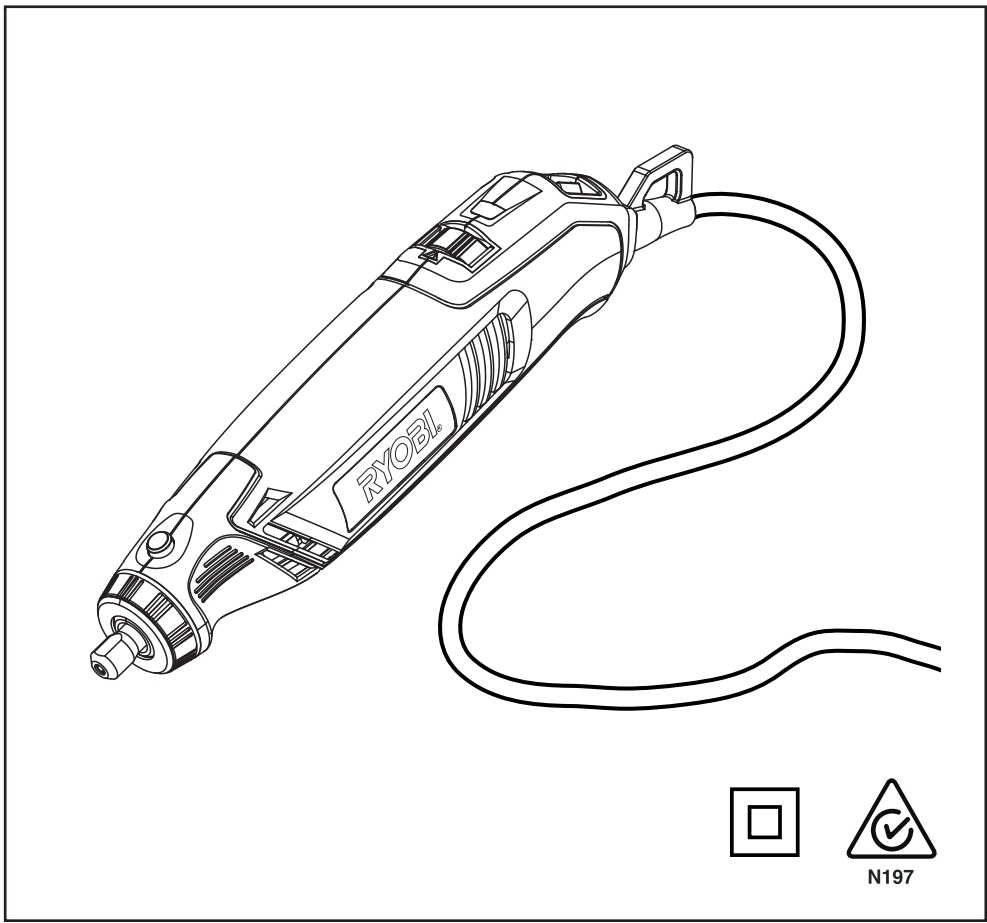




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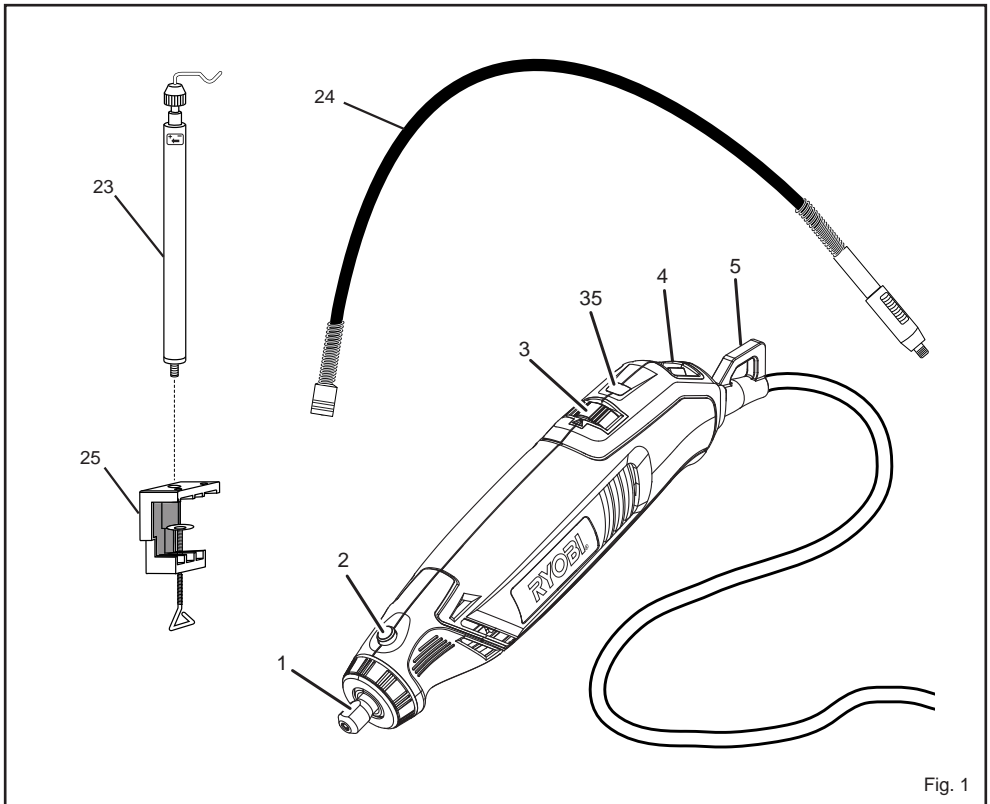
**ROTARY TOOL  
OWNER'S OPERATING MANUAL**



