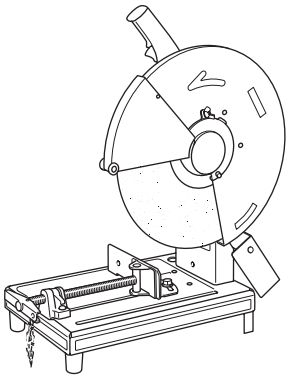
ENGLISH: Original instructions

INSTRUCTION MANUAL

Portable Cut-Off

2416S



Read before use.

SPECIFICATIONS

Model	2416S
Wheel diameter	405 mm
Hole diameter	25.4 mm
Max. cutting capacities dia.	115 mm
No load speed(min^{-1})	2,300
Dimensions (L x W x H)	610 mm x 265 mm x 535 mm
Net weight	19.2kg
Safety class	Class I

• Due to our continuing program of research and development, the specifications herein are subject to change without notice.
• Specifications may differ from country to country.
• Weight according to EPTA-Procedure 01/2003

Symbols

The following show the symbols used for the equipment. Be sure that you understand their meaning before use.

Read instruction manual.

Only for EU countries
Do not dispose of electric equipment together with household waste material! In observance of European Directive 2002/96/EC on waste electric and electronic equipment and its implementation in accordance with national law, electric equipment that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

Intended use
The tool is intended for cutting in ferrous materials with appropriate abrasive cut-off wheel. Follow all laws and regulations regarding dust and work area health and safety in your country.

Power supply
The tool should be connected only to a power supply of the same voltage as indicated on the nameplate, and can only be operated on single-phase AC supply. This tool should be grounded while in use to protect the operator from electric shock. Use only three-wire extension cords which have three-prong grounding-type plugs and three-pole receptacles which accept the tool's plug.

SAFETY INSTRUCTIONS

WARNING! When using electric tools, basic safety precautions, including the following, should always be followed to reduce the risk of fire, electric shock and personal injury. Read all these instructions before operating this product and save these instructions.

For safe operations:

1. **Keep work area clean.**
   Cluttered areas and benches invite injuries.
2. **Consider work area environment.**
   Do not expose power tools to rain. Do not use power tools in damp or wet locations. Keep work area well lit. Do not use power tools where there is risk to cause fire or explosion.
3. **Guard against electric shock.**
   Avoid body contact with earthed or grounded surfaces (e.g. pipes, radiators, ranges, refrigerators).
4. **Keep children away.**
   Do not let visitors touch the tool or extension cord. All visitors should be kept away from work area.
5. **Store idle tools.**
   When not in use, tools should be stored in a dry, high or locked up place, out of reach of children.
6. **Do not force the tool.**
   It will do the job better and safer at the rate for which it was intended.
7. **Use the right tool.**
   Do not force small tools or attachments to do the job of a heavy duty tool. Do not use tools for purposes not intended; for example, do not use circular saws to cut tree limbs or logs.
8. **Dress properly.**
   Do not wear loose clothing or jewellery, they can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protecting hair covering to contain long hair.
9. **Use safety glasses and hearing protection.**
   Also use face or dust mask if the cutting operation is dusty.
10. **Connect dust extraction equipment.**
    If devices are provided for the connection of dust extraction and collection facilities ensure these are connected and properly used.
11. **Do not abuse the cord.**
    Never carry the tool by the cord or yank it to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.
12. **Secure work.**
    Use clamps or a vice to hold the work. It is safer than using your hand and it frees both hands to operate the tool.
13. **Do not overreach.**
    Keep proper footing and balance at all times.
14. **Maintain tools with care.**
    Keep cutting tools sharp and clean for better and safer performance. Follow instructions for lubrication and changing accessories. Inspect tool cord periodically and if damaged have it repaired by an authorized service facility. Inspect extension cords periodically and replace, if damaged. Keep handles dry, clean and free from oil and grease.

