



# 4455 Professional Planer 20”

## Owner’s Manual



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## **Warranty**

Oliver makes every effort possible to assure that its equipment meets the highest possible standards of quality and durability. All products sold by Oliver are warranted to the original customer to be free from defects for a period of 2 (two) years on all parts, excluding electronics and motors, which are warranted for 1 year. Oliver's obligation under this warranty shall be exclusively limited to repairing or replacing (at Oliver's option) products which are determined by Oliver to be defective upon delivery F.O.B. (return freight paid by customer) to Oliver, and on inspection by Oliver. This warranty does not apply to defects due, directly or indirectly, to misuse, abuse, negligence, accidents, unauthorized repairs, alterations, lack of maintenance, acts of nature, or items that would normally be consumed or require replacement due to normal wear. In no event shall Oliver be liable for death, personal or property injury, or damages arising from the use of its products.

## **Warning**

Read this manual thoroughly before operating the machine. Oliver Machinery disclaims any liability for machines that have been altered or abused. Oliver Machinery reserves the right to effect at any time, without prior notice, those alterations to parts, fittings, and accessory equipment which they may deem necessary for any reason whatsoever.

## **For More Information**

Oliver Machinery is always adding new Industrial Woodworking products to the line. For complete, up-to-date product information, check with your local Oliver Machinery distributor, or visit [www.olivermachinery.net](http://www.olivermachinery.net)

# WARNING

Read this manual completely and observe all warning labels on the machine. Oliver Machinery has made every attempt to provide a safe, reliable, easy-to-use piece of machinery. Safety, however, is ultimately the responsibility of the individual machine operator. As with any piece of machinery, the operator must exercise caution, patience, and common sense to safely run the machine. Before operating this product, become familiar with the safety rules in the following sections.

- **Always keep guards and covers in place and in proper operating condition.**
1. If you are not properly trained in the use of a planer do not use until the proper training has been obtained.
  2. Read, understand and follow the safety instructions found in this manual. Know the limitations and hazards associated with this machine.
  3. Make certain that the machine frame is electrically grounded and that a ground lead is included in the incoming electrical service. In cases where a cord and plug are used, make certain that the grounding plug connects to a suitable ground. Follow the grounding procedure indicated in the National Electrical Code.
  4. Wear an approved safety shield, goggles, or glasses to protect eyes. Common eyeglasses are only impact-resistant, they are not safety glasses.
  5. Before operating the machine, remove tie, rings, watch and other jewelry and roll up sleeves above the elbows. Remove all loose outer clothing and confine long hair. Protective type footwear should be used. Where the noise exceeds the level of exposure allowed in Section 1910.95 of the OSHA Regulations, use hearing protective devices. Do not wear gloves.
  6. Keep the machine guards and covers in place for every operation. If any guards and covers are removed for maintenance, DO NOT OPERATE the machine until the guards and covers are reinstalled.
  7. Keep the floor around the machine clean and free of scrap material, saw dust, oil and other liquids to minimize the danger of tripping or slipping. Be sure the table is free of all scrap, foreign material and tools before starting the planer. Make certain the work area is well lighted and that a proper exhaust system is used to minimize dust. Use anti-skid floor strips on the floor area where the operator normally stands and mark off machine work area. Provide adequate work space around the machine.
  8. Maintain a balanced stance and keep your body under control at all times.
  9. Before turning on machine, remove all extra equipment such as keys, wrenches, scraps, and cleaning rags away from the machine.
  10. Give the work you are doing your undivided attention. Looking around, carrying on a conversation, and “horseplay” are careless acts that can result in serious injury.
  11. Before performing any service, maintenance, adjustments or when changing knives disconnect the machine from power source. A machine under repair should be RED TAGGED to show it should not be used until the maintenance is complete.

12. Do not plane boards with loose knots, nails or any foreign material in the workpiece. Irregular, or warped stock should be jointed first on one side before planing a parallel surface.
13. If the operator leaves the machine area for any reason, the planer should be turned "off" and the cutterhead should come to a complete stop before their departure. In addition, if the operation is complete, they should clean the planer and the work area. NEVER clean the planer with power "on" and never use hands to clear sawdust and debris; use a brush or air hose.
14. Use only genuine Oliver Machinery factory authorized replacement parts and accessories; otherwise the warranty and guarantee is null and void.
15. Do not use this Oliver planer for other than its intended use. If used for other purposes, Oliver disclaims any real or implied warranty and holds itself harmless for any injury or damage which may result from that use.
16. Do not operate this machine while under the influence of drugs, alcohol, or any medication.
17. This machine is designed for planing wood products only. Do not use to plane any kind of substance other than wood.
18. Never start the planer while a workpiece is in contact with the cutterhead or knives.
19. Always feed workpiece against the rotation of the cutterhead.
20. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - Lead from lead-based paint.
  - Crystalline silica from bricks and 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 specifically designed to filter out microscopic particles.

Familiarize yourself with the following safety notices used in this manual:

**CAUTION:** (This means that if precautions are not heeded, it may result in minor or moderate injury and/or possible machine damage)

**WARNING:** (This means that if precautions are not heeded, it could result in serious injury or possibly even death).

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## Specifications

Stock No.....	(7.5HP, 1Ph HSS Straight Knife) 4455.001
Stock No.....	(7.5HP, 3Ph HSS Straight Knife) 4455.002
Stock No.....	(7.5HP, 1Ph Carbide Helical Cutterhead) 4455.101
Stock No.....	(7.5HP, 3Ph Carbide Helical Cutterhead) 4455.102
Maximum Stock Width (in.).....	22
Maximum Depth of Cut (in.).....	3/16
Maximum Stock Thickness (in.).....	9
Minimum Stock Thickness (in.).....	1/8
Minimum Stock Length (in.).....	10
Dust Port Diameter (in.).....	5
Minimum CFM Required.....	900
Segmented Infeed Roller Diameter (in.).....	3
Outfeed Roller Diameter (in.).....	3
Feed Speeds (FPM).....	20 and 30
Bed Rollers.....	2, Adjustable
Table Size (L x W/in.).....	32-1/4 x 23-3/4
Cutterhead Diameter (in.).....	3
Number of Knives.....	4
Cutterhead Speed (RPM).....	5,000
Table Support.....	2-Column
Motor.....	7.5HP, 1Ph, 220V Only
	7.5HP, 3Ph, 220V/440V, Prewired 220V
Gross Weight (lbs.).....	1,568

## Oliver 4455 - 20" Professional Planer

### 1. 20" Planer

#### Box 1

- 4. Leveling Pads
- 4. Hex Key Wrenches
- 4. Open End Wrenches
- 4. Leveling Bolts and Nuts
- 1. Knife Setting Gauge
- 2. Lifting Eye Bolts and Nuts
- 1. Knob for Handwheel
- 1. Handwheel
- 1. Handle

#### Box 2

- 1. Dust Chute
- 8. Hex Head Screws M6x10



### Uncrating the Machine

Retain all packaging materials in case it becomes necessary to ship the machine to another site.

### Machine Preparation and Setup

#### **WARNING!**

The equipment used to lift this machine must have a rated capacity at, or above the weight of the planer. Failure to comply may cause serious injury!

The planer can be lifted from over head using slings and the two lifting eye bolts (A, Figure 1). There are two threaded holes for the eye bolts. One is located in the right front corner and the other is in left rear corner. Thread the eye bolt into the hole at least half way and tighten the nut (B, Figure 1).

Remove the eye bolts and save in case the machine needs to be moved in the future.

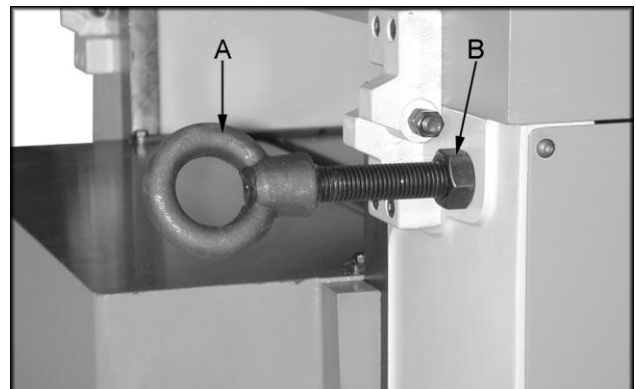


Figure 1

## Machine Preparation and Setup (cont'd)

Thread leveling bolts (A, Figure 2) into holes in the four corners of the planer base. The planer must be positioned on a smooth, level surface. Install the leveling pads (B, Figure 2) under the four corners of the planer.

Clean all rust protected surfaces with a commercial solvent. Do not use acetone, gasoline, lacquer thinner or any type of flammable solvent, or a cleaner that may damage paint. Cover cleaned surfaces with WD-40 or a 20W machine oil.

Place a level on the table of planer and adjust leveling bolts until the machine is resting level. Tighten the hex nuts (C, Figure 2) against the base of the planer to keep the leveling bolts from turning.

## Electrical Connections

### **WARNING!**

**Electrical connections and wiring must be done by a qualified electrician. The machine must be properly grounded. Failure to comply may cause serious injury!**

This planer is available in both 1-Phase and 3-Phase versions.

### • **Electrical Connections for a 3-Phase Unit**

This planer is 3-Phase, 220V/440V **pre-wired 220V**. If you need to switch the planer from 220V to 440V have a qualified electrician make the changes.

Make sure the voltage of your power supply matches the specifications on the motor plate of the machine.

1. **Disconnect machine from power source!**
2. Remove screws that secure the cover to connection box.
3. Insert the power cable through strain relief, and attach the wires to terminals.
4. Re-install connection box cover. With 3-Phase power verify in-feed roller is rotating in the correct direction. Lower table completely. Connect planer to the power source and push the "ON" button to start the planer. Crouch down to view in-feed roller from the front of machine. The top of in-feed roller should be rotating down towards you

in such a manner that it would pull a piece of wood into the planer. If it does not, disconnect machine from power source and reverse any two incoming power leads.

