

# 2-Speed Heavy Duty Wood Shaper

(Models 43-431X and 43-495X)



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## IMPORTANT SAFETY INSTRUCTIONS

**⚠ WARNING** Read and understand all warnings and operating instructions before using any tool or equipment. When using tools or equipment, basic safety precautions should always be followed to reduce the risk of personal injury. Improper operation, maintenance or modification of tools or equipment could result in serious injury and property damage. There are certain applications for which tools and equipment are designed. Delta Machinery strongly recommends that this product NOT be modified and/or used for any application other than for which it was designed.

If you have any questions relative to its application DO NOT use the product until you have written Delta Machinery and we have advised you.

Online contact form at [www.deltamachinery.com](http://www.deltamachinery.com)

Postal Mail: Technical Service Manager  
Delta Machinery  
4825 Highway 45 North  
Jackson, TN 38305

(IN CANADA: 505 SOUTHGATE DRIVE, GUELPH, ONTARIO N1H 6M7)

Information regarding the safe and proper operation of this tool is available from the following sources:

Power Tool Institute  
1300 Sumner Avenue, Cleveland, OH 44115-2851  
[www.powertoolinstitute.org](http://www.powertoolinstitute.org)

National Safety Council  
1121 Spring Lake Drive, Itasca, IL 60143-3201

American National Standards Institute, 25 West 43rd Street, 4 floor, New York, NY 10036 [www.ansi.org](http://www.ansi.org)  
ANSI 01.1 Safety Requirements for Woodworking Machines, and

the U.S. Department of Labor regulations [www.osha.gov](http://www.osha.gov)

**SAVE THESE INSTRUCTIONS!**

# SAFETY GUIDELINES - DEFINITIONS

It is important for you to read and understand this manual. The information it contains relates to protecting YOUR SAFETY and PREVENTING PROBLEMS. The symbols below are used to help you recognize this information.



- |                  |  |
|------------------|--|
| <b>⚠ DANGER</b>  | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.                           |
| <b>⚠ WARNING</b> | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.                          |
| <b>⚠ CAUTION</b> | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.                           |
| <b>CAUTION</b>   | Used without the safety alert symbol indicates potentially hazardous situation which, if not avoided, may result in property damage. |

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## CALIFORNIA PROPOSITION 65

**⚠ WARNING** **SOME DUST CREATED BY POWER SANDING, SAWING, GRINDING, DRILLING, AND OTHER CONSTRUCTION ACTIVITIES** contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- lead from lead-based paints,
- crystalline silica from bricks and cement and other masonry products, and
- arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, always wear **NIOSH/OSHA** approved, properly fitting face mask or respirator when using such tools.

# GENERAL SAFETY RULES



**⚠ WARNING** READ AND UNDERSTAND ALL WARNINGS AND OPERATING INSTRUCTIONS BEFORE USING THIS EQUIPMENT. Failure to follow all instructions listed below, may result in electric shock, fire, and/or serious personal injury or property damage.

## IMPORTANT SAFETY INSTRUCTIONS

- FOR YOUR OWN SAFETY, READ THE INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learning the machine's application, limitations, and specific hazards will greatly minimize the possibility of accidents and injury.
- WEAR EYE AND HEARING PROTECTION. ALWAYS USE SAFETY GLASSES.** Everyday eyeglasses are NOT safety glasses. USE CERTIFIED SAFETY EQUIPMENT. Eye protection equipment should comply with ANSI Z87.1 standards. Hearing equipment should comply with ANSI S3.19 standards.
- WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
- DO NOT USE THE MACHINE IN A DANGEROUS ENVIRONMENT.** The use of power tools in damp or wet locations or in rain can cause shock or electrocution. Keep your work area well-lit to prevent tripping or placing arms, hands, and fingers in danger.
- MAINTAIN ALL TOOLS AND MACHINES IN PEAK CONDITION.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories. Poorly maintained tools and machines can further damage the tool or machine and/or cause injury.
- CHECK FOR DAMAGED PARTS.** Before using the machine, check for any damaged parts. Check for alignment of moving parts, binding of moving parts, breakage of parts, and any other conditions that may affect its operation. A guard or any other part that is damaged **should be properly repaired or replaced**. Damaged parts can cause further damage to the machine and/or injury.
- KEEP THE WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
- KEEP CHILDREN AND VISITORS AWAY.** Your shop is a potentially dangerous environment. Children and visitors can be injured.
- REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure that the switch is in the "OFF" position before plugging in the power cord. In the event of a power failure, move the switch to the "OFF" position. An accidental start-up can cause injury.
- USE THE GUARDS.** Check to see that all guards are in place, secured, and working correctly to reduce the risk of injury.
- REMOVE ADJUSTING KEYS AND WRENCHES BEFORE STARTING THE MACHINE.** Tools, scrap pieces, and other debris can be thrown at high speed, causing injury.
- USE THE RIGHT MACHINE.** Don't force a machine or an attachment to do a job for which it was not designed. Damage to the machine and/or injury may result.
- USE RECOMMENDED ACCESSORIES.** The use of accessories and attachments not recommended by Delta may cause damage to the machine or injury to the user.
- USE THE PROPER EXTENSION CORD.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage, resulting in loss of power and overheating. See the Extension Cord Chart for the correct size depending on the cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.
- SECURE THE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. Loss of control of a workpiece can cause injury.
- FEED THE WORKPIECE AGAINST THE DIRECTION OF THE ROTATION OF THE BLADE, CUTTER, OR ABRASIVE SURFACE.** Feeding it from the other direction will cause the workpiece to be thrown out at high speed.
- DON'T FORCE THE WORKPIECE ON THE MACHINE.** Damage to the machine and/or injury may result.
- DON'T OVERREACH.** Loss of balance can make you fall into a working machine, causing injury.
- NEVER STAND ON THE MACHINE.** Injury could occur if the tool tips, or if you accidentally contact the cutting tool.
- NEVER LEAVE THE MACHINE RUNNING UNATTENDED. TURN THE POWER OFF.** Don't leave the machine until it comes to a complete stop. A child or visitor could be injured.
- TURN THE MACHINE "OFF", AND DISCONNECT THE MACHINE FROM THE POWER SOURCE** before installing or removing accessories, before adjusting or changing set-ups, or when making repairs. An accidental start-up can cause injury.
- MAKE YOUR WORKSHOP CHILDPROOF WITH PADLOCKS, MASTER SWITCHES, OR BY REMOVING STARTER KEYS.** The accidental start-up of a machine by a child or visitor could cause injury.
- STAY ALERT, WATCH WHAT YOU ARE DOING, AND USE COMMON SENSE. DO NOT USE THE MACHINE WHEN YOU ARE TIRED OR UNDER THE INFLUENCE OF DRUGS, ALCOHOL, OR MEDICATION.** A moment of inattention while operating power tools may result in injury.
- ⚠ WARNING USE OF THIS TOOL CAN GENERATE AND DISBURSE DUST OR OTHER AIRBORNE PARTICLES, INCLUDING WOOD DUST, CRYSTALLINE SILICA DUST AND ASBESTOS DUST.** Direct particles away from face and body. Always operate tool in well ventilated area and provide for proper dust removal. Use dust collection system wherever possible. Exposure to the dust may cause serious and permanent respiratory or other injury, including silicosis (a serious lung disease), cancer, and death. Avoid breathing the dust, and avoid prolonged contact with dust. Allowing dust to get into your mouth or eyes, or lay on your skin may promote absorption of harmful material. Always use properly fitting NIOSH/OSHA approved respiratory protection appropriate for the dust exposure, and wash exposed areas with soap and water.

# ADDITIONAL SPECIFIC SAFETY RULES

**▲WARNING** FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY.

1. **IF YOU ARE NOT** thoroughly familiar with the operation of Wood Shapers, obtain advice from your supervisor, instructor or other qualified person.
2. **FOLLOW ALL WIRING CODES** and recommended electrical connections. Make certain that the tool is properly grounded.
3. **NEVER** turn the tool "ON" before clearing the table of all objects (tools, scraps of wood, etc.).
4. **DO NOT** process materials less than 12" in length or 4" in width without special supporting fixtures. Use push sticks, featherboards, or holdowns whenever possible.
5. **ALWAYS** use a miter gauge and a clamp attachment when edge shaping work less than 6" wide. Remove the fence during this operation.
6. **AVOID** awkward hand positions. A sudden slip could allow the hand to contact the cutter.
7. **KEEP** hands away from cutting tool.
8. **NEVER** run the stock between the fence and the cutter.
9. **DO NOT** feed material that is warped, contains knots, or is embedded with foreign objects, (nails or staples, etc.).
10. **NEVER** start the tool with the stock in contact with the cutter.
11. **NEVER** reach under the table while the tool is running.
12. **NEVER** perform layout, assembly, or set-up work on the table while the tool is operating.
13. **KEEP** cutters sharp and free from rust and pitch.
14. **ADJUST THE FENCE HALVES** so that the cutter opening is never more than is required to clear the cutter.
15. **ALWAYS** lock the fence hardware after making fence adjustments.
16. **PROPERLY SECURE THE CUTTERS** before starting the tool.
17. **DO NOT** perform any operation freehand. **ALWAYS** use the fence for straight shaping, the miter gauge for edge shaping, and the starting pin and rub collars for curve shaping.
18. **ALWAYS** keep the front motor access panel closed while operating the tool.
19. **WEAR HEARING PROTECTION** to safeguard against hearing loss.
20. **USE GUARDS** provided with the machine when possible.
21. **MAKE ALL ADJUSTMENTS** with the power "OFF".
22. **BEFORE** leaving the machine, make sure the work area is clean.
23. **WHEN SHAPING** with collars and starting pin, the collar **MUST** have sufficient bearing surface (Fig. B). The wrong way to perform this operation is illustrated in Fig. C. Note that the collar **DOES NOT** have sufficient bearing surface.

