



说明书材质要求：105g 有光铜版纸	说明书成品尺寸：105*143mm
第一：专色用6级防晒油墨+CMYK油墨要求： 1.PANTONE137C专色油墨（专色用6级防晒油墨）： 如果自己配色，油墨配比为：酒联中黄（防晒）2000g 酒联金红（防晒）225g 2.C色油墨：酒联天蓝墨 3.M色油墨：酒联金红墨 4.Y色油墨：pantone123C专色油墨 5.K色油墨：酒联黑墨	第二：特别注意： 1.印刷时看样请参考我司提供的实物样品颜色。不得偏色 2.137C的专色不得参考C=0,M=35,Y=90,K=0对应的四色 色谱颜色来看样印刷 Pantone 137C Black（两色印刷）
折叠方式：风琴折（ 20P以下用风琴折 ）/ 骑马钉（ 20P以上用骑马钉 ） 特殊情况：16P/20P：风琴折 + 对折	备注：

特别注意：此页内容不印刷

风琴折 + 对折 页面顺序

16P 页面顺序

9	10	11	封面
12	13	14	封底

1	2	3	4
5	6	7	8

20P 页面顺序

11	12	13	14	封面
15	16	17	18	封底

1	2	3	4	5
6	7	8	9	10

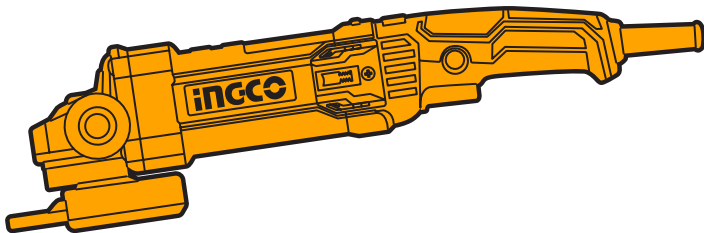
更改记录	1. 加货号AG1100385E			1. 调整安规，加噪音振动值			1. 更新最新安规		
	0824.V08	2024.08.13	LYD	0125.V09	2025.1.21	LY	0825.V10	2025.8.11	LYD
	版本号	日期	设计师	版本号	日期	设计师	版本号	日期	设计师

INGCO

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PRODUCT MANUAL

ANGLE GRINDER



AG12003 UAG12003 AG12003xy UAG12003xy
AG110038 UAG110038 AG110038xy UAG110038xy
AG1100385 UAG1100385 AG1100385xy UAG1100385xy
AG1100382 UAG1100382 AG1100382xy UAG1100382xy
x(blank,1,2,3,4,5,6,7,8,9,E,S,A,M)
y(blank,-1,-2,-3,-4,-5,-6,-7,-8,-9,-91,E,S,A,M)



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.

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 adapter 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 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.*

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 a 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 and clothing 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.*
- h) **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.*

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 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.*

- 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 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.*
- 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, 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.**
- h) **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.*

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.*

THE SYMBOLS IN INSTRUCTION MANUAL

	Double insulated for additional protection
	Read the instruction manual before using.
	CE conformity.
	Safety alert. Please only use the accessories supported by the manufacturer.
	Wear safety glasses, hearing protection and dust mask.
	WARNING! Always operate with two hands
	Do not use the guard for cut-off operations. When working with cut-off wheels, always use the parting safety guard for safety reasons
	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.

ADDITIONAL SAFETY WARNING

Safety instructions for all operations

Safety warnings common for grinding, sanding, wire brushing, polishing or cutting-off operations:

- a) **This power tool is intended to function as a grinder, sander, wire brush, polisher or cut-off tool. 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.***
- b) **Do not convert this power tool to operate in a way which is not specifically designed and specified by the tool manufacturer. *Such a conversion may result in a loss of control and cause serious personal injury.***
- c) **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.***
- d) **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.***
- e) **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.***
- f) **The dimensions of the accessory mounting must fit the dimensions of the mounting hardware of the power tool. *Accessories that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.***
- g) **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.***
- h) **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.*

- i) **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 immediate area of operation.*
- j) **Hold the 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 could give the operator an electric shock.*
- k) **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.*
- l) **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.*
- m) **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.*
- n) **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.*
- o) **Do not operate the power tool near flammable materials.** *Sparks could ignite these materials.*
- p) **Do not use accessories that require liquid coolants.** *Using water or other liquid coolants may result in electrocution or shock.*

Further safety instructions for all operations

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 of the accessory's rotation at the point of the 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 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.