N197

## DESCRIPTION

1. Collet nut
2. Spindle lock
3. Speed control dial
4. On/off switch
5. Tool loop
6. Collet
7. Wrench
8. Accessory
9. Spindle
10. Grinding wheel bits
11. Rubber polishing bits
12. Mandrel screw
13. Washer
14. Cut-off disk
15. Mandrel
16. Tighten
17. Fiberglass cut-off wheel
18. Sanding drums
19. Indicator mark
20. Less speed
21. More speed
22. Pencil holding method
23. Telescoping tool hanger
24. Flex shaft
25. Clamp-on base
26. Tool hanger hook
27. Tool hanger
28. Clamp screw
29. Drive shaft
30. Collar
31. Cup end of flex shaft
32. Locking key
33. Hole
34. Grooved gripping section
35. Live tool indicator
36. Collet sleeve
37. Tool head



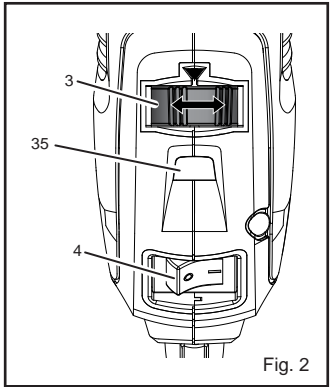


