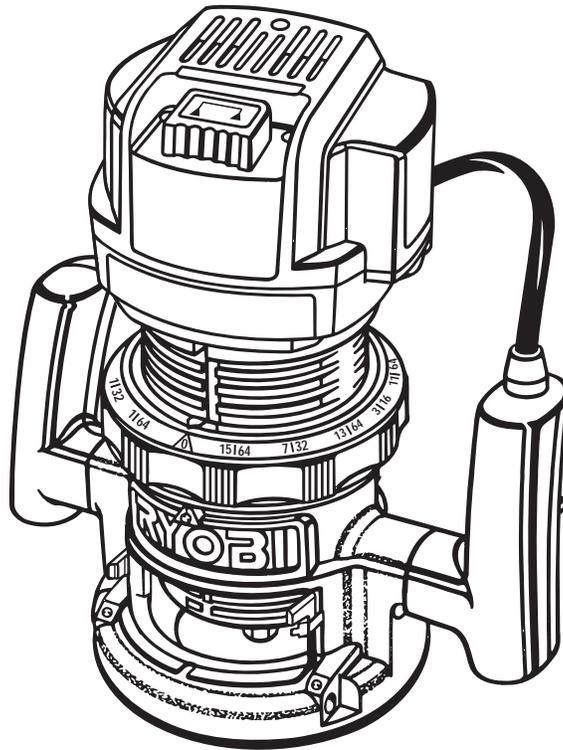




OPERATOR'S MANUAL

ROUTER - RE170VS

DOUBLE INSULATED



SPECIFICATIONS:	
Depth Of Cut	0 - 1-1/2 in. (0 - 38.1 mm)
Collet	1/2 in. (13 mm)
Also Included With Packaging	1/4 in. (6.4 mm)
Amperes	8.5
Peak Horsepower	1-3/4
Rating	120 Volts, 60 Hz, AC Only
No Load Speed	15,000 - 25,000 RPM
Net Weight	3.92 kg. (8.625 lbs.)

THANK YOU FOR BUYING A RYOBI ROUTER.

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.

⚠ CAUTION: Carefully read through this entire operator's manual before using your new router.

Pay close attention to the Rules for Safe Operation, Warnings, and Cautions. If you use your router properly and only for what it is intended, you will enjoy years of safe, reliable service.

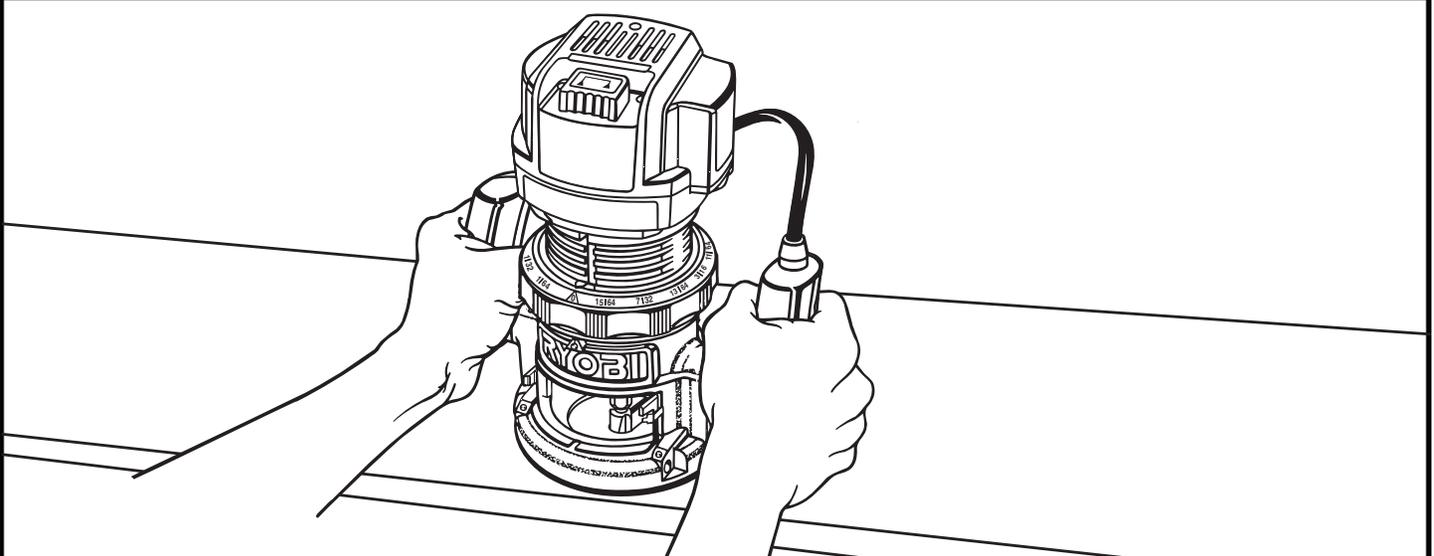
Thank you again for buying Ryobi tools.

SAVE THIS MANUAL FOR FUTURE REFERENCE

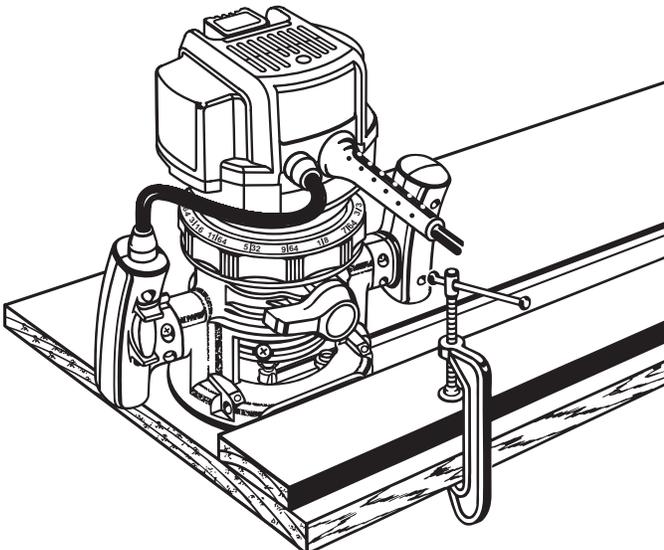
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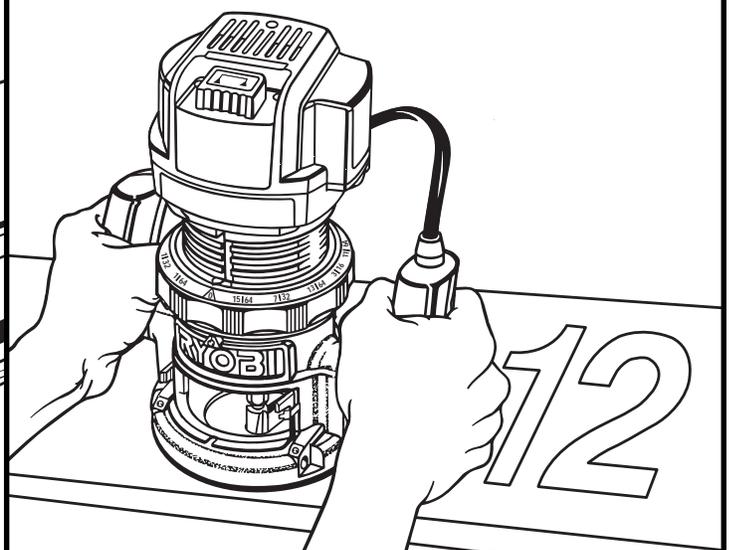
TYPICAL APPLICATIONS



ROUTING A GROOVE, WITH A GUIDE



FREEHAND ROUTING



RULES FOR SAFE OPERATION

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



SAFETY ALERT SYMBOL:

Indicates caution or warning. May be used in conjunction with other symbols or pictographs.



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.

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.

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 **RYOBI AUTHORIZED SERVICE CENTER** for repair. When servicing use only identical Ryobi replacement parts.



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 related to avoiding electrical shock.



WARNING:

Do not attempt to operate this tool until you have read thoroughly and understand completely all instructions, safety rules, etc. contained in this manual. Failure to comply can result in accidents involving fire, electric shock, or serious personal injury. Save operator's manual and review frequently for continuing safe operation, and instructing others who may use this tool.



WARNING:



The operation of any router can result in foreign objects being thrown into your eyes, which can result in severe eye damage. Before beginning power 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.