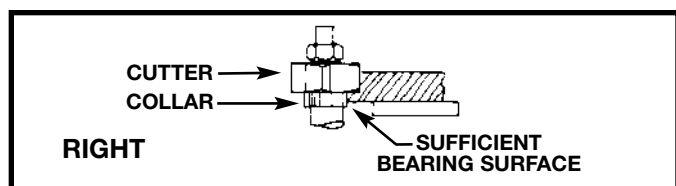


Fig. B

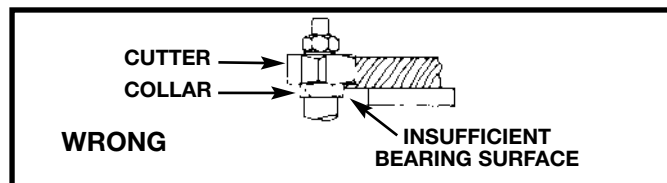


Fig. C

24. **WHEN SHAPING** with collars and starting pin, use work that is fairly heavy in proportion to the cut being made (Fig. D).

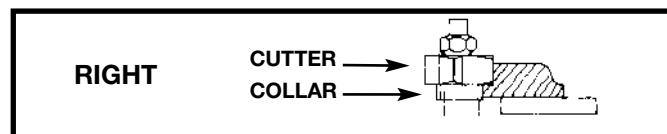


Fig. D

25. **UNDER NO CIRCUMSTANCES** should short work of light body be shaped against the collars (Fig. E).

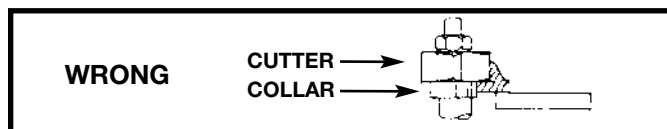


Fig. E

26. When shaping with collars and starting pin, the cutter should be positioned below the collar when possible (Fig. F).

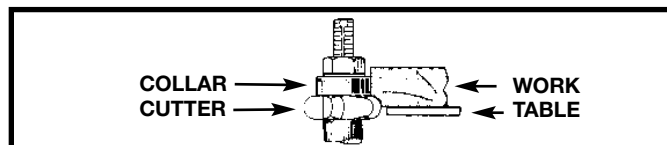


Fig. F

27. Feed workpiece against cutter rotation (Fig. G)

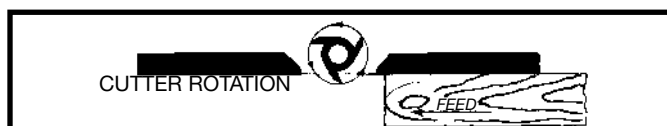


Fig. G

28. **SHOULD ANY PART OF THE TOOL** be missing, damaged, or fail in any way, or should any electrical component fail to perform properly, shut off the switch and remove the plug from the power supply outlet. Replace any missing, damaged, or failed parts before resuming operation.

29. **IMPORTANT: When the tool is not in use, the switch should be locked in the "OFF" position to prevent unauthorized use.**

30. **ADDITIONAL INFORMATION** regarding the safe and proper operation of this machine, including a safety video, is available from the Power Tool Institute, 1300 Summer Avenue, Cleveland, OH 44115-2851 ([www.powertoolinstitute.com](http://www.powertoolinstitute.com)). Information is also available from the National Safety Council, 1121 Spring Lake Drive, Itasca, IL 60143-3201. Please refer to the American National Standards Institute ANSI 01.1 Safety Requirements for Woodworking Machines and the U.S. Department of Labor OSHA 1910.213 Regulations.

## POWER CONNECTIONS

A separate electrical circuit should be used for your machines. This circuit should not be less than #12 wire and should be protected with a 20 Amp time lag fuse. If an extension cord is used, use only 3-wire extension cords which have 3-prong grounding type plugs and matching receptacle which will accept the machine's plug. Before connecting the machine to the power line, make sure the switch (s) is in the "OFF" position and be sure that the electric current is of the same characteristics as indicated on the machine. All line connections should make good contact. Running on low voltage will damage the machine.

### **⚠ DANGER**

**DO NOT EXPOSE THE MACHINE TO RAIN OR OPERATE THE MACHINE IN DAMP LOCATIONS.**

## MOTOR SPECIFICATIONS

Your machine is wired for 230 volt, 60 HZ alternating current. Before connecting the machine to the power source, make sure the switch is in the "OFF" position.

## GROUNDING INSTRUCTIONS

### **⚠ DANGER**

**THIS MACHINE MUST BE GROUNDED WHILE IN USE TO PROTECT THE OPERATOR FROM ELECTRIC SHOCK.**

### 1. All grounded, cord-connected machines:

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This machine is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the machine is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding type plugs and matching 3-conductor

receptacles that accept the machine's plug, as shown in Fig. A. Repair or replace damaged or worn cord immediately.

### **⚠ DANGER**

**IN ALL CASES, MAKE CERTAIN THE RECEPTACLE IN QUESTION IS PROPERLY GROUNDED. IF YOU ARE NOT SURE HAVE A QUALIFIED ELECTRICIAN CHECK THE RECEPTACLE.**

### 2. Grounded, cord-connected machines intended for use on a supply circuit having a nominal rating between 150 - 250 volts, inclusive:

If the machine is intended for use on a circuit that has an outlet that looks like the one illustrated in Fig. C, the machine will have a grounding plug that looks like the plug illustrated in Fig. C. Make sure the machine is connected to an outlet having the same configuration as the plug. No adapter is available or should be used with this machine. If the machine must be re-connected for use on a different type of electric circuit, the re-connection should be made by qualified service personnel; and after re-connection, the machine should comply with all local codes and ordinances.

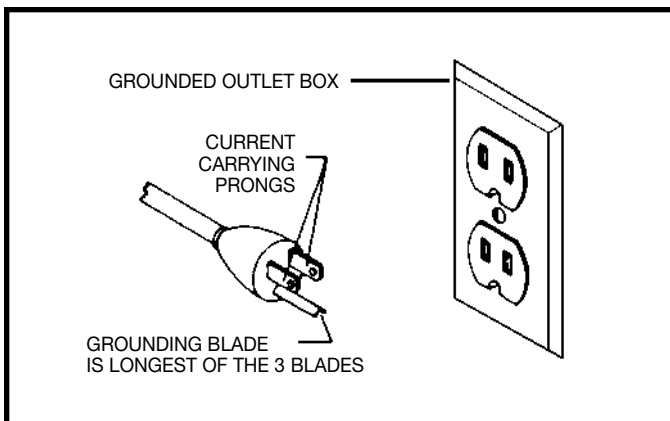


Fig. A

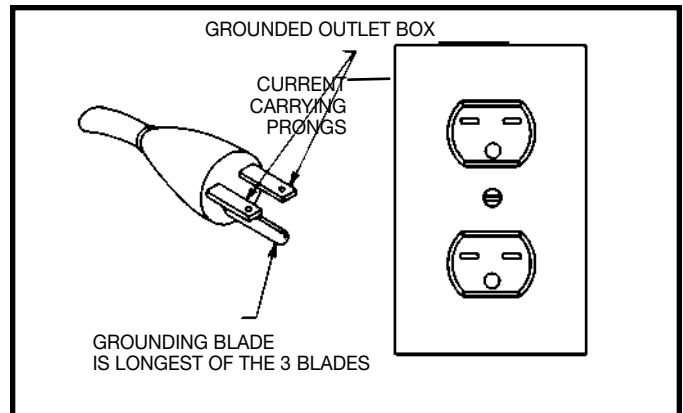


Fig. C

### 3. Permanently connected machines:

If the machine is intended to be permanently connected, the machine should be connected to a grounded metal permanent wiring system, or to a system having an equipment-grounding conductor.

