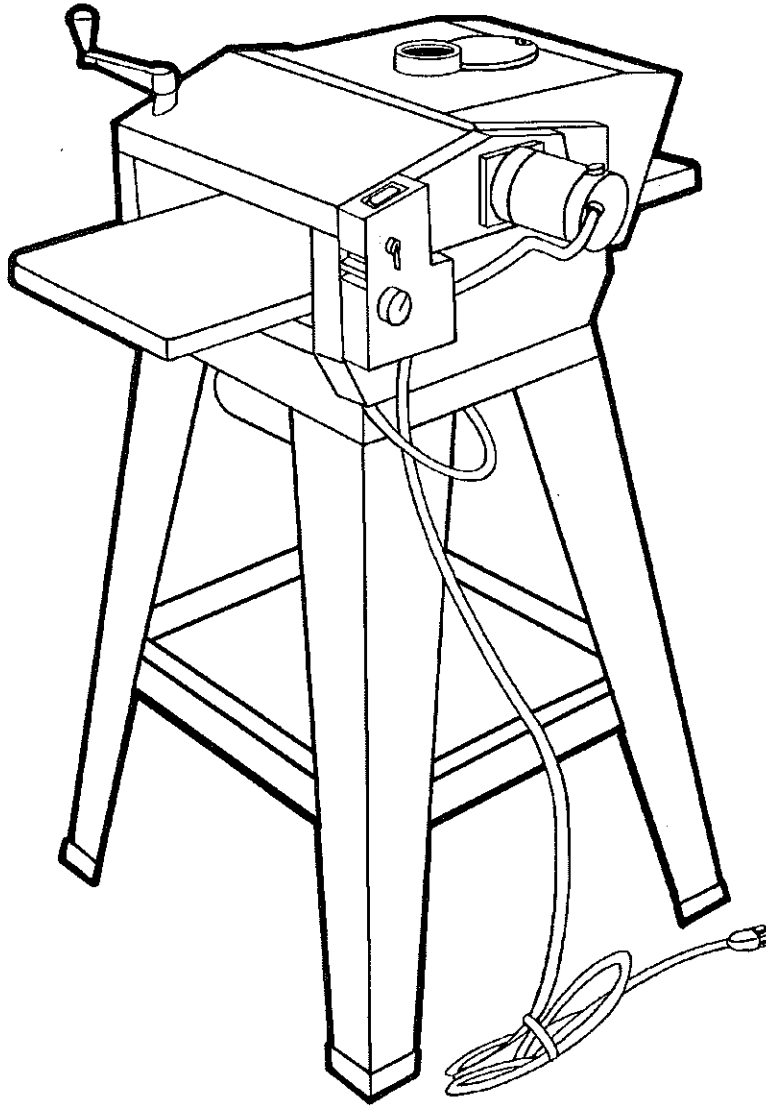




Professional Planer



WARNING

Read the Safety section and complete the Setup procedures before operating the Shopsmith Professional Planer. Mount the Professional Planer on Shopsmith equipment only.

Also, use only Shopsmith parts and accessories on your Professional Planer. Mounting the Professional Planer on non-Shopsmith machinery or using non-Shopsmith parts will create a hazardous condition and will void your warranty.

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Introduction

Congratulations. Your Shopsmith Professional Planer is an exciting addition to your workshop. You'll soon find that it's built to deliver years of reliable service as well as help you to expand your workshop capabilities.

We know that you're eager to get started using your new planer, but please take time to read this manual before you begin. This is extremely important - even if you have operated other planers in the past - because the Shopsmith Professional Planer incorporates a number of special design features which are not available on other machines.

As you operate the planer, you must be responsible for knowing your own limitations as well as those of the machine. The best possible way to avoid serious injury is to constantly remind yourself to use the tool correctly and with the proper safety equipment.

The planer's capabilities permit you to reduce thick boards to thinner ones, surface rough lumber, plane boards to identical thicknesses and true up boards that have been glued together. It allows you to plane any wood, hard or soft, to any thickness - from ultra-thin stock for musical instruments and toys to thick finished lumber for furniture and carpentry projects.

We wish you the best in all your woodworking endeavors. We know that your Shopsmith Professional Planer will rapidly become an indispensable tool in your workshop. Please read this manual completely, then keep it handy for future reference.

Safety

WARNING

General Safety Instructions for Power Tools

- Know your power tool - Read the instruction manual and product literature carefully. Learn the tool's applications and limitations, as well as its specific potential hazards.
- Ground all tools (unless double-insulated) - If a tool is equipped with an approved three-conductor cord and a three-prong grounding type plug to fit the proper grounding type re-

ceptacle, the green conductor in the cord is the grounding wire. Never connect the green wire to a live terminal.

- Wear eye protection - Use full face shield or approved safety glasses with a side shield. Everyday eyeglasses have only impact-resistant lenses; they are not safety glasses. Use a dust mask if cutting operation is dusty.
- Wear ear protection - Extended exposure to noise from power tools can damage your hearing; you won't notice it at first, but it's cumulative. Over a long period of time, you'll begin to notice a loss of hearing. Ear protectors screen out noise, but they can still allow you to carry on a conversation, since the human voice resonates at a much lower frequency.
- Never operate the planer if you're fatigued or taking medication or if you're under the influence of drugs or alcohol.
- Keep the guards in place - Always keep guards in working order and use them as recommended for each specific operation.
- Remove adjusting keys and wrenches - Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
- Keep work area clean - Cluttered areas and benches invite accidents. Sweep and clear the floor of dust and chips.
- Don't work in a dangerous environment - Don't use power tools in damp or wet locations or expose them to rain; you may also lose your footing in such conditions. Don't operate tools in explosive or otherwise hazardous environments. Keep your work area well lit.
- Keep children away - All visitors should be kept a safe distance from the work area. They should also wear approved safety devices for eyes and ears.
- Make workshop childproof - Use padlocks and master switches and remove starter keys.
- Don't force the tool - It will do the job better and safer at the rate for which it was designed.
- Use the right tool - Don't force a tool or attachment to do a job for which it was not designed.

WARNING

- Wear proper apparel – Don't wear loose clothing, gloves, neckties, rings, bracelets or other jewelry or clothing which may get caught in moving parts or be otherwise hazardous. Roll up sleeves above your elbows. Wear non-slip safety footwear. Wear protective hair covering to contain long hair.

- Secure your work – Use clamps or a vise to hold your work when practical. It's safer than using your hand, and it frees both hands to operate the tool.

- Don't overreach – Keep proper footing and balance at all times.

- Maintain tools with care – Keep tools sharp and clean for best and safest performance. Follow instructions for lubrication, maintenance and accessory changes.

- Disconnect tools – Before servicing or changing accessories such as blades, bits and cutters, make sure tool is both turned to "Off" position and also disconnected from the power source.

- Reduce risk of unintentional starting - Make sure switch is in the "Off" position before plugging the tool in.

- Use recommended accessories – Consult the owners manual for recommended accessories. The use of improper accessories may cause personal injury or damage to equipment and will invalidate your warranty.

- Never stand on the tool – Serious injury could occur if the tool is tipped or if the cutting tool is unintentionally contacted.

- Check damaged parts – Before further use of a tool, a guard or other part that is damaged, perform a thorough check of all equipment. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting(s) and any other conditions that may affect operations. Any part that is damaged should be properly repaired or replaced.

- Direction of feed – Feed work into the blade or cutter, against the direction of rotation of the blade or cutter. NEVER feed work with the rotation of the blade or cutter.

- Never leave a tool running unattended – Never leave a tool until it comes to a complete stop. Always turn off and unplug the tool when not in use.

Additional Safety Instructions for the Professional Planer

- Always keep your hands, fingers and other body parts at least 12" away from the moving knives.

- Never operate the planer without the infeed and outfeed shields in place and secured.

- Don't let your fingers be pinched between the stock and the table. Release the stock as soon as the infeed roller grabs it.

- Always stand to the right of the machine– the side of the switch– while you're working. This gives you maximum control.

- Never remove more than 1/8" of stock at one time. The maximum depth of cut on the planer is 1/8", or two turns of the thickness adjustment crank.

- Don't plane stock less than 1" wide or more than 12" wide. Don't plane stock less than 12" long.

- Don't edge plane stock that's higher than it is wide.

- Remove the control box safety key and put it in a safe place when you are not using the planer.

- Make sure the machine rests firmly on the floor – not up on its retractable casters.

- Always plane with the grain direction of the wood.

- Never plane two or more boards side-by-side. One board may interfere with the others.

- Don't plane boards of different thicknesses in the same pass. The rollers would not hold the thinner board securely and it might be kicked back.

- Keep stock parallel to the sides of the planer table as it's fed through the machine.

- Don't attempt to push or pull a board through the planer faster than the rollers will feed it.

- If the stock stops feeding, immediately turn off the planer and wait until it stops. Lower the table and remove the stock. Never force a jammed board.

WARNING

• Never make a depth-of-cut adjustment or clear wood chips while the planer is running. **TURN OFF THE PLANER FIRST AND LET THE CUTTERHEAD COME TO A COMPLETE STOP.**

• When working with long or heavy boards, support the work with one or two roller stands placed 1-4' out from the machine.

• Never plane secondhand lumber. Hitting a nail or screw will ruin the planer knives and possibly cause injury.

• Don't plane wood that has large, loose knots or other imperfections which might cause the board to split under pressure. Defective wood may damage equipment and cause personal injury.

• Never plane painted or varnished wood, plywood or particle board. These materials will ruin your planer knives.

• Plane dry, properly cured wood only. Wet sawdust and shavings will adhere to the knives, causing the machine to cut poorly.

• Use the machine as it was designed to be used – as a planer for surfacing solid wood. Never stretch the capacity of the machine.

• Do not attempt to disassemble or repair the control box.

• Use only recommended Shopsmith parts and accessories with your Shopsmith Professional Planer. Use only Shopsmith Planer Knives - other brands of knives will not seat properly in the cutterhead.

Warnings, Cautions and Notes

Throughout this manual, we list WARNINGS, CAUTIONS and NOTES. When you come to one of these listings, please read and fully understand it before proceeding. Their meanings are:

WARNING

A WARNING is given when failure to follow the directions could result in injury, loss of limb or life.

CAUTION

A CAUTION is given when failure to follow the directions could result in temporary or permanent damage to the equipment.

NOTE

A NOTE is used to highlight an important operating procedure, practice or condition.

Danger Zone

The Shopsmith Professional Planer is surrounded by a "danger zone," as illustrated in Fig. 1. This zone is separated physically by the infeed and outfeed shields. It is extremely dangerous to place your hands inside or under the shields. This rule applies not only when the planer is running, but whenever the planer is plugged in. If you should accidentally turn on the planer when one of your hands is under a shield, the rollers could drag your hand into the whirling knives.

The danger zone also extends 6' directly in front and to the rear of the planer. The spaces in front of the infeed opening and behind the outfeed opening are dangerous because of the risk of thrown objects.

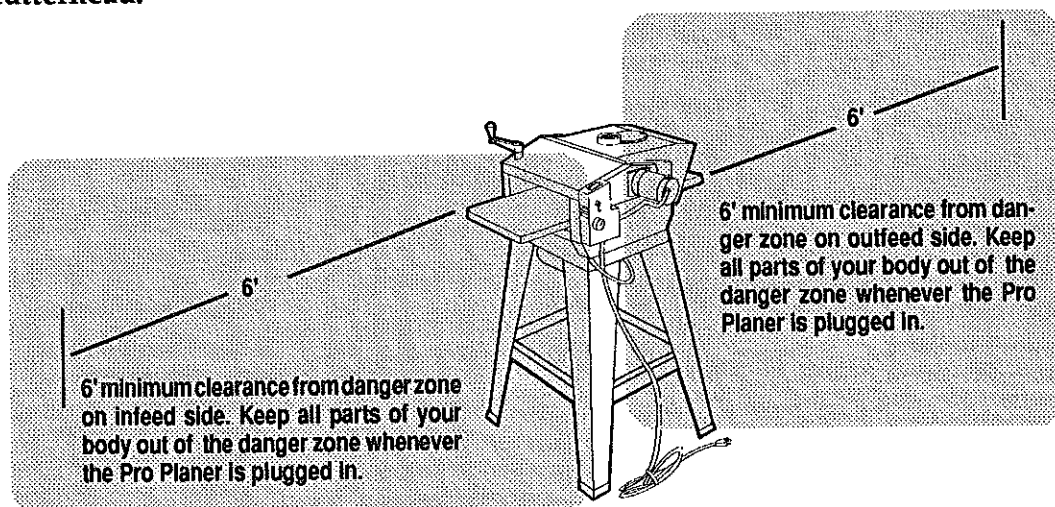


Fig. 1

Remember these points:

- Keep your hands, fingers, and other body parts out of the danger zone when working with the planer. There is one exception to this rule: You must put your hands in front of or behind the openings to feed and receive stock. Never put your hands into the openings. Never try to push the stock through the planer from either direction, as your hand could slip into the openings.

- The infeed and outfeed shields provide a physical barrier between you and the moving parts of the planer. Keep these shields in place and locked down. Never operate the planer without the protective shields in place and properly secured.

- Use the infeed and outfeed shields to remind you where the danger zone begins.

- Never reach under the shields to adjust a workpiece or brush away wood chips while the planer is running. Turn off the machine, let the cutterhead come to a complete stop, then reach in with a push stick or similar wooden or plastic tool. Don't reach in with a metal tool. You could nick the knives. And if the planer is accidentally started, you could ruin the machine and injure yourself.

WARNING

Never put your hands inside the planer while it's running. If you need to reach under the shields with your hands, turn off the machine, let the cutterhead come to a complete stop, and **UNPLUG THE PLANER** before doing so. Keep your hands out from under the shields when the planer is plugged in - even if it's turned off.

Sawdust and Chips

Sawdust and chips can be fire hazards and breathing sawdust can be a health hazard. Sawdust may cause you physical discomfort, especially if you have emphysema, asthma or an allergic reaction.

- The sawdust from some woods can also be toxic.

- For better dust control, Shopsmith offers a vacuum attachment as an accessory for the planer.

- Wear a close-fitting dust mask. Clean or replace the filters in the mask regularly.

- Open a window or use a fan to ventilate your shop, even if you're using a vacuum attachment.

Electrical Requirements

Pay particular attention to the connection you make between your power tools and your power source.

Circuit - Before you plug in the planer, check the output and the amperage of the circuit you'll be using. The output of the circuit must match the electrical requirements of the motor that runs the planer. The amperage of circuit must be rated high enough to handle the load of that motor, plus any other tools or appliances you may have plugged into the same circuit and are running at the same time.

- The planer utilizes a 1-3/4 hp motor, which is rated at 15 amps.

- This motor runs on ordinary U.S. house current - 115 volts, 60 Cycles (hz). The circuit you use should be rated for at least 15 amps.

- If you have fuses, we recommend you install "slow-blow" or time-delay fuses. Fusetron T-15 is recommended.

Plugging In - The planer is designed so that you can operate both the cutterhead motor and the feed motor with one switch. In addition, the power switch is located where you can reach it easily and turn off the machine quickly in case something goes wrong while you're working.

- Plug the cutterhead motor and the feed motor into the proper receptacles in the control box, check that the switch is off, then plug the control box power cord into a power outlet.

WARNING

Never plug the cutterhead motor directly into a power outlet to operate the planer.

Grounding - The circuit you use should be properly grounded to protect you from electrical shock.

- The plug on the control box cord has three prongs. See Fig. 2a. The receptacle should have three corresponding holes.

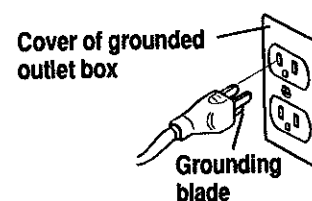


Fig. 2a

- If you have a two-hole receptacle, use a temporary adapter to plug in the planer. See Fig. 2b. The grounding lug or wire on the adapter **must** be connected to a permanent ground such as a grounded outlet box. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. (Adapters are not allowed in Canada.)

- If you're not sure your outlet is properly grounded, ask a licensed electrician.

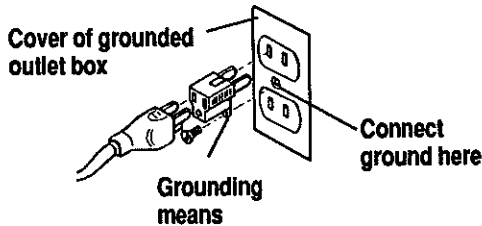


Fig. 2b

Extension Cords - If you use an extension cord to plug in your planer, be sure it's a three-wire cord with a three-prong grounding plug and three-hole receptacle.

- The wire gauge must be heavy enough to prevent loss of power and overheating - the longer the cord, the thicker the wire should be. See chart to determine the American Wire Gauge (AWG) wire size required:

| Cord Length | Minimum Wire Size |
|-------------|-------------------|
| 25' | 16 AWG |
| 50' | 14 AWG |
| 100' | 10 AWG |

- Before using an extension cord, inspect it for loose wires or damaged insulation. Repair or replace damaged cords immediately.

- Don't let the connection between power cord and extension cord lie on a damp or wet surface - it could cause a short circuit.

Specifications

The specifications of the Shopsmith Professional Planer will give you an idea of its capabilities:

Capacities

The planer will plane stock from 4" down to 3/32" thick. It can handle boards from 1" up to 12" wide. The length of stock is limited only to what you can safely control, but it shouldn't be less than 12" long. The maximum depth of cut is 1/8".

Cutterhead

The cutterhead revolves on two sealed ball bearings and holds three precision-ground steel knives. Each knife is 12-1/4" long and rests on three knife-leveling screws so that you don't have to match-grind the knives. With the knives installed, the cutterhead is 2-1/4" in diameter.

Table

The table is cast iron. The working surface is 28" long and 12-1/2" wide. The table is held parallel to the cutterhead by four threaded posts. The vertical position can be adjusted from 3/32" to 4" away from the cutting edge of the knives.

Feed Motor

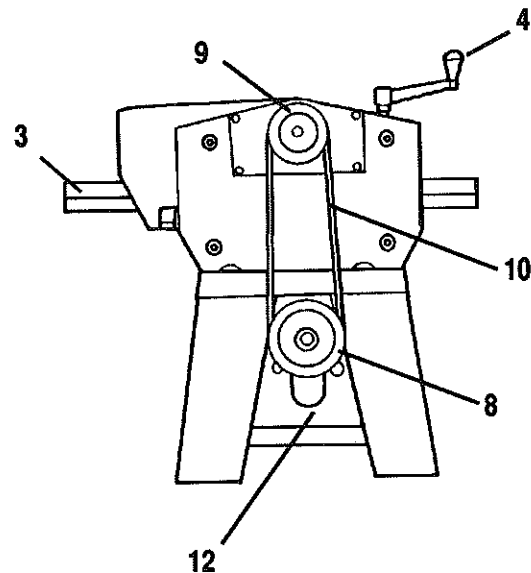
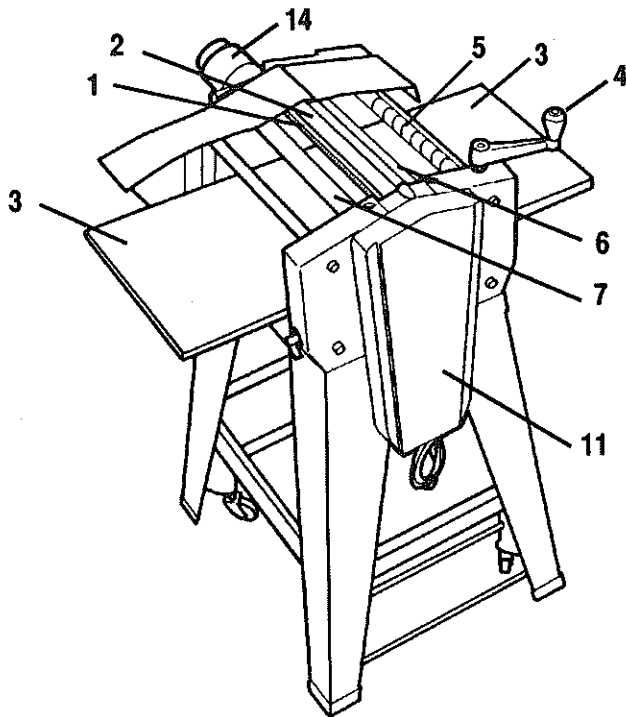
The 1/20-hp variable-speed feed motor feeds stock through the planer from approximately 7 sfpm (Surface Feet Per Minute) to 20 sfpm. The actual feed rate at any given feed control setting will vary depending on the depth of cut, width and hardness of the board being planed.