READ ALL INSTRUCTIONS

1. **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.
2. **GUARD AGAINST ELECTRICAL SHOCK** by preventing body contact with grounded surfaces. For example: Pipes, radiators, ranges, refrigerator enclosures.
3. **KEEP GUARDS IN PLACE** and in working order.
4. **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents.
5. **AVOID DANGEROUS ENVIRONMENT.** Don't use power tool in damp or wet locations or expose to rain. Keep work area well lit.
6. **KEEP CHILDREN AND VISITORS AWAY.** All visitors should wear safety glasses and be kept a safe distance from work area. Do not let visitors contact tool or extension cord.
7. **STORE IDLE TOOLS.** When not in use tools should be stored in a dry and high or locked-up place - out of the reach of children.
8. **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was designed.
9. **USE RIGHT TOOL.** Don't force small tool or attachment to do the job of a heavy duty tool. Don't use tool for purpose not intended - for example - A circular saw should never be used for cutting tree limbs or logs.
10. **WEAR PROPER APPAREL.** Do not wear loose clothing or jewelry that can get caught in tool's moving parts and cause personal injury. Rubber gloves and nonskid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair and keep it from being drawn into nearby air vents.
11. **ALWAYS WEAR SAFETY GLASSES.** Everyday eyeglasses have only impact-resistant lenses; they are **NOT** safety glasses.
12. **PROTECT YOUR LUNGS.** Wear a face or dust mask if operation is dusty.
13. **PROTECT YOUR HEARING.** Wear hearing protection during extended periods of operation.
14. **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil and sharp edges.
15. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.
16. **DON'T OVERREACH.** Keep proper footing and balance at all times. Do not use on a ladder or unstable support.
17. **MAINTAIN TOOLS WITH CARE.** Keep tools sharp at all times, and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
18. **DISCONNECT TOOLS.** When not in use, before servicing, or when changing attachments, blades, bits, cutters, etc., all tools should be disconnected from power supply.
19. **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
20. **AVOID ACCIDENTAL STARTING.** Don't carry plugged-in tools with finger on switch. Be sure switch is off when plugging in.
21. **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. A wire gage size (A.W.G.) of at least **14** is recommended for an extension cord 50 feet or less in length. A cord exceeding 50 feet is not recommended. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.
22. **OUTDOOR USE EXTENSION CORDS.** When tool is used outdoors, use only extension cords suitable for use outdoors. Outdoor approved cords are marked with the suffix W-A, for example - SJTW-A or SJOW-A.
23. **KEEP CUTTERS CLEAN AND SHARP.** Sharp cutters minimize stalling and kickback.
24. **KEEP HANDS AWAY FROM CUTTING AREA.** Keep hands away from cutters. Do not reach underneath work while cutter is rotating. Do not attempt to remove material while cutter is rotating.

RULES FOR SAFE OPERATION (Continued)

25. **NEVER USE IN AN EXPLOSIVE ATMOSPHERE.** Normal sparking of the motor could ignite fumes.
26. **INSPECT TOOL CORDS PERIODICALLY** and if damaged, have repaired at your nearest **AUTHORIZED SERVICE CENTER.** Stay constantly aware of cord location.
27. **INSPECT EXTENSION CORDS PERIODICALLY** and replace if damaged.
28. **KEEP HANDLES DRY, CLEAN, AND FREE FROM OIL AND GREASE.** Always use a clean cloth when cleaning. Never use brake fluids, gasoline, petroleum-based products or any strong solvents to clean your tool.
29. **STAY ALERT.** Watch what you are doing and use common sense. Do not operate tool when you are tired. Do not rush.
30. **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 unless indicated elsewhere in this instruction manual.
31. **DO NOT USE TOOL IF SWITCH DOES NOT TURN IT ON AND OFF.** Have switches replaced by an authorized service center.
32. **INSPECT FOR** and remove all nails from lumber before routing.
33. **DRUGS, ALCOHOL, MEDICATION.** Do not operate tool while under the influence of drugs, alcohol, or any medication.
34. **WHEN SERVICING, USE ONLY IDENTICAL RYOBI REPLACEMENT PARTS.**
35. **POLARIZED PLUGS.** To reduce the risk of electric shock, this tool has 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 the proper outlet. Do not change the plug in any way.
36. **DO NOT USE TOOL UNDER "BROWNOUT" OR OTHER LOW VOLTAGE CONDITIONS.** Also, do not use with any device that could cause the power supply voltage to change.
37. **WHEN USING THIS ROUTER WITH A ROUTER TABLE, HELP PREVENT POSSIBLE SERIOUS INJURY BY KEEPING THE CUTTER GUARDED AT ALL TIMES.** Use only UL listed router tables, with guards, that have been designed for use on routers that are of this type, size, and weight.
38. **SAVE THESE INSTRUCTIONS.** Review 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.



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

SAVE THESE INSTRUCTIONS

UNPACKING

Your router has been shipped completely assembled and ready for use. After removing it from the box, inspect it carefully to make sure no breakage or damage has occurred during shipping. If any parts are damaged or missing, contact your nearest Ryobi dealer to obtain replacement parts before attempting to operate router. A 1/4 in. (6.4 mm) collet assembly, wrench, operator's manual, and warranty registration are the only loose parts included in the box.

WARNING:

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

FEATURES

Your router is a versatile woodworking tool which 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 which is beautiful and precise.

Your router can be used for routing grooves, edge routing, routing circles, and freehand routing. When used with recommended accessories, such as a UL listed router table or 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.

CAUTION: Use router bits for cutters only.

Also make sure all router bits and recommended accessories are in accordance with listed specifications for this tool. For example, do not use router bits that are rated at less than 25,000 RPM.

KNOW YOUR ROUTER

Before attempting to use your router, familiarize yourself with all operating features and safety requirements. See *Figures 1 and 2*.

HEAVY DUTY MOTOR

Your router has a powerful motor, sufficient enough to handle tough routing jobs that require heavy duty performance. It has a 8.5 amp motor that delivers 1-3/4 peak horsepower.

SWITCH

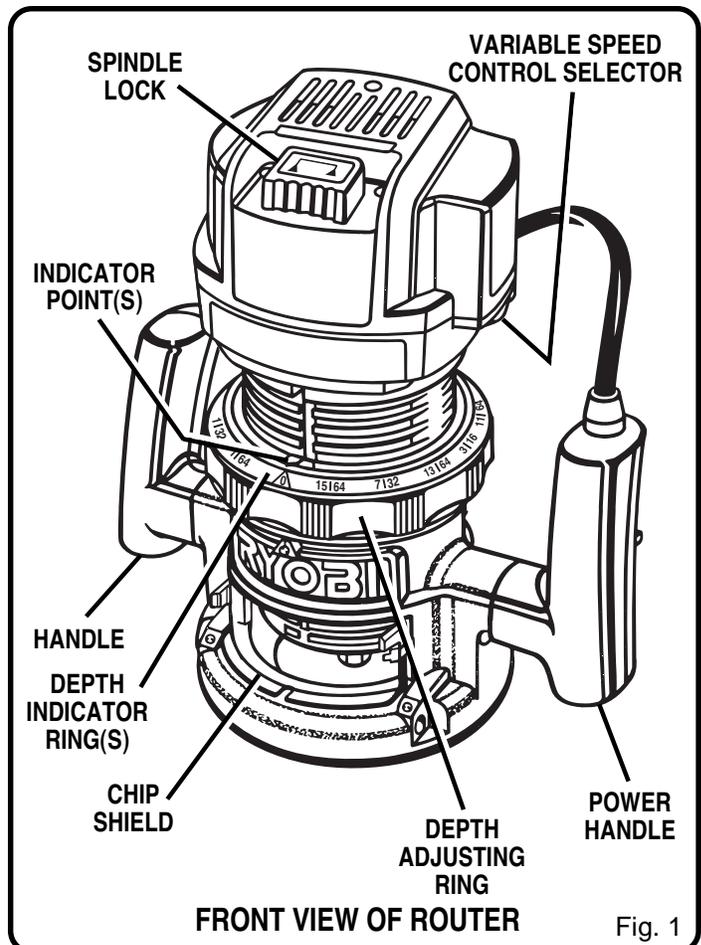
To turn your router **ON**, depress the switch trigger. Release the switch trigger to turn your router **OFF**.

LOCK-ON FEATURE

Your router is equipped with a **lock-on** feature that is convenient when continuous operation for extended periods of time is required. To lock on, depress the trigger, push in the lock-on button located on the side of the handle, then while holding the lock-on button pushed in, release the trigger. To release the lock, depress the trigger and release it. See *Figure 2*.

WARNING:

Do not allow familiarity with your router to make you careless. Remember that a careless fraction of a second is sufficient to inflict severe injury.



FEATURES

CHIP SHIELD

A clear plastic see-through chip shield is installed on the front of your router for protection against flying dust and chips. The shield is designed to fit the front opening of the router base. See Figure 1. If necessary to remove chip shield, squeeze the tabs on each end and pull outward. To replace, squeeze the tabs at each end, fit into opening, then release. **FOR YOUR PROTECTION, DO NOT USE ROUTER WITHOUT CHIP SHIELD PROPERLY IN PLACE.**

SPINDLE LOCK

A spindle lock secures the spindle so that only one wrench is needed to loosen the collet nut and change cutters. It also leaves both hands free for changing cutters.

NOTE: Your router will not run if spindle is locked.

ERGONOMIC HANDLES

The handles on your router provide for easy handling and maintaining proper control when routing.

The handles have also been designed so that they are comfortable and easy to grasp when operating in different positions.

ELECTRONIC VARIABLE SPEED CONTROL

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 a given job. Both the experienced and inexperienced router users benefit, obtaining professional like results with fewer job errors.

SOFT START

The soft start feature builds motor RPM gradually to minimize start-up torque.

VARIABLE SPEED

The variable speed control feature allows the router to develop a no load speed that can be adjusted from 15,000 to 25,000 RPM. The variable speed control selector is conveniently located under the end cap on the side of your router.

Speed can be set according to the approximate cutter diameter you will be using and to the hardness of the material being cut. See the chart in figure 10, on page 11. The best cuts are made when the cutter is fed through material at the proper rate of feed.

ELECTRONIC FEEDBACK

The electronic feedback 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.

APPLICATIONS

(Use 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.