Fig. 2

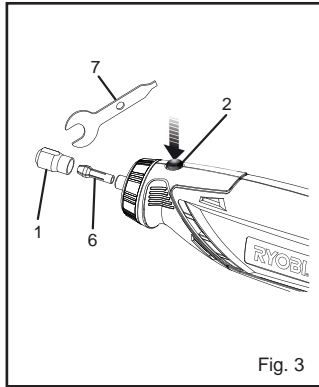


Fig. 3

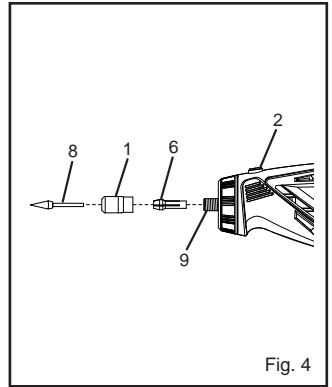


Fig. 4

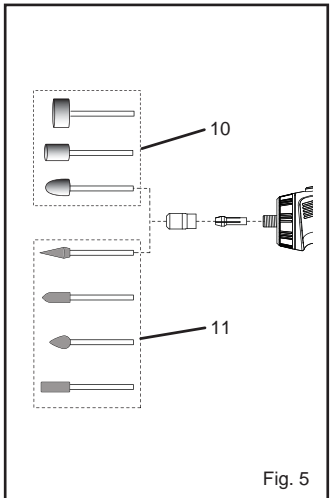


Fig. 5

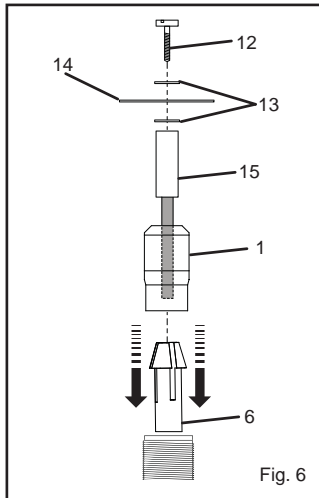


Fig. 6

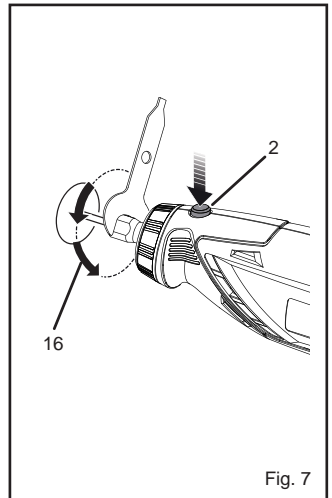


Fig. 7

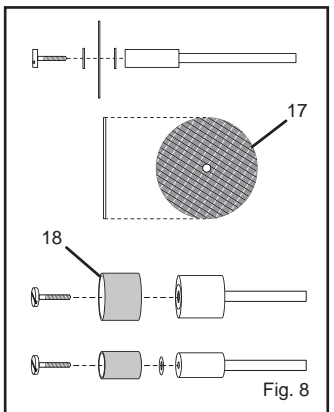


Fig. 8

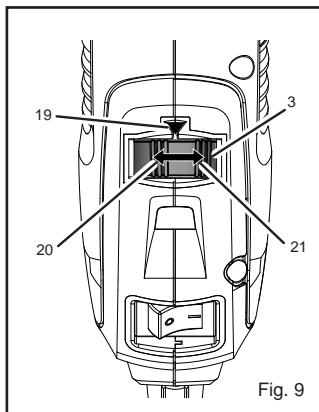


Fig. 9

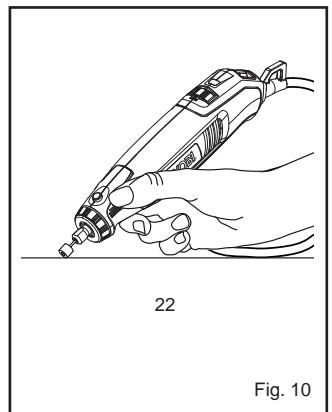
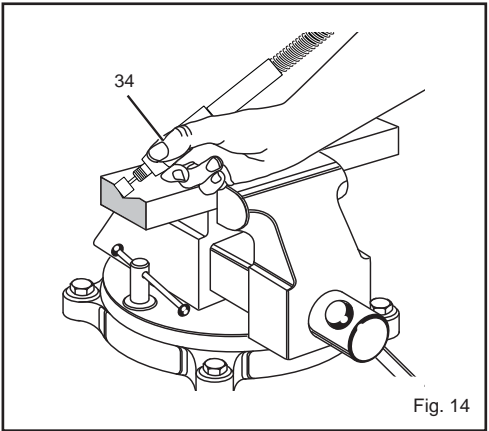
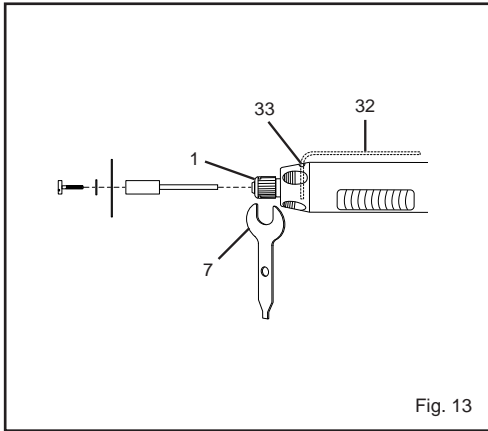
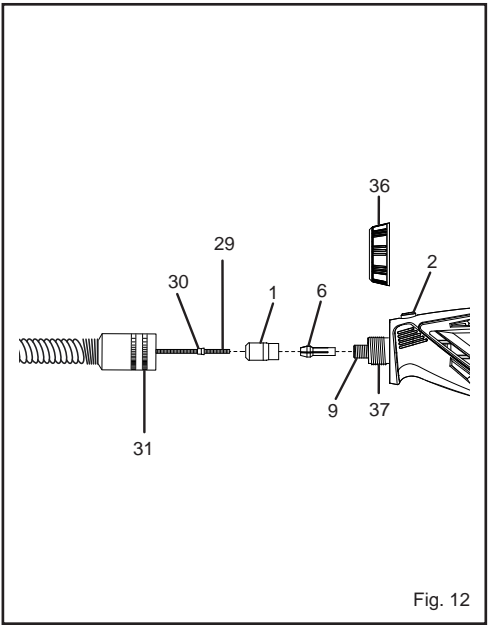
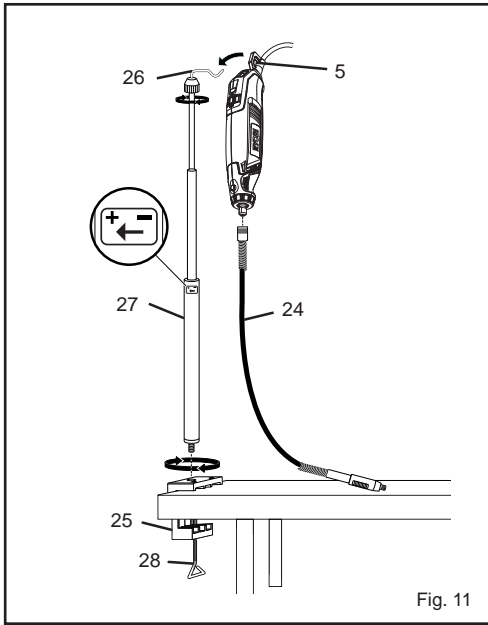


Fig. 10



## **Important!**

It is essential that you read the instructions in this manual before operating this machine.