Speed

The planer operates at a cutterhead speed of 5750 rpm. Since the motor that powers the cutterhead and the feed motor work independently of each other, the cuts per inch are infinitely variable from 72 cuts/inch (5750 rpm at 20 sfpm) to 205 cuts/inch (5750 rpm at 7 sfpm).

Overall Dimensions and Weight

The planer and stand are 28" long, 39-1/2" high, 24-1/2" wide and weigh 151 pounds.



Terms to Know

The Shopsmith Professional Planer will accomplish woodworking operations that are difficult or impossible with other tools. The planer consists of a rotating cutting head fixed above a movable table. The cutterhead planes lumber to a uniform thickness. By moving the table up or down, the operator can choose the amount of stock to be planed. Become familiar with all of the planer's functions and parts before you begin to use it.

1. Cutterhead - The cutterhead holds three knives at the proper cutting angle to plane the stock. The knives are preset at the factory.

2. Chip Deflector - This metal plate directs the wood shavings toward the outfeed opening, away from the operator.

3. Table - The movable table adjusts up or down to produce different thicknesses of stock. The table supports the stock as it is fed through the planer.

4. Thickness Adjustment Crank - By turning the handle, the tabletop is adjusted up or down, increasing or decreasing the distance to the cutterhead. Each full turn of the handle moves the table 1/16".

5. Anti-kickback Fingers - These steel fingers help prevent the stock from being thrown out the infeed opening.

6. Infeed Roller - This segmented knurled steel roller holds the stock firmly against the table and feeds it under the cutterhead.

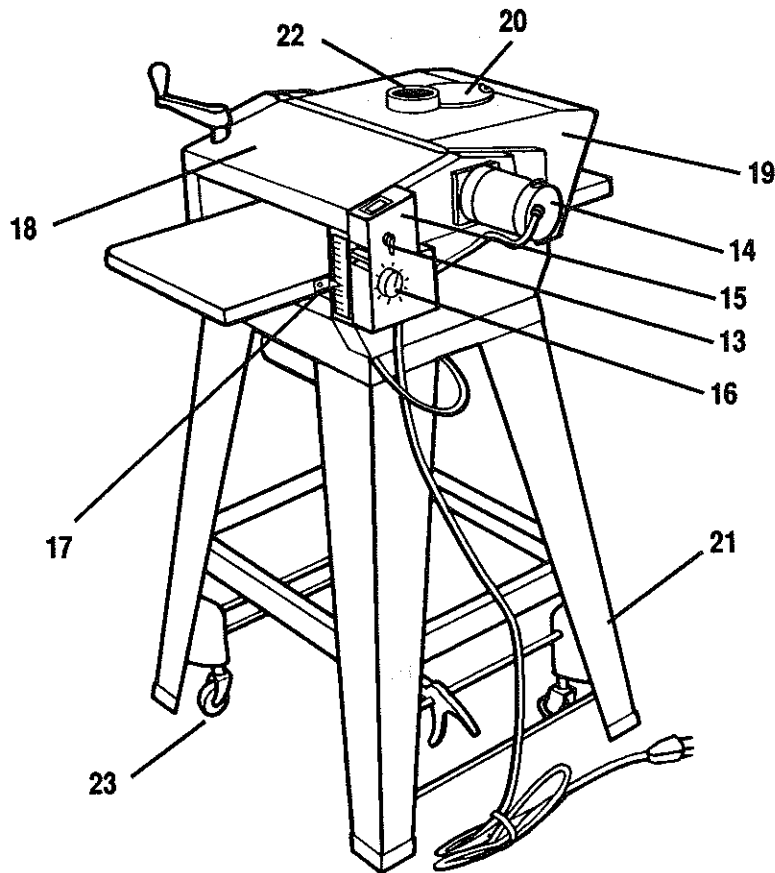
7. Outfeed Roller - The rubber covered outfeed roller moves the stock away from the cutterhead as it is planed, while holding it firmly against the table.

8. Motor pulley - Connected to the cutterhead motor, this pulley transfers power from the cutterhead motor to the V-belt.

9. Cutterhead pulley - Connected to the cutterhead, this pulley transfers power from the V-belt to the cutterhead.

10. V-belt - This belt transfers power from the motor pulley to the cutterhead pulley.

11. Pulley Guard - This cover protects you from the revolving motor pulley and cutterhead pulley, as well as the V-belt. **Never** operate the planer with this cover removed.



12. Cutterhead Motor - Mounted on the power stand, this motor supplies power to the cutterhead through the motor pulley, V-belt and cutterhead pulley.

13. Safety Key - This is a safety feature. The planer will not run unless the key is inserted in the control box.

14. Feed Motor - The feed motor powers the infeed and outfeed rollers, automatically feeding the stock through the planer.

15. Control Box - The control box turns on and off the power to both the feed motor and cutterhead motor.

16. Feed Control - This dial controls the speed of the feed motor. To increase the feed rate, turn clockwise. To decrease the feed rate, turn counterclockwise.

17. Thickness Scale and Pointer - The scale and pointer indicate the finished thickness of the planed stock.

18. Infeed Shield - The infeed shield protects you from the cutterhead, infeed roller and other moving parts on the infeed side of the planer. **Never** operate the planer with this shield removed.

19. Outfeed Shield - The outfeed shield protects you from the cutterhead, outfeed roller and the moving parts on the outfeed side of the planer. **Never** operate the planer with this shield open or removed.

20. Sawdust Port Cover - The medallion covers the sawdust port in the outfeed shield. It swings out of the way, allowing you to install the vacuum accessory. **Never** operate the planer with the medallion removed unless you're using the vacuum attachment.

21. Power Stand - The power stand supports the planer and houses the cutterhead motor.

The following parts are Shopsmith optional attachments:

22. Vacuum Attachment - By mounting the vacuum attachment under the outfeed shield on your planer, you can connect a shop vacuum to the planer using a standard 2-1/2" hose with a 2-1/4" outlet.

23. Retractable Casters - By adding casters to the power stand, you can move the planer with ease.

Assembly and Alignment

To minimize shipping damage, the Shopsmith Professional Planer is sent to you partially unassembled and in two boxes. Do not begin to set up your planer unless you have both boxes. Do the Assembly and Alignment instructions in sequence.

The numbers in parentheses are reference numbers. They are found in the Parts Lists and Exploded Views (printed separately) so you can get detailed descriptions and see how parts fit in the Pro Planer. You should have the Parts Lists and Exploded Views next to this manual as you perform the following instructions.

Tools Needed:

- Medium blade screwdriver
- Adjustable wrench
- 1/2" open-end wrench
- 9/16" socket and ratchet, or open-end wrench
- 24" straightedge
- 3/32", 1/8", 5/32" and 3/16" Allen wrenches
- Clean shop rag
- Paste floor wax or paste furniture wax
(Do not use car wax or spray furniture wax.)

WARNING

Do not plug the planer into a power source to "try it out." Complete the Assembly and Alignment instructions before you attempt to operate the Pro Planer.

INSPECT THE BOXES AND PREPARE FOR ASSEMBLY

1. The Pro Planer comes packed in two boxes, as illustrated in Fig. 3. Inside the smaller box are two smaller boxes. Unpack these two smaller boxes.

2. Lay out the contents from the two smaller boxes.

ATTACH THE MOTOR MOUNTING SCREWS TO THE TOP PANEL

3. Turn over the top panel (95) so the angled edge faces up.

4. Insert a screw (103) through one of the two slots so the screw threads point up toward you.

5. Place a flat washer (104) and a lock washer (105) on the screw, then install a hex nut (106), as seen in Fig. 4. Slightly finger tighten.



Fig. 3

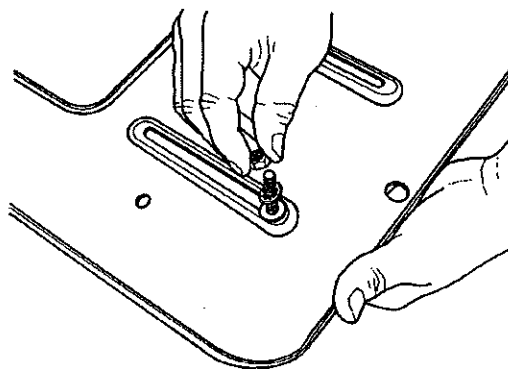


Fig. 4

6. Repeat Steps 3-5 to install each of the three remaining motor mounting screws.

7. Thread another hex nut onto each screw, as shown in Fig. 5, and allow a 1" gap between nuts.

8. Place a washer on top of each nut, as seen in Fig. 6.

9. All four screws should be loose enough to slide, so position them according to the dimensions listed in Fig. 7. Finger tighten them after the screws are in place.

10. Remove the motor (102) from its packing, as demonstrated in Fig. 8.

11. Place the screws through the motor mounting bracket, as shown in Fig. 9. Slightly adjust the positions of the screws, if needed. The motor's drive shaft should be pointing away from the top panel's opening.

12. Place a flat washer, lock washer and a hex nut on each screw, as seen in Fig. 10. Thread the hex nuts only enough to engage all the nut's threads, as illustrated in Fig. 11. Do not tighten the hex nuts now. They will be tightened after alignment procedures are performed.

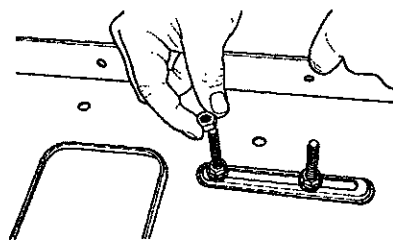


Fig. 5

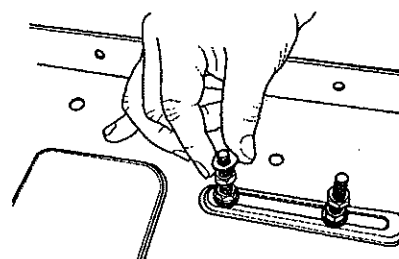
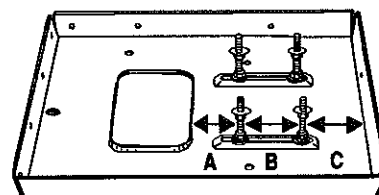


Fig. 6



A = 1-3/4" (All dimensions measured from the sides of the screws.)
B = 3"
C = 3-1/4"

Fig. 7

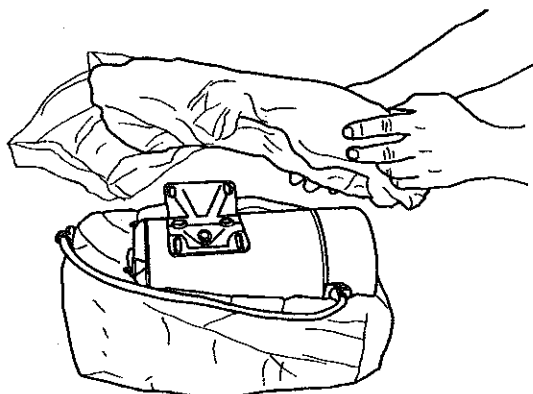


Fig. 8

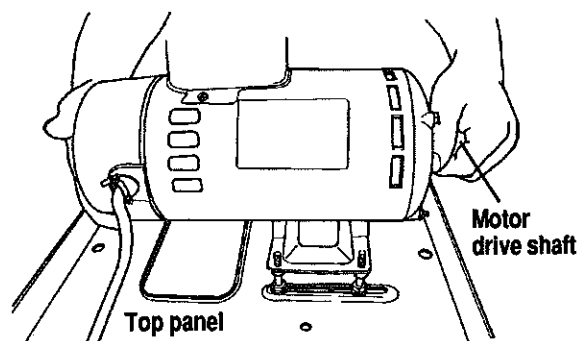


Fig. 9

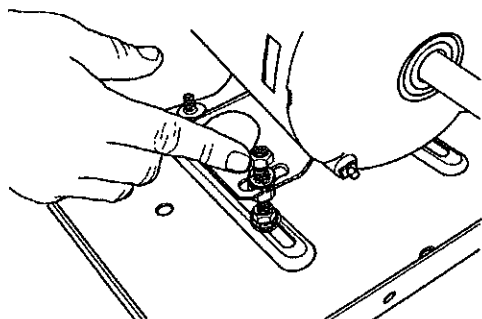


Fig. 10

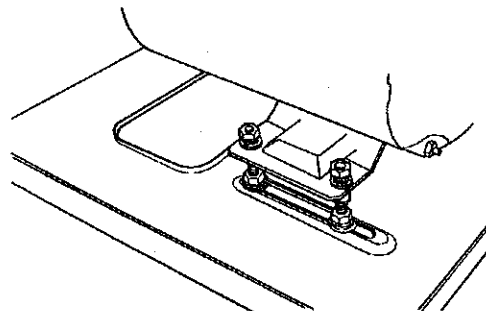


Fig. 11

ATTACH THE LEGS TO THE TOP PANEL

13. Open the big box and remove the legs (96), as shown in Fig. 12.

14. Place the wide end of a leg against an inside corner of the top panel.

15. Insert a Pan head machine screw (99) through a hole in the top panel and the leg, as illustrated in Fig. 13.

NOTE

When attaching each leg, first install the two outer screws and washers, and finger tighten the nuts. Then install the two inner screws, washers and nuts.

16. Place a lock washer (100) on the screw and attach a square nut (101). Finger tighten.

17. Repeat Steps 15 and 16 for the other three holes in the top panel and leg.

18. Attach the other three legs as in Steps 15-17.

ATTACH THE LEG BRACES TO THE LEGS

19. Standing on the side of the motor drive shaft, hold a leg brace (98) between the two legs, as demonstrated in Fig. 14. Using the inside holes, attach the brace with a lock washer (100) and square nut (101). Finger tighten.

20. Repeat Step 19 to attach a leg brace to the opposite legs.

21. Attach a brace between two remaining unbraced legs by using the brace's outer two holes, as shown in Fig. 15. Finger tighten.

22. Use a 1/2" wrench and a screwdriver to securely tighten all the nuts attaching the legs to the top panel, as seen in Fig. 16. Then securely tighten the nuts attaching the leg braces.

23. Install a leg boot (97) on the end of each leg, as demonstrated in Fig. 17.

24. Stand the Pro Planer upright, as shown in Fig. 18.

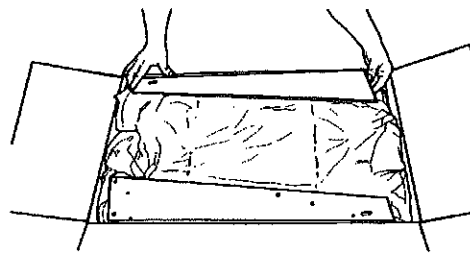


Fig. 12

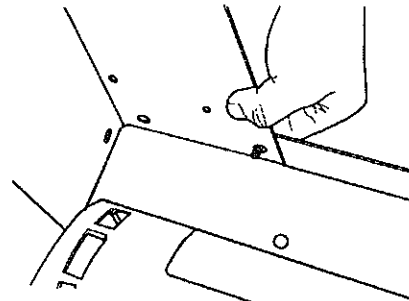


Fig. 13

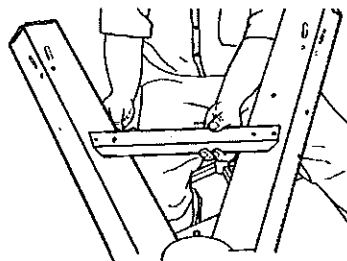


Fig. 14

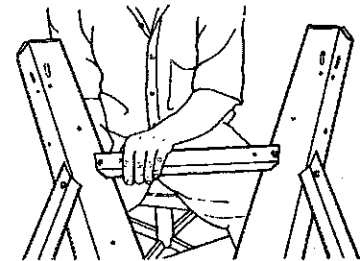


Fig. 15

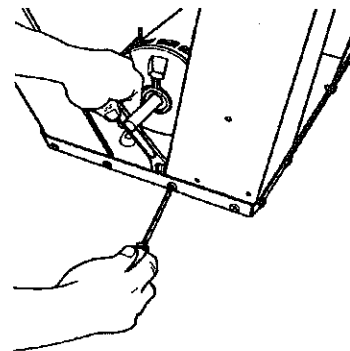


Fig. 16

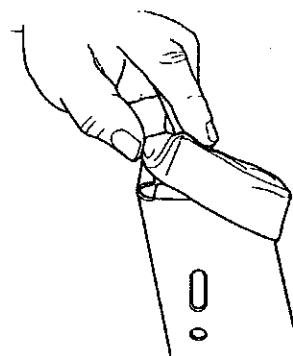


Fig. 17

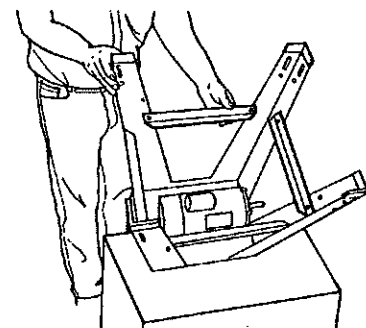


Fig. 18

INSTALL THE SWITCH BOX

25. Remove the planer from the big box, as illustrated in Fig. 19. Set it on a flat, stable surface.

26. Hold the control box (53) in position and attach it to the planer with three machine screws (52), as shown in Fig. 20.

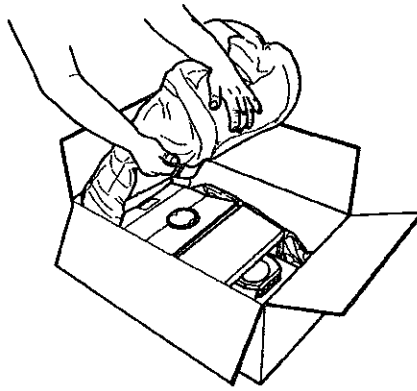


Fig. 19

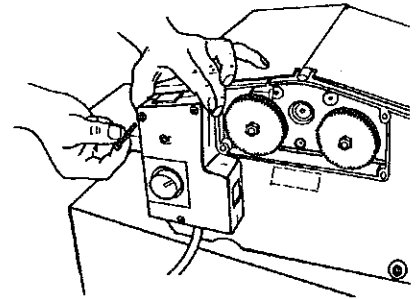


Fig. 20

INSTALL THE FEED MOTOR

27. Place a lock washer (44) on each of four socket head screws (43), then set the close to the planer.

28. Hold the feed motor in position, as shown in Fig. 21.

29. Attach the feed motor to the planer with the socket head screws and lock washers, as seen in Fig. 22.

30. Use a 3/16" Allen wrench to securely tighten all four screws, as shown in Fig. 23.

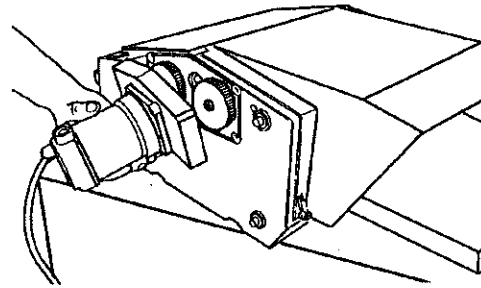


Fig. 21

INSTALL THE PLANER ON THE STAND

31. Firmly grasp the planer and lift it into position on the stand. Carefully place the planer on the stand so the feed motor is on the same side of the top panel as the large opening, as shown in Fig. 24.