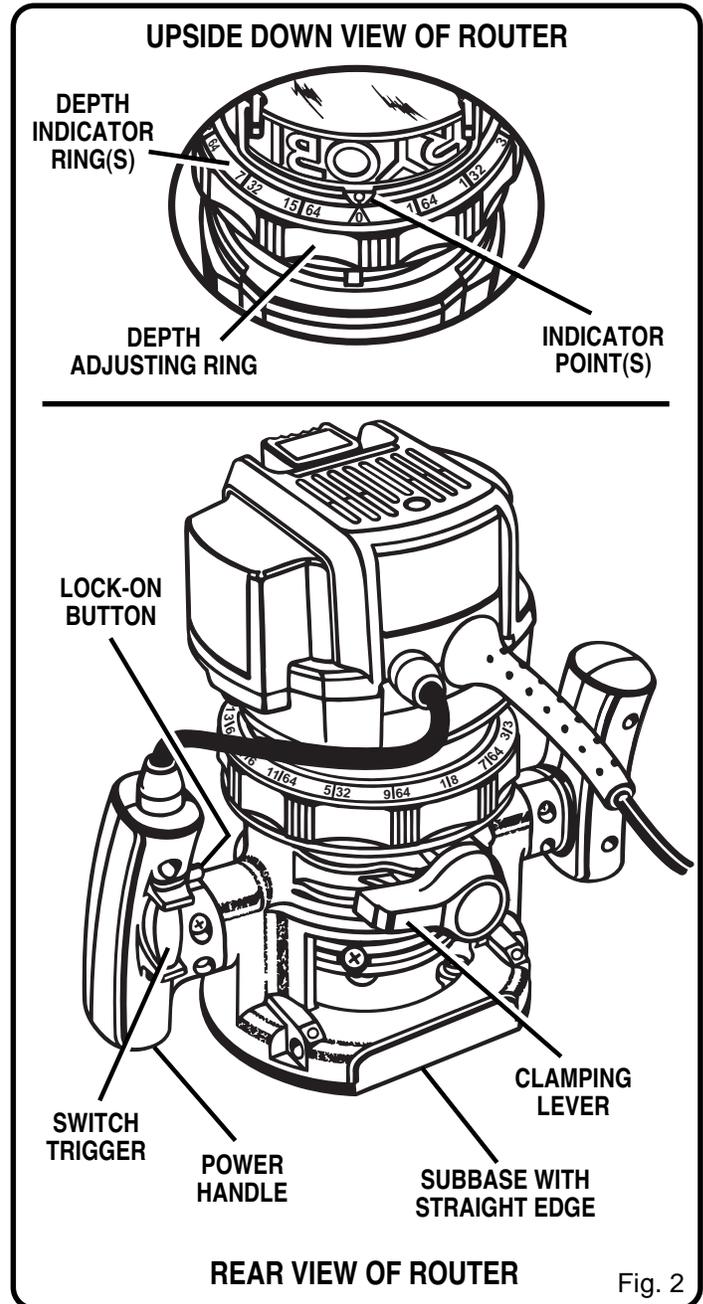


Fig. 2

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.

INSTALLING/REMOVING CUTTERS

See Figures 3, 4, and 5.

■ 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.

■ A spindle lock is located on the top of the end cap. See Figure 3. To activate lock, (1) push spindle lock in, (2) slide into lock position, then (3) release spindle lock.

■ Place your router upside down on table, then turn collet nut with wrench until lock mechanism interlocks. See Figure 4.

NOTE: Spindle lock is spring loaded and will snap into position when lock mechanism interlocks.

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.

■ Remove cutters by turning collet nut counterclockwise enough to allow cutter to slip easily from collet. See Figure 4.

■ If installing cutter for the first time, it can be installed once collet nut is loose. If changing cutters, cutter will easily slip from collet after loosening collet nut.

■ The 1/2 in. (13 mm) collet is machined to precision tolerances to fit cutters with 1/2 in. (13 mm) diameter shanks. A 1/4 in. (6.4 mm) collet assembly has also been provided with your router so that cutters with 1/4 in. (6.4 mm) shank bits can be used. See Figure 5.

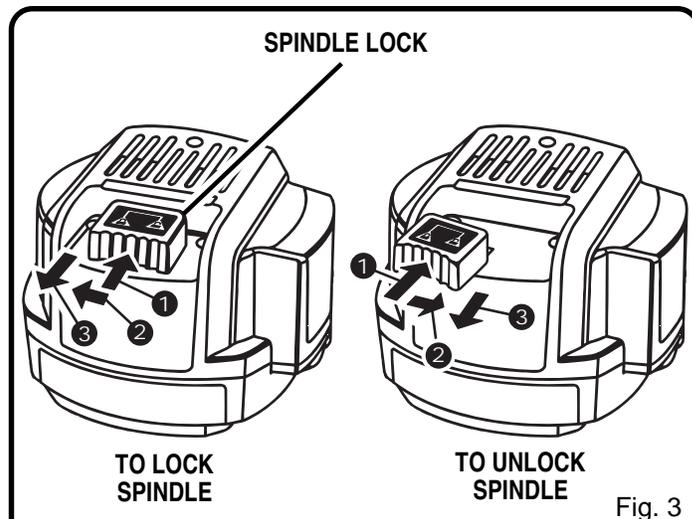


Fig. 3

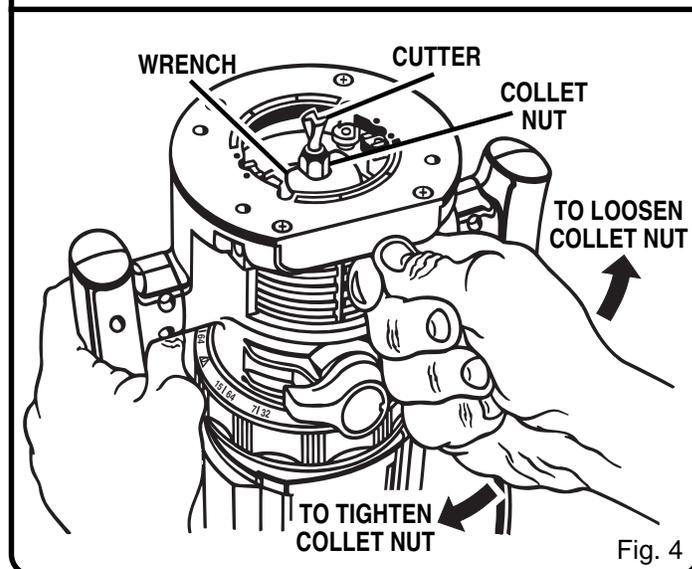


Fig. 4

WARNING:

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

WARNING:

Before connecting your router to power supply, always check to be sure switch is not in **lock-on** position. Failure to do so could result in accidental starting of your router resulting in possible serious injury.

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 substantial voltage drop will cause a loss of power and the motor will overheat. If your tool does not operate when plugged into an outlet, double-check the power supply.

ADJUSTMENTS

INSTALLING/REMOVING CUTTERS

(Continued)

■ To use cutters with 1/4 in. (6.4 mm) shank bits, the 1/2 in. (13 mm) collet assembly must be removed and replaced with the 1/4 in. (6.4 mm) collet assembly. Remove the 1/2 in. (13 mm) collet assembly by removing collet nut, loosening collet screw securing collet to motor shaft, then removing collet assembly.

NOTE: The collet screw has left hand threads and you will need a #2 phillips screwdriver to loosen collet screw. Turn screw clockwise to loosen and counterclockwise to tighten.

■ Replace with the 1/4 in. (6.4 mm) collet assembly, securely tightening collet screw in collet to motor shaft, then reassemble the 1/2 in. (13 mm) collet nut. See *Figure 5*. Make sure collet can turn freely inside motor shaft once collet screw is tight.

■ Insert shank of cutter into collet 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. See *Figure 4*.



WARNING:

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

■ Place spindle lock back in unlock position. Otherwise, interlocking mechanism of spindle lock will not let you turn your router on.

DEPTH OF CUT ADJUSTMENTS

See *Figures 6, 7, 8, and 9*.

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 depths of cut greater than 1/8 in. (3.2 mm).

■ **UNPLUG YOUR ROUTER.**



WARNING:

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

■ Place your router on a flat surface, unlock clamping lever, and turn depth adjusting ring until cutter is inside subbase. See *Figure 6*.

■ Turn the depth adjusting ring until tip of cutter touches flat surface (zero depth of cut). See *Figure 7*. Next turn depth indicator ring until the zero lines up with the indicator point on front of motor housing. See *Figure 6*.