## EXTENSION CORDS

**⚠ WARNING** Use proper extension cords. Make sure your extension cord is in good condition and is a 3-wire extension cord which has a 3-prong grounding type plug and matching receptacle which will accept the machine's plug. When using an extension cord, be sure to use one heavy enough to carry the current of the machine. An undersized cord will cause a drop in line voltage, resulting in loss of power and overheating. Fig. D-1 or D-2, shows the correct gauge to use depending on the cord length. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

| MINIMUM GAUGE EXTENSION CORD                                |       |                                       |                         |
|---|-------|---------------------------------------|-------------------------|
| RECOMMENDED SIZES FOR USE WITH STATIONARY ELECTRIC MACHINES |       |                                       |                         |
| Ampere Rating   | Volts | Total Length of Cord in Feet          | Gauge of Extension Cord |
| 0-6   | 240   | up to 50                              | 18 AWG                  |
| 0-6   | 240   | 50-100                                | 16 AWG                  |
| 0-6   | 240   | 100-200                               | 16 AWG                  |
| 0-6   | 240   | 200-300                               | 14 AWG                  |
| 6-10  | 240   | up to 50                              | 18 AWG                  |
| 6-10  | 240   | 50-100                                | 16 AWG                  |
| 6-10  | 240   | 100-200                               | 14 AWG                  |
| 6-10  | 240   | 200-300                               | 12 AWG                  |
| 10-12   | 240   | up to 50                              | 16 AWG                  |
| 10-12   | 240   | 50-100                                | 16 AWG                  |
| 10-12   | 240   | 100-200                               | 14 AWG                  |
| 10-12   | 240   | 200-300                               | 12 AWG                  |
| 12-16   | 240   | up to 50                              | 14 AWG                  |
| 12-16   | 240   | 50-100                                | 12 AWG                  |
| 12-16   | 240   | GREATER THAN 100 FEET NOT RECOMMENDED |                         |

Fig. D-2

## FUNCTIONAL DESCRIPTION

### FOREWORD

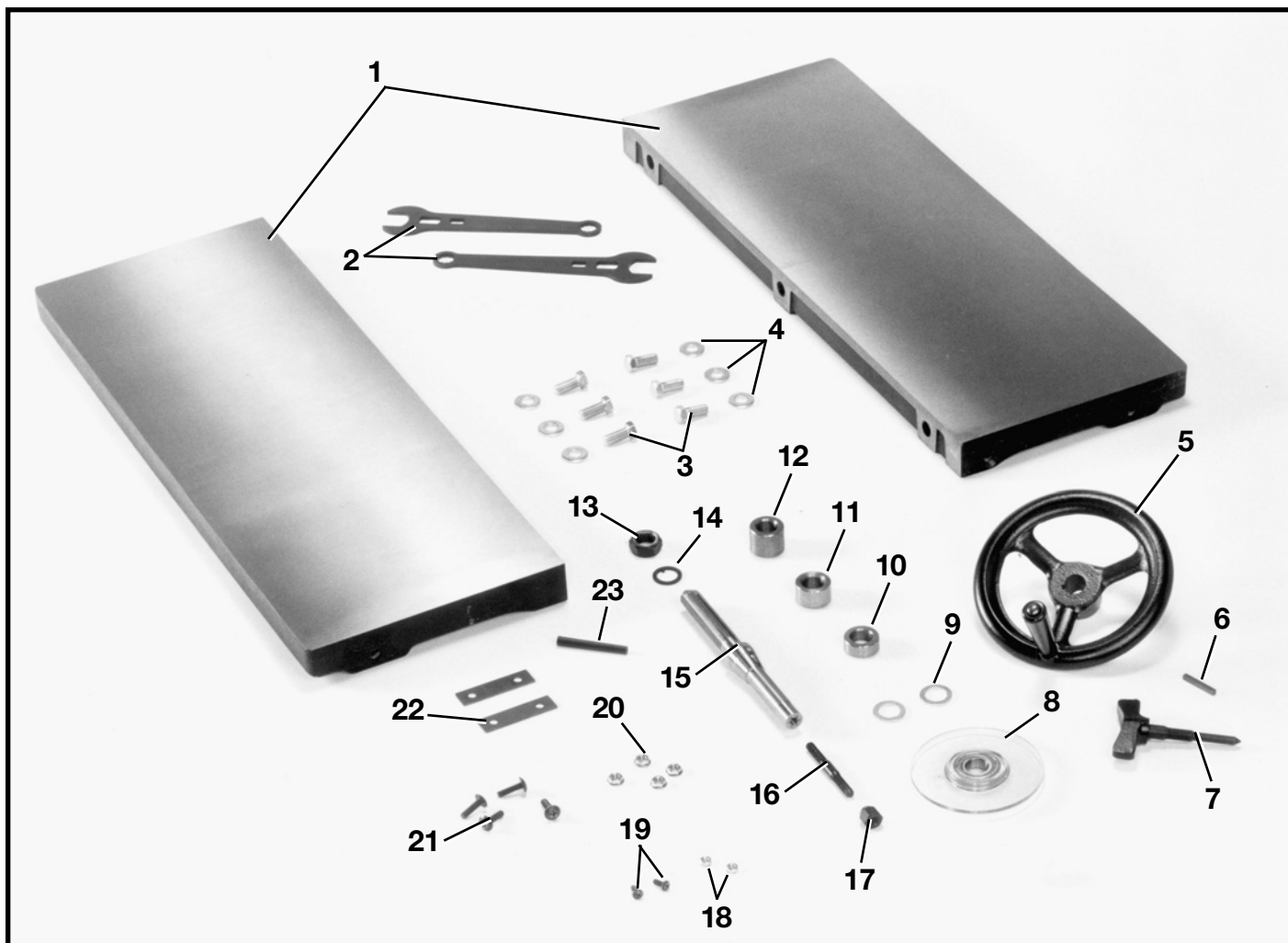
Delta Model 43-431X (also sold as 43-495X) is a heavy duty, 2-speed wood shaper. The 3 HP single-phase motor provides ample power to perform all shaping operations. It has a unitized drive mechanism, a rugged spindle assembly, and a large table. These tools will operate in both forward and reverse at 7,000 and 10,000 RPM.

**NOTICE: THE PHOTO ON THE MANUAL COVER ILLUSTRATES THE CURRENT PRODUCTION MODEL. ALL OTHER ILLUSTRATIONS CONTAINED IN THE MANUAL ARE REPRESENTATIVE ONLY AND MAY NOT DEPICT THE ACTUAL COLOR, LABELING OR ACCESSORIES AND ARE INTENDED TO ILLUSTRATE TECHNIQUE ONLY.**

## CARTON CONTENTS

### UNPACKING AND CLEANING

Carefully unpack the machine and all loose items from the shipping container(s). Remove the protective coating from all unpainted surfaces. This coating may be removed with a soft cloth moistened with kerosene (do not use acetone, gasoline or lacquer thinner for this purpose). After cleaning, cover the unpainted surfaces with a good quality household floor paste wax.



**Fig. 1**

- |   |   |
|---|---|
| 1. 10" Wide Cast Iron Extension Wings (2)                       | 14. Keyed Washer  |
| 2. Wrenches (2)   | 15. Spindle   |
| 3. 7/16-20 x 1" Hex Cap Screws (6) for mounting extension wings | 16. Tie Rod   |
| 4. 7/16" Flat Washers (6) for mounting extension wings          | 17. Tie Rod Nut   |
| 5. Handwheel  | 18. Keps Nut (2) for mounting switch to switch-mounting bracket                               |
| 6. Key for Handwheel  | 19. 10-32 x 1/2" Phillips Head Screw (2) for mounting switch to switch-mounting bracket       |
| 7. Lock Knob  | 20. 1/4-20 Flange Nut (4) for mounting switch mounting bracket to shaper                      |
| 8. Safe Guard II Spindle Guard                                  | 21. 1/4-20 x 7/8" Truss Head Machine Screw (4) for mounting switch mounting bracket to shaper |
| 9. 3/4" I.D. Washer (2)   | 22. Switch Adapter Plate (2) for mounting switch mounting bracket to shaper                   |
| 10. 3/4" I.D. x 1/2" Thick Collar                               | 23. Starting Pin  |
| 11. 3/4" I.D. x 3/4" Thick Collar                               |   |
| 12. 3/4" I.D. x 1" Thick Collar                                 |   |
| 13. Spindle Nut   |   |

## ASSEMBLY

### ASSEMBLY TOOLS REQUIRED

- \* Two wrenches (supplied)
- \* Phillips and slotted screwdriver and an adjustable wrench (not supplied)
- \* 5/8 open end or socket wrench for extension wing assembly (not supplied)

**ASSEMBLY TIME ESTIMATE - 2-3 hours**

**⚠ WARNING** FOR YOUR OWN SAFETY, DO NOT CONNECT THE MACHINE TO THE POWER SOURCE UNTIL THE MACHINE IS COMPLETELY ASSEMBLED, AND YOU READ AND UNDERSTAND THE ENTIRE INSTRUCTION MANUAL.

## ATTACHING SPINDLE RAISING AND LOWERING HANDWHEEL

1. Insert key (A) Fig. 2 into slot in spindle raising and lowering shaft (B).
2. Place the handwheel (C) Fig. 2 on the spindle shaft (B). Fit the key (A) into the slot (D) in the handwheel. Insert the set screw that holds the handwheel to the shaft. Tighten the screw firmly against the key.
3. Thread the lock knob (E) Fig. 3 into the spindle shaft (B).