- a) **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.*
- b) **Never place your hand near the rotating accessory.** *Accessory may kickback over your hand.*
- c) **Do not position your body in the area where power tool will move if kickback occurs.** *Kickback will propel the tool in direction opposite to the wheel's movement at the point of snagging.*
- d) **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.*
- e) **Do not attach a saw chain woodcarving blade, segmented diamond wheel with a peripheral gap greater than 10 mm or toothed saw blade.** *Such blades create frequent kickback and loss of control.*

Additional safety instructions for grinding and cutting-off operations

Safety warnings specific for grinding and abrasive cutting-off operations:

- a) **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.*
- b) **The grinding surface of center depressed wheels must be mounted below the plane of the guard lip.** *An improperly mounted wheel that projects through the plane of the guard lip cannot be adequately protected.*
- c) **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, accidental contact with wheel and sparks that could ignite clothing.*

- d) **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.*
- e) **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.*
- f) **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.*
- g) **When using dual purpose wheels always use the correct guard for the application being performed.** *Failure to use the correct guard may not provide the desired level of guarding, which could lead to serious injury.*

Additional safety instructions for cutting-off operations

Additional safety warnings specific for cutting-off operations:

- a) **Do not “jam” the cut-off wheel or apply excessive pressure. Do not attempt to make an excessive depth of cut.** *Overstressing the wheel increases the loading and susceptibility to twisting or binding of the wheel in the cut and the possibility of kickback or wheel breakage.*
- b) **Do not position your body in line with and behind the rotating wheel.** *When the wheel, at the point of operation, is moving away from your body, the possible kickback may propel the spinning wheel and the power tool directly at you.*
- c) **When wheel is binding or when interrupting a cut for any reason, switch off the power tool and hold the power tool motionless until the wheel comes to a complete stop. Never attempt to remove the cut-off wheel from the cut while the wheel is in motion otherwise kickback may occur.** *Investigate and take corrective action to eliminate the cause of wheel binding.*
- d) **Do not restart the cutting operation in the workpiece. Let the wheel reach full speed and carefully re-enter the cut.** *The wheel may bind, walk up or kickback if the power tool is restarted in the workpiece.*

- e) **Support panels or any oversized workpiece to minimize the risk of wheel pinching and kickback.** *Large workpieces tend to sag under their own weight. Supports must be placed under the workpiece near the line of cut and near the edge of the workpiece on both sides of the wheel.*
- f) **Use extra caution when making a “pocket cut” into existing walls or other blind areas.** *The protruding wheel may cut gas or water pipes, electrical wiring or objects that can cause kickback.*
- g) **Do not attempt to do curved cutting.** *Overstressing the wheel increases the loading and susceptibility to twisting or binding of the wheel in the cut and the possibility of kickback or wheel breakage, which can lead to serious injury.*

Additional safety instructions for sanding operations

Safety warnings specific for sanding operations:

- a) **Use proper sized sanding disc paper. Follow manufacturers recommendations, when selecting sanding paper.** *Larger sanding paper extending too far beyond the sanding pad presents a laceration hazard and may cause snagging, tearing of the disc or kickback.*

Additional safety instructions for polishing operations

Safety warnings specific for polishing operations:

- a) **Do not allow any loose portion of the polishing bonnet or its attachment strings to spin freely. Tuck away or trim any loose attachment strings.** *Loose and spinning attachment strings can entangle your fingers or snag on the workpiece.*

Additional safety instructions for wire brushing operations

Safety warnings specific for wire brushing operations:

- a) **Be aware that wire bristles are thrown by the brush even during ordinary operation. Do not overstress the wires by applying excessive load to the brush.** *The wire bristles can easily penetrate light clothing and/or skin.*
- b) **If the use of a guard is recommended for wire brushing, do not allow any interference of the wire wheel or brush with the guard.** *Wire wheel or brush may expand in diameter due to work load and centrifugal forces.*

RESIDUAL RISKS

Even when the power tool is used as prescribed it is not possible to eliminate all residual risk factors. The following hazards may arise in connection with the power tool's construction and design:

- a) Health defects resulting from vibration emission if the power tool is being used over longer period of time or not adequately managed and properly maintained.
- b) Injuries and damage to property due to broken accessories that are suddenly dashed.