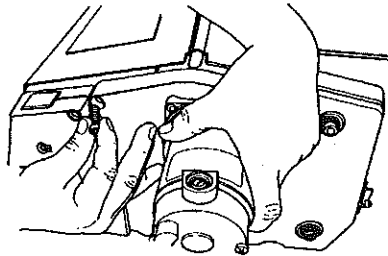


Fig. 22

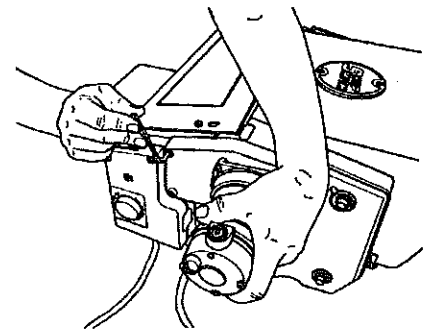
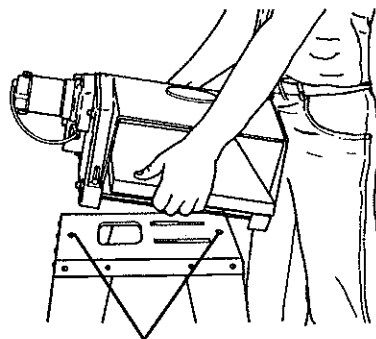


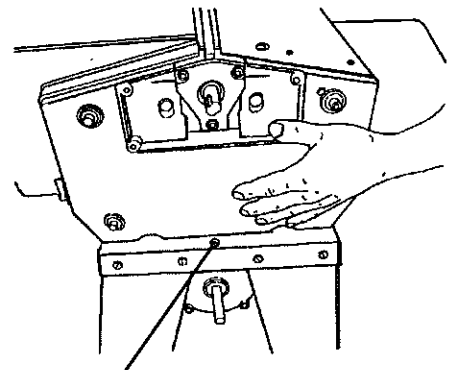
Fig. 23

32. See Figs. 24 and 25. Note the hole in the middle of the top panel (on both ends). Make sure these holes are aligned with the two mounting holes located in the bottom of the planer.



Mounting holes

Fig. 24



Mounting hole

Fig. 25

33. Place a flat washer (109) and lock washer (108) on each of two hex head bolts (107). Thread a bolt up through the top panel and into the planer, as shown in Fig. 26. Do the same for the other, opposite hole in the top panel and the bottom of the planer.

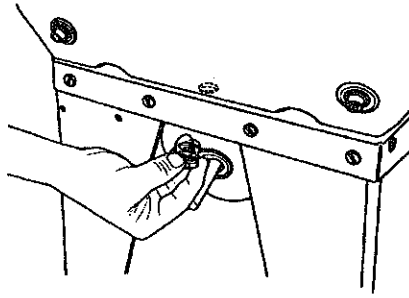


Fig. 26

34. Use a 3/8" ratchet wrench to securely tighten both hex head bolts, as seen in Fig. 27.

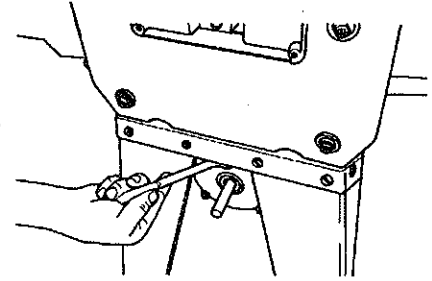


Fig. 27

NOTE

The ratchet wrench may bump the drive shaft during tightening if you use a socket extender.

ATTACH THE MOTOR PULLEY

35. Insert a key (110) into the slot of the motor's drive shaft, as shown in Fig. 28.

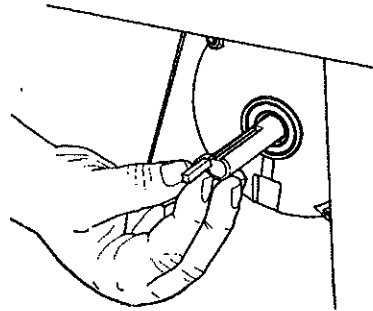


Fig. 28

36. Use a 5/32" Allen wrench to loosen the setscrew in the larger 5" pulley. Insert the drive shaft through the pulley's hole. Line up the pulley setscrew on the key. See Fig. 29.

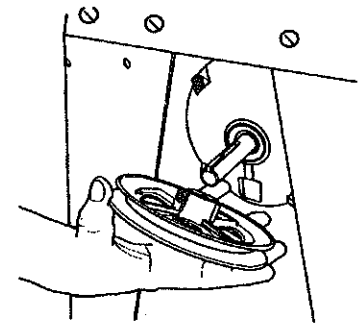


Fig. 29

37. Adjust the pulley so it clears the legs by 1/16". DO NOT tighten the setscrew at this time.

ATTACH THE CUTTER HEAD PULLEY

38. Insert a key (110) into the slot of the cutterhead motor's drive shaft, as shown in Fig. 30.

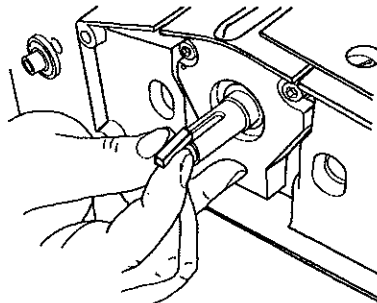


Fig. 30

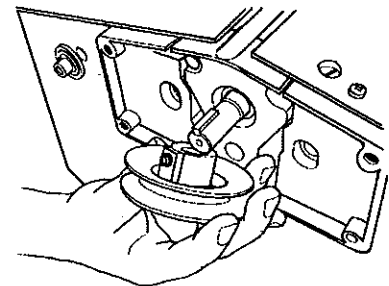


Fig. 31

39. Use a 5/32" Allen wrench to loosen the setscrew in the smaller 3" pulley. Insert the cutterhead motor's drive shaft through the pulley's hole. Line up the pulley setscrew on the key. See Fig. 31.

40. Adjust the pulley so that its inside edge is approximately 1/2" from the planer end frame, as shown in Fig. 32, then tighten the pulley setscrew, as in Fig. 33.

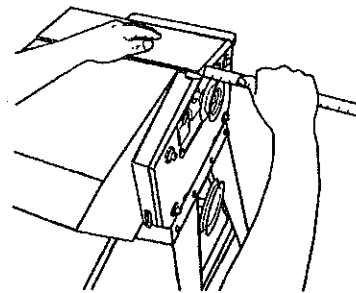


Fig. 32

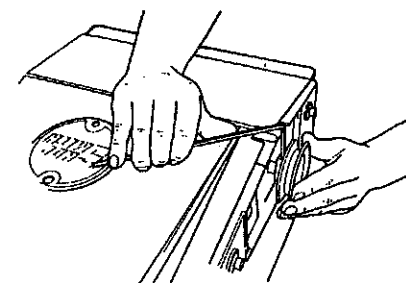


Fig. 33

ALIGN THE MOTOR PULLEY TO THE CUTTERHEAD PULLEY

41. Hold a straightedge against the two pulleys, as seen in Fig. 34.

42. Move the larger motor pulley in or out so it is aligned with the smaller cutterhead pulley.

43. When aligned, tighten the motor pulley's setscrew, as shown in Fig. 35.

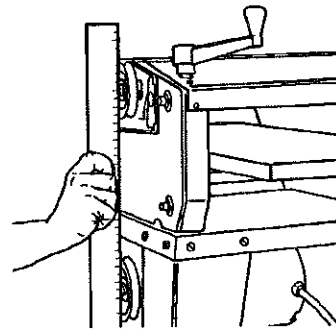


Fig. 34

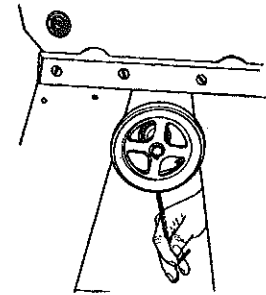


Fig. 35

INSTALL THE V-BELT

44. Place the V-belt on both pulleys, as demonstrated in Fig. 36.

45. If needed, adjust the motor so its drive shaft is centered between the stand legs.

46. Test the belt's tension, as shown in Fig. 37. The belt should flex about 1/2".

47. To adjust the belt tension, use a 1/2" wrench to adjust the two hex nuts on either side of each motor bracket corner, as marked in Fig. 38.

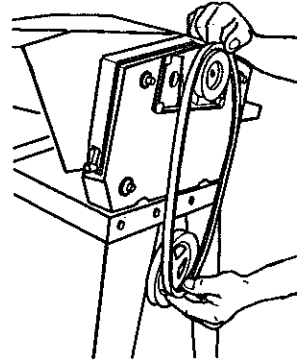


Fig. 36

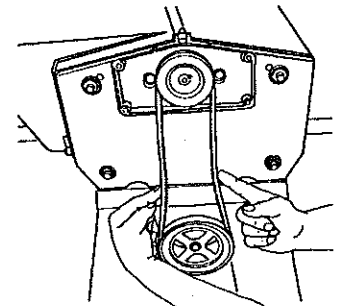


Fig. 37

Use these nuts for each corner to adjust the belt tension.

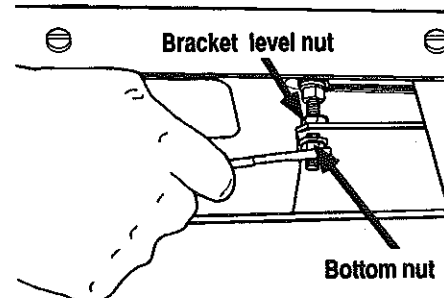


Fig. 38

- **To tighten the V-belt**, lower the motor by loosening the bottom nuts and then the bracket level nuts (which determine where the bracket rests on the motor mounting screws). All four bracket level nuts must touch the bracket, and the motor bracket must be level. Re-check the V-belt tension. When belt tension is correct (1/2" flex) and the motor bracket is level, tighten the bottom nuts.

- **To loosen the V-belt**, raise the motor by loosening the bracket level nuts from the motor bracket. Keep the motor bracket level. Re-check belt tension. When belt tension is correct (1/2" flex) and the motor bracket is level, tighten the bottom nuts.

CAUTION

Make sure that the cutter head motor is level and not tilted on the mounting screws.

ATTACH THE PULLEY GUARD

48. Place the pulley guard (114) in position, cover both pulleys and V-belt, as shown in Fig. 39.

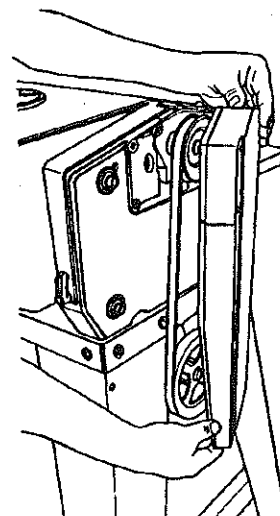


Fig. 39

49. Attach the pulley guard to the planer with four socket head cap screws (115), as in Fig. 40. Finger tighten.

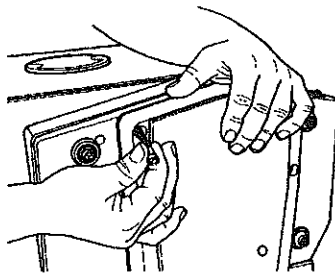


Fig. 40

50. Check for interference between the guard and motor pulley. If the pulley touches the guard, remove the guard and adjust the pulley.

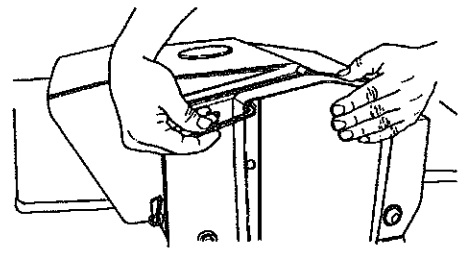


Fig. 41

51. Use a 5/32" Allen wrench to tighten the four screws attaching the pulley guard to the planer, as in Fig. 41.

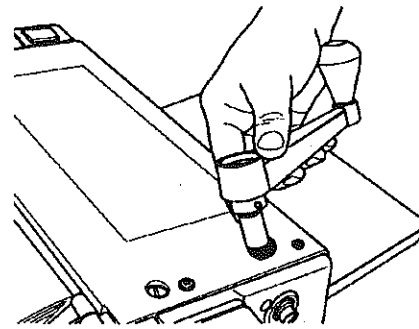


Fig. 42

INSTALL THE THICKNESS ADJUSTMENT CRANK

52. Insert the shaft of the thickness adjustment crank (58) into the hole on the left side of the infeed shield (1), as seen in Fig. 42. Let the shaft bottom out. Turn the crank clockwise. The crank will then drop and engage itself into place.

WAX THE PLANER

53. Lower the table all the way by turning the thickness adjustment crank counter-clockwise.

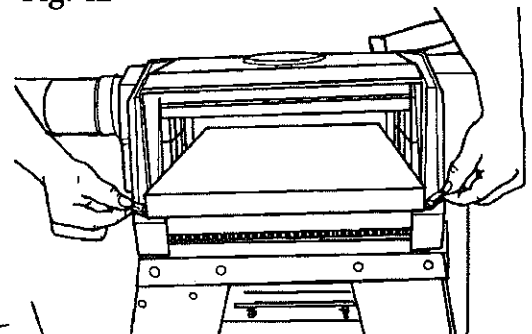


Fig. 43

54. Rotate the two hold-down latches (16) downward, as shown in Fig. 43.

55. Swing the outfeed shield up and out of the way, as seen in Fig. 44.

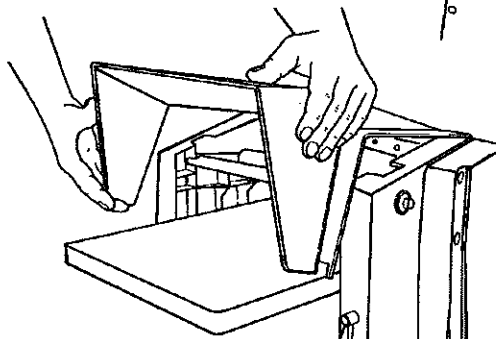


Fig. 44

56. Use a good furniture paste wax to wax the table, as shown in Fig. 45.

NOTE

Because the table is cast iron, it is important to wax the table once every other week for the first 3-4 months. This will build up a good protective coat and seal the table. Remember to always have the planer turned off and unplugged before waxing the planer table.

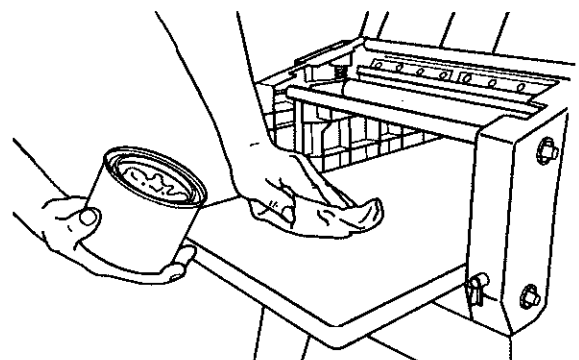


Fig. 45

PLUG IN THE PLANER CORDS

CAUTION

You must carefully follow the steps below so that you can't accidentally plug a power cord into the wrong outlet.

57. Plug in the feed motor's cord into the **side** of the control box, as shown in Fig. 46.

58. Plug in the cutterhead motor's cord into the **bottom** of the control box, as shown in Fig. 47.

59. Plug the control box power cord into a 120-volt electrical outlet.

60. Insert the safety key (51) into the hole in the side of the control box, as in Fig. 48. Turn the key clockwise until you feel it lock into position.

WARNING

NEVER operate the planer by plugging the cutterhead motor cord directly into a power outlet. The control box is located where it will give you maximum control and safety during all planing operations.

Also, the planer will operate only when the safety key has been locked in the control box. Remove the key when you are not using the planer.

ADJUST THE THICKNESS SCALE

61. Prepare a board (the one in the illustrations is approximately 3/4" thick x 3" wide x 3' long).

62. Measure the thickness of the board you are about to plane, as demonstrated in Fig. 49. Turn the thickness adjustment crank to lower the table beyond the thickness of the stock by 1/4".

63. Slide the board into the outfeed side of the planer until the board is under both the rollers and cutterhead, and overhangs both the infeed and outfeed sides of the table.

64. Switch on the planer.

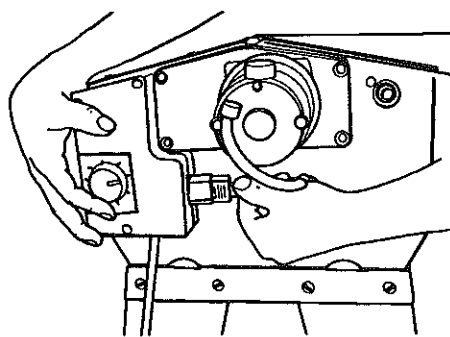


Fig. 46

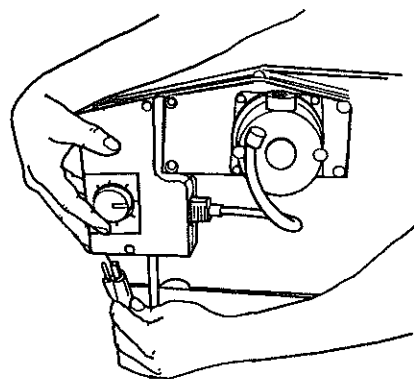


Fig. 47

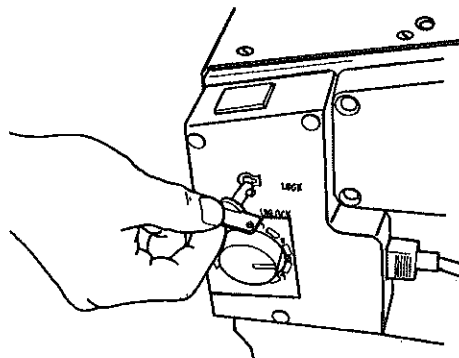


Fig. 48

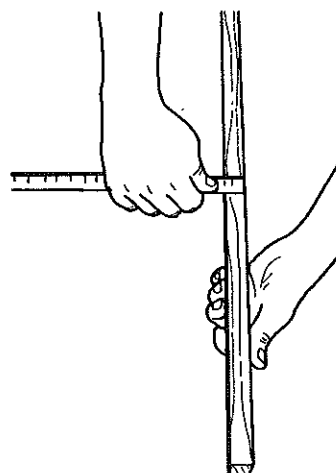


Fig. 49

65. Slowly turn the table adjustment crank clockwise to raise the board into the planer knives, as demonstrated in Fig. 50. When the knives barely start cutting the board, stop cranking. Let the planer feed the board through. Do NOT touch the crank.

66. Turn off and unplug the planer from the electrical outlet.

67. Measure the board on its planed portion. This measurement is exactly what the thickness pointer (71) should indicate.

68. To adjust the thickness pointer, use a Phillips screwdriver to slightly loosen the screw, as illustrated in Fig. 51. The screw hole in the thickness pointer is actually a slot, so move the pointer to the exact measurement of the planed board. Retighten the screw.

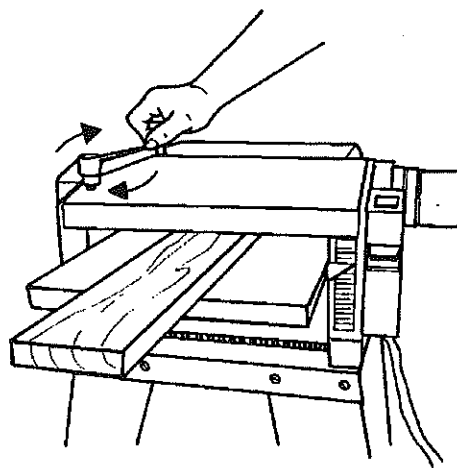


Fig. 50

Assembly & Alignment Safety Checklist

Before you operate your planer, double check to see that you performed the items on this list:

- Is the planer bolted securely to the stand?
- Is the thickness adjustment crank installed, and does the table move up and down smoothly?
- Are both infeed and outfeed shields in place and secured?
- If you're using a vacuum attachment, is your Dust Collector (or other dust collection system) connected and ready to run? If you're not using the attachment, is the sawdust port, "medallion" cover locked in place?
- Have the cutterhead motor and the feed motor both been properly plugged into the control box? Is the control box power cord plugged into a power outlet and has the control box key been inserted into the control box?

NOTE

Read and understand the remainder of this manual before attempting to operate this machine. The Operations and Maintenance sections show how to use the planer effectively and accurately and how to keep it running properly for many years to come.

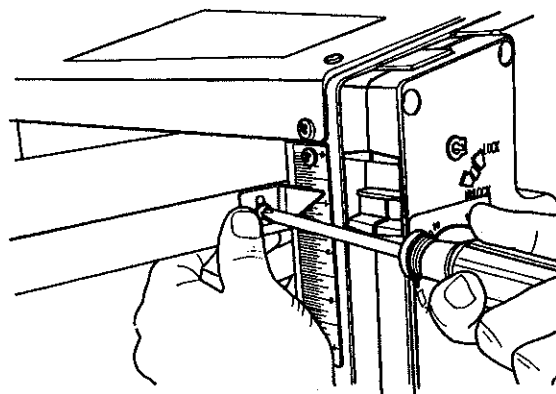


Fig. 51

Operations

The information in this section will give you the basic understanding you'll need to safely perform typical planer operations.

