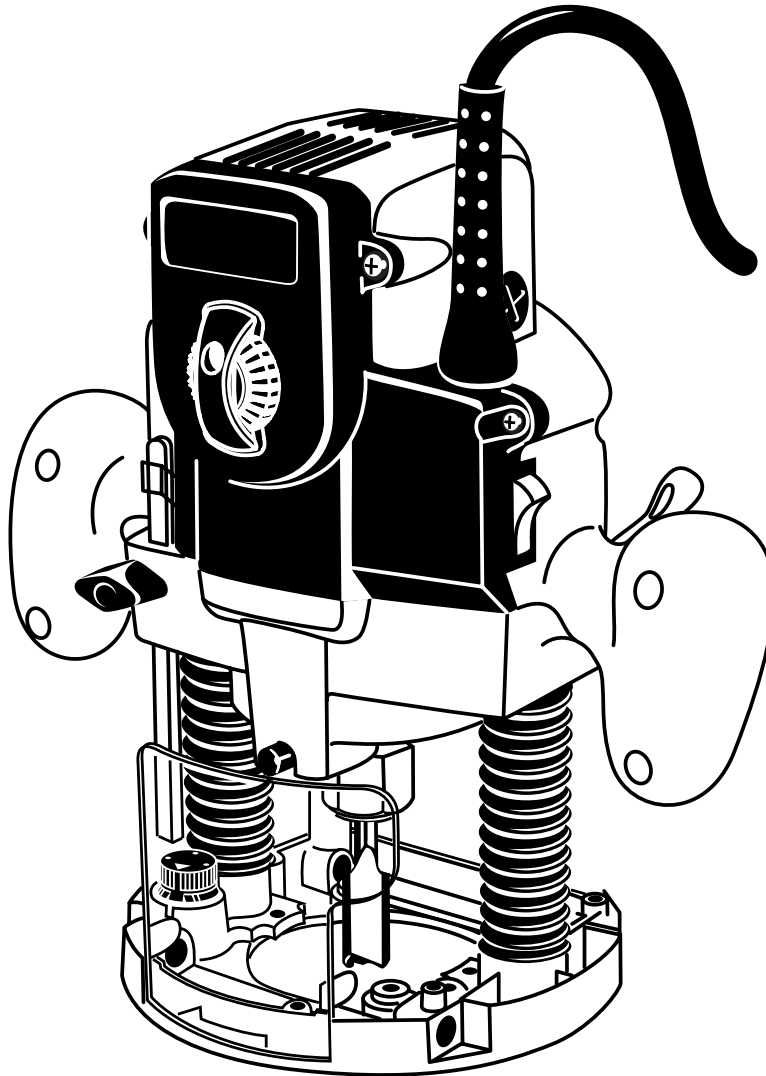


# RYOBI

## OPERATOR'S MANUAL ELECTRONIC PLUNGE ROUTER RE180PL1 VARIABLE SPEED – DOUBLE INSULATED



Your new router has been engineered and manufactured to Ryobi's high standard for dependability, ease of operation, and operator safety. Properly cared for, it will give you years of rugged, trouble-free performance.

**⚠ WARNING:** To reduce the risk of injury, the user must read and understand the operator's manual.

Thank you again for buying Ryobi tools.

**SAVE THIS MANUAL FOR FUTURE REFERENCE**

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## INTRODUCTION

Your router has many features for making the use of this tool more pleasant and enjoyable. Safety, performance, and dependability have been given top priority in the design of this tool making it easy to maintain and operate.

### **WARNING:**

Do not attempt to use this tool until you thoroughly read and completely understand the operator's manual. Pay close attention to the safety rules, including Dangers, Warnings, and Cautions. If you use your tool properly and only for what it is intended, you will enjoy years of safe, reliable service.



The operation of any power tool can result in foreign objects being thrown into your eyes, which can result in severe eye damage. Before beginning tool operation, always wear safety goggles or safety glasses with side shields and a full face shield when needed. We recommend Wide Vision Safety Mask for use over eyeglasses or standard safety glasses with side shields. Always wear eye protection which is marked to comply with ANSI Z87.1.



**Look for this symbol to point out important safety precautions. It means attention!!! Your safety is involved.**

# GENERAL SAFETY RULES

## SAVE THESE INSTRUCTIONS


### **WARNING:**

Read and understand all instructions. Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

## WORK AREA

- **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
- **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools may create sparks which may ignite the dust or fumes.
- **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

## ELECTRICAL SAFETY

- **Double insulated tools are equipped with a polarized plug (one blade is wider than the other).** This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. **Do not change the plug in any way.** Double insulation  eliminates the need for the three-wire grounded power cord and grounded power supply system.
- **Avoid body contact with grounded surfaces, such as pipes, radiators, ranges, and refrigerators.** There is an increased risk of electric shock if your body is grounded.
- **Don't expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- **Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges, or moving parts. Replace damaged cords immediately.** Damaged cords increase the risk of electric shock.
- **When operating a power tool outside, use an outdoor extension cord marked "W-A" or "W".** These cords are rated for outdoor use and reduce the risk of electric shock.

## PERSONAL SAFETY

- **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.

- **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts or drawn into air vents.
- **Avoid accidental starting. Be sure switch is off before plugging in.** Carrying tools with your finger on the switch or plugging in tools that have the switch on, invites accidents.
- **Remove adjusting keys or wrenches before turning the tool on.** A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations. Do not use on a ladder or unstable support.
- **Use safety equipment. Always wear eye protection.** Dust mask, nonskid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

## TOOL USE AND CARE

- **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
- **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
- **Do not use tool if switch does not turn it on or off.** Any tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Disconnect the plug from power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
- **Store idle tools out of the reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
- **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools with sharp cutting edges are less likely to bind and are easier to control.
- **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
- **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool, may become hazardous when used on another tool.

# GENERAL SAFETY RULES

## SERVICE

- **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury.
- **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of electric shock or injury.

## SPECIFIC SAFETY RULES

Hold tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its cord. Contact with a “live” wire will make exposed metal parts of the tool “live” and shock the operator.

### ADDITIONAL SAFETY RULES

- **Know your power tool. Read operator’s manual carefully. Learn its applications and limitations, as well as the specific potential hazards related to this tool.** Following this rule will reduce the risk of electric shock, fire, or serious injury.
- **Always wear safety glasses. Everyday eyeglasses have only impact-resistant lenses; they are NOT safety glasses.** Following this rule will reduce the risk of serious personal injury.
- **Protect your lungs. Wear a face or dust mask if the operation is dusty.** Following this rule will reduce the risk of serious personal injury.
- **Protect your hearing. Wear hearing protection during extended periods of operation.** Following this rule will reduce the risk of serious personal injury.
- **Inspect tool cords periodically and, if damaged, have repaired at your nearest Factory Service Center or other Authorized Service Organization. Constantly stay aware of cord location.** Following this rule will reduce the risk of electric shock or fire.
- **Check damaged parts. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service center.** Following this rule will reduce the risk of shock, fire, or serious injury.
- **Do not abuse cord. Never carry the tool by the cord or yank it to disconnect it from the receptacle. Keep cord away from heat, oil, and sharp edges.** Following this rule will reduce the risk of electric shock or fire.
- **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. A wire gage size (A.W.G.) of at least 16 is recommended for an extension cord 100 feet or less in length. A cord exceeding 100 feet is not recommended. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.** An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.
- **Inspect for and remove all nails from lumber before routing.** Following this rule will reduce the risk of serious personal injury.
- **Drugs, alcohol, medication. Do not operate tool while under the influence of drugs, alcohol, or any medication.** Following this rule will reduce the risk of electric shock, fire, or serious personal injury.
- **Save these instructions. Refer to them frequently and use them to instruct others who may use this tool. If you loan someone this tool, loan them these instructions also.**

### **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, such as those dust masks that are specially designed to filter out microscopic particles.

# SYMBOLS

**Important:** Some of the following symbols may be used on your tool. Please study them and learn their meaning. Proper interpretation of these symbols will allow you to operate the tool better and safer.

SYMBOL	NAME	DESIGNATION/EXPLANATION
V	Volts	Voltage
A	Amperes	Current
Hz	Hertz	Frequency (cycles per second)
W	Watt	Power
min	Minutes	Time
~	Alternating Current	Type or a characteristic of current
$n_0$	No Load Speed	Rotational speed, at no load
	Class II Construction	Designates double-insulated construction tools
.../min	Revolutions or Reciprocation Per Minute	Revolutions, strokes, surface speed, orbits etc. per minute
	Safety Alert	Indicates danger, warning or caution. It means attention!!! Your safety is involved.
	Wet Conditions Alert	Do not expose to rain or use in damp locations.

The purpose of safety symbols is to attract your attention to possible dangers. The safety symbols, and the explanations with them, deserve your careful attention and understanding. The safety warnings do not by themselves eliminate any danger. The instructions or warnings they give are not substitutes for proper accident prevention measures.

## SYMBOL MEANING



**DANGER:** Failure to obey a safety warning will result in serious injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock and personal injury.



**WARNING:** Failure to obey a safety warning can result in serious injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock and personal injury.



**CAUTION:** Failure to obey a safety warning may result in property damage or personal injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock and personal injury.

**NOTE:** Advises you of information or instructions vital to the operation or maintenance of the equipment.

## SAVE THESE INSTRUCTIONS

# SPECIFICATIONS

Plunge Depth	0 - 2 in. (0 - 5.08 cm)
Collet	1/2 in. (12.7 mm)
Adaptor	1/4 in. (6.35 mm)
Peak Horsepower	2
Input	120 Volts, 60 Hz, AC Only, 10.0 Amperes
No Load Speed	15,000 - 23,000 RPM
Power Cord	10 ft. (3 m)
Net Weight	8.5 lbs. (3.86 kg.)

# UNPACKING

## INSTRUCTIONS

Your router has been shipped completely assembled.

- Carefully remove the tool and accessories from the box. Make sure that all items listed in the packing list are included.
- Inspect the tool carefully to make sure no breakage or damage occurred during shipping.
- Do not discard the packing material until you have carefully inspected and satisfactorily operated the tool.
- If any parts are damaged or missing, please call 1-800-525-2579 for assistance.

## PACKING LIST

Plunge Router  
Collet  
Adaptor  
15/16 in. (23.8 mm) Wrench  
5/16-18 UNC-2A Flathead Screws (2)  
Operator's Manual

**NOTE:** The screws and the optional depth control knob must be used when mounting your router to a router table. They are the only screws that will secure your router to a router table properly.

### **WARNING:**

If any parts are missing do not operate your tool until the missing parts are replaced. Failure to do so could result in possible serious personal injury.

# APPLICATIONS

Use your router only for the purposes listed below:

- Routing grooves, shaping edges, freehand designs, etc. in wood.
- Chamfering, rabbeting, dadoing, and dovetailing in wood.
- Routing edges on laminates.

