

**RYOBI®**

**RTR400**

ORIGINAL INSTRUCTIONS  
**Trim Router**



## **Important!**

This product is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the product by a person responsible for their safety.

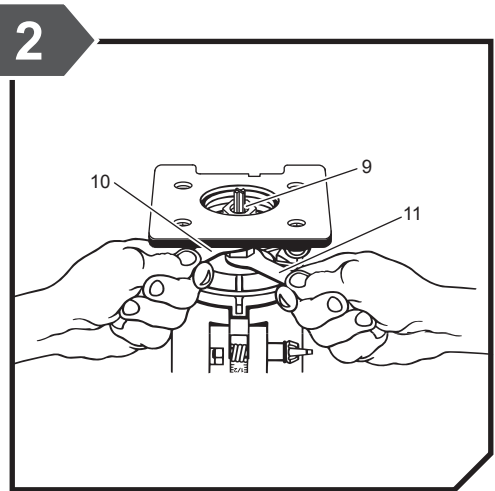
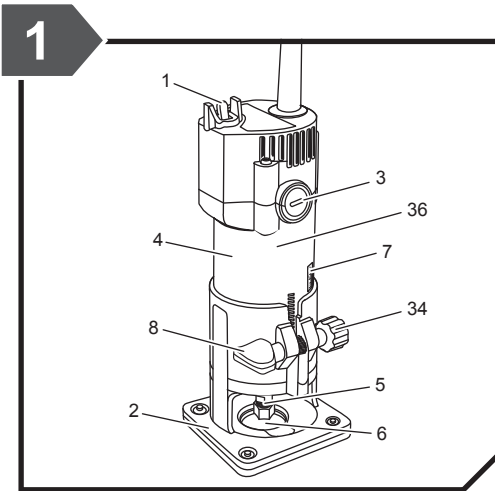
Children should be supervised to ensure that they do not play with the product.

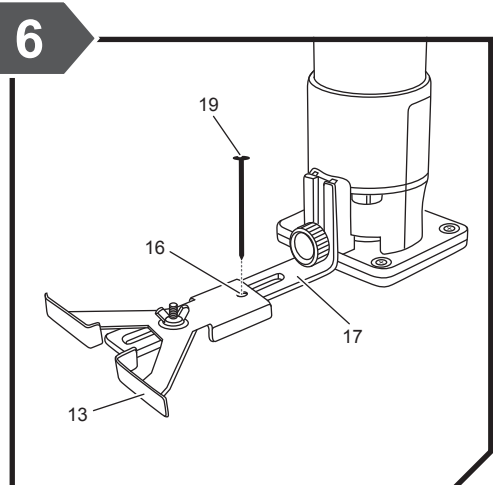
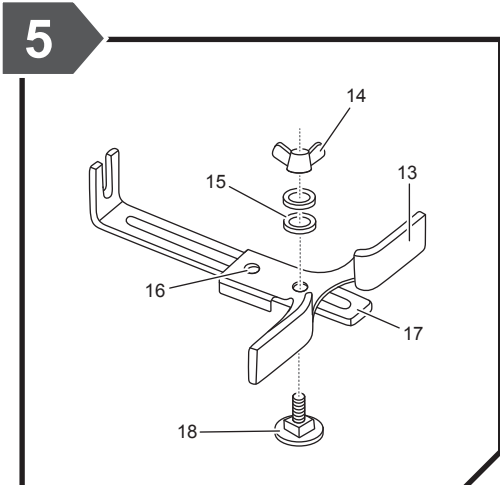
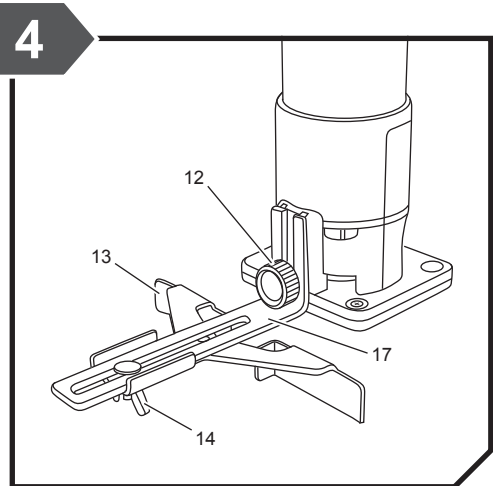
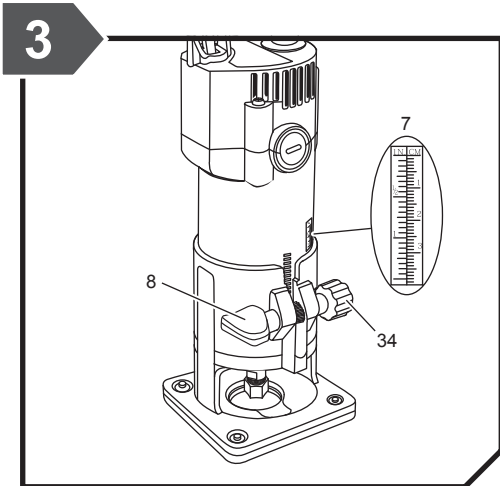
It is essential that you read the instructions in this manual before assembling, operating, and maintaining the product.