5. When wiring is completed, tape all power box joints to keep out dust.

### • **Electrical Connections for a 1-Phase Unit**

This planer is 1-Phase, **220V only**.

Make sure the voltage of your power supply matches the specifications on the motor plate of the machine.

1. **Disconnect machine from power source!**
2. Remove screws that secure the cover to connection box.
3. Insert the power cable through strain relief, and attach the wires to the terminals.
4. Re-install connection box cover.
5. When wiring is completed, tape all power box joints to keep out dust.

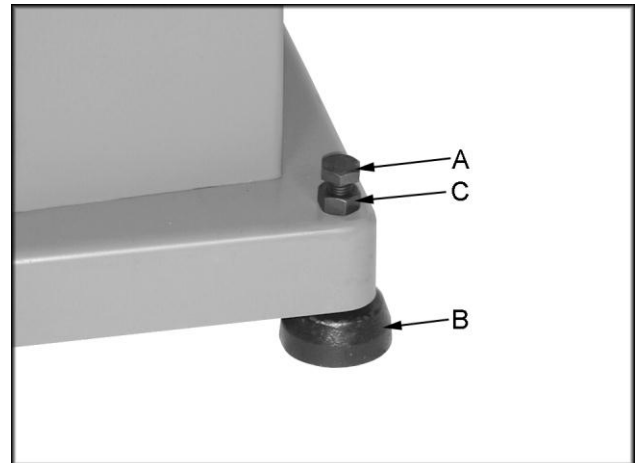


Figure 2

## Dust Chute Assembly

Mount the dust chute (A, Figure 3) to the planer hood with eight M6x10 hex head screws (B, Figure 3). Make sure the dust collection system has sufficient capacity and suction for your planer. Always turn on the dust collection system before starting the planer.

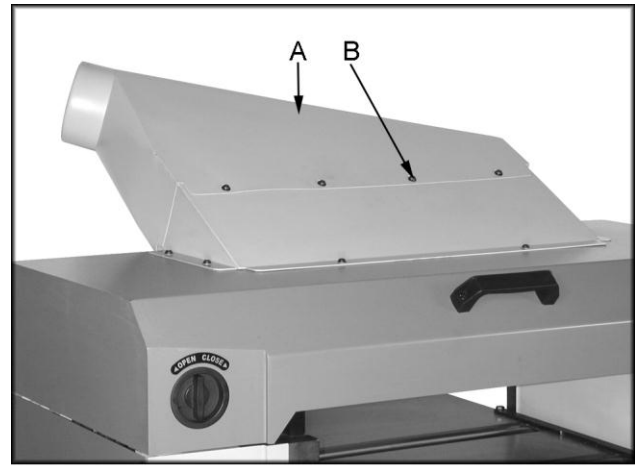


Figure 3

## Table Roller Handle Assembly

Thread the handle (C, Figure 4) into the hub.

## Handwheel Assembly

Line up the key on handwheel shaft with the key way in the handwheel. Slide the handwheel (D, Figure 4) into place and secure with knob (E, Figure 4).

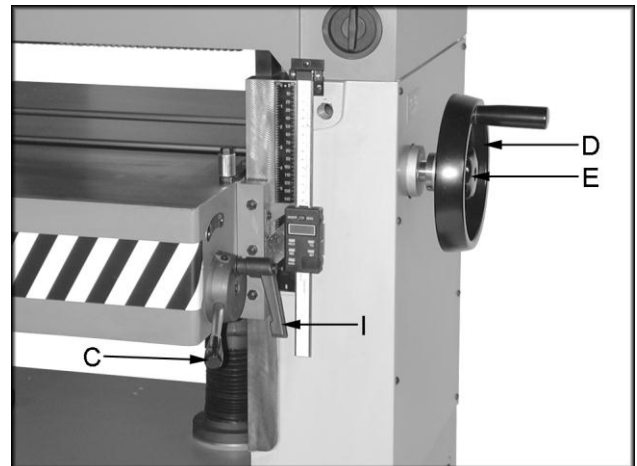


Figure 4

## Control Panel (figure 5)

- F. **Emergency Stop Button:** Stops all functions of machine, but the planer still has power. To reset rotate switch clockwise until the button pops out.
- G. **Main Motor:** Starts rotation of cutterhead. Will not work if the “Emergency Stop” switch is engaged, or hood is open.



Figure 5

## Changing Feed Rate

The planer has two selectable feed speeds that feed stock at 20 and 30 feet per minute. To adjust speed, move lever (H, Figure 5) until it clicks into place. **Change feed speed only while the feed system is RUNNING!**

## Table Roller Adjustment

Loosen the handle (I, Figure 4) and move the table rollers up, or down by raising, or lowering the handle (C, Figure 4). When you reach the desired position tighten the handle.

The rollers are usually set higher when planing rough stock. When planing smooth stock the table rollers should be set slightly above, or flush with the table.



## Raising and Lowering Table

Turn the handwheel (A, Figure 6) clockwise to raise the table. One revolution equals 1/16".

## Table Stop

The socket head cap screw (B, Figure 6) acts as a stop and prevents you from running the table into the cutting and feeding assembly.

## Opening Hood

Turn the locks (C, Figure 6) clockwise to open the hood. The hood will open automatically. Use the handle (D, Figure, 6) to shut the hood.

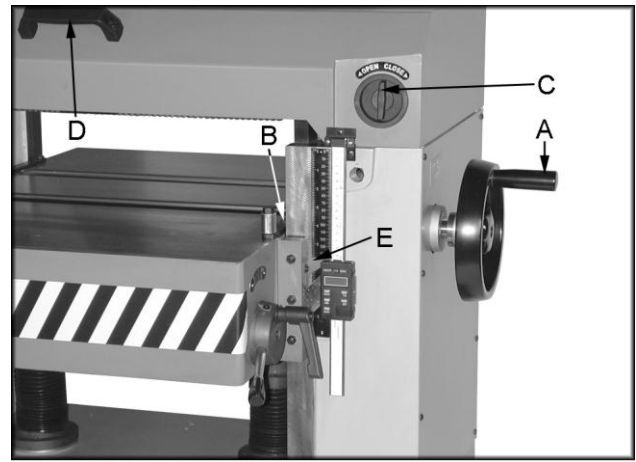


Figure 6

## Calibrating the Thickness Scale

The following sections will describe the use of a calibrating board. The calibrating board should be made of a hardwood and have one side that has been run through a jointer.

1. With the planer turned "OFF – cutterhead **NOT** spinning", place your calibrating board jointed surface down on the table and slide it into the machine.
2. Use the handwheel (A, Figure 6) to raise the table so that the in-feed roller is about 1/16" above the calibrating board.
3. Remove calibrating board from planer and turn the planer "ON".
4. Turn the handwheel clockwise one complete revolution to raise the table and run the calibrating board through the planer.
5. Repeat Step 4 until the planer removes the entire top surface of your calibrating board.
6. Measure the thickness of the board using a pair of calipers.
7. Adjust the pointer (E, Figure 6) so that it reads the measured thickness by loosening the screw that holds it in place.

## Digital Readout

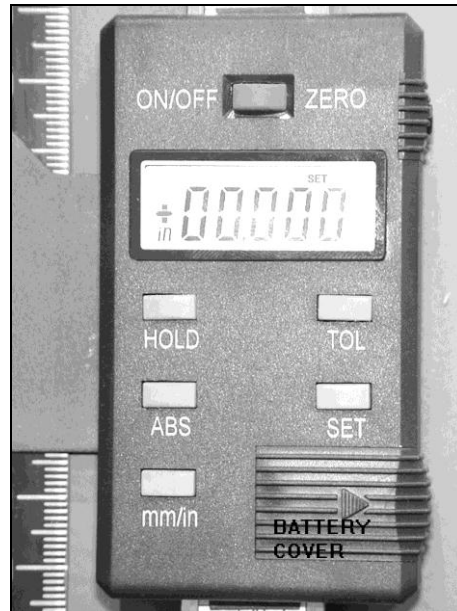
The digital scale equipped with your 4455 ,22” planer can serve many applications, however for wood planing we need only concern ourselves with the ON/OFF, SET, and mm/in buttons. When set properly the digital readout will display the thickness of the finished product.

**Calibration:** In order to calibrate the unit first run a board through the planer and measure the finished thickness with a set of vernier calipers. This is the number to be entered into the display unit. At this point turn the unit on by pushing the ON/OFF button. Now press the mm/in button to set the unit to American standard or the metric system.

1. Press and hold the SET button until the ‘+’ sign starts to flash and immediately release it.
2. Cycle the set button by pressing it until the ‘+’ sign remains on.
3. Press and hold the SET button until the second zero to the right of the ‘+’ plus sign starts to flash and immediately release it.
4. Cycle the SET button by pressing it until the number reads the correct whole number taken with the vernier calipers and immediately release the button.
5. Press and hold the SET button until the zero to the right of the decimal point starts to flash.
6. Repeat steps 4 and 5 until the last digit in the 0.001 place is entered.
7. Press and hold the SET button until the SET on the display starts to flash and immediately release it.
8. Press and release the SET button one final time to complete the calibration.

**Note: Do not turn the device off. If you do you will have to re-calibrate the unit.**

**Battery:** When the display begins to flash the battery should be replaced. The battery is to be replaced with a SR144 (or equivalent) and can be found at most pharmacies or grocery stores. When replacing the battery the positive side of the button cell must face out.



A.