To get the "feel" of your planer, practice doing simple work before you tackle more difficult operations. We suggest you practice first with a clean, straight, knot-free board, approximately 1-2" thick, 5-6" wide, and 36-48" long. Begin with general thickness planing.

Planer Safety

As you prepare to use your planer, take time to think about **SAFETY**.

- Read the Safety section of this manual.
- Always wear proper eye and ear protection.
- Keep your hands, fingers and other body parts out of the danger zone, as illustrated in Fig. 52.
- Never operate the planer without the infeed and outfeed shields in place and secured.

Setting the Thickness

Turn the thickness adjustment crank counter-clockwise to lower the table and accommodate thicker stock. Turn the crank clockwise to raise the table.

Always make this adjustment from a greater to a lesser thickness, as seen in Fig. 53. For instance, if you want to plane a board 3/4" thick, first lower

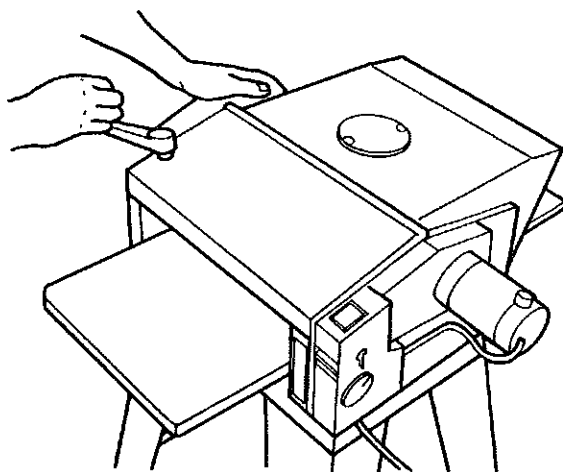


Fig. 53

the table so that it goes down past the 3/4" mark on the thickness scale at least one full turn of the crank. Then raise the table to the mark.

By adjusting the thickness, you also adjust the depth of the cut - how much stock the planer removes from a board in a single pass. As we mentioned earlier, the maximum depth of cut for all planing operations is 1/8". To remove 1/8" of stock from a 3/4" board, raise the table two turns of the thickness adjustment crank past the 3/4" mark on the thickness scale.

CAUTION

Never turn the thickness adjustment crank while you are planing stock.

See the following table for crank revolutions to table movement relationships. (This table also appears on the infeed shield label on the planer.)

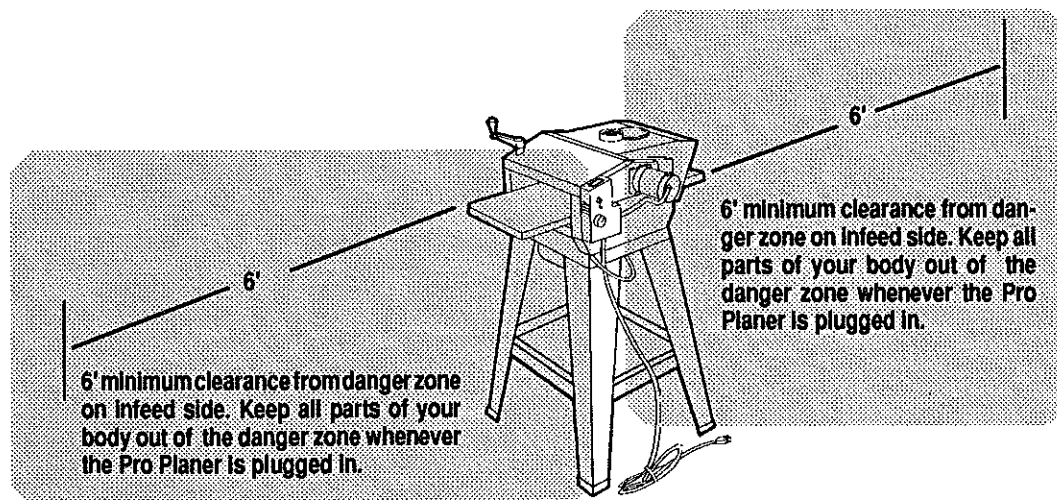


Fig. 52

**Turns of Crank
(revolutions)**

**Table Movement
(in inches)**

| | |
|-------|--------|
| 1/8 | 1/128" |
| 1/4 | 1/64" |
| 1/2 | 1/32" |
| 3/4 | 3/64" |
| 1 | 1/16" |
| 1-1/2 | 3/32" |
| 2 | 1/8" |

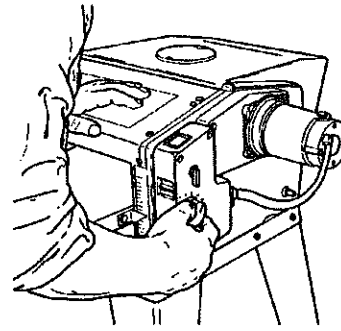


Fig. 54

Planer Feed Rates

Before you begin any planer operation, set the feed motor to feed stock at the proper rate. See Fig. 54. For the most part, the right feed rate for the operation depends on:

- The hardness of the wood
- The width of the board
- The depth of cut
- Sharpness of the knives
- Grain direction

To determine the correct feed rate for an operation, first look up the hardness of the wood you're planing in the **Wood Planing Guide** below. Measure the width of the widest board you have to plane, and decide the amount of stock you want to remove in each pass. Then look up the recommended feed settings, in the **Feed Rate Chart** on page 22.

Wood Planing Guide

This guide contains information on a variety of common and exotic woods that will help take the guesswork out of your planing operations. To use this guide, first look up the wood you are about to plane. Pay particular attention to the **hardness rating** whether the wood is rated as hard,

medium or soft. Once you know the hardness of the wood, measure the width of the widest board you have to plane and decide the amount of stock you want to remove on each pass. Use the **Feed Rate Chart** to determine the feed rate.

| Wood | Characteristics Hardness, Grain, Workability | Planing Tips |
|--------------------------------|---|--|
| Ash (White) | Hard, distinct, difficult | Tends to chip when fed too fast. |
| Basswood | Soft, faint, fair | Pay attention to grain direction. Becomes fuzzy if you cut against the grain. Decrease feed roller pressure slightly. |
| Birch (Yellow) | Hard, faint, difficult | Very difficult to plane because of a curly grain pattern. Take very shallow cuts. |
| Butternut | Soft, distinct, fair | Fuzzy, tough grain, becoming fuzzier if you cut against the grain. The grain direction may be inconsistent. |
| Cedar (aromatic Red & Western) | soft, distinct, fair | Feed slowly to avoid chipping out knots. Wear a dust mask when planing western cedar— its sawdust is toxic! |
| Cherry (wild) | Hard, distinct, fair | Tends to chip at a high feed rate. |
| Chestnut (wormy) | Soft, distinct, fair | Stock tends to be brittle. Chips out easily around knots. |
| Cocobolo | Hard, distinct, difficult | Stock is very hard and brittle. Pay attention to grain direction to avoid chipping. Wear a dust mask when planing Cocobolo— its sawdust is toxic! |
| Ebony | Hard, faint, difficult | This wood is very hard. Limit the depth of cut to 1/64". Difficult to tell grain direction. Stock is sometimes coated with wax to avoid checking. Remove wax with a scraper before planing to avoid gumming up the planer table and rollers. Wear a dust mask when planing Ebony— its sawdust is toxic! |

| Wood | Characteristics Hardness, Grain, Workability | Planing Tips |
|------------------------------------|---|---|
| Elm (Rock) | Hard, distinct, fair | Tough grain. Pay attention to grain direction. It chips badly if you cut against the grain. |
| Fir (Douglas) | Medium, distinct, difficult | Stock alternates between hard and soft. Pay attention to grain direction. Chips or "feathers" if you cut against the grain. |
| Fruitwood (Apple, Pear, etc...) | Hard, distinct, difficult | Tends to chip when fed too fast. |
| Hickory | Hard, distinct, difficult | Extremely hard, tough wood. Limit depth of cut to 1/16". Hickory tends to chip at a high feed rate. |
| Mahogany (Honduras) | Medium, faint, fair | Grain direction may be inconsistent. |
| Maple (Rock) | Hard, distinct, fair | Watch for curly grain pattern and bird's-eyes. It planes well when the grain is straight. Limit depth of cut to 1/16". |
| Oak (Red) | Hard, distinct, easy | Pay attention to grain direction. Chips badly if it is cut against the grain. |
| Oak (White) | Hard, distinct, fair | Has similar characteristics as red oak. Limit the depth of cut to 1/16". |
| Padouk | Hard, distinct, difficult | Extremely hard wood. Limit depth of cut to 1/16" and feed rate to "1". Its orange sawdust stains hands and clothing. |
| Pine (White) | Soft, faint, easy | Tends to chip out around knots. Decrease feed roller pressure. |
| Pine (Yellow) | Medium, distinct, fair | Stock alternates between hard and soft. Planer knives must be sharp to avoid chipping. |
| Poplar (Yellow) | Soft, faint, easy | Tends to fuzz slightly if you cut against the grain. Planes very easily. |
| Purpleheart | Hard, faint, difficult | Extremely hard and brittle. Pay attention to grain direction. Chips if cut against the grain. Purple dust stains hands and clothing. |
| Redwood | Soft, faint, easy | Boards clear of knots will plane easily. |
| Rosewood (Indian) | Hard, distinct, difficult | Extremely hard, dense wood with curly grain. Limit the depth of cut to 1/16" and the feed rate to "1". Wear a dust mask when planing Rosewood- its sawdust is toxic! |
| Spruce | Soft, distinct, easy | Spruce boards clear of knots will plane easily. |
| Teak | Hard, distinct, fair | Extremely hard, dense wood. Limit depth of cut to 1/16". Wear a dust mask when planing Teak- its sawdust is toxic! |
| Walnut | Hard, faint, fair | Watch for buris and knots. Tends to chip when stock isn't clear. Brown dust stains hands and clothing |
| Zebrawood | Hard, distinct, fair | Extremely hard, dense wood. Limit depth of cut to 1/16". Pay attention to grain direction. It chips badly if cut against the grain. |

Feed Rate Chart*

| Stock Hardness | Depth of Cut | Feed Rate for Different Widths of Stock | | |
|----------------|--------------|---|--------------|---------------|
| | | 1" - 4" Wide | 4" - 8" Wide | 8" - 12" Wide |
| Hard | 1/32" | 10 | 10 | 10 |
| | 1/16" | 10 | 3 | — |
| | 3/32" | 9 | — | — |
| | 1/8" | 4 | — | — |
| Soft | 1/32" | 10 | 10 | 10 |
| | 1/16" | 10 | 6 | — |
| | 3/32" | 10 | — | — |
| | 1/8" | 10 | — | — |

* These are maximum recommended feed rate settings for clear, straight-grained woods. If your stock contains knots, figured grain, or is unusually dense and hard, you will have to adjust the settings downward. Stop operating the planer at a high feed rate if the cutterhead motor "bogs down".

Feed rates also depend on the grain pattern of the stock. As the grain becomes more figured or "wild," or the more knots there are in the grain, the slower the feed rate should be. If the planer "bogs down" during a cut, immediately lower the feed rate to let the planer "catch up." On the next pass, try a slower feed rate. If that doesn't work, try a shallower depth of cut.

CAUTION

DO NOT continue to run the planer at a feed rate that causes the machine to labor or stop during a cut. The cutterhead motor will overheat, blow fuses and possibly burn out.

Starting Up in Cold Weather

If your shop temperature should fall below 55 degrees F., it is important that you allow the planer to warm up prior to using it. Turn on the planer and allow it to run for 2 minutes. This will allow all motor and planer parts to reach operating temperature.

WARNING

Do not leave the planer running unattended.

Getting the Smoothest Possible Cut

The cutterhead speed and feed rate combine to give you a certain number of cuts per inch (cuts/inch). Generally, as the cuts per inch increase, the planed stock becomes smoother. To raise the number of cuts per inch, decrease the feed rate. To calculate the exact cuts/inch, use this formula:

Cuts Per Inch Formula:

5,750 rpm x 3 (the no. of knives)
surface feet per minute x 12 (inches)

= Cuts Per Inch

You'll also find your planed stock gets smoother as you take shallower cuts. To get the smoothest possible surface on your planed stock, reduce the depth of cut to 1/64" or less on the last pass through the planer, and decrease the feed rate to "1".

CAUTION

If the planer slows or stops during a pass when the feed rate has already been adjusted to "1", turn off the machine IMMEDIATELY. Lower the table and remove the stock. Try the pass again with a shallower depth of cut.

General Thickness Planing

Here are six general procedures to follow each time you operate the planer:

1. Support the stock, as needed. If you are planing long or heavy lumber, have a helper ready to feed or receive the stock. If you can't find a helper, place one or two roller stands out 1'-4' from the infeed and/or outfeed tables. Make sure these stands are adjusted to precisely the same height as the table. Remember to re-adjust them each time you raise or lower the table.

2. Set the feed rate. Turn the control dial to the proper setting for the stock you're planing.

3. Feed the board into the planer. Always make your first pass at "0" depth of cut. This will even out any inconsistencies in the thickness of the stock. Take a comfortable stance to the right of the infeed opening, near the power switch. Turn the planer on and let it come up to speed. Hold the board parallel to the sides of the table, then feed it forward until the infeed roller grabs it. Continue to support the board as it feeds into the planer, but do not push or pull it through the machine.

WARNING

Always turn on the planer and let it come up to speed. THEN feed the stock into the machine. NEVER turn on the planer with stock already under the cutterhead or feed stock into the planer before it's running at full speed.

4. Watch and listen for problems. As the stock is feeding through the planer, watch and listen carefully for several problems:

- Watch that the stock continues to feed at a steady rate.
- Listen that the planer doesn't begin to slow down or stop during the cut.
- Watch and listen that the wood doesn't chip, splinter or "tear out."
- Watch that the stock doesn't drift toward one side of the table, but always remains parallel to the sides.

If the stock begins to drift toward one side of the table or the other, gently press against the infeed or outfeed end of the board to straighten it as the board is being cut.

WARNING

DO NOT put your hands under the infeed or outfeed shield.

If you can't straighten the board or if the stock jams in the planer, turn off the machine and let it come to a complete stop. Lower the table, remove the stock, and unplug the planer. Remove any wood chips or sawdust that might be blocking the work path, then repeat the pass.

If the cutterhead slows or the wood chips and splinters, quickly adjust the feed rate to "1". If this doesn't correct the problem, immediately turn off the machine. Let the planer come to a complete stop, then lower the table, remove the stock, and inspect both the planer and the board to see what could be causing the problem. It might be any one - or a combination - of several different causes. See the **Troubleshooting Guide** on page 38.

CAUTION

If an unusual vibration develops, or if you hear excessive chipping and splintering, **IMMEDIATELY** turn off the planer. **DO NOT** operate the machine until you have located and corrected the problem.

5. Receive the stock and remove it from the planer. As the stock emerges from the planer, move to the outfeed side of the machine, keeping your body to the control box side of the outfeed opening. Support the stock as it is fed out, but don't pull it any faster than the rollers want to feed it. Once the outfeed roller lets go of the stock, remove it from the planer.

6. Make repeat passes, as needed. Inspect the board for any chipped or torn spots. If there are no problems, readjust the depth of cut and feed the board into the planer for another pass. Make repeat passes until you have reduced the board to the desired thickness.

Helpful Planing Hints

Getting a good, smooth surface begins by making sure the knives are sharp and properly adjusted, the depth of cut isn't too deep, and the machine is running at the proper feed rate. Here are a few additional tips to help you get the best results:

Accuracy

When you're planing stock to a desired thickness, you'll probably want to measure the thickness many times as the stock approaches the final dimension. Several measuring tools will work well - a combination square, depth gauge, outside calipers, vernier calipers or a micrometer. If you want a tool that is easy to use and accurate, choose the vernier calipers. Keep a set in your pocket while you work.

Wood Grain Direction

Always feed the stock so that the knives are cutting in the same direction as the wood grain, as seen in Fig. 55. If you cut against the grain, the wood may "chip out," or even be torn apart in the planer, as shown in Fig. 56.

Knots and Trouble Spots

Wood with knots, "wild" grain, or extensive figuring is always difficult to surface and requires extra care. Check that any knots in a board are solid - don't plane stock with loose or checked knots. Feed the work very slowly and take light cuts ($1/128$ - $1/64$ "). Be especially cautious of kick-backs and stop cutting immediately if the stock will not feed smoothly.

Sniping

If you let the end of the stock "droop" when it's fed into or coming out of the planer, the knives may cut a large snipe at the beginning or the end of the board, as in Fig. 57a. A small snipe (less than .005" deep) is normal. If you have enough length on the stock to be planed, consider planing the stock (and assuring the desired thicknesses) **before** you cut the stock to the lengths you will be using in the project. This way you can plan to cut off the "sniped" ends.

If the snipes are deep, be more careful how you support the stock. Support the stock on both ends with roller stands, as demonstrated in Fig. 57b. Adjust both stands to be exactly parallel to the planer table. Keep the stock parallel to and flat on the table at all times. If the planer continues to cut a pronounced snipe no matter how you feed the stock, check the **Troubleshooting Guide** on page 38. Make the necessary adjustments.

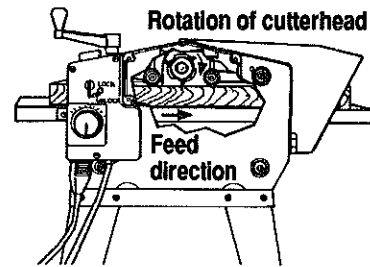


Fig. 55



Fig. 56

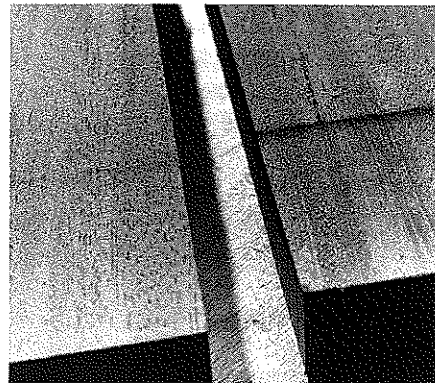


Fig. 57a

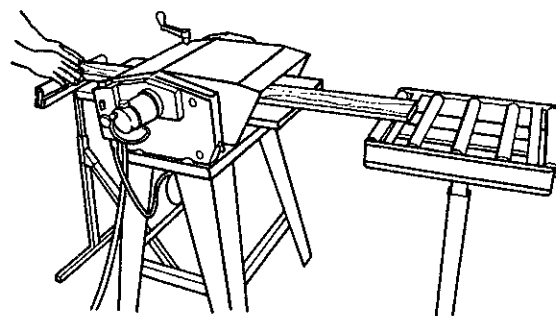


Fig. 57b

Ridges

If you attempt to plane used lumber with nails below the surface, painted wood, plywood, hardboard, wood with glue beads, or any material other than solid wood, you will damage the planer knives. Even a bit of dirt on the wood can nick the knives badly.

Damaged or nicked knives leave long ridges on the surface of the planed stock, running the entire length of the board, as seen in Fig. 58. These ridges detract from the finished surface of the wood and may interfere with the accuracy of your woodworking. The only way to restore the knives so they won't leave ridges is to have them professionally re-ground.



Fig. 58

To avoid damaging the knives, inspect each board before you plane it. Be sure there are no staples, tacks, dirt, paint, or similar materials on or in the wood. If you must surface glued-up stock, follow the procedure described in **Planing Glued-Up Stock** in this section.

Mill Marks

Mill marks are small, parallel "ripples" that run across a board from edge to edge. If your planing operations are producing mill marks, try decreasing the feed rate or taking a shallower depth of cut. If the mill marks persist, check the knife positions.

Planing Rough Lumber

Air-dried wood should stand for at least one year per inch of thickness of the rough-cut stock. The moisture content of air-dried wood should be about 12-15%. You needn't worry about how long kiln-dried wood stands, but it should have a moisture content of about 10%. If the wood is to be used for fine furniture or cabinets, the moisture content should be about 7-8%. To determine the moisture content, see the formula below.