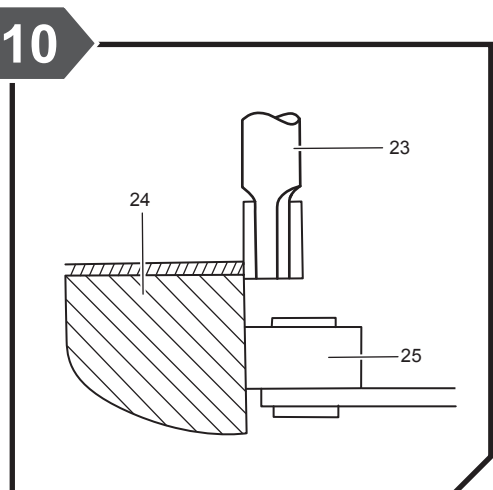
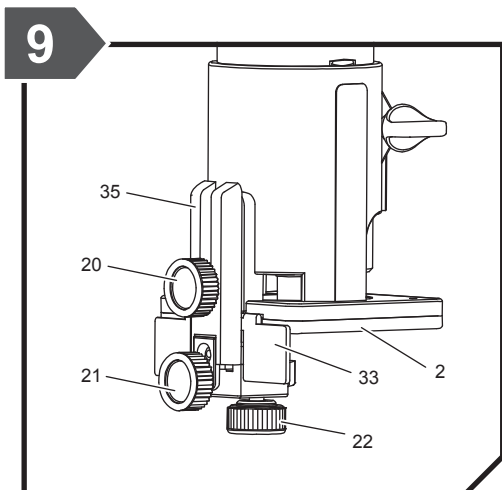
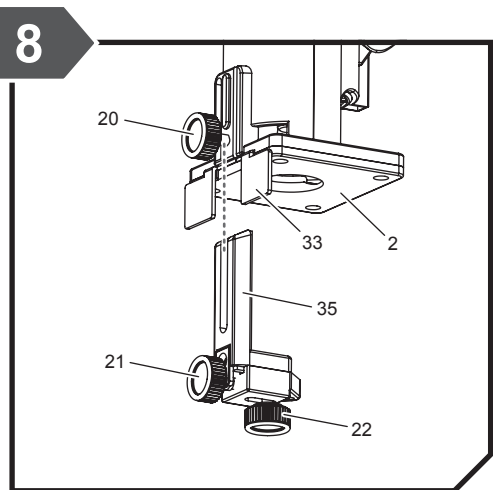
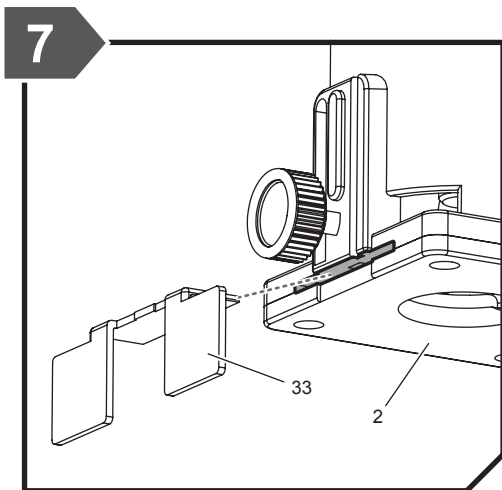
Subject to technical modification.

