



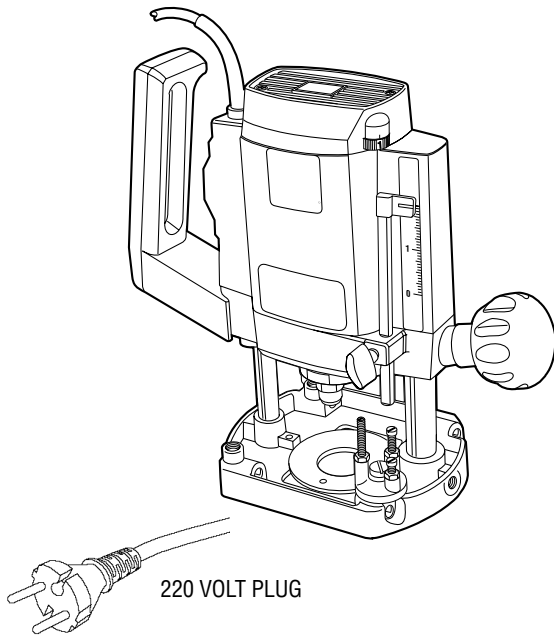
# Instruction Manual

## 3304-220 Plunge Cut Routers

## Getting the most out of your tool.

Please take time to read this manual and pay particular attention to the safety rules we've provided for your protection. If you have any questions about your tool please call:

**1-800-9-BD TOOL**  
**(1-800-923-8665)**



## **IMPORTANT SAFETY INSTRUCTIONS**

**WARNING:** When using electric tools, basic safety precautions should always be followed to reduce risk of fire, electric shock, and personal injury, including the following:

### **READ ALL INSTRUCTIONS**

### **Double Insulation**

Double insulated tools are constructed throughout with two separate layers of electrical insulation or one double thickness of insulation between you and the tool's electrical system. Tools built with this insulation system are not intended to be grounded. As a result, your tool is equipped with a two prong plug which permits you to use extension cords without concern for maintaining a ground connection.

**NOTE:** Double insulation does not take the place of normal safety precautions when operating this tool. The insulation system is for added protection against injury resulting from a possible electrical insulation failure within the tool.

**CAUTION:** WHEN SERVICING USE ONLY IDENTICAL REPLACEMENT PARTS. Repair or replace damaged cords.

## Safety Instructions For All Tools

- **KEEP WORK AREA CLEAN.** Cluttered areas and benches invite injuries.
- **CONSIDER WORK AREA ENVIRONMENT.** Don't expose power tools to rain. Don't use power tools in damp or wet locations. Keep work area well lit. Do not use tool in presence of flammable liquids or gases.
- **GUARD AGAINST ELECTRIC SHOCK.** Prevent body contact with grounded surfaces. For example; pipes, radiators, ranges, and refrigerator enclosures.
- **KEEP CHILDREN AWAY.** Do not let visitors contact tool or extension cord. All visitors should be kept away from work area.
- **STORE IDLE TOOLS.** When not in use, tools should be stored in dry, and high or locked-up place — out of reach of children.
- **DON'T FORCE TOOL.** It will do the job better and safer at the rate for which it was intended.
- **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.
- **DRESS PROPERLY.** Do not wear loose clothing or jewelry. They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protective hair covering to contain long hair.
- **USE SAFETY GLASSES.** Also use face or dust mask if operation is dusty.
- **DON'T ABUSE CORD.** Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil, and sharp edges.
- **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.
- **DON'T OVERREACH.** Keep proper footing and balance at all times.
- **MAINTAIN TOOLS WITH CARE.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and if damaged, have repaired by authorized service facility. Inspect extension cords periodically and replace if damaged. Keep handles dry, clean, and free from oil and grease.
- **DISCONNECT OR LOCK OFF TOOLS** when not in use, before servicing, and when changing accessories, such as blades, bits, cutters.
- **REMOVE ADJUSTING KEYS AND WRENCHES.** Form habit of checking to see

that keys and adjusting wrenches are removed from tool before turning it on.