Subject to technical modifications.

## GENERAL POWER TOOL SAFETY WARNINGS

### WARNING

Read all safety warnings and all instructions. Failure to follow the warnings and instructions 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.

#### 1. WORK AREA SAFETY

- a. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- b. **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.
- c. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

#### 2. ELECTRICAL SAFETY

- a. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adaptor plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- b. **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.
- c. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d. **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.
- e. **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.
- f. **If operating power tools in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

#### 3. PERSONAL SAFETY

- a. **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.

- b. **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.
- c. **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.
- d. **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.
- e. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- f. **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
- g. **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.

#### 4. POWER TOOL USE AND CARE

- a. **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.
- b. **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.
- c. **Disconnect the plug from the power source and/or the battery pack 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.
- d. **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.
- e. **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- f. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

- g. **Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from intended could result in a hazardous situation.

## 5. SERVICE

- a. **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.

## SPECIAL SAFETY RULES

### WARNING

The 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.

- **Hold tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring or its own cord.** Contact with a “live” wire will make exposed metal parts of the cutting tool “live” and shock the operator.
- **Inspect for and remove all nails from lumber before using this tool.** Following this rule will reduce the risk of serious personal injury.
- **Do not reach in the area of the spinning bit.** The proximity of the spinning bit to your hand may not always be obvious.
- **The product is not intended for use as a dental drill or in human or veterinary medical applications.** Serious injury may result.
- **When using steel screws, cut-off wheels, high speed cutters, or tungsten carbide cutters, always have the work securely clamped. Never attempt to hold the work with one hand while using any of these accessories.**
- The product is not intended for use by young children or infirm persons. Adequate supervision by a responsible person must be provided to ensure that they do not play with the product.
- **Keep children and visitors away.** Visitors should wear safety glasses and be kept a safe distance from work area. Do not let visitors contact tool or extension cord.
- **Complies with AS/NZS 60745.**
- Recommended for the use of a residual current device

with a rated residual current of 30 mA or less.

## ADDITIONAL SAFETY INSTRUCTIONS FOR YOUR MINI GRINDER

- **This power tool is intended to function as a grinder. 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.
- **Operations such as sanding, wire brushing, polishing or cutting-off are not recommended to be performed with this power tool.** Operations for which the power tool was not designed may create a hazard and cause personal injury.
- **Do not use accessories which are not specifically designed and recommended by the tool manufacturer.** Just because the accessory can be attached to your power tool, it does not assure safe operation.
- **The rated speed of the accessory must be at least equal to the maximum speed marked on the power tool.** Accessories running faster than their rated speed can break and fly apart.
- **The outside diameter and the thickness of your accessory must be within the capacity rating of your power tool.** Incorrectly sized accessories cannot be adequately guarded or controlled.
- **The arbour size of wheels, flanges, backing pads or any other accessory must properly fit the spindle of the power tool.** Accessories with arbour holes that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.
- **Do not use a damaged accessory. Before each use, inspect the accessory such as abrasive wheels for chips and cracks, backing pad for cracks, tear or excess wear, wire brush for loose or cracked wires.** If power tool or accessory is dropped, inspect for damage or install an undamaged accessory. After inspecting and installing an accessory, position yourself and bystanders away from the plane of the rotating accessory and run the power tool at maximum no-load speed for one minute. Damaged accessories will normally break apart during this test time.
- **Wear personal protective equipment. Depending on application, use face shield, safety goggles or safety glasses. As appropriate, wear dust mask, hearing protectors, gloves and workshop apron capable of stopping small abrasive or workpiece fragments.** The eye protection must be capable of stopping flying debris generated by various operations. The dust mask or respirator must be capable of filtering particles generated by your operation. Prolonged exposure to high intensity noise may cause hearing loss.



- **Keep bystanders a safe distance away from work area. Anyone entering the work area must wear personal protective equipment.** Fragments of workpiece or of a broken accessory may fly away and cause injury beyond the immediate area of operation.
- **Hold power tool by insulated gripping surfaces only, when performing an operation where the cutting accessory may contact hidden wiring or its own cord.** Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and shock the operator.
- **Position the cord clear of the spinning accessory.** If you lose control, the cord may be cut or snagged and your hand or arm may be pulled into the spinning accessory.
- **Never lay the power tool down until the accessory has come to a complete stop.** The spinning accessory may grab the surface and pull the power tool out of your control.
- **Do not run the power tool while carrying it at your side.** Accidental contact with the spinning accessory could snag your clothing, pulling the accessory into your body.
- **Regularly clean the power tool's air vents.** The motor's fan will draw the dust inside the housing and excessive accumulation of powdered metal may cause electrical hazards.
- **Do not operate the power tool near flammable materials.** Sparks could ignite these materials.
- **Do not use accessories that require liquid coolants.** Using water or other liquid coolants may result in electrocution or shock.