15. **Disconnect tools.**
When not in use, before servicing and when changing accessories such as blades, bits and cutters.
16. **Remove adjusting keys and wrenches.**
Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
17. **Avoid unintentional starting.**
Do not carry a plugged-in tool with a finger on the switch. Ensure switch is off when plugging in.
18. **Use outdoor extension leads.**
When tool is used outdoors, use only extension cords intended for outdoor use.
19. **Stay alert.**
Watch what you are doing. Use common sense. Do not operate tool when you are tired.
20. **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, free running 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 in this instruction manual. Have defective switches replaced by an authorized service facility. Do not use the tool if the switch does not turn it on and off.
21. **Warning.**
The use of any accessory or attachment, other than those recommended in this instruction manual or the catalog, may present a risk of personal injury.
22. **Have your tool repaired by a qualified person.**
This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

ADDITIONAL SAFETY RULES FOR TOOL

1. **Wear protective glasses. Also wear hearing protection during extended periods of operation.**
2. **Use only wheels recommended by the manufacturer which have a maximum operating speed at least as high as "No Load RPM" marked on the tool's nameplate. Use only fiberglass-reinforced cut-off wheels.**
3. **Check the wheel carefully for cracks or damage before operation. Replace cracked or damaged wheel immediately.**
4. **Secure the wheel carefully.**
5. **Use only flanges specified for this tool.**
6. **Be careful not to damage the spindle, flanges (especially the installing surface) or bolt, or the wheel itself might break.**
7. **KEEP GUARDS IN PLACE and in working order.**
8. **Hold the handle firmly.**
9. **Keep hands away from rotating parts.**
10. **Make sure the wheel is not contacting the work-piece before the switch is turned on.**
11. **Before using the tool on an actual workpiece, let it simply run for several minutes first. Watch for flutter or excessive vibration that might be caused by poor installation or a poorly balanced wheel.**
12. **Watch out for flying sparks when operating. They can cause injury or ignite combustible materials.**
13. **Remove material or debris from the area that might be ignited by sparks. Be sure that others are not in the path of the sparks. Keep a proper, charged fire extinguisher closely available.**
14. **Use the cutting edge of the wheel only. Never use side surface.**
15. **If the wheel stops during the operation, makes an odd noise or begins to vibrate, switch off the tool immediately.**
16. **Always switch off and wait for the wheel to come to a complete stop before removing, securing workpiece, working vise, changing work position, angle or the wheel itself.**
17. **Do not touch the workpiece immediately after operation; it is extremely hot and could burn your skin.**
18. **Store wheels in a dry location only.**

SAVE THESE INSTRUCTIONS.

INSTALLATION

Securing cut-off saw

The cut-off saw may be bolted (2 bolts) down to a bench or floor using the bolt holes in the base. Do not secure the bolts too tightly.

FUNCTIONAL DESCRIPTION

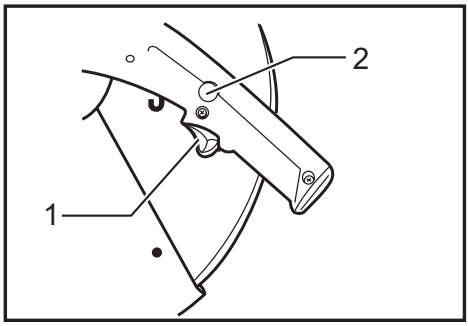
⚠CAUTION:

- Always be sure that the tool is switched off and unplugged before adjusting or checking function on the tool.

Switch action

⚠CAUTION:

- Before plugging in the tool, always check to see that the switch trigger actuates properly and returns to the "OFF" position when released.



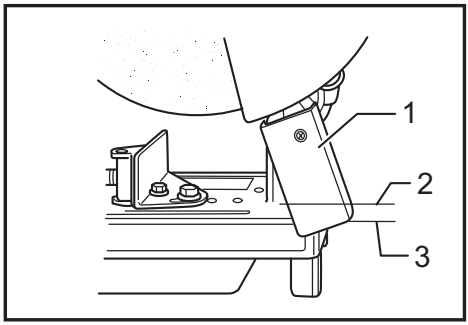
► **1.** Switch trigger **2.** Lock-off button

The lock-off button and the trigger in the handle must be pressed for the tool to be activated. You can stop the motor by releasing the trigger.

⚠CAUTION:

- Be sure the switch operates properly. It should turn the tool on and return to the "off" position after being released.
- When not using the tool, remove the lock-off button. This prevents unauthorized operation.

Positioning the spark chute



► **1.** Spark chute **2.** Base top **3.** Point A

To prevent sparks from flying around, raise the spark chute slightly so that point A will be below the base top indicated.