To determine the amount of moisture in wood, cut a sample block from a board. Do this by cutting 6" from the end of the board and discarding the end. Then cut off a second 6" for your sample. Don't simply cut off an end, because ends dry quicker and this will give you a false reading. Weigh the sample on a postal scale, then bake it in an oven for 1-2 hours at 200° F to remove all the moisture. When the sample is completely dry, weigh it again. Use this equation to calculate the exact moisture content:

Moisture Content Formula:

Where- A = Weight after baking
B = Weight before baking

$$\frac{B - A}{A} \times 100 = \% \text{ Moisture Content}$$

CAUTION

Be sure the wood is properly dried. Wet or "green" lumber clogs the machine as you plane it.

Joint one edge before surfacing a board. It's almost impossible to determine the grain direction in a rough-cut board. By jointing one edge before you plane a board, you can determine which way the grain is running and feed the board into the grain.

Measure to find the thickest part of the board. As wood dries, its dimensions become inconsistent - including its thickness. Measure the thickness of a rough-cut board at several places, as seen in Fig. 59a and set the depth of cut for the first pass according to the thickest spot.

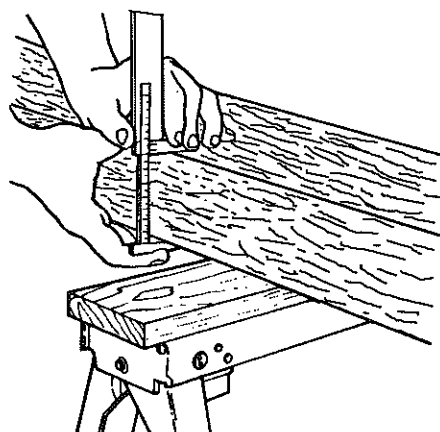


Fig. 59a

Take very shallow cuts at first. To avoid ruining the wood, take shallow cuts ($1/64$ "– $1/32$ ") until you can tell whether there is any figuring, knots, or other unusual grain patterns.

Remember to surface both sides. Plane one side until you have removed most of the saw marks, then turn the board over and plane it to remove all saw marks. Flip the board over to plane it to the desired thickness.

Planing Boards to Identical Thicknesses

When thicknessing, you often need to plane two or more boards to identical thicknesses. To do this, start by planing the thickest board. Plane it down to the thickness of the next thickest board, then begin to plane both boards at the same depth-of-cut settings. Cut these two boards down to the thickness of the third thickest board, then plane all three. Continue in this manner until you are planing all the boards.

WARNING

NEVER feed two or more boards side-by-side through the planer. The boards may interfere with each other as they pass through the machine, causing them to jam or kick back.

A simple way to tell if one board has been planed down to approximately the same thickness as another is to place both boards on a flat surface, side by side. With your hand, feel the "step" from the edge of one board to the next, as illustrated in Fig. 59b. If the step seems higher than $1/32$ " , continue planing the thicker board. If it's smaller than $1/32$ " or there is no step - you can begin planing both boards at the same depth-of-cut settings.

Finish by planing all of the boards at the same depth-of-cut setting at least once. This will ensure that all boards are cut to identical thicknesses.

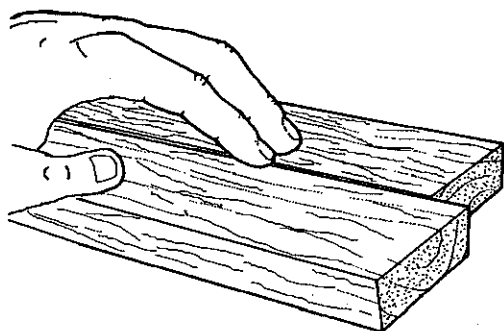


Fig. 59b

Squaring Stock

The planer can also be used to help square turning stock, furniture legs and posts. Start by rough-cutting your stock square, leaving at least $1/8$ " extra stock for planing. Square one corner of the stock on a jointer, jointing two adjacent sides so that they are exactly 90 degrees apart. (See Fig. 60.)

On the end grain of the stock, mark the sides opposite the joined sides "1" and "2". Set the depth of cut on the planer, then plane the stock with side "1" up. Without changing the depth of cut, make a second pass with side "2" up. Continue in this manner until you have planed the stock to the desired dimensions.

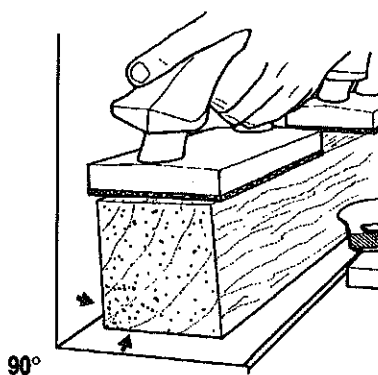


Fig. 60

Planing Glued-up Stock

The planer is designed for planing wood. Other materials, including glue, will dull or damage the knives. However, when you need to "true up" glued-together stock, follow this gluing procedure to minimize the damage to the knives:

Glue and clamp the stock and allow the glue to dry at least 24 hours. Use a scraper to remove all the glue on the surface, as seen in Fig. 61.

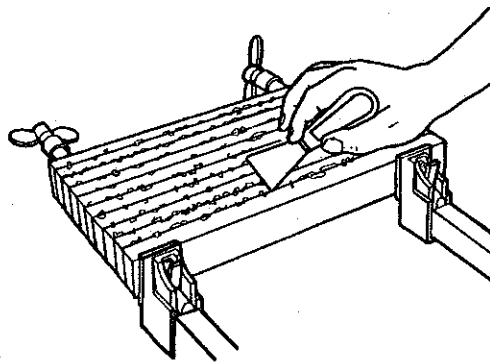


Fig. 61

WARNING

Be sure to let glued-up stock dry for 24 hours before planing it. If you don't, the stock may come apart in the planer.

When you plane glued-up stock, take a shallow depth of cut ($1/32$ " or less) and use a slower feed rate than normal. When you're finished, check the planer knives for built-up pitch, glue or other signs of wear.

Advanced Planer Techniques

The operations described in this section will give you a good solid foundation in thicknessing and surfacing. Once you have used the planer for some time, you may want to learn about advanced techniques.

If you'd like to learn more, study woodworking books and magazines. Talk to experienced woodworkers or enroll in woodworking seminars and classes to pick up the pointers you need. But as with any power tool, never attempt an operation that is beyond your proven skill and ability. Practice the techniques described here before trying more advanced cuts.

Maintenance

Your Shopsmith Professional Planer is designed to deliver years of reliable service with a minimum of maintenance. Like any other power tool, however, it will perform better and safer if you occasionally give it a few minutes of "tender loving care."

WARNING

Unplug the planer from its power source and the motors from the control box before attempting any alignment, adjustment, maintenance or service procedure.

Knife Mounting System

NOTE

The planer knives are preset at the factory and should not require any alignment. However, you should periodically check and re-check the condition and alignment of the knives.

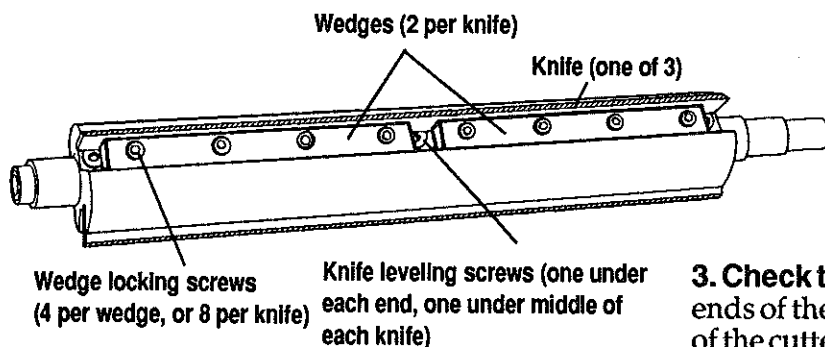


Fig. 62

The planer cutterhead holds three knives. Each knife is held in the cutterhead by two metal wedges with four locking screws through each wedge. In all, eight locking screws hold each knife in place, as illustrated in Fig. 62.

WARNING

Use only Shopsmith Planer Knives. Other brands of knives will not seat properly in the cutterhead. USING OFF-BRAND KNIVES IS EXTREMELY DANGEROUS.

NOTE

Check the wedge locking screws immediately if unusual noise, vibration, or uneven cuts develop and after every 10 hours of use - as a general practice.

There are also three knife leveling screws— one under each end and one under the middle of each knife, as seen in Fig. 62. These screws allow you to adjust all three knives to precisely the same height without the need for costly and time-consuming match grinding.

Checking Knife Positions

NOTE

The planer knives are preset at the factory and should not require any alignment. However, you should periodically check and re-check the condition and alignment of the knives.

Knife position is the most critical adjustment on the planer. All knives must be positioned identically both side-to-side and top-to-bottom. To check knife positions, follow this procedure:

1. Disconnect the power - Unplug the control box from your power source.

2. Raise the outfeed shield - Turn the two hold-down latches that lock the outfeed shield in place 1/2 revolution down. Swing the shield up and out of the way.

3. Check the side-to-side knife positions - The ends of the knives should be flush with the sides of the cutterhead, as shown in Fig. 63. Place your fingertips on one side of the cutterhead and slowly rotate it one full revolution. Check, by feeling, that each knife is even with the side of the cutterhead.

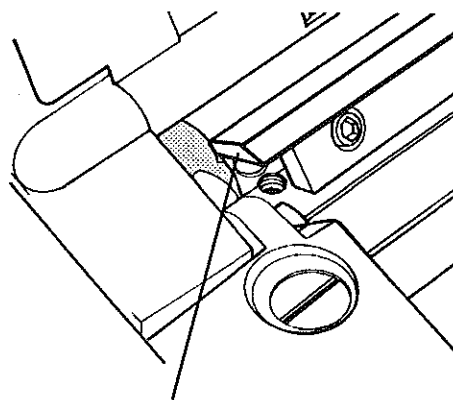


Fig. 63

4. Check the height of one knife - Use the knife setting gauge supplied with the planer to check the height of the knives. Use an awl to scribe a line, on both sides of the gauge, perpendicular to the ramp angle of the gauge, $7/16$ " from the lower corner of the ramp. This is the zero setting line, as shown in Fig. 64. Place the square slotted end of the gauge over the right end of the outfeed tie bar, and let the tip of the gauge rest on the cutterhead. The knife will be positioned between the tip and the angled ramp. Turn the cutterhead to position a knife under the angled ramp of the gauge, as in Fig. 64.

Insert the $5/32$ " Allen wrench in the right knife leveling screw. (The Allen wrench and the knife setting gauge should be close together, but they must not interfere with each other.)

Using the wrench as a lever, slowly rock the cutterhead back and forth so that the knife passes under the ramp of the gauge. If the knife height is correct, the cutting edge will touch the ramp at the mark without lifting the tip of the gauge from the cutterhead. See Figs. 64 and 65.

If the knife doesn't touch the mark, lifts the tip of the gauge, or does not contact the gauge, the knife height is incorrect.

Repeat this procedure at the middle and left end of each knife. Be certain the knife height is correct and exactly the same from one end of the knife to the other, and knife-to-knife.

Removing, Installing and Adjusting Knives

NOTE

The planer knives are preset at the factory and should not require any alignment. However, you should periodically check and re-check the condition and alignment of the knives, as described below.

CAUTION

It is important that you return the knives, wedges and screws to their original position in the cutterhead.

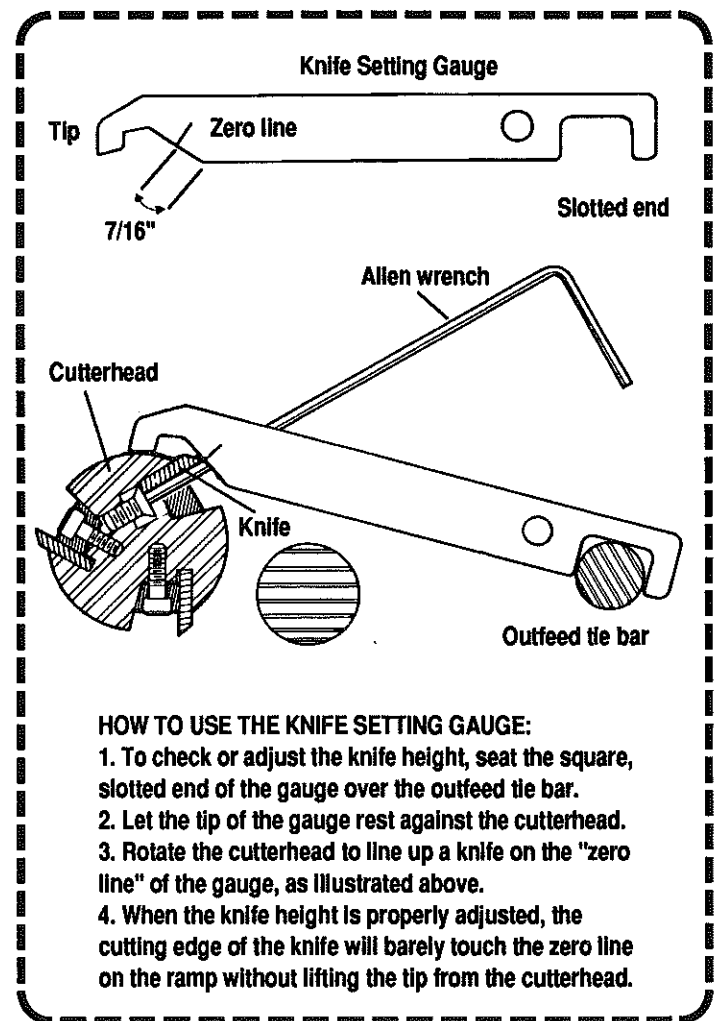


Fig. 64

Use an Allen wrench as a lever to slowly rotate the cutterhead while checking the height of the knife.

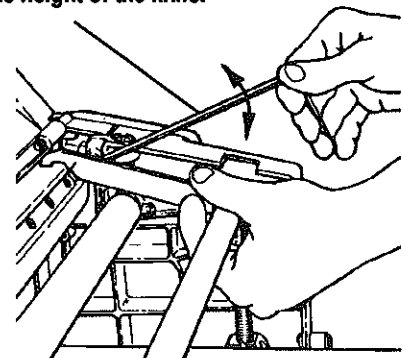


Fig. 65

Removal:

1. Disconnect the power - Unplug the control box from your power source. Raise the outfeed shield out of the way.

2. Loosen the wedge locking screws on one knife- With the 5/32" Allen wrench, turn all eight wedge locking screws counter-clockwise 2-3 revolutions. Do not remove them completely at this time.

3. Pop the wedge loose- Using the 5/32" Allen wrench again, turn the right knife leveling screw counterclockwise 1/4 turn, as seen in Fig. 66. This usually requires a strong twist if the wedges are properly seated. Move to the middle screw and turn it 1/4 turn, then the left screw.

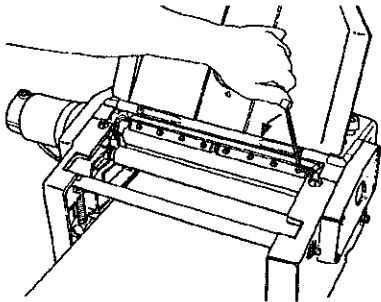


Fig. 66

Repeat this procedure, moving from right to left, turning each knife leveling screw 1/4 turn at a time, until the wedges and blade pop loose. Working carefully from left to right relieves the pressure on the knife in such a way that it prevents the knife from flexing and possibly breaking.

4. Remove the knife and wedge locking assembly - Once the knife is loose, remove it from the cutterhead. Handle the knife carefully; it's very sharp and somewhat brittle. It may chip or break if dropped.

When you've removed the knife, back the wedge locking screws out of the wedge all the way. Remove both wedges, and finally remove the knife leveling screws.

5. Clean all components- Wipe the cutterhead, knife, wedges and screws with mineral spirits or oven cleaner to remove sawdust and wood pitch. Scrape any dust or pitch buildup out of the mounting grooves in the cutterhead.

Once the knife has been cleaned, inspect it closely. If it is chipped or damaged, you may wish to have it sharpened by a professional sharpening service before re-installing it.

Installation and Initial Adjustment:

6. Reinstall the knife leveling screws in the cutterhead, turning them clockwise 8-9 revolutions, or until they "bottom out." Do not tighten them down.

7. Install one knife loosely - Set the knife in place with the cutting edge pointed toward the outfeed side of the machine. Put the two wedges in place and align them with the screw holes in the cutterhead. Be certain that the square side of the wedges butt up against the knife as shown in Fig. 67.

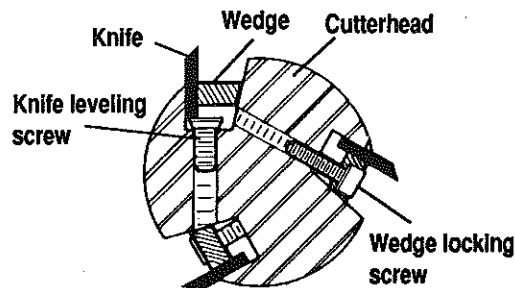


Fig. 67

Seat the wedge locking screws in their sockets with the 5/32" Allen wrench, then back them out one revolution. Do not tighten the wedge locking screws yet. If you have trouble starting the screws, check which way the wedges are turned. They may be backwards.

8. Set the side-to-side knife position - The planer knife should be centered so that the ends of the knife are flush with the sides of the cutterhead.

9. Adjust the height of the knife to within 1/32" of its correct position. Place the knife setting gauge over the right end of the outfeed tie bar as described in "Checking Knife Positions" in this section. Insert the 5/32" Allen wrench in the right knife leveling screw. Slowly rock the cutterhead back and forth so that the knife passes under the

gauge. At the same time, turn the leveling screw counter-clockwise until the edge of the knife comes within 1/32" of the zero line you scribed on the ramp of the gauge, as seen in Fig. 68.

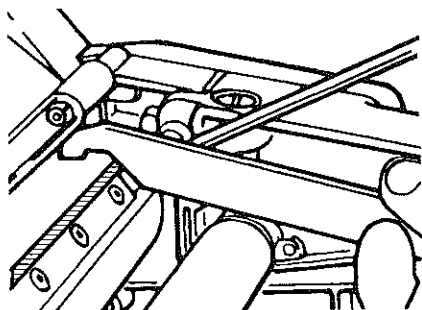


Fig. 68

Repeat this procedure for the left knife leveling screw. Then "snug up" all eight wedge locking screws, turning them just one revolution clockwise to seat them. Do not completely tighten the wedge locking screws at this time. If you tighten these screws past "snug," the wedge will seat and you won't have the freedom to make the final height adjustment. You may also bend or break the knife.

Final Adjustment:

10. Adjust the height at the right and left ends of the knife. Replace the knife setting gauge near the right knife leveling screw. Insert the Allen wrench in this screw and rock the cutterhead back and forth. Carefully turn the knife leveling screw until the knife touches the zero line scribed on the gauge.

Repeat this procedure for the left knife leveling screw, skipping over the middle screw for the moment. When you have made the final height adjustment at both ends of the knife, tighten the extreme right wedge locking screw in the right wedge, then the extreme left wedge locking screw in the left wedge, as shown in Fig. 69. Leave the other wedge locking screws alone for the moment.

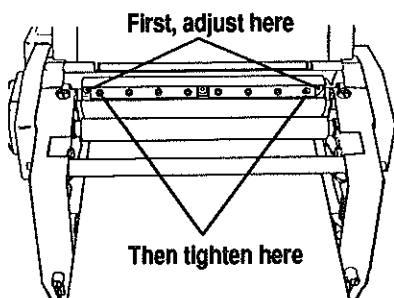


Fig. 69

After tightening these screws, re-check the knife height at both ends of the knife. Tightening the screws may move the knife slightly. If this happens, loosen the wedge locking screws and pop the wedge loose again. Readjust the knife height, compensating for the movement.

11. Adjust the height at the middle of the knife. Make the final height adjustment in the middle of the knife. When you have completed this adjustment, tighten the extreme left wedge locking screw in the right wedge and extreme right wedge locking screw in the left wedge, as in Fig. 70.

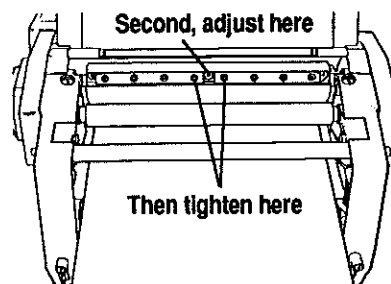


Fig. 70

12. Tighten the two remaining wedge locking screws in the left and right wedges.

13. Repeat Steps 2 through 12 for the other two knives.

14. Lock the outfeed shield back down. It's also wise to check the infeed shield in case any of the screws holding it in place have vibrated loose.