#### Kickback and related warnings

Kickback is a sudden reaction to a pinched or snagged rotating wheel, backing pad, brush or any other accessory. Pinching or snagging causes rapid stalling of the rotating accessory which in turn causes the uncontrolled power tool to be forced in the direction opposite the accessory's rotation at the point of binding. For example, if an abrasive wheel is snagged or pinched by the workpiece, the edge of the wheel that is entering into the pinch point can dig into the surface of the material causing the wheel to climb out or kick out. The wheel may either jump toward or away from the operator, depending on the direction of the wheel's movement at the point of pinching. Abrasive wheels may also break under these conditions.

Kickback is the result of power tool misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.

- **Maintain a firm grip on the power tool and position your body and arm to allow you to resist kickback forces. Always use auxiliary handle, if provided, for maximum control over kickback or torque reaction during start-up.** The operator can control torque reactions or kickback forces, if proper precautions are taken.
- **Never place your hand near the rotating accessory.**

Accessory may kickback over your hand.

- **Do not position your body in the area where power tool will move if kickback occurs.** Kickback will propel the tool in the direction opposite to the wheel's movement at the point of snagging.
- **Use special care when working corners, sharp edges etc. Avoid bouncing and snagging the accessory.** Corners, sharp edges or bouncing have a tendency to snag the rotating accessory and cause loss of control or kickback.
- **Do not attach a saw chain woodcarving blade or toothed saw blade.** Such blades create frequent kickback and loss of control.

#### Safety warnings specific for grinding operations:

- **Use only wheel types that are recommended for your power tool and the specific guard designed for the selected wheel.** Wheels for which the power tool was not designed cannot be adequately guarded and are unsafe.
- **The guard must be securely attached to the power tool and positioned for maximum safety, so the least amount of wheel is exposed towards the operator.** The guard helps to protect the operator from broken wheel fragments and accidental contact with the wheel.
- **Wheels must be used only for recommended applications. For example: do not grind with the side of cut-off wheel.** Abrasive cut-off wheels are intended for peripheral grinding, side forces applied to these wheels may cause them to shatter.
- **Always use undamaged wheel flanges that are of correct size and shape for your selected wheel.** Proper wheel flanges support the wheel, thus reducing the possibility of wheel breakage. Flanges for cut-off wheels may be different from grinding wheel flanges.
- **Do not use worn down wheels from larger power tools.** Wheel intended for larger power tool is not suitable for the higher speed of a smaller tool and may burst.

## ELECTRICAL

### DOUBLE INSULATION

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

### WARNING

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





**NOTE:** Servicing of a product 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 product to your nearest authorized service center for repair. Always use original factory replacement parts when servicing.

### ELECTRICAL CONNECTION

The product has a precision-built electric motor. It should be connected to a power supply that is 230 volts, AC only (normal household current), 50 Hz. Do not operate the product on direct current (DC). A substantial voltage drop will cause a loss of power and the motor will overheat. If the product does not operate when plugged into an outlet, double-check the power supply.

### EXTENSION CORDS

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 product will draw. An undersized cord will cause a drop in line voltage, resulting in overheating and loss of power.

When working outdoors with a product, use an extension cord that is designed for outside use.

#### ⚠ WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other 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 dust masks that are specially designed to filter out microscopic particles.

### SPECIFICATIONS

Input	230 V - 240 V ~ 50 Hz
Rated speed	10,000-35,000 (RPM) min <sup>-1</sup>
Collet	3.2 mm max.
Weight	0.73 kg

### OPERATION

#### ⚠ WARNING

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

#### ⚠ WARNING

Always wear eye protection marked to comply with ANSI Z87.1. Failure to do so could result in objects being thrown into your eyes resulting in possible serious injury.

#### ⚠ WARNING

Do not use any attachments or accessories not recommended by the manufacturer of the product. The use of attachments or accessories not recommended can result in serious personal injury.

### APPLICATIONS

You may use the product for the purposes listed below:

- Cutting
- Sanding
- Polishing and buffing
- Engraving
- Drilling

### TURNING THE ROTARY TOOL ON/OFF

See *Figure 2*.

- To turn the tool on: Push “|”.
- To turn the tool off: Push “O”.

#### ⚠ CAUTION

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

### CHANGING COLLETS

See *Figure 3*.

- Unplug the rotary tool.
- Press and hold the spindle lock, and rotate the shaft with the provided collet wrench until the spindle lock engages the shaft, preventing further rotation.
- With the spindle lock engaged, use the collet wrench to loosen the collet nut, if necessary.
- Remove the collet nut and old collet using collet wrench, if necessary.
- Insert the unslotted end of the collet in the hole at the end of the tool shaft.
- Replace the collet nut on the shaft.