# FEATURES

Your plunge router is a versatile woodworking tool that will give you years of trouble-free performance. It is engineered with the professional in mind, but its ease of operation allows the amateur to produce work that is beautiful and precise. As the name implies your plunge router can be used for making plunge cuts in workpieces, routing grooves, edge routing, routing circles, and freehand routing. When used with recommended accessories, such as a UL listed router table, depth adjustment knob, and straight guide; it becomes even more versatile. Various types of cutters, both with and without roller bearings as guides, also add to the versatility of this tool.

## HEAVY DUTY MOTOR

Your router has a powerful 10 amp motor with sufficient power to handle tough routing jobs. It delivers 2 horsepower for heavy duty performance. The motor also has externally accessible brushes for ease of servicing.

## SWITCH

To turn the router **ON**, toggle the switch to the **I** position. To turn the router **OFF**, toggle the switch to the **O** position.

## DEPTH STOP SYSTEM

The Accu-Stop™ Micro-Adjustable depth stop located on the base of your router provides precise stops for repetitive depth of cut changes. A depth adjustment scale makes quick adjustments to depth of cut changes possible.

## CHIP SHIELD

A plastic chip shield has been provided on the base of your router for protection against flying dust and chips. It is designed to fit the front opening of the router base.

## SPINDLE LOCK

A spindle lock secures the spindle so that only one wrench is needed to loosen collet nut and change cutters. **NOTE:** Do not run router with spindle lock engaged.

## VARIABLE SPEED

Your router has advanced electronic features, designed to assist you in getting the maximum use from your router. By making proper speed selections, your router can be adjusted to specific routing needs. This eliminates much of the guess work previously needed to perform operations on UL listed router tables when used with the optional depth control knob.

The variable speed control allows the router to develop a no load speed that can be adjusted from 15,000 to 23,000 RPM. The variable speed control selector is conveniently located on the front of the router.

The electronic feature of your router introduces the flexibility of adjusting the motor speed to required job conditions. An electronic speed control module senses the load applied to the motor, and increases or decreases motor voltage to compensate for and maintain desired RPM.

Speed can be set according to the approximate cutter diameter you will be using and to the hardness of the material being cut. The best cuts are made when the cutter is fed through material at the proper rate of feed.

## PLUNGE LOCK LEVER

Your router has a plunge lock lever that allows for free plunging. This feature is very useful for table mounted operations on UL listed router tables when used with the optional depth control knob. Unlocking the plunge lock lever allows for a smooth, precise plunging action. Once you reach the desired depth of cut, simply lock the plunge lock lever. The cutter will then be secured at the desired depth of cut.

## ERGONOMIC DESIGN

The design of this tool provides for easy handling. It is designed for comfort and ease of grasp when operating in different positions and at different angles.

## ELECTRICAL CONNECTION

Your router has a precision built electric motor. **It should be connected to a power supply that is 120 volts, 60 Hz, AC only (normal household current).** Do not operate this tool on direct current (DC). A voltage drop of more than 10 percent will cause a loss of power and overheating. If your tool does not operate when plugged into an outlet, double-check the power supply.

## DOUBLE INSULATION

Double insulation is a concept in safety in electric power tools, which eliminates the need for the usual three-wire grounded power cord. All exposed metal parts are isolated from the internal metal motor components with protecting insulation. Double insulated tools do not need to be grounded.

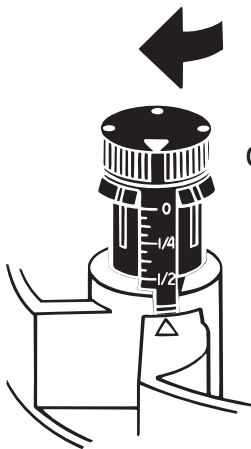
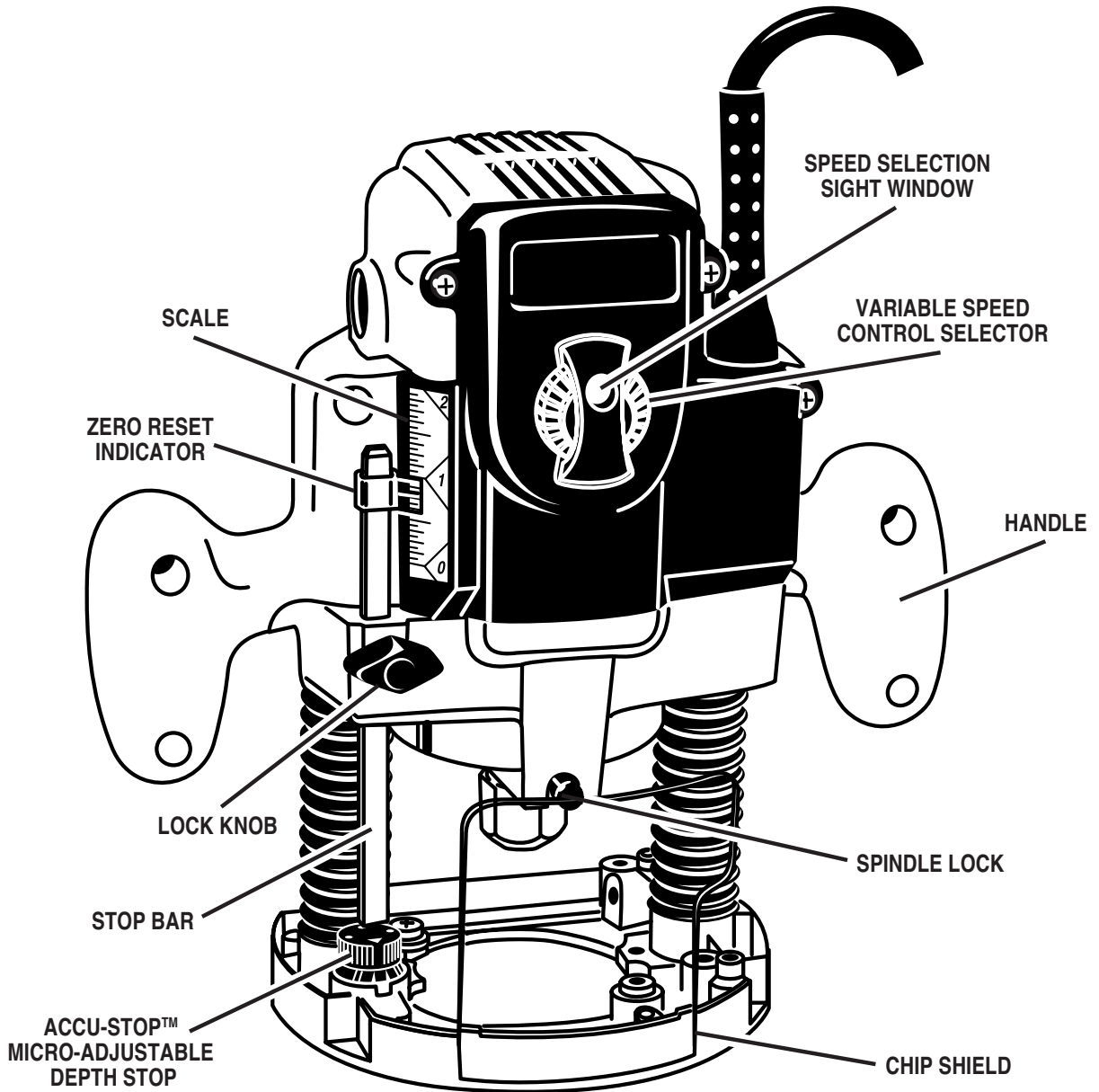
### **WARNING:**

The double insulated system is intended to protect the user from shock resulting from a break in the tool's internal wiring. Observe all normal safety precautions to avoid electrical shock.

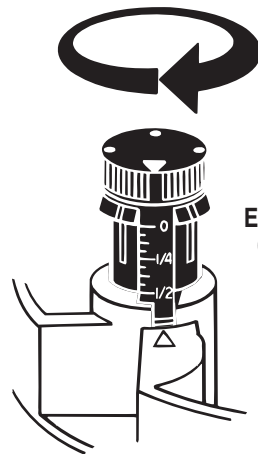
**Important:** Servicing of a tool with double insulation requires extreme care and knowledge of the system and should be performed only by a qualified service technician. For service, we suggest you return the tool to your nearest authorized service center for repair.

# FEATURES

## FRONT VIEW OF ROUTER



EACH 90° ROTATION  
OF DEPTH STOP KNOB  
EQUALS 1/64 in.  
(0.4 mm) CHANGE IN  
DEPTH OF CUT

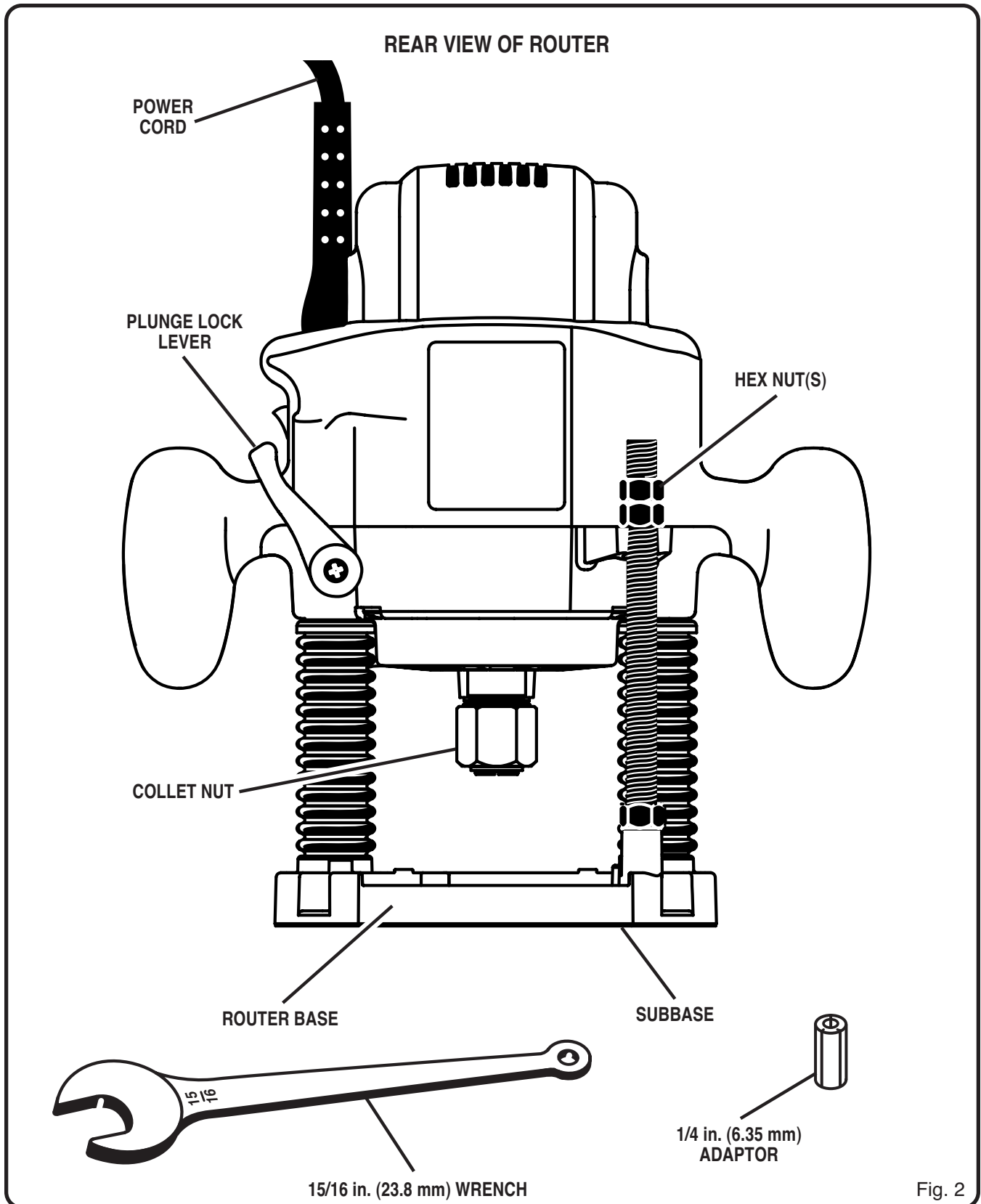


EACH COMPLETE  
ROTATION (360°) OF  
DEPTH STOP KNOB  
EQUALS 1/16 in. (1.6 mm)  
CHANGE IN DEPTH OF  
CUT

Fig. 1



# FEATURES



## **⚠ WARNING:**

Do not attempt to modify this tool or create accessories not recommended for use with this tool. Any such alteration or modification is misuse and could result in a hazardous condition leading to possible serious personal injury.