- **AVOID UNINTENTIONAL STARTING.** Don't carry tool with finger on switch. Be sure switch is off when plugging in.
- **EXTENSION CORDS.** 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. The following table shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

Volts	Minimum Gage for Cord Sets				
	Total Length of Cord in Feet				
120V	0-25	26-50	51-100	101-150	
240V	0-50	51-100	101-200	201-300	
Ampere Rating		AWG			
More Than	Not more Than				
0	- 6	18	16	16	14
6	- 10	18	16	14	12
10	- 12	16	16	14	12
12	- 16	14	12	Not Recommended	

- **OUTDOOR USE EXTENSION CORDS.** When tool is used outdoors, use only extension cords intended for use outdoors and so marked.
- **STAY ALERT.** Watch what you are doing. Use common sense. Do not operate tool when you are tired.
- **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 otherwise indicated elsewhere in this instruction manual. Have defective switches replaced by authorized service center. Do not use tool if switch does not turn it on and off.

## SAVE THESE INSTRUCTIONS

## Motor

Be sure your power supply agrees with nameplate marking.

120 Volts AC means your tool may be operated only with alternating current and **never** with direct current.

Voltage decrease of more than 10% will cause loss of power and overheating. All tools are factory tested; if this tool does not operate, check the power supply.

## SPECIFICATIONS

### PREPARATION FOR USE

The motor in this router is high-powered (750 Watts, max.). Despite this, it is advisable to cut deep grooves or remove large amounts of material in two or more passes.

### TECHNICAL DATA

Model	3304-220
Voltage	220/240V 50-60 Hz
Speed	8,000–24,000 r.p.m.
Insulation	double insulated
Column	spring loaded twin column
Plunging stroke	50 mm (1-15/16")
Routing depth	0-50 mm adjustable
Cutter mounting	precision collet, size 1/4" (6mm)
Cutter cap	max. 30 mm
Rotary depth stop	3 stage depth position

## OPERATING INSTRUCTIONS

### Bit Installation and Removal

#### TURN OFF AND UNPLUG ROUTER.

Before installing a router bit in your unit, position the tool so that the collet is easily accessible.

**IMPORTANT NOTE: Always snap the collet firmly into the collet nut, (past the retainer spring) before installing a bit.**

Depress the spindle lock button and use the supplied wrench as necessary to loosen (counterclockwise) the collet nut, as shown in Figure 1.

Insert the round shank of the desired router bit into the loosened collet as far as it will go and then pull it out about 1/16". Hold the spindle shaft by depressing the spindle lock button while firmly tightening the collet nut with the wrench, as shown in Figure 1.

Your router has a unique locking system for retaining the bit. When removing a bit, the collet nut must be loosened with the wrench.

The collet nut will turn approximately 3/4 of a turn and then become tight again. At this point the bit can't be removed. Using the same procedure, loosen the nut a second time. This lifts the collet and makes it very easy to remove the bit.

### Collets

**NEVER TIGHTEN THE COLLET ON THIS TOOL WITHOUT FIRST INSTALLING A ROUTER BIT IN IT. TIGHTENING AN EMPTY COLLET CAN DAMAGE THE COLLET.**

To change collets, unscrew the collet assembly, as described above, sharply pull the old collet out of the collet nut and insert the new collet. Push firmly so that it snaps past the retainer spring in the collet nut.

Figure 1

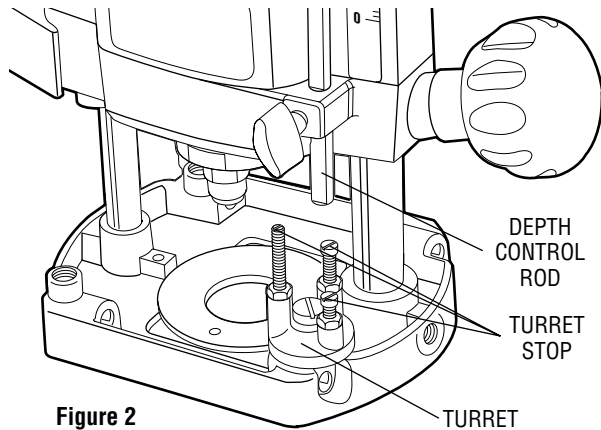
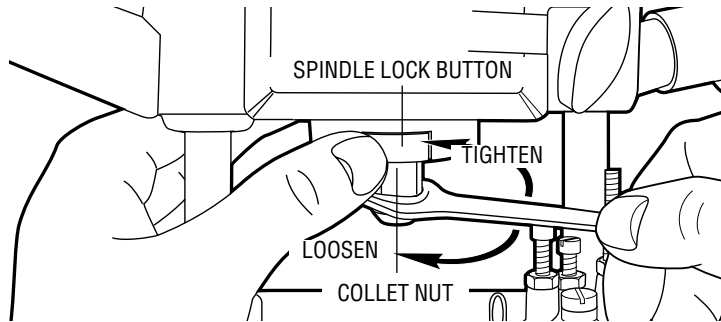