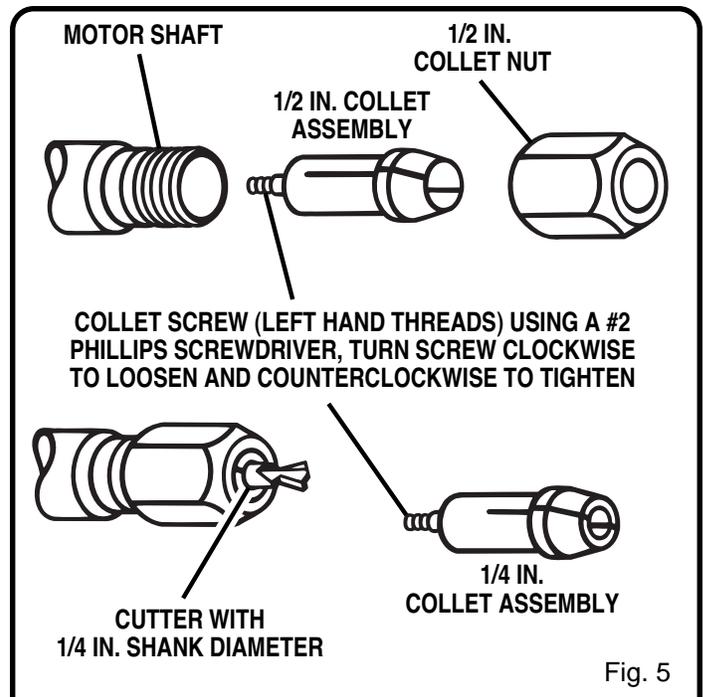


Fig. 5

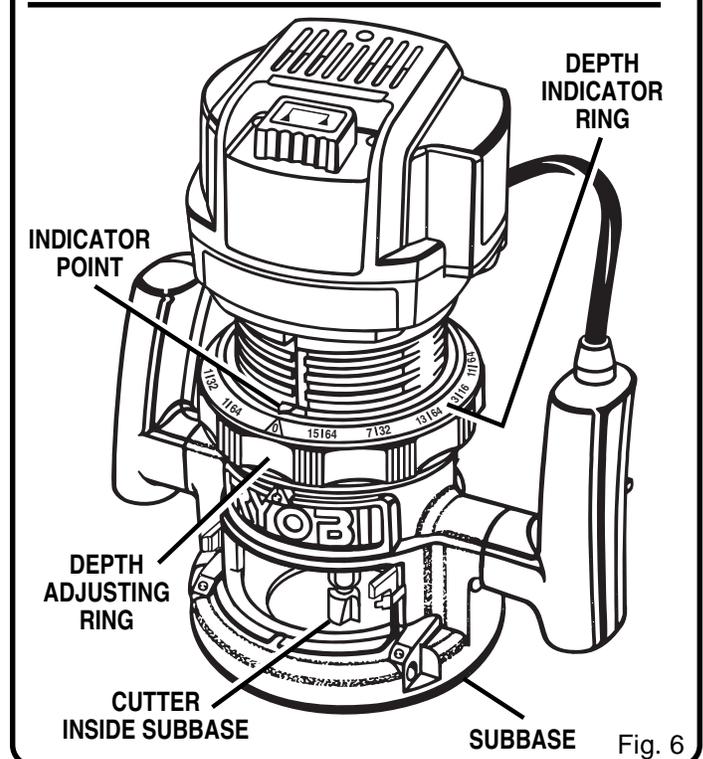
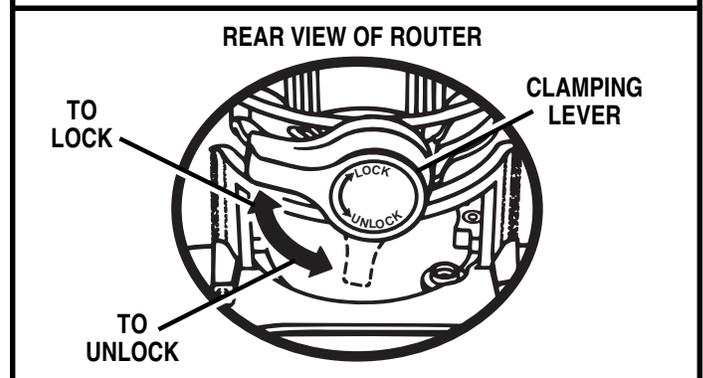


Fig. 6

ADJUSTMENTS

DEPTH OF CUT ADJUSTMENTS (Continued)

- Position your router so that the cutter can extend below the subbase for desired depth setting. See Figure 8.
- Turn the depth adjusting ring to obtain the desired depth of cut. The distance the cutter moves can be read on the depth adjusting ring. Each mark on the depth adjusting ring indicates 1/64 inch (.4 mm) change in depth setting. One indicator point is located on front of the motor housing, the other one is located on the base.
- Lock clamping lever, securing depth adjusting ring to motor housing and base.

DEPTH OF CUT ADJUSTMENTS WHEN ROUTER IS MOUNTED TO A ROUTER TABLE

See Figure 9.

The depth of cut is readable from both sides of the depth adjusting ring. There is a depth indicator ring and indicator point on both sides of the depth adjusting ring. The bottom ring is convenient when using your router mounted to a router table. The indicator point on the base should also be used when using your router mounted to a router table.

The depth indicator rings are identical parts. Therefore, when you have your router mounted upside down on a router table, you set depth of cut by reading the scale differently. Set the cutter at zero depth of cut, rotate depth indicator ring to desired depth of cut on the scale, then turn depth adjusting ring back to zero depth of cut and lock clamping lever securely.

VARIABLE SPEED CONTROL SELECTOR

See Figure 10.

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 25,000 rpm. There is a six step scale labeled A thru 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. Turn to a lower setting to decrease speed and torque.

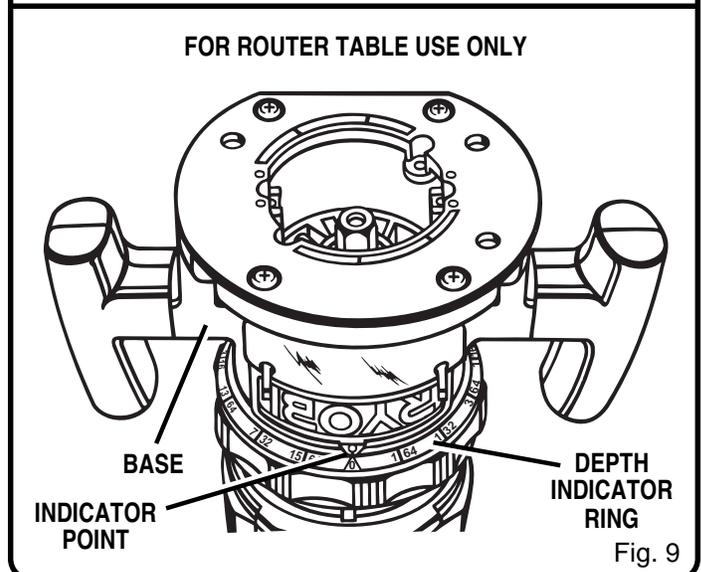
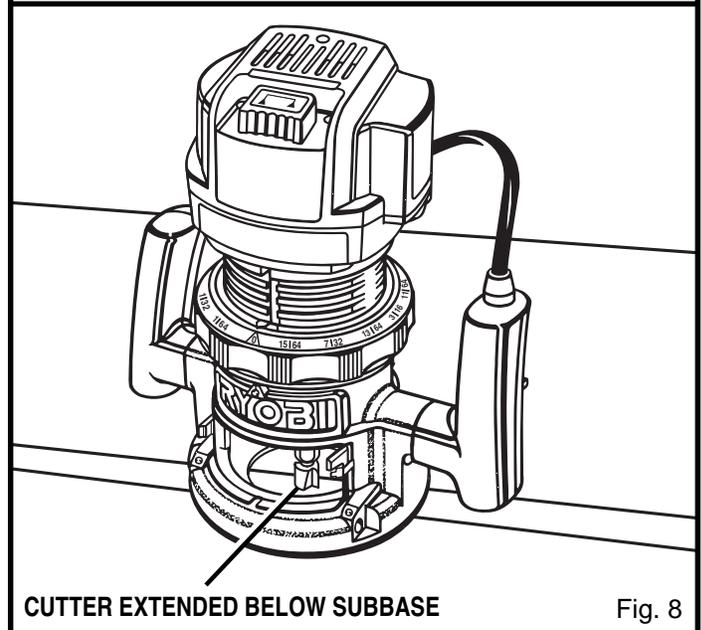
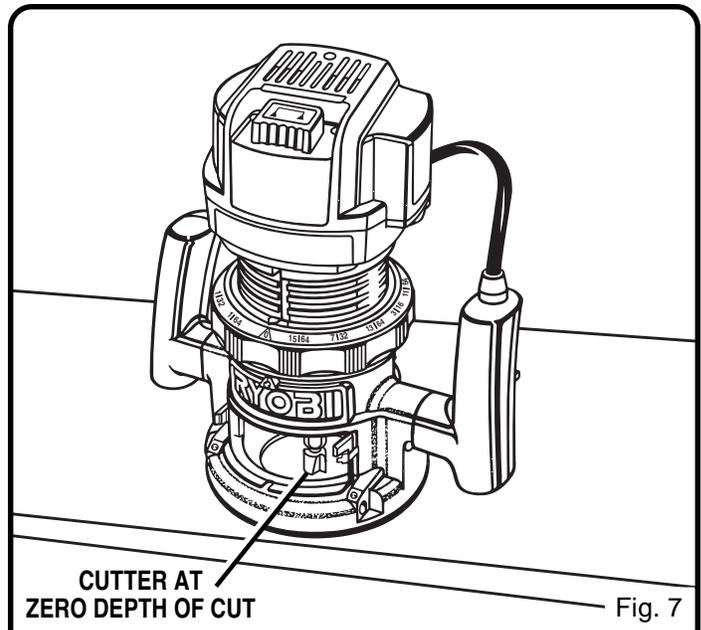
NOTE: If you do not want to use the variable speed control selector, turn to the highest possible setting F.

The speed selection chart shown gives suggested speed settings based on the diameter of the cutter and the type of material being routed. See Figure 10.

PRACTICE BEFORE ACTUAL USE

We suggest that you practice with the variable speed feature of your router before installing a cutter and making cuts in wood. **Check the following before connecting your router to power supply:**

- Make sure power supply is 120 volts, 60 Hz, AC only.
- Make sure the spindle lock is in the unlocked position.
- Make sure the trigger is not in the lock-on position.



OPERATION

- Make sure there is not a cutter in the collet.
- Make sure the collet does not extend below the subbase.
- Choose the desired speed from the speed selection chart. See Figure 10.
- Turn the variable speed control selector to the desired setting. Align desired setting on the variable speed control selector with indicator mark on the lower end cap.
- Plug your router into power supply source.
- Grasp your router firmly with both hands and turn on.



WARNING:

Always wear safety goggles or safety glasses with side shields when operating your router. Failure to do so could result in dust, shavings, loose particles or foreign objects being thrown into your eyes, causing possible serious injury.

ROUTING

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 as shown in figure 11.

Before starting router, unplug it and make sure 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.

FEED DIRECTION

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 could cause loss of control of your router. See Figure 15.

RATE OF FEED

IMPORTANT: The whole "secret" of professional routing and edge shaping lies in making a careful setup for the cut to be made 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 will be required.