# ADJUSTMENTS

## ⚠ WARNING:

Your router should never be connected to power supply when you are assembling parts, making adjustments, installing or removing cutters, or when not in use. Disconnecting your router will prevent accidental starting that could cause serious injury.

## CUTTER INSTALLATION

See Figures 3 and 4.

### ■ UNPLUG YOUR ROUTER.

## ⚠ WARNING:

Failure to unplug your router could result in accidental starting causing serious injury.

## ⚠ CAUTION:

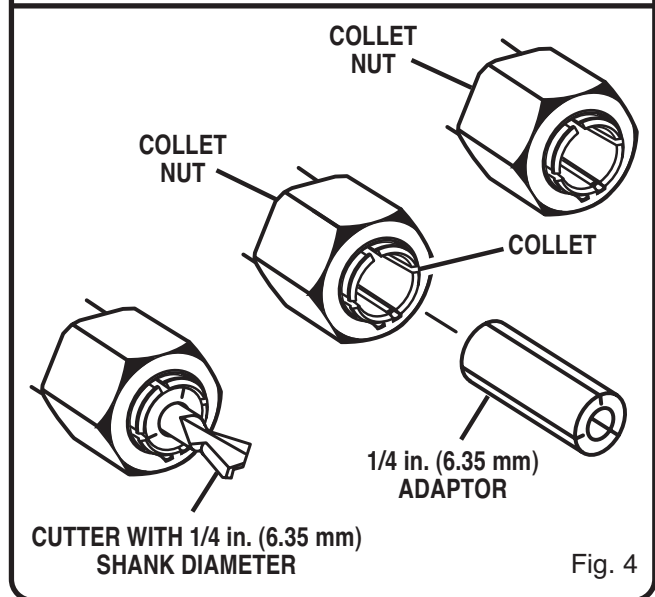
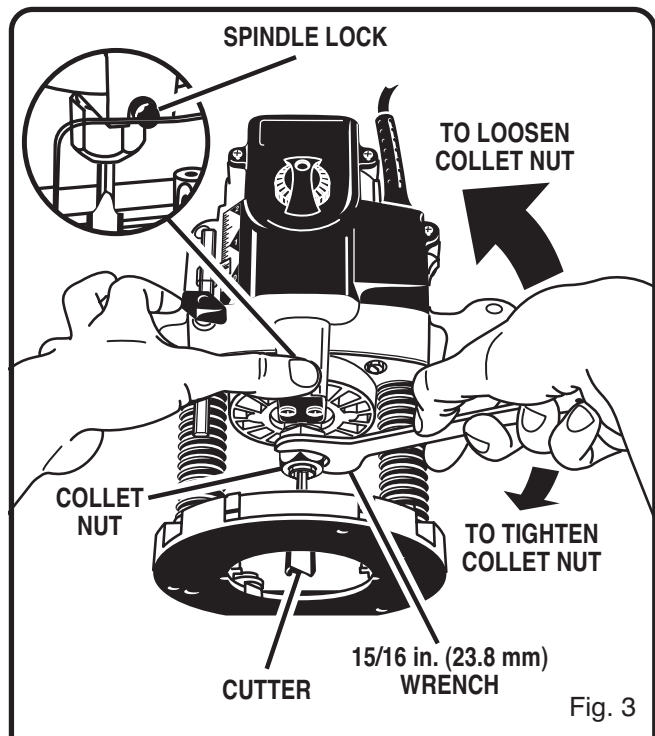
To prevent damage to the spindle or spindle lock, always allow motor to come to a complete stop before engaging spindle lock.

- Remove chip shield from router base.
- Depress spindle lock. See Figure 3.
- Lay router down on workbench in order to gain easy access to collet nut. See Figure 3.
- Place the wrench provided through front of router base onto collet nut and turn counterclockwise to loosen. See Figure 3.

## ⚠ WARNING:

If you are changing a cutter immediately after use, be careful not to touch the cutter or collet with your hands or fingers. They will get burned because of the heat buildup from cutting. Always use the wrench provided.

- Install cutter once collet nut is loose. If changing cutters, cutter will easily slip from collet after loosening collet nut. **NOTE:** The collet is machined to precision tolerances to fit cutters with 1/2 in. (12.7 mm) diameter shanks. To use cutters with 1/4 in. (6.35 mm) diameter shanks, insert the 1/4 in. (6.35 mm) adaptor into the 1/2 in. (12.7 mm) collet.
- Insert shank of cutter until shank bottoms out, then pull it out 1/16 in. (1.6 mm) to allow for expansion when the bit gets hot.
- Tighten the collet nut securely by turning clockwise with the wrench provided.
- Release spindle lock.
- Replace chip shield.



## ⚠ WARNING:

If the collet nut is not securely tightened, the cutter may detach during use causing serious personal injury.

# ADJUSTMENTS

## **⚠ WARNING:**

Do not use cutters with undersized shanks. Undersized shanks will not tighten properly and could be thrown from the tool causing injury.

## **⚠ WARNING:**

Do not use cutters that are larger in diameter than the opening in router base. Use of such cutters will come in contact with the router base and damage both the cutter and router base. This situation could also cause possible loss of control or create other hazardous conditions that could cause possible serious personal injury.

## DEPTH OF CUT

See Figures 5, 6 and 7.

When routing a groove that is too deep to safely cut in one pass, it is best to make the cut in several passes. We recommend that cuts be made at a depth not exceeding 1/8 in. (3.2 mm) and that several passes be made to reach deeper cuts.

Proper depth of cut depends on several factors: horsepower of router motor, type of cutter being used, and type of wood being routed. A lightweight, low horsepower router is designed for making shallow cuts. A router with high horsepower rating can safely cut deeper. Small bits, such as veining bits with 1/16 in. (1.6 mm) cutting diameters, are designed to remove only small amounts of wood. Large bits, such as straight-flute bits, are made to remove larger amounts of wood in a single pass. Cuts can be made deeper in soft woods, such as white pine, than in tough hardwoods, like oak or maple. Based upon these considerations, choose a depth of cut that will not place excessive strain on router motor. If you find that extra force is needed or that the motor speed slows down considerably, turn off router and reduce the depth of cut. Then, make the cut in two or more passes.

## TO ADJUST DEPTH OF CUT

### ■ UNPLUG YOUR ROUTER.

## **⚠ WARNING:**

Failure to unplug your router could result in accidental starting causing serious injury.

- Raise cutter by unlocking plunge lock lever. See Figure 5.
- Adjust hex nuts on threaded post until cutter is inside router subbase.
- Place router on a flat surface.
- Lower router until tip of cutter barely touches flat surface. See Figure 6.