1. On / Off switch
2. Base
3. External brush cap
4. Motor housing
5. Collet
6. Collet nut
7. Depth of cut scale
8. Wing bolt
9. Cutter
10. Wrench on collet nut
11. Wrench on spindle flats
12. Locking screw
13. Fence
14. Wing nut
15. Washer
16. Center hole
17. connector
18. Bolt

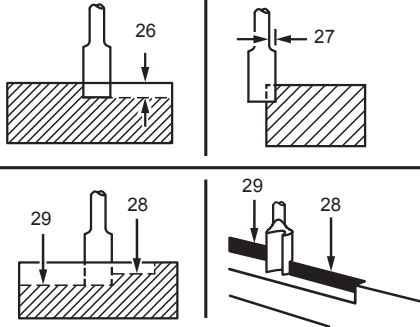
19. Nail (not included)
20. Bolt A (Locking screw)
21. Bolt C
22. Bolt B
23. Bit
24. Workpiece
25. Guide
26. Depth of cut
27. Width of cut
28. 1st pass
29. 2nd pass
30. Trimmer feed direction
31. Trim end grains first
32. Brush assembly
33. Bit/cutter guard
34. Height adjust knob
35. Adjusting guide
36. Insulated grasping surface



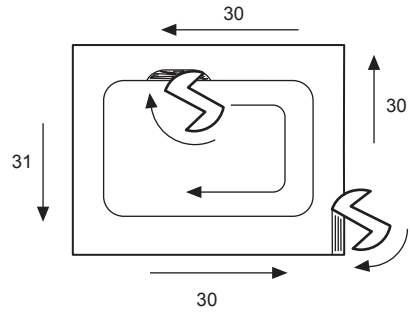




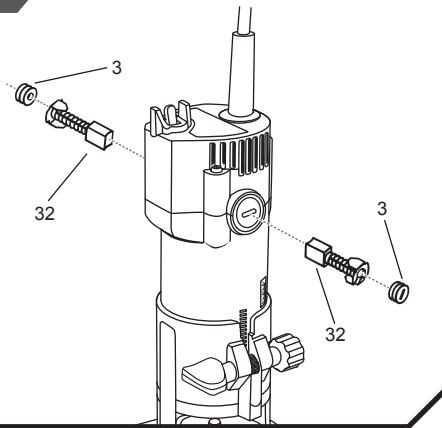
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Safety, performance, and dependability have been given top priority in the design of your trim router.

### INTENDED USE

The trim router is intended to be used only by adults who have read and understood the instructions and warnings in this manual, and can be considered responsible for their actions.

The product is intended for:

- Cabinet making, trimming counter tops and finishing work.
- Trimming wood and plastics.

The product should only be used in well ventilated areas.

The product is intended for consumer use only. Do not use the product for any other purpose.

### GENERAL POWER TOOL SAFETY WARNINGS

#### WARNING

**Read all safety warnings, instructions, illustrations and specifications provided with this power tool.** Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

**Save all warnings and instructions for future reference.**

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

### WORK AREA SAFETY

- **Keep work area clean and well lit.** Cluttered or 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 create sparks which may ignite the dust or fumes.
- **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

### ELECTRICAL SAFETY

- **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- **Do not 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 for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.