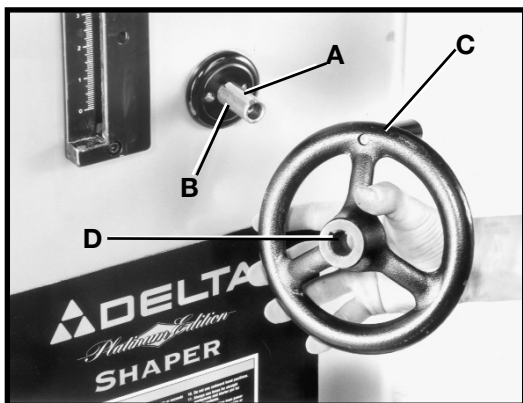


Fig. 2

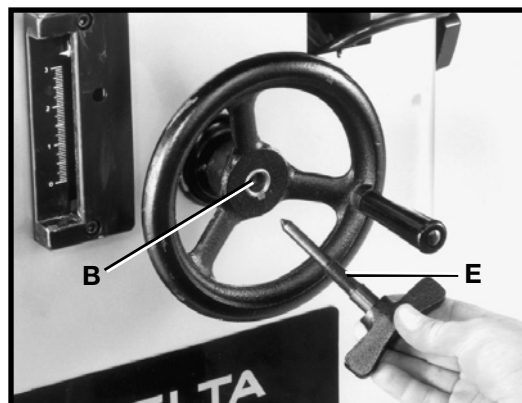


Fig. 3

## ATTACHING EXTENSION WINGS TO SHAPER TABLE

Attach the extension wing (A) Fig. 4 to shaper table (B) using three 7/16-20 x 1" hex head screws (C) and flat washers (D). Use a straight edge (E) Fig. 4 to level the extension wing with the shaper table before tightening the three screws (C). Attach and level the remaining extension wing.

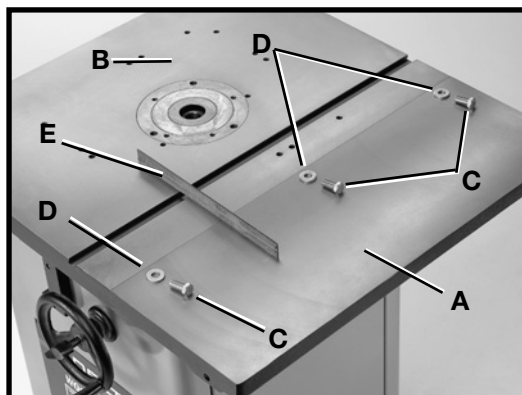


Fig. 4

## ATTACHING SWITCH BRACKET AND ON/OFF SWITCH

1. The on/off switch (A) Fig. 5 and switch mounting bracket (B) are shipped inside the shaper cabinet. Open the side door of the shaper cabinet, remove the switch package, and remove all packaging material.
2. Position the switch mounting bracket (B) Fig. 6 with the holes (C) over hole (D) in the shaper cabinet (E). Fasten the bracket (B) to the cabinet (E) using the four 1/4-20 x 7/8" truss head screws (F) Fig. 5, 1/4-20 flange nuts (G) and the two switch adapter plates (H).

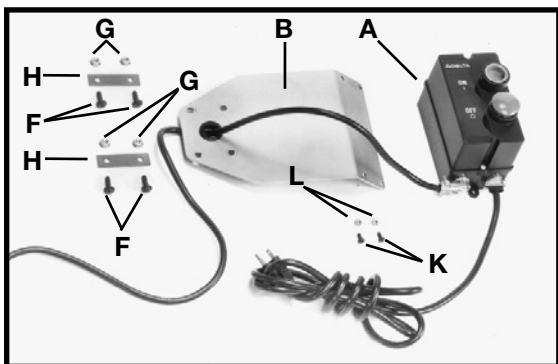


Fig. 5

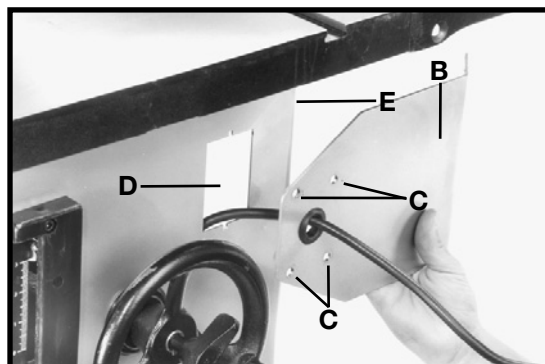


Fig. 6

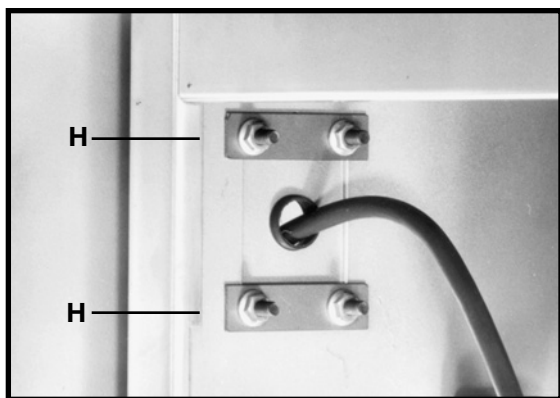


Fig. 7

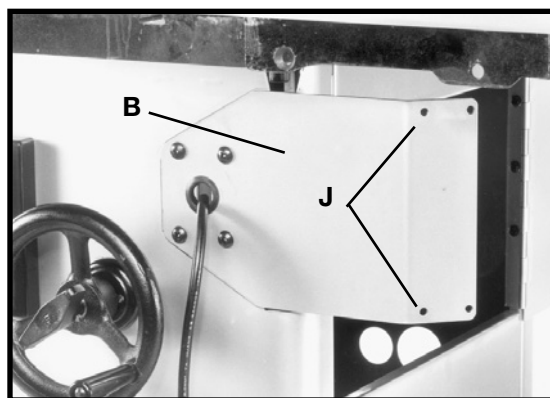


Fig. 8

**NOTE:** Position the switch adapter plates (H) inside the shaper cabinet (Fig. 7).

3. Attach the on/off switch (A) Fig. 5 to the switch mounting bracket (B) Fig. 8, through the two holes (J). Use two #10-32 x 1/2" Phillips head screws (K) Fig. 5 and secure with #10-32 Keps nuts (L).

## ATTACHING AND CHANGING SPINDLES

**⚠ WARNING DISCONNECT TOOL FROM POWER SOURCE.**

1. Thread one end of the tie rod (A) Fig. 9 into the threaded hole in the bottom of the spindle (B).
2. Insert tie rod and spindle into the spindle cartridge. Line up the pin (C) Fig. 10 with the notch (D) in the spindle.
3. Thread nut (E) Figs. 9 and 12 on the bottom end of the tie rod (A).
4. Use a wrench on the flats (F) Fig. 11 to hold the spindle while tightening the nut (E) Fig. 12 on the bottom of the tie rod.

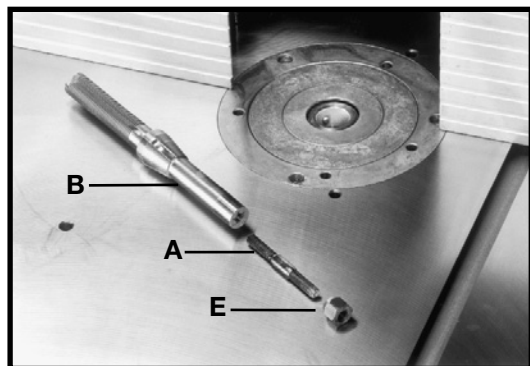


Fig. 9

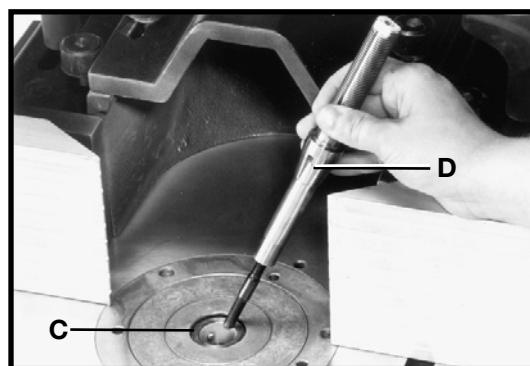


Fig. 10

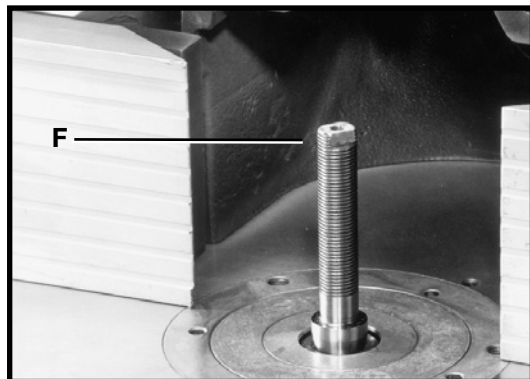


Fig. 11

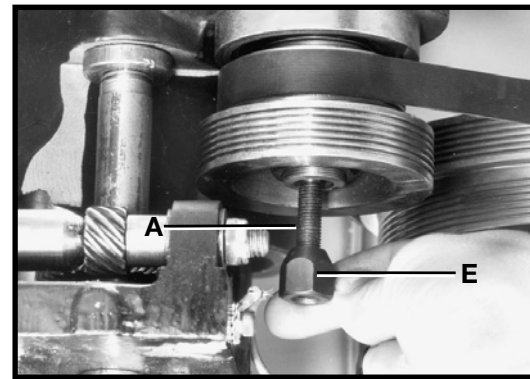


Fig. 12

## ATTACHING TABLE INSERTS

Three table inserts are provided for various size cutters, (Fig. 13). The large insert is adjustable. To set it flush with the table:

1. Remove the three slotted head screws (A) Fig. 13.
2. Use a screwdriver to turn the three adjusting screws (B) Fig.13 until the insert is flush with the table.
3. Replace the slotted head screws (A).