WARNING

The wedge locking screws must be tightened down and the shields must be secured before you can safely operate the planer. Check these components after you install and adjust the knives, and at regular intervals as you use the planer.

Adjusting the Thickness Scale

The height of the planer table (its distance from the cutterhead) determines the finished thickness of the planed stock. The table height is adjusted simply by turning the thickness adjustment crank. Rotating the crank counterclockwise moves the table down and rotating the crank clockwise moves the table up.

The finished thickness is indicated on the thickness scale, to the right of the table on the infeed side of the planer. When the table pointer has been correctly aligned, this scale will show the finished thickness to the nearest 1/16". To align the pointer, follow this procedure:

- 1. Set the table height** - Select a piece of scrap wood between 1" and 2" thick. Measure the wood as carefully as possible and set the table height to 1/16" less than the thickness of the stock.
- 2. Plane the scrap piece of stock to the set thickness.**
- 3. Adjust the thickness scale pointer** - Measure the final thickness of the wood. If the measurement is more or less than the indication on the gauge, loosen the screw on the pointer and adjust the pointer up or down to the actual measured thickness on the scale.

Adjusting the Chain Tension

To check the chain tension, raise the table to the 1" setting. Put your finger on the chain midway between the two infeed table mounting posts and push toward inside of the machine. The chain should feel taut, but it should still "give" approximately 3/8", as demonstrated in Fig. 71.

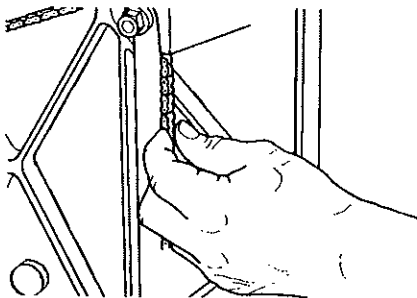


Fig. 71

If the chain seems to be too loose or too tight, remove the pulley guard exposing the pulleys and V-belt. Loosen the belt tension by raising the motor. Remove the V-belt and unbolt the planer

from the stand. Remove the planer from the stand and place it on your workbench. Turn the planer over on its left side (the same side as the motor pulley). Locate the tension adjustment sprocket on the right side of the planer, under the table.

Loosen the nut under the sprocket, then slide the sprocket in or out to adjust the chain tension. Sliding the sprocket down (toward the middle of the machine) increases the tension; sliding the sprocket up decreases the tension, as seen in Fig. 72. Be careful that the chain doesn't slip off the mounting post sprockets. When the chain tension is properly adjusted, re-tighten the nut under the sprocket.

When you adjust the chain tension, you may want to mark the position of the chain on the mounting post sprockets with a white grease pencil, just in case the chain slips off the machine. If the chain does slip off, be careful not to turn the thickness adjustment crank or any of the table mounting posts until you replace the chain.

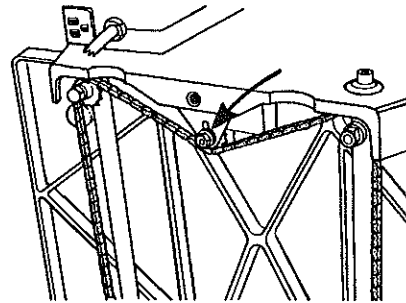


Fig. 72

Synchronizing the Table Mounting Posts

If the chain should slip or break, or should you need to remove it for any reason, one or more of the mounting posts may be turned out of synchronization with the others. With the posts "out of sync," the thickness adjusting mechanism will not operate properly, you may not be able to take a full 1/8" depth of cut, and the planer may not cut the stock to a uniform thickness. Should this happen, follow this procedure to re-synchronize the posts:

CAUTION

DO NOT operate the planer with the mounting posts out of sync; you may ruin the machine.

1. Disconnect the power and dismount the planer from the stand. Remove the infeed shield and swing the outfeed shield up and out of the way.

2. Check that the connector setscrews and the barrel nut setscrews are tight. Check for any up-and-down play of the table. If there is any play, tighten the nuts on the bottom of the table elevation posts to the point where there is no vertical play in the table, but not so tight that the posts become difficult to turn.

3. Make a "feeler gauge" to accurately gauge the distance between the table and the upper tie bars. Glue a 2-1/2" length of 3/8"-diameter hardwood dowel in a scrap of wood 3/4" x 1-1/2" x 1-1/2". See Fig. 73.

4. Loosen the four setscrews in the underside of the table at the connector using the 1/8" Allen wrench and the four setscrews in the large connector heads holding the barrel nuts using the 3/32" Allen wrench, as shown in See Fig. 74.

5. Loosen the chain tension. Remove the chain by slipping it off the sprockets. Raise or lower the table posts by inserting the crank handle onto the top of the posts, so that the feeler gauge barely fits under the upper tie bars. Alternate between all four posts, so as not to bind the table and post.

6. Adjust the mounting post. Place the feeler gauge on one side of the table, under the upper tie bar. Attach the crank handle and slowly turn the mounting post until the top of the feeler gauge barely touches the underside of the tie bar, as illustrated in Fig. 75.

When the mounting post is properly adjusted, gently clamp it on the inside of the planer with a small wooden hand screw clamp, as shown in Fig. 76. This will keep it from turning during the rest of the procedure.

CAUTION

DO NOT clamp the mounting posts with bare metal clamps. If you don't have small wooden clamps and have to use metal clamps, protect the mounting posts with wooden, plastic or rubber pads. Without the protective pads, a hard metal clamp will ruin the threads on a mounting post.

7. Repeat Steps 5 and 6 for the three remaining mounting posts. Tighten the eight setscrews.

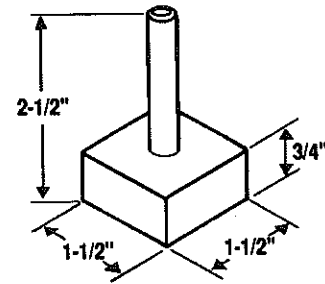


Fig. 73

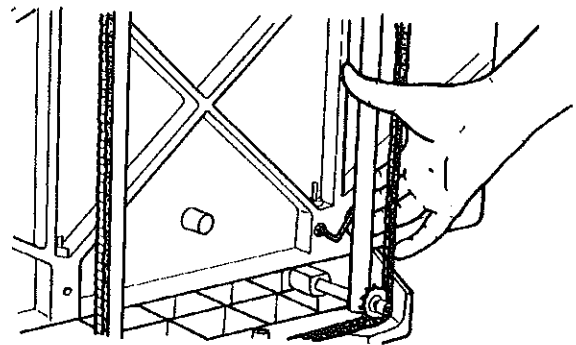


Fig. 74

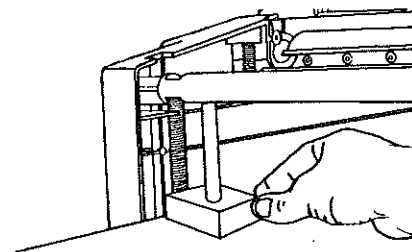


Fig. 75

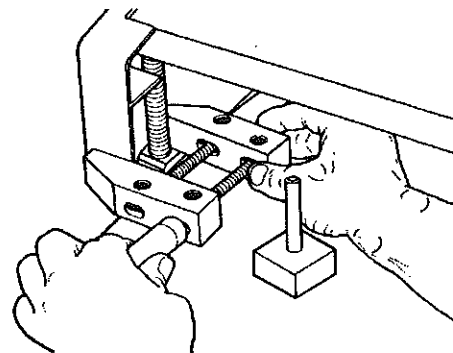


Fig. 76

CAUTION

Failure to tighten the setscrews in the proper order (table connectors first, barrel nuts second) will result in damage to the planer. The planer must be in the horizontal position when tightening the setscrews.

8. Make fine adjustments, if necessary. When you turn one mounting post, it will slightly change the adjustment of the other three. Because of this, you need to re-check the adjustment of each mounting post with the feeler gauge and make fine adjustments, if necessary.

9. Re-install and re-adjust the synchronizing chain. Tilt the planer on its right side so that the tension adjustment sprocket is at the top. Remove the adjustment sprocket. Place the chain on the bottom two sprockets and hold it so the chain doesn't drop. Carefully slip the chain over the top left sprocket. Do not pull the chain to tighten it. If the chain is loose, remove and reset on the sprocket one link tighter. Without allowing the chain to slacken on the left side, place it over the top right sprocket. All slack in the chain should be hanging between the top two sprockets. Re-install the adjustment sprocket, demonstrated in Fig. 77, and adjust the tension in the chain.

10. Remove the clamps holding the four mounting posts after the chain is reinstalled and properly tensioned.

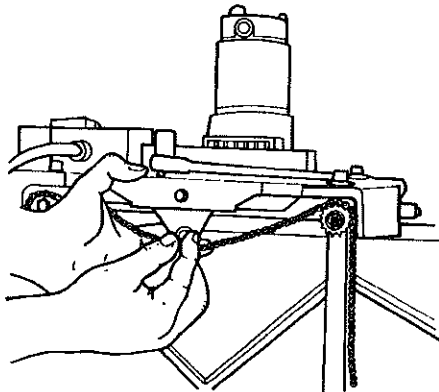


Fig. 77

11. Replace the planer onto the stand and secure tightly. From underneath, secure the planer to the stand using the two mounting bolts. Re-connect the V-belt and replace the pulley guard.

NOTE

If you wish, you can make even finer adjustments in the synchronization of the mounting posts by adding a few steps to the procedure:

Make absolutely sure that the knives are set properly. Then plug in the machine and plane a 9-12" wide board. With a square, draw a line across the board near its midpoint in length. Use a micrometer to measure the thickness of the board near the edge on either end of the line. If the thickness of the board varies from edge to edge, unplug and remove the planer from its stand. Clamp the mounting posts, turn the planer on its side and disconnect the chain. Turn the two mounting posts on the low side of the table clockwise to raise that side and level the table. Turning a mounting post the distance of one tooth on the mounting post sprocket will move the table .004". With a little math and a lot of patience, you can synchronize the mounting posts so that you can plane wood to a perfectly uniform thickness. After adjusting the table, replace and tension the chain. Reinstall the planer on the stand.

Adjusting the Roller Pressure

CAUTION

If the board "drifts" to one side or the other during a typical pass through the planer, this could shorten the life of the rollers—especially the rubber outfeed roller. Periodically check both the infeed and outfeed roller tension, which control how straight and even the stock is fed into the planer knives. Do this by seeing if the stock "drifts" to one side or the other during a typical pass through the planer. Make any needed adjustments according to the instructions below.

The infeed and outfeed rollers move the stock through the planer and hold it flat against the table as it's planed. These rollers are pressed against the stock by four coil springs, one on each end of each roller, as called out in Fig. 78. The roller pressure is set at the factory and under

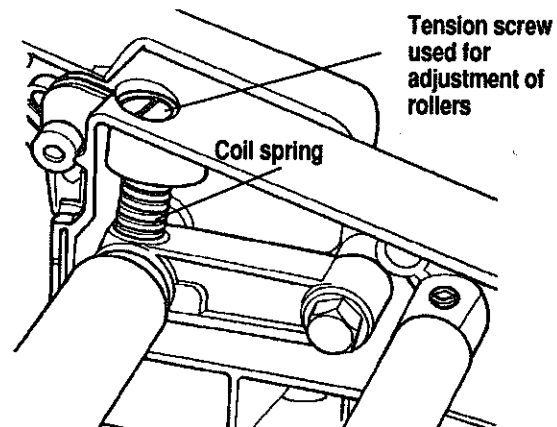


Fig. 78

normal circumstances it shouldn't be necessary to readjust it. However, if the springs should break or weaken, the adjusting screws vibrate loose, or you're working with extremely soft stock, the pressure must be adjusted before you can safely operate the planer.

The planer will give you several clues if something is wrong with the roller pressure. When the pressure is too light, the stock will "chatter" as it passes through the machine, and the planer will cut a large snipe in either end of the stock. A very small amount of sniping is normal. But if snipes are deeper than .005", check the roller pressure. The pressure could also be too great, especially if you're planing extremely soft stock. However, if the feed motor seems to labor more than usual or the infeed roller makes lines in the stock, it could be because of too much roller pressure. To check and adjust the roller pressure, follow these instructions:

1. Disconnect the power. Unplug the control box from your power source.

2. Lift the thickness adjustment crank out of its mounting hole. Remove the infeed shield by the six screws that hold the infeed shield to the planer, as shown in Fig. 79.

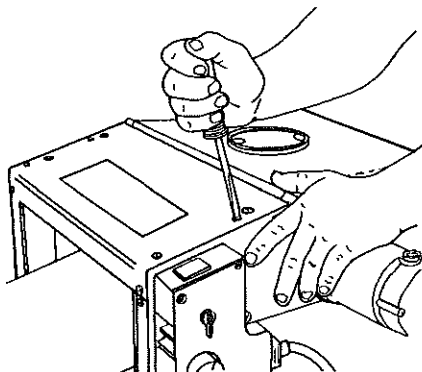


Fig. 79

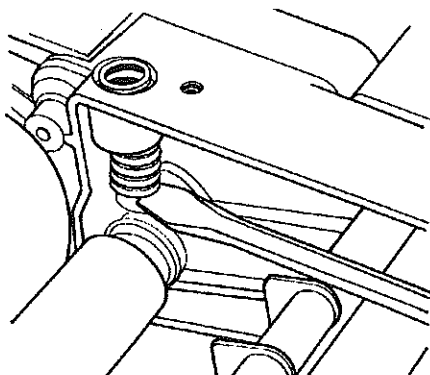


Fig. 80

3. Remove and inspect the roller springs. With a large screwdriver, back out the headless adjustment screws (31) that hold the roller springs (32) in place. Pry the bottom of the springs off the roller arms with the screwdriver, then remove the springs from the planer, as seen in Fig. 80. Inspect the springs carefully. If any of the coils are cracked or collapsed, replace the spring.

4. Reinstall the springs and adjust the roller tension. Reinstall the springs, seating them over the projections on the roller arms. Seat the adjusting screws in the other end of the springs. Compress springs and start the screws in their holes. Be careful not to cross thread the screws. Turn the screws 7-8 revolutions clockwise, until the tops of the screws are flush with the lower edge of the hole in the planer side frames. This should restore the proper roller tension.

5. Raise the outfeed shield. Repeat Steps 3 and 4 for the outfeed roller.

6. Check that the roller pressure is even from side to side and roller to roller. Put your hand underneath the infeed roller, near the right roller spring and pull up. Repeat for the other roller springs. If the roller pressure seems too heavy at any one point, turn the appropriate adjusting screw counterclockwise (out) 1/2 turn at a time until the pressure evens out. If the roller pressure seems too light, turn the adjusting screw clockwise (in) 1/2 turn at a time. When properly adjusted, each spring should deliver 30 pounds of pressure.

NOTE

Don't turn any one adjusting screw more than 12 full revolutions clockwise. If these screws are too tight, they will prevent the roller arms from moving up.

7. Replace the shields. When all four springs have been replaced and readjusted, swing the outfeed shield down and lock it in place. Replace the infeed shield and tighten all six screws securely - but be careful you don't tighten these screws down too hard, or you may strip the threads. Finally, replace the thickness adjustment crank.

WARNING

Before you operate the planer, make sure the infeed and outfeed shields are securely in place.

Regrinding Planer Knives

When the edges of your planer knives have been damaged or the bevel has become rounded after repeated honings, you need to have the knives re-ground by a professional sharpening service. The knife leveling screws eliminate the need to match grind each knife to precisely the same width.

Shopsmith Planer Knives are precision-ground at 45°. This is a "multipurpose" cutting angle that will produce smooth surfaces at a variety of speeds in both hardwood and softwood. Depending on the woods you work with, you may want the sharpening service to change this angle slightly. If you work entirely with softwoods, 47°- 48° will give you a smoother cut. If you work entirely with hardwoods, 42°- 43° will prevent the knives from dulling quickly.

WARNING

Knives that have been re-ground to less than 11/16" wide should be discarded immediately - further use is dangerous. USE ONLY SHOPSMITH PLANER KNIVES. OTHER BRANDS OF KNIVES WILL NOT SEAT PROPERLY IN THE CUTTERHEAD AND ARE EXTREMELY DANGEROUS.

Lubricating the Planer

Lubricate the roller arm bushings (at either end of the rollers), the mounting post bushings (in the tie bars), and the threads of the mounting posts with powdered graphite or silicone. The cutterhead bearings are sealed and require no lubrication.

If powdered graphite or silicone is unavailable, you can apply 10-wt. machine oil sparingly (1 -2 drops only) to these parts.

The synchronizing chain, on the other hand, must be lubricated with 10-wt. oil. Wipe the entire length of the chain with an oily rag, then wipe it again with a clean rag to remove any excess oil.

Waxing the Planer

NOTE

Because the table is cast iron, it is important to wax the table once every other week for the first 3-4 months. This will build up a good protective coat and seal the table.

Wax and buff the planer table, wax the tie bars and the cutterhead. Use a good paste floor wax or paste furniture wax. **DO NOT** use car wax or spray furniture polish. Car wax forms a tough protective coat, but it doesn't lubricate. Furniture polish isn't tough enough.

Apply the wax sparingly and rub it out thoroughly. If you apply too much wax or don't buff it, the wax will mix with sawdust, impede moving parts, and leave residue on the wood.

Storing the Planer

In normal use, regular waxing of the planer table, tie bars and cutterhead will prevent rust. If the machine is to be stored for an extended period or under unusually humid conditions, it should be sprayed with a rust-inhibiting light oil. Remove this oil with mineral spirits and re-wax the planer before using it again.

Maintenance Running Time

To estimate running time, use this rule: The average woodworker will use power tools only 10% of the total time spent in the shop— at the most. You may not use your planer as much as other power tools. If you work in your shop for 25 hours, you have probably logged less than an hour of running time on your planer.

However, some woodworkers save up the planing they need to do, then keep their machine running for hours at a stretch. If you work like this, put a little piece of masking tape on the side of the machine. Make notes on the tape how long you have used the planer and when you last performed the scheduled maintenance. Perform the 100-hour maintenance procedure once a year as a matter of practice, even if you haven't logged 100 hours on the machine.

Maintenance Intervals

The maintenance intervals shown in the **Maintenance Schedule** are based on normal operation, and assume that you will be careful not to abuse the tool. If you work your planer unusually hard, you will need to maintain it more often.

If an unusual noise or vibration develops, stop the machine immediately and check the locking screws, bearings, knife positions and other adjustments. **DO NOT** operate the planer until you have located and corrected the cause of the noise or vibration.