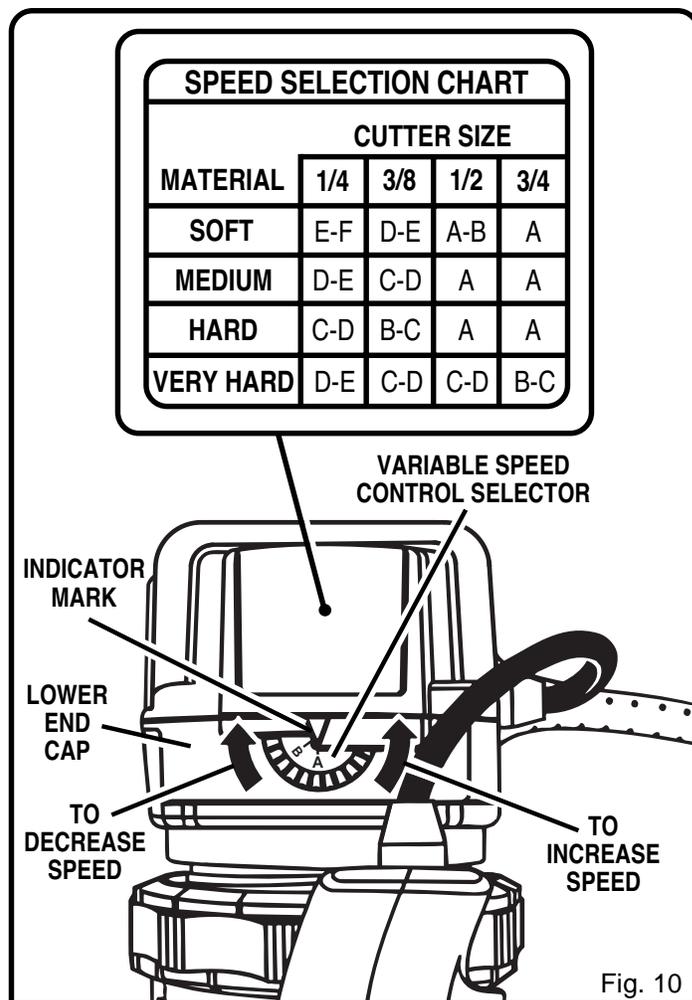


Fig. 10

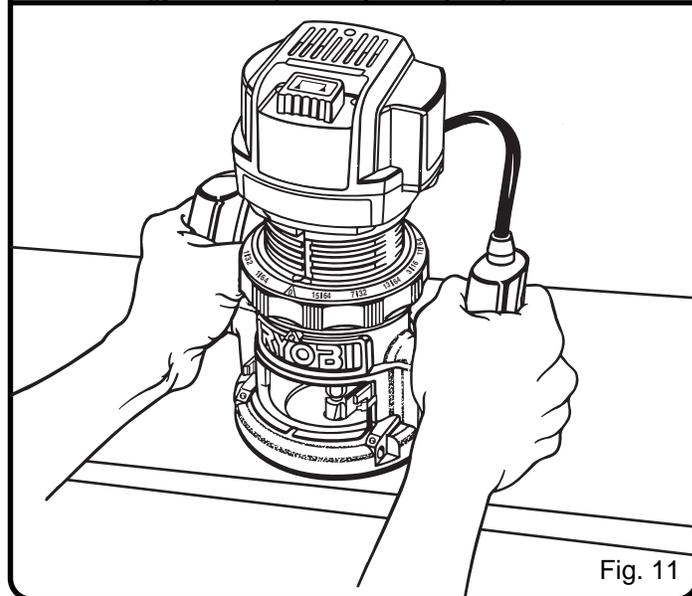


Fig. 11

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.

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 — without hogging into the wood to make large individual chips or, on the other hand, to create only sawdust. If you are making a small diameter, shallow groove in soft, dry wood, the proper feed may be about as fast as you can travel your router along your guide line. On the other hand, if the bit is a large one, the cut is deep or the wood is hard to cut, the proper feed may be a very slow one. Then, again, 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. . . by listening to the router motor and by feeling the progress of each cut. If at all possible, always test a cut on a scrap piece of the workpiece wood, beforehand.

SPEED SELECTION

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. See Figure 10.

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.

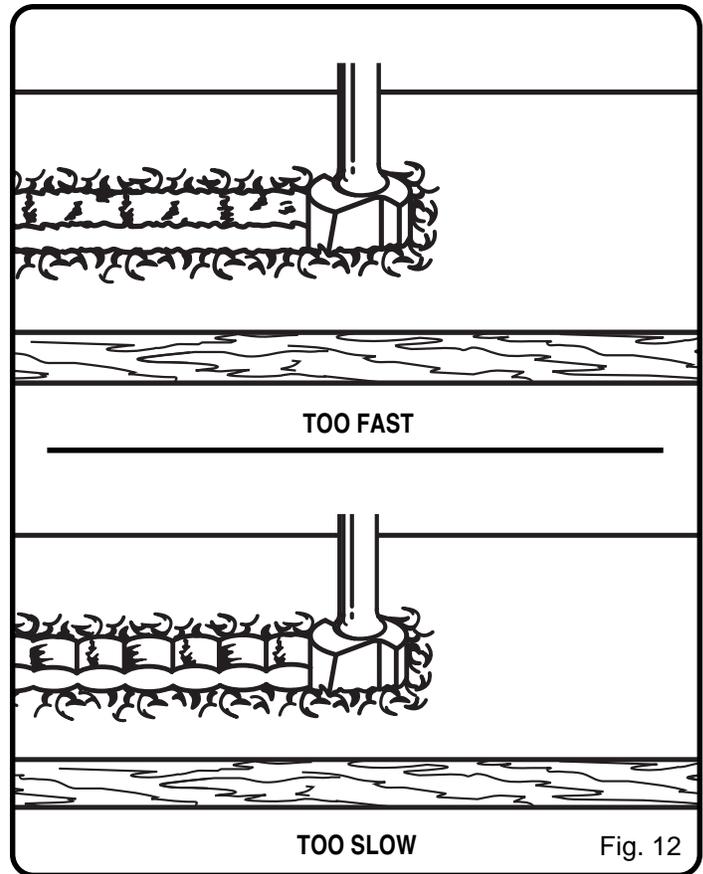
FORCE FEEDING

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), with resulting splintering and gouging of the workpiece. See Figure 12.

Your Ryobi router is an extremely high-speed tool (15,000 - 25,000 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.



TOO SLOW FEEDING

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 — 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 12.

"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 too-highly pitched sound of the motor; or by feeling the "wobble" of the bit in the cut.

OPERATION

DEPTH OF CUT

As previously mentioned, the depth of cut is important because it affects the rate of feed which, in turn, affects the quality of a 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 off, 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 13.

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 14.

DIRECTION OF FEED AND THRUST

See Figures 15 and 16.

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 is starting 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.

ROUTING

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 16, tool travel should be left to right and counterclockwise around curves. When the guide is positioned as shown in the second part of Figure 16, 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.