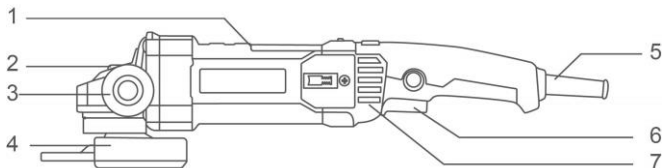
WARNING!

This power tool produces an electromagnetic field during operation. This field may under some circumstances interfere with active or passive medical implants. To reduce the risk of serious or fatal injury, we recommend persons with medical implants to consult their physician and the medical implant manufacturer before operating this power tool.

INTENDED USE

The angle grinder suitable for grinding, sanding, abrasive cutting-off operations and wire brushing metal, concrete, stone and similar materials without the use of water.

SPECIFICATIONS



Components

- | | |
|---------------------------|-----------------------|
| 1. Housing | 5. Power cable sleeve |
| 2. Spindle locking button | 6. Switch button |
| 3. Auxiliary handle | 7. Cooling vents |
| 4. Disc guard | |

Accessories

1. Auxiliary handle 1pcs
2. Spanner 1pcs

Technical specifications

Model No.	AG110038 AG110038xy	UAG110038 UAG110038xy
Rated input power	1100W	1100W
Rated voltage	220-240V~50/60Hz	110-120V~50/60Hz
Rated no-load speed	12000/min	12000/min
Grinding spindle thread	M14	5/8"-11UNC
Disc diameter	125mm	5"
Protection class	II/II	II/II

Model No.	AG1100385 AG1100385xy	UAG1100385 UAG1100385xy
Rated input power	1100W	1100W
Rated voltage	220-240V~50/60Hz	110-120V~50/60Hz
Rated no-load speed	5000-12000/min	5000-12000/min
Grinding spindle thread	M14	5/8"-11UNC
Disc diameter	125mm	5"
Protection class	II/II	II/II

Model No.	AG1100382 AG1100382xy	UAG1100383
Rated input power	1100W	1100W
Rated voltage	220-240V~50/60Hz	110-120V~50/60Hz
Rated no-load speed	12000/min	12000/min
Grinding spindle thread	M10	5/8"-11UNC
Disc diameter	100mm	4-1/2"
Protection class	II/II	II/II

Model No.	AG110038-9	AG1100382-9
Rated input power	1100W	1100W
Rated voltage	220-240V~60Hz	220-240V~60Hz
Rated no-load speed	12000/min	12000/min
Grinding spindle thread	M14	M10
Disc diameter	125mm	100mm
Protection class	□/II	□/II

Model No.	UAG1100383-91	UAG1100385-91	AG11003857
Rated input power	1100W	1100W	1100W
Rated voltage	127V~60Hz	127V~60Hz	220-240V~60Hz
Rated no-load speed	12000/min	5000-12000/min	5000-12000/min
Grinding spindle thread	M14	M14	M10
Disc diameter	4-1/2"	5"	100mm
Protection class	□/II	□/II	□/II

Model No.	AG120032	AG12003	AG120035
Rated input power	1200W	1200W	1200W
Rated voltage	220-240V~50/60Hz	220-240V~50/60Hz	220-240V~50/60Hz
Rated no-load speed	12000/min	12000/min	5000-12000/min
Grinding spindle thread	M10	M14	M14
Disc diameter	100mm	125mm	125mm
Protection class	□/II	□/II	□/II

Model No. NOTE: x (blank, 1,2,3,4,5,6,7,8,9,E,S,A,M); y (blank, -1,-2,-3,-4,-5,-6,-7,-8,-9,E,S,A,M)

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.