Maintenance Schedule

| Running Time | Maintenance Activities |
|-----------------|--|
| Every 1 hour | <ol style="list-style-type: none">1. Brush off and blow out the sawdust and chips inside the planer completely.2. Inspect the rollers and roller arms for any impacted wood chips that might interfere with your planing operations.3. Wipe the rollers with a damp rag, then dry. Wax the planer table. |
| Every 5 hours | <ol style="list-style-type: none">1. Repeat the previous maintenance activities, plus—2. Clean the pitch from the cutterhead.3. Wax the tie bars and the cutterhead.4. Inspect the knives and hone them or have them re-ground, if needed. |
| Every 10 hours | <ol style="list-style-type: none">1. Repeat the previous maintenance activities, plus—2. Check knife positions, knife mounting screws and wedges, thickness scale alignment, synchronizing chain tension and roller pressure. |
| Every 100 hours | <ol style="list-style-type: none">1. Repeat the previous maintenance activities, plus—2. Lubricate the synchronizing chain, roller arm bushing, mounting post bushings, and the threads of the mounting posts. |

Troubleshooting Guide

| Problem | Possible Cause | Solution |
|--|--|---|
| General Operation Drive shaft heats up and/or cutterhead vibrates. | Bearing worn. | Replace bearings. Have done by nearest Shopsmith Store or Customer Service. |
| | V-belt may be too tight. | Loosen tension on V-belt. |
| | Pulley slips drive shaft. | Secure pulley. |
| | Cutterhead out of balance. | Check wedge locks. Reset and/or take shallower cuts. |
| Planer slows or stops while cutting, and/or cutterhead motor heats up. | Load on motor is too great. | Decrease feed rate and/or take shallower cuts. |
| | Knives dull or out of adjustment. | Reset and/or sharpen knives. |
| | V-belt slipping. | Increase tension on V-belt. |
| | Pulleys slipping on shafts. | Secure pulleys. |
| Planer won't start or starts very slowly. | Machine stiff from the cold. | Turn on Planer, let run for two minutes. |
| | Switch box problem. | Repair switch box. Have done by nearest Shopsmith Store or Customer Service. |
| | Motor defective | Replace or rebuild motor. Have done by nearest Shopsmith Store or Customer Service. |
| Planer clogs quickly with sawdust when cutting. | Stock wet or "green." | Plane only dry or "cured" stock. |
| | Vacuum attachment installed but not operating. | See that vacuum is hooked up and operating properly, or remove vacuum attachment. |
| | Sawdust port open. | Close sawdust port cover, or install vacuum attachment and vacuum. |
| | Long shavings wrapping around outfeed tie bar. | Normal for some woods. Decrease feed rate and/or take shallower cuts. |
| Feed Feed motor won't run or runs very slowly. | Feed rate set too slow. | Reset feed rate |
| | Machine stiff from cold. | Turn on planer, let run for two minutes. |
| | Feed motor not plugged in. | Plug feed motor into side of control box. |
| | Feed motor jammed. | Remove feed motor and inspect roller gears for foreign materials. If there is nothing jamming gears, feed motor may need repair or cleaning. Have done by nearest Shopsmith Store or Customer Service. |

| Problem | Possible Cause | Solution |
|--|--|--|
| | Switch box problem. | Repair switch box. Have done by nearest Shoptsmith Store or Customer Service. |
| Stock constantly drifts to one side of planer. | Sawdust and wood chips accumulated on rollers. | Clean outfeed roller with damp rag, infeed roller with wire brush. |
| | Knives positioned improperly. | Reset knives. |
| | Roller pressure uneven. | Re-adjust roller pressure. |
| | Thickness of stock uneven. | Drifting is normal. This should stop after stock has passed through planer once. |
| | Mounting posts improperly synchronized. | Synchronize mounting posts. |
| | Wood chips jammed behind or under roller arms. | Clean chips from around roller arms. |
| Stock kicks back or chatters constantly while feeding. | Load on motor too great. | Decrease feed rate and/or take shallower cuts. |
| | Knives cutting against the grain. | Turn stock end for end. |
| | Roller pressure too light. | Increase roller pressure. |
| | Wood chips jammed behind or under roller arms. | Clean chips from around roller arms. |
| | Knives dull or out of adjustment. | Reset and/or sharpen knives. |
| Stock hesitates or sticks while feeding. | Load on motor too great. | Decrease feed rate and/or take shallower cuts. |
| | Planer clogged with sawdust. | Clean planer. Check that stock is dry. If you are using a vacuum attachment, check that vacuum is operating. |
| | Resin or foreign material on table. | Clean and wax table. |
| | Knives cutting against the grain. | Turn stock end for end. |
| | Roller pressure too heavy. | Decrease roller pressure. |
| | Sawdust and wood chips accumulated on rollers. | Clean rollers-outfeed with a damp rag, and infeed with a wire brush. |
| Table and Thickness Adjustment Thickness adjustment crank sticks or is difficult to turn. | Mounting posts and barrel nuts in a bind. | Loosen setscrews, raise and lower table. Tighten setscrews. |
| | Synchronizing chain too tight. | Decrease chain tension. |
| | Chain frozen or jammed. | Clean and lubricate chain. |
| | Mounting posts jammed with sawdust or foreign materials. | Clean and lubricate mounting posts. |

| Problem | Possible Cause | Solution |
|--|--|--|
| | Mounting posts improperly synchronized. | Synchronize mounting posts. |
| | One or more mounting posts bent. | Replace mounting posts. |
| Table creeps down. | Thickness improperly adjusted. | Adjust thickness from greater to lesser. |
| | Synchronizing chain too loose. | Increase chain tension. |
| Thickness cannot be adjusted so planer takes full 1/8" depth of cut. | Mounting posts improperly synchronized. (Infeed side of table higher than outfeed side.) | Synchronize mounting posts. |
| | Washers missing under infeed shield. | Replace washers. |
| Cutterhead and Knives Cutterhead sticks, squeals, and/or vibrates. | Bearings dry and/or worn. | Replace bearings. Have done by nearest Shopsmith Store or Customer Service. |
| | Cutterhead out of balance. | Check wedge locks. Reset and/or re-grind knives. |
| Knives "knock" badly when planing. | Knives improperly positioned. Only one or two knives cutting. | Reset knives. |
| Cutterhead makes ticking sound when planer running free. | Knives are improperly positioned and hitting table, end frames, or chip deflector. | Turn off planer immediately . Inspect knives and other parts of the planer for damage. Have knives re-ground, if necessary. |
| Knives chip or tear out stock. | Feed rate too fast, or depth of cut too deep. | Decrease feed rate and/or take shallower cuts. |
| | Knives cutting against the grain. | Turn stock end for end. |
| | Stock has figured grain or hard knots. | Decrease feed rate and/or take shallower cuts. |
| | Stock too dry. | Discard stock. |
| Knives leave ridges in stock. | Knives damaged. | Hone or have knives re-ground. Replace knives, if necessary. |
| Knives leave mill marks in stock. | Knives making too few cuts per inch. | Decrease feed rate. |
| | Knife height is inconsistent. | Check knife positions. |
| Knives dull or nick easily. | Stock has foreign materials on it or in it, or you may be planing improper materials. | Inspect stock for staples, tacks, paint, glue beads, and dirt before planing. Never plane secondhand lumber, plywood or hardboard. Plane only clean, solid wood. |
| | Knives may have been "over ground" and lost their factory temper. | Replace knives. |

| Problem | Possible Cause | Solution |
|---|--|--|
| Wedges will not come out after wedge locking screws are removed. | Wedges are tightly seated— this is normal. It's part of the overall safety design. | Turn knife leveling screws counter-clockwise 1/4 turn, one at a time, until the wedges "pop loose." |
| Accuracy of Cut Thickness of stock not as indicated. | Thickness scale improperly aligned. | Re-align thickness scale. |
| Surface of planed stock uneven. | Stock not held firmly on table. | Increase roller pressure. |
| | Knives improperly positioned. | Reset knives. |
| | Knives damaged. | Hone or have knives re-ground. Replace knives, if necessary. |
| | Roller pressure too light. | Increase roller pressure. |
| Stock is tapered from end to end. | Table creeps down | Adjust thickness from greater to lesser. Also, check chain tension. |
| Stock is tapered from side to side. | Roller pressure uneven. | Re-adjust roller pressure. |
| | Mounting posts improperly synchronized. | Synchronize mounting posts. |
| | Knives out of adjustment. | Reset knives. |
| Quality of Cut Stock is rough, chipped or rippled. | Feed rate too fast or depth of cut too deep. | Decrease feed rate and/or take shallower cuts. |
| | Knives are cutting against the grain. | Turn stock end for end. |
| | Knives improperly positioned. Only one or two knives cutting. | Reset knives. |
| | Knives dull or damaged. | Hone or have knives re-ground. Replace knives, if necessary. |
| Planer cuts snipe in beginning or end of board. | Stock improperly supported while feeding into or coming out of planer. | Keep stock parallel to and flat on the table. Don't let stock "droop." |
| | Roller pressure too light. | Increase roller pressure. |
| Planer leaves small dents in stock. | Wood chips imbedded in rollers. | Clean rollers- outfeed with damp rag, infeed with a wire brush. |
| | Roller pressure too great. | Decrease roller pressure. |
| | Planer clogged with wood chips. | Clean planer. Check that stock is dry. If you are using a vacuum attachment, check that vacuum is operating. |
| Planed stock has glossy finish or stock burns. | Knives dull. | Hone or have knives re-ground. |
| | Feed rate too slow. | Increase feed rate. |

NOTES

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Serving Your Needs

Your Shopsmith equipment is covered by the Shopsmith **Gold Medal Buyer Protection Plan**. This plan includes a 30-day money-back guarantee, a full one-year warranty, and a lifetime reconditioning program.

30-Day Money-Back Guarantee

We guarantee your complete satisfaction! You can try the equipment for 30 days at no risk before you decide whether to keep it or not. Use it to make as many projects as you like. Compare it, feature for feature, with other equipment. Then, if the equipment isn't everything we say, go to your nearest Shopsmith/Woodworking Unlimited store— or call Customer Services and we'll advise you how to return it for a prompt and complete refund. We'll even pay for shipping.

Full One-Year Warranty

Your equipment is guaranteed against all defects in parts and workmanship for a period of ONE FULL YEAR from the date of receipt. Here are the details:

Shopsmith warrants to the owner of Shopsmith woodworking equipment that the equipment will be free of manufacturing defects in materials and workmanship for a period of one year from the date of receipt. All claims must be submitted in writing within one month after expiration of the one-year warranty period. Shopsmith shall, by repair of, or at its option replacement, remedy any defect or malfunctions covered by this warranty. This warranty excludes and does not cover defects, malfunctions, or failures of your Shopsmith equipment which are caused by damage while in your possession or that of a previous owner or by unreasonable use, including your failure or the failure of any previous owner to provide reasonable and necessary maintenance.

Personal injury or property damage may result if equipment is interchanged with non-Shopsmith brand parts and equipment. Therefore, Shopsmith, Inc. disclaims all liability and excludes all warranties of merchantability and fitness for a particular purpose if this equipment is used with non-Shopsmith brand parts or equipment.

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IN NO EVENT SHALL SHOPSMITH BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES. Some states do not allow the exclusion or limitation of consequential or incidental damages, so the above limitation of consequential or incidental damages may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Lifetime Reconditioning Program

Our equipment is designed for years of constant, rugged, uninterrupted operation. However, to ensure the continued usefulness of your unit, we offer a unique Lifetime Reconditioning Program:

If at any time, regardless of the age of your equipment, you can take it to a Shopsmith/Woodworking Unlimited store or send it to us (round-trip shipping at owner's expense), and we'll rebuild it and touch up the paint. We'll replace wearing parts such as bearings, seals, and belts.

Your reconditioned equipment will come back to you with a new 90-day full warranty. Reconditioning or repair will be done for a cost that will not exceed one-third of the current list price of equipment at the time of repair. If parts other than normal wearing parts need replacement, an estimate will be submitted to the owner for approval.

Warranty Service

To repair or replace a part in the equipment while it is still under warranty, go to your nearest Shopsmith/Woodworking Unlimited store or contact Customer Services. They will instruct you where to send the part of your equipment. If the warranty is applicable, the part will be repaired at no charge.

Out-of-Warranty Service

If your equipment is out of warranty and needs service, see your Shopsmith/Woodworking Unlimited store or call Customer Services for instructions how

you can have the part repaired at our store or Factory for a fee. We will help you diagnose the problem, give you an estimate of the cost, and instruct you where to send the part or equipment for repair.

Shopsmith/Woodworking Unlimited stores carry a limited number of replacement parts and can perform some repairs. Call ahead to see if they can provide the part or service your need.

How to Order Parts

To order replacement parts, first consult the Parts List in this manual. Then write or call for current price information.

How to Return Parts

Should you need to return the equipment, see your Shopsmith/Woodworking Unlimited store or call Customer Services for packing and shipping information.

Customer Services

Where to Write – Send inquiries to: Shopsmith, Inc.
Customer Services
3931 Image Drive
Dayton, Ohio 45414

Where to Phone – Shopsmith maintains toll-free telephone numbers during normal business hours.

For service, call:

1-800-762-7555 (All U.S. states, Puerto Rico and U.S. Virgin Islands)
1-800-268-3998 (Canada)
1-513-898-6070

To place an order, call:

1-800-762-7586 (All U.S. states, Puerto Rico and U.S. Virgin Islands)
1-800-268-3998 (Canada)
1-513-898-6070

When you write or call, tell us your Customer Number and the Date Code of your equipment. Your Customer Number appears on the invoice and the mailing labels of the literature we send you, so please write it in below. The Date Code is already stamped below.

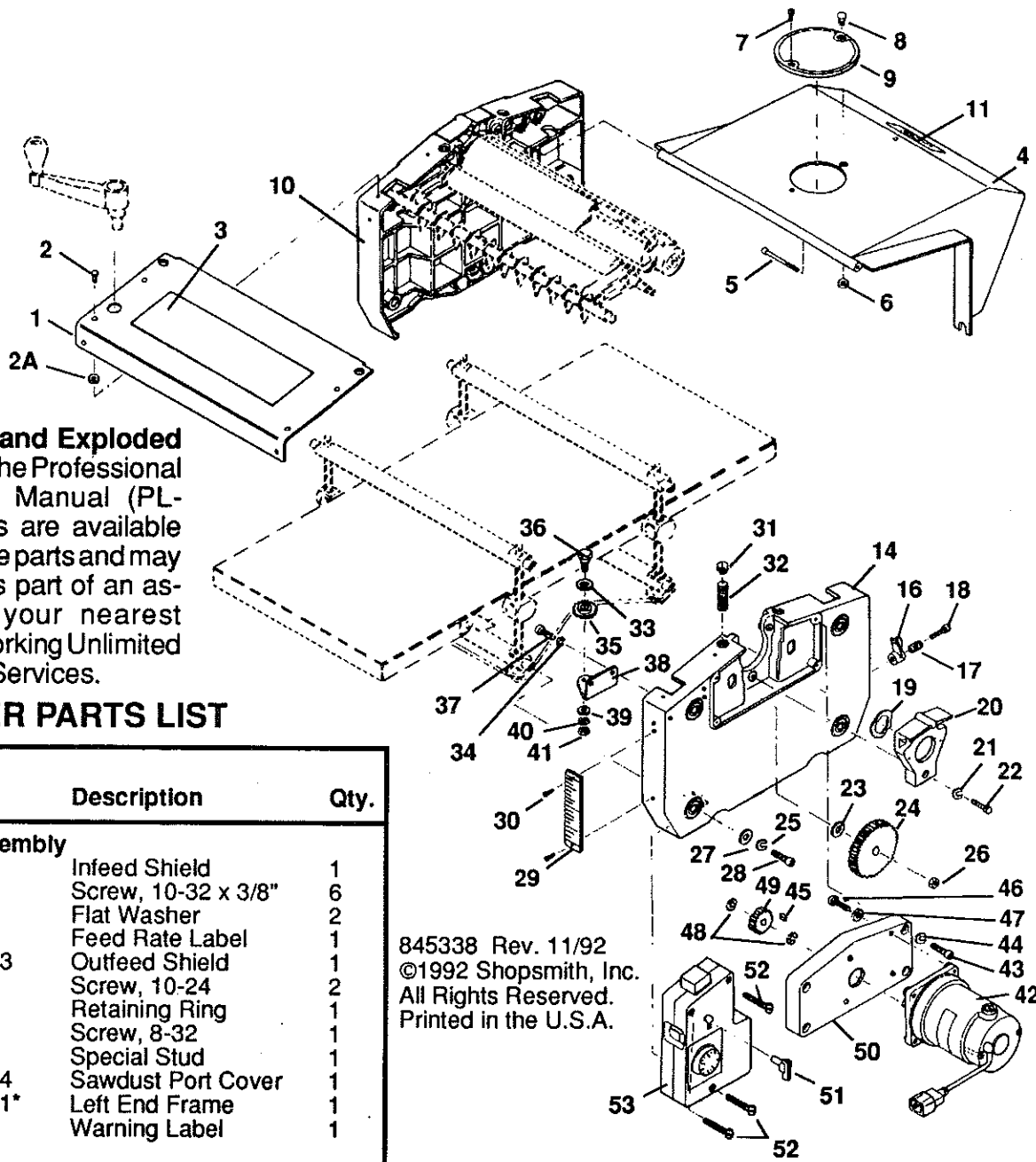
Date No. _____

Customer No. _____



Shopsmith Inc.
3931 Image Drive
Dayton, Ohio 45414

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These **Parts Lists and Exploded Views** supplement the Professional Planer Instruction Manual (PL-5051). Not all parts are available separately as service parts and may be available only as part of an assembly. Consult your nearest Shopsmith/Woodworking Unlimited store or Customer Services.

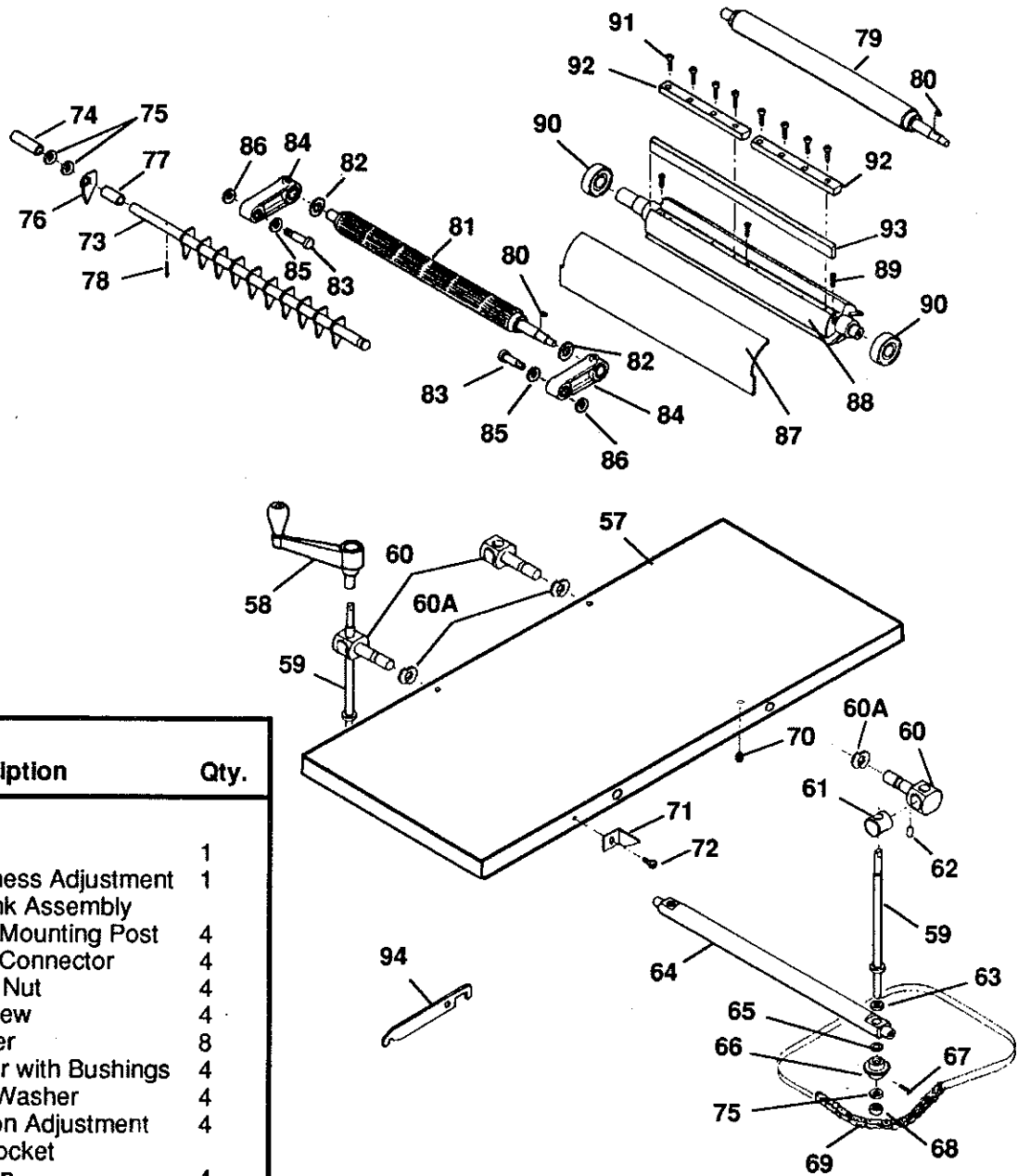
PRO PLANER PARTS LIST

| Ref. No. | Part No. | Description | Qty. |
|---------------------------------|------------|-----------------------|------|
| Main Planer Assembly | | | |
| 1 | 513348 | Infeed Shield | 1 |
| 2 | 513986 | Screw, 10-32 x 3/8" | 6 |
| 2A | 502333 | Flat Washer | 2 |
| 3 | 514208 | Feed Rate Label | 1 |
| 4 | 513783-03 | Outfeed Shield | 1 |
| 5 | 513738 | Screw, 10-24 | 2 |
| 6 | 513752 | Retaining Ring | 1 |
| 7 | 513782 | Screw, 8-32 | 1 |
| 8 | 513751 | Special Stud | 1 |
| 9 | 513723-04 | Sawdust Port Cover | 1 |
| 10 | 513341-01* | Left End Frame | 1 |
| 11 | 516540 | Warning Label | 1 |
| 12,13 | not used | | |
| 14 | 513342-01* | Right End Frame | 1 |
| 15 | not used | | |
| 16 | 513720 | Latch | 2 |
| 17 | 513721 | Spring | 2 |
| 18 | 513722 | Pivot Screw | 2 |
| 19 | 513390* | Spring Washer | 2 |
| 20 | 513350-01* | Bearing Support | 2 |
| 21 | 120380 | Lock Washer | 6 |
| 22 | 513386 | Screw, 1/4"-20 | 6 |
| 23 | 513794 | Washer | 4 |
| 24 | 513402 | Feed Roller Gear | 2 |
| 25 | 120214 | Lock Washer | 10 |
| 26 | 513857 | Prevailing Torque Nut | 2 |
| 27 | 513739 | Spacer Washer | 8 |
| 28 | 513795 | Screw | 8 |
| 29 | 513746 | Thickness Scale | 1 |
| 30 | 513986 | Screw, 10-32 x 3/8" | 2 |
| 31 | 513376 | Tension Screw | 4 |
| 32 | 513389 | Compression Spring | 4 |
| Chain Tensioner Assembly | | | |
| 33 | 513733 | Special Washer | 2 |
| 34 | 120380 | Lock Washer | 2 |
| 35 | 513381 | Sprocket | 1 |
| 36 | 513375 | Idler Screw | 1 |