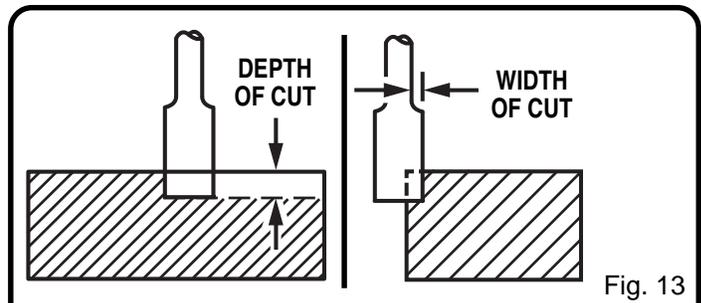


Fig. 13

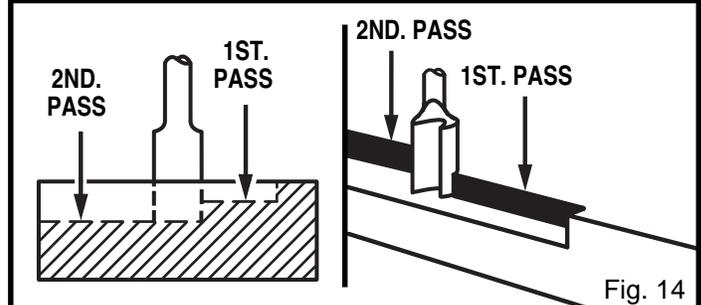


Fig. 14

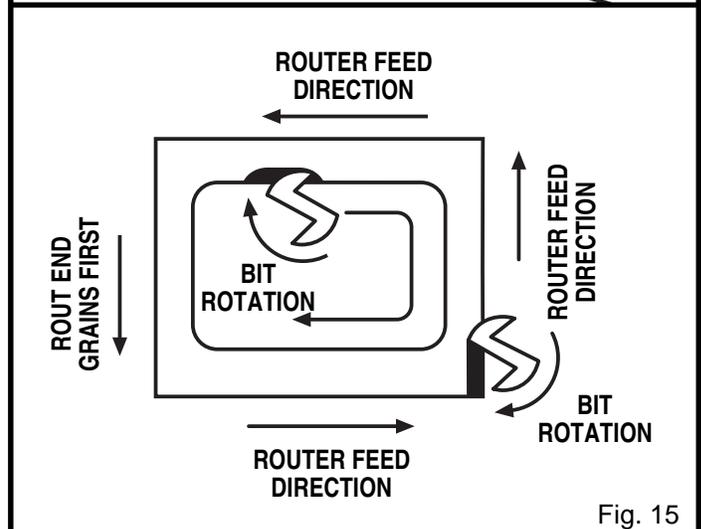


Fig. 15

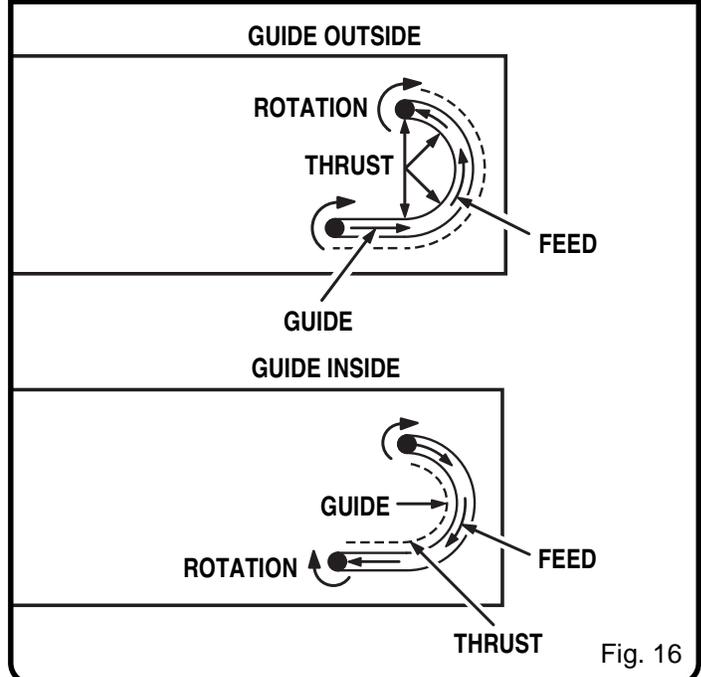


Fig. 16

OPERATION

STARTING AND ENDING A CUT INTERNAL ROUTING

Tilt router and place on workpiece, letting edge of subbase contact workpiece first. Be careful not to let router bit contact workpiece. Turn router on and let motor build to its full speed. Gradually feed cutter into workpiece until subbase is level with 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.

EDGING WITH PILOT BITS

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: If desired any of the piloted bits can be used without a pilot for edge shaping with guides, as preceding. Also, the size (diameter) of the pilot that is used determines the maximum cut width that can be made with the pilot against

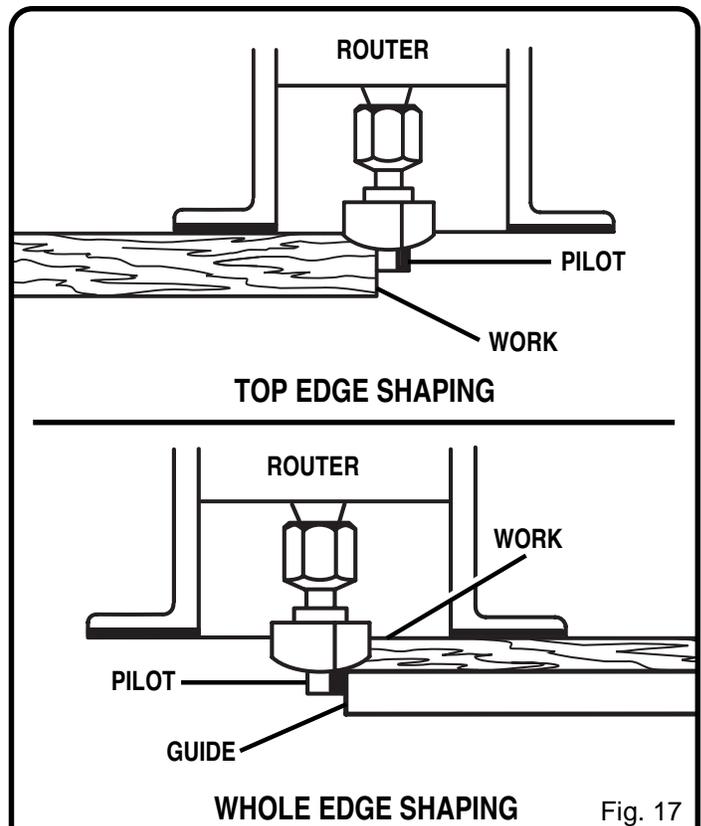


Fig. 17

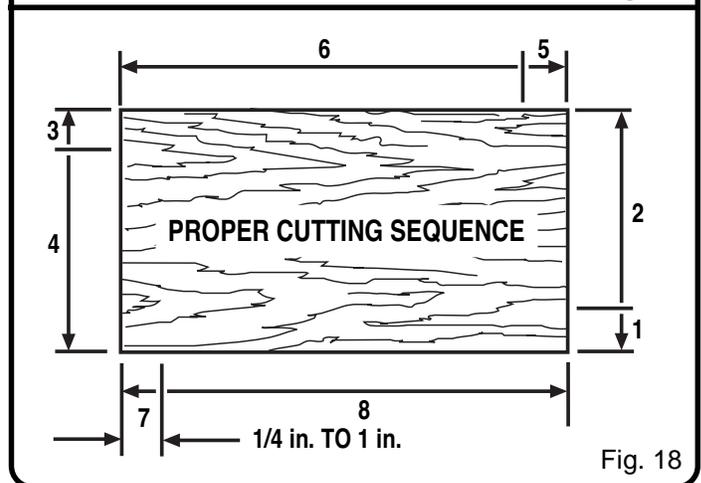


Fig. 18

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. (6.4 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.

OPERATION

EDGE ROUTING

Place router on workpiece, making sure the router bit does not contact workpiece. Turn router on and let 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.

ROUTING WITH STRAIGHT EDGE OF SUBBASE

See Figure 19.

The subbase on your router has a straight edge. It should be used when placing your router against an edge guide or fence and routing grooves parallel to the fence.

ROUTING GROOVES

See Figure 20.

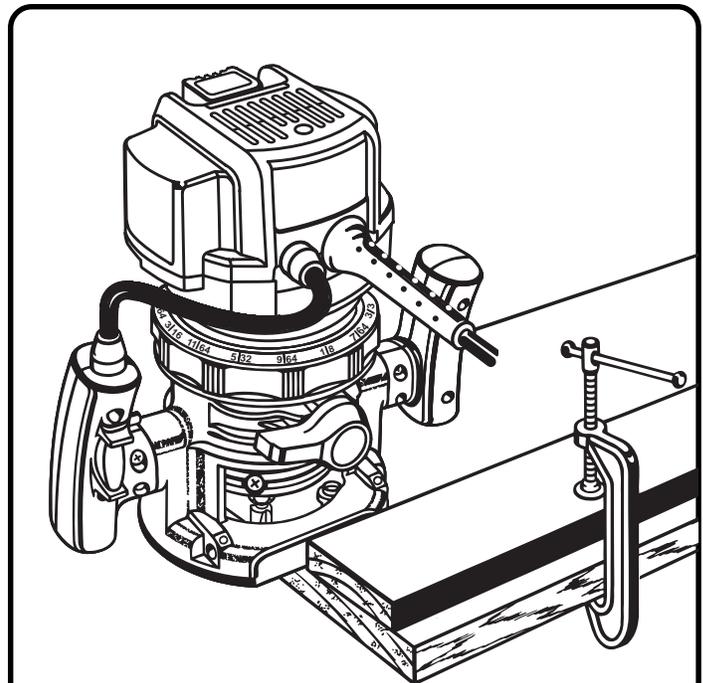
When routing across the face of boards, set router at desired depth of cut, place the edge of router base against workpiece, and turn on your router. Slowly feed the cutter into the workpiece along desired line of cut.

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.



ROUTING WITH STRAIGHT EDGE OF SUBBASE AGAINST AN EDGE GUIDE

Fig. 19

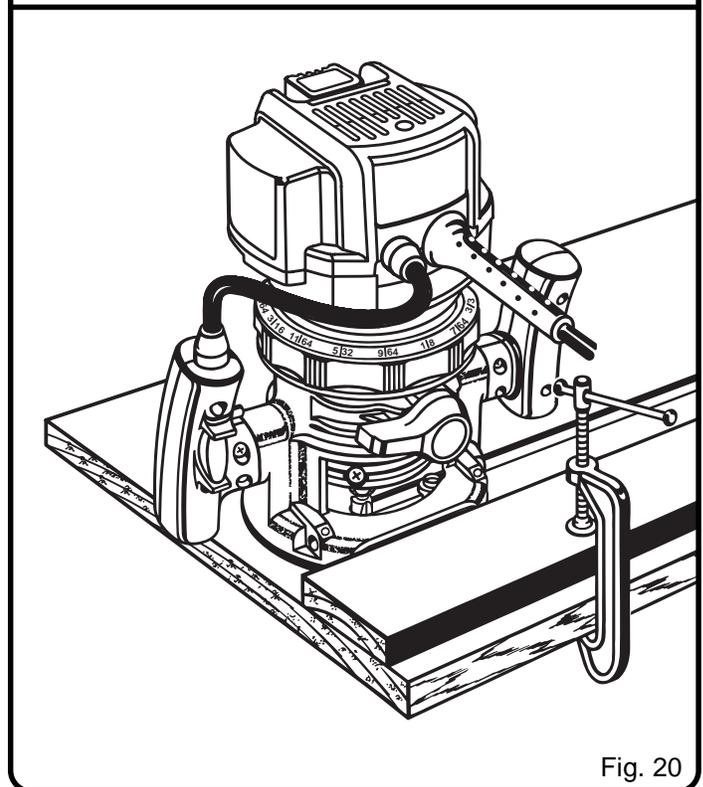


Fig. 20

OPERATION

FREEHAND ROUTING

See Figure 21.