## **WARNING**

Always use the collet which matches the shank size of the accessory you plan to use. Never force a large diameter shank into a collet. The accessory should fit smoothly into the collet, but you should be able to tighten the accessory firmly and securely with the provided wrench.

## **DANGER**

If you are changing an accessory immediately after use, be careful not to touch the collet, collet nut, or the accessory with your hands or fingers. You will get burned because of the heat build-up from cutting. Always use the wrench provided.

## **INSTALLING ACCESSORIES**

See Figures 4 - 5.

- Unplug the rotary tool.
- Press and hold the spindle lock, and rotate the shaft by hand until the spindle lock engages the shaft, preventing further rotation.
- With the spindle lock engaged, use the collet wrench to loosen the collet nut, if necessary.
- Insert the shank of the accessory into the collet until the shank bottoms out, then pull it out 1.6 mm (1/16 in) to allow for expansion when the accessory gets hot.
- With the spindle lock engaged, tighten the collet nut with the provided wrench until the accessory shank is gripped by the collet. Avoid excessive tightening of the collet nut.

## **REMOVING ACCESSORIES**

See Figures 4 - 5.

- Unplug the rotary tool.
- With the spindle lock engaged, loosen the collet nut with the provided wrench.
- Remove the accessory.

## **USING MANDRELS**

See Figures 6 - 8.

The most common types of mandrel to use with this tool are the standard mandrels which are used with cut-off discs, grinding wheels, emery wheels, and cut-off wheels. Screw mandrels are used with polishing wheels and polishing drums. Drum mandrels are used with sanding drums.

### **To install:**

- Unplug the rotary tool.
- Install the mandrel.

### **If using the standard mandrel:**

- Press and hold the spindle lock.

- Insert the slot end of the provided wrench into the slot on top of the mandrel and unscrew.
- Remove mandrel screw and washer.
- Place desired accessory over mandrel shaft and align accessory hole with mandrel hole.
- Insert mandrel screw with washer through the accessory and mandrel shaft holes.

**NOTE:** The mandrel washer should be placed between the mandrel screw and the accessory.

- Tighten using provided wrench.

### **If using the screw mandrel:**

- Align desired accessory hole with mandrel screw head.
- Screw accessory onto mandrel by twisting clockwise until secured.

### **If using the drum mandrel:**

- Align appropriately sized sanding drum over mandrel and push down to completely cover drum end of mandrel.

**NOTE:** If necessary, tighten the screw on the drum mandrel head to expand the drum and securely hold the sanding drum in place.

## **BALANCING ACCESSORIES**

For precision work, it is important that all accessories be properly balanced. To balance an accessory, slightly loosen the collet nut and give the accessory or collet a 1/4 turn. You should be able to tell by the sound and feel if the accessory is running in balance. Continue adjusting in this fashion until the best balance is achieved. Replace accessories if they become damaged or unbalanced.

## **SELECTING THE RIGHT SPEED**

See Figure 9.

The rotary tool has a speed range of 10,000 to 35,000 RPM. To select the right speed for each job, use a practice piece of material. Vary speed to find the best speed for the accessory you are using and the job to be done.

Use the indicator mark above the speed control dial to set the best speed for the job. The speed control dial is numbered 1 to 5 and MAX. For example, a speed setting of 1 is approximately 10,000 RPM, and a speed setting of MAX is approximately 35,000 RPM.

Refer to the speed dial settings table to determine the proper speed based on the material being worked and the type of accessory being used.

## **SLOWER SPEEDS**

Certain materials, some plastics for example, require a relatively slower speed because the friction of the tool generates heat and causes the plastic to melt at high speed.

Slow speeds (15,000 RPM or less) are usually best for polishing operations using the polishing accessories. They may also be best for working on delicate projects, delicate

wood carving, and fragile model parts.

Higher speeds are better for carving, cutting, and shaping wood. Hardwoods, metals, and glass require high speed operation. Drilling should also be done at high speeds.

To determine the optimum operational speed for different materials and accessories, refer to the speed dial settings table.

The best way to determine the correct speed for work on any material is to practice for a few minutes on a piece of scrap, even after referring to the table. You can quickly learn whether a slower or faster speed is more effective just by observing what happens when you make a pass or two at different speeds.

When working with a scrap piece of plastic, start from a slow rate of speed and increase the speed until you observe the plastic is melting at the point of contact; reduce the speed slightly to get optimum working speed without melting the workpiece.

#### **NOTE:**

- Plastic and materials that could melt at slow temperatures should be cut at low speeds.
- Soft wood should be cut at high speed.
- Aluminum, tin, copper, lead, and zinc alloys may be cut at any speed, depending on the type of cutting being done. Use paraffin or other suitable lubricant on the cutter to prevent the cut material from adhering to the cutter teeth.

For more information, see table on speed dial settings.

## **OPERATING THE ROTARY TOOL**

See Figure 10.