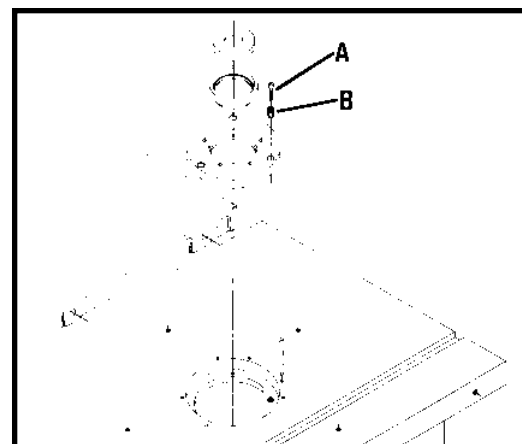


Fig. 13

## ATTACHING CUTTERS AND COLLARS TO SPINDLE

**⚠ WARNING DISCONNECT TOOL FROM POWER SOURCE.**

1. Three different collars (A) Fig. 14 are supplied with these shapers. The collars allow the cutter and/or the 4-1/2" diameter spindle guard to be positioned at various locations on the spindle.
2. When attaching cutters to the spindle, position the cutter as close to the bottom of the spindle as possible. This action will reduce the possibility of spindle run-out, which can affect the appearance of the cut.
3. Determine which, if any, collars are needed. Then attach the cutter (B) Fig. 15, keyed washer (C), and spindle nut (D) (Figs. 14 and 16). Place one wrench on the flats (A) on top of the spindle and one wrench on the spindle nut (D). Tighten as shown in Fig. 16.
4. **IMPORTANT: Always place "keyed" washer (C) Fig. 15 on spindle before screwing on nut (D). The "keyed" washer (C) prevents the nut (D) from loosening when the spindle turns counterclockwise.**

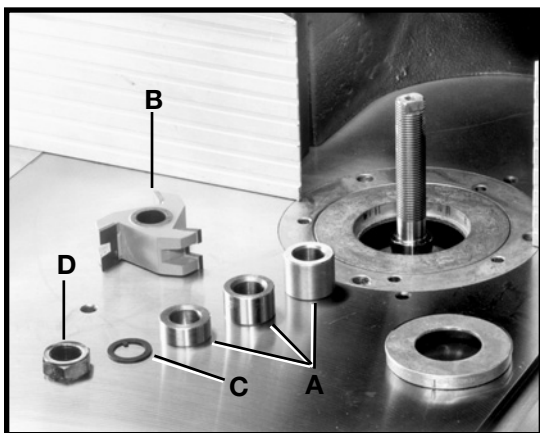


Fig. 14

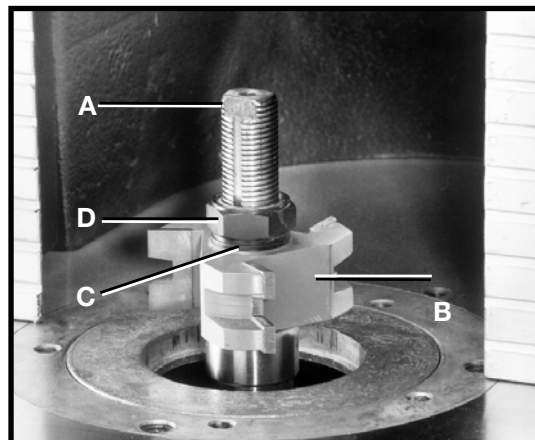


Fig. 15

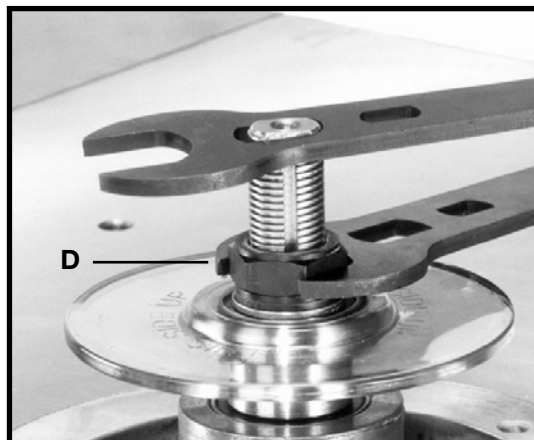


Fig. 16

## ATTACHING SPINDLE GUARD

A 4-1/2" spindle guard is supplied with these machines.

**⚠ CAUTION** THE DIAMETER OF THE SPINDLE GUARD SHOULD BE AT LEAST 1" MORE THAN THE MAXIMUM CUTTING CIRCLE OF THE SHAPER CUTTER AND THE HEIGHT OF THE GUARD SHOULD NOT EXCEED 1/4" ABOVE THE MATERIAL.

To attach spindle guard:

**⚠ WARNING** DISCONNECT TOOL FROM POWER SOURCE.

1. Place one of the 3/4" I.D. washers (A) on the spindle (Fig.20).
2. Place the spindle guard (B) Fig. 21 on the spindle. Install the other washer (C) and the "keyed" washer (D) on the spindle.
3. Thread the spindle nut (E) Fig. 22 on the spindle. Place one wrench on the flats at the top of the spindle and one wrench on spindle nut (E) and tighten.
4. **IMPORTANT:** Always place the "keyed" washer (D) Fig. 21, on the spindle before screwing on the spindle nut (E) Fig. 22. The "keyed" washer (D) Fig.21 prevents the spindle nut (E) Fig. 22 from loosening when the spindle turns counterclockwise.

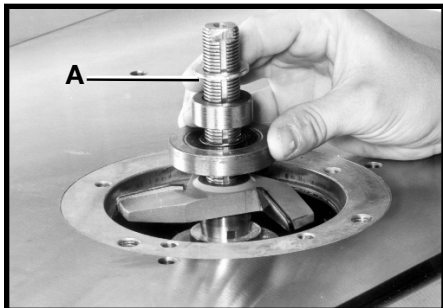


Fig. 20

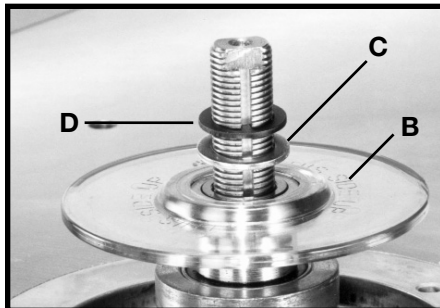


Fig. 21

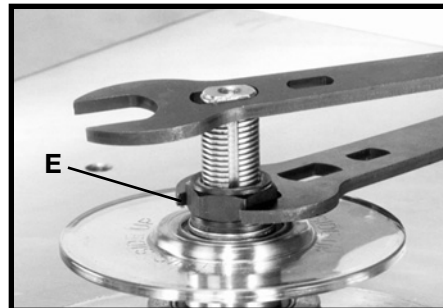


Fig. 22

## OPERATION

### OPERATIONAL CONTROLS AND ADJUSTMENTS

#### STARTING AND STOPPING THE TOOL

To start the machine, push "ON" button (A) Fig. 20. To stop the machine, push "OFF" button (B).

**IMPORTANT:** When the tool is not in use, the switch should be locked in the "OFF" position to prevent unauthorized use, using a padlock (C) Fig. 21 with a 3/16" diameter shackle.

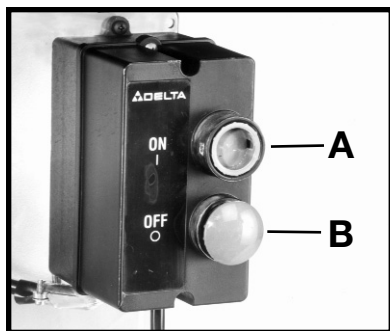


Fig. 20

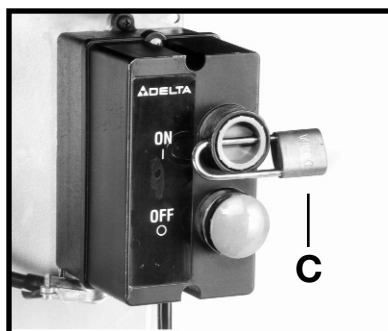


Fig. 21

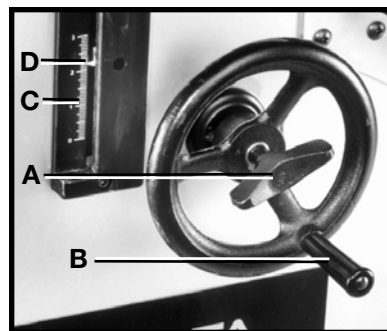


Fig. 22

#### RAISING AND LOWERING SPINDLE

The spindle can be raised or lowered by loosening lock knob (A) Fig. 22, and turning handwheel (B). To raise the spindle height, turn the handwheel (B) clockwise. To lower the spindle height, turn handle (B) counterclockwise.

The scale (C) Fig. 22 indicates the spindle travel range from 0" to 3" and is marked in 1/16" increments. Minor cutter height adjustments can be measured using the pointer (D) along the scale (C).