Fraction	Decimal	Metric
1/32	0.031	0.794
1/16	0.063	1.588
3/32	0.094	2.381
1/8	0.125	3.175
5/32	0.156	3.969
3/16	0.188	4.763
7/32	0.219	5.556
1/4	0.250	6.350
9/32	0.281	7.144
5/16	0.313	7.938
11/32	0.344	8.731
3/8	0.375	9.525
13/32	0.406	10.319
7/16	0.438	11.113
15/32	0.469	11.906
1/2	0.500	12.700
17/32	0.531	13.494
9/16	0.563	14.288
19/32	0.594	15.081
5/8	0.625	15.875
21/32	0.656	16.669
11/16	0.688	17.463
23/32	0.719	18.256
3/4	0.750	19.050
25/32	0.781	19.844
13/16	0.813	20.638
27/32	0.844	21.431
7/8	0.875	22.225
29/32	0.906	23.019
15/16	0.938	23.813
31/32	0.969	24.606
1	1.00	25.400

## Setting / Changing Knives

### **WARNING!**

**Knives are extremely sharp. Be very careful when handling knives. Failure to comply may cause serious injury!**

The Oliver 20" planer was designed to accept 22-1/8" x 1" x 1/8") knives. Installing straight knives accurately is an important step to achieve a smooth finish. End to end, and knife to knife adjustment must be accurate within .001". Use a dial indicator if available to check results and fine tune. Remove and replace the knife in one slot before changing the next knife. Any knife sharpening, or replacement should be done to all four knives at the same time.

1. **Disconnect machine from power source.**
2. Open the hood, loosen eight locking bolts (A, Figure 8) on the clamping block and remove the knife. Remove and clean the clamping block, and springs (B, Figure 9). Also clean cutterhead knife slot before re-installing the sharpened, or new knife.
3. Re-install the springs, knife and clamping block, and just snug the eight locking bolts (A, Figure 8). **Note:** You should still be able to raise and lower the knife.
4. Notice that the knife does not rest at the bottom of the knife slot. Instead, the knife rests on three jack screws (C, Figure 8), and two springs. These jack screws are used to support and raise the knife.
5. Place the knife setting gauge (D, Figure 10) on to the cutterhead as shown. Use the jackscrew to raise the knife so that the point just touches the raised portion of the gauge.
6. Once knife is set to the proper height, tighten two center locking bolts and, work your way towards the ends until all bolts are tight.
7. Re-check knife with the knife setting gauge after tightening all of the locking bolts.
8. Repeat for the remaining three knives.

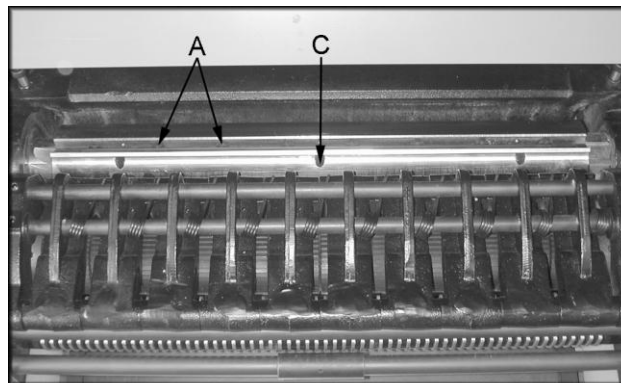


Figure 8

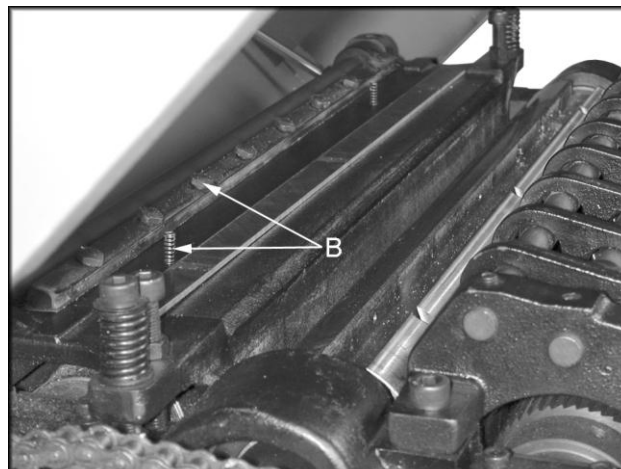


Figure 9

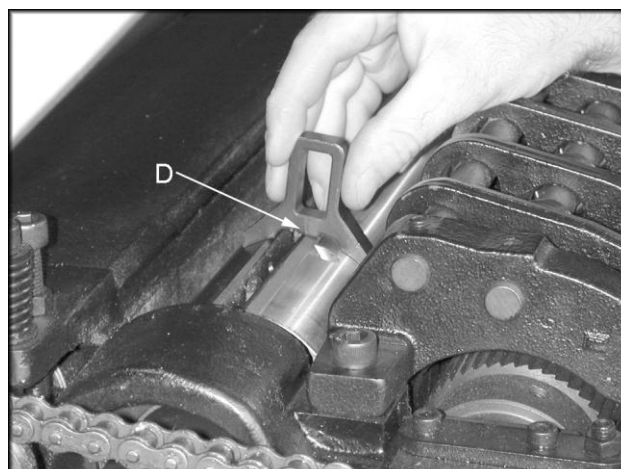


Figure 10

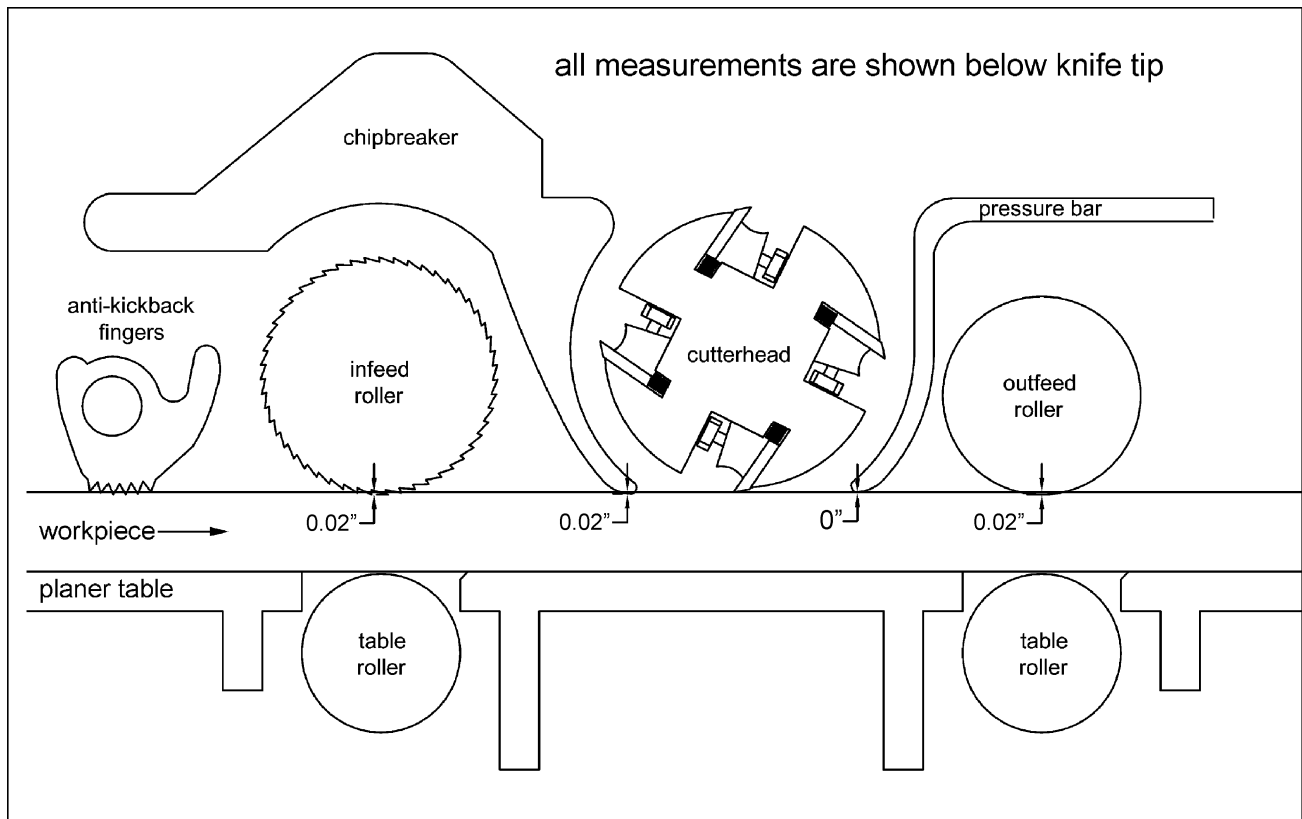


Figure 11

### Setup of Feed Rollers, Chipbreaker and Pressure Bar

**⚠ WARNING!**  
 Disconnect machine from the power source before performing any adjustments or maintenance. Failure to comply may cause serious injury!

The planer comes set up from the factory and shouldn't need any adjustment.

If you find adjustment is necessary, follow the below listed sections for setting the in-feed roller, chipbreaker, pressure bar and outfeed roller.

Make a hardwood block to the specifications in drawing Figure 12. You can use this wood gauge along with 0.02" feeler gauge to set the planer up as shown in Figure 11.