Noise/Vibration information

The noise emission, measured in accordance with EN62841-2-3:

Sound pressure level	L_{pA}	91 dB (A)
Sound power level	L_{wA}	99 dB (A)
Uncertainty	K	3 dB (A)

Wear hearing protection!

The vibration total value and its uncertainty determined according to EN62841-2-3:

Surface grinding:

Vibration emission value	$a_{h,AG}$	14,2 m/s ²
Uncertainty	K	1,5 m/s ²

NOTE: For other applications, e.g., abrasive cutting-off operations or wire brushing other vibration values could occur.

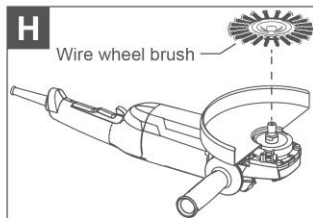
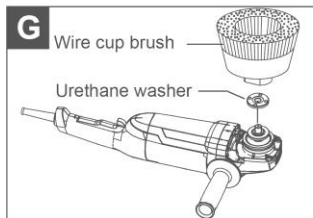
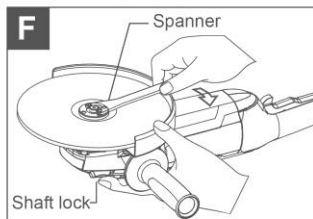
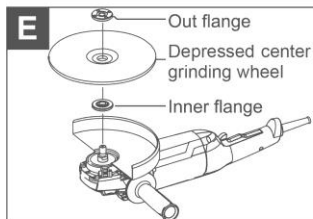
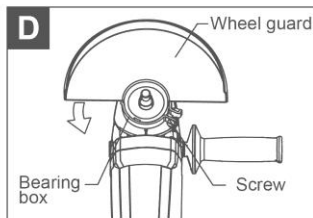
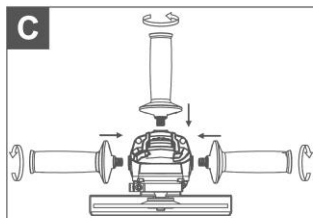
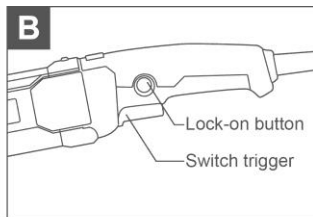
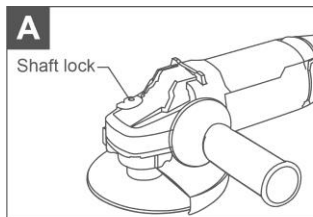
That the declared vibration total value has been measured in accordance with a standard test method and may be used for comparing one tool with another.

That the declared vibration total value may also be used in a preliminary assessment of exposure.

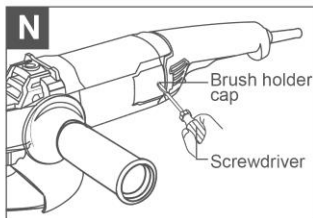
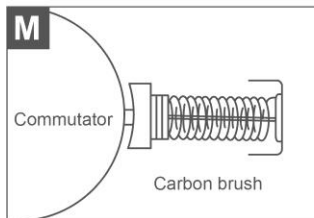
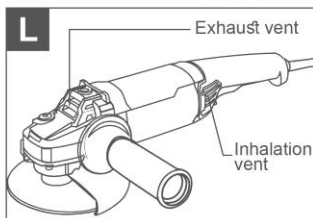
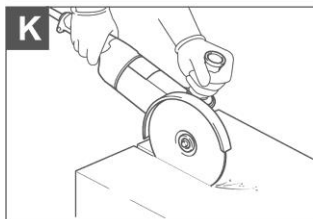
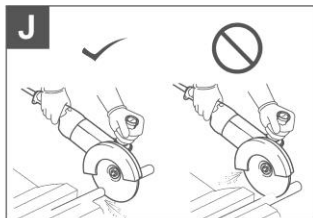
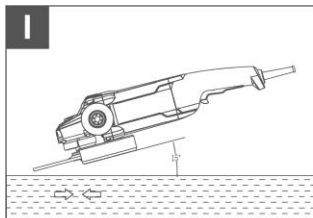
** WARNING!**

- That the vibration emission during actual use of the power tool can differ from the declared total value depending on the ways in which the tool is used;
- Identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

OPERATION PICTURE



OPERATION PICTURE



OPERATION

Shaft lock (see Figure A)

WARNING!