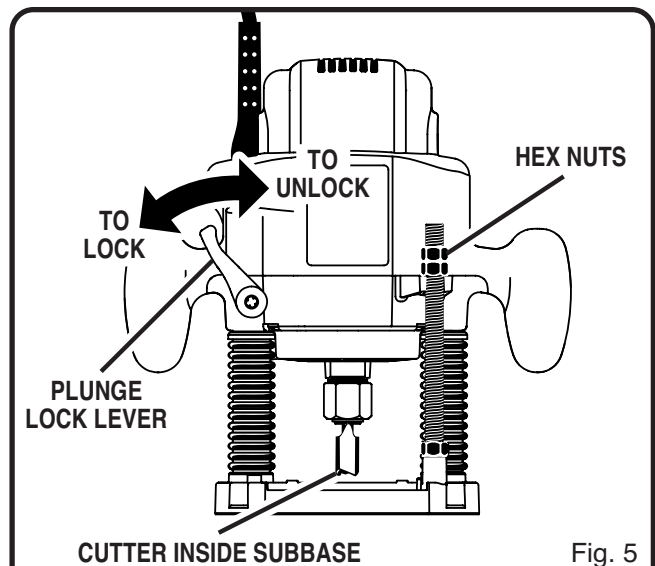


Fig. 5

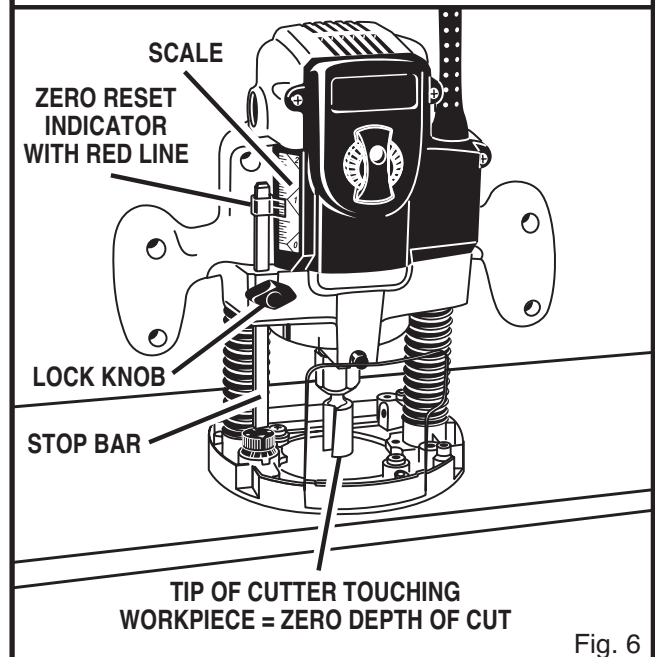


Fig. 6

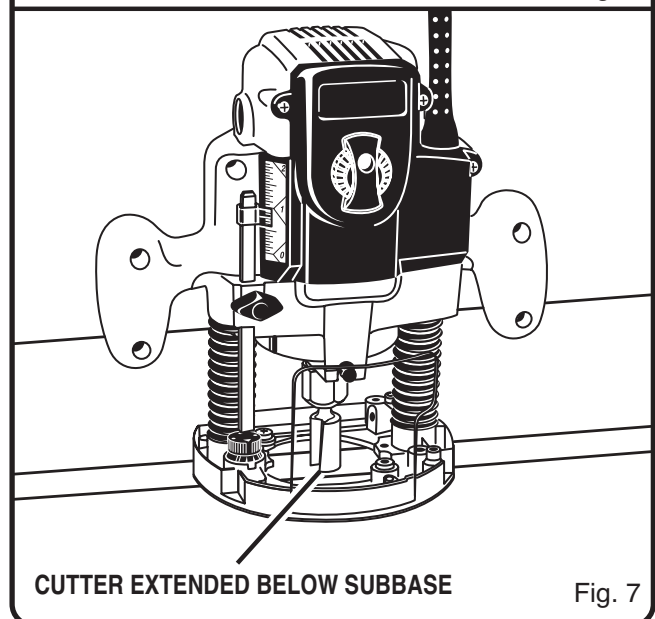


Fig. 7

# ADJUSTMENTS

- Lock plunge lock lever to position cutter at "zero" depth of cut.
- Adjust hex nuts until they come in contact with stop flange. This will provide a position stop at "zero" depth of cut.
- Make sure the hex nuts are securely tightened against each other.
- Rotate depth stop to desired position, loosen lock knob and adjust stop bar until it touches depth stop.
- Slide zero-reset indicator up or down the scale on stop bar until red line on zero-reset indicator aligns with a desired reference point. For example, align red line with 1 in. (25.4 mm) mark on the scale.
- Lift stop bar to obtain desired depth of cut. For example, if setting 1/8 in. (3.2 mm) depth of cut, the zero-reset indicator will move 1/8 in. (3.2 mm) from the 1 in. (25.4 mm) reference point.
- Tighten lock knob securely.
- Position your router so that the cutter can extend below the subbase for desired depth setting. See *Figure 7*.
- Unlock plunge lock lever.
- Grasp handles and lower router until stop bar contacts depth stop.
- Lock plunge lock lever to position cutter at desired depth of cut.

## OPTIONAL DEPTH CONTROL KNOB

An optional depth control knob is available and may be purchased for use with your plunge router. We recommend its use when your routing needs require precise depth of cut adjustments and when router is mounted upside down on a UL listed router table. **NOTE:** The weight of the router plus the awkward position it is in when mounted to a router table make it very difficult to set depth of cut simply by turning the hex nut with a 15/16 in. (23.8 mm) wrench. Therefore, we recommend that you purchase and use a depth control knob for situations mentioned above as well as other similar situations.

The optional depth control knob is spring loaded against hex nut to prevent router motor from accidentally separating from router base. If depth control knob is turned too far up depth adjustment rod, the spring will cause depth control knob to pop off before hex nut. **Do not remove hex nut.** It should remain on depth adjustment rod at all times. This is especially important when using router upside down on a router table.

## TO INSTALL OPTIONAL DEPTH CONTROL KNOB

See *Figure 8*.

- UNPLUG YOUR ROUTER.

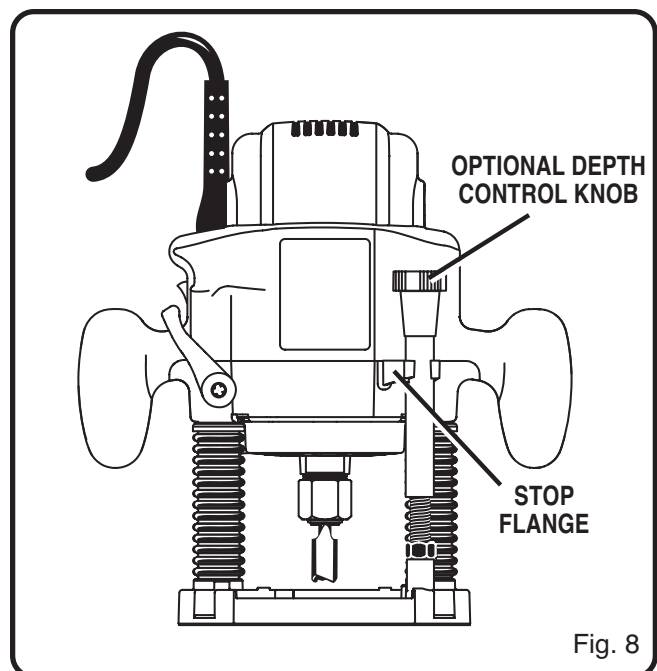
### ⚠ WARNING:

Failure to unplug your router could result in accidental starting causing serious injury.

- Remove upper hex nut from depth adjustment rod. **NOTE:** This is the only time you should remove the hex nut from the router. Also, if you remove the optional depth control knob for any reason, you must reinstall the hex nut before reusing the router.
- Turn remaining hex nut counterclockwise until 1/4 in. (6.35 mm) of thread is remaining at the top of the depth adjustment rod.
- Place compression spring on top of hex nut as shown in *Figure 8*.
- Place optional depth control knob on top of compression spring and align tabs on depth control knob with flats on hex nut.
- Compress spring by carefully pushing down on top of depth control knob.
- Thread depth control knob clockwise onto depth adjustment rod.

### ⚠ WARNING:

Relaxing optional depth control knob without compression spring could result in depth control knob and hex nut vibrating off depth adjustment rod. This situation could cause motor to separate from router base, resulting in possible serious injury.



# ADJUSTMENTS

## TO ADJUST DEPTH OF CUT USING OPTIONAL DEPTH CONTROL KNOB

See Figure 9.

- UNPLUG YOUR ROUTER.

### **WARNING:**

Failure to unplug your router could result in accidental starting causing serious injury.

- Loosen lock knob and raise stop bar.
- Unlock plunge lock lever and raise cutter to its uppermost position.
- Plunge router until cutter reaches the approximate desired depth of cut.
- Lock plunge lock lever, temporarily locking cutter at desired depth of cut.
- Turn depth control knob clockwise until hex nut seats against stop flange. **Do not overtighten.**
- Unlock plunge lock lever. **Always unlock plunge lock lever before setting depth of cut with depth control knob.**
- Turn depth control knob until cutter reaches desired depth of cut.
- Lock plunge lever. **Always lock cutter in place before routing.**
- Loosen lock knob and adjust stop bar until it touches depth stop.
- Tighten lock knob securely.

## DEPTH STOP

See Figures 10 and 11.

The depth stop is located on the base of your router and makes it possible to make deep or heavy cuts in successive passes by use of the Accu-Stop™ Micro-Adjustable Depth Stop System. Alignment marks make depth of cut changes quick and easy.

A preset cutting depth is achieved by plunging router until stop bar comes in contact with depth stop. The micro-adjusting feature provides alignment marks at each 90° rotation of the depth stop knob. Each 90° rotation of the knob changes depth of cut setting 1/64 in. (0.4 mm). See Figure 10.

A complete rotation (360°) of the depth stop knob changes the depth of cut setting 1/16 in. (1.6 mm). See Figure 11.

The Accu-Stop™ Micro-Adjustable Depth Stop System provides for depth of cut changes to be made from 0 to 1/2 in. (12.7 mm) from the initial setting of the stop bar. This initial setting of the stop bar can be "zero" depth of cut, or it can be any depth of cut setting that you choose as a starting point for a particular job to be performed.

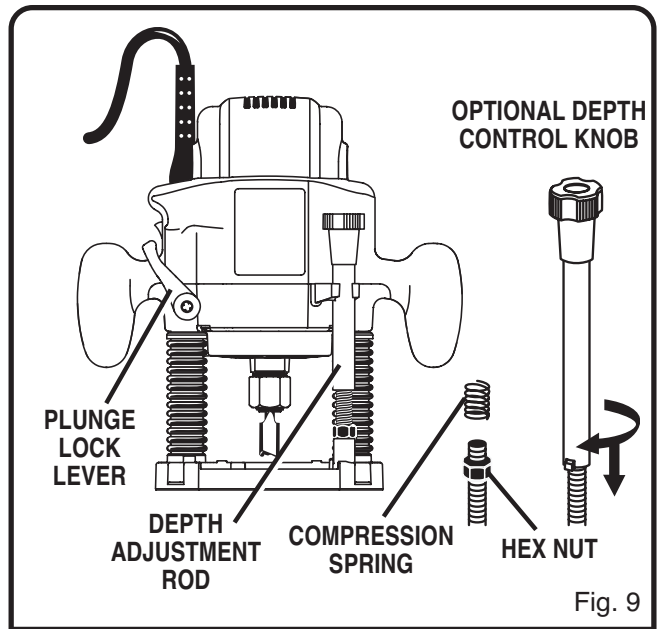


Fig. 9

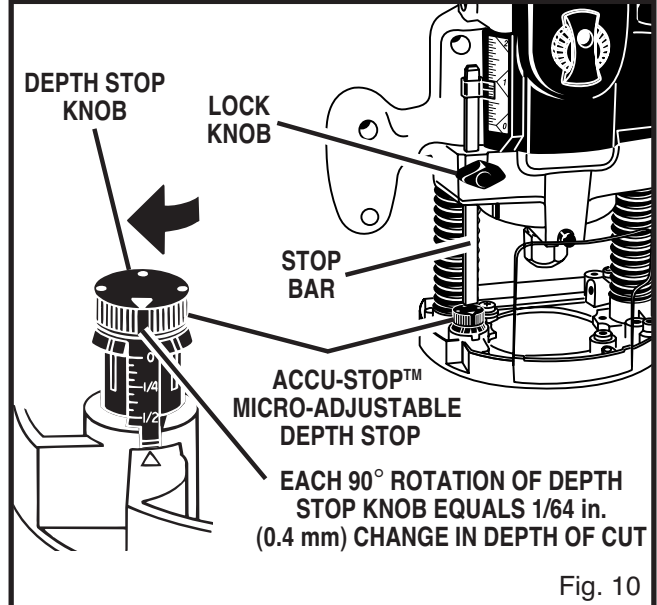


Fig. 10

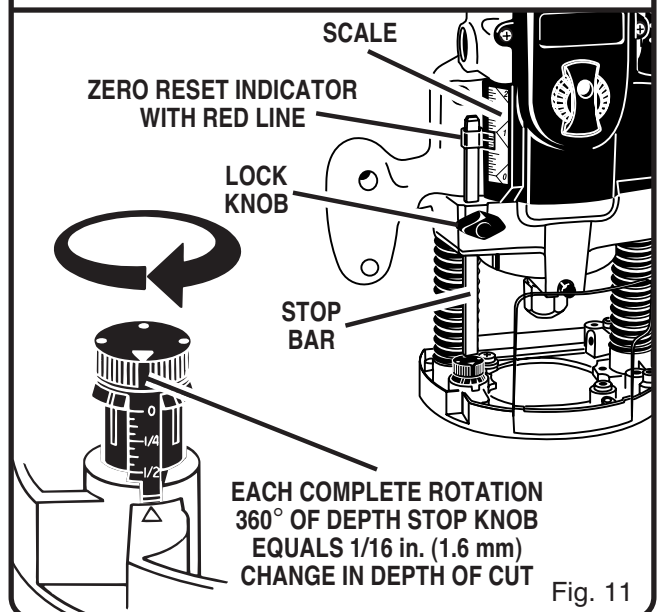


Fig. 11

# ADJUSTMENTS

## ⚠ WARNING:

Always wear safety goggles or safety glasses with side shields when using your router. Failure to do so could result in dust, shavings, chips, loose particles, or foreign objects being thrown in your eyes resulting in possible serious injury. If the operation is dusty, also wear a face or dust mask.