**⚠ CAUTION** ALWAYS TIGHTEN LOCK KNOB (A), FIG. 22 AFTER ADJUSTING SPINDLE HEIGHT.

## CHANGING SPEEDS AND ADJUSTING BELT TENSION

The tools are supplied with a 2-step motor pulley and a 2-step spindle pulley that provide spindle speeds of 7,000 and 10,000 RPM. With the belt on the largest step of the motor pulley and the smallest step of the spindle pulley, the spindle speed will be 10,000 RPM. With the belt on the smallest step of the motor pulley and the largest step of the spindle pulley, the spindle speed will be 7,000 RPM.

A chart (Y) Fig. 23 that illustrates the correct belt placement for 7,000 or 10,000 RPM is located on the inside panel of the motor access door.

To change speeds and adjust belt tension:

### **⚠ WARNING** DISCONNECT TOOL FROM POWER SOURCE.

1. Open motor access door (Y) Fig. 23.
2. Loosen the thumb screw (A) Fig. 24. Release tension on the belt by moving the lever (B) to the left. Position the belt (C) on the desired steps of the spindle pulley (D) and the motor pulley (E), and apply belt tension by moving the lever (B) to the right. When the desired belt tension is attained, tighten the thumb screw (A).
3. Proper belt tension is approximately a 3/32" deflection when using light finger pressure on the belt between pulleys. **IMPORTANT:** Pulleys (D) and (E) Fig. 24 should always be aligned with each other to provide maximum belt performance and reduce belt wear. To check pulley alignment, refer to section "REPLACING SPINDLE CARTRIDGE".

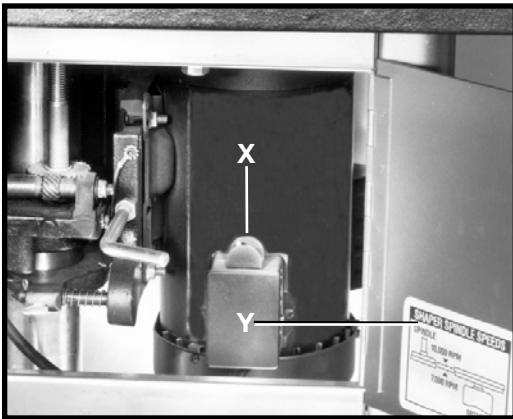


Fig. 23

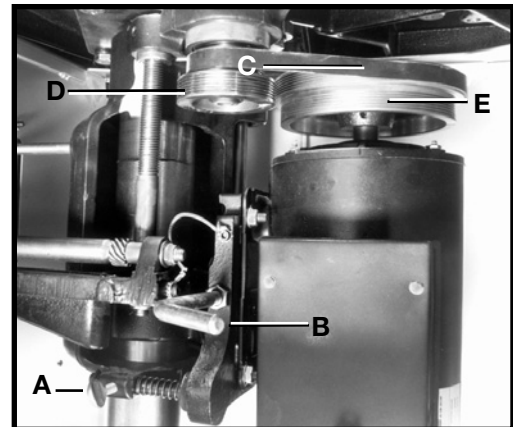


Fig. 24

## REVERSING SPINDLE ROTATION

### **⚠ WARNING** DISCONNECT TOOL FROM POWER SOURCE.

The motor is equipped with a reversing switch (X) Fig. 23, located on the motor junction box.

### **⚠ CAUTION** NEVER ATTEMPT TO REVERSE THE ROTATION OF THE SPINDLE WITH THE MOTOR RUNNING.

## MACHINE USE

The following examples show set-up and operational procedures when using the fence, miter gauge, collars, and starting pin. Please review this information carefully before turning on the power to avoid personal injury and/or damage to the machine.

## SHAPING WHEN USING THE FENCE AS A GUIDE

Using the fence is the safest and most satisfactory method of shaping. Most straight work can be shaped using the fence described below.

1. For average work, where a portion of the original edge of the work is not touched by the cutter, both the front and rear fences are in a straight line (Fig. 25).
2. When the shaping operation removes the entire edge of the work (jointing or making a full bead), the shaped edge will not be supported by the rear fence when both fences are in line (Fig. 26). In this case, the work should be advanced to the position shown in Fig. 26 and stopped.

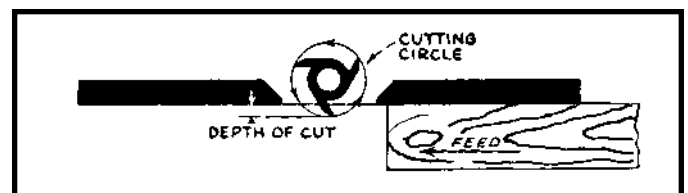


Fig. 25



Fig. 26

3. The rear fence should then be advanced to contact the work (Fig. 27), putting it in line with the cutting circle.

## SHAPING WITH COLLARS AND STARTING PIN

When shaping with collars and starting pin, follow the rules below for superior finishing and safety in operation.

1. Free the collars of **ALL** gum or other substances, and make sure that they are smooth.
2. Check to see that the edge of the work is smooth. **ANY** irregularity in the surface that rides against the collar will be duplicated on the moulded surface.
3. A portion of the edge of the work **MUST** remain untouched by the cutters in order that the collar will have sufficient bearing surface. The wrong method is shown in Fig. 28, while Fig. 29 illustrates the right method.
4. The work **MUST** be fairly heavy in proportion to the cut being made (Fig. 30). Under **NO** circumstances should short work of light body be shaped against the collars (Fig. 31).
5. When shaping with collars and starting pin, use the spindle guard supplied with the tool.



Fig. 27

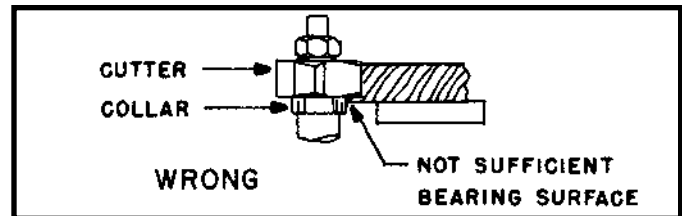


Fig. 28

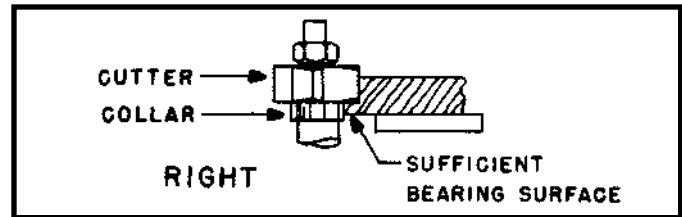


Fig. 29

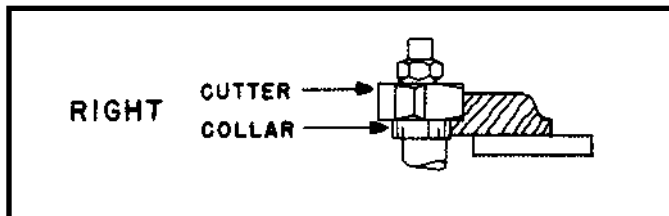


Fig. 30

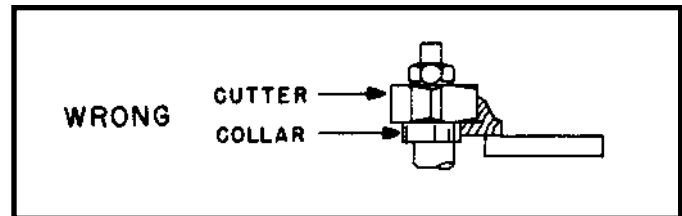


Fig. 31

## POSITION OF COLLARS

1. The collars may be used in any of three positions: above, below, or between two cutters.
2. When the collar is used below the cutter (Fig. 32), the operator can see the progress of the cut. **NOTE:** Any accidental lifting of the work will gouge the wood and ruin the workpiece.
3. When the collar is used above the cutter (Fig. 33), the operator will be unable to see the cut. However, the advantage in this method is that the cut is not affected by slight variations in the thickness of the stock. Also, accidental lifting of the work will not gouge the workpiece. Simple correction for the mistake is to repeat the operation.
4. The collar between cutters method (Fig. 34) has the advantages of the first two methods and is frequently used when both edges of the work are to be shaped.

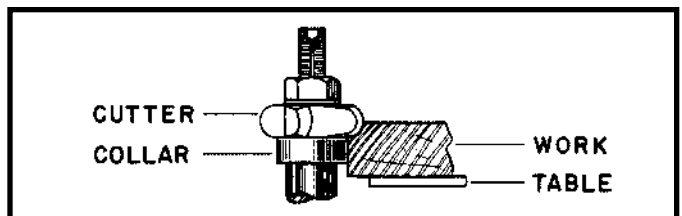


Fig. 32

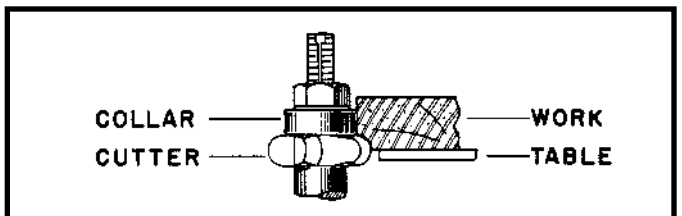


Fig. 33

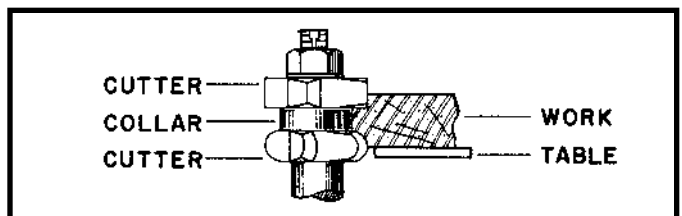


Fig. 34

## END SHAPING

Maintain sufficient support of the workpiece during all shaping operations. When end shaping a workpiece that is not long enough to be sufficiently supported halfway through the cut, USE A MITER GAUGE OR BACK-UP BLOCK (Figs. 38 and 39).