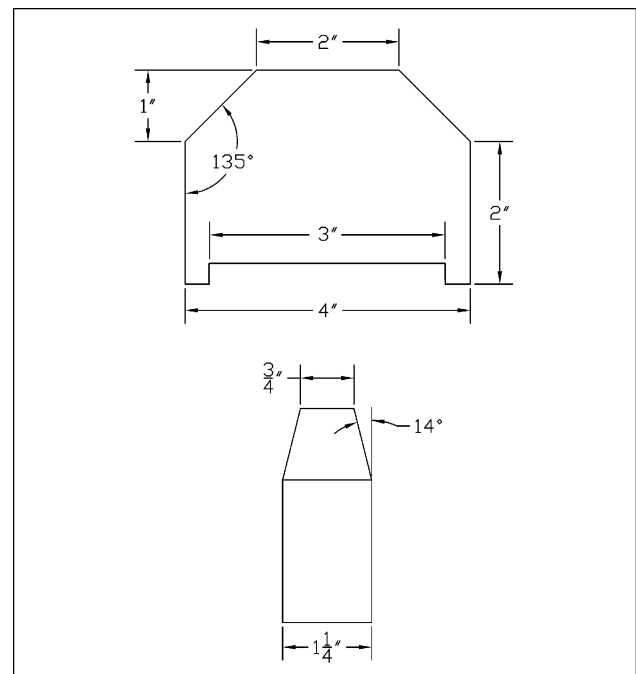


Figure 12

Figure 11 shows setup for general planing applications. Depending on the stock and cutterhead you may find that a different setup may work better for your particular planing operation.

## Anti-Kickback Fingers

Anti-kickback fingers help prevent stock from being kicked out of the machine towards the user. Keep the fingers clean and free from sawdust, pitch gum, etc., so they operate smoothly.

## Adjustment of In-Feed Roller

The in-feed roller should be set 0.02" below the lowest point of knife. Make sure the knives are set properly see the "Setting / Changing Knives" section on page 11 prior to making any adjustments.

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

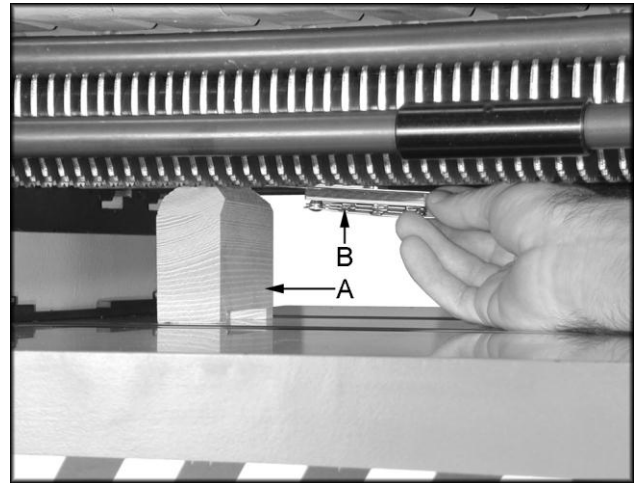


Figure 13

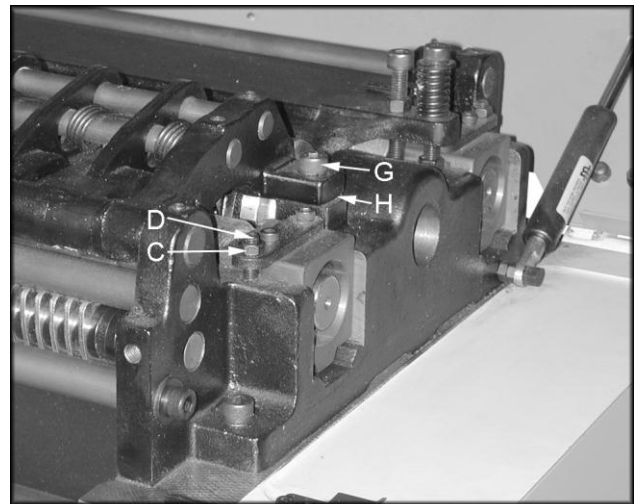


Figure 14

## Adjustment of Chipbreaker

Chipbreaker should be set 0.02" below the lowest point of knife. Make sure the knives are set properly see the "Setting / Changing Knives" section on page 11 prior to making any adjustments.

1. **Disconnect machine from power source.**
2. Place a hard wood gauge (A, Figure 13) under a knife in the cutterhead. Place a 0.02" feeler gauge (B, Figure 13) on top of wood block and raise table until the gauge contacts the knife in its lowest position.
3. Remove feeler gauge and place wood gauge (E, Figure 15) under the left side of chipbreaker (F, Figure 15). The top of the wood gauge should just contact the chipbreaker. If it doesn't, remove the socket head cap screw (G, Figure 14) and insert a shim (H, Figure 14) of proper thickness in-between castings until chipbreaker contacts the wood gauge. Repeat for opposite side of the chipbreaker.

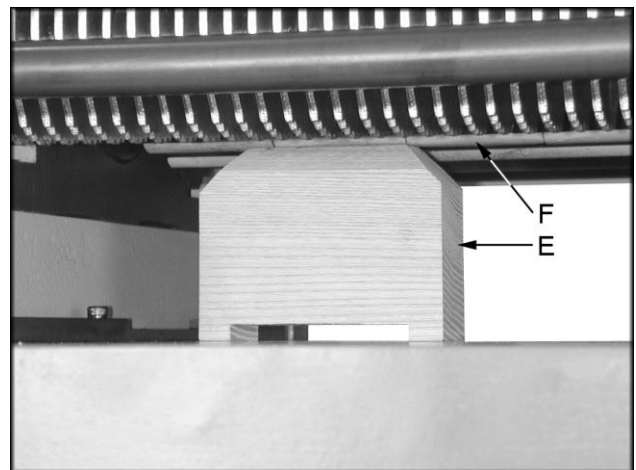


Figure 15

## Adjustment of Pressure Bar

The pressure bar should be set even with the lowest point of knife. Make sure the knives are set properly see the “Setting / Changing Knives” section on page 11 prior to making any adjustments.

1. **Disconnect machine from power source.**
2. Place a hard wood gauge under a knife in cutterhead. Raise table until wood gauge contacts the knife in its lowest position.
3. Place wood block (A, Figure 16) under the left side of pressure bar (B, Figure 16). The top of wood gauge should just contact the pressure bar. If it doesn't, loosen jam nut (C, Figure 17) and turn the adjusting screw (D, Figure 17) to raise, or lower the pressure bar until it contacts wood gauge. Repeat for opposite side of the pressure bar.

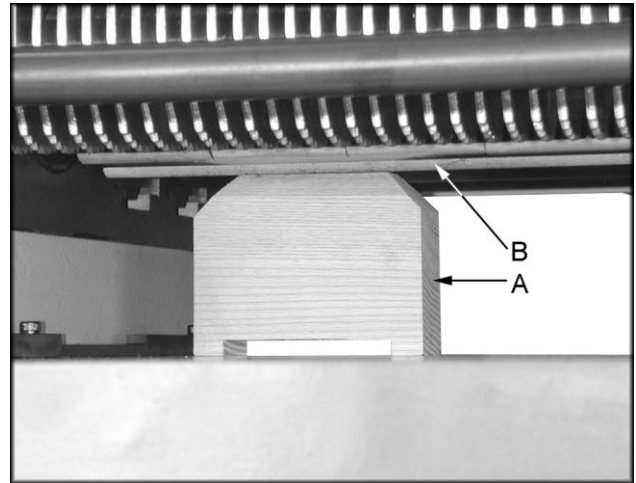


Figure 16

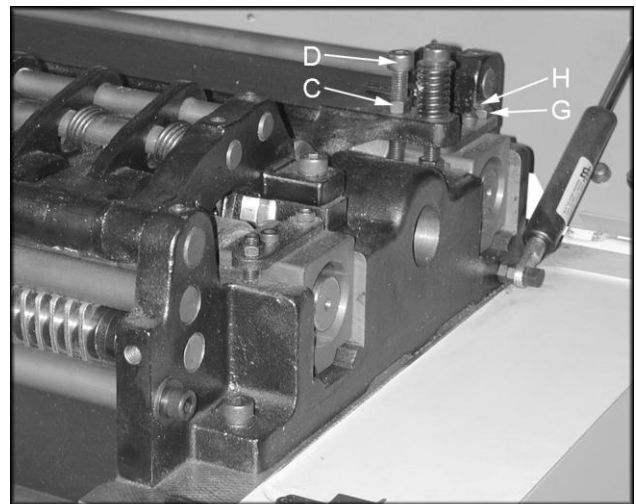


Figure 17

## Adjustment of Out-feed Roller

The out-feed roller should be set 0.02” below the lowest point of knife. Make sure the knives are set properly see the “Setting / Changing Knives” section on page 11 prior to making any adjustments.

1. **Disconnect machine from power source.**
2. Place a hard wood gauge (A, Figure 13) under a knife in the cutterhead. Place a 0.02” feeler gauge (B, Figure 13) on top of wood block and raise table until the gauge contacts the knife in its lowest position.
3. Remove feeler gauge and place wood block (E, Figure 18) under the left side of out-feed roller (F, Figure 18). The top of wood gauge should just contact the out-feed roller. If it doesn't, loosen jam nut (G, Figure 17) and turn the adjusting screw (H, Figure 17) to raise, or lower the out-feed roller until it contacts wood gauge.

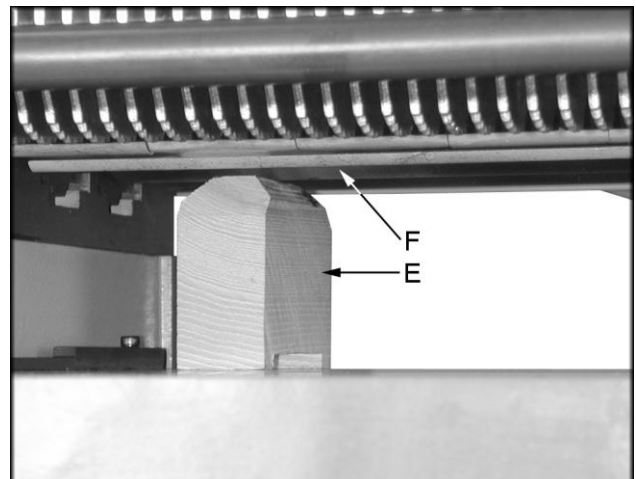


Figure 18

## Helical Cutterhead

### **WARNING!**

**Knives are extremely sharp. Be very careful when handling knives. Failure to comply may cause serious injury!**

The helical cutterhead is set-up with the same relationship to the in-feed roller, chipbreaker, pressure bar and outfeed roller as the straight knife cutterhead. The planer comes set up from the factory and shouldn't need any adjustment. If you find adjustment is necessary, follow the steps on pages 12-14 for setting the in-feed roller, chipbreaker, pressure bar and outfeed roller in relation to the helical cutterhead.