### TO SET DEPTH STOP

#### ■ UNPLUG YOUR ROUTER.

## ⚠ WARNING:

Failure to unplug your router could result in accidental starting causing serious injury.

- Loosen lock knob and raise stop bar.
- Rotate depth stop until the highest depth stop is aligned with the stop bar.
- Raise cutter by unlocking plunge lock lever.
- Place router on flat surface, and lower router until tip of cutter barely touches flat surface.
- Lock plunge lock lever to position cutter at "zero" depth of cut.
- Lower stop bar against depth stop, then tighten lock knob securely. The highest stop now becomes the "zero" depth of cut setting.

## VARIABLE SPEED CONTROL SELECTOR

See Figure 12.

Your router has a variable speed control selector designed to allow operator control of speed and torque limits. You can make speed selections best suited to the type of cut, the material being cut, and the size of bit being used. The variable speed control selector allows you to adjust router speed from 15,000 to 23,000 RPM. There is a six-step scale (A to F) on the variable speed control selector. To increase the speed and torque of your router, turn the variable speed control selector to a higher setting (F). Turn to a lower setting to decrease speed and torque.

**NOTE:** If you do not want to use the variable speed control selector, turn it to the highest possible setting, and the feature will not be active.

The speed selection chart shown gives suggested speed settings based on the diameter of the cutter and the type of material being routed.

We suggest that you practice with the variable speed feature of your router before installing a cutter and making cuts in wood.

SPEED SELECTION CHART				
MATERIAL	CUTTER SIZE			
	1/4	3/8	1/2	3/4
SOFT	E-F	D-E	A-B	A
MEDIUM	D-E	C-D	A	A
HARD	C-D	B-C	A	A
VERY HARD	D-E	C-D	C-D	B-C

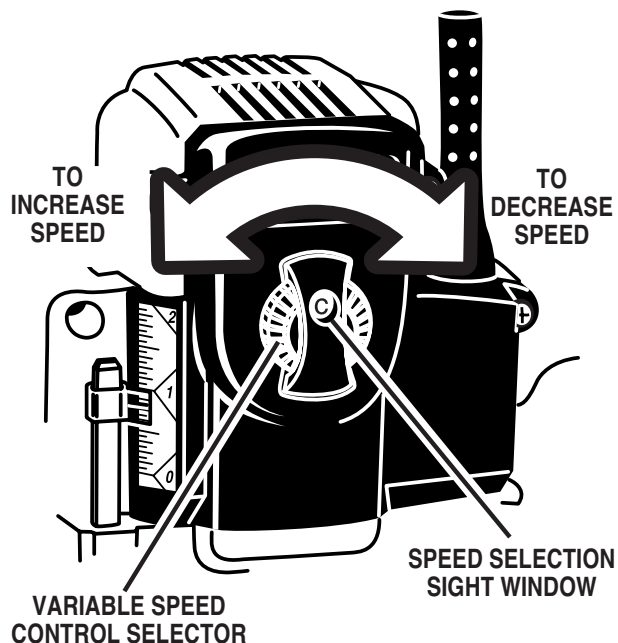


Fig. 12

## ZERO RESET INDICATOR

The zero reset indicator allows you to use the scale provided on the housing to make quick depth of cut changes to existing depth of cut settings. Simply choose a reference point on the scale and slide the zero reset indicator up or down the scale the distance required for new depth of cut. Then change stop bar position by loosening lock knob and adjusting stop bar until red line on zero reset indicator moves back to reference point. Tighten lock knob securely to lock stop bar in new position. The cutter position will now increase or decrease the exact distance the stop bar was adjusted.

**NOTE:** Each mark on the inch scale indicates 1/16 in. (1.6 mm).

# OPERATION

## SWITCH

See Figure 13.

To turn the router **ON**, toggle the switch to the **I** position. To turn the router **OFF**, toggle the switch to the **O** position.

### **CAUTION:**

We suggest that you practice with your router before installing a cutter and making cuts in wood.

## ROUTING

See Figure 14.

For ease of operation and maintaining proper control, your router has two handles, one on each side of the router base. When using your router hold it firmly with both hands.

Before starting the router, unplug it and make sure the cutter is securely tightened in collet nut and that depth of cut is properly set.

Plug router into power supply, turn it on, and let motor build to its full speed, then gradually plunge or feed cutter into workpiece. **Do not** let the cutter contact workpiece before turning on router and allowing it to develop full speed.

Remain alert and watch what you are doing. **Do not** operate router when fatigued or under the influence of drugs, alcohol, or any medication.

## ROUTING GROOVES

See Figure 15.

When routing across the face of boards, set router at desired depth of cut, place the edge of router base against workpiece, and turn on the router. Slowly feed the cutter into the workpiece along desired line of cut.

### **WARNING:**

If desired depth of cut is greater than can be safely cut in one pass, make cuts in two or more passes.

When routing straight cuts across stock, clamp a straight edge to the workpiece to use as a guide. Position the straightedge parallel to the line of cut and offset the distance between the cutting edge of the cutter and the edge of the router base. Hold the router base against the straightedge and rout the groove.

When routing a groove wider than the diameter of the cutter, clamp a straightedge on both sides of the cutlines. Position both guides parallel to the desired line of cut and spaced equal distances from the desired edges of the groove. Rout along one guide; then, reverse direction and rout along the other guide. Clean out any remaining waste in the center of the groove freehand.

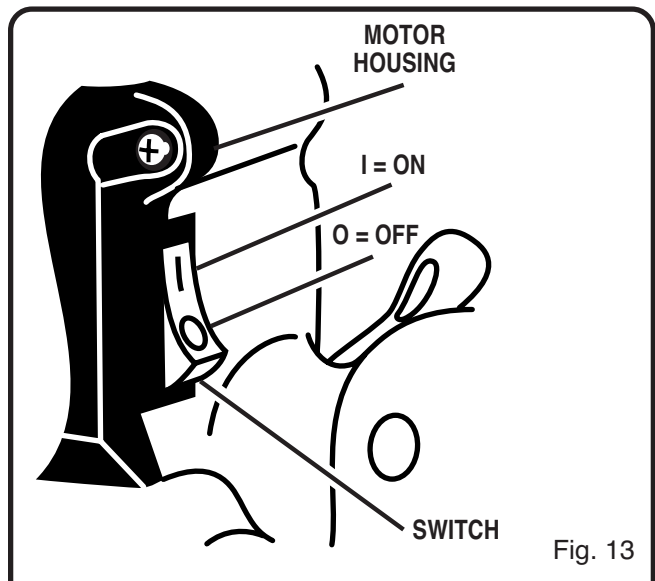


Fig. 13

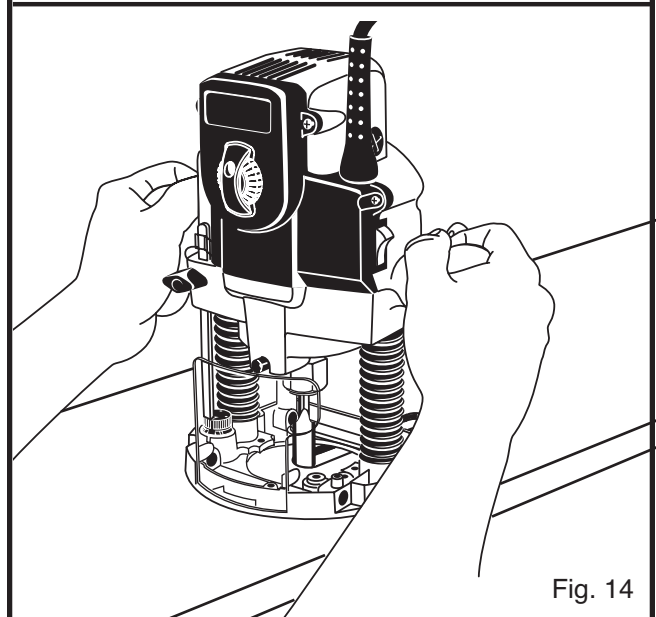


Fig. 14

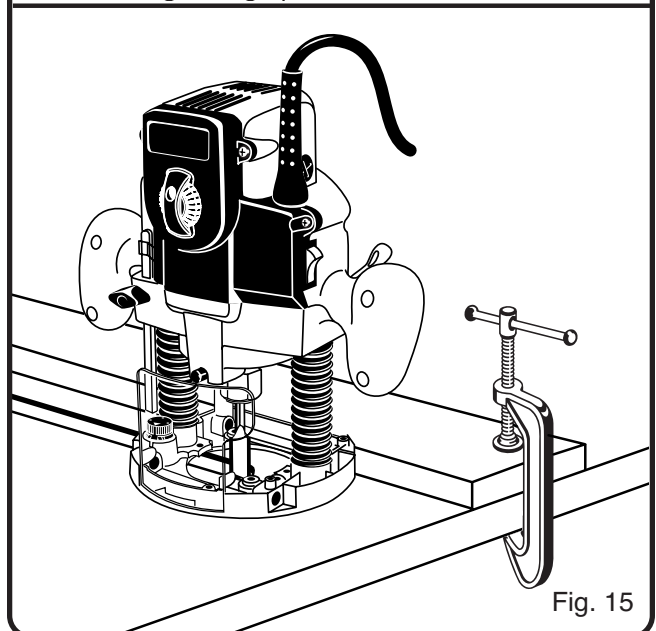


Fig. 15

# OPERATION

## ROUTING BY FREEHAND

See Figure 16.

When used freehand, your plunge router becomes a flexible and versatile tool. This flexibility makes it possible to easily rout signs, relief sculptures, etc.

There are two basic techniques for freehand routing:

- Routing letters, grooves, and patterns into wood.
- Routing out the background, leaving the letters or pattern raised above the surface.

**When freehand routing, we suggest the following:**

- Draw or layout the pattern on workpiece.
- Choose the appropriate cutter.

**NOTE:** A core box or V-groove bit is often used for routing letters and engraving objects. Straight bits and ball mills are often used to make relief carvings. Veining bits are used to carve small, intricate details.

- Rout the pattern in two or more passes. Make the first pass at 25% of the desired depth of cut. This process will provide better control as well as being a guide for the next pass.
- **Do not** rout deeper than 1/8 in. (3.2 mm) per pass or cut.