- **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
- **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces 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 a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- **Use personal protective equipment. Always wear eye protection.** Protective equipment such as dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
- **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- **Dress properly. Do not wear loose clothing or jewellery. Keep your hair and clothing away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
- **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

### POWER TOOL USE AND CARE

- **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.



- **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- **Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

#### SERVICE

- **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.

#### TRIM ROUTER SAFETY WARNINGS

- **Hold power tool by insulated gripping surfaces, because the cutter may contact its own cord.** Cutting a "live" wire may make exposed metal parts of the power tool "live" and shock the operator.
- **Use clamps or another practical way to secure and support the workpiece to a stable platform.** Holding the work by your hand or against the body leaves it unstable and may lead to loss of control.
- Use only rotary cutting bits of the correct shank diameter for the collet mounted.
- Use only rotary cutting bits suitable for the speed of the product.
- Use the dust collection device or connect a dust extraction vacuum when operating the product.

#### ADDITIONAL SAFETY WARNINGS

- **Startup protection:** When switched on, the product will not start up after voltage breakdown. To continue working, switch the product off and then on again.
- It is recommended that the product be always supplied via a residual current device with a rated residual current of 30mA or less.

#### RESIDUAL RISKS

Even when the product is used as prescribed, it is still impossible to completely eliminate certain residual risk factors. The following hazards may arise and the operator

should pay special attention to avoid the following:

- Injury caused by vibration
  - Limit exposure. See Risk Reduction.
- Injury caused by flying debris
  - Wear eye protection at all times.
- Injury caused by dust
  - Wear appropriate dust mask with suitable filters that can protect against particles from the material of the workpiece. Do not eat, drink, or smoke in the work area. Ensure adequate ventilation and use the dust extraction accessories provided.
- Injury from contact with the cutting bits
  - The bits are sharp and will become hot during use. Wear gloves when changing bits. Keep hands away from the cutting area at all times. Never hold the workpiece being cut in your hands or across your leg. Secure the workpiece whenever possible.

#### RISK REDUCTION

It has been reported that vibrations from handheld tools may contribute to a condition called Raynaud's Syndrome in certain individuals. Symptoms may include tingling, numbness and blanching of the fingers, usually apparent upon exposure to cold. Hereditary factors, exposure to cold and dampness, diet, smoking and work practices are all thought to contribute to the development of these symptoms. There are measures that can be taken by the operator to possibly reduce the effects of vibration:

- Keep your body warm in cold weather. When operating the unit wear gloves to keep the hands and wrists warm. It is reported that cold weather is a major factor contributing to Raynaud's Syndrome.
- After each period of operation, exercise to increase blood circulation.
- Take frequent work breaks. Limit the amount of exposure per day.

If you experience any of the symptoms of this condition, immediately discontinue use and see your doctor about these symptoms.

#### ⚠ WARNING

Injuries may be caused or aggravated by prolonged use of a tool. When using any tool for prolonged periods, ensure you take regular breaks.

#### ASSEMBLY

#### ⚠ WARNING

The product should never be connected to a power supply when assembling parts, making adjustments, cleaning, performing maintenance, or when the product is not in use. Disconnecting the product from the power supply will prevent accidental starting that could cause serious injury.





**⚠ WARNING**

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

**⚠ WARNING**

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

### INSTALLING/REMOVING CUTTERS

See figure 2.

**⚠ WARNING**

Failure to unplug the product could result in accidental starting causing serious injury.

- Unplug the product.
- Place the product upside down on a workbench in order to gain easy access to the spindle and collet nut.
- Place the small end of one of the wrenches provided on the spindle flats. This will hold the spindle stationary.
- Place the large end of the other wrench provided onto the collet nut. Rotate wrench counterclockwise to loosen collet nut.

**⚠ 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 may get burnt due to the heat buildup from cutting. Always use the wrench provided.

- If installing a cutter for the first time, it can be installed once the collet nut is loose. If changing cutters, cutter will easily slip from collet after loosening collet nut.
- The collet is machined to precision tolerances to fit cutters with 6.35 mm diameter shanks.
- With the product still upside down on a workbench, insert shank of cutter into collet. The shank of your cutter should be close to but not touching the bottom of the collet. This allows for expansion when the cutter gets hot.
- Tighten the collet nut securely by turning clockwise with the wrench provided.