- Always be sure that the tool is switched off and unplugged before adjusting or checking function on the tool.
- Never actuate the shaft lock when the spindle is moving. The tool may be damaged.

Press the shaft lock to prevent spindle rotation when installing or removing accessories.

Switching On/Off (see Figure B)

WARNING!

- Before plugging in the tool, always check to see that the switch trigger actuates properly and returns to the "OFF" position when released.
- Switch can be locked in "ON" position for ease of operator comfort during extended use. Apply caution when locking tool in "ON" position and maintain firm grasp on tool.

To start the tool, simply pull the switch trigger. Release the switch trigger to stop.

For continuous operation, pull the switch trigger and then push in the lock button, and then release the switch trigger.

To stop the tool from the locked position, pull the switch trigger fully, then release it.

Installing the auxiliary handle (see Figure C)

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

Always be sure that the side grip is installed securely before operation.

Adjusting wheel guard operations (see Figure D)

When using a depressed center grinding wheel/Multidisc, flex wheel or wire wheel brush, the wheel guard must be fitted on the tool so that the closed side of the guard always points toward the operator.

Mount the wheel guard with the protrusion on the wheel guard band aligned with the notch on the bearing box.

Then rotate the wheel guard around 180 degrees counterclockwise. Be sure to tighten the screw securely.

To remove wheel guard, follow the installation procedure in reverse.

Disc grinding wheel assembly (see Figure E)

Always use supplied guard when depressed center grinding wheel/Multidisc is on tool. Wheel can shatter during use and guard helps to reduce chances of personal injury.

Mount the inner flange onto the spindle. Fit the wheel/disc on the inner flange and screw the lock nut with its protrusion facing downward (facing toward the wheel).

Removing the wheel (see Figure F)

To tighten the lock nut, press the shaft lock firmly so that the spindle cannot revolve, then use the lock nut wrench and securely tighten clockwise

To remove the wheel, follow the installation procedure in Reverse.

Wire cup brush operations (see Figure G)

Check operation of brush by running tool with no load, ensure that no one is in front of or in line with brush.

Do not use brush that is damaged, or which is out of balance. Use of damaged brush could increase potential for injury from contact with broken brush wires.

Unplug tool and place it upside down allowing easy access to spindle. Remove any accessories on spindle.

WARNING!

When using wire cup brush, mount urethane washer to the spindle. It will make it easier to remove wire cup brush.

Wire wheel brush operations (see Figure H)

Check operation of wire wheel brush by running tool with no load, ensure that no one is in front of or in line with the wire wheel brush.

WARNING!

- **Do not use wire wheel brush that is damaged, or which is out of balance. Use of damaged wire wheel brush could increase potential for injury from contact with broken wires.**
- **ALWAYS use guard with wire wheel brushes, as assuring diameter of wheel fits inside guard. Wheel can shatter during use and guard helps to reduce chances of personal injury.**

- **Unplug tool and place it upside down allowing easy access to spindle. Remove any accessories on spindle.**

Thread wire wheel brush onto spindle and tighten with the wrenches.

When using wire wheel brush, avoid applying too much pressure which causes over bending of wires, leading to premature breakage.

⚠ WARNING!

- **It should never be necessary to force the tool. The weight of the tool applies adequate pressure.**
- **Forcing and excessive pressure could cause dangerous wheel breakage.**
- **ALWAYS** replace wheel if tool is dropped while grinding.
- **NEVER** bang or hit grinding disc or wheel onto work.
- **ALWAYS** hold the tool firmly with one hand on rear handle and the other on the side handle. Turn the tool on and then apply the wheel or disc to the workpiece.
- **In general, keep the edge of the wheel or disc at an angle of about 15 degrees to the workpiece surface.**

⚠ CAUTION!