Figure 2

## Controls

**IMPORTANT NOTE:** Before operating any of the controls, read this whole section.

### Plunge Clamp Knob

The plunge clamp knob controls the plunging action of the router. When tightened, the knob clamps the router in position, whether plunged fully down, fully up or anywhere in between. When loosened, the clamp is released and the router can be moved into and out of the workpiece.

### Multi-Position Turret Stop

The turret stop limits the downward distance that the tool can be plunged. It consists of three screws of different lengths that serve to define the depth of cut by limiting the travel of the depth control rod (see Figure 2). Routing depth can be set by selecting the screw of the appropriate length on the turret.

It is the interaction of the depth control rod and the turret stop that determine the routing depth.

If none of the provided screws seems close to the desired height each can be adjusted by loosening the hex nut at the bottom and then turning the screw either in or out to make it the proper length. After adjusting this screw be sure to tighten the hex nut at the bottom. (See Figure 3.)

See the section "Setting the Routing Depth" for instructions on how to use the turret stop in an actual operation.

### Depth Control Rod and Depth Scale

The depth control rod is what contacts the selected screw in the turret stop to limit the routing depth. (See "Setting the Routing Depth".)

## Familiarization

Please take a little time now and, without plugging the tool in, practice with these adjustments and controls and become familiar with their operation. Only with a complete, "hands on" understanding of these systems will you be able to get the most out of this quality router.

## Setting the Routing Depth

### TURN OFF AND UNPLUG THE ROUTER.

To set the routing depth follow the steps below:

1. Install the router bit as described previously.
2. Loosen the depth control rod clamp knob and raise the depth control rod so that the red indicator line is at the 2 inch mark on the scale, as shown in Figure 4.
3. Rotate the turret stop until the shortest of the three screws is directly beneath the depth control rod.

**NOTE:** the turret stop has a detent in each of its positions so that you will feel it snap into place.

4. Loosen the plunge clamp knob and push the router down until the bit just touches the surfaces to be routed. Lock the router down by tightening the plunge clamp knob.
5. Loosen the depth control rod clamp knob and permit the rod to fall and contact the screw in the turret stop that you just adjusted.
6. Read the scale by aligning the top or bottom of the red line with the 1/16" graduations on the scale.

**NOTE:** It makes no difference whether you read the top or the bottom of the red line, as long as you consistently read the same side.

7. Using the reading you just took as the zero point, raise the rod by hand to a reading that will give the correct depth of cut. Tighten the depth control rod clamp knob.