### **Learning to use the rotary tool:**

- Hold the tool in your hand and get used to its weight, balance, and the taper of the housing. This taper permits the tool to be grasped like a pencil.
- Examine the rotary tool accessories carefully. Damaged accessories can fly apart as they come up to speed and should not be used. The use of damaged accessories can result in serious personal injury.
- Practice on scrap materials first to see how the tool operates. Keep in mind that the work is done by the speed of the tool and by the accessory in the collet. You should not lean on or push the tool into the work.

It is best to make a series of passes with the tool rather than attempt to do all the work in one pass. To make a cut, pass the tool back and forth over the work like you would a small paint brush. Cut a little material on each pass until you reach the desired depth. For most work, a gentle touch is best; you will have greater control, make fewer errors, and get the most efficient work out of the accessory.

For the best control in close work, grip the tool like a pencil between your thumb and forefinger. A "hand grip" method of holding the tool is used for operations such as grinding a flat surface or using cut-off discs.

### **To operate the rotary tool:**

- Secure all work in a vise or clamp to a workbench to prevent it from moving under the tool.
- Hold the tool in front and away from you, keeping the tool accessory clear of the workpiece.
- Turn on the tool and let the motor and accessory build up to full speed.
- Lower the tool gradually until the accessory contacts the workpiece.
- Move the tool continuously at a steady, consistent pace.
- Use just enough pressure to keep the tool from chattering or bouncing.

**NOTE:** Heavy pressure will decrease the tool's speed and put a strain on the motor. The weight of the tool alone is adequate for most jobs.

- Lift the tool away from the workpiece before turning off the tool.

## **TELESCOPING TOOL HANGER WITH CLAMP ON BASE**

See Figure 11.

The telescoping tool hanger provides a convenient place to hang the rotary tool while the flex shaft is in use.

### **To clamp the base to a worktable:**

- Turn the clamp screw counterclockwise to open the clamping area.
- Place clamp over the edge of worktable.
- Turn the clamp screw clockwise until the clamp is secure.

### **To attach the tool hanger to the base:**

- Turn the lower part of the tool hanger clockwise to unlock.
- Pull the tool hanger up to lengthen or push the tool hanger down to shorten its height.
- Turn the lower part of the tool hanger counterclockwise to lock into place.
- Screw the tool hanger into the top of the clamp.

**NOTE:** When using the flex shaft, hang the rotary tool on the tool hanger hook using the hook located at the back of the rotary tool.

## **OPERATING THE FLEX SHAFT**

See Figures 12 - 14.

The 1/8 in. collet must be inserted into the rotary tool before the flex shaft can be installed. To install the flex shaft:

- Unplug the rotary tool.
- Loosen collet sleeve by turning counterclockwise, then remove.
- Press and hold the spindle lock, and rotate the shaft by hand until the spindle lock engages the shaft,

preventing further rotation.

- With the spindle lock engaged, use the collet wrench to loosen the collet nut, if necessary.
- Remove collet nut and collet.
- Insert the 1/8 in. collet.
- Replace and tighten the collet nut.
- Insert drive shaft into collet nut until the collar meets the collet nut.
- Tighten the collet nut completely, keeping collar in contact with the collet nut.
- Insert cup end of flex shaft onto tool head. Turn clockwise to tighten.

#### To install accessories into the flex shaft:

- Unplug the rotary tool.
- Locate the hole behind the collet nut in the flex shaft body.
- Turn the collet nut until the hole in the flex shaft body aligns with the hole visible inside the flex shaft.
- Insert provided locking key into the aligned holes to lock collet nut into place.
- Insert the shank of the accessory into the collet nut until the shank bottoms out, then pull it out 1/16 in. to allow for expansion when the accessory gets hot.
- With the key still in place, tighten the collet nut with the provided wrench until the accessory shank is gripped by the collet. Avoid excessive tightening of the collet nut.
- Remove the key.

#### To remove accessories from the flex shaft:

- Unplug the rotary tool.
- Locate the hole behind the collet nut in the flex shaft body.
- Turn the collet nut until the hole in the flex shaft body aligns with the hole visible inside the flex shaft.
- Insert provided locking key into the aligned holes to lock collet nut into place.
- With the key still in place, loosen the collet nut with the provided wrench.
- Remove the accessory.

#### To operate the rotary tool using the flex shaft:

- Secure all work in a vise or clamp to a workbench to prevent it from moving under the tool.
- Grip the flex shaft along the grooved gripping section.
- Hold the tool in front and away from you, keeping the tool accessory clear of the workpiece.
- Turn on the tool and let the motor and accessory build up to full speed.
- Lower the tool gradually until the accessory contacts the workpiece.

- Move the tool continuously at a steady, consistent pace.
- Use just enough pressure to keep the tool from chattering or bouncing.