When it is time to rotate the carbide knives ALL knives must be rotated at the same time. This is the same when replacing carbide knives ALL knives must be replaced at the same time. Mark the knives with a marker so you know which knives have been rotated. You can rotate the knives once before replacing. Use the provided torque wrench to rotate, or remove knives.

## V-Belt Adjustment

Two v-belts (A, Figure 20) drive the cutterhead. The single v-belt (B, Figure 20) drives the in-feed and out-feed rollers. Belt tension has been set at the factory. If the belts have stretched and need adjustment.

1. **Disconnect machine from power source.**
2. Open lower rear, and lower left-hand side panels. Loosen and tighten four adjustment nuts (C, Figure 20) to move motor plate up, or down to increase, or decrease belt tension. Tighten nuts against motor plate after adjustment is made.
3. Belts are tensioned properly when moderate finger pressure can deflect the v-belts about a 1/4"-1/2" midway between the pulleys.

## Adjusting Table Gibs

Adjust gibs (D, Figure 21) by loosening the hex nuts (E, Figure 21), and turning gib screws (F, Figure 21) so that the ways (G, Figure 21) are lightly contacted. You should be able to get a 0.005" feeler gauge in between the gib and way.

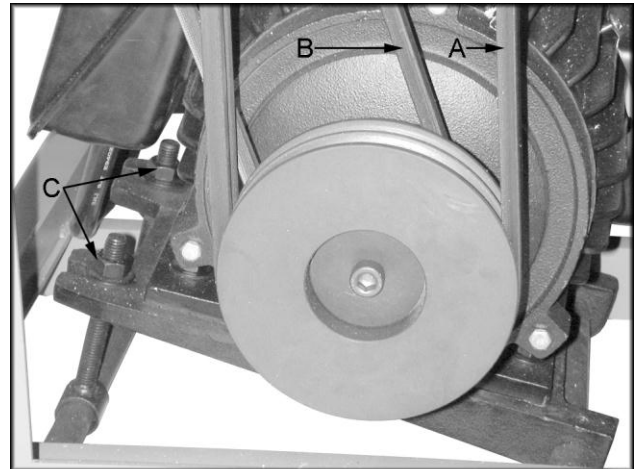


Figure 20



Figure 21

## Adjusting Table Rollers

The table rollers come pre-set from the factory and shouldn't need any adjustment. If you find adjustment is necessary, follow the below listed steps.

1. Lay a straight edge (A, Figure 22) on the table across the roller (B, Figure 22).
2. Raise the rollers until it contacts the straight edge and lock the handle. The pointer should be set at "0". If not adjust the pointer to read zero. **Note:** Spin the roller by hand to know when roller makes contact with the straight edge.
3. Move straight edge to the opposite side of bed roller and check to see that the roller just contacts straight edge. If not loosen the hex nut (C, Figure 23) and turn the hex cap bolt (D, Figure 23) to raise or lower the bed roller until it just contacts the straight edge.

## Maintenance

### **WARNING!**

**Disconnect the machine from power source before proceeding with any maintenance, lubrication or assembly! Failure to comply may cause serious injury!**

- Periodic, or regular inspections are required to ensure that the machine is in proper adjustment, and that all hardware is tight.
- Clean out-feed rollers and table with a non-flammable solvent to remove pitch, gum and other unwanted build-up.
- Periodically clean the inside of the machine for dust control.
- Keep pulleys and belts free from dirt, dust, oil and grease. Replace worn v-belts as needed.
- Replace worn knives or sharpen. If a knife gets nicked stagger the knives. Move one knife no more than 1/8" to the right and another knife no more than 1/8" to the left.
- There is one limit switch on the planer that triggers if the hood is opened. Keep it clean and blown out with an air hose.

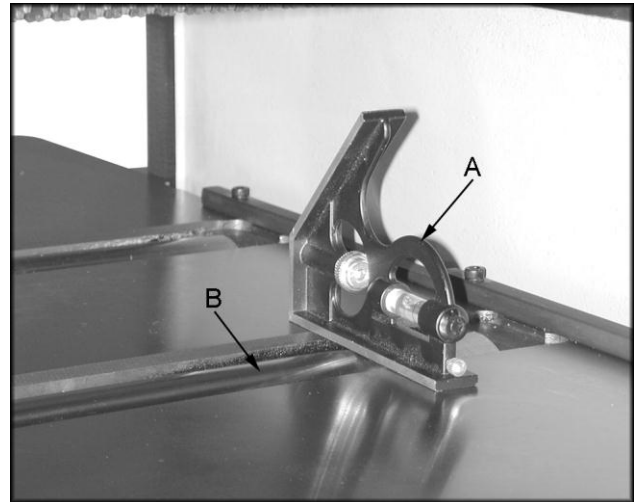


Figure 22



Figure 23



## Lubrication

- The bearings on the cutterhead are factory lubricated and sealed. They require no lubrication.
- Lubricate the two table elevation screws (A, Figure 24) as needed. Raise the table and remove the two screws holding the top of the accordion cover (B, Figure 24) in place. Pull the cover down and lightly grease the elevating screws, see Figure 24.
- Use an oiled cloth to wipe the ways (C, Figure 24) weekly.
- The gear box oil should be changed at least once a year. Remove the drain plug (D, Figure 25) to drain the oil into an appropriate container. Replace the drain plug and fill the gear box with 60 to 90 weight gear oil through the fill hole (E, Figure 25). Capacity is 0.494 gallon (1.87L). The sight glass (F, Figure 25) should be checked periodically and oil topped off as necessary.
- The recommended lubrication for roller chains used in medium to slow speed operation is to simply wipe the chain clean. When there is an appreciable buildup of dust, dirt or wood shavings, use an oil cloth but never pour the oil directly on the chain. Over-oiling defeats the purpose of the lubrication, since it tends to invite the collection of dust, shavings, etc. and works into members of the chain. This hastens wear and leads to premature replacement.
- Weekly oil the bearings on the infeed and outfeed rollers, through the oil cups located on the bearing blocks (Figure 26). Recommended oil type is SAE 30.