- **NEVER** use tool with wood cutting blades and other sawblades. Such blades when used on a grinder frequently kick and cause loss of control leading to personal injury.
- **Never** switch on the tool when it is in contact with the workpiece, it may cause an injury to operator.
- **Always** wear safety goggles or a face shield during operation.
- **After operation, always** switch off the tool and wait until the wheel has come to a complete stop before putting the tool down.

To use grinder (see Figure I)

Always hold the tool firmly with one hand on rear handle and the other on the side handle. Turn the tool on and then apply the wheel or disc to the workpiece.

In general, keep the edge of the wheel or disc at an angle of about 15 degrees to the workpiece surface.

Operation with abrasive cut-off / diamond wheel

Optional accessory

Usage example: operation with abrasive cut-off wheel (see Figure J)

Usage example: operation with diamond wheel (see Figure K)

⚠ WARNING!

- Do not "jam" the wheel or apply excessive pressure. Do not attempt to make an excessive depth of cut. Overstressing the wheel increases the loading and susceptibility to twisting or binding of the wheel in the cut and the possibility of kickback, wheel breakage and overheating of the motor may occur.
- Do not start the cutting operation in the workpiece. Let the wheel reach full speed and carefully enter into the cut moving the tool forward over the workpiece surface. The wheel may bind, walk up or kickback if the power tool is started in the workpiece.
- During cutting operations, never change the angle of the wheel. Placing side pressure on the cut-off wheel (as in grinding) will cause the wheel to crack and break, causing serious personal injury.
- A diamond wheel shall be operated perpendicular to the material being cut.

Maintenance

Cleaning (see Figure L)

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.

Regularly clean the tool's air vents or whenever the vents start to become obstructed.

Carbon brushes (see Figure M, N)

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.

MAINTENANCE&MALFUNCTIONS

Possible malfunctions and methods of their eliminations

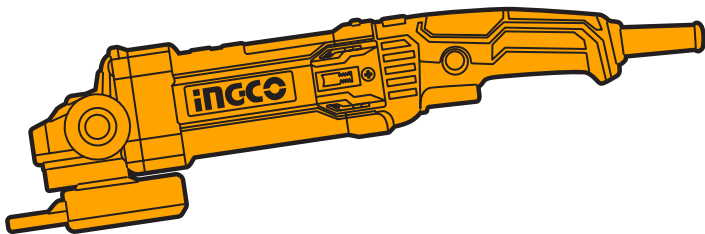
Malfunction	Probable causes	Actions
When the machine is turned on, the electric motor does not work.	● Switch failure ● The power cord or wiring is broken, power cord plug malfunction; ● No brush contact with the collector; ● Wear/damage of brushes	Disconnect the machine from the mains and contact a qualified specialist.
Formation of a circular fire on the collector	● Brush wear/damage of the brush holder; ● Malfunction in the armature coil	Disconnect the machine from the mains and contact a qualified specialist. Please don't repair the machine by your own.
When working, smoke or the smell of burning insulation appears from the ventilation openings.	● Malfunction in the electric motor coil; ● Malfunction of the electrical part of the tool.	
Increased noise in the gearbox	● Wear/breakage of gears or bearings	
When the machine is turned on, the spindle does not rotate	● Gearbox failure.	

Critical state criteria

Critical state criteria	Probable causes	Actions
Cracks on the surfaces of bearing and housing parts	Fatigue deformation of metal	Disconnect the machine from the mains and contact a qualified specialist. Please don't repair the machine by your own.
The power cord or plug is damaged	Overload or breakage	
Excessive wear or damage to the motor or reductor mechanism, or a combination of signs	Fatigue deformation of metal	

Critical state criteria

List of critical failures	Actions
Electric motor sparking	It is necessary to contact a qualified specialist
The appearance of extraneous noise	It is necessary to contact a qualified specialist
If the above malfunctions are detected, it is necessary to disconnect the machine from the mains and contact a qualified specialist	



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