**⚠ WARNING SHAPING NARROW MATERIAL WITHOUT PROPER SUPPORT AND PUSH STICK COULD RESULT IN INJURY.**

The infeed fence assembly must be parallel to the miter slot when using the miter gauge. Adjust the outfeed fence so that it will not contact the workpiece after it has passed the cutter. Place the workpiece firmly against the miter gauge and infeed fence and feed the cutter by pushing the miter gauge.

**⚠ WARNING FAILURE TO HOLD THE WORKPIECE FIRMLY AGAINST THE MITER GAUGE DURING THE CUT COULD RESULT IN SLIPPAGE OF THE WORKPIECE, CAUSING INJURY AND/OR DAMAGE TO THE WORKPIECE.**

## CROSS GRAIN SHAPING

Shaping across the grain will usually cause some splitting at the end of the cut. Feeding the workpiece slowly across the cutter at the end of the cut can minimize the splitting. Shape the cross-grain cuts first. Shaping with the grain last will usually remove the splintered end.

## SHAPING NARROW MATERIAL

Clamp a support (Fig. 40) to the tool when shaping narrow material (less than 3" wide) Feed the workpiece under this support with a push stick. **NOTE:** The push stick should be slightly narrower and thinner than the workpiece.

**⚠ WARNING SHAPING NARROW MATERIAL WITHOUT PROPER SUPPORT AND PUSH STICK COULD RESULT IN INJURY.**

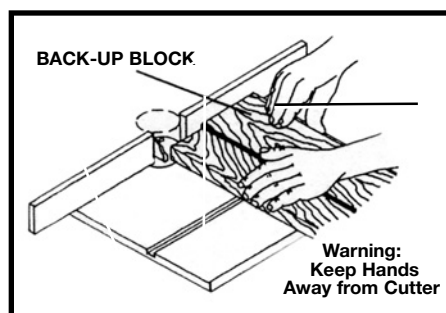


Fig. 38

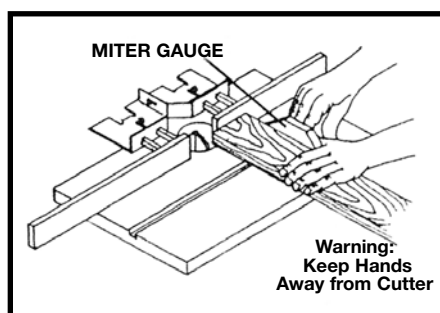


Fig. 39

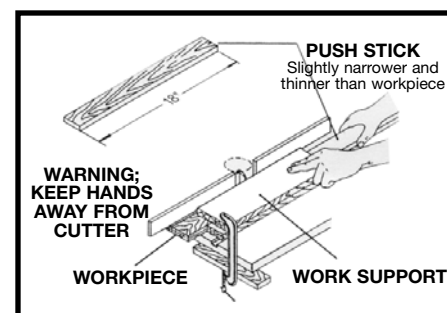


Fig. 40

## STARTING PIN

1. These tools are supplied with a tapered starting pin (A) Fig. 41, which is used as a support when starting the cut. The starting pin (A) is placed in one of the tapered holes (B) in the table.
2. Place the work in the first position using the guide pin as a support (Fig. 42). Swing the work into the cutter as shown in the second position (Fig. 42). The work will be supported by the collar and starting pin (Fig. 42).
3. After the cut has started, swing the work free of the starting pin and let it ride only against the collar (third position, Fig. 43). **ALWAYS FEED WORKPIECE AGAINST THE ROTATION OF THE CUTTER.**

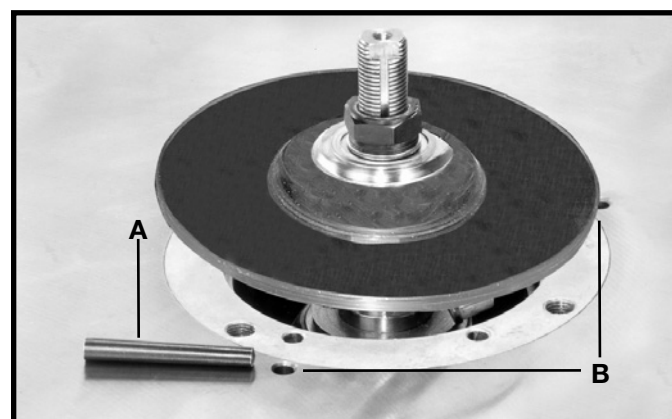


Fig.41

**⚠ WARNING ADVANCING THE WORK TO THE CUTTER WITHOUT THE SIDE SUPPORT OF THE STARTING PIN WILL PROVIDE KICKBACK. ALWAYS USE THE STARTING PIN.**

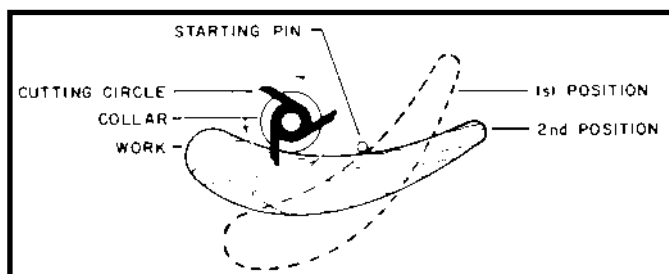


Fig. 42

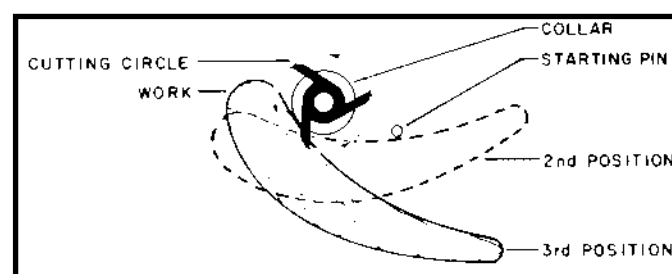


Fig. 43

## REPLACING SPINDLE CARTRIDGE

**⚠ WARNING** DISCONNECT TOOL FROM POWER SOURCE.

1. **IMPORTANT:** When replacing the spindle cartridge, loosen bolt (A) Fig. 44. Remove the cartridge. Insert new cartridge. Tighten bolt (A) Fig. 44, **ONLY** 7 TO 10 foot pounds.
2. The spindle pulley (D) Fig. 45, and motor pulley (E) should always be aligned with each other to provide maximum belt performance and to reduce belt wear. To check the pulley alignment, place a straight edge against the underside of both pulleys (Fig. 45). If an adjustment is necessary, loosen the set screw (F) and move the motor pulley up or down until the two pulleys (D) and (E) are aligned. Tighten the set screw.
3. Proper belt tension is approximately a 3/32" deflection when using light finger pressure on the belt between pulleys (D) and (E) Fig. 45.

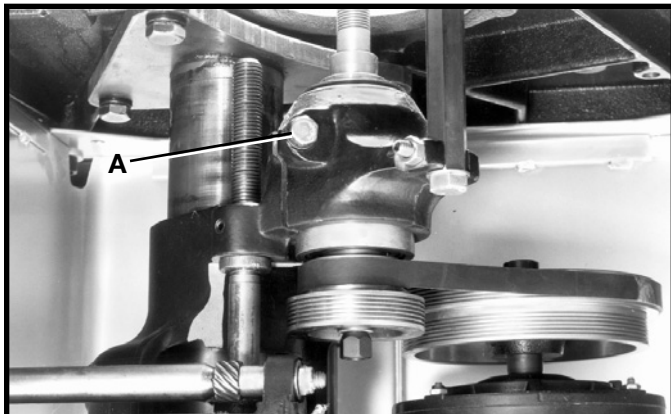


Fig. 44

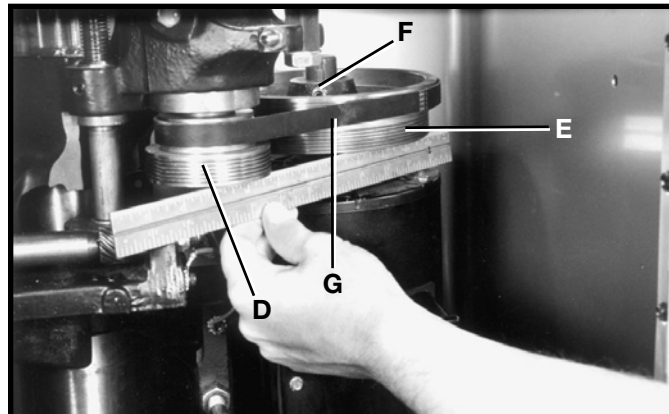


Fig. 45

## TROUBLESHOOTING

For assistance with your machine, visit our website at [www.deltamachinery.com](http://www.deltamachinery.com) for a list of service centers or call the DELTA Machinery help line at 1-800-223-7278 (In Canada call 1-800-463-3582).