**⚠ WARNING**

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

**⚠ WARNING**

Avoid open area of trim router base. Serious personal injury will result from contact with a rotating cutter.

### TO SET THE DEPTH OF CUT

See figure 3.

**⚠ WARNING**

Failure to unplug the product could result in accidental starting causing serious injury.

- Unplug the product .
- Loosen the wing bolt and turn the height adjusting knob until the tip of cutter touches the work surface. The depth of cut is zero at this point.
- Position the product so that the cutter can extend below the sub base for desired depth of cut setting.
- Turn the height adjusting knob to obtain the desired depth of cut. The distance the cutter moves will be indicated on the depth of cut scale. The cut scale is dual measure. Each mark indicates a change of 1/16" per division on one scale and 1mm on the other.
- Securely tighten the wing bolt.

### OPERATION

**⚠ WARNING**

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

**⚠ WARNING**

When turing the product ON, be prepared for start-up torque. Always have a firm grasp of the product before starting. Because of the high cutter speed rotation the product has a tendency to twist, jerk, or grab in your hands during start-up. If not prepared, this can cause a loss of control resulting in possible serious injury.

### STRAIGHT FENCE

See figure 4.

It is helpful to use the straight fence when trimming the straight edge or engraving a groove.

Tighten the screw to install straight fence. Loosen the wing nut to adjust the required distance between bit and fence. Then tighten the wing nut, keep the fence even with the workpiece edge when cutting and moving the tool.

### CIRCUMFERENCE CUTTING

See figure 5 - 6.

By installing the straight fence and connector you can

make a circumference cut. Available radius cuts, shown from bit to central hole.

Minimum radius: 70mm

Maximum radius: 220mm

Attention: The straight fence is unable to cut a radius between 172mm and 186mm.

Correctly align the fence central hole to the required circle's center. Pushing a nail, with a diameter no more than 6mm into the hole, to firmly fix the fence. Move the tool around the nail in a clockwise direction.

## ADJUSTING THE GUIDE

See figure 7 - 10.

It is much easier to use the adjusting guide for curve cutting and trimming. Move the guide along the curved edge.

Tighten the screw to install the adjusting guide on the tool base plate. Loosen the wing bolt to adjust the guide. Then tighten the screw firmly to fix the adjusting guide at a required distance.

Install the guide into the base by bolt A. Adjust the distance between the bit and base by bolt B, then fasten by bolt C.

When using the tool, please keep the guide mounted on the workpiece edge.

A bit/cutter guard is attached to protect users from contacting the bit/cutter when adjusting the fence.

## DEPTH OF CUT

See figure 11.

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 the product motor and cutter). A deep cut requires a slower feed than a shallow cut and a too deep cut will cause you to slow the feed so much that the cutter is no longer cutting.

Making a deep cut is never advisable. The smaller cutters especially those only 1.6 mm in diameter are easily broken when subjected to too much side thrust. A large cutter may not break, but if the cut is too deep a rough cut will result and it may be very difficult to guide and control the cutter as desired. For these reasons, we recommend that you do not exceed 3 mm depth of cut in a single pass, regardless of the cutter size or the softness or condition of the workpiece. This will result in a higher quality cut.

To make deeper cuts it is therefore necessary to make as many successive passes as required, lowering the cutter 3 mm for each new pass. In order to save time, do all the cutting necessary at one depth setting, before lowering the cutter for the next pass. This will also ensure a uniform depth when the final pass is completed.

### ⚠ WARNING

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

## DIRECTION OF FEED AND THRUST

See figure 12.

The trim router motor and cutter 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 starts.

Because of the extremely high speed of cutter rotation during "proper feeding" operation, there is very little kickback under normal conditions. However, should the cutter 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 cutter rotation.