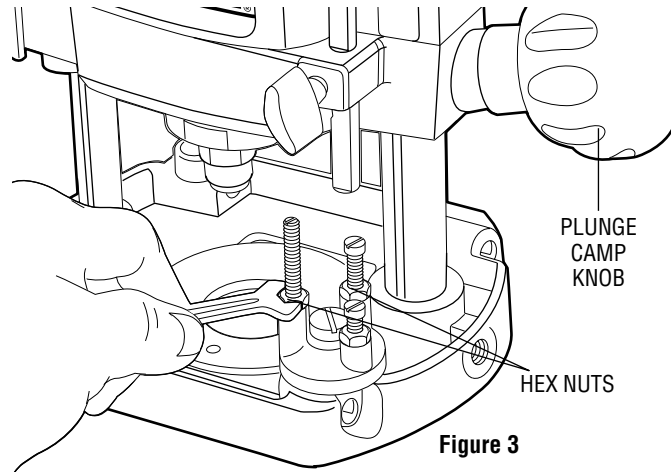


Figure 3

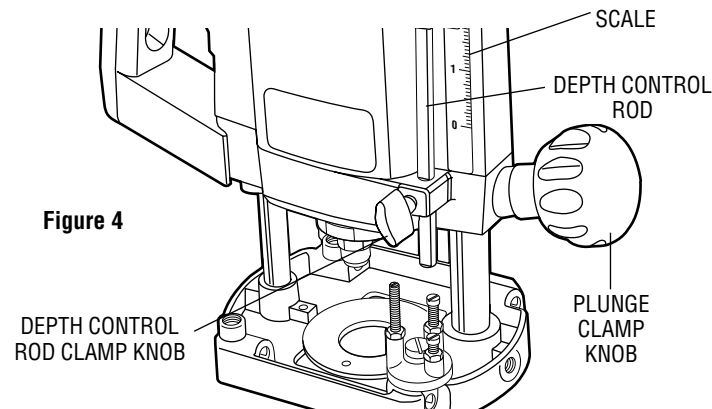


Figure 4

Figure 5

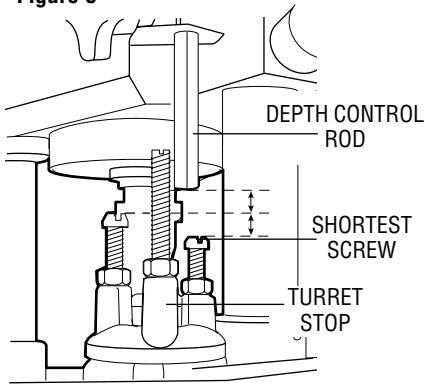


Figure 6

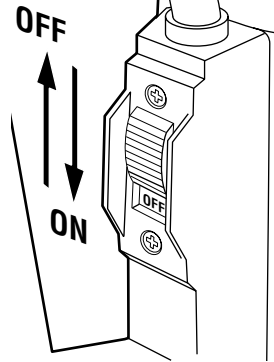


Figure 7

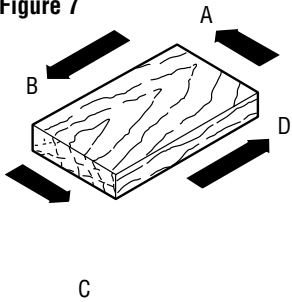


Figure 8

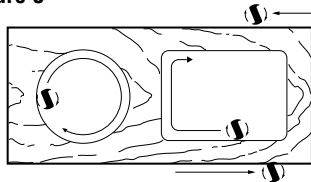
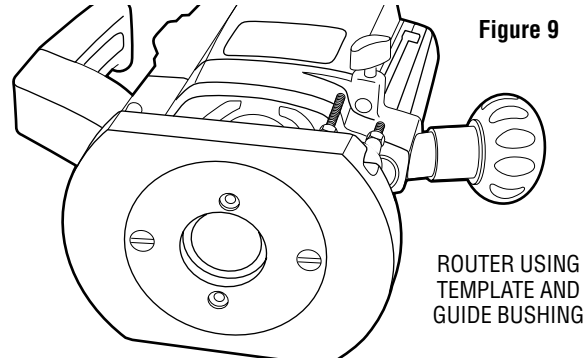


Figure 9



**EXAMPLE:** If the zero reading is 1-1/8" and you wish to rout to a depth of 1/2", set the red line to read 1-5/8".

8. Loosen the plunge clamp knob and release the router to rise to its full height.

The router is now ready to cut to its set depth. When it reaches the set depth, the depth control rod will contact the screw in the turret stop and stop the router's downward travel.

### Using the Turret Stop for Sequential Routing Depth Settings

#### TURN OFF AND UNPLUG ROUTER.

It is recommended that particularly deep grooves be cut with several passes rather than one deep pass. In order to do this and still maintain accuracy of depth when the job is finished, perform the following procedure.

1. Set the final desired routing depth as instructed above. For the purpose of this discussion, assume that the desired depth is 1/2".

2. With a depth of 1/2" set on the shortest screw in the turret stop, adjust the second shortest screw to a point about halfway between the bottom of the depth control rod and the top of the shortest screw, as shown in Figure 5.
3. Leave the vernier setting alone and turn the adjusted second shortest screw into position under the depth control rod.
4. Make your first cut at this setting.
5. Rotate the turret stop so that the shortest screw is directly under the depth control rod and make your final cut.

**NOTE:** The third screw in the turret stop is provided if your cut is even deeper and you want to make three cuts to achieve the final depth, or set final depth for multiple cuts at one time.