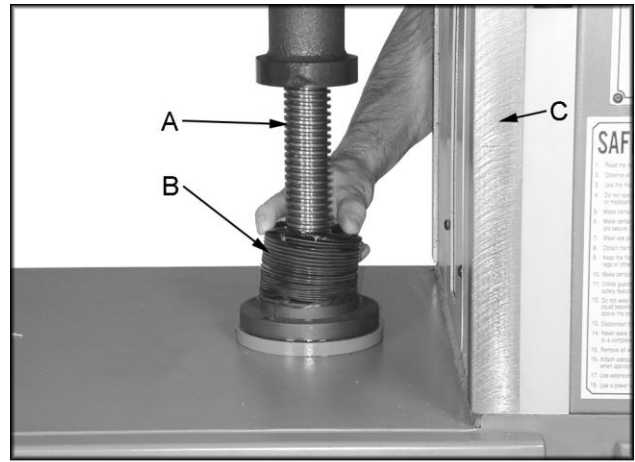


Figure 24

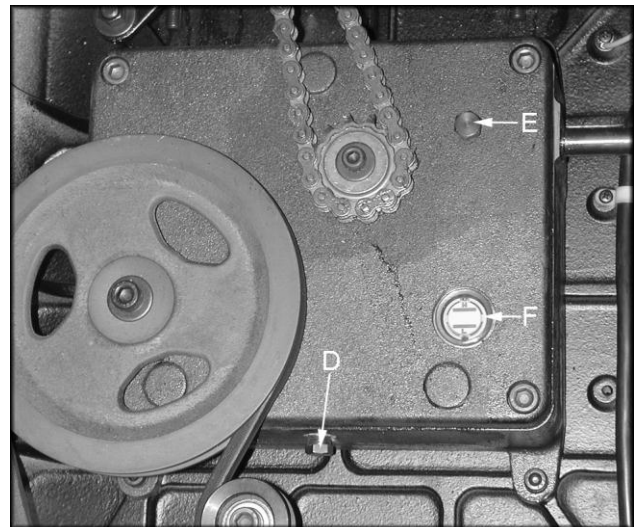


Figure 25

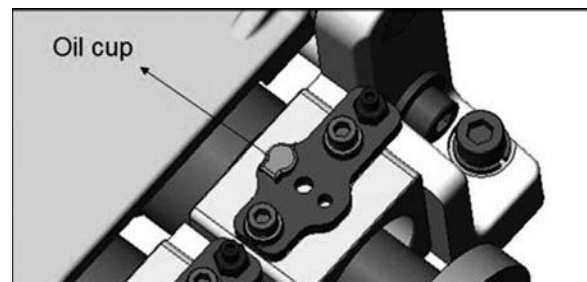


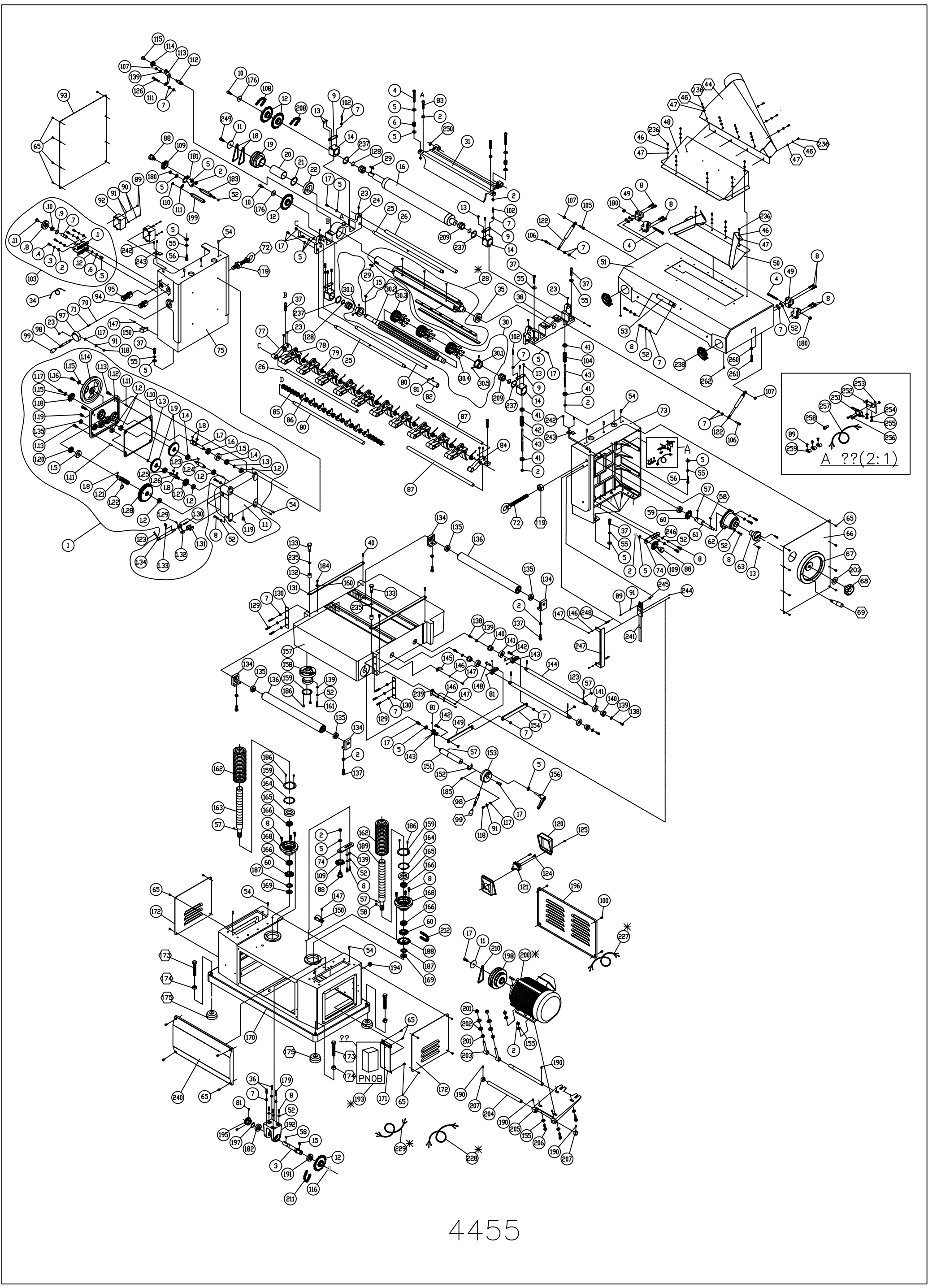
Figure 26

## Halted Feeding

If the in-feed roll takes stock away from you while feeding, then feeding stops before contacting the knives, the chipbreaker is probably too low. Or the in-feed roller is not set low enough, or does not have enough pressure. In a similar situation, the in-feed roll takes the stock, the chipbreakers lift, and stops as you hear the knives contact the material. In this case the pressure bar is too low. Follow the steps on pages 12-14 for setting the in-feed roller, chipbreaker, pressure bar and outfeed roller in relation to the cutterhead.

## Troubleshooting

Description of Symptoms	Possible Cause	Corrective Action
Machine will not start	<ol style="list-style-type: none"> <li>1. Fuse blown or circuit breaker tripped</li> <li>2. Cord Damaged</li> <li>3. Not connected to power source</li> <li>4. Connected to wrong voltage</li> <li>5. Top cover is open</li> <li>6. Emergency stop button pressed</li> <li>7. Overload tripped</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse or reset circuit breaker</li> <li>2. Have cord replaced</li> <li>3. Check connection</li> <li>4. Check voltage</li> <li>5. Close top cover</li> <li>6. Rotate emergency stop button clockwise until it pops out</li> <li>7. Remove lower rear cover on the base and press reset switch found inside.</li> </ol>
Cutterhead does not come up to speed	<ol style="list-style-type: none"> <li>1. Low current</li> <li>2. Motor not wired for correct voltage</li> </ol>	<ol style="list-style-type: none"> <li>1. Contact local electric company</li> <li>2. Refer to motor nameplate for correct voltage</li> </ol>
Workpiece stops when feeding	<ol style="list-style-type: none"> <li>1. Too much material being removed in one pass</li> <li>2. Chipbreaker or pressure bar set too low</li> <li>3. Insufficient pressure on in-feed or out-feed rollers</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the amount of material being removed</li> <li>2. Raise the Chipbreaker or pressure bar per Figure 11, page 12</li> <li>3. Increase pressure on in-feed or out-feed rollers per Figure 11, page 12</li> </ol>
Snipe	<ol style="list-style-type: none"> <li>1. Incorrect setting for in-feed, out-feed rollers, pressure bar or chipbreaker</li> <li>2. Inadequate support of long boards</li> <li>3. Table rollers not set properly</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust feed system per Figure 11, page 12</li> <li>2. Support long boards with extension rollers</li> <li>3. Adjust table rollers until desired results are achieved</li> </ol>
Fuzzy Grain	<ol style="list-style-type: none"> <li>1. Planing wood with a high moisture content</li> <li>2. Dull knives</li> </ol>	<ol style="list-style-type: none"> <li>1. Allow wood to dry properly</li> <li>2. Sharpen knives</li> </ol>
Poor feeding of lumber	<ol style="list-style-type: none"> <li>1. Inadequate feed roll pressure</li> <li>2. Planer bed dirty</li> <li>3. V-belts slipping</li> <li>4. Dirty feed rollers</li> <li>5. Incorrect setting for in-feed, out-feed rollers, pressure bar or chipbreaker</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust feed roll tension or lower feed rollers</li> <li>2. Clean pitch and residue off table with a non-flammable solvent</li> <li>3. Increase v-belt tension</li> <li>4. Clean feed rollers with a non-flammable solvent</li> <li>5. Adjust feed system per Figure 11, page 12</li> </ol>



4455 Parts List

No.	Part Number	Description		QTY	Old P/N
0	850214-000	BAGGED PARTS		1	PN0203
64	040401-000	SCREWDRIVER	1號*75	1	HQ070100
68	230026-000	KNOB		1	PN020004
69	230114-906	HANDLE		1	PJ010018
98	360414-910	SHAFT		1	PN010025
99	250054-000	KNOB		1	LJ010110
231	040003-000	WRENCH	3mm	1	HQ010400
216	040004-000	WRENCH	4mm	1	HQ010500
215	040006-000	WRENCH	6mm	1	HQ010700
214	040007-000	WRENCH	8mm	1	HQ010800
217	040201-000	OPEN WRENCH	8*10	1	HQ020400
127	040204-000	OPEN WRENCH	12*14	1	HQ020900
232	040206-000	OPEN WRENCH	17*19	1	HQ021200
218	040207-000	OPEN WRENCH	22*24	1	HQ021400
222	041305-003	POLY BAG	275*185(開口)*0.1t	1	HR043800
0	850044-000	BAGGED SCREW		1	PN0107
39	041001-001	ZIP BAG	60*40*0.05	1	HR010100
46	006303-100	SPRING WASHER	6.1*12.3 染黑	8	HE020900
47	006001-032	WASHER	6.6*13*1.0t 染黑	8	HE011900
58	012003-005	KEY	5*5*16	1	HH010409
173	000006-101	HEX NUT	M16*2.0P*100 染黑	4	PN010032
174	008011-100	NUT	M16*2.0P(24B*13H) 染黑	4	HC011600
221	041306-002	POLY BAG	190*130(開口)*0.15t	1	HR051500
236	002501-101	ROUND HEAD SCREW	M6*1.0P*10L 染黑	8	HA340404
1	920314-000	CHANGE GEAR BOX ASSY		1	PN0103
1.01	050322-008	GEAR BOX		1	PN010301
1.02	030205-000	BEARING	6201-2NSE	6	HJ031900
1.03	010007-000	S RING	STW-16	2	HF011400
1.04	320208-000	GEAR		2	PN010302
1.05	030208-000	BEARING	6204-2NSE	2	HJ032200
1.06	043603-000	OIL SEAL	TC20*40*7	1	HM140803
1.07	360430-000	SHAFT		1	PN010303
1.08	012003-002	KEY	5*5*10	4	HH010405
1.09	320209-000	GEAR		2	PN010304
1.10	340029-000	PACKING	235*216*2t	1	PN010305
1.11	360413-901	PIN		2	PN010024
1.12	050323-008	GEAR BOX COVER		1	PN010307
1.13	000105-102	CAP SCREW	M10*1.5P*25 染黑	4	HA020613
1.14	050324-902	PULLEY		1	PN010308
1.15	006001-071	WASHER	10*25*3.0t 染黑	2	HE019700
1.16	000105-101	CAP SCREW	M10*1.5P*20 染黑	1	HA020610