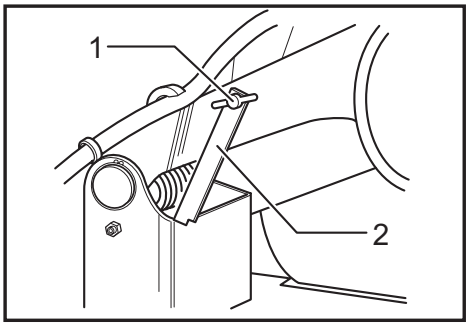
⚠CAUTION:

- Be sure to adjust the spark chute as mentioned above before operation. Failure to do so will cause more sparks to fly around causing greater potential for injury or ignition of any combustible materials nearby.

Adjusting stopper plate

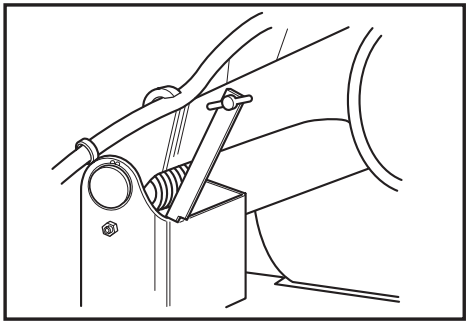
The stopper plate prevents the wheel from contacting the surface of the bench floor.

1. When the new wheel is installed, set the stopper plate as shown in the figure and tighten the thumb bolt.

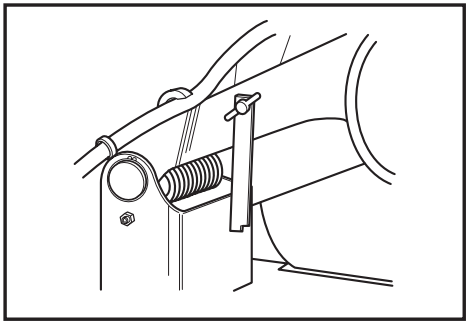


► **1.** Thumb bolt **2.** Stopper plate

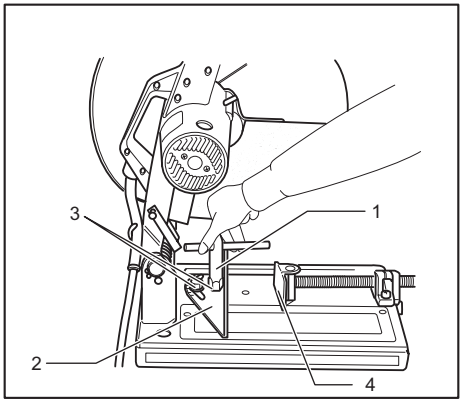
2. When the wheel wears down to below 355mm (14") in diameter, set the stopper plate as shown in the figure and tighten the thumb bolt.



3. When the wheel wears down to below 305mm (12") in diameter, set the stopper plate as shown in the figure and tighten the thumb bolt.

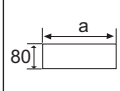
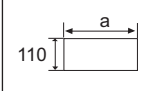


Changing the width between vise and guide

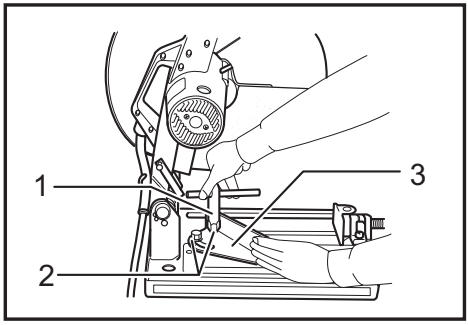


► **1.** Socket wrench **2.** Guide **3.** Hex bolt **4.** Vise

Changing guide position to accommodate larger work-piece as shown, the socket wrench can be used to remove the hex bolts and move the guide. The following interval settings are possible:
0-170 mm (0 - 6-3/4")
60-230 mm (2-3/8" - 9")

Applicable wheel dimensions		405 mm (16") outer dia. X less than 4.5 mm (3/16") X 25.4 mm (1") inner dia.				
Wheel configuration						
Max. cutting capacity	90° cutoff	115mm (4-1/2")	120 mm (4-3/4")	230 mm (9")	185 mm (7-1/4")	150 mm (5-7/8")
	45° cutoff	115mm (4-1/2")	110 mm (4-3/8")	110 mm (4-3/8")	110 mm (4-3/8")	110 mm (4-3/8")

Setting the cutting angle



► **1.** Socket wrench **2.** Hex bolts **3.** Guide

To change the cutting angle, loosen the hex bolts with the socket wrench as shown, then move the guide to the desired angle. At 60-230 mm (2-3/8" - 9") position, the guide cannot be angle to allow 45°cuts.

