HEX HD SCR	M5xP0.8x25L	1
MI-31170-76	SET SCREW	M5xP0.8x6L	8
MI-31170-77	PH ROUND HD SCR	M3xP0.5x20L	2
MI-31170-78	SPECIAL HEX SOC BUT HD SCR	M5xP0.8x12L	8
MI-31170-79	NUT	M4	1
MI-31170-80	DEPTH OF CUT		1
MI-31170-81S	DEPTH OF CUT INDICATOR ASSY.		1

PARTS LIST FOR MI-31170

ITEM NO.	DESCRIPTION	SIZE	Q'ty
MI-31170-81	INDICATOR CASE		1
MI-31170-82	BUSHING		1
MI-31170-83	NYLOCK PH PAN SEMS SCR	M4xP0.7x10L	1
MI-31170-84	POINTER COVER		1
MI-31170-85	SPRING	8.5x19x0.8	1
MI-31170-86	ROD POINTER ELEVATING		1
MI-31170-87	PH RD HD Tri-lobular Thread SEMS SCR	M5xP0.8x8L	2
MI-31170-88	EXT LOCK WASHER	M5	2
MI-31170-89	FEED RATE LABEL		1
MI-31170-90	C-RING	STW15	4
MI-31170-91	SPROCKET		3
MI-31170-91A	SPROCKET		1
MI-31170-92	CHAIN		2
MI-31170-93	SPRING (LEFT)		2
MI-31170-94	BLOCK BEARING		4
MI-31170-95	OUTFEED ROLLER		1
MI-31170-96	SPRING (RIGHT)		2
MI-31170-97	RETAINER PLATE		4
MI-31170-98	SCR HEX SOC CAP	M5xP0.8x10L	8
MI-31170-99	INFEED ROLLER		1
MI-31170-101	GEAR PINION		1
MI-31170-102S	GEAR BOX COMBINATION		1
MI-31170-113	HEX SOC SEMS SCR	M5xP0.8x45L	4
MI-31170-115	SPACER	15x20x8.5	1
MI-31170-116	HEX SOC SCR	M5xP0.8x12L	11
MI-31170-117	GUIDE RAIL		2
MI-31170-118	WEAR PLATE		1
MI-31170-119	TABLE		2
MI-31170-128	SCALE		1
MI-31170-129	SPACER		4
MI-31170-130	FOAM SEAL		1
MI-31170-131	HEX SOC HD SEMS SCR	M4xP0.7x8L WITH $\frac{5}{16}$ 10x0.8T	2
MI-31170-132	CONNECTING ROD		1
MI-31170-133	GEARBOX COVER		1
MI-31170-134	HEX SOC SCR	M5xP0.8x10L	3
MI-31170-136	SLOTTED ADJUSTING BOLT	M10xP1.5	4
MI-31170-137	HEX NUT		4
MI-31170-140	HEX HD BOLT	M6xP1.0x25L	4
MI-31170-141	HEX NUT	M6xP1.0	4
MI-31170-142	BALL BEARING	6000ZZ	5
MI-31170-143	WASHER	$\frac{5}{16}$ 4.2x $\frac{5}{16}$ 15x2T	4
MI-31170-144	NYLOCK HEX SOC CAP SCR	M4xP0.7x12L	4
MI-31170-146	CHAIN		1
MI-31170-147	HEX SOC CAP SCR	M5xP0.8x25L	3
MI-31170-155	WASHER	$\frac{5}{16}$ 10.3 x $\frac{5}{16}$ 18 x 1T	4

PARTS LIST FOR MI-31170

ITEM NO.	DESCRIPTION	SIZE	Q'ty
MI-31170-164	WASHER	Ø 19.8x Ø 23.5x0.8T	4
MI-31170-250S	MOTOR ASSY.		1
MI-31170-252	HOUSING MOTOR		1
MI-31170-253	BRUSH HOLDER		2
MI-31170-254	BRUSH	SPECIAL PART	2
MI-31170-255	BRUSH CAP		2
MI-31170-271	SWITCH HOUSING		1
MI-31170-272	BEZEL SWITCH		1
MI-31170-273	SWITCH	HY18-4P	1
MI-31170-274	SWITCH KEY	SPECIAL PART	1
MI-31170-277	CORD W/PLUG		1
MI-31170-280	OVERLOAD		1