**Follow these directions when routing by freehand:**

- Choose the appropriate cutter, set desired depth of cut, carefully check set-up, and secure workpiece.
- Make a test cut in a scrap piece of wood from the same workpiece if possible.
- Unlock plunge lock lever to raise cutter from any preset depth of cut. This also permits raising cutter inside router subbase.
- Place router on workpiece inside pattern to be routed.
- Grasp handles securely and press the switch to start your router.
- Let motor build to full speed, then gradually plunge cutter into workpiece until stop bar comes into contact with depth stop.
- Lock plunge lock lever to secure depth of cut setting.
- Begin routing out the pattern, continuing until a complete pass at this depth of cut has been made.

### **⚠ WARNING:**

Do not use large router bits for freehand routing. Use of large router bits when freehand routing could cause loss of control or create other hazardous conditions that could cause possible serious personal injury.

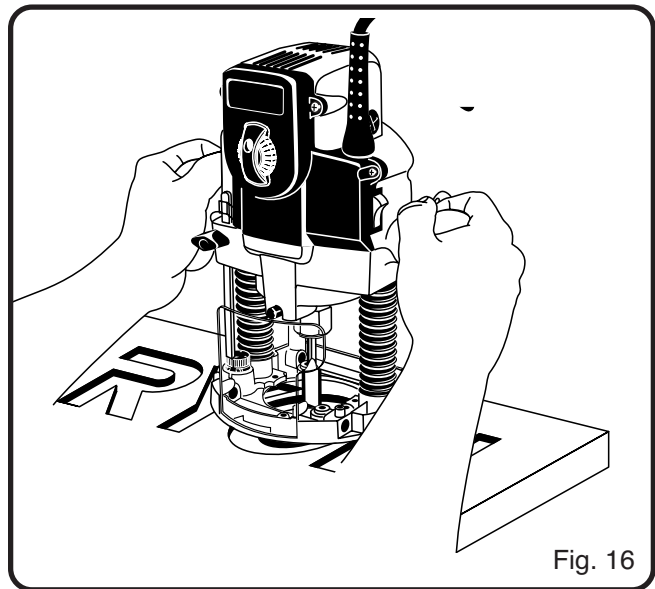


Fig. 16

- Several cuts that require repositioning of router may be needed for a particular job. If this situation exists, unlock plunge lock lever to raise cutter inside router subbase after each cut, reposition router for next cut, gradually plunge cutter into workpiece until stop bar contacts depth stop, lock plunge lock lever and continue routing.
- After all cuts have been made, unlock plunge lock lever, raise cutter inside router subbase, remove router from workpiece, turn off the router, and allow cutter to come to a complete stop.

## ROUTING EDGES

Place router on workpiece, making sure the router bit does not contact workpiece. Turn router on and let the motor build to its full speed. Begin your cut, gradually feeding cutter into workpiece.

### **⚠ WARNING:**

Keep a firm grip on router with both hands at all times. Failure to do so could result in loss of control leading to possible serious injury.

Upon completion of cut, turn motor off and let it come to a complete stop before removing router from work surface.

### **⚠ WARNING:**

Never pull router out of work and place upside down on work surface before the cutter stops.



# OPERATION

## PILOT BIT EDGING

See Figure 17.

Rabbets and molded edges can be cut using piloted cutters. The pilot extends below the cutter. Some pilots are solid extensions of the cutter. Others are ball bearing guides that are fastened to the end of the cutter. The pilots allow the cutters to turn while the pilot follows the edge of the workpiece.

Arbor-type bits with pilots are excellent for quick, easy, edge shaping. They will follow workpiece edges that are either straight or curved. The pilot prevents the bit from making too deep a cut; and holding the pilot firmly in contact with the workpiece edge throughout prevents the cut from becoming too shallow.

Whenever the workpiece thickness together with the desired depth of cut (as adjusted by router depth setting) are such that only the top part of the edge is to be shaped (leaving at least a 1/16 inch (1.6 mm) thick uncut portion at bottom), the pilot can ride against the uncut portion, which will serve to guide it. See Figure 17. However, if the workpiece is too thin or the bit set too low so that there will be no uncut edge to ride the pilot against, an extra board to act as a guide must be placed under the workpiece. This "guide" board must have exactly the same contour — straight or curve — as the workpiece edge. If it is positioned so that its edge is flush with the workpiece edge, the bit will make a full cut (in as far as the bit radius). On the other hand, if the guide is positioned as shown in Figure 17 (out from the workpiece edge), the bit will make less than a full cut — which will alter the shape of the finished edge. **NOTE:** When edge shaping with guides, any of the piloted bits can be used without a pilot. Also, the size (diameter) of the pilot that is used determines the maximum cut width that can be made with the pilot against the workpiece edge (the small pilot exposes all of the bit; the large one reduces this amount by 1/16 inch (1.6 mm)).

When routing all the edges of a panel or board, rout the end grain first. Any splintering that occurs at the corners will then be removed when routing the edge. Start each side 1/4 in. (6.35 mm) away from the end. Feed the cutter into the wood until the pilot contacts the uncut edge. Then, slowly back the router to shape the corner. Next, move the router forward to shape the rest of the edge. Be careful to keep the pilot pressed against the uncut edge. Repeat this procedure on each side of the panel. Figure 18 shows the proper sequence of cuts to make when edge routing four sides of a panel.

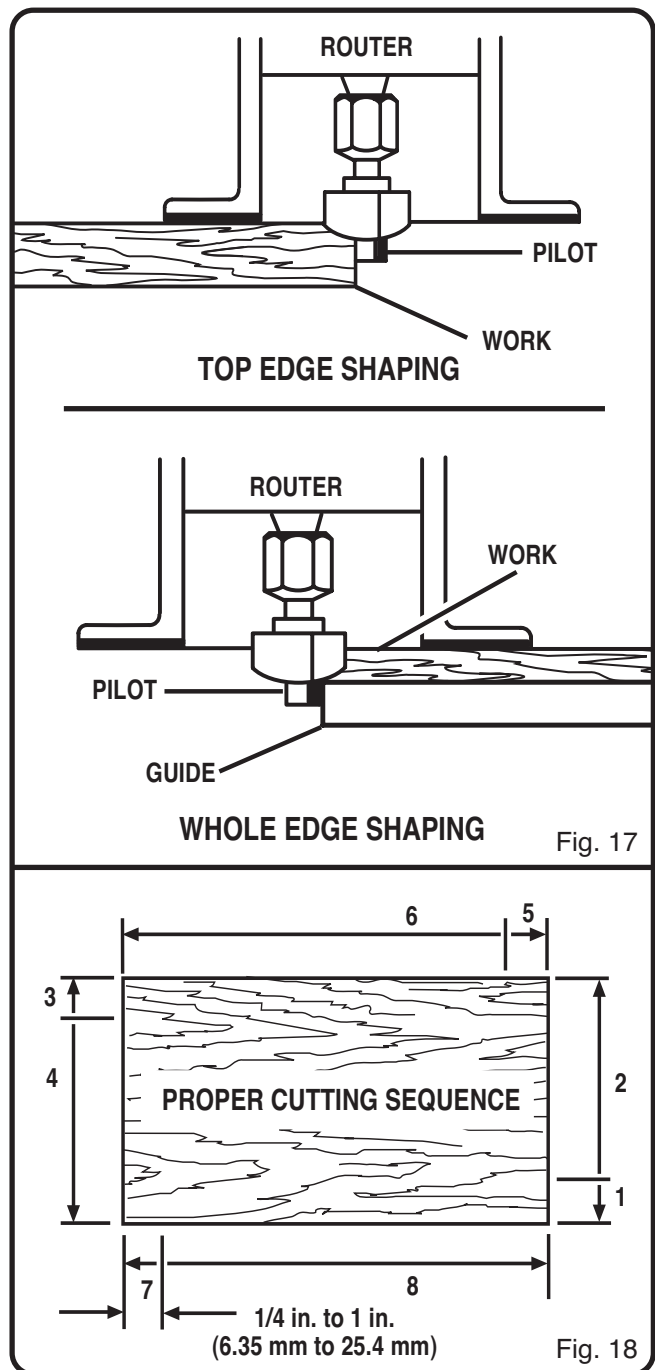


Fig. 17

Fig. 18

# OPERATION

## PROPER FEEDING

The right feed is neither too fast nor too slow. It is the rate at which the bit is being advanced firmly and surely to produce a continuous spiral of uniform chips. A feed to fast produces large, individual chips and a feed to slow creates sawdust. If you are making a small diameter, shallow groove in soft, dry wood, the proper feed may be as fast as you can travel your router along your guide line. On the other hand, if the bit is large, the cut is deep, or the wood is hard, the proper feed may be a very slow one. Additionally, a cross-grain cut may require a slower pace than an identical with-grain cut in the same workpiece.

There is no fixed rule. You will learn by experience from practice and use. The best rate of feed is determined by listening to the sound of the router motor and by feeling the progress of each cut. Always test a cut on a scrap piece of the workpiece wood.

### DIRECTION (EXTERNAL)

See Figure 19.

When routing, the cutter rotates clockwise. Therefore, you should feed the router into the workpiece from left to right. When fed from left to right, the rotation of the cutter pulls the router against the workpiece. If fed in the opposite direction, the rotation forces of the spinning bit will tend to throw the router away from the workpiece. This action could cause you to lose control of the router.

The router motor and bit revolve in a clockwise direction. This gives the tool a slight tendency to twist (in your hands) in a counterclockwise direction, especially when the motor revs up.

Because of the extremely high speed of bit rotation during a "proper feeding" operation, there is very little kickback to contend with under normal conditions. However, should the bit strike a knot, hard grain, foreign object, etc. that would affect the normal progress of the cutting action, there will be a slight kickback—sufficient to spoil the trueness of your cut if you are not prepared. Such a kickback is always in the direction opposite to the direction of bit rotation.

To guard against such a kickback, plan your setup and direction of feed so that you will always be thrusting the tool—to hold it against whatever you are using to guide the cut—in the same direction that the leading edge of the bit is moving. In short, the thrust should be in a direction that keeps the sharp edges of the bit continuously biting straight into new (uncut) wood.