## MAINTENANCE

### KEEP MACHINE CLEAN

Periodically blow out all air passages with dry compressed air. All plastic parts should be cleaned with a soft damp cloth. NEVER use solvents to clean plastic parts. They could possibly dissolve or otherwise damage the material.

**⚠ WARNING** WEAR ANSI Z87.1 SAFETY GLASSES WHILE USING COMPRESSED AIR.

### FAILURE TO START

Should your machine fail to start, check to make sure the prongs on the cord plug are making good contact in the outlet. Also, check for blown fuses or open circuit breakers in the line.

### LUBRICATION

Apply household floor paste wax to the machine table and extension table or other work surface weekly.

### PROTECTING CAST IRON FROM RUST

To clean and protect cast iron tables from rust, you will need the following materials: 1 pushblock from a jointer, 1 sheet of medium Scotch-Brite™ Blending Hand Pad, 1 can of WD-40®, 1 can of degreaser, 1 can of TopCote® Aerosol. Apply the WD-40 and polish the table surface with the Scotch-Brite pad using the pushblock as a holddown. Degrease the table, then apply the TopCote® accordingly.

## SERVICE



## PARTS, SERVICE OR WARRANTY ASSISTANCE

All Delta Machines and accessories are manufactured to high quality standards and are serviced by a network of Porter-Cable • Delta Factory Service Centers and Delta Authorized Service Stations. To obtain additional information regarding your Delta quality product or to obtain parts, service, warranty assistance, or the location of the nearest service outlet, please call 1-800-223-7278 (In Canada call 1-800-463-3582).

## ACCESSORIES

A complete line of accessories is available from your Delta Supplier, Porter-Cable • Delta Factory Service Centers, and Delta Authorized Service Stations. Please visit our Web Site [www.deltamachinery.com](http://www.deltamachinery.com) for a catalog or for the name of your nearest supplier.

**⚠ WARNING** SINCE ACCESSORIES OTHER THAN THOSE OFFERED BY DELTA HAVE NOT BEEN TESTED WITH THIS PRODUCT, USE OF SUCH ACCESSORIES COULD BE HAZARDOUS. FOR SAFEST OPERATION, ONLY DELTA RECOMMENDED ACCESSORIES SHOULD BE USED WITH THIS PRODUCT.

## WARRANTY



### Two Year Limited New Product Warranty

Delta will repair or replace, at its expense and at its option, any new Delta machine, machine part, or machine accessory which in normal use has proven to be defective in workmanship or material, provided that the customer returns the product prepaid to a Delta factory service center or authorized service station with proof of purchase of the product within two years and provides Delta with reasonable opportunity to verify the alleged defect by inspection. For all refurbished Delta product, the warranty period is 180 days. Delta may require that electric motors be returned prepaid to a motor manufacturer's authorized station for inspection and repair or replacement. Delta will not be responsible for any asserted defect which has resulted from normal wear, misuse, abuse or repair or alteration made or specifically authorized by anyone other than an authorized Delta service facility or representative. Under no circumstances will Delta be liable for incidental or consequential damages resulting from defective products. This warranty is Delta's sole warranty and sets forth the customer's exclusive remedy, with respect to defective products; all other warranties, express or implied, whether of merchantability, fitness for purpose, or otherwise, are expressly disclaimed by Delta.

## NOTES

## NOTES

## PORTER-CABLE • DELTA SERVICE CENTERS (CENTROS DE SERVICIO DE PORTER-CABLE • DELTA)

Parts and Repair Service for Porter-Cable • Delta Machinery are Available at These Locations  
(Obtenga Refaccion de Partes o Servicio para su Herramienta en los Siguientes Centros de Porter-Cable • Delta)

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4501 N. 7th Ave.  
Phone: (602) 279-6414  
Fax: (602) 279-5470

### CALIFORNIA

Ontario 91761 (Los Angeles)  
3949A East Guasti Road  
Phone: (909) 390-5555  
Fax: (909) 390-5554

San Diego 92111  
7290 Clairemont Mesa Blvd.  
Phone: (858) 279-2011  
Fax: (858) 279-0362

San Leandro 94577 (Oakland)  
3039 Teagarden Street  
Phone: (510) 357-9762  
Fax: (510) 357-7939

### COLORADO

Denver 80223  
700 West Mississippi Ave.  
Phone: (303) 922-8325  
Fax: (303) 922-0245

### FLORIDA

Davie 33314 (Miami)  
4343 South State Rd. 7 (441)  
Unit #107  
Phone: (954) 321-6635  
Fax: (954) 321-6638  
  
Tampa 33634  
4909 West Waters Ave.  
Phone: (813) 884-0434  
Fax: (813) 888-5997

### GEORGIA

Forest Park 30297 (Atlanta)  
5442 Frontage Road,  
Suite 112  
Phone: (404) 608-0006  
Fax: (404) 608-1123

### ILLINOIS

Addison 60101 (Chicago)  
400 South Rohlwing Rd.  
Phone: (630) 424-8805  
Fax: (630) 424-8895

Woodridge 60517 (Chicago)  
2033 West 75th Street  
Phone: (630) 910-9200  
Fax: (630) 910-0360

### KANSAS

Overland Park 66214  
9201 Quivira Road  
Phone: (913) 495-4330  
Fax: (913) 495-4378

### MARYLAND

Elkridge 21075 (Baltimore)  
7397-102 Washington Blvd.  
Phone: (410) 799-9394  
Fax: (410) 799-9398

### MASSACHUSETTS

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Franklin Industrial Park  
101E Constitution Blvd.  
Phone: (508) 520-8802  
Fax: (508) 528-8089

### MICHIGAN

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30475 Stephenson Highway  
Phone: (248) 597-5000  
Fax: (248) 597-5004

### MINNESOTA

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9709 Valley View Road  
Phone: (952) 884-9191  
Fax: (952) 884-3750

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Fax: (314) 997-9183

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175-25 Horace Harding Expwy.  
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Fax: (718) 423-9619

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9129 Monroe Road, Suite 115  
Phone: (704) 841-1176  
Fax: (704) 708-4625

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Columbus 43229  
1948 Schrock Road  
Phone: (614) 895-3112  
Fax: (614) 895-3187  
  
Cleveland 44125  
8001 Sweet Valley Drive Unit #19  
Phone: (216) 447-9030  
Fax: (216) 447-3097

### OREGON

Portland 97230  
14811 North East Airport Way  
Phone: (503) 255-6556  
Fax: (503) 255-6543

### PENNSYLVANIA

Willow Grove 19090  
(Philadelphia)  
520 North York Road  
Phone: (215) 658-1430  
Fax: (215) 658-1433

### TEXAS

Carrollton 75006 (Dallas)  
1300 Interstate 35 N, Suite 112  
Phone: (972) 446-2996  
Fax: (972) 446-8157

Houston 77022-2122  
536 East Tidwell Rd.  
Phone: (713) 692-7111  
Fax: (713) 692-1107

### WASHINGTON

Auburn 98001 (Seattle)  
3320 West Valley HWY, North  
Building D, Suite 111  
Phone: (253) 333-8353  
Fax: (253) 333-9613

Authorized Service Stations are located in many large cities. Telephone **800-438-2486** or **731-541-6042** for assistance locating one. Parts and accessories for Porter-Cable-Delta products should be obtained by contacting any Porter-Cable-Delta Distributor, Authorized Service Center, or Porter-Cable-Delta Factory Service Center. If you do not have access to any of these, call **800-223-7278** and you will be directed to the nearest Porter-Cable-Delta Factory Service Center. Las Estaciones de Servicio Autorizadas están ubicadas en muchas grandes ciudades. Llame al **800-438-2486** ó al **731-541-6042** para obtener asistencia a fin de localizar una. Las piezas y los accesorios para los productos Porter-Cable-Delta deben obtenerse poniéndose en contacto con cualquier distribuidor Porter-Cable-Delta, Centro de Servicio Autorizado o Centro de Servicio de Fábrica Porter-Cable-Delta. Si no tiene acceso a ninguna de estas opciones, llame al **800-223-7278** y le dirigirán al Centro de Servicio de Fábrica Porter-Cable-Delta más cercano.

## CANADIAN PORTER-CABLE • DELTA SERVICE CENTERS

### ALBERTA

Bay 6, 2520-23rd St. N.E.  
Calgary, Alberta  
T2E 8L2  
Phone: (403) 735-6166  
Fax: (403) 735-6144

### BRITISH COLUMBIA

8520 Baxter Place  
Burnaby, B.C.  
V5A 4T8  
Phone: (604) 420-0102  
Fax: (604) 420-3522

### MANITOBA

1699 Dublin Avenue  
Winnipeg, Manitoba  
R3H 0H2  
Phone: (204) 633-9259  
Fax: (204) 632-1976

### ONTARIO

505 Southgate Drive  
Guelph, Ontario  
N1H 6M7  
Phone: (519) 767-4132  
Fax: (519) 767-4131

### QUÉBEC

1515 ave.  
St-Jean Baptiste, Suite 160  
Québec, Québec  
G2E 5E2  
Phone: (418) 877-7112  
Fax: (418) 877-7123

1447, Begin  
St-Laurent, (Montréal),  
Québec  
H4R 1V8  
Phone: (514) 336-8772  
Fax: (514) 336-3505

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