To guard against such 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 cutter is moving. In short, the thrust should be in a direction that keeps the sharp edges of the cutter continuously biting straight into new (uncut) timber.

## MAINTENANCE

### ⚠ WARNING

When servicing, use only original manufacturer's replacement parts, accessories and attachments. Use of any other parts may create a hazard or cause product damage.

### ⚠ WARNING

Do not at any time let brake fluids, gasoline, petroleum-based products, penetrating oils, etc., come in contact with plastic parts. Chemicals can damage, weaken or destroy plastic which may result in serious personal injury.

- Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to various types of commercial solvents and may be damaged by their use. Use clean cloths to remove dirt, carbon dust, etc.
- For greater safety and reliability, all repairs should be performed by an authorised service centre.

### ⚠ WARNING

If the supply cord of this power tool is damaged, it must be replaced by a specially prepared supply cord available through the service organization.

- Use clean cloths to remove dirt, carbon dust, etc. When electric tools are used on fibreglass 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 fibreglass 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 fibreglass 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.

### BRUSH REPLACEMENT

See figure 13.

The product has externally accessible brush assemblies that should periodically be checked for wear. Proceed as follows when replacement is required:

- Unplug the product .

#### WARNING

Failure to unplug the product could result in accidental starting causing serious injury.

- Remove the brush cap with a flat blade screwdriver. Brush assembly is spring loaded and will pop out when you remove the brush cap.
- Remove the 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 the brush moves freely in the brush tube.
- Make sure the brush cap is oriented correctly (straight) and replace.
- Tighten the brush cap securely. Do not over tighten.

### PROPER CARE OF CUTTERS

Get faster, 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 outer 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 the collet and clean the dust and chips that have collected. Then return the collet nut to its original position.

### 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.

### ENVIRONMENTAL PROTECTION



Recycle raw materials instead of disposing of as waste. The machine, accessories and packaging should be sorted for environmental-friendly recycling.

### SYMBOLS



Safety Alert

V

Volts

Hz

Hertz

~

Alternating Current

W

Watts

n<sub>o</sub>

No-load speed

min<sup>-1</sup>

Revolutions or reciprocations per minute



Regulatory Compliance Mark (RCM). Product meets applicable regulatory requirements.



Class II tool, double insulation



Wear ear protection



Wear eye protection



Read the instructions carefully before starting the machine.



Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority or retailer for recycling advice.

## PRODUCT SPECIFICATIONS

Trim router

Model	RTR400
Voltage	220 V - 240 V ~ 50 Hz
No-load speed	29,000 min <sup>-1</sup> (+10% / -15%)
Input power	400 W
Max. cutter diameter	6.35 mm
Weight (According to EPTA procedure 01/2014)	1.7 kg

Measured sound values determined according to EN 62841:

A-weighted sound pressure level	$L_{pA} = 78.0$ dB(A)
Uncertainty K	3 dB(A)
A-weighted sound power level	$L_{WA} = 89.0$ dB(A)
Uncertainty K	3 dB(A)

Wear ear protectors.

The vibration total values (triaxial vector sum) determined according to EN 62841:

Vibration emission level	$a_h \leq 2.5$ m/s <sup>2</sup>
Uncertainty K	1.5 m/s <sup>2</sup>

## VIBRATION LEVEL

### **WARNING**

The vibration emission level given in this information sheet has been measured in accordance with a standardised test given in EN 62841 and may be used to compare one tool with another. It may be used for a preliminary assessment of exposure. The declared vibration emission level represents the main applications of the tool. However if the tool is used for different applications, with different accessories or poorly maintained, the vibration emission may differ. This may significantly increase the exposure level over the total working period.

An estimation of the level of exposure to vibration should also take into account the times when the tool is switched off or when it is running but not actually doing the job. This may significantly reduce the exposure level over the total working period. Identify additional safety measures to protect the operator from the effects of vibration such as: maintain the tool and the accessories, keep the hands warm, organisation of work patterns.

Imported by:

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