### DIRECTION (INTERNAL)

Whenever you are routing a groove, your travel should be in a direction that places whatever guide you are using at the right-hand side. In short, when the guide is positioned as shown in the first part of Figure 20, tool travel should be left to right and counterclockwise around curves. When the guide is positioned as shown in the

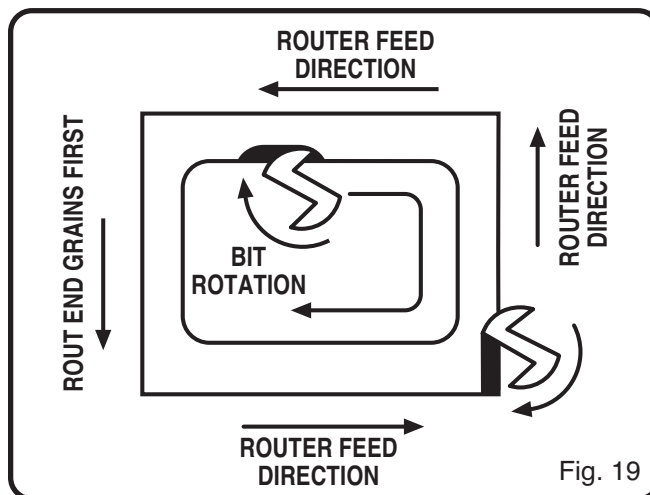


Fig. 19

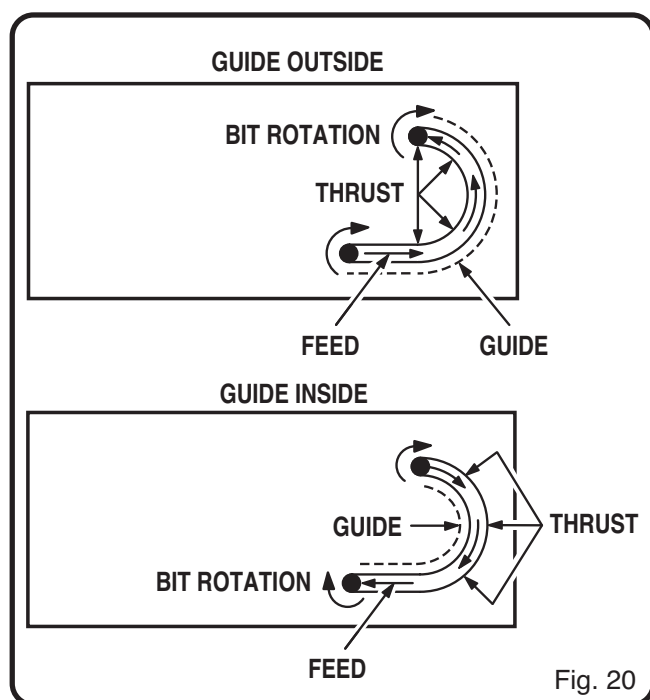


Fig. 20

second part of Figure 20, tool travel should be right to left and clockwise around curves. If there is a choice, the first setup is generally the easiest to use. In either case, the sideways thrust you use is against the guide.

### SPEED CONTROL

In general, if the material being cut is hard, the cutter size is large, or the depth of cut is deep - maximum 1/8 in. (3.2 mm), then your router should be run at slower speeds. When these situations exist, turn the variable speed control selector until the desired speed is reached.

**NOTE:** Carbide cutters cut at higher speeds than steel cutters and should be used when cutting very hard materials. Keep cutters sharp at all times.

# OPERATION

## RATE OF FEED

**IMPORTANT:** The “secret” of professional routing and edge shaping lies in making a careful set-up for the cut and in selecting the proper rate of feed.

The proper rate of feed depends on several factors: the hardness and moisture content of the wood, the depth of cut, and the cutting diameter of the bit. When cutting shallow grooves in soft woods such as pine, a faster rate of feed can be used. When making deep cuts in hardwoods such as oak, a slower rate of feed should be used.

The best rate of feed is one that does not slow down the router motor more than one-third of its no-load speed. If the router is fed too fast, it will take large chips out of the wood and leave gouge marks. If the router is fed too slow, it will scorch or burn the wood.

### *Feeding Too Fast*

Clean, smooth routing and edge shaping can be done only when the bit is revolving at a relatively high speed and is taking very small bites to produce tiny, cleanly severed chips. If your router is forced to move forward too fast, the RPM of the bit becomes slower than normal in relation to its forward movement. As a result, the bit must take bigger bites as it revolves. “Bigger bites” mean bigger chips, and a rougher finish. Bigger chips also require more power, which could result in the router motor becoming overloaded.

Under extreme force-feeding conditions the relative RPM of the bit can become so slow — and the bites it has to take so large — that chips will be partially knocked off (rather than fully cut off), resulting in splintering and gouging of the workpiece. See Figure 21.

Your router is an extremely high-speed tool (15,000 - 23,000 RPM no-load speed), and will make clean, smooth cuts if allowed to run freely without the overload of a forced (too fast) feed. Three things that cause “force feeding” are bit size, depth-of-cut, and workpiece characteristics. The larger the bit or the deeper the cut, the more slowly the router should be advanced. If the wood is very hard, knotty, gummy or damp, the operation must be slowed still more.

You can always detect “force feeding” by the sound of the motor. Its high-pitched whine will sound lower and stronger as it loses speed. Also, the strain of holding the tool will be noticeably increased.

### *Feeding Too Slow*

It is also possible to spoil a cut by moving the router forward too slowly. When it is advanced into the work too slowly, a revolving bit does not dig into new wood fast enough to take a bite; instead, it simply scrapes away sawdust-like particles. Scraping produces heat, which can glaze, burn, or mar the cut and in extreme cases, can even overheat the bit so as to destroy its hardness.

In addition, it is more difficult to control a router when the bit is scraping instead of cutting. With practically no load on the motor the bit will be revolving at close to top RPM, and will have a much greater than normal tendency to bounce off the sides of the cut (especially if the wood has a pronounced grain with hard and soft areas). As a result, the cut produced may have rippled, instead of straight sides. See Figure 21.

“Too-slow feeding” can also cause your router to take off in a wrong direction from the intended line of cut. **Always grasp and hold your router firmly with both hands when routing.**

You can detect “too-slow feeding” by the runaway, high-pitched sound of the motor; or by feeling the “wobble” of the bit in the cut.

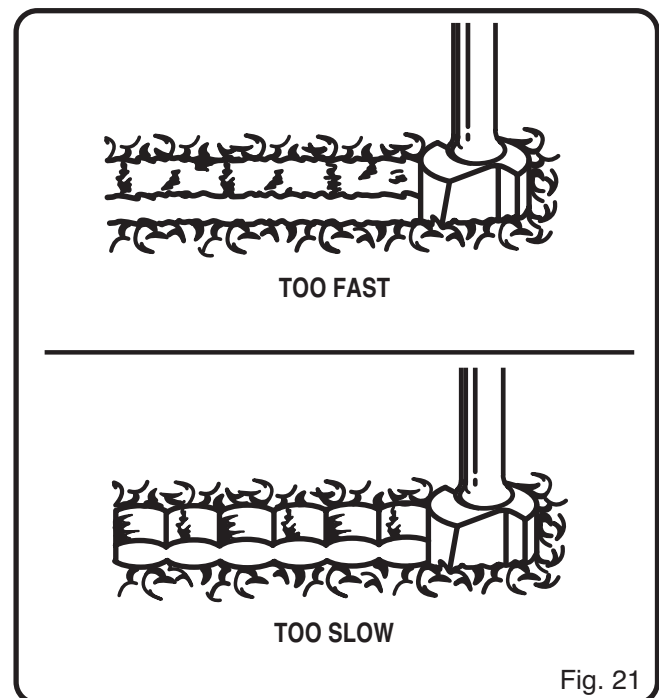


Fig. 21

# OPERATION

## DEPTH OF CUT

As previously mentioned, the depth of cut is important because it affects the rate of feed that, in turn, affects the quality of the cut (and, also, the possibility of damage to your router motor and bit). A deep cut requires a slower feed than a shallow one, and a too deep cut will cause you to slow the feed so much that the bit is no longer cutting, it is scraping, instead.

Making a deep cut is never advisable. The smaller bits — especially those only 1/16 inch (1.6 mm) in diameter — are easily broken off when subjected to too much side thrust. A large enough bit may not be broken, but if the cut is too deep a rough cut will result — and it may be very difficult to guide and control the bit as desired. For these reasons, we recommend that you do not exceed 1/8 in. (3.2 mm) depth of cut in a single pass, regardless of the bit size or the softness or condition of the workpiece. See *Figure 22*.

To make deeper cuts it is therefore necessary to make as many successive passes as required, lowering the bit 1/8 in. (3.2 mm) for each new pass. In order to save time, do all the cutting necessary at one depth setting, before lowering the bit for the next pass. This will also assure a uniform depth when the final pass is completed. See *Figure 23*.

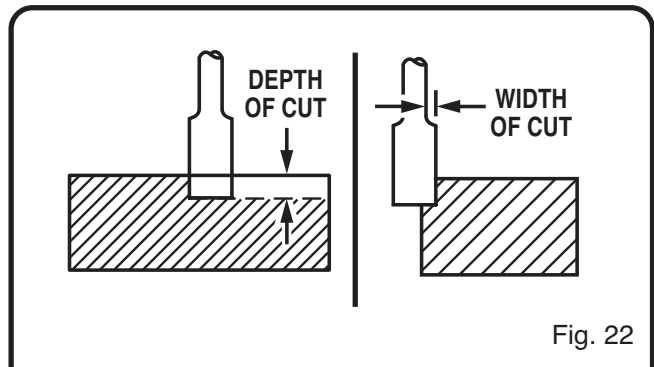


Fig. 22

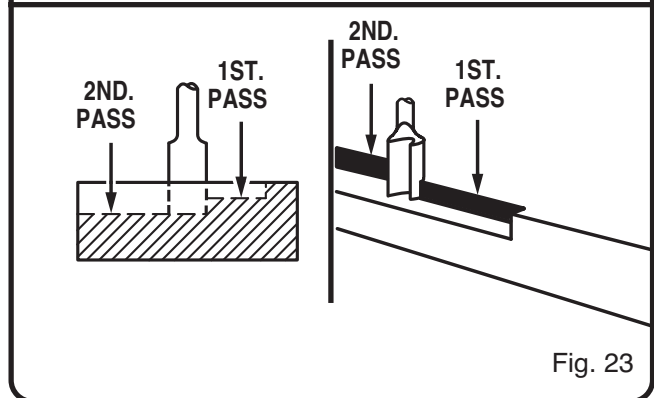


Fig. 23

# MAINTENANCE

## ⚠ WARNING:

When servicing use only identical Ryobi replacement parts. Use of any other parts may create a hazard or cause product damage.

## GENERAL

Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to damage from various types of commercial solvents and may be damaged by their use. Use clean cloths to remove dirt, carbon dust, etc.

## ⚠ WARNING:

Do not at any time let brake fluids, gasoline, petroleum-based products, penetrating oils, etc. come in contact with plastic parts. They contain chemicals that can damage, weaken, or destroy plastic.

Electric tools used on fiberglass material, wallboard, spackling compounds, or plaster are subject to accelerated wear and possible premature failure, as the fiberglass chips and grindings are highly abrasive to bearings, brushes, commutators, etc. Consequently, we do not recommend that this tool be used for extended work on these types of materials. If, however, you do work with any of these materials, it is extremely important that you clean the tool frequently by blowing it with an air jet.

## ⚠ WARNING:

Always wear safety goggles or safety glasses with side shields during power tool operation or when blowing dust. If operation is dusty, also wear a dust mask.

# MAINTENANCE

## LUBRICATION

All of the bearings in this tool are lubricated with a sufficient amount of high grade lubricant for the life of the unit under normal operating conditions. Therefore, no further lubrication is required.

## CUTTERS

Get faster and more accurate cutting results by keeping cutters clean and sharp. Remove all accumulated pitch and gum from cutters after each use.