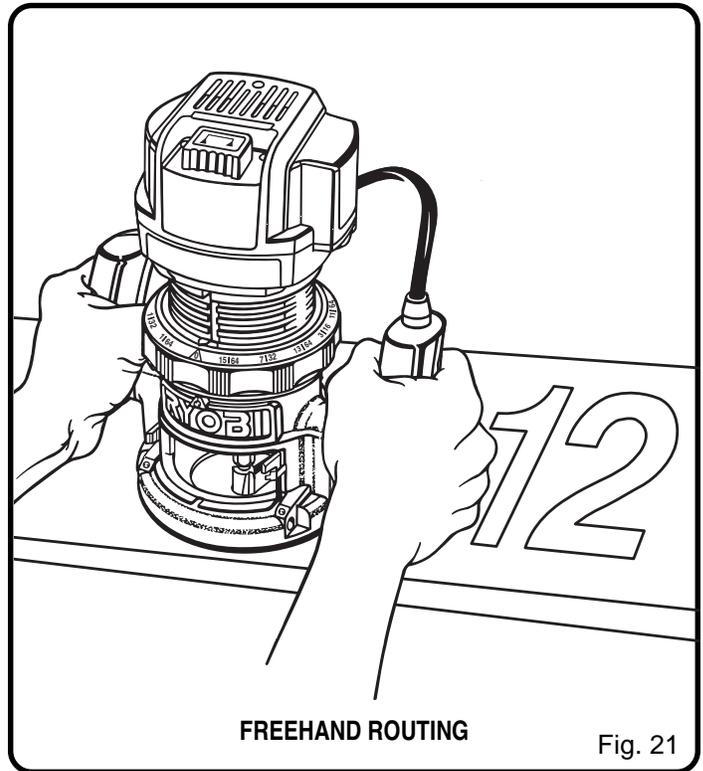
When used freehand, your router becomes a flexible and versatile tool. This flexibility makes it possible to easily rout signs, relief sculptures, etc.

There are two basic techniques for freehand routing:

- Routing letters, grooves, and patterns into wood. See Figure 21.
- 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 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.



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.

WARNING:

Do not use with router tables 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.

ROUTER TABLE USE

See Figures 22 and 23.

- Your Ryobi RE170VS router can be used on UL listed router tables such as the Ryobi BT3000SXI Precision Cutting System. It may be necessary to remove the subbase to utilize the full pattern of some edge forming bits such as Roman Ogee and round-over bits. Remove the four (4) #10-32 pan head screws and subbase. With the subbase base removed, the router is secured to the mounting plate with 5/16-18 x 3/4 in., tapered flat head screws provided in the Ryobi Router Mounting Kit model number 4950300 or available at your local hardware store.

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.

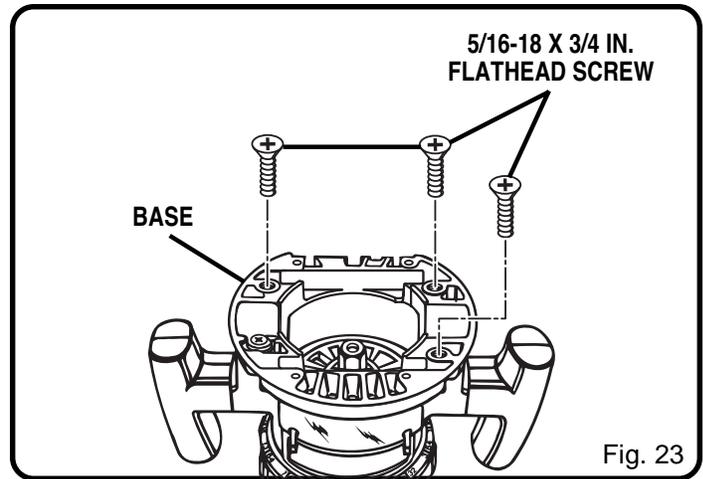
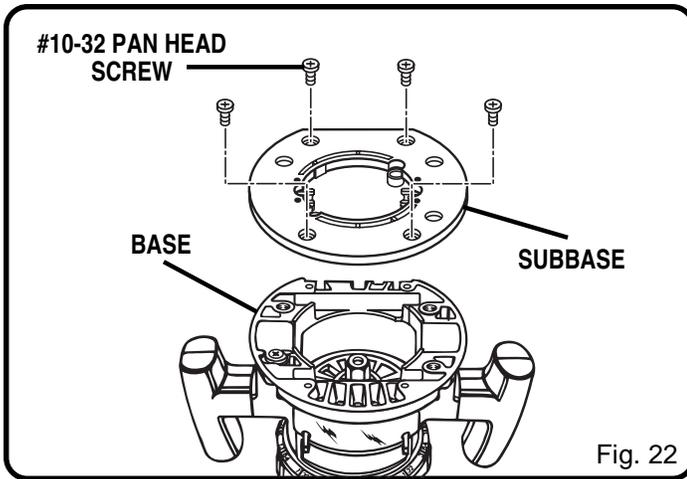
WARNING:

ALWAYS make sure the shank of the router bit is seated within 1/16 in. of the bottom of the collet. Extending the shank of the router bit more than 1/16 in. beyond the base of the collet could cause improper engagement of the collet to the bit and result in serious personal injury.

WARNING:

Use only 5/16-18 x 3/4 in. machine screws to mount the router in an inverted position for table use. The use of smaller screws, such as the #10-32 machine screws provided for mounting the subbase, could provide an insecure mounting and result in the risk of serious personal injury.

OPERATION



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.

PROPER CARE OF 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.

PROPER CARE OF COLLET

From time to time, it also becomes necessary to clean your collet and collet nut. To do so, simply remove collet nut from collet and clean the dust and chips that have collected. Then return collet nut to its original position. Tighten collet nut on collet without a cutter installed.

When electric tools are used on fiberglass boats, sports cars, wallboard, spackling compounds, or plaster, it has been found that they are subject to accelerated wear and possible premature failure, as the fiberglass chips and grindings are highly abrasive to bearings, brushes, commutators, etc. Consequently, it is not recommended that this tool be used for extended work on any fiberglass material, wallboard, spackling compounds, or plaster. During any use on these materials, it is extremely important that the tool is cleaned frequently by blowing 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.

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.

OPTIONAL ACCESSORIES

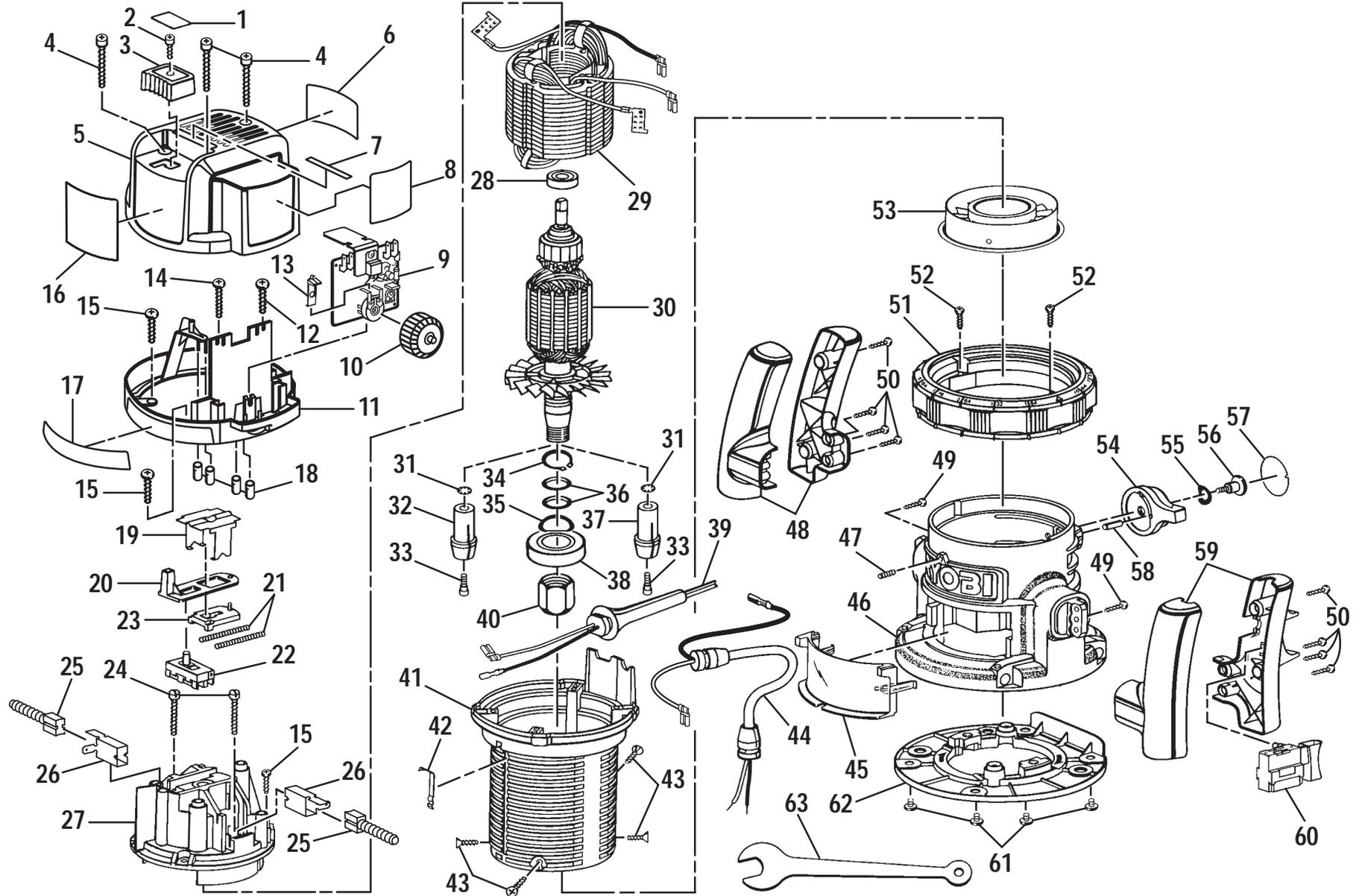
The following recommended accessories are current and were available at the time this manual was printed:

ITEM NO.	DESCRIPTION
4070175	Template Guide Adapter For Ryobi Template Guides
4070176	Template Guide Adapter For Porter Cable Rockwell and B&D Template Guides
6090080	Straight Guide For Ryobi Routers - Model Nos. R160, R165, RE 170, RE170VS, R175, RE175, R180, and RE185

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. This will provide smoother operation of depth adjusting ring and clamping lever areas. 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.**

RYOBI ROUTER – MODEL NUMBER RE170VS



⚠ WARNING:

Improper repair of a double insulated tool can result in damages to the double insulation system possibly causing electrical shock or electrocution. Any repairs requiring disassembly of your tool requires safety testing and should only be performed by a Ryobi authorized service center. For the repair center nearest you call 1-800-525-2579 in the United States or 1-800-265-6778 in Canada.