### Switch

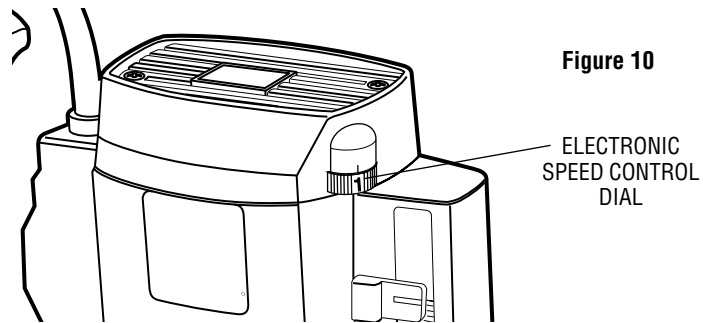
The slide switch on your router is located as shown in Figure 6. To turn the tool on, slide the switch down. To turn the tool off, slide the switch up.

### Electronic Speed Control Dial

The speed of your router is variable. Use the electronic speed control dial (Figure 10) to produce uniform cutting results in wood, plastics and aluminum. Use the lower settings (1-3) for large diameter cutters and the higher settings for small diameter cutters.

### Operation

After setting the cutting depth as described, locate the router such that the bit is directly over the place you will be cutting. Loosen the plunge clamp knob. With the router running, lower the unit smoothly down into the workpiece. (DO NOT JAM THE ROUTER DOWN). When the tool reaches the pre-set depth, tighten the plunge clamp knob. When you have finished routing, loosen the knob and let the spring lift the router directly out of the workpiece.



**Figure 10**

All common routing tasks can be performed with ease with the plunge cut router: Grooving, rabbeting, recessing, veining, and profiling on all types of wood and plastic.

Always feed the router opposite to the direction in which the cutter is rotating.

Only carbide-tipped cutters should be used on panels faced with plastic laminates. The hard laminates will quickly dull steel cutters.

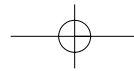
### Direction of Feed

The direction of feed is very important when routing and can make the difference between a successful job and a ruined project. Figures 7 and 8 show proper direction of feed for some typical cuts.

Mold the outside edge of a piece of stock by (A) mold the end grain, left to right, (B) do the straight grain side moving left to right. Always do end grains first.

The direction of feed is important in router usage. Be sure the cutter is rotating into the stock by moving left to right on outside edges and clockwise on the inside cuts.





## Template Guide Adapter

Your router comes equipped with a template guide adapter for use with two piece bushings and for a little extra base support.

The guide adapter will have to be removed when inserting some of the larger router bits. When not in use, remove the template guide adapter and store it (and its mounting screws) in a safe place.

## Accessories

Recommended accessories for use with your tool are available at extra cost from your distributor or your local service center. Service centers are listed in the back of manual.

**CAUTION:** The use of any non-recommended accessory may be hazardous.

If you need any assistance in locating any accessory, call 1-800-9-BD TOOL (1-800-923-8665) or contact B&D, Consumer Services Department, 626 Hanover Pike, P.O. Box 618, Hampstead, MD 21074.

## Important

To assure product safety and reliability, repairs, maintenance, and adjustments should be performed by B&D service centers or other qualified service organizations, always using B&D replacement parts.

**Every B&D tool is of the highest quality.  
If you wish to contact us regarding this product, please call toll  
free between 8:00am and 8:00pm ET, seven days a week:**

**1-800-9-BD TOOL  
(1-800-923-8665)**

## One Year Free Maintenance

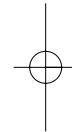
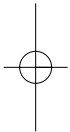
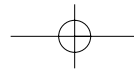
All B&D tools for Industry and Construction are covered under a one year free maintenance program where B&D will inspect your tool for safety and provide necessary maintenance or repairs, including normal wear and tear parts, for one year, FREE OF CHARGE.

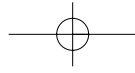
## Full Warranty

All B&D tools for Industry and Construction are warranted to be free of any defects in materials or workmanship. Upon thorough examination of tool, B&D will repair or replace, at our option, any product that is determined to be defective.

## Conditions

The service/safety check and the warranty do not apply to: repairs made or attempted by anyone other than an authorized B&D service location; misuse, abuse, neglect, improper application of the tool; missing parts; or normal wear and tear (after first year of ownership). Please return the complete unit, transportation prepaid, to any B&D factory owned or B&D authorized service center location (list provided with tool or see Yellow Pages under "Tools Electric").





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