**NOTE:** Heavy pressure will decrease the tool's speed and put a strain on the motor. The weight of the tool alone is adequate for most jobs.

- Lift the tool away from the workpiece before turning off the tool.

#### LIVE TOOL INDICATOR

This tool features a live tool indicator which illuminates as soon as the tool is connected to the supply. This warns the user that the tool is connected and will operate when the switch is pressed.

#### MAINTENANCE

##### WARNING

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

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, dust, oil, grease, 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.

Do not abuse power tools. Abusive practices can damage tool as well as workpiece.

##### WARNING

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

Electric tools used on fiberglass material, wallboard, spackling compounds, or plaster are subject to accelerated wear and possible premature failure because the fiberglass chips and grindings are highly abrasive to bearings, brushes, commutators, etc. Consequently, we do not recommend using the product for extended work on these types of materials. However, if you do work with any of these materials, it is extremely important to clean the product using compressed air.

## LUBRICATION

All of the bearings in the product 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.

## POWER SUPPLY CORD REPLACEMENT

If replacement of the power supply cord is necessary, this must be done by an authorized service center in order to avoid safety hazard.

### SYMBOL



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



Conformity



Double insulation



Wear ear protection



Wear eye protection










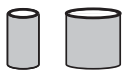
Please read the instructions carefully before starting the machine.



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.




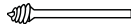






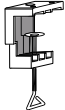



SPEED DIAL SETTINGS								
Type of accessory	Soft wood	Hard wood	Laminates, plastics	Steel	Aluminum, brass, etc.	Shell/stone	Ceramic	Glass
Cut-off discs	—	—	—	1-3	—	—	—	—
Fiberglass cut-off wheel	—	—	1-3	—	1-5	—	—	—
Sanding drums	3-MAX	3-MAX	1-3	4-MAX	4-MAX	—	—	—
Felt polishing wheels	—	—	—	3-5	3-5	3-5	3-5	3-5
Aluminum oxide grinding stones	—	—	—	3-5	—	—	—	—
Silicon carbide grinding stone	—	—	—	—	1-2	1-2	4-MAX	4-MAX
Drill bit	4-MAX	4-MAX	1-3	4-MAX	4-MAX	—	—	—
Drywall cutting bit	4-MAX (Drywall only)							

ACCESSORY TABLE			
Figure	Qty	Accessory	Application
	1	Collet (Ø 3.2 mm)	Attaching bits
	1	Collet (Ø 1.6 mm)	
	3	Orange 120-grit aluminum oxide grinding wheel bits	Ferrous materials: casting, welds, rivets, rust
	1	Green 120-grit silicon carbide grinding wheel bit	Non-ferrous materials: stone, ceramics, porcelain, glass
	1	Drum sander mandrel (Ø 6.4 mm)	Attaching sanding drums
	1	Drum sander mandrel (Ø 12.7 mm)	
	1	Polishing compound vial	Polishing and brightening metals and plastics
	72	Cut-off discs (Ø 23.8 mm x Ø 0.8 mm)	Cutting ferrous materials
	1	Pink 220-grit aluminum oxide grinding wheel (Ø 19 mm)	Ferrous materials: casting, welds, rivets, rust
	8	Sanding drums (60-grit and 120-grit) (Ø 6.4 mm x Ø 12.7 mm)	Sanding wood, metals and plastics
	8	Sanding drums (60-grit and 120-grit) (Ø 12.7 mm x Ø 12.7 mm)	



**ACCESSORY TABLE**

Figure	Qty	Accessory	Application
	1	Silicon carbide dressing stone	Bringing shape back to parabolic shaped grinding attachments
	3	Felt polishing wheels (25.4 mm x 12.7 mm)	Polishing and buffing metals, stone, glass and ceramics
	2	Fiberglass cut-off wheel (Ø 31.8 mm)	Cutting and trimming metals, plastics and ceramics
	1	Screw mandrel (Ø 3.2 mm)	Attaching felt attachments
	1	Mandrel (Ø 3.2 mm shank x 1.6 mm)	Attaching cut-off discs, cut-off wheels, grinding wheels, and emery wheels
	2	High speed steel drill bit (Ø 1.6 mm)	Drilling
	2	Drywall cutting bit (Ø 3.2 mm)	Cutting drywall
	1	Wrench	Removing attachments
	1	Telescoping tool hanger	Hanging the rotary tool while using the flex shaft
	1	Flex shaft (915 mm)	Allowing fingertip control to cut, sand, polish, etc.
	1	Clamp-on base	Attaching the tool hanger on the base
	1	Locking key	Locking the spindle of flex shaft to replace the accessory

**Techtronic Industries (Australia) Pty. Ltd.**

Level 1, 660 Doncaster Road  
Doncaster, VIC 3108, Australia

**Techtronic Industries New Zealand Ltd.**

27 Clemow Drive  
Mt. Wellington, Auckland 1060, New Zealand