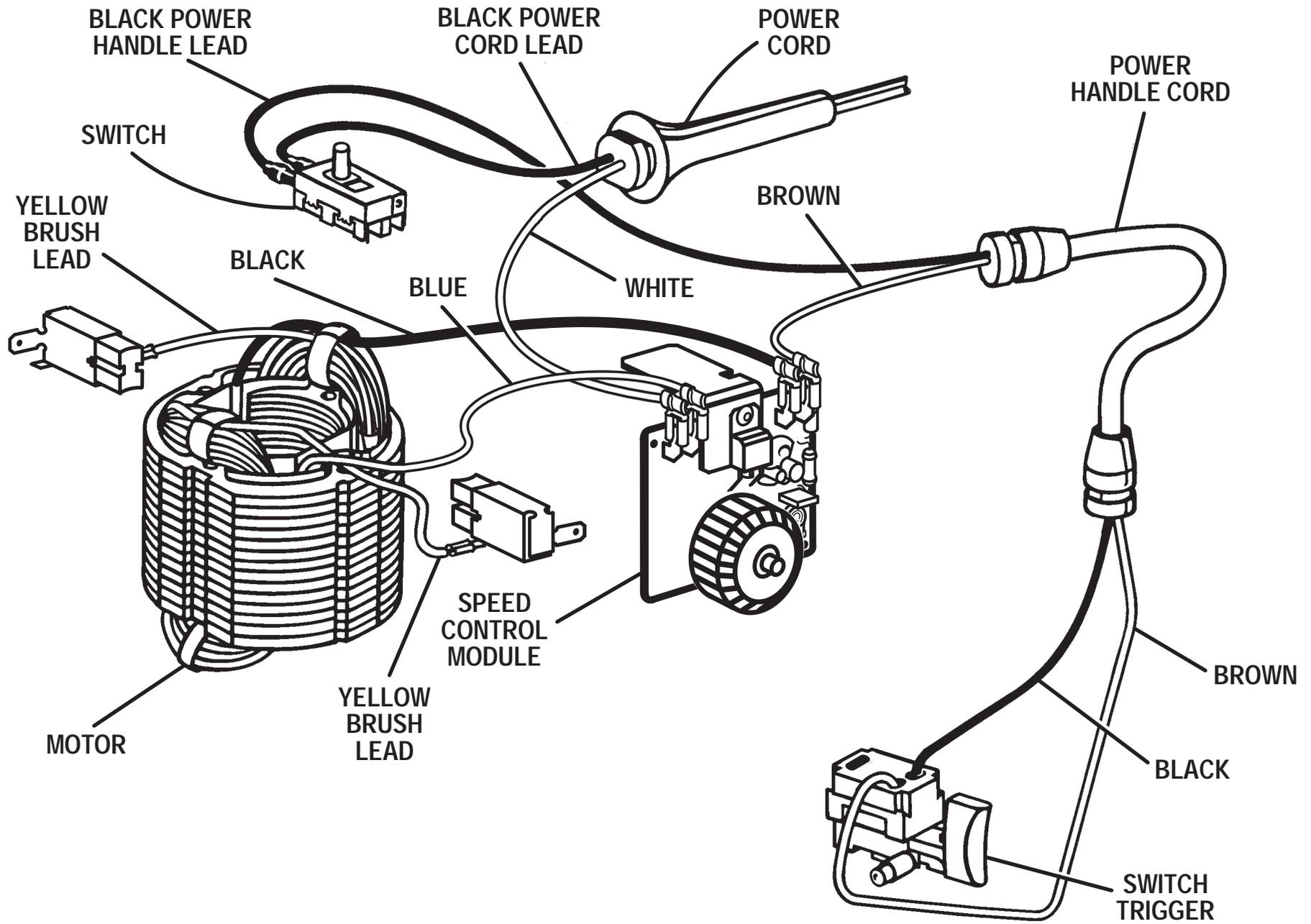
RYOBI ROUTER – MODEL NUMBER RE170VS

The model number will be found on a plate attached to the motor housing. Always mention the model number in all correspondence regarding your **ROUTER** or when ordering repair parts.

PARTS LIST

Key No.	Part Number	Description	Quan.	Key No.	Part Number	Description	Quan.
1	974323-001	Shaft Lock Label	1	34	617932-002	Retaining Ring	1
2	999053-003	Screw (#5-10 x 1/2 in. Fil. Hd.)	1	35	622347-018	Washer	1
3	973671-001	Actuator Button	1	36	969313-001	O Ring	2
4	989592-002	Screw (#8-10 x 1-3/8 in. Fil. Hd.)	3	37	974252-005	1/4 in. Collet Assembly (Includes One of Key Nos. 31 and 33)	1
5	974799-001	Upper End Cap	1	38	968305-041	Ball Bearing (6004LLBCM)	1
6	982016-001	Data Plate	1	39	970105-024	Cord	1
7	974289-001	Caution Label	1	40	973844-001	1/2 in. Collet Nut	1
8	974927-001	Speed Control Label	1	41	973657-002	Motor Housing	1
9	974617-001	Speed Control Module	1	42	973688-001	Pointer	1
10	974779-001	Speed Control Dial	1	43	612556-003	Screw (#8-18 x 9/16 in. Flat Hd. Phillips T.C.)	4
11	974800-001	Lower End Cap	1	44	982020-002	Power Handle Cord	1
12	990705-009	Screw (#8-22 x 5/8 in. Pan Hd. Hi-Lo)	1	45	973672-001	Chip Shield	1
13	970771-001	Dial Detent Ratchet	1	46	974908-004	Base (Includes Key No. 58)	1
14	616081-003	Screw (#8-18 x 1 in. Pan Hd. T.C.)	1	47	726676-002	Set Screw (#8-32 x 7/16 in. Flat Point)	1
15	616081-014	Screw (#8-18 x 11/16 in. Pan Hd. T.C.)	3	48	974998-001	Auxiliary Handle Assembly	1
16	974907-001	Logo Plate	1	49	616968-003	Screw (#6-20 x 5/8 in. Pan Hd. T.C.)	2
17	982261-001	Lower End Cap Label	1	50	610120-005	Screw (#6-10 x 3/4 in. Pan Hd.)	8
18	975029-001	Bumper	4	51	974239-002	Ring Assembly	1
19	989573-001	Retainer Clip	1	52	974516-001	Screw (#4-40 x 3/4 in. Pan Hd.)	2
20	973679-001	Shaft Lock Lever	1	53	974098-001	Lower Bearing Plate	1
21	612855-001	Spring	2	54	973669-001	Depth Lock Lever	1
22	968303-098	Switch	1	55	622347-020	Washer	1
23	612858-002	Slide Lock Assembly	1	56	970712-002	Screw (#10-32 x 5/16 in. Pan Hd.)	1
24	714096-807	Screw (#10-16 x 1 in. Fil. Hd. T.F.)	2	57	973689-001	Lock Lever Label	1
25	968304-026	Brush Assembly	2	58	623924-007	Needle Roller	1
26	611686-003	Brush Tube	2	59	974997-001	Power Handle Assembly	1
27	974959-002	Top Bearing Plate	1	60	968303-046	Switch	1
28	968305-010	Ball Bearing (NTN#608ZZ/1E)	1	61	998586-001	Screw (#10-32 x 1/4 in. Pan Hd.)	4
29	968307-141	Field	1	62	973668-002	Subbase	1
30	968306-131	Armature (Includes Key No. 28)	1	63	974518-001	Wrench (7/8 in.)	1
31	607896-001	Retaining Ring	2		972000-774	Owner's Manual	
32	974252-003	1/2 in. Collet Assembly (Includes One of Key Nos. 31 and 33)	1				
33	974096-001	Shoulder Screw	2				

RYOBI ROUTER – MODEL NUMBER RE170VS



WIRING DIAGRAM



OPERATOR'S MANUAL

ROUTER - RE170VS

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.

** Ampere rating

(on tool data plate) 0-2.0 2.1-3.4 3.5-5.0 5.1-7.0 7.1-12.0 12.1-16.0

Cord Length	Wire Size (A.W.G.)					
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 refer to the Service Center insert or call 1-800-525-2579 in the United States or 1-800-265-6778 in Canada for your nearest Ryobi Authorized Service Center. You can also check our web site at www.ryobi.com for a complete list of Authorized Service Centers.

• MODEL NO.

The model number of your 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.

- MODEL NUMBER RE170VS
- SERIAL NUMBER _____

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