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| Ref. No. | Part No. | Description | Qty. |
|----------------------|-----------|----------------|------|
| 37 | 513793 | Tapping Screw | 2 |
| 38 | 513368 | Bracket | 1 |
| 39 | 120392 | Washer, 1/4" | 1 |
| 40 | 115546 | Lock Washer | 1 |
| 41 | 120375 | Nut, 1/4"-20 | 1 |
| Feed Assembly | | | |
| 42 | 514203 | Feed Motor | 1 |
| 43 | 513191 | Screw, 1/4"-20 | 4 |
| 44 | 120380 | Lock Washer | 4 |
| 45 | 513391 | Woodruff Key | 1 |
| 46 | 513406 | Screw | 4 |
| 47 | 502973 | Lock Washer | 4 |
| 48 | 513735 | Retaining Ring | 2 |
| 49 | 513403 | Feed Pinion | 1 |
| 50 | 513415-03 | Gear Cover | 1 |
| 51 | 513411 | Safety Key | 1 |
| 52 | 513760 | Screw, 10-32 | 3 |
| 53 | 514692 | Control Box | 1 |
| 54 - 56 not used | | | |

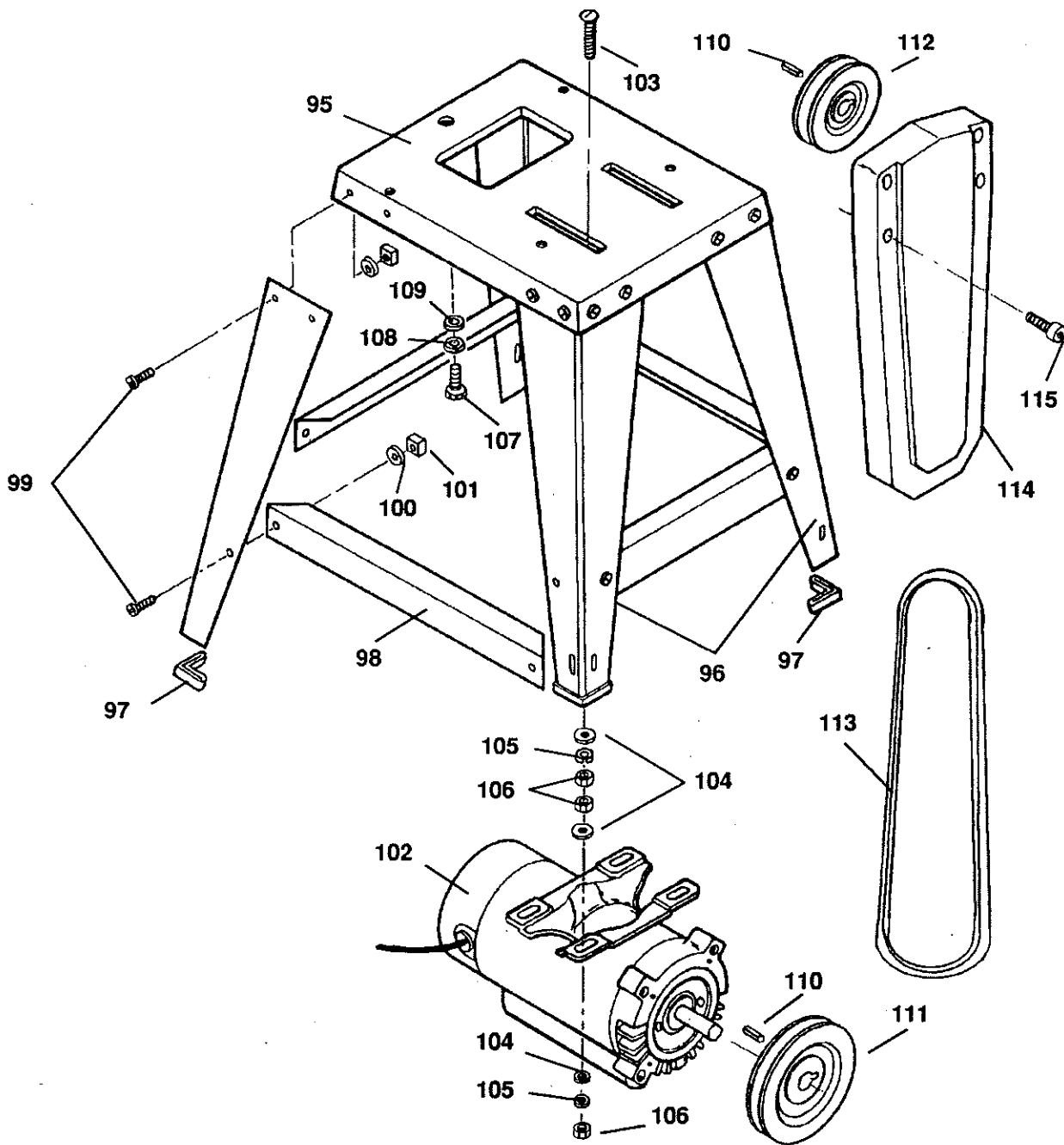
* Have these parts replaced by our Service Dept.



| Ref. No. | Part No. | Description | Qty. |
|-------------------------------|-----------|-------------------------------------|------|
| Table Assembly | | | |
| 57 | 514216-03 | Table | 1 |
| 58 | 514137-03 | Thickness Adjustment Crank Assembly | 1 |
| 59 | 513397* | Table Mounting Post | 4 |
| 60 | 514036 | Table Connector | 4 |
| 61 | 514037 | Barrel Nut | 4 |
| 62 | 513994-01 | Setscrew | 4 |
| 63 | 513794* | Washer | 8 |
| 64 | 513730 | Tie Bar with Bushings | 4 |
| 65 | 513384* | Shim Washer | 4 |
| 66 | 513382* | Tension Adjustment Sprocket | 4 |
| 67 | 513734* | Roll Pin | 4 |
| 68 | 513857 | Prevailing Torque Nut | 4 |
| 69 | 513387* | Chain | 1 |
| 70 | 513989-01 | Setscrew | 4 |
| 71 | 513380-03 | Thickness Pointer | 1 |
| 72 | 513986 | Screw, 10-32 x 3/8" | 1 |
| Anti-kickback Assembly | | | |
| 73 | 513395 | Anti-kickback Rod | 1 |
| 74 | 513393 | Long Tube Spacer | 2 |
| 75 | 513794 | Washer | 2 |
| 76 | 513369 | Anti-kickback Wedge | 11 |
| 77 | 513394 | Short Tube Spacer | 10 |
| 78 | 513385 | Cotter Pin | 1 |
| Feed Roller Assemblies | | | |
| 79 | 513401* | Outfeed Roller | 1 |
| 80 | 513391 | Woodruff Key | 2 |
| 81 | 514141* | Infeed Roller | 1 |
| 82 | 513733* | Special Washer | 8 |
| 83 | 513372* | Pivot Screw | 4 |
| 84 | 513352* | Pivot Arm | 4 |
| 85 | 513794* | Washer | 8 |
| 86 | 513792* | Spacer Washer | 4 |

| Ref. No. | Part No. | Description | Qty. |
|----------------------------|-----------|--------------------------------------|------|
| Cutterhead Assembly | | | |
| 87 | 513357* | Chip Deflector | 1 |
| — | 514425* | Cutterhead Assembly (includes 88-93) | 1 |
| 88 | 513362* | Cutterhead | 1 |
| 89 | 502899 | Knife Leveling Screw | 9 |
| 90 | 513388* | Ball Bearing | 2 |
| 91 | 513406 | Wedge Locking Screw | 24 |
| 92 | 513363 | Knife Wedge | 6 |
| 93 | 513364 | Knife | 3 |
| Miscellaneous | | | |
| 94 | 513414 | Knife Setting Gauge | 1 |
| — | 513686-01 | 5/32" Allen Wrench | 1 |
| — | 513686-04 | 3/16" Allen Wrench | 1 |
| — | 513686-07 | 1/8" Allen Wrench | 1 |
| — | 513686-05 | 3/32" Allen Wrench | 1 |

* Have these parts replaced by our Service Dept.



| Ref. No. | Part No. | Description | Qty. | Ref. No. | Part No. | Description | Qty. |
|---------------------|-----------|--|------|----------|-----------|---|------|
| Planer Stand | | | | | | | |
| 95 | 513892-03 | Top Panel | 1 | 107 | 180120 | Hex Head Bolt, 3/8"-16 x 3/4" | 2 |
| 96 | 502766-03 | Leg | 4 | 108 | 120382 | Lock Washer, 3/8" | 2 |
| 97 | 513969 | Leg Boot | 4 | 109 | 120394 | Plain Washer, 3/8" | 2 |
| 98 | 516442 | Leg Brace | 4 | 110 | 518026 | Woodruff Key 3/16" x 7/8" | 2 |
| 99 | 514205 | Pan Head Machine Screw, 1/4"-20 x 1/2" | 24 | 111 | 518025 | Pulley, 5" diameter (includes setscrew) | 1 |
| 100 | 115546 | Lock Washer, 1/4" | 24 | 112 | 517913 | Pulley, 3" diameter (includes setscrew) | 1 |
| 101 | 514204 | Square Nut, 1/4"-20 | 24 | 113 | 513854-04 | V-belt, 38" | 1 |
| 102 | 514271 | Motor | 1 | 114 | 514217-02 | Pulley Guard | 1 |
| 103 | 513870 | Round Head Screw, 5/16"-18 x 2" | 4 | 115 | 516168 | Socket Head Cap Screw, 1/4"-20 x 1-1/4" | 4 |
| 104 | 502081 | Plain Washer, 5/16" | 12 | | | | |
| 105 | 115548 | Lock Washer, 5/16" | 8 | | | | |
| 106 | 102634 | Hex Nut, 5/16"-18 | 12 | | | | |



Planer Dust Chute

PARTS LIST

| Ref. No. | Part No. | Description | Qty. |
|----------|----------|------------------------|------|
| 1* | 514521 | Elbow, 2-1/2" diameter | 1 |
| 2* | 513419 | Dust Chute | 1 |
| 3 | 517920 | Chute Bottom | 1 |
| 4 | 517914 | Clip | 4 |

* not included with the Dust Chute Retrofit Kit.

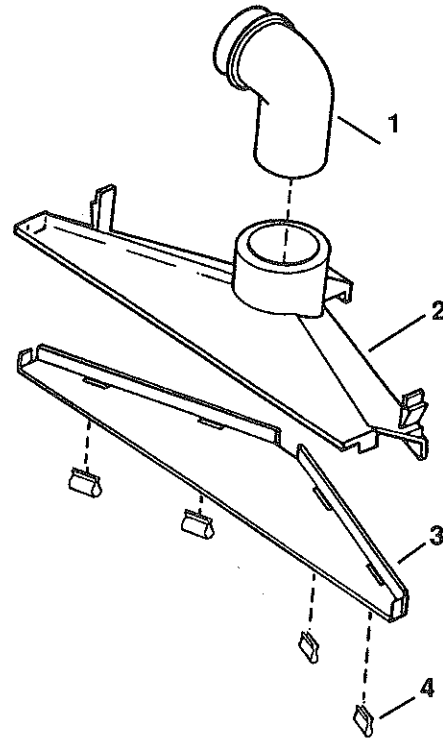
Introduction

This product literature is for both the **Planer Dust Chute- 300001** (includes parts 1-4 listed above) and **Planer Dust Chute Retrofit Kit- 555643** (includes only parts 3 and 4 listed above). The Planer Dust Chute connects the Shopsmith Dust Collector— or other dust collectors with 2-1/2" diameter hoses— to either the Shopsmith **Thickness Planer** or **Professional Planer**. The Dust Chute provides high efficiency dust and chip collection.

Safety

WARNING

- Read, understand and follow all the information in both your dust collector and planer instruction manuals, whenever you operate your planer with the dust chute attached.
- Do not operate your planer with the Dust Chute installed— unless you connect and operate a dust collector while operating the planer at the same time. Failure to simultaneously operate a dust collector and planer (with the Dust Chute installed) will cause the dust chute to quickly clog, and could damage your planer and wood stock as well as cause a safety hazard.
- Position the outlet of the dust chute elbow so that when the dust collector hose is connected, it does not interfere with operations or limit access to the control box.
- Avoid touching the planer knives while installing the Dust Chute. They are sharp!
- Turn off and unplug the planer before proceeding with any of the following instructions for the Dust Chute.



Tool Needed for these instructions:

- Medium screwdriver

NOTE

Owners of the Retrofit Kit— skip Steps 1- 2 and go to Step 3.

PREPARE THE PLANER

1. Use the screwdriver to remove the screw in the Shopsmith logo, located on the outfeed shield of your planer. Rotate the logo 180° to expose the sawdust port, as shown in Fig. 1.
2. Re-attach the Shopsmith logo with the screw. This will keep the cover from turning or rattling when the dust chute is installed.

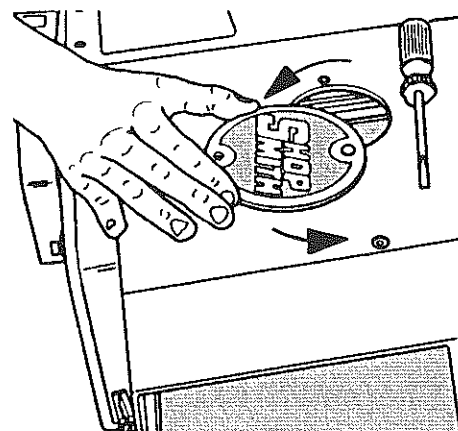


Fig. 1

ASSEMBLE THE DUST CHUTE

3. FOR OWNERS OF THE RETROFIT KIT ONLY: Open the outfeed cover and remove the dust chute by firmly pressing in on its two wing tabs while lifting the chute. Now proceed with the rest of Step 3.

Align the metal chute bottom to the opening of the plastic dust chute, as seen in Fig. 2.

4. Attach the chute bottom with four clips, as shown in Fig. 3. Make sure the clips are in all the way and the "barbs" fully dig into the plastic dust chute.

INSTALL THE DUST CHUTE ASSEMBLY

5. Unlock and raise the planer's outfeed shield. Place the assembled dust chute so the tab on its outlet rests on the outfeed tie bar and its two top wing tabs rest on the planer's side castings, as illustrated in Fig. 4. The nozzle of the dust chute should be slightly angled toward the rear of the planer.

6. Cautiously but firmly press in (toward the center) on the two top wing tabs, as shown in Fig. 5. At the same time gently press downward. The dust chute assembly should snugly pop into place.

PREPARE FOR OPERATIONS

7. Lower the outfeed shield. The dust chute outlet should protrude through the sawdust port. Lock down the outfeed shield before operating the planer.

8. Install the dust chute elbow by inserting the elbow securely into the dust chute, oriented as shown in Fig. 6.

9. Connect the dust collector hose to the dust chute elbow and turn on the dust collector before operating the planer.

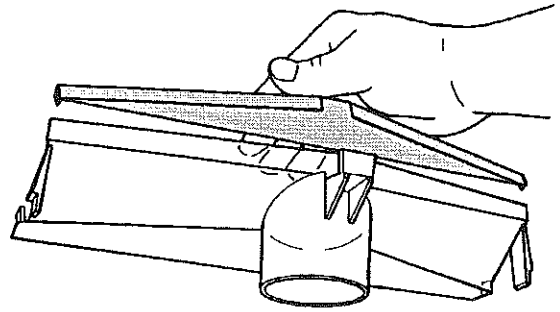


Fig. 2

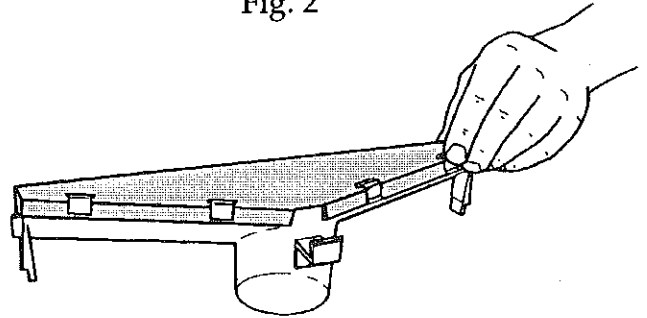


Fig. 3

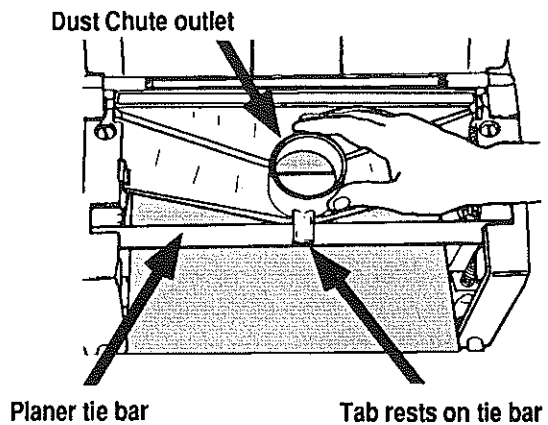


Fig. 4

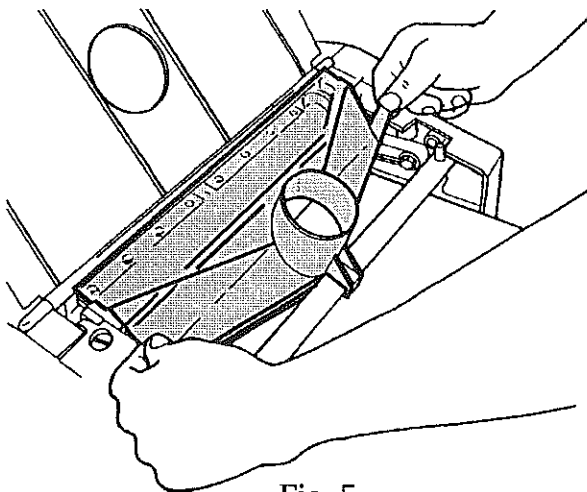


Fig. 5

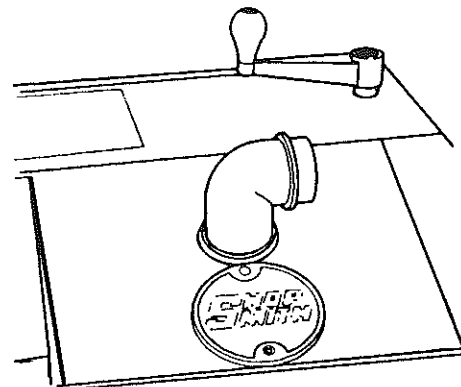


Fig. 6



Shopsmith Inc.
3931 Image Drive
Dayton, Ohio 45414

Note: If you have further questions or need help, visit the Shopsmith Store in your area, or call Customer Service: Toll Free 1-800-762-7555 (in Canada, 1-800-268-3998).

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