When sharpening cutters, sharpen only the inside of the cutting edge. Never grind the outside diameter. Be sure when sharpening the end of a cutter to grind the clearance angle the same as originally ground.

## COLLET

Dust and chips may collect on the collet from time to time, making it necessary to clean the collet. To do so, remove the collet assembly and wipe it with a clean dry rag. Clean the taper in the shaft in the same manner. Never immerse the collet or end of the shaft in a solvent or in water. Before replacing the collet assembly, put a drop of SAE30 motor oil on the inside of the nut, on the threads of the shaft, and on the taper in the shaft. Replace the collet assembly onto the shaft by hand only. Never tighten the collet nut without a bit in the collet. This action could permanently damage the collet.

## BRUSH ASSEMBLIES

See Figure 24.

Your router has externally accessible brush assemblies that should periodically be checked for wear.

### TO REPLACE BRUSH ASSEMBLIES

#### ■ UNPLUG YOUR ROUTER.

#### **⚠ WARNING:**

Failure to unplug your router could result in accidental starting causing serious injury.

- Remove brush cap with a screwdriver. Brush assembly is spring loaded and will pop out when you remove brush cap.
- Remove brush assembly (brush and spring).
- Check for wear. If worn, always replace in pairs. Do not replace one side without replacing the other.
- Reassemble using new brush assemblies. Make sure curvature of brush matches curvature of motor and that brush moves freely in brush tube.
- Make sure brush cap is oriented correctly (straight) and replace.
- Tighten brush cap securely. Do not over torque.

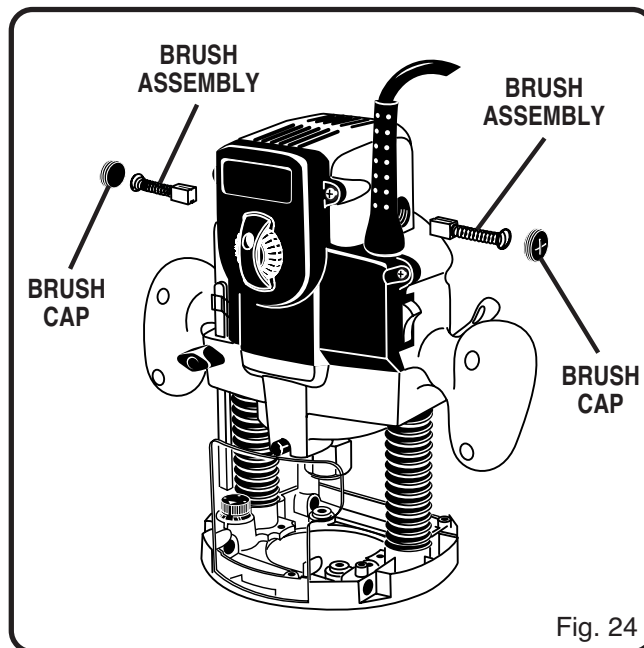


Fig. 24

# MAINTENANCE

## PLUNGE LOCK LEVER

See Figures 25, 26, and 27.

After extended use, the plunge lock may wear. If this happens, you can easily adjust the lever.

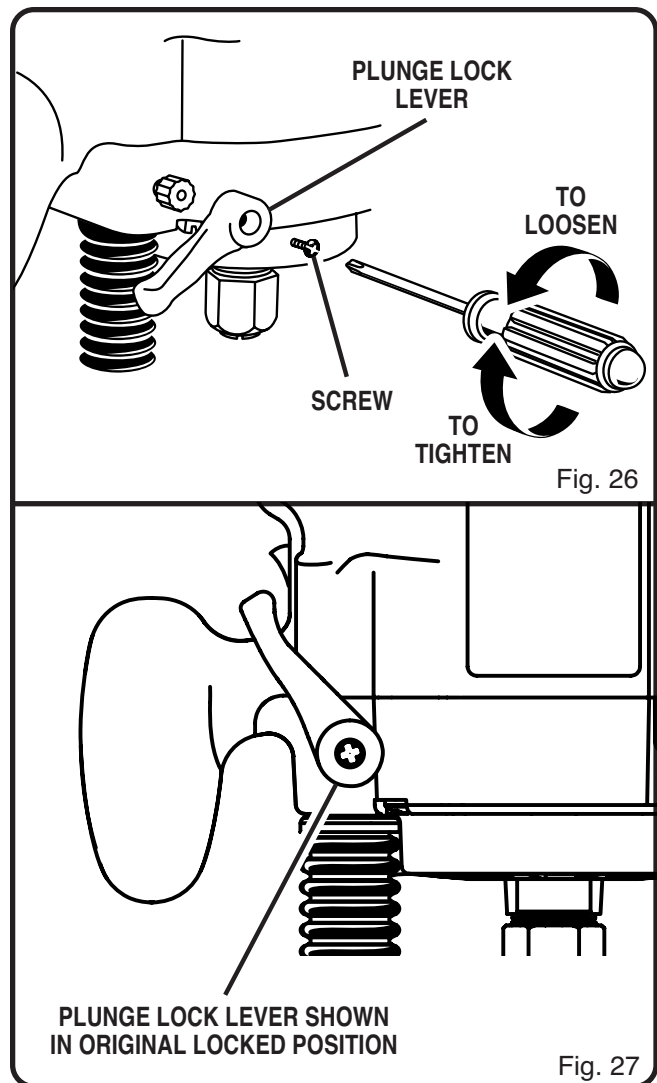
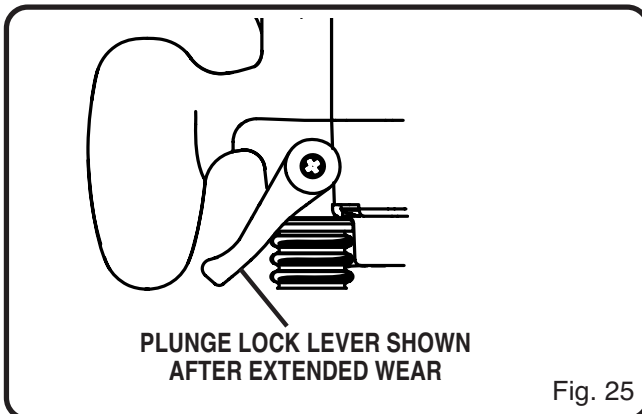
### TO ADJUST PLUNGE LOCK LEVER

#### ■ UNPLUG YOUR ROUTER.

#### **⚠ WARNING:**

Failure to unplug your router could result in accidental starting causing serious injury.

- Make sure lever is in locked position.
- Remove the screw supporting the plunge lock lever.
- Remove the lever.
- Place the lever back in the original locked position.
- Replace the screw.
- Check for free plunge with lever rotated to unlocked position. If router does not plunge freely, reposition lever.



## HELPFUL HINTS

- ✓ Always clamp workpiece securely before routing.
- ✓ A safe operator is one who thinks ahead.
- ✓ Always wear eye protection when routing.
- ✓ Make setup adjustments carefully. Then double check. Measure twice and cut once.
- ✓ Keep cutters clean and properly sharpened.
- ✓ Don't let familiarity make you careless.
- ✓ Study all safety rules and do the job safely.
- ✓ **NEVER** place your hands in jeopardy.
- ✓ Make certain clamps can't loosen while in use.
- ✓ Test difficult setups on scrap—Don't waste lumber.
- ✓ Plan each operation before you begin.
- ✓ Clean your router frequently. Shake router or blow with an air jet to remove sawdust buildup.
- ✓ **DO NOT ABUSE POWER TOOLS.** Abusive practices can damage tool as well as workpiece.
- ✓ **THINK SAFETY BY THINKING AHEAD.**

# ACCESSORIES

## OPTIONAL STRAIGHT GUIDE

An optional straight guide, part number 6090080, is available and may be purchased for use with your router.

## OPTIONAL DEPTH CONTROL KNOB

An optional depth control knob, part number 4830175, is available, which allows you to easily adjust the depth of cut when using the router mounted upside down to a router table.

## ROUTER TABLE

When mounting your router to a router table, use the two 5/16-18 UNC-2A flathead screws supplied. These screws will secure your router to the router table properly. Use of any other type and size screws could result in an accident causing possible serious injury. **Do not use 8 mm screws.**

### **WARNING:**

When using a UL listed router table, large router bits should be used for edging only. Do not use router bits that are larger in diameter than the opening in the router base for any purpose. Failure to heed this warning could result in serious personal injury.

### **WARNING:**

Do not use with router tables that are not UL listed and that fail to conform to safe woodworking practices and offer proper guarding for the cutter. Failure to comply can result in an accident causing possible serious injury.

### **WARNING:**

The use of this router in table mounted applications requires the use of the optional depth control knob. Failure to use this optional depth control knob could result in an accident and possible serious personal injury.



# OPERATOR'S MANUAL ELECTRONIC PLUNGE ROUTER

## RE180PL1

### VARIABLE SPEED – DOUBLE INSULATED

#### EXTENSION CORD CAUTION

When using a power tool at a considerable distance from a power source, be sure to use an extension cord that has the capacity to handle the current the tool will draw. An undersized cord will cause a drop in line voltage, resulting in overheating and loss of power. Use the chart to determine the minimum wire size required in an extension cord. Only round jacketed cords should be used.

When working with a tool outdoors, use an extension cord that is designed for outside use. This is indicated by the letters "WA" on the cord's jacket.

Before using any extension cord, inspect it for loose or exposed wires and cut or worn insulation.

Cord Length	Wire Size (A.W.G.)					
	0-2.0	2.1-3.4	3.5-5.0	5.1-7.0	7.1-12.0	12.1-16.0
25'	16	16	16	16	14	14
50'	16	16	16	14	14	12
100'	16	16	14	12	10	—

**CAUTION:** Keep the extension cord clear of the working area. Position the cord so that it will not get caught on lumber, tools or other obstructions while you are working with a power tool.

*\*\*Used on 12 gauge - 20 amp circuit.*

#### • SERVICE

Now that you have purchased your tool, should a need ever exist for repair parts or service, simply contact your nearest Ryobi Authorized Service Center. Be sure to provide all pertinent facts when you call or visit. Please call 1-800-525-2579 for your nearest Ryobi Authorized Service Center. You can also check our Web site at [www.ryobitools.com](http://www.ryobitools.com) for a complete list of Authorized Service Centers.

#### • MODEL NO. AND SERIAL NO.

The model number of this tool will be found on a plate attached to the motor housing. Please record the model number and serial number in the space provided below.

#### • HOW TO ORDER REPAIR PARTS

WHEN ORDERING REPAIR PARTS,  
ALWAYS GIVE THE FOLLOWING INFORMATION:

- MODEL NUMBER RE180PL1
- SERIAL NUMBER \_\_\_\_\_

#### RYOBI TECHNOLOGIES INC.

1428 Pearman Dairy Road Anderson, SC 29625  
 Post Office Box 1207 Anderson, SC 29622  
[www.ryobitools.com](http://www.ryobitools.com)  
 Phone 1-800-525-2579



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