1.17	001301-101	CAP SCREW-LEFT	M8*1.25P*20染黑	1	HA210510
1.18	150014-000	SPROCKET		1	PN010309
1.19	043401-000	PLUG	PT1/4"-19牙	2	HM110300
1.20	043606-000	OIL SEAL	TC24*40*8	1	HM142104
1.21	360431-000	SHAFT		1	PN010310
1.22	010011-000	S RING	STW-25	1	HF012300
1.23	012003-005	KEY	5*5*16	2	HH010409
1.24	360432-000	GEAR SHAFT		1	PN010311
1.25	320210-000	GEAR		1	PN010312
1.26	360433-000	GEAR SHAFT		1	PN010313
1.27	320211-000	GEAR		1	PN010314
1.28	320051-000	GEAR		1	PN010315
1.29	000202-101	SET SCREW	M5*0.8P*5染黑	1	HA030301
1.30	011002-106	SPRING PIN	4*25染黑	1	HG010914
1.31	070018-000	JAM		1	PN010318
1.32	050216-000	ARM		1	LL010734
1.33	010208-000	E RING	ETW-12	1	HF032000
1.34	360434-902	SHAFT		1	PN010319
1.35	043001-000	OIL VIEW	29	1	HM010200
2	008007-100	NUT	M10*1.5P(17B*8H)染黑	23	HC011000
3	360424-000	FIXING SHAFT		1	PN010076
4	000105-109	CAP SCREW	M10*1.5P*75染黑	4	HA020643
5	006001-071	WASHER	10*25*3.0t染黑	32	HE019700
6	280056-901	PRESS SPRING		2	PN010087
7	008006-100	NUT	M8*1.25P(13B*6.5H)染黑	28	HC010800
8	000104-108	CAP SCREW	M8*1.25P*25染黑	30	HA020513
9	170513-902	ADJUST PLATE		4	PN010098
10	001302-101	CAP SCREW-LEFT	M10*1.5P*20染黑	2	HA210610
11	006001-084	WASHER	11*53*3.0t染黑	2	PN010046
12	070017-000	SPROCKET		4	PN010018
13	000103-106	CAP SCREW	M6*1.0P*16染黑	10	HA020408
14	130047-903	BUSHING		4	PN010009
15	012005-001	KEY	8*7*18	2	HH010710
16	360411-000	OUTFEED ROLLER		1	PN010017
17	000105-101	CAP SCREW	M10*1.5P*20染黑	9	HA020610
18	014111-000	BELT	A80	2	HK026600
19	050565-902	MACHINE PULLEY		1	PN020016
20	190024-902	FIXING BUSHINF		1	PN010012
21	010111-000	R RING	RTW-85	1	HF025500
22	030218-000	BEARING	6209-2NSE	1	HJ032700
23	000204-102	SET SCREW	M8*1.25P*10染黑	9	HA030504
24	050304-000	CUTTERHEAD BRACKET -L		1	PN010002
25	360409-902	CUTTERHEAD FIXING SHAFT		2	PN010011
26	360418-902	FIXING SHAFT		2	PN010047

27	290014-901	SHOULDER SCREW		2	PN010030
*28	PN02-12	CUTTERHEAD ASS'Y			PN0L
29	012005-002	KEY	8*7*30	2	HH010717
30	920371-000	INFEED ROLLER ASSY		1	PN0202
.1	130157-903	SPACER		2	050014-903
.2	360621-000	INFEED ROLLER SAHFT		1	PN020006
.3	130052-903	INFEED ROLLER		22	PN010203
.4	250352-615	BUSHING		132	PM070102
.5	000204-102	SET SCREW	M8*1.25P*10染黑	4	HA030504
31	050308-000	REAR HOILDER PLATE		1	PN010007
32	041503-019	PLASTIC PLATE	920*710*0.05t	1	630019-000
33	041503-020	PLASTIC PLATE	1210*710*0.05t	1	630020-000
34	471003-001	CONNECT WIRE CSA WIRE	SJT14AWG*1C*250mm	1	PJ0E0102
35	030202-000	BEARING	6007-2NSE	1	HJ031200
36	000204-105	SET SCREW	M8*1.25P*20染黑	2	HA030510
37	000105-104	CAP SCREW	M10*1.5P*35染黑	20	HA020619
38	050303-000	CUTTERHEAD BRACKET -R		1	PN010001
40	000003-102	HEX NUT	M8*1.25P*16染黑	2	HA010508
41	170512-901	FIXING PLATE		8	PN010097
42	280055-901	PRESS SPRING		2	PN010078
43	360408-902	FIXING SHAFT		4	PN010010
44	170510-000	DUST HOOD		1	PN010089
*45	PN02-10	LABEL			PN1A
46	006303-100	SPRING WASHER	6.1*12.3染黑	10	HE020900
47	006001-032	WASHER	6.6*13*1.0t染黑	10	HE011900
48	170508-000	DUST EXHAUSTER		1	PN010083
49	050320-000	UPPER COVER SEAT		4	PN010084
50	920316-000	DUST CHUTE ASSY		1	PN0110
	170507-000	DUST CHUTE		1	PN010082
	200023-615	PACKING		2	PN010003
51	170876-000	UPPER COVER		1	PN020001
52	006305-100	SPRING WASHER	8.2*15.4染黑	27	HE021100
53	250123-615	HANDLE		1	PG920008
54	360413-901	PIN		10	PN010024
55	006307-100	SPRING WASHER	10.2*18.5染黑	20	HE021300
56	000105-105	CAP SCREW	M10*1.5P*40染黑	2	HA020622
57	012003-002	KEY	5*5*10	6	HH010405
58	012003-005	KEY	5*5*16	2	HH010409
59	030103-000	BEARING	6004ZZ	1	HJ020900
60	150013-000	SPROCKET		3	PN010079
61	360425-901	HANDWEEEL SHAFT		1	PN010077
62	050311-902	HANDWHEEL BRACKET		1	PN010029
63	050174-000	HANDWHEEL BASE		1	LJ010626
65	000801-101	ROUND HEAD SCREW	M6*1.0P*10染黑	28	HA090404

66	170502-000	SIDE COVER RIGHT		1	PN010071
67	240032-008	HANDWHEEL	市購品	1	PN020003
70	017002-000	BALL	6	1	HL011200
71	280018-000	PRESS SPRING		1	LJ010216
72	000601-101	HOOK SCREW	M20*2.5P*160染黑	2	PN010031
73	050015-000	COLUMN RIGHT		1	PN020014
74	170413-901	BRACKET		2	PJ010065
75	050352-000	COLUMN LEFT		1	PN020015
77	050307-000	PRESS BASE LEFT		1	PN010006
78	050305-000	PRESS BASE FRONT		10	PN010004
79	280053-000	TWIN SPRING		10	PN010013
80	360410-902	FIXING SHAFT		2	PN010016
81	000202-101	SET SCREW	M5*0.8P*5染黑	9	HA030301
82	190025-902	LIMITED SHAFT		1	PN010015
83	000105-107	CAP SCREW	M10*1.5P*50染黑	2	HA020628
84	050306-000	PRESS BASE RIGHT		1	PN010005
85	250160-615	SPACER		72	PJ010035
86	170411-905	ANTI-KICK BACK FINGER		62	PJ010036
87	360416-902	PRESS BASE FIXING SHAFT		2	PN010027
88	290040-901	IDLE FIXING SHAFT		3	PN010045
89	000302-103	ROUND HEAD SCREW	M4*0.7P*10染黑	4	HA040404
90	006301-100	SPRING WASHER	4.1*7.7染黑	4	HE020600
91	006001-001	WASHER	4.3*10*1.0t染黑	6	HE010600
92	250168-615	SWITCH BOX		2	PJ0B0D02
93	170503-000	SIDE COVER LEFT		1	PN010072
94	490040-000	START SWITCH		1	PJ080016
95	490039-000	STOP SWITCH		1	PJ080015
97	380151-910	COVER		1	PN010023
98	360414-910	SHAFT		1	PN010025
99	250054-615	KNOB		1	LJ010110
100	000403-204	PAN HEAD SCREW	M6*1.0P*20電鍍	4	HS050410
102	000204-106	SET SCREW	M8*1.25P*25染黑	4	HA030513
103	921346-000	IDLE BELT ASSY		1	
.1	171789-901	PULLEY BRACKET		1	
.2	006001-053	WASHER	8.5*19*2.0t染黑	4	HE014400
.3	006305-100	SPRING WASHER	8.2*15.4染黑	4	HE021100
.4	000104-104	CAP SCREW	M8*1.25P*16染黑	4	HA020508
.5	000105-111	CAP SCREW	M10*1.5P*15染黑	1	HA020607
.6	006307-200	SPRING WASHER	10.2*18.5電鍍	1	HY021300
.7	360678-901	FIXING SHAFT		1	
.8	380458-902	IDLE BELT ASSY		1	
.9	010101-000	R RING	RTW-30	1	HF022800
.10	030105-000	BEARING	6200ZZ	1	HJ021800
.11	000803-103	ROUND HEAD SCREW	M10*1.5P*20染黑	1	