CAUTION: Tighten the hex bolts securely.

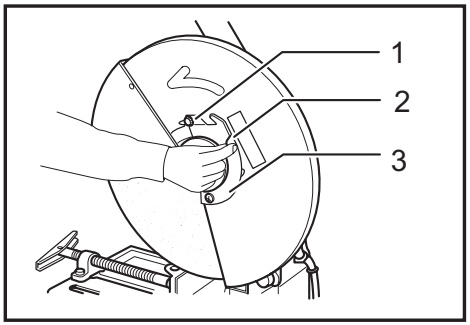
CAUTION: **Do not operate the tool when the material is not firmly secured with the vise because of the cutting angle.**

ASSEMBLY

CAUTION:

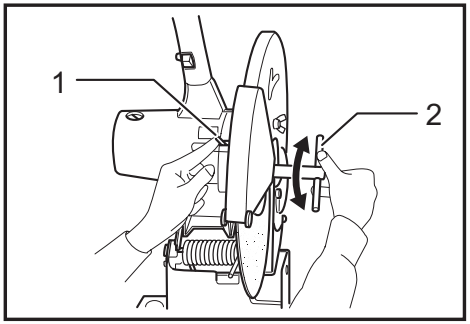
- Always be sure that the tool is switched off and unplugged before carrying out any work on the tool.

Installing cut-off wheel



► **1.** Thumb bolt **2.** Knob **3.** center cap

1. To install a wheel, loosen the thumb bolt and lift up the center cap with the knob.
2. Press stopper in the direction of the arrow. Loosen the hex bolt with the socket wrench by turning it counterclockwise. Then remove the hex bolt, outer flange and wheel.



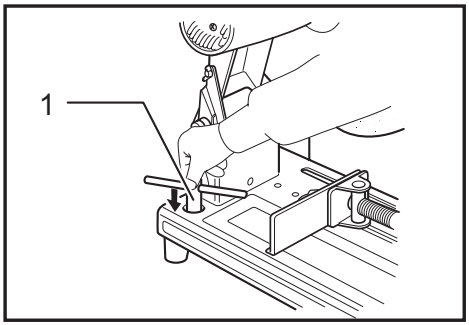
► **1.** Stopper **2.** Socket wrench

3. To install the wheel, follow the removal procedure in reverse. BE SURE TO TIGHTEN THE HEX BOLT SECURELY. Secure center cap carefully with thumb bolt.

⚠CAUTION:

- When installing the wheel, make sure that Makita mark on the wheel faces you on the outside.
- Use only Makita socket wrench to remove or install the wheel.

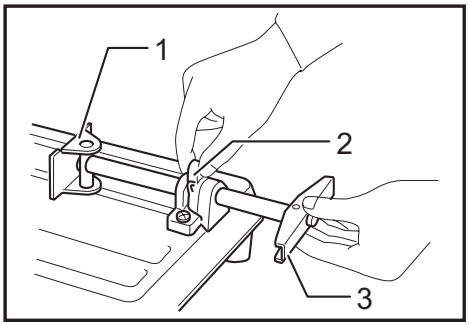
Storing socket wrench



► **1.** Socket wrench

The socket wrench can be conveniently stored in the location as indicated.

Securing workpiece



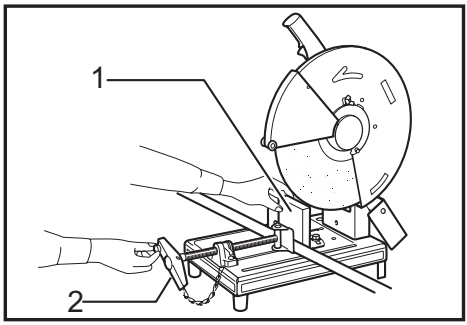
► **1.** Vise plate **2.** Vise nut **3.** Vise handle

By turning the vise handle counterclockwise and then flipping the vise nut to the left, the vise is released from the shaft threads and can be moved rapidly in and out. To grip workpieces, push the vise handle until the vise plate contacts the workpiece. Flip the vise nut to the right and then turn the vise handle clockwise to securely retain the workpiece.