.12	006001-078	WASHER	10.5*19*1.5t染黑	1	HE015800
104	280054-901	PRESS SPRING		2	PN010034
105	290024-901	SHOULDER SCREW		2	PN010037
106	290025-901	SHOULDER SCREW		2	PN010038
107	008306-100	CHECK NUT	M8*1.25P(13B*9H)染黑	3	HC040800
108	016007-000	CHAIN	#40*72P	1	HK246000
109	150001-000	IDLE		3	PN010040
110	010204-000	E RING	ETW-7	1	HF031600
111	280069-000	SPRING		2	PN010039
112	380141-902	IDLE FIXING SAHFT		1	PN010080
113	170183-901	IDLE FIXING BRACKET		1	PN010043
114	360729-000	IDLE PULLEY		1	130071-000
115	360349-902	IDLE PULLEY SAHFT		1	PJ010010
116	010011-000	S RING	STW-25	1	HF012300
117	170014-156	POINTER		2	AE010026
118	000302-102	ROUND HEAD SCREW	M4*0.7P*8染黑	2	HA040403
119	008012-100	NUT	M20*2.5P(30B*16H)染黑	2	HC011800
120	920317-000	WIRE BOX		1	PN0108
	490124-000	WIREBOX UPPER COVER		1	PN010801
	490125-000	WIREBOX LOWER COVER		1	PN010802
121	920318-000	TERMINALS SEAT ASSY'		1	PN0109
	490031-008	TERMINALS SEAT UPPER COVER		1	PN010901
	490032-000	TERMINALS SEAT		1	PN010902
122	660017-000	BUFFER		2	PN010091
123	011003-105	SPRING PIN	5*26染黑	5	HG011015
124	000303-107	ROUND HEAD SCREW	M5*0.8P*20染黑	2	HA040610
125	003303-102	ROUND HEAD SCREW	3/16"-24NC*1/4"染黑	1	HB040903
126	000104-114	CAP SCREW	M8*1.25P*50染黑	1	HA020528
128	010501-000	ISTW RING	ISTW-30	4	HF090100
129	000204-108	SET SCREW	M8*1.25P*35染黑	6	HA030519
130	170498-901	PLATE		2	PN010050
131	170511-902	PLATE		2	PN010095
132	190002-905	POINTER		2	PN010092
133	290009-902	SHOULDER SCREW		2	PN010085
134	130049-903	ROLLER FIXING BASE		4	PN010052
135	030108-000	BEARING	6203ZZ	4	HJ022100
136	920319-000	ROLLER ASSY		2	PN0101
	190027-906	ROLLER		1	PN010101
	360426-000	ROLLER FIXING SHAFT		1	PN010102
137	000004-103	HEX NUT	M10*1.5P*30染黑	4	HA010616
138	000104-104	CAP SCREW	M8*1.25P*16染黑	4	HA020508
139	006001-053	WASHER	8.5*19*2.0t染黑	13	HE014400
140	360419-901	CAM FIXING SHAFT		4	PN010053
141	130050-000	CAM		4	PN010059



142	290016-901	SHOULDER SCREW		2	PN010075
143	130048-903	BLOCK		3	PN010044
144	360421-901	TRANSMISSION LINK		2	PN010057
145	170509-156	POINTER		1	PN010086
146	006001-012	WASHER	5.3*12*1.0t染黑	1	HE011300
147	000303-103	ROUND HEAD SCREW	M5*0.8P*10染黑	8	HA040604
148	290015-901	SHOULDER SCREW		1	PN010048
149	170500-901	FIXING PLATE		1	PN010058
150	021103-000	WIRE HOLDER	ACC-3	8	HP020500
151	360420-902	FIXING SHAFT		1	PN010055
152	010211-000	E RING	ETW-24	1	HF032300
153	050313-902	SHAFT BASE		1	PN010056
154	170499-901	FIXING PLATE		1	PN010054
155	006001-075	WASHER	10.3*22*2.0t染黑	8	HE016200
156	230122-000	HANDEL	市購品	1	PN010064
157	050315-000	MIDDLE TABLE		1	PN010065
158	050318-902	FIXING SHAFT		2	PN010068
159	170481-901	COLLAR		4	PM010038
160	006001-027	WASHER	6.5*16*0.8t染黑	2	HE010100
161	000104-112	CAP SCREW	M8*1.25P*40染黑	6	HA020522
162	250173-615	DUST SLEEVE		2	PM010037
163	360423-000	WORM SHAFT		1	PN010069
164	010110-000	R RING	RTW-68	2	HF024800
165	030203-000	BEARING	6008-2NSE	2	HJ031300
166	031003-000	BEARING	51105	4	HJ130600
168	050319-902	BUSHING BASE		2	PN010070
169	008201-100	NUT	M25*1.5P染黑	2	HC030400
170	170877-000	BASE		1	PN020002
171	170495-000	SWITCH PLATE		1	PN010019
172	170505-000	BASE SIDE COVER		2	PN010074
175	050314-008	FOOT		4	PN010061
176	006001-083	WASHER	11*37*3.0t染黑	2	PN010028
179	000204-107	SET SCREW	M8*1.25P*30染黑	1	HA030516
180	008308-100	CHECK NUT	M10*1.5P(17B*12H)染黑	3	HC041000
181	170501-904	IDLE FIXING BRACKET		1	PN010060
182	030109-000	BEARING	6204ZZ	1	HJ022200
183	380137-902	IDLE FIXING SAHFT		1	PN010041
184	000002-103	HEX NUT	M6*1.0P*16染黑	2	HA010408
185	000203-104	SET SCREW	M6*1.0P*12染黑	1	HA030405
186	001601-101	ROUND HEAD SCREW	M4*0.7P*8/4*10*0.8t染黑	8	HA260100
187	006802-100	STAR WASHER	25染黑	2	HE080600
188	320206-000	BEVEL GEAR		1	PN010094
189	360422-000	LEAD SCREW		1	PN010062
190	000204-103	SET SCREW	M8*1.25P*12染黑	6	HA030505

191	030104-000	BEARING	6005ZZ	1	HJ021000
192	050312-902	BEVLE GEAR FIXING BASE		1	PN010049
*193	PN02-02	SWITCH ASSY			PN0B
194	021503-000	WIRE RELIEF	15.5*19*5.5	1	HP160300
195	320207-000	BEVEL GEAR		1	PN010096
196	170479-000	COVER		1	PM010026
197	010010-000	S RING	STW-20	1	HF011800
198	050309-902	MOTOR PULLEY		1	PN010008
199	380138-902	SPRING FIXING SHAFT		1	PN010042
*200	PN02-01	MOTOR ASSY			PN0A
201	008009-100	NUT	M12*1.75P(19B*10H)染黑	4	HC011200
202	006002-091	WASHER	13*28*3.0t電鍍	8	HY019600
203	380249-901	ADJUST ROD ASSY		2	PM0111
204	360394-000	SUPPORT SHAFT		2	PM010030
205	050321-008	MOTOR PLATE		1	PN010093
206	000004-105	HEX NUT	M10*1.5P*40染黑	4	HA010622
207	190074-901	SPACER		2	PM010029
208	016008-000	CHAIN	#40*60P	1	HK244800
209	032101-000	NAIL BEARING	NA-6906	4	HJ115100
210	014105-000	BELT	A56	1	HK024200
211	016013-000	CHAIN	#40*107P	1	HK247700
212	016003-000	CHAIN	#40*80P	1	HK246800
*213	PN02-14	Manual			PN0N
220	041306-006	Poly Bag	415*255(開口)*0.15t	1	HR051400
223	640006-000	Anti-Rust Bag	1600*1800*0.1t	1	PN010022
224	520001-249	CARDBOARD FOR PARTS	680*170*440*	1	PN010090
225	610003-024	PALLET	880*1230*1460*	1	PN010051
226	042001-000	DEHYDRATOR	100g	1	HZ040100
*227	PN02-04	MOTER CORD			PN0D
*228	PN02-06	POWER CORD			PN0F
*229	PN02-05	SWITCH CORD			PN0E
230	520001-221	CARDBOARD FOR DUST HOOD	370*250*110**3層	1	PG071101
234	003902-201	WOOD SCREW	3/8-16NC*4"電鍍	4	HY120534
235	010205-000	E RING	ETW-8	2	HF031700
236	002501-101	ROUND HEAD LOCK SCREW	M6*1.0P*10L染黑	10	HA340404
237	010107-000	R RING	RTW-47	4	HF023700
238	920664-000	LOCKER ASSY		2	PP0103
	250259-615	LOCK BASE		1	EQ010701
	250328-615	LOCK TURNER		1	EQ010702
	230167-615	NYLON NUT	P-LG-M63-B(市購)	1	EQ010704
	170903-902	LOCKER PLATE		1	PP010081
	006001-005	WASHER	5*12*0.8t染黑	1	HE017900
	001105-502	ROUND HEAD SELF TAPPING SCREW	M6*2.54P*10染黑	1	HA180604
239	170879-902	SLIDE BRACKET		1	PN020008

240	170878-000	FRONT COVER		1	PN020005
241	660019-000	DIGITAL READER	9 inch	1	PN0201
242	000103-104	CAP SCREW	M6*1.0P*14染黑	4	HA020406
243	270025-902	SPRING PLATE		2	PN020007
244	000404-101	PAN HEAD SCREW	M3*0.5P*6染黑	2	HA050102
245	006001-004	WASHER	4.3*14*1.8t染黑	1	HE112400
246	006001-048	WASHER	8.5*16*1.8t染黑	2	HE013500
247	170881-000	DIGITAL READER COVER		1	PN020010
248	230274-000	HEX BOLT		2	PN020011
249	002604-101	CAP SCREW	M10*1.5P*20染黑	1	HA430610
250	006712-100	WAVY WASHER	BWW-6001	1	HE071500
251	490018-000	LIMITED SWITCH	125V*20.5AMP	1	PH030062
252	170680-000	SWITCH SHAFT		1	PN020013
253	008001-100	NUT	M3*0.5P(5.5B*2.5H)染黑	2	HC010100
254	006302-100	SPRING WASHER	5.1*9.3染黑	2	HE020800
255	000804-101	ROUND HEAD SCREW	M5*0.8P*8染黑	2	HA090303
256	000301-204	ROUND HEAD SCREW	M3*0.5P*15電鍍	2	HS040207
257	472001-003	CONNECT WIRE	18AWG*2C*1200mm	1	PN0E0102
258	022002-000	PIN	TM-3	1	HP181000
259	021101-000	WIRE HOLDER	ACC-2	3	HP020300
260	008004-100	NUT	M5*0.8P(8B*4H)染黑	1	HC010400
261	000102-112	CAP SCREW	M5*0.8P*25染黑	1	HA020313
262	340007-615	PACKING		2	PG010046
263	041202-002	POLYBAG	175*110(開口)*0.1t	4	HR040300