⚠CAUTION:

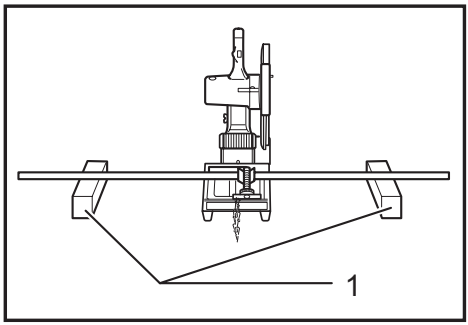
- Always set the vise nut to the right fully when securing the workpiece. Failure to do so may result in insufficient securing of the workpiece. This could cause the workpiece to be ejected or cause a dangerous breakage of the wheel.

When the cut-off wheel has worn down considerably, use a spacer block of sturdy, non-flammable material behind the workpiece as shown in the figure. You can more efficiently utilize the worn wheel by using the mid point on the periphery of the wheel to cut the workpiece.



► **1.** Spacer block **2.** Handle

Long workpieces must be supported by blocks of non-flammable material on either side so that it will be level with the base top.



► **1.** Blocks

OPERATION

Hold the handle firmly. Switch on the tool and wait until the wheel attains full speed before lowering gently into the cut. When the wheel contacts the workpiece, gradually bear down on the handle to perform the cut. When the cut is completed, switch off the tool and WAIT UNTIL THE WHEEL HAS COME TO A COMPLETE STOP before returning the handle to the fully elevated position.

⚠*CAUTION:*

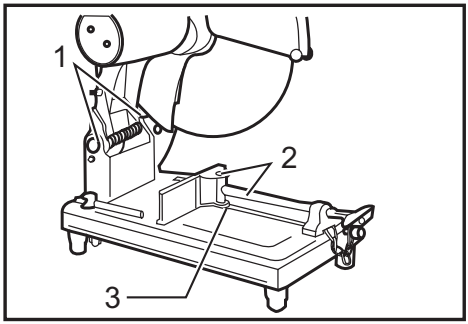
- Proper handle pressure during cutting and maximum cutting efficiency can be determined by the amount of sparks that is produced while cutting. Your pressure on the handle should be adjusted to produce the maximum amount of sparks. Do not force the cut by applying excessive pressure on the handle. Reduced cutting efficiency, premature wheel wear, as well as, possible damage to the tool, cut-off wheel or workpiece may result.

MAINTENANCE

⚠*CAUTION:*

- Always be sure that the tool is switched off and unplugged before attempting to perform inspection or maintenance.
- Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

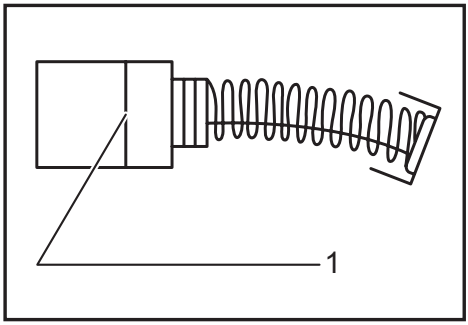
Lubrication



The following parts should be lubricated occasionally with machine oil:

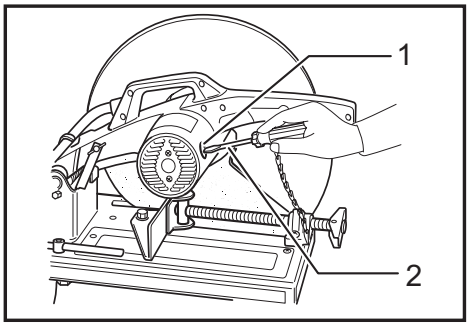
1. Vise screw and turning parts.
2. Contact surface between motor housing and motor housing mounting plate.
3. Vise sliding surface.

Replacing carbon brushes



► **1.** Limit mark

Remove and check the carbon brushes regularly. Replace when they wear down to the limit mark. Keep the carbon brushes clean and free to slip in the holders. Both carbon brushes should be replaced at the same time. Use only identical carbon brushes.
Use a screwdriver to remove the brush holder caps. Take out the worn carbon brushes, insert the new ones and secure the brush holder caps.



► **1.** Brush holder cap **2.** Screwdriver

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by Makita Authorized Service Centers, always using Makita replacement parts.

OPTIONAL ACCESSORIES

⚠CAUTION:

- These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- Abrasive cut-off wheels
- Socket wrench 17
- Lock off button

NOTE:

- Some items in the list may be included in the tool package as standard accessories. They